KALECKI'S MACRO SYSTEM
The Alternative Theoretical Structure

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Notes on references to Kalecki's writings:

1. Page-references to the writings of Kalecki are mainly to his *Collected Works* (complete reference given at the end), made as follows: (136,II) means p.136, vol.II.

2. Unless otherwise stated, italicisations and parenthetical insertions in excerpts from Kalecki are *our own*.

Chapter 1

Introduction

1.1 Statement of Objectives

This work represents an attempt not to be repelled by the terseness of Kalecki's writings and fall back upon synthetic substitutes. Baseline of the work is therefore simply a close and careful reading of Kalecki - a set of *detailed textual interpretations* based on that. We try by these means to reach the *underlying plane* of Kalecki's arguments and see the whole theory unfold on this plane[1]. Within this, our basic effort is directed to locating the essential *framework* of the theory, seeing the whole theory *proceed therefrom*. We hope this leads to a fresh and deeper understanding of Kalecki.

Let us put the objective *through* Kalecki. He never bothered to set out the framework of his arguments in so many words. He simply moved tersely from one substantive proposition of the theory to another, each argued tersely and tightly between what "facts" would permit and what the "purpose" required, building up the whole theory in this manner. The result was a very *tight theoretical structure* - another name for the same "terseness".

Our objective then is to work out the theory *afresh* in the manner stated running counter to this mode of argument. This is necessarily to space out or loosen out the

[1]The actual *scope* of the theory that we consider is stated in the next section.

tight theoretical structure, give more play to its individual elements and altogether make it *freer* or *more open ended*[2]. (The framework itself is but a spacing out of the really basic elements).

Let us now call attention to another side of our work. Out attempt at seeing Kalecki's theory proceed from its own framework is by definition an attempt at *systematisation* and entails a basic *reorganisation* of his arguments. These things run through the whole thesis. Obviously, this means that we *feel* a need for reorganisation and systematisation in the first place, and that inturn means very generally some *criticism* of Kalecki. This is the otherside of our work. The work is based on not only a close and careful but also a critical, in fact a very critical reading of Kalecki, for we try to look into *all details* of his arguments (as we are aware) and in doing that we almost invariably locate some "gaps" or other, *to be attended.* Thus our criticisms of Kalecki are fundamentaly constructive in nature, meant to carry his theory forward. This leds not only to reorganisations and systematisations but also to ceratin *reformulations*, even *extensions* of his arguments. They all come in a line[3]. In the end, we put forwardthe thesis simply as a series of modest contributions to Kaleckian economics in the true sense, grounded in his writings and governed by the basic spirit of his enquiry, not just heresy.

But Kaleckian economics means nothing if not *set aside the mainstream.* Hence the idea of an "alternative theoretical structure". Indeed, the writings of Kalecki bring us to a *fair range of explicit or implicit criticism of the conventional framework of economic theory.* Their assimilation is simply part of our objectives already set out. How else do we reach the "underlying plane", the "framework"? In fact, starting out from Kalecki's framework simply provides the right place for these "assimilations" as so many points of departure from the conventional framework, and that at once sets Kalecki apart. (So, we do not repeat the point later).

It is only to be stated that too much is not be read into the word "alternative theoretical structure" so far as this work is concerned. We do not attempt to reach a point or viewpoint where we can meaningfully *compare* alternatives. In fact, we

[2]The significance of this point is made clear at the end of this chapter.

[3]This is not to say that we do not reach some "dead ends", i.e, gaps that we find unbrigeable (see ch.7,sec.2 and ch.10,sec.1). We do mention that baring one exception, our criticisms of Kalecki are all *internal* to his theory. The exception is that Kalecki neglects what we feel to be a relevant "fact" about real world for his line of enquiry(ch.4,sec.3).

do not even enter into any explicit comparison of Kalecki with others. We simply discuss Kalecki on his own *distanced* from the mainstream as above. The word is in the end simply a pointer to the *perspective* we have tried to keep in view in writing the thesis and no more. Whether Kalecki really provides an "alternative" to the mainstream or not is a question that we leave entirely in the open.

We end by mentioning two further points about the thesis. One, we call attention to a *few connections between Kalecki and classical economics*. These are all on points of detail - what would generally miss the eye - without necessarily adding upto anything. The broader connections are either left out or left to a few terms used without further explanation. Whether there is anything meaningful in this direction - any direction for an alternative theoretical structure - we really do not know.

Two, we call attention to writings *on* Kalecki only when something *crosses our way*. Fortunately or unfortunately, such instances are rather rare. We do not go out of our way to point out differences of our reading (or interpretation) of Kalecki from others', or get into comparisons for comparison's sake.

1.2 Scope and Organisation of the Work

Kalecki was a Marxist by conviction. He saw the economy he was writing about - the *capitalist* economy, he would always insist[4] - in the *broad class framework* : "capitalists" and "workers". His target in his own words was to build up a total theory of the "dynamics" of the capitalist economy - a theory of the "trend cum business cycles phenomenon" as he put it (435, II) - in this framework.

Let us now state very clearly that we will be concerned with this subject matter - what we have been calling the "theory" in Kalecki - only *upto the point of determination of national income or output.* This is the "end problem" of the theory for our purpose. The theory of trends and cycles falls outside the scope of the work.

We can say that the subject matter here is Kalecki's theory of the *working* of the economy - *in an appropriate time frame of reference* - as distinct from its "dynamics" in the sense of Kalecki. Obviously, this time frame excludes the longer term phenomena of trends and cycles. So, we can also put our subject matter as Kalecki's theory of the relatively *short-term* working of the economy as distinct from its long-term working which in turn is nothing different from his "dynamics"[5].

This apart, we will keep all through to "two simplifying assumptions" under which Kalecki set out his basic theory in the above regard, viz. the assumptions of "no foreign trade" and "no government expenditure and taxation", (246, II). In fact, Kalecki went on to give a powerful analysis of each of these two, integrating them back into the structure of his basic theory. We leave them out.

So much for the precise *scope* or *boundary* of our subject matter. Let us now take a look at its *structure* or *content.* As terms go, "determination of national income" is a problem in *macroeconomics.* Hence the title "Kalecki's Macro System". Let us now make a more precise use of terms. We have to say that *pure* macro-arguments or macro-analysis - the sole reference point of which is the working of the economy *as a whole* - did make up a considerable and powerful part of Kalecki's macroeconomics

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[4]Kalecki was to write to later on both the socialist economy and the mixed economies of the third world, but we will not be concerned with that.

[5]Note, nothing is said hereabout the substantive content or meaning of the "short term", the "appropriate" time-frame of reference. How precisely this is *closed* in Kalecki's theory is a point not to be missed out. See Ch.6.

or macro theory, but this was a "part" (or "component") and no more. The other part came from elsewhere - up from *micro-foundations*, as terms go.

The first part - we can call this Kalecki's macro theory *per se* - is very well summed up in an aphorism-like statement often attributed to Kalecki : "Workers spend what they earn, capitalists earn what they spend". We call this Kalecki's *fundamental theorem on profits*, or *profit theorem* for short[6].

Obviously, the scope of Kalecki's macro theory *per se* was limited to the determination of *profits*. Kalecki now went on to *extend* the scope by *integrating a theory of income distribution into this macro framework*. This is what gave him the "determination of national income".

The theory of income distribution in turn was *based squarely on a theory of price formation*[7]. Indeed we can say that it was in essence a theory of price formation merely *turned* in this direction. This whole structure is summed up in a single term which Kalecki borrowed from Lerner [27] and then gave a life of its own[8] - the *degree of monopoly*. In this one word we have both his general view of the prevailing *market structure* in the economy and the *tool* for the analysis of income distribution that he forged out of it.

It is clear from the above that Kalecki's theoretical structure as we are concerned with rests on *two basic pillars* or *building blocks* - one, the macro theory *per se* and the other, the price theory. The complete structure is obtained by completing the sequence - first, the "turning" of the price theory into a distribution theory, then the "integration" of this whole into the framework of the macro theory *per se*. Obviously, our work must also follow this structure : Part I is on Price Theory (Chs. 2-4) and Part II on Macro Theory (Chs. 5-9) including respectively the "turning" and the "integration". For reasons presently explained, Ch. 10 ("The Primary Sector") falls somewhat outside this structure, straddling between these two parts.

Now, our basic objective is to see Kalecki's theory proceed from its own frame-

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[6]The term profit is understood here as capitalists' earnings as a whole, whatever the form.

[7]We will often refer to the two simply as "price theory" and "distribution theory". This is merely an abbreviation.

[8]Nevertheless the origin proved to be a constant source of toil and trouble for Kalecki. Note his bitter complaint (or sad reflection) late in his life - "It is this term, I believe, which facilitated the dismissal of the theory as 'tautological'(438, II).

work. So, the framework has to come *first*. But it hardly makes sense to put together or assemble a framework for price theory and a framework for macro theory - framework for *what* precisely? Each of the two makes its *own* demands, to be attended as such. Accordingly, each of the two parts of our work begins with a chapter on the framework (Chs. 2 & 5).

But we cannot leave things just at this. There is also a question of *link* between the two frameworks or more broadly of the framework *as a whole* even though for reasons just stated we cannot go very far in this. This beginning is made in the very next section.

Let us now explain why we have a separate chapter on the "primary sector" falling outside the above organisation. Kalecki began his price theory with the broad and bold assertion that there are really "two types of price formation" in the economy (209,II), one for primary products, one for manufactures[9]. Taken by itself, this was of fundamental importance. However, it is to be remembered that Kalecki's "capitalist economy" was really the *advanced* capitalist economy, by definition a *highly industrial* economy with agriculture pushed so to say to the "periphery". Completely in line with this, the *mainline* of Kalecki's arguments ran squarely in terms of manufactures or industry. The primary sector remained in the background, more as an appendage or adjunct to the basic theory than as an integral part of it.

Let us look a little closely into Kalecki's procedure or method in this regard. We can say that he first *set apart* the primary sector from the mainline by the very notion of "two types of price formation". In a way, this simply *cleared the ground* for his purpose - it is the theory of *industrial* price formation that he turned, genetically or organically, into a theory of income distribution. This was by definition a theory of income distribution *for the industrial sector* of the economy. Kalecki now went on to successively extend the scope of this theory by looking at income distribution in other sectors from the vantage point already reached, beginning with the "primary sector". This was his integration of the "appendage" or "adjunct" to the mainline.

There is a further point to note in this context. Careful reading shows that in the above "integration" Kalecki had already thrown a clear forward reference to the *macro* level as if to be picked up when the time came. We have to say simply (or

[9]Called respectively "raw materials" and "finished goes" by Kalecki. Just by these words he set his price theory in *macro perspective* right at its outset.

alas !) the time came, but Kalecki did *not* pick up this "lead". In fact, we find *no* reference to the primary in his macro theory. This theory was worked entirely out of premises pertaining to the industrial sector. The primary sector was tacitly left out.

We simply make this explicit and turn it into a "strategy". The strategy is to *abstract* from the primary sector till the very end, where we bring it back to see what *difference* this makes. In other words we run the whole course of the theory (price formation, income distribution and macro) on the basis of this abstraction[10] (chs.2-9) and then extend its scope to cover the distinct price formation of primary products (ch. 10). It is our view that this procedure gives a better understanding both of Kalecki's "mainline", free of any clutters and of the nature of problems created by his own analysis of primary product price formation for this mainline.

[10] A convenient way of putting this "abstraction" is this: We simply carry Kalecki's reference point of a "highly industrial economy" one step further to a "purely industrial economy".

1.3 Kalecki's Framework - A Bird's-Eye View

First we set a boundary to our bird's eye view. Bottom line of the framework of (or for) any theory is simply the *facts taken for granted* - "assumptions" if you like. They are the very *defining elements* of the framework. Taken together - together with their basic conceptual underpinnings and interlacings - they give us the author's *basic perception of reality* in respect of the given phenomenal domain of reference and that is the absolute beginning of his enquiry. All this constitutes the so called "pre-analytic stage" of the theory - after which the questions, their precise framing, the beginning of the analytic stage. In this section we remain within the boundary of the first stage.

One qualification is necessary before we move into this subject. Terms like "facts taken for granted" and "defining elements" suggest something *absolute*, a *rigidity*, which may a may not be simply there in the author. This is to be allowed. There is a simple literary test on this point, which in fact applies to Kalecki in toto. When he uses the word "assume" (or "abstract"), he implies a certain *restriction* or *delimitation* of the reality concerned thereby admitting the possibility of revision, modification, extension of the theory, whether explicitly followed up by him or not. Facts taken *truly* for granted are to be found simply in the *language* or *vocabulary* used. They are the *unstated assumptions.*

Naturally, as we go over Kalecki's "facts", we also go over this record in him. This already prepares us for a *richer* or *finer* structure of the theory than suggested hitherto. The organisation of *such details* of the subject matter for the purpose of this work is also given in this chapter.

Let us now begin. As we see facts taken truly for granted by Kalecki - on which he would entertain no doubt or dispute - were just *two* in number : One, the "classes" (or the "class-division" of society), and two, the "dynamics" of the capitalist economy in his sense of the term, its "trend cum business cycles phenomena". There is something to note on this second "fact". Careful reading shows that it is only the "business cycles" that Kalecki regarded as indisputable fact or primary datum about the capitalist economy. The question of trend - whether even positive at all - was always treated as *open*, a *problematic*. One can certainly question such perception of the reality - or of "history" - but this falls outside our terms of reference and so we

leave it at that. (However, we do return to the point at the end of the next section).

Another "fact" had almost the same status to Kalecki as the above two. Let us have it in his own words :

> "... as long as the resources of the economy are *far from being fully utilised* - and this I believe to be the *typical condition* of a developed capitalist economy .... " (437,38,II).

Let us work a little bit on this. Stated in terms of our "purely" industrial economy, the above certainly implies a *more or less chronic under utilisation of productive capacity*[11]. This is the relevant "fact" for our purpose.

There are now two observations to make. One, while this "fact" generally underlied all of Kalecki's writings on the capitalist economy, we have to make a distinction when it comes to the question of "framework" in the specific sense of the term (what framed the question asked). The fact under reference entered very clearly and explicitly the framework of Kalecki's price theory, from where it got transmitted to the rest. It did not enter directly the framework of his macro theory. So we do not count it as one of *its* defining elements.

Two, Kalecki always allowed for the fact that the fact under reference may cease to be true under *boom conditions*. He had a "special corner" of his price theory to tackle this problems to be discussed as such.

Let us now say a few words about the way the class-framework came into Kalecki's theoretical structure. The class framework is preeminently a framework for the theory of income distribution. But Kalecki did not exactly use the framework as stated for this purpose. He was quite apologetic about this. We quote here the opening lines of his first paper on the subject [6] -

> "In the present paper we try to investigate both statistically and analytically the problem of the relative share of *manual labour* in the national income. There are two reasons why we do not consider the total share of labour although it would be *more interesting from the social point of view*" (3,II).

[11]The words "almost", "typical" (Kalecki's) and "more or less" come in a line. This is presently taken up.

As stated here the "distribution" of national income actually discussed by Kalecki was between *manual workers* on the one hand and *capitalists and non-manual or other works taken together on the other*. This point remained unchanged through all the later versions of the theory. We can say that the theory was addressed in a "modified" class framework as distinct from the original.

It is his macro theory that Kalecki squarely set in the original class framework. There was never any departure from this. In fact his whole framework for this purpose was defined by only *one* other assumption - *workers do not save* - "We abstract as well from workers' saving, which is definitely unimportant", to quote one of his statements to the same effect (436,II).

Let us now discuss. There are two related points to state. The first is purely conceptual. If workers do not save, they do not own any property or earn any "capitalist income" (69,I). So, Kalecki's class division boiled down to the classical Marxist - "haves" and "have-nots". This was a clear *sharpening* or *strengthening* of the class framework begun with. We can also say that the complete framework was defined simply by two elements coming in a line, the "classes" and the "worker assumption" (they do not save).

This brings us to the second point. Whatever the conceptual (or ideological) underpinnings, Kalecki seems to have put forward the worker assumption as a *broad approximation* and no more. He was willing to *relax* it - and in fact *did*, but only after a basic theory was already erected. This is taken up in chap.9 of the thesis. We mention that we have many reservations about Kalecki's handling of this problem. This motivates us to take a *fresh look* at the problem, guided, nevertheless, we think, by spirit of his enquiry.

Let us now go over to Kalecki's "facts" in his price theory for manufacturers or industry (which is all that we are concerned with here). He set out this theory under the caption or heading : "Price Fixing by a Firm" (210,II). That *prices are fixed or set by firms themselves* was simply a fact taken for granted - a clear instance of "unstated assumption". There is much to write on the "fact" but we leave that to ch. 2.

"Firm's pricing" (as we may call it) was the very central or pivotal element in the framework of Kalecki's price theory. Careful reading shows that there were only *two other* defining elements of this framework. One is already mentioned ("under

utilisation of capacity"). The other was that *firms face competition in selling their products.* Again, this was an unstated assumption remaining hidden in such statements as "*uncertainties* faced in the process of price fixing" (meaning presumably the uncertainties or hazards of competition) and more explicitly, "in fixing its price, the firm takes into account ..... the prices of *other firms producing similar goods*" (210,II).

The tapestry woven around these three elements is gone over at length in ch. 2. Here we simply provide an initial summary in the manner of the basic conceptual structuring of the facts or elements. We note that "firm's pricing" is a straightforward statement of the *mode of price formation.* This "mode" was then *embedded in a structure* defined on the *outside* by the factor of "competition" (competition from *other* firms) and on the *inside* by the factor of "capacity underutilisation" (the firm's *own*). We can also say that the *complete* mode of price formation was given by firm's pricing *subject to some form of competition.* This "whole" was then embedded in the *basic production condition* of capacity underutilisation which itself was taken as something purely structural in nature.

Finally let us put "firm's pricing" in the background of Kalecki's class framework. Surely we can say that *firms are owned and controlled* by capitalists. This in a word was the *link* between the frameworks of Kalecki's price theory and macro theory.

On the face of it, the above is a very simple proposition. But there was nothing "simplistic" about this in kalecki. Setting this out, we establish our first *real* point of contact with Kalecki.

Kalecki held very firm views on "ownership and control". At the end of his famous chapter on "entrepreneurial capital" (ch.8 of [10]), he wrote rather sarcastically:

> "Many economists assume, at least in their abstract theories, a state of business democracy where anybody endowed with entrepreneurial ability can obtain capital for starting a business venture. This picture of the activities of the 'pure' entrepreneur is, to put it mildly, unrealistic. The most important prerequisite for becoming an entrepreneur is the *ownership* of capital." (280,II;italics in the original)

Clearly, Kalecki was addressing here the general economic profession in *their*

terms, the "entrepreneur". But this "entrepreneur" of the conventional framework is by definition the ultimate locus of *decision making* in the firm, its unit of *control*. The position taken was thus ownership is the *basis* of control. Note, however, that *passive* ownership - ownership just for "return" - is not denied. (We pick up this point in a minute).

There is second passage from the same source to note in this context. (Actually this passage came first). Here Kalecki simply brought down the general point made above to the level of specific *institutions*. He wrote:

> "It should first be stated that a joint-stock company is not a 'brotherhood of shareholders' but is managed by a *controlling group of big shareholders....*" (279,II)

It is thus clear that Kalecki had no truck, neither with the "entrepreneurial myth" of his times, nor with the emerging doctrine of "managerial capitalism". The "entrepreneur" was now the controlling group of big shareholders - "shareholders"(owners) first, "big" at that, then a "group", finally the "control". This whole structure was built into the point that firms are "owned and controlled" by capitalists.

Let us now return to the point that these passages do not deny passive ownership. Indeed, the passages derive their strength only in this background, i.e, from a distinction between "active" and "passive" owners, or between Kalecki's "entrepreneurs" (whom we may also call capitalists "proper" in Kalecki's framework) and "rentiers". It is a point of some importance for our purpose that while Kalecki often referred and some times made use of this important distinction, he *never integrated it into his basic theoretical structure.* This stands in stark contrast to his distinction between "manual" and "non-mannual" workers to which he did accord this status[12].

At this point there is nothing more to say on this. Only at the end of the thesis when we have got the whole of Kalecki's theoretical structure behind us can we meaningfully return to it, and we do, though only for some comments or observations and no more.

[12]As we shall see this distinction had its basis in kalecki's price theory whence it entered the basic structure or framework of his distribution theory(as already noted), in which form it was carried into the basic structure of his macro theory.

1.4 A Bio-Bibliographical Note on Kalecki

In this section we simply place the subject matter we study and the source materials we use in the background of Kalecki's works as a whole thereby setting things in a perspective. Obviously, this stands a little outside the main structure of the study. We begin with the source materials.

Our basic source material - the "basic text of reference" as we shall often say - is Kalecki's *Theory of Economic Dynamics* (1954,[10]). We note that the title is rather nondescript and can also be misleading. Perhaps that is why Kalecki added very uncharacteristically a long subtitle[13], "An Essay on Cyclical and Long Run Changes in the Capitalist Economy". Even here one may question the word "an essay", particularly when taken in conjunction with the title of his other books (see below). Same is to be said about, yes, the year of publication of the book (see below).

The book brought to a completion Kalecki's works on the "theory of the dynamics of the capitalist economy" over the last two decades. In fact it was a revision and expansion with some significant alterations of his *Studies in Economic Dynamics* (1943 [9]) which in turn stood roughly in the same relation to his *Essays on Economic Fluctuation* (1939, [7]). The beginning of all this - not only the basic theme but also many leading ideas of these books - goes back squarely to Kalecki's first book-length publication, really a monograph, since translated from its original Polish under the title *An Essay on Business Cycle Theory* (1933, [2])[14].

Barring the last-named (first-published) all the books had the character, basically, of an *inter connected set of essays or papers*[15]. Quite a few of their chapters were previously published as independent papers, a few others too had this character[16]. Naturally, they were adjusted, often rewritten, when put together in a book. The actual sequence of chapters in each book, particularly the last two (as published), brought out clearly their linkages and, implicitly, developed a "subject" or more

[13] *No* other writing of Kalecki, book or paper, has a subtitle, long or short.

[14] These four books are conveniently referred as the *Theory, Studies, Essays and Essay* respectively.

[15] Cf."These essays, though formally independent, nevetheless constitute a whole. Each of them treats a problem which is interesting in itself, but at the same time it prepares the ground for the succeeding essays" (Foreword to [7],234,I).

[16] Interestingly, parts or excerpts of the *Essay* were also published as independent papers, but this came later.

precisely a basic "theme" on the subject. We say "implicitly" - and this is a point of some importance for understanding Kalecki - because the subject or theme was *nowhere set out as a whole*, neither at the beginning, i.e., in advance, nor at the end as summary or conclusion. None of the books simply had either an introductory or concluding chapter to serve this purpose. The theme got established simply by cumulation. The converse of this statement is perhaps revealing of Kalecki the writer. Each book launched straight a sequence of substantive arguments upto a point of culmination where the theme got established. Roughly the same is true of individual chapters of the books and sometimes even of individual sections of chapters. This is exactly what we said at the beginning about Kalecki's "mode of argument"[17] The mode or method of setting out a whole and working within, working it out from within - what we basically attempt to do in this study - is to be seldom found in Kalecki[18].

Let us move to the second point. We have just spoken of two decades of development of Kalecki's ideas behind our basic text of reference. This is perhaps a little misleading. The intense, almost hectic and certainly path-breaking, development is to be found in the first decade, 1933-43. The distance between the *Theory* and *Studies* is actually shorter than that between *Studies* and *Essays*, contrary to what the time elapsed suggest. Outside these reference, it is in this period that Kalecki wrote his basic paper on foreign trade and public finance ([3]and[5]). Even inside, we should mention separately his early papers on "mass unemployment" and "business upswing" [4]. Finally, the end-year of our period also saw the publication of Kalecki's really basic paper on "political economy" in the specific sense of the term (1943). We can say, with good judgment, we believe, that almost the whole of Kalecki's *economics* - economics of *capitalism* - is to be found in his writings of this period. After this, we have only a few sporadic writings, continuing with and developing, sometimes "turning" (sometimes significantly so) earlier ideas (see below).

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[17]We give here an alternative or rather complementary statement of this mode of argument from the "editorial introduction" to Kalecki's *Collected Works*, signed "Committee of Economic Sciences, Polish Academy of Sciences" - "He was an exceptional example of conciseness and precision. His works need to be studied sentence by sentence, for each is an indispensable link in the chain of reasoning and contains - expressed as succinctly as possible - an idea that will not be repeated later, and without which it will be impossible to understand his argument".

[18]Notable though only partial exceptions are chs.1 (on price theory), 8 (on the size of the firm) and 9 (on investment theory) of the *theory*.

This is easily explained by reference to a few facts of Kalecki's life and also temperament[19]. The *Studies* was published when Kalecki was already working full time on problems of the "war economy" in a job with the *Oxford Institute of Economics and Statistics.* This lasted fully through the years of the Second World War. After this Kalecki took up a job with the *United Nations* (1946) which brought him in touch with problems of economic development and planning in so called "developing countries" or "third world". In the words of the Editorial Committee of Kalecki's *Collected Works* this marked the beginning of Kalecki's "second line of scholarly interest". (The "line" is already stated). Soon followed the "third line" viz. the theory and practice of central planning in socialist countries. This was to be his main preoccupation for the rest of his life after Kalecki returned for good to his native Poland (1965). The "second line" was kept up. But the "first line" - first love, we might say - receded more and more to the background with the outcome just stated[20]. Only at the end of his life did Kalecki return comprehensively to it, reviewing earlier works putting them in a perspective in more than one sense of the term and, on one occasion at least, carrying them significantly forward. The high point of this phase was the publication of the *Selected Essays on the Dynamics of the Capitalist Economy, 1933-1971* (1971,[16])[21] - "what I consider to be my main contributions to the theory of the dynamics of the capitalist economy". He ended this "Introduction" to the volume with a few lines where he summed up as it were his lifetime's contribution to the subject. To serve us *invaluable guide* for our purpose.

This completes one part of the section. Now on we will be concerned more exclusively with things pertaining to our subject. First, a word on Kalecki's *brevity.* All we have on this subject in our basic text of reference are : (i) first 9 pages of ch.1 on price theory, (ii) first 3 pages of ch.2 on distribution theory, (iii) first 3 pages of ch.3 on macro theory *per se* and (iv) next 1 page of ch.3 and first 3 pages of ch.5 on macro theory as a whole or the macro system. To this we have to add also 2 pages

[19]Our basic source of information in this regard is the previously cited "Introduction" to the *Collected Works of Kalecki.*

[20]The "putting together" of our basic text of reference i.e., the *Theory*, obviously belongs to this phase of Kalecki's life. This perhaps explains why the book took so long in the coming (11 years) compared to the earlier 10 years of intense, hectic writings on the capitalist economy. War time shortage must have also been a contributing factor. The "preface" to the book is dated exactly 2 years earlier (Feb. 1952).

[21]The book was actually published after Kalecki's death (1971).

of ch.9 straddling a little across to cover the total materials. Thus our study is very largely a spelling out spelling out and spelling out of these bare 20 pages.

We will now sketch the development of the different parts or components of the subject. After this we review the whole under the "guidance" mentioned above. First came the macro theory *per se*. In fact it came simply as stepping stone to a theory of business cycles, where it remained more or less in tact all through Kalecki's writings. This was completely outlined - complete with a clear statement and exposition of the *fundamental profit theorem* - in the *Essay*. Curiously, Kalecki gave a rigorous proof of the theorem with detailed defense of its assumptions only in a paper published quite a few years later. (1942, [8]). This is a little surprising considering the hectic speed of development of Kalecki's ideas in this phase.

Next to be developed was the distribution theory. The *Essay* already contained suggestions for the possible development of a distribution theory to *complement* the macro theory *per se*. "Lead" for the actual development came from Lerner's paper already mentioned (1934). The theory was first presented - "in a rather imperfect form", Kalecki said later - in a paper under the same title (1938, [6]). Later (improved) various appeared in both the *Studies* (ch.2) and the *Theory* (ch.2). Comparison shows that the theory itself - its basic content and conclusion as well as basic formal structure - remained more or less intact through these revisions though there was a subtle turn in "motivation". The gain was fundamentally in *conceptual breadth* and *analytical depth*.

And that precisely was the contribution of the price theory *grown under*. This "growth" is interesting. At the beginning Kalecki's ideas on the subject were quite conventional ("demand and supply" in the "marginalist frame", more particularly "perfect competition"). This was followed by a strenuous effort to come to terms with Lerner's "foundations" - same as these conventional tools *sans* perfect competition - which Kalecki then *gave up for good*. His first paper on distribution theory bears the first imprint of this "coming out". But its ideas on price formation were only rudimentary. The real "growth" consisted of their fructification in a very comprehensive theory of Kalecki's own as reported in the *Theory* (ch.1). The beginning effort is in the *Studies* (ch.1).

We mention that in the very last paper of his life (1971, [15]) Kalecki's returned comprehensively to the above area in the background of certain recent trends of

thought (unnamed), where he brought his price theory closer to the distribution theory than hitherto, but only at the cost of much pruning. Here he made no use of Lerner's term, but this is of no consequence in itself. The paper had also other purposes to serve.

There is little to say here about Kalecki's macro theory as a whole or the macro system. It was a fusion, an outgrowth of the macro theory *per se* by the developments just noted. Its basic ideas had however already taken shape around this core or nucleus *before* the fusion or outgrowth. Witness the early papers on foreign trade, mass unemployment and business upswing already mentioned. The complete theory was first reported in the *Essays*, much under the impact of Keynes' and Keynesian writings[22]. The final version, less "Keynesian" and more of his own, is in the *Theory* (chs. 3-5).

We how pass on to review of the whole. Here is the "guidance" :

> "It is interesting to notice that the theory of effective demand, already clearly formulated in the first three papers, *remain unchanged* in all the relevant writings, as do my views on the distribution of national income. However, there is a *continuous search for new solutions* in theory of investment decisions, where even the last paper represents - for better or for worse - a novel approach". (viis. [6]).

First things first, Kalecki here summed up as it were his lifetimes contribution to the "theory of the dynamics of the capitalist economy" in terms of its *three elements or leading elements*, "effective demand", "distribution of national income" and "investment decision". We can say that by his own reckoning there were the *three essential coordinates of the complete theoretical structure* of Kalecki. Of these, our subject comprises of the *first two*, the "finished" we can say ("remains unchanged through all relevant writings"). The "unfinished" part ("continuous search for new solutions", even in the "last paper" presenting a "novel approach") was *gateway* to Kalecki's theory of the longer term working of the economy, his "dynamics", the theory of business cycles and growth. Obviously, if the "gateway" remained unfinished, so did the main arena. The two always came together in Kalecki's writ-

[22]The book is quite aptly grouped with some other writings of roughly the same period under the heading "Confrontation with Keynesian Economics" in the *Collected Works*.

ings. Let us now proceed in order. The "first three papers" that Kalecki talked here had a back reference. Earlier in the same "Introduction" Kalecki called attention to these papers mentioning specifically their *language* (not English) and *dates of publication* (all prior to the publications of Keynes' *General Theory*) and said, "they contain, I believe, its *essential* (General Theory's)". Perhaps that is why Kalecki used here the term "effective demand". That was enough to recall the earlier claim, and Kalecki perhaps meant that. Otherwise we run into this curiousm that while "income distribution" and "investment decisions" are *subject matters* proper - or "fields" or "areas" of study - *on* or *of which* we can speak of a "theory", "effective demand" is the *theory itself* (or the "name" of a theory) certainty not the subject matter.

Another curiosm is the absence of any reference to "price theory". True, this was subsumed under the theory of "income distribution". But the Kalecki's theory of "investment decisions" was also completely subsumed under his theory of "business cycles and growth" (or "dynamics" or "macro dynamics", if you like). The parallelism is complete : each grew *under* its cover, serving *that* purpose. Going back, let us just repeat - why we find this a "curiosm" - Kalecki's distribution theory was both a "derivative" and a "connective" in his total theoretical structure, not an independent entity or basic building block of this structure like the price theory. There is, therefore, in our humble view, a certain misemphasis in Kalecki's statement at this point.

We now come to the last point we kept for this section. We have just noted the togetherness of Kalecki's theories of "investment decisions" and "business cycle and growth". It is in this background that one has to read his "continuous search for new solutions". We come to the "last point" by raising simply the question, solution to what? What was the *problem* awaiting solution?

Kalecki gave a very complete answer to this question in one of his last papers[14]. Let us quote this in full:

> "Perhaps after all the problem of the markets (read problem of effective demand) does not really constitute an abstacle to expanded reproduction (read growth) of a capitalist economy. In order to give a complete answer to this query, it is necessary to construct a theory of investment decisions such as it would cover all aspects of dynamics of capitalist economy

> and not only those relevant to the business cycles..... (This is what) I always considered to be the *central problem of the political economy of capitalism.*"(453,II)

We have already met the "perception of reality" contained in this passage. What we now meet in the perception of a *problem* - the very "central problem" in kalecki's lifetime's work on this phenomenal doamin (the word "always") - answering the question just raised.

We can now see things truly in a perspective. This was the problem that drove all along Kalecki's theory of investment decisons, driving the *rest* of his theoretical structure along with it. *All* elements of the theoretical structure therefore because in the end simply *means* to solve or resolve the pronblem, *inputs* in a grand model of the "dynamics of the capitalist economy". We can therefore see *what* held the theoretical structure so tightly together, *why* the terseness.

The "problem" ofcourse lies beyond the scope of our work. By the same tocken we can carry out the work *freed* from such concern or obligation - tread from this "means" or "inputs" view of the theory we study. This is what gives meaning to our objectives of "loosening out" Kalecki's tight theoretical structure, make it "freer" or "more open ended". The rest is for the thesis to say.

Part I

Theory of Price Formation and Income Distribution

Chapter 2

Framework

Kalecki, it seems, was reluctant to use the word "competition" in his price theory simply because he feared that it might be taken to mean "perfect competition". E.g., immediately, after deriving his equation ("formula", he called it) for a firm's pricing, he wrote that it described "semi-monopolistic competition" - on the ground that the underlying conditions of the equation or formula were "incompatible with so-called perfect competition" (210, II). Clearly, he was using the term "semi-monopolistic" to mean nothing more than that competition is not "perfect".

we feel that to get a hang of what Kalecki was really doing it is necessary to get the load of such terms off his ideas. It is not enough for this purpose simply to de-pedestalize perfect competition as Kalecki did[1]. It is necessary to argue *positively* starting from what is already contained in Kalecki's starting point of "firm's pricing". The "lead" has to come from elsewhere, for Kalecki leaves us simply in the cold silence of a "heading", nothing behind. Writing long after, Hicks coined the term "fix price markets" to mean markets "in which prices are set by producers themselves" and then went on to write :

> "That modern markets are predominantly of the fix price type needs hardly to be verified. It is *verified by the most common observation*". (p.xi,[24]).

[1] "Perfect competition, when its actual status of a handy model is forgotten, becomes a dangerous myth" (98,II).

Let us now take over. If *this* be the case, we see no point in drawing the line between competition and monopoly by the so called "taking" and "making" of price. To argue positively, the forces of competition *as they are* must work *through* the price making or setting or fixing of firms[2]. This is exactly what we have in Kalecki - in a form to be seen.

The other side of the same coin is that monopoly, any *element* of it, must mean something *more* than just price-making. That has no cutting power in itself. Again, this is exactly what we have in Kalecki. Unfortunately, the point is somewhat lost in his terminology, in particular in the way he went about the term "degree of monopoly" in developing the formal structure of his theory. We shall clear this up in the due course[3]. At this point we simply state the *basics*. Kalecki's framework excluded by definition the case of "pure monopoly" as much as it excluded the case of "perfect competition". The very notion of monopoly here was of some *degree* of monopoly, a question of *size* or *market-share*, of power exerted on *that* basis.

In sum, in place of the text book idea of a market morphology defined between these two extremes or "pure types", Kalecki's was a *general* framework of competition *and* monopoly excluding these extremes. More correctly perhaps we should speak of it as a general framework of competition built upon the premise of firm's pricing - "general" because, as we shall see, in this framework forces of competition gave way to or rather made room for forces of monopoly in a most natural and logical way. This was Kalecki's *first fundamental point of departure from the conventional framework of economic theory.*

There is another conceptual point to make in the present context. The price of its product that is set by a firm is obviously set with an eye to *profit*. We can say simply that *price is but an instrument of profit.* [4]. With this, we can now settle

[2]Yes, the word "predominantly". This is explained by the "exceptional" character of markets for *primary products* which we have already abstracted from. Hicks also brings one to the same point, in a more round about way.

[3]We mention that this one point entails a very considerable *reorganisation* of Kalecki's arguments in this part of the thesis, next in importance only to our attempt at seeing his theory (here, his price theory) proceed from its own framework.

[4]Such a notion tacitly underlies the whole of Kalecki's price-and-distribution theory. Conceptually speaking, the very root or genesis of his "turning" the price theory into a distribution theory is to be found in this viewpoint or framework, for "profit" is after all a category of income, a distributive category.We have to acknowledge that we got the notion of "price as an instrument of profit" from

down to giving a systematic account of the framework of Kalecki's price theory.

We start from the definition of a firm's profit as its sale proceeds minus the cost of production. So, the framework opens up in the two direction of pricing in relation to "sales" and "sale-proceeds" on the one hand and "cost of production" on the other. We mention that the two directions take us respectively to the fact or factor of "competition", or of "competition and monopoly" as we can say now, and of "underutilisation of productive capacity". So, we have room for all of Kalecki's "facts" in this framework.

Let us now organise the discussion. We simply follow up the two directions just set out one after another - to the extent that this is necessary for developing the "framework". However, there are *four* stages to the discussion, not two. This comes about as follows. The first direction already subdivides into two : one, what we may call Kalecki's framework of competition *as such*, free of the element of monopoly; two, his placement and development of this element in this framework (stages 1 & 2). After this we come to the second direction, more explicitly to pricing in relation to the cost of production given that the productive capacity is underutilised(stage 3). But "capacity utilisation" is at bottom a purely *physical* notion having possibly ramifications for price formation at this level prior to the notion of cost. This came at the very beginning of Kalecki's theory. In our organisation this comes last (stage 4).

This is as it should be. We are concerned solely with Kalecki's theory of *industrial* price formation. So, we organise the whole discussion around its basic premise of "firm's pricing". Kalecki began *earlier* with his "two types of price formation" for which he set the terms of reference by the *general market phenomenon of demand and supply* - "supply conditions" in relation to "changes in demand" in the "short period", to give his words(210,II). It is here - in defining the basic supply condition of manufactures - that we meet the purely physical significance of underutilisation of productive capacity in his framework[5]. The fact of firm's pricing was of no significance in this general market context and was introduced later. For us, on the other hand, this is the primary point of reference. It is only by transgressing the boundaries set by it that we can take note of the above broader phenomena. This

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an unpublished paper by P.Gajapathy[21].

[5]Note, the very notion of "productive capacity" is specific to industry or manufactures.

has to come last.

Let us now begin. Mathematically speaking, sale-proceeds is the product of price and sales (volume of sales). But a firm can sell only what is *demanded* of its product. In the present framework this "demand" comes to a firm only *via the competition of other firms with all its hazards and uncertainties.* It is in the handling of this point, his "uncertainties faced in the process of price fixing", that Kalecki is perhaps his tersest terse. Let us then proceed carefully, step by step, preparing the ground for that statement.

The first step is this. If "demand" comes to a firm as just stated then the firm can certainly have no clear perception of the so called "demand curve" facing it. Indeed, the notion itself becomes problematic. Kalecki set out his theory silently within this negative proposition, rejecting this very standard "tool" of conventional economic theory - "silently" because not a word was said on the subject. We proceed through this blank or void.

Let us now measure our steps. We cannot jump from the proposition that the firm has - to put firmly - simply no knowledge of the demand curve facing it, to the proposition that therefore the firm shows *no concern* for demand or sales in its pricing. This makes nonsense of the idea of price as instrument of profit. Let us say first that such "concern" ran through the whole of Kalecki's theory. There is no missing it anywhere. This in turn means that *some calculation or judgement of the demand relationship* facing the firm - connected inextricably with its perception of the competion faced - did come into his pricing principles. This "some" belongs to the "theory within", to be met there (next chapter). Here we simply draw a finer line for this purpose than what is stated so far.

For this it is necessary to first decipher the meaning of Kalecki's "uncertainties". What he meant (our reading) is this : *If one firm lowers price to increase sales, so can others.* So, to cut the story short, *this game is simply not played.* Kalecki made it clear that he was addressing a world where "price competition is replaced by competition in advertisement campaigns etc." (215,II). However, this was to come later, much later, in the course of his arguments. At this point he was concerned simply within the tools of analysis - *that* statement :

"In view of the uncertainties faced in the process of price-fixing, it will

not be assumed that the firm attempts to maximize profits in any precise sort of manner" (210,II)..

As just seen the premise here ("in view of ... ") already contained an implicit rejection of the tool or assumption of a given demand curve. This was now completed in an explicit rejection of the tool or assumption of profit maximisation - no demand curve, no "mr", no "mc = mr". These explicit and implicit rejections constituted Kalecki's *second fundamental point of departure from the conventional framework of economic theory*, perhaps the most "distancing" one in terms of tools and techniques of analysis.

Let us now get back to the question raised. The purpose is best served by recasting Kalecki's argument as follows. First, his "profit maximisation in a precise sort of manner" is exactly what this term means in the conventional framework of economic theory, profit maximisation *with respect to output* - "price" or "pricing" is but a corollary. The outcome is given compactly by the so called "elasticity" formula, $p = mc/(1 - \frac{1}{e})$. Clearly, the assumption is that the firm *knows* the value of "e". It knows precisely how much effect a small change in its price is going to have on its sales. But before the firm can get to this point it has to reckon the question of *how other firms respond or react to its prospective price change*, which simply takes it back to the game that is not played. Leaving this aside, the argument here was that the very *uncertainty* of these responses, including the ultimate buyer-response, makes it *impossible* for the firm to calculate "e" with that *minimum degree of certainty or reliability* that is necessary for it serve as *basis* of pricing as in the above formula. The firm therefore gives up as meaningless the search for the "p" that is to really "maximize" its profit.

Clearly, it is the precise calculation of "e" (or "mr") that was rejected by Kalecki. Perhaps this is what he meant by the words "precise sort of manner". This makes clear what precisely was rejected by Kalecki in this passage. It follows that the firm's concern for sales is to be based on *broader* considerations than the above and then expressed in *suitable form*. Certainly, the considerations are about the demand relationship facing the firm, but this is a complex relationship shot through with the "uncertainties" spoken. Calculations regarding the relationship therefore admit only of far less exacting form than "e" or "mr". The form in which the concern for sales is expressed is therefore also far less exacting than "profit maximisation in any precise

sort of manner". What precisely these "forms" were in Kalecki's theory is left to the next chapter.

We now pass on to a related area left untouched by Kalecki. In the conventional theory of profit maximisation the firm's *price* - and *output-decisions* are but the two sides of the same coin - two coordinates of a "point" on the demand curve. This stood implicitly rejected in Kalecki's theory. Here there were in principle *two distinct decisions*, not one. The question is, how were the two *related* if at all?

Careful reading shows that Kalecki assigned a certain *priority* to the price-decision over the output decision. The price was to be decided basically on *structural* grounds while the only question in the output-decision was *selling*, a question of "demand" and that was the basic *conjunctural* factor in Kalecki's analysis all through. The argument then was that the conjunctural decision *depends* upon the structural decision, *not vice versa*. In sum, price was in some sense taken as *given* in the output decision, but output was *not* so treated in the price decision.

Regarding the first proposition we have to state first that Kalecki nowhere addressed the question of the firm's output decision. It is however very clear from his writings that he simply took output to be *always equal to demand*. Stated in terms of "decisions" this means that the firm always decides to produce the output *it thinks it can sell* - at the going price. The decision is thus governed exclusively by the firm's estimation or rather projection of demand, and the output is in this sense "demand-determined". This clarifies the meaning of "given price" - the estimation or projection of demand and hence also the output-decision are made *as of the going price*. Variation of price is no part of this exercise - what for?

Unlike the first proposition, the second one was simply part of Kalecki's price theory. As such, we again meet it later. That will also give us the precise location of the proposition in the build up of the theory. At this point we simply join it up with the proposition that output is demand determined. We can then say simply that *price is set in advance of demand*. This is very straight forward. Using the previous words of Hicks, one can say "it is verified by the most common observation". Alternatively, one can consider it simply as part of the very notion of "firm's pricing". E.g, this is how Robinson and Eatwell state the notion in their "text book"[31]: "The producer sets the price and sells as much as the market will take". To make the matter complete, we can just add the words "and produces as much as he can sell".

All this fits exactly into Kalecki's theory. More correctly, we should say that all this comes straight out of Kalecki. He is surely one of the original sources of these ideas.

Before leaving off this area we have to bring up the thorny question of *stock*, i.e., the stock of its product held by firms to meet demand, what it actually sells from. A moments' reflection will show that the output decision postulated above is based on the tacit assumption that the firms are satisfied with their stock holding, i.e., they intend no accumulation or running down of the stock. A stricter assumption is simply stocks are *abstracted*, i.e., assumed away.

This is completely admitted. However, we are not very sure that this is a charge to be leveled against Kalecki. He did give a thorough analysis of stocks in other contexts and that has a clear relevance in the present context as well. However, he himself did not show this explicitly. This is a task that falls squarely on us, and this constitutes one important part of our work in the thesis. We shall have occasion to make a beginning on this later in this chapter. The complete work is given separately in an Appendix to the thesis[6].

Let us now return to the main line of our work in this chapter. We have almost completed stage one of this work. We will now end this part by noting the *positive* turn of Kalecki's arguments following the earlier rejections thus coming to the *constructive* side of the framework on the basis of arguments so far.

The "positive turn" is given by Kalecki's statement : "In fixing its price, the firm takes into consideration the *prices of other firms producing similar goods*" (210,II). In this statement "prices of other firms" stand *as much* for the forces of competition faced by the firm *as* its concern for sales or demand in its pricing. The factors of "demand" and "competition" are thus inextricably linked together in the theory ahead. This is one high point of the whole theory. It is of course not a "new" point, for, after all, what we have been discussing so far under the heading of Kalecki's framework of competition as such has centered very much around the question of demand, how it enters the firm's pricing. We have already noted the basic *technical* aspect of this question in Kalecki's theory ("broader considerations"). We now have the complete *analytical and conceptual* setting of this technical point :

[6]The Appendix in fact covers *all* contexts that fall within the scope of the subject matter of the thesis, not just the "present" context. Thus it subserves the purpose of thesis as a whole. Precisely for this reason, we do not unnecessarily bring up the question of "stocks" any where in the main thesis.

In Kalecki's theory the question of demand is brought in a fundamentally *structured* manner, given its *conjunction* with the question of competition on the one hand and a clear *disjunction* of the firm's price and output decisions on the other.

We also note here the *formal* implications of the "positive turn" for the build-up of Kalecki's theory. In fact this givess a complete outline of the formal structure of the theory. It follows at once from Kalecki's statement of the "positive turn" that firm prices in any given industry are *interdependent*. By definition, the interdependence gets *washed out* when all these prices are considered *together* where they form a clear "price system". Here firm prices are starkly revealed as dependent simply upon, or formed purely out of, the cost of production - in a form to be seen. It is these price-cost relations that *open up* the theory *from within* in the direction of income-distribution - again in a form to be seen. And that is the end of it all. Thus we have the whole theory as a clear *organic* structure made up of *three successive layers or stages*: the firm's pricing, the price system (or price formation in an industry as a whole) and income distribution.

To move to *stage two* of our work we need simply continue with Kalecki's statement just given. The moot point here is this. At first sight it may appear from the statement that the firm in question simply takes the prices of other firms as *given* in its own pricing, uninfluenced by its own decisions or actions. But *no*, careful reading shows that it is precisely on this point that Kalecki drew the line between competition as such, or competition in the strict sense, and monopoly, any element of it. A benchmark for the former was indeed defined by this "givenness". The element of monopoly was then brought in by the denial of this condition or assumption. However even here the assumption could stay in a "provisional" sense. This is why we can speak of his framework of competition as a "general" one, accommodating the element of monopoly by suitable adjustment of internal contours or parameters. What precisely were these "parameters" and how they got "adjusted" is part of the theory within. Here we simply state the basics : A firm with some monopoly power *knows* that its price does influence the pricing of other firms and takes this factor into account in its own pricing. This in sum was the "force" of monopoly in Kalecki's theory.

This was made more precise by a very significant step that Kalecki had taken in the meanwhile. Without saying a further word he simply replaced the amorphous or heterogeneous notion of "prices of other firms" by the more compact one of "average

price" - "weighted average of all firm prices, weighted according to output (i.e, market share)" (fn.3,210,II) to give the full definition - in all subsequent arguments. With this, the line between competition and monopoly came to be drawn on the question whether or not a firm in question takes this "average price" - or the *industry price* as we may also call it - as given in its pricing. Now, this price depends by definition upon all firm prices, but only *in proportion to their outputs.* It follows that for *small* firms the industry price indeed appears as "given", uninfluenced by its own price. They fall within the strict benchmark of competition, i.e., for them only the force of competition is relevant. *Ipso facto*, the force of monopoly is relevant only for *relatively large firms.* Exactly as it should be. This is why we said earlier that in Kalecki's framework the force of competition gives way to the force of monopoly in a most "natural" or "logical" way.

The "step" just spoken had also other, rather far reaching ramification in Kalecki's theory. We take a little time off to bring this out step by step. First, the step meant that there is *no direct interdependence* between firm prices in an industry. The interdependence is mediated or channeled through the average price or industry price which is thus set up as a vital link in price formation. The price system splits into two "levels" or "tiers" concerned respectively with the formation of firm prices and the industry price lending a great deal of transparency to the whole structure of relations. In particular, it allowed one to see very clearly, we shall see, the *adjustment mechanism* at work, i.e., the mechanism of adjustment of prices to changes in underlying data. Conceptually speaking, all this veered the theory away from so called "oligopoly theory" cutting the ground from under its "indeterminacies". To put more positively, by the very "mediation" or "chanelling" just spoken, the force of competition now comes to acquire a certain character of *impersonality* - away from the notion of "rivalry" and such like. One is thus back in some sense to the classical framework.

We are now set for *stage three* of our work, firm's pricing in relation to its cost of production, given that the productive capacity is underutilised. Let us start off with kalecki's statement of this condition:

"Let us consider a firm with a given capital equipment. It is assumed that supply is elastic, i.e. that the firm operates below the point of practical capacity and that the prime costs (cost of materials and wages) per unit

of output are stable over the relevant range of output".(210,II)

It is necessary to read this passage with a little care. It is true that viewed purely in terms of *cost*, one has to define "underutilisation of capacity" precisely by Kalecki's "stability" of unit prime cost (upc)[7]. So, the two conditions in this passage may appear as a duplication. However, this seems incorrect. "Point of practical capacity" sets a definite benchmark figure of output defining "full capacity" on purely physical grounds. There is no reason why it should coincide with the benchmark defined by cost condition viz.the "point of increasing cost", i.e., the point at which the upc curve begins to turn upward. Kalecki simply required both of these conditions to be fulfilled. It can be argued that because the "turning point" of the upc curve must precede the point of practical capacity, Kalecki's second condition already implies the first. But such theoretical nicety - not to speak of setting out all the definitions *in so many words* - was simply not Kalecki's wont.

Let us proceed on. The relevant consideration for us here is the assumed stability of upc. We note that with respect to this assumption Kalecki wrote with some emphasis "it has been *proved by many empirical enquiries*"(210,II, fn.2). This simply underlies the strength of this pillar of his price theory.

Kalecki clubbed together the rest of cost of production (other than prime cost) under the heading of "overhead costs", regarding the behaviour of which he simply said, "the total of overhead costs remain roughly stable as output varies".

So much is simply on the cost conditions assumed by Kalecki. Let us now come to his ideas on *pricing in relation to these cost conditions* (so far as the "framework" is concerned). This is a rather difficult area. Much is to be inferred from his basic statement regarding the significance of overhead costs in pricing. Unfortunately the statement also holds out rather confusing or misleading suggestions. It is necessary to keep them out, to separate the wheat from the chaff. Keeping this in mind, we now have the statement before us.

> "Nevertheless it will be assumed that the actual level of overheads *does not directly influence* the determination of price *since* the total of overhead costs remain *roughly stable as output varies*".(210,II).

[7]Henceforth we use the abbreviation upc for "unit prime cost".

Let us read Kalecki's "no direct influence in the determination of price" as meaning simply that overhead costs is *not* a "determinant" of price. Why so? The answer given is that the "total overheads remains roughly stable as output varies", i.e, the overhead cost *per unit of output* varies continuously with output. The only way we can read the argument then is this: price remains fixed but the unit overhead cost varies as output varies. Hence unit overhead cost cannot be a determinant of price, which is to say the same as overhead costs cannot be a determinant of price. (Its transformation to unit overhead costs is necessary simply for the dimensional commensurability).

This, we take, is the *basic substantive content* of this passage. It follows that the *unstated premise* in the whole passage is simply that *price does not vary with output*. This is to say the same as that output is *not* taken as given in the price decision. This then is where this proposition got located in Kalecki's building up of his price theory.

Many things now fall in place. First, let us take together the two propositions, (a) price is set independently of the output actually produced and (b) upc is stable over the relevant range of output. It follows at once that upc enters the pricing process as a *given datum* (or parameter). Not so "the unit overhead cost". It follows that whatever way overhead costs *may still enter* the pricing process, it is not by the way of the unit overhead cost as a "parameter" in this process. Obviously, whether or not overhead cots *at all* enter the pricing process is a question left entirely in the open in this statement. This, as far as we see, is as far as the matter can be argued at the level of the framework *per se*.

We mention that at a first reading Kalecki's "no direct influence" fits in perfectly with this interpretation. In the background, we already have upc as a basic datum in the pricing process. This is now understood as prime costs having a "direct influence" in price determination, and this in turn is already denied for overhead costs. Hence the latter can have at most an "indirect influence".

We now have reached a point where we can set off Kalecki *against the conventional framework of economic theory*. On the face of it Kalecki's "prime" and "overhead" costs are the same as the conventional "variable" and "fixed" costs. Let us grant this so far as *definition* is concerned[8]. The point to state is that the two dis-

[8]we shall in fact treat overhead costs as fixed.

tinctions derive their *analytical significance* from two entirely different frameworks. As a result, the precise point at which this analytical significance is obtained is also quite different, i.e, the analytical properties of the respective categories that make them significant in the respective theoretical frameworks are quite different from one another.

The categories of fixed and variable cost derive their analytical significance from profit maximisation. Here it is simply a question of whether the *total cost varies with output or not.* The answer is "yes' for variable costs, "no" for fixed costs. *Ipso facto* only variable costs enter the determination of price. Fixed costs are irrelevant.

We assume that the relevant theoretical framework for the category of prime and overhead costs is simply "firm's pricing", and this in turn is now understood, among other things, as *pricing in advance of demand and hence of the actual level of production.* It follows that the relevant cost-question here is whether the *unit cost is known beforehand or not.* The answer is "yes" for prime costs (given the basic condition of underutilisation of productive capacity), "no" for overhead costs. As a result, one plays a "direct" role in pricing, the other can at most play an "indirect" role.

In this context it is of some interest to note the following "detail" in Kalecki's account of his cost categories. In a footnote to the first passage we quoted he wrote "Infact, unit prime costs fall somewhat in many instances as output increases. We ignore this complication, which is of no major importance."(fn.2;211,II). This was certainly very scrupulous. This may look little curious when set aside the very lax word "roughly stable" in the second passage, i.e, regarding the total overhead cost. The curiosm vanishes once we recognise that what was relevant in his theory was stability (or fixity) of upc on the one hand and variability of unit overhead cost on the other, just that. Both the "scruple" and the "laxity" are explained thereby.

Now to the confusing and misleading suggestions. One source of this is the word "no direct influence". We have already given an interpretation of this word consistent with the rest of the build up here. Kalecki however had different things in mind. He did admit that the level of overhead may have an "indirect influence" upon price formation, but left the actual argument to a later stage (215,II). When we go over this argument we see that it really established a *conditional influence of demand upon price formation* - conditional upon the "slump" or "depression" - which Kalecki

simply mistook for an indirect influence of overheads. This is fully discussed later in the thesis (ch.3,sec.9).

The other source of confusion lies in the word "nevertheless". Kalecki had just rejected the assumption of profit maximisation. (The statement is already given). So, the word suggested a concession to the conventional theory, something in common between it and Kalecki's theory. But overhead costs (read fixed costs) are simply *irrelevant* in the conventional theory and this was *not necessarily so* in Kalecki's theory. At this point, we add that they were not in fact so here.

We mention that there is another way of coming to this same contrast between the two theories. In the conventional theory of profit maximisation the firm goes on producing so long as the price is greater than the average variable cost (whatever the market structure). But Kalecki came to criticise precisely this point (with reference to perfect competition) implying that the possibility of price taking to the average variable cost is ruled out in his theory, implying in turn *some minimum coverage of overhead costs* in his price, contrary to the conventional theory.

We now move to the *fourth and final stage* of our work, "demand and supply", Kalecki's whole argument here was given in one terse passage. We have to give it the due time.

> "The production of finished goods is *elastic* as a result of existing reserves of productive capacity. When demand increases it is met mainly by an increase in the volume of production while prices tend to remain stable", (210, II).

Let us first spend some time on broader aspects of the matter. This was Kalecki's *basic* statement of his "fact" of capacity underutilisation. In this very statement a seemingly purely negative notion is transformed into a positive one, for the very notion of "reserves" suggests a policy behind. This is to be seen in the background of another "fact" stressed by Kalecki all through, viz., it takes *time*, often considerable time, to *build up* productive capacity (or "complete an investment project"). Having such reserves firms can suitably expand the actual volume of production when the need arises, say there is a (sudden) increase in demand. To restate, output is *more or less readily adjusted or adapted* to higher levels of demand (of course, within

limits). This was Kalecki's key notion of "elastic production" set out (assumed, if you like) in this passage.

To continue, the argument here was simply that output being "elastic", there is no cause for any "imbalance" of demand and supply consequent upon a rise in demand. *This* source of price rise - the "channel of pressure of demand" as Kalecki was to say later - was therefore *ruled out* in his theory. Short term price changes are governed by other factors, as he had asserted at the very beginning of this chapter.

However, there were the *two qualifying words*, "mainly" and "tends to". This is where the terseness is. This is set off by a seeming relatedness of the two terms. Let us first set this out. To say that the increase in demand is met "mainly" by an increase in the volume of production is - so this argument goes - yet to leave a "gap" between the two. Put differently, the rise in demand is nearly but not fully matched by the rise in output. This "gap" or "imbalance" then extends its "upward pressure" on price. Hence the price only "tends to" remain stable, does not actually remain so. Stated in full, the smaller the gap the greater the possibility of price remaining actually stable. This is readily conceded in the conventional framework of economic theory.

In our view this is a *complete misreading* of Kalecki. His "mainly" was a straight pointer or reference to *stocks* - stocks of their finished products with firms from which the sales are made. When there is an increase in demand it is met *in the first place* by running down the stocks. This is purely definitional. The stocks are there to be sold from. The first impact of changes in demand (rise or fall) is therefore necessarily borne by the stocks. This is precisely what Kalecki referred to when he spoke (elsewhere) of "unexpected accumulation or running down of stocks", the "importance" of which he thought was "frequently exaggerated" (240,II).

We have now made our beginning on the relevance of Kalecki's analysis of stocks in other contexts for the present context. Since we take this up fully in Appendix-A, we give here only the basic proposition that Kalecki seems to have had in mind in writing this passage. ~~The proposition~~ given that rise in demand is met in the first place by running down the pre-existing stocks the proposition here is that a rise in demand is met from both of the following sources in a short-period of time - (a) pre-existing stocks(this is run down) and (b) current production (this is increased). Seen in this background, the word "mainly" means simply that (a) is the less im-

portant source. This in turn means simply that the "short-priod" under reference is a *reasonable* short-period, not arbitrarily short. The important point is that the demand is *fully met* through this whole period[9].

The word "tends to" stands on a completely different footing. Kalecki had just spoken of prices of primary products (his "raw materials") as "demand-determined" (in the sense that the "short term price changes are determined mainly by changes in demand"), and then clarified that prices of manufacturers (his "finished goods") - which he explicitly characterised as "cost-determined" (in a parallel sense) - are "affected, of course, by any 'demand-determined' changes in the prices of raw materials". He pointed out with emphasis "it is through the channel of *costs* that this influence is transmitted", (210, II). This is what he now carried forward : prices of manufactures can tend to *increase* with an increase in demand because of this *shift* in the cost curve. Needless to say, this whole effect is absent in the "purely industrial economy" assumed in our work.

There is also another reason, a purely textual exigency, for the word. The analysis here *preceded* his assertion of the stability of unit prime costs. So, the ground was left in the open for the price to rise on account of so called "increasing cost". Needless to say, this was a nonsequitor in the whole theory.

Let us wind up. We find that far from being "related" the two words "mainly" and "tends to" stand on completely different footing having nothing to do with one another. Far from qualifying Kalecki's argument the tooling of the first actually strengthens or reinforces it. In one case at least there is no case for any qualifications.

Let us end by putting on record Kalecki's departure from the conventional framework of economic theory in the present respect. In the conventional framework of "demand and supply" a change in demand causes "imbalance" of demand and supply causing the price to change which in turn induce firms to adjust their output. While this counteracts the initial price moment, it works only on the basis of another, more permanent, price moment to offset the force of "increasing cost". Kalecki's "fact" of unused capacity simply cuts the ground under both these movements, the first because production is "elastic", the second because unit prime costs are "stable" in the notion of "supply condition" of manufactures in Kalecki. This was Kalecki's *third*

[9]We note that the above clarification also accounts for the word "frequently exaggerated" in the statement of Kalecki just given.

basic point of departure from the conventional framework of economic theory. More correctly perhaps we should call it the "prior" point of departure.

Chapter 3

Price Formation

We now begin on the theory within the framework just set out. The starting point is a firm's pricing in a given industry (secs. 1-2). Then comes the price system made up of the pricing of all firms in the industry (secs. 3-5). Upto this point we tacitly abstract from the element of "monopoly" which is taken up in the following two sections. The last two sections are devoted to the two "special corners" of the theory, one for the "boom", one for the "slump" or "depression"

3.1 Firm's Pricing I

We have already marked the positive turn of Kalecki's arguments on firm's pricing following his earlier rejections. This was followed by a few rather complex sentences in which he set out the whole theory. Reading between the lines we can see that he now started out by decomposing the firm's profit into sales and profit per unit of sales[1] (or the profit margin[2]). These were the two channels of price to act upon profit - without the guidance of a "demand curve", though not in a complete void in this regard. In fact, the whole problem of pricing was now tacitly posed as the problem of sales *vs.* profit margin - how to reconcile these two conflicting concerns within a meaningful range of the firm's calculation of the demand relationship.

[1]It was tacitly assumed at this point that sales equal output. Hence the notion of "profit per unit of sale" interchangeable with "profit per unit of output".

[2]This is defined as profit per unit of output expressed as a percentage of price.

At first Kalecki appeared to approach this problem in the framework of "decision making", broadly understood. But this only served to "delimit" the problem in a certain way without "solving" it. Perhaps Kalecki meant simply to show the limits to which one could argue in such framework consistently with his own. After this, he shifted over to what can be called the "behaviourial approach" which really *presumed* a solution which Kalecki then went on to characterise in a certain way leading eventually to his formula or equation for the firm's price, on the basis of which he developed the rest of the theory. There was no direct follow up of the earlier argument but the same mode of argument was to appear later in the course of his arguments.

We have just given our basic reading of a difficult part of Kalecki's arguments. We add that his arguments in the second part were purely *formal*. The *substance* of the problem was taken to be understood from the first part. Kalecki probably meant this to be simply a stepping stone to the second part notwithstanding the "shift", or even perhaps without recognising it. Whatever be his actual reasoning, we see no alternative to following out the sequence just stated. This explains why e have divided the subject matter into these two sections.

Let us now have the argument that concerns us here:

> "The firm must make sure that the price does not become too high in relations to the prices of other firms, for this would drastically reduces sales, and that the price does not become too low in relation to its unit prime cost, for this would drastically reduce the profit margin".(210,II)

Let us first read the passage in the background of the discussion of the last chapter. We can say that the goal of "profit maximisation" is replaced here by a pair of "minimal objectives", viz. to avoid what is considered a "drastic fall" of sales on the one hand and profit margin on the other. Obviously this is far less exacting. The basis for this replacement is simply that the firm does not know "e" or "mr", for "mc" is already given by upc. In place of "e" or "mr", the firm has now only an idea of the price so "high" as to entail the "drastic fall in sales", given the price of other firms. We can say that at most this defines a "point" on the demand curve which is taken to be known. Turning to the other side, we simply note that the very word "profit margin" in this passage tells us that overhead costs are not simply ignored or neglected.

Let us return once again to the passage as a whole. Kalecki's arguments here consisted simply of proposing two conditions on price as following from the two minimal objectives, viz. the price is not to be too high in relation to the prices of other firms and not to be too low in relation to its upc. This is how the problem got delimited at this stage.

So much is simply tying up the passage with what was stated earlier. Let us now look forward. It is clear that Kalecki's argument here is very informal, in fact rather loose because nothing is said to define what constitutes the "drastic falls". Basically, we shall try to tighten up the argument on the basis of appropriate formalisations defining the benchmarks of reference necessary for this purpose. Let us be clear that these benchmarks are our own insertions into Kalecki's argument. However, we do not think that they take one outside Kalecki's broad framework.

Let us consider Kalecki's first argument - the price must not be too high in relation to the prices of other firms, for this would drastically reduce sales. We have already mentioned that without saying a further word Kalecki simply replaced the notion of "prices of other firms" by the "average price" (or "industry price" as we called it) in all subsequent arguments. We include this step within the scope of our discussion.

Let us first formalise the condition. Let p_i and σ_i denote respectively the *prices* and *market shares* of firms in an industry and $\bar{p}$ denote the *average price*. By definition :

$$\bar{p} = \sum \sigma_i p_i \quad (\sigma_i > 0, \sum \sigma_i = 1) \tag{3.1.1}$$

We now proceed in two steps. First, we simply incorporate the "average" notion in Kalecki's argument as stated, i.e., we replace "prices of other firms" by *their* average. On this basis we have the following formalisation of the condition :

$$\begin{aligned} p_k &< \eta_k \frac{\sum_{i \neq k} \sigma_i p_i}{\sum_{i \neq k} \sigma_i} \\ &= \frac{\eta_k}{1 - \sigma_k} \sum_{i \neq k} \sigma_i p_i \end{aligned} \tag{3.1.2}$$

At this point η_k is simply an undefined parameter carrying the sense of Kalecki's

word "too high".

Next, we add the term $\frac{\eta_k \sigma_k p_k}{1-\sigma_k}$ to both sides of (3.1.2) followed by certain obvious groupings and transpositions so as to define the condition in term of $\bar{p}$. This is given by the following :

$$p_k < \beta_k \, \bar{p} \tag{3.1.3}$$

where

$$\beta_k = \frac{\eta_k}{1-(1+\eta_k)\sigma_k}$$

Henceforth it is in this form that we consider the condition.

Let us now turn to the argument behind the condition. Let us remember the inseparability of the questions of "sales" and "competition" in Kalecki's framework. This point is somehow missed out in Kalecki's argument. Let us bring it back into the picture. We can then argue as follows. The higher the price of a firm in relation to the average price, the weaker its *competitive position* in the market - it *loses* sales, meaning by definition that it loses sales *to others*. This acts as a *restraining influence* upon the firm's price. It is this point that is expressed in an *extreme* form in (3.1.3) which requires the firm to price its product below an upper bound or limit defined in terms of the average price. All we need to do to capture this sense of the condition is replace Kalecki's "drastic reduction of sales" by "drastic loss of sales" in the above sense of the term in his argument. This is to be further worked upon.

We now notice that *if* the total sales in the market remains constant, then the two notions of "reduction" (or fall) and "loss" of sales simply coincide. So, we can say that this is the tacit assumption in Kalecki's argument. But this assumption does not simply go with his framework, important points of which are already seen to be argued from the independent variation of total sales or demand and the firm's response to it. So, we continue with our argument without such assumption.

Clearly, "loss of sale" in the sense understood is the same as a fall in *market share*. So, we essentially *reformulate* the whole condition in term of "market share" in place of "sales". It will be seen that the reformulation we offer is quite genuine.

First, we develop a view of the behaviour of market shares consistently with Kalecki. The world addressed is one where price competition is replaced by compe-

tition in "sales promotion" in the broad same of the term. In other words, the active instrument of competition is sales promotion, not price. But unlike price-fixing, sales promotion is a *whole activity going on in line.* By and large, it has a cumulative effect upon sales, or, in other words, it "builds up" sales. But we cannot view the sales of any particular firm in isolation from the sales of other firms in the market in this context. This brings us back to "market shares".

Now, there is certainly a general influence of sales promotion upon "demand" as such. But this is an exogenous factor for our purpose, and so we keep it aside. We can then say that it is precisely the respective market shares that get "built up" by the sales promotion of different firms. As a result, in the market itself the market shares appear as *more or less stable parameters.* Barring catastrophic events, they do not undergo "drastic changes" in a *short period of time.* So, we simply *eschew* this notion having a short term perspective in mind.

The reformulation then goes as follows. At any given point of time, each firm in an industry has its own market share, already "built up". But the firm recognises that it can *maintain* its market share (or competitive position) through time - even through a short period of time ahead - *only* if it keeps its price within a certain bound or limit in relation to the average price. This simply takes us back to (3.1.3), now interpreted as a *necessary* condition for maintaining its market share or competitive position as seen by the firm concerned. $\beta\bar{p}$ represents the "bound" or "limit" just spoken, which we can call the "competitive barrier" to the firm's price (rather the firm's *perception* of such barrier). It remains within the perceived barrier in its pricing. This is the net upshot of the condition.

Let us briefly discuss the parameter β. Since sales-promotion is the main instrument of competition, β implicitly reflects the firm's strength in this respect. We can say that the stronger the firm in this respect the higher the value of β. But what about the numerical value of β? First we note that it follows at once from (3.1.1) and (3.1.3) that $\sum \sigma\beta > 1$, i.e., on the average β has a value greater than one. Obviously, this condition is satisfied if $\beta > 1$, all firms. We also see that, other things given, the contrary case $\beta < 1$ is possible provided σ is not too large, i.e., the firm is not very large. Combining this with the earlier proposition we see that this case typically represents the case of a firm which is "weak" in respect of both size and sales promotion. This can be considered somewhat exceptional, i.e., the normal case is $\beta > 1$.

Before we go over to Kalecki's second argument, we give a sketch of the demand-side of the picture suggested by the view of the behaviour of market shares taken above. The basic point is that the σ's are relatively stable parameters in the short run. From this we can say that the total demand in a market in any given short period of time gets "distributed" among firms basically according their preexisting values of σ. This in turn sets their output. These relations are represented by the following two equations

$$d = \sigma D \tag{3.1.4}$$

$$x = d \tag{3.1.5}$$

where d and x denote respectively the demand faced and output produced by individual firms and D denotes the total market demand.

This appears to us to be the view of the demand-side underlying Kalecki's theory of price formation. Price does not appear explicitly in this picture, but the "stability" of σ's is tacitly based on the assumption that firm prices satisfy (3.1.3). However, no specific relation between the values of σ and p (or $p/\bar{p}$) is presumed in the theory.

We have already stated that overhead costs *are* brought within the orbit of pricing in the second part of Kalecki's passage. The question is, how? We shall give what appears to be the most straight forward answer to this question, though it is not without its problem. But first we must bring the condition stated here to a more amenable form, rid of the arbitrariness of the word "drastic fall". Again, we choose what appears to be the most straightforward path.

Let us remember that we are concerned here with the firm's "minimal objective" in respect of profit margin. Almost by definition, this brings us to the notion of a minimum profit margin that is in some sense "acceptable" to the firm, i.e., its *minimum acceptable profit margin*. With this, we can read Kalecki's "drastic fall" in profit margin as simply a fall *below* this minimum acceptable profit margin. This is to be avoided. That in brief is the condition here. Stated more fully, and positively, the condition is that the firm must set its price sufficiently above (or higher than) its upc so as to ensure at least its minimum acceptable profit margin.

However there is a catch here. Given that there *are* overhead costs, a firm's profit margin, i.e., the *actual* margin, depends as much upon price as upon output. It is therefore not possible to ensure any particular value of profit margin by pricing alone. The firm may indeed have such a consideration in mind in setting price. But

whether that goal is realised or not depends ultimately upon the output produced, i.e., the *demand* faced, on which obviously the firm has no control.

This granted, the problem now is to give a precise meaning to the word "such consideration in mind" such that it carries a definite operational significance. The point is that the "consideration" has to be put in a form consistent with the basic postulate that price is set *independently* of the output actually produced. So, it is not possible to interpret the term "minimum acceptable profit margin" as saying that the *actual* profit margin is greater than this "minimum". The term has to be taken in a *notional* sense. How?

It is to this question that we give a straightforward answer. Obviously, the question stems from the fact that overhead costs are sought to be "covered" in price (through the notion of "profit margin") consistently with the "basic postulate" as just stated. To do this, it is necessary first to "distribute" total overhead costs in terms of some *benchmark figure of output defined for this purpose* - a "notional" output, not the "actual" output - and then "enter" this *notional* unit overhead cost into the definitions of unit cost of production and profit margin, which too are thus rendered as notional magnitudes. *This* profit margin is by definition independent of the actual output and so a stipulation on its value can meaningfully define a condition upon pricing consistently with the "basic postulate". This is the answer.

Let us now set down the argument in formal terms. Let x_n denote the "notional output" under reference. (Note, the actual output is already denoted x). Let A and u denote respectively the *total* overhead cost and the *unit* prime cost of the firm (Note, both are given data or "constants"). Let c and c_t denote respectively the *actual* and the *notional* unit cost of production. By definition :

$$\begin{aligned} c &= u + (A/x) \\ c_n &= u + (A/x_n). \end{aligned}$$

Finally, let π denote the firm's minimum acceptable profit margin, where the term "profit margin" is already understood in the notional sense.

We then have the following formalisation of Kalecki's condition

$$\frac{p - c_n}{p} > \pi, \quad 0 < \pi < 1$$

or

$$p > \frac{c_n}{1-\pi} \tag{3.1.6}$$

It remains to bring (3.1.6) in line with the exact statement of this condition by Kalecki. For this purpose, we first replace c_n in (3.1.6) by its definition just given and then introduce a *parameter* δ defined as (A/ux_n). This gives us the following successive transformation of (3.1.6) :

$$\begin{aligned} p &> \frac{1}{1-\pi}(u + \frac{A}{x_n}) \\ &= \frac{1+\delta}{1-\pi}.u \\ &= (1+\alpha)\ u \end{aligned} \tag{3.1.7}$$

where

$$\alpha = \frac{\delta + \pi}{1-\pi}$$

Obviously the parameter α carries the whole sense of the word "too low" in Kalecki. His "drastic fall" is already avoided by introduction of the notion of minimum acceptable profit margin.

Let us make a reference to Kalecki's last paper on the subject [13] at this point. Here he addressed straight the question of how a firm sets its price avoiding the "shift" in the present mode of argument. The question was then answered as follows :

> "Each firm in an industry arrives at the price of its product by 'marking up' its direct cost consisting of average cost of wages plus raw materials in order to *cover overheads* and achieve profits. But this mark-up depends upon 'competition' ....."(99,II)

Note firstly that "covering overheads" is now explicitly stated as a factor in pricing. The next point to note is that "covering overheads" and "achieving profits" go together in the pricing. All that the firm can do is set price *sufficiently above*

its upc[3] for this purpose. *How much* above - the precise "mark up" - depends upon the "competition" faced. Knowing this but keeping it aside for the time - and this is precisely the approach followed so far - the firm *on its own* can meaningfully set only a "minimum" target or objective in this respect. It is precisely this idea that is conveyed by our "minimum acceptable profit margin". The condition (3.1.7) then follows at once. α stands for the mark-up defined by this notion, which we may call the minimum *required* mark up. Note finally that the two terms δ and π in the numerator of α correspond precisely to "covering overheads" and "achieving profits". This is as good an approximation to Kalecki's arguments as we can achieve.

The "problem" in this approximation - or in our handling of the question raised at the beginning - is that the term x_n is left hanging in the air. It is defined as the notional output defined for the purpose of "distributing" total overheads for the purpose of pricing. There is no *outside* reference in this. Such reference can indeed be brought in by defining x_n as the "standard" output or the "normal" output in some sense of the term. The point to mention is simply that these notions do *not* have a basis in Kalecki's writings. His position all through was simply that output depends upon demand on which the firm has no control. This gives the firm no basis for fixing these notions.

There is one more point to make in this context. So long as $x \geq x_n$, (3.1.7) automatically guarantees that the *actual* profit margin is greater than π. We can say that in this range the condition carries the full sense of the notion of a minimum acceptable profit margin. This is *no longer the case* when x has fallen below x_n. Even though x_n may not have a substantive basis in the actual working of the firm, this makes one aware of the nature of the problem of "slump" or "depression" in the firm's pricing.

To go a little further, it may be objected - and rightly so - that what concerns a firm is the profit it makes (per unit of time) and not the profit margin. This is completely admitted. No "ultimate" significance is to be read into the notion of a minimum acceptable profit margin. In the end, it is only an analytical device to bring the cost-side comprehensively into the picture of a firm's pricing consistently with the other tenets of the theory. Like all such tools, it is of use or significance only under appropriate conditions. We can say that these are simply the *normal*

[3]Called here the "direct cost". The implication was that these costs are "directly covered" in price while the other costs are only "indirectly coverd".

conditions understood very broadly as excluding the "boom" on the one hand and the "slump" on the other. In the boom, the notion is redundant. In the slump it has to be taken over by the more basic concept of a minimum profit that is "acceptable" to the firm. Within this range, the tool derives its significance from the fact that the *actual* profit margin reflects *both* the prevailing state of competition and prevailing state of demand. The firm has no control upon either. Kalecki's strategy was basically to separate out the factor of "demand" giving full expression to the play of "competition" at any given level of demand in this range. This is already borne out by the passage from his last paper given earlier.

One important observation is to be made in this context. Profit margin, i.e., the ratio $(p-c)/p$, does not appear explicitly in the analytical structure of Kalecki's price theory. It remains implicit in the notion of "gross margin" defined as $(p-u)/p$ which appears as the key variable on the scene so far as "competition" is concerned, acting as a "surrogate" for profit margin. Since there is a one to one correspondence between the two (for any given firm) this raises no problems. However, the method does create problems for comparative or cross-sectional analysis of firms. This will be duly noted in such contexts.

Let us end. So far, we have discussed the two conditions of Kalecki separately from one another. When we bring the two *together*, we notice at once that the conditions are meaningfully defined only if the lower bound upon p defined in (3.1.7) is actually smaller than the upper bound defined in (3.1.3), i.e.,

$$(1+\alpha)u < \beta\bar{p} \tag{3.1.8}$$

This is really the basic *viability condition* for the firm thrown up by the analysis so far, to be granted as such. In a nutshell, the basic idea here is that the firm is always caught between the outside pressure of *competition* and inside pressure of *cost* (including its minimum profit consideration). It has to price within the limits set by these two forces. Should this prove impossible - competition (or the consideration of "sales") does not allow even the min acceptable profit margin (under "normal" circumstances) - the firm simply ceases to be viable.

Note, the problem of viability is covered very *comprehensively* in (3.1.8), covering *all* costs, whether "directly covered" in price (prime costs) or "indirectly covered" (overheads as well as minimum profit) on one side and covering both what the firm

can do (sales promotion) and what comes from outside (the industry price) in the matter of sales and competition on the other. One by one, all these factors are captured in the four terms u, α, β and $\bar{p}$. Whichever way the matter is looked - whether it is high u or α or low β or $\bar{p}$ - once the "gap" in (3.1.8) is closed or reversed, the firm, to repeat, is no longer viable.

3.2 Firm's Pricing II

We are concerned here simply with Kalecki's equation or formula for a firm's price. There is a number of things to discuss under this head.

First, we tie up with what we said earlier about Kalecki's argument here. Kalecki arrived at the equation by laying down certain conditions upon the firm's response to a change (rise) in its upc. Thus his whole argument was about the firm's response to a stimulus. This is why we said he now shifted over to a "behaviourial" approach.

Now, Kalecki's conditions upon this response depended solely upon the assumed behaviour of the average price. It follows that, mathematically speaking, he now simply took it for granted that the firm's price p is a *determinate function* of its upc u and the average price $\bar{p}$, i.e.,

$$p = f(u, \bar{p}) \tag{3.2.1}$$

Kalecki's conditions were really conditions on this function. But to speak of p as a function of u and $\bar{p}$ *is* to presume a definite solution of the sales vs. profit margin problem, to which the whole pricing problem had already been reduced, which is then embodied in the function f. This is why we said that Kalecki's arguments now simply presumed a solution of this problem [4], which was only characterised in a certain way, viz. through conditions on the above response. This point will become abundantly clear as we go on. It will also be seen that Kalecki's equation boils down simply to the simplest form of f consistent with his conditions.

Let us now have Kalecki's derivation of the equation before us :

> "If u increases, p can be increased proportionately only if $\bar{p}$ rises proportionately as well. But if $\bar{p}$ increases less than u, the firm's price will also be raised less than u [5]. These conditions are clearly satisfied by the formula
>
> $$p = mu + n\bar{p} \tag{3.2.2}$$

[4]The common sense of this "presumption" is simply this. Whatever the aprioristic "indeterminacies" in the firm's pricing, it has to actualy set the price, and that at once implies - in the present framework - a resolution of these indeterminacies or more precisely of the "conflict" lying behind.

[5]As we see the word "less" in this sentence is to be taken in the sense of "in a lesser proportion". This is taken as understood in the discussion below.

where both m and n are positive coefficients".(210,II)

It needs hardly any saying that this is very terse and formal. It seems that for some reason Kalecki simply choase to suppress the whole economic content of the conditions - leave that to the reader. We simply take this up.

For this purpose we will *rearrange* Kalecki's statements in the following two stages. In stage one, it is assumed that $\bar{p}$ remains *unchanged.* In stage two, $\bar{p}$ is allowed to *vary freely* on its own, i.e., as an exogenous variable. Note that this is in some sense a reversal of Kalecki's steps, for he first considered the case where $\bar{p}$ rises in the same proportion as u, which is included in our stage two, and then came to the case where $\bar{p}$ rises less than this, the extreme case of which is simply that $\bar{p}$ does not rise at all, our stage one.

Our stage one takes one straight to the heart of the problem. There has been a rise in u but no change in $\bar{p}$. What does the firm do (so far as p is concerned)? If it does *not* raise p, it lets its profit margin fall, for p/u has fallen[6]. If on the other hand it *does* raise p then it lets its competitive position fall, for $p/\bar{p}$ has risen. The firm is thus caught between the *two conflicting objectives* of maintaining its profit margin on the one hand and its competitive position on the other. One requires p to be *raised in the same proportion as* u, the other requires p to be left *unchanged.*

Seen in this background, Kalecki's stipulation was simply that the firm comes to a *compromise* - it does raise p, but in a lesser proportion than u. So, there is some fall in both profit margin and competitive position such that there is some "protection" of each as well.

This is the key proposition in the whole argument. Let us restate it in a different language. The proposition here is that, given no change in the industry price, the firm makes a *partial adjustment* of its price to a change in its upc, "full adjustment" being defined by p changed in the same proportion as u. The shortfall of this partial adjustment from full adjustment measures the firm's sacrifice of the first objective in view of the second[7].

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[6]As already pointed out the behaviour of profit margin is taken to be reflected in the behaviour of its "surrogate", the gross margin, which in turn is obviously reflected in the behaviour of the ratio p/u.

[7]This is another point at which a broad judgement on the demand relationship facing the firm is involved in the firm' pricing.

Let us move on to stage two of the analysis. Starting from "no change in $\bar{p}$", we now suppose that $\bar{p}$ rises in steps, given the rise in u already taken place. Obviously, the very rise in $\bar{p}$ *reduces* the conflict just spoken, for p can now be raised in that proportion without any fall in competitive position. What if $\bar{p}$ rises in the same proportion as u? In this case the conflict simply *disappears*, for now raising p in the same proportion as u (maintaining profit margin intact) comes to the same thing as raising p in the same proportion as $\bar{p}$ (maintaining competitive position intact). So, in this case, p is in fact raised in the same proportion as u.

It follows at once from the above propositions that, first, f is *increasing in both arguments*, i.e., $\partial f/\partial u > 0, \partial f/\partial \bar{p} > 0$; and second, that f is a *homogeneous function of degree one.* Hence by Euler's theorem on homogeneous functions :

$$f = u\frac{\partial f}{\partial u} + \bar{p}\frac{\partial f}{\partial \bar{p}}$$

The simplest form of f consistent with this condition is one where the partial derivatives are *constant.* This is exactly what is stipulated in Kalecki's equation (3.1.2) where $m = \partial f/\partial u$, $n = \partial f/\partial \bar{p}$.

To proceed on, so far the only conditions in (3.2.2) are that $m > 0, n > 0$. We shall now see that the equation has to satisfy a number of other conditions as well to be meaningful.

Kalecki himself stated immediately one such condition, viz.

$$n < 1.^{8} \tag{3.2.3}$$

His argument went as follows. Since $\bar{p}$ is the average of firm prices in an industry, it can be assumed that there exists a firm with $p = \bar{p}$. For this firm (3.2.2) boils down to

$$p = mu + np$$

This can be immediately solved for p provided $n = 1$. But obviously the solution is meaningful in the sense that $p > 0$ *only if* (3.2.3) is satisfied[9]

[8]Henceforth we call this "Kalecki's condition".

[9]Strictly speaking, this is true only for firms with $p \leq \bar{p}$. But Kalecki postulated (3.2.3) as a

To continue, we can clearly say that for a firm's price to be meaningfully defined, it must not only be positive, it must also *cover at least the firm's upc*, i.e., we require the stronger condition $p > u$. This was not explicitly stated by Kalecki, but this is so obvious a requirement that one expects it to show up at some point or other of his analysis based upon (3.2.2). We shall see that this was indeed the case.

Stated in terms of Kalecki's equation, the condition here is that

$$mu + n\bar{p} > u.$$

It does not appear possible to get rid of the variables u and $\bar{p}$ in this condition as a general proposition. But if we again consider the case $p = \bar{p}$ we see at once that (3.2.2) has the solution

$$p = \frac{m}{1-n}u$$

It follows that for this firm $p > u$ *iff*

$$m > 1 - n$$

or

$$m + n > 1.^{10} \tag{3.2.4}$$

This completes the statement of one group of conditions upon (3.2.2) for "meaningfulness". We now move on to another group following from the formal results of the last section. Since these results are based squarely upon our rather specific interpretation of Kalecki's arguments, there is no precise basis of these conditions in Kalecki. This part of the work is really our "making" or "self-imposed".

First we recall the viability condition of a firm (3.1.8). This is defined jointly in terms of the four terms α, β, u and $\bar{p}$, of which u and $\bar{p}$ now appear as independent variables in (3.2.2). It follows that this equation is meaningfully defined only for such values of u and $\bar{p}$ as satisfy (3.1.9) for given values of α and β. Put differently, the

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general proposition, holding for *all* firms. The validity of this is not very clear to us but we leave it at that.

[10]Obviously, this condition is also subject to the same sort of qualification as mentioned in the preceeding footnote.

proper domain of the function $f = mu + n\bar{p}$ defined in this equation is defined by the viability condition.

Within this, we must also require (3.2.2) to be consistent with the two boundary conditions upon p derived in the last section, viz. (3.1.3) and (3.1.7). Let us first consider the pair (3.2.2) and (3.1.3) :

$$\begin{aligned} p &= mu + n\bar{p} \\ p &< \beta\bar{p} \end{aligned}$$

It follows that

$$mu + n\bar{p} < \beta\bar{p}$$

or

$$mu < (\beta - n)\bar{p}.$$

Since m, u, β, n and $\bar{p}$ are all positive, this condition is satisfied *only if*

$$n < \beta \tag{3.2.5}$$

We not that since in general $\beta > 1$, this condition is generally made redundant by (3.2.3).

Let us now consider the other pair, (3.2.2) and (3.1.7) :

$$\begin{aligned} p &= mu + n\bar{p} \\ p &> (1+\alpha)u \end{aligned}$$

It follows that

$$mu + n\bar{p} > (1+\alpha)u.$$

Let us now consider this condition together with (3.1.8) which defines the proper domain of the function f. Dividing both sides of each condition by u, we have

$$\begin{aligned} m + n\frac{\bar{p}}{u} &> 1 + \alpha \\ \frac{\bar{p}}{u} &> \frac{(1+\alpha)}{\beta} \end{aligned}$$

It follows that

$$m + n\frac{1+\alpha}{\beta} > 1 + \alpha$$

or after rearranging terms

$$m > (1+\alpha)(1 - \frac{n}{\beta}). \qquad (3.2.6)$$

We note that (3.1.7) expresses the condition of a minimum acceptable profit margin which is obviously much stronger thatn the condition $p > u$ (or a positive gross margin) discussed earlier. So, conceptually speaking, (3.2.6) should be stronger than (3.2.4). But this is not necessarily guranteed because of the qualifications to (3.2.4) already given.

Before concluding this part of the analysis we have to mention again that (3.1.3) and (3.1.7) have no precise basis in Kalecki. Obviously, the same is to be said about the two conditions just derived. At a deeper level, we have to recognise that Kalecki himself advanced the earlier arguments, what we called the "decision making" arguments, only as a *stepping stone* to his arguments embodied in (3.2.2) and no more. Hence it is not permissible to treat the two sets of parameters (α, β) and (m, n) as *independent* of one another. Rather, they reflect at bottom the *same set of forcess* expressed in two different frameworks (the "decision making" and the "behavioural"). As such, we have to treat the condition (3.2.5) and (3.2.6) as "automatically satisfied" in the total structure of Kalecki's arguments. Granting our interpretations, (3.1.3) and (3.1.7) are obviously "prior" to (3.2.2). Foramlly speaking, this means that the parameters m and n are *in some way dependent* upon the more basic parametrs, α and β, such that (3.2.5) and (3.2.6) are automatically satisfied.

We now come to the final part of this section. So far, Kalecki's equation (3.2.2) stands simply as a "characterisation" of a firm's pricing. To speak of it as the equation "determining" the firm's price is to assume that the yet undetermined parameters m and n are in fact *determined prior to the stage of pricing*. This was indeed

the supposition in Kalecki. The question remains, "determined" by what exactly. In response to this question Kalecki just wrote :

> "The coefficients m and n characterising the price-fixing policy of the firm reflect what may be called the degree of monopoly position of the firm (in the industry concerned)".(211,II)

Thus p was taken to be determined in the end by the "degree of monopoly".

This brings us to an important part of our work here. Our basic point is this. Leaving aside the question of "determination", we have to say that we find the above *too hasty* an appeal to the notion of "degree of monopoly", with no background in the actual forces of monopoly. Surely, there must be some way of meaningfully interpreting the coefficients *prior* to this notion, *leading eventually to it.* This is what we now attempt to do - to fill a "gap" left by Kalecki. The question of "determination" is also taken up *inter alia.*

According to (3.2.2) p depends positively on both u and $\bar{p}$. We can say that the dependence of p upon u really stands for the firm's *independence* - its ability to set price purely on the basis of *its* cost. The dependence of p upon $\bar{p}$ is, on the other hand, truly a *dependence* - the firm's dependence upon the *outside* for this purpose (pricing). Clearly, the parameters or coefficients m and n measure respectively the strength of these two forces[11]. This is the basic interpretation. Note, both forces are simultaneously at work and so, "dependence" and "independence" here are ultimately matters of "degree".

Obviously the forces of dependence and independence stand *opposed* to one another. A firm cannot simultaneously be more independent and more dependent. It follows that the two coefficients must be *inversely related*, i.e., they move in *opposite directions* as the firm becomes more independent (m increases, n decreases) or more dependent (vice versa) as the case may be.

We can now join up with Kalecki in a preliminary way by saying that a firm being "more independent" or "more dependent" in its pricing than another firm is fundamentally a reflection of differences in such underlying factors as size, organisation,

[11]So, we may as well call them respectively the "independence coefficient" and the "dependence coefficient" in Kalecki's equation for the firm's price.

technology etc.[12]. The coefficients m and n are in this sense basically "structurally determined", and hence so is price in the final analysis. This, we believe, is also the net upshot of the statement of Kalecki just given, rid of the term "degree of monopoly".

We end this section by pointing out how the above interpretation (or conceptualisation) of the coefficients leads to an *alternative* way of viewing, and defending, Kalecki's condition (3.2.3). The argument is purely conceptual.

First, we set a benchmark of reference by considering the *limiting case* of a firm with the "no independence, complete dependence". We take this characterisation to mean that the firm simply *sets its price equal to the average price.* It is a pure "price follower" in this sense (but there is no "price leader"). We are thus back to the equation $p = \bar{p}$, not as a statistical average as in Kalecki, but simply as an extreme specification of Kalecki's equation (3.2.2). Obviously, for this firm, $m = 0$ ("no independence") *and* $n = 1$ (this is really the benchmark for "complete dependence").

We note this configuration is "inadmissible" since it is already assumed that $m > 0$. This simply means that our "limiting case" falls *outside* Kalecki's specification or terms of reference. So, to be meaningful we must *move inside* the admissible region *starting from this inadmissible point.* Such a movement means not only an *increase* in the value of m but also a *decrease* in the value of n, since the two are inversely related. Thus starting from $(m = 0, n = 1)$ we move into the region $(m > 0, n < 1)$. This establishes the configuration $(m > 0, n < 1)$ as a *general proposition* within Kalecki's theory as per the interpretations just given. Thus we have Kalecki's condition (3.2.3) simply as *part* of this general proposition, valid for all firms.

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[12]This is not to deny the presence of an "individual element" in the parameters. A firm may *choose* to be more "independent" or "more dependent" in its pricing than suggested by the factors. I.e., two similar firms in these respects may not have the same values of the parameters under reference. By the same token, *some* variation of the parameters on account of differences in this element of "choice" is to be allowed. Quantitatively speaking, the "theory" here is that in the total view of an industry, such variations are swamped by variations due to "structural factors".

3.3 Price Formation in an Industry as a Whole

Beginning this section, we are concerned with the "price system" in Kalecki as made up of all firm prices in an industry together with their "average" which mediates their interdependence.

Let us first give an account of the basic analytical structure of this system. In this system firm prices are related to the average price and hence to *one another* through the coefficient n (one for each firm). It follows that if this coefficient is large enough, the system becomes *unstable* or *explosive* in the sense that a change in the price of some firm leads ultimately to larger and large changes in price in all firms. A moment's reflection shows this is indeed the case if $n > 1$, all firms, in strong violation of "Kalecki's condition". To spell out, suppose there is a "small" rise in the price of some firm, somehow occurred. This leads to some rise in the average price $\bar{p}$ which may be "very small". (This depends upon the value of σ of the firm concerned). But if $n > 1$ then this small rise in $\bar{p}$ leads to a *magnified* rise of *all* firm prices implying a corresponding rise in $\bar{p}$ which in turn leads to another round of "magnified" price rise and so on.

The point goes deeper. Before we can speak of the stability or otherwise of a price system we have to ensure that it is *internally consistent* in the sense of having a "meaningful" solution. On the basis of well-established precedents (the "correspondence principle") we expect the stability condition to be *one and the same* as the consistency condition (or existence condition). And on the basis of the analysis just given, we expect this condition to be *closely related to "Kalecki's condition"*. All these are to be verified. In this section we shall be concerned only with the "consistency" or "existence" part of the problem. The "stability" part is taken up in the next section.

The formal analysis of the present problem is straightforward. Formally, our price system is defined by :

$$p = mu + n\bar{p}$$

and

$$\bar{p} = \sum \sigma u$$

So, by substitution

$$\begin{aligned} \bar{p} &= \sum \sigma(mu + n\bar{p}) \\ &= \sum \sigma m u + \bar{p} \sum \sigma n \end{aligned}$$

and by transposition

$$(1 - \sum \sigma n)\bar{p} = \sum \sigma m u \tag{3.3.1}$$

Clearly this equation has a meaningful solution $\bar{p} > 0$ *if and only if*

$$\sum \sigma n < 1 \tag{3.3.2}$$

This is the consistency condition or existence condition of the price system.

Clearly "Kalecki's condition" is *sufficient* for the satisfaction of this condition. Since that condition is already justified on a priori grounds, we have the matter here with the statement that we do have a meaningfully defined price system.

Let us proceed on. Solving (3.3.1) we have

$$\bar{p} = \frac{\sum \sigma m u}{1 - \sum \sigma n} \tag{3.3.3}$$

This equation shows how exactly the industry price is formed. It is formed *out of* the unit prime costs, u, *through* the "structural parameters" of the system, σ, m and n. This is to be further interpreted. Before that we simply point out that with $\bar{p}$ meaningfully determined by (3.3.3), all the p's are now also meaningfully determined by (3.2.1). Clearly, all these prices are "cost determined".

Let us now take up the "further interpretation" of (3.3.3). There are two points here. We have already spoken of m and n as "structurally determined". Clearly one of the structural determinants is the *market share* σ. Thus there obtains a definite "structure" within the set of structural parameters under reference. The other point is this. The unit prime costs u are given together by the technical relations of production and the prices of raw materials and wage rates which we henceforth call the "basic cost data" of the industry. The former are again of a purely "structural" nature. So, the notion of "determination" here is ultimately as follows : The prices

under reference are determined *by* these basic cost-data of the industry *within* the "structure" defined by the technical relations of production on the one hand and the parameters σ, m, n with their own structure as just stated, on the other hand.

Rest of section is devoted to putting (3.3.3) in a more compact and amenable form. Intuitively we expect $\bar{p}$ to depend only upon the *average* values of m, n, and u, say $\bar{m}, \bar{n}$, and $\bar{u}$. The question is, how precisely are these "averages" defined? Now, by definition, $\bar{u} = \sum \sigma u$ while it is clear from (3.3.3) that $\bar{n}$ must be defined as $\sum \sigma n$. So, it is really the definition of $\bar{m}$ that is under question. Note, by the very nature of our problem we require the following decomposition of $\sum \sigma mu$:

$$\sum \sigma mu = \bar{m}.\bar{u}. \tag{3.3.4}$$

where $\bar{m}$ is a well-defined average of the m's. The question is, what precisely is this "well-definition"?

Let us introduce some variables. Let $t = ux =$ the *total* prime cost of a firm (x denotes output) and let $T = \sum t$ (the total prime cost of the industry) and $X = \sum x$ (total output of the industry). By definition $\sigma = x/X$ and $\bar{u} = T/X$. Let us now factorise the term $\sum \sigma mu$ as follows :

$$\begin{aligned}
\sum \sigma mu &= \sum m.(\sigma u) \\
&= \sum m(\frac{x}{X})(\frac{t}{x}) \\
&= \sum m(\frac{t}{X}) \\
&= \sum m(\frac{t}{T})(\frac{T}{X}) \\
&= (\frac{T}{X}) \sum m(\frac{t}{T}) \\
&= \bar{u}.\bar{m}
\end{aligned}$$

where

$$\bar{m} = \sum m(\frac{t}{T})$$

Thus $\bar{m}$ is indeed a weighted average of m's with (t/T), i.e., the *relative shares of firms in the total prime cost of the industry* as weights. Henceforth we shall denote (t/T) by γ.

With this, we have the following compact and amenable form of expression of (3.3.3)

$$\bar{p} = \frac{\bar{m}}{1-\bar{n}}\bar{u} \tag{3.3.5}$$

where

$$\bar{u} = \sum \sigma u, \bar{m} = \sum \gamma m, \bar{n} = \sum \sigma n$$

We note that γ enters the theory only because the determination of $\bar{p}$ is sought to be expressed in the above compact form. It has no other role to play in the theory.. This sort of a role - the definition of appropriate "averages" — is also played by σ. But σ enters the theory from the very beginning and plays a more basic role as well, as already noted. Thus we can say that σ has a "two-fold significance" in the theory, one at the technical level(aggregation procedure), one at the substantive level. γ has only the first significance.

Before ending the section, we make two brief references to Kalecki. He discussed price formation in an industry as a whole first for the "special case" where the (m, n) coefficients are the same for all firms and then for the "general case". We find this "special case" to be only a formal simplification devoid of any specific economic content. (This is clear from the analysis so far). So, we have cosidered straight Kalecki's "general case". For this case, Kalecki simply stated the determination of $\bar{p}$ in the form given in (3.3.5), without any explicit derivation. We have put this in.

The other reference is this. Kalecki began his theory of income distribution with the following expression for $\bar{p}$:

$$\bar{p} = k.\bar{u} \tag{3.3.6}$$

where he *defined* k as the "ratio of aggregate proceeds to aggregate prime costs (in an industry)" (225,II). Just from this definition Kalecki took it for granted that $k > 1$ and based the theory upon this condition. This is nothing but the condition that price is greater than upc (or that the gross margin is positive) which we imposed earlier on his equation for the firm's pricing. Next, Kalecki linked up (3.3.6) with (3.3.5) with the statement, "k is determined by the degree of monopoly". Obviously. he meant that the two equations are the same; k is just a shorthand for $\bar{m}/(1-\bar{n})$.

It follows at once that he simply took for granted that

$$\bar{m} + \bar{n} > 1. \tag{3.3.7}$$

This was his implicit restriction of the parameters of the price equation in the present context. Clearly we can say that (3.3.7) is only the industry level analogue of (3.2.4). So, (3.2.4) was also implied by the same arguments.

3.4 The Adjustment Mechanism

We are concerned here with the adjustment mechanism of Kalecki's price system. Now, in this system prices are ultimately cost-determined. So, the notion of "adjustment mechanism" here is the mechanism of adjustment of prices to *relevant changes in costs*. Put differently, it is the mechanism by which such changes are transmitted to price.

There are two distinct take-off points for this problem in the theory so far. One is the stability analysis of the price system given in the last section, which we now cast in the framework of adjustment mechanism. Note, this also means that we start here one step *back* from where we started in the last section. There we started from a change in price *somehow occurred*; here we start from "relevant change in costs". By this, we mean simply a change in the *basic cost-data of an industry*, i.e., a change in the prices of raw materials or wages rates. We mention that this is exactly how Kalecki himself introduced the problem —

> "It is still important to see in what way a new 'price equilibrium' is reached when the unit prime costs change as a result of changes in prices of raw materials or unit wage costs" (213,II).

Kalecki however gave only a sketch or outline of the mechanism for the "special case" of his price system. We shall give a complete formulation of it for his "general case".

The second take-off point for the present problem is the *first stage* of the argument by which we arrived at Kalecki's equation of the firm's price. To recapitulate, the stage established a "partial adjustment" of the price of a firm to a change in its upc, given no change in the industry price. Thereafter (second stage) the industry price was allowed to vary freely as an independent or exogenous variable. Here on the other hand the industry price is treated as an *endogenous* variable, as it must be. In fact, it is the key endogenous variable in the present problem, for once it gets "adjusted", so are all firm prices. But the *beginning* or *first step* of the adjustment mechanism here is given *exactly* by the above "first stage" of the earlier argument, i.e., by the "partial adjustments" just referred. This is because once there has been a change in the basic cost-data of the industry, there is a change in the upc of each firm. So each firm makes its own price-adjustment to the change in its upc, which

is nothing but the above "partial adjustment", for the industry price has not *yet* changed. However, the very adjustment of firm prices causes the industry price to change, and that calls for a further adjustment of firm prices, now with respect to this change in the industry price. But this again causes the industry price to change, and so on. Thus there ensues a *process* of successive price adjustments. The question is whether the process *converges* or not. This is the same as the question of "stability" or otherwise of the price system. Note, the notion of "adjustment mechanism" is now translated into a "process of successive adjustments". Further, the first step of this process (the "partial adjustments") is *qualitatively different* for the subsequent steps, all of which describe a process of *interaction* between firm prices and the industry price. This is where the notion of "successive adjustments" come in. Intuitively it is clear from this that the question of convergence or stability turns only around the nature of this "interaction", which in turns depends only upon the parameters n and σ. The "first step" does not come into this, though it is necessary to *define* the process in the first place. Same is to be said about the parameter m. We shall see later (next section) that this step (and m) becomes crucial where we ask the question *how much* do prices changes over the whole process, i.e., for "comparative statics".

Let us now give a formal statement of the process. Let u^0 and u^1 denote respectively the "old" and "new" upc, before and after the change in the basic cost data of the industry. It is assumed that the price system is initially in equilibrium. This means simply that the initial firm prices p^0 satisfy Kalecki's equation (3.2.2) for *that* value of the industry price $\bar{p}^0$ which is in fact the average of these p^0's as defined in (3.1.1). In other words

$$\begin{aligned} p^0 &= mu^0 + n\bar{p}^0 \\ \bar{p}^0 &= \sum \sigma p^0 \end{aligned}$$

Let p^k and $\bar{p}^k$ denote respectively the firm prices and the industry price at step k of the process, $k = 1, 2, \ldots$. By definition

$$\bar{p}^k = \sum \sigma p^k, \quad k = 1, 2, \ldots \tag{3.4.1}$$

There is no "step transition" in these equations. That comes in though the equations for p^k, *differently* for $k = 1$ and $k = 2, 3, \ldots$.

$$
\begin{aligned}
p^1 &= mu^n + n\bar{p}^0 \\
&= (mu^0 + n\bar{p}^0) + m(u^n - u^0) \\
&= p^0 + m(u^n - u^0) \qquad (3.4.2)
\end{aligned}
$$

$$
\begin{aligned}
p^2 &= mu^n + n\bar{p}^1 \\
&= (mu^n + n\bar{p}^0) + n(\bar{p}^1 - \bar{p}^0) \\
&= p^1 + n(\bar{p}^1 - \bar{p}^0)
\end{aligned}
$$

$$
\begin{aligned}
p^3 &= mu^n + n\bar{p}^2 \\
&= p^2 + n(\bar{p}^2 - \bar{p}^1) \text{ (\textit{by parallel reasoning to the above})}
\end{aligned}
$$

and so on. So, for $k \geq 1$

$$p^{k+1} = p^k + n(\bar{p}^k - \bar{p}^{k-1}) \qquad (3.4.3)$$

The process as a whole is defined by (3.4.1) - (3.4.3).

To discuss the question of stability or convergence of this process, we need focus attention only upon the behaviour of $\bar{p}^k$, for obviously $\{p^k\}$ converges iff $\{\bar{p}^k\}$ converges. As already noted (3.4.2) does not come into this question.

Let us now write (3.4.1) as

$$
\begin{aligned}
\bar{p}^{k+1} &= \sum \sigma p^{k+1} \\
&= \sum \sigma p^k + \sum \sigma n(\bar{p}^k - \bar{p}^{k-1}) \quad from \ (3.4.3) \\
&= \bar{p}^k + \bar{n}(\bar{p}^k - \bar{p}^{k-1})
\end{aligned}
$$

or,

$$\bar{p}^{k+1} - \bar{p}^k = \bar{n}(\bar{p}^k - \bar{p}^{k-1})$$

It follows at once that $\{\bar{p}^k\}$ converges *iff*

$$\bar{n} < 1 \qquad (3.4.4)$$

As already expected, this is nothing but the internal consistency condition or existence condition of the price system. *Ipso facto*, "Kalecki's condition" is sufficient to guarantee that the price system is stable.

3.5 Cost-Price Relations in an Industry

In this section we study the cost-price relations in an industry implicit in Kalecki's theory of price formation by means of a comparative static analysis of his price system complementing its adjustment mechanism discussed in the previous section. The starting point remains a general change (rise) in the basic cost-data of the industry. We already know that, as a result, the price system eventually settles down to a new equilibrium where all prices are higher. The question here is simply *how much* higher – higher in relation to the rise in upc's taken place. Note, once we have answered this question we have also answered how *profit margins* are affected by the change in costs. This is the end point of the exercise. We shall discuss the question first for the "simple case" where upc rises *uniformly* (in the same proportion) over firms, then for the "general case".

For the simple case we can argue directly from the two basic building blocks of Kalecki's price system, viz., (a) firm prices p are linear homogeneous functions of respective upc's u, and the industry price $\bar{p}$, and (b) $\bar{p}$ is a weighted average of p with given weights, σ. In the simple case, all the u's rise in the same proportion, say α. So it follows from (a) that *if* $\bar{p}$ also rises in the proportion α, then so do all the p's. But if all p's rise in the proportion α, then so must $\bar{p}$ (from (b)). So, a rise in *all* prices (p's and $\bar{p}$) in the proportion α satisfies both the conditions (a) and (b). It follows that this *is* the new equilibrium of the price system. In sum, all prices rise in the same proportion as the assumed uniform rise in upc. As a corollary, all profit margins remain unchanged. There is a change only in the magnitude of costs and prices, not in any proportions of the price system. This completely answers the question raised.

Let us now proceed to the general case. We can as well assume that u's do *not* rise uniformly over firms[13]. It follows that the firms in the industry now fall in three groups G_1, G_2 and G_3 defined by the criterion $\Delta u/u \gtreqless \Delta\bar{u}/\bar{u}$, i.e., $\Delta u/u > \Delta\bar{u}/\bar{u}$ for G_1 and so on.

Let us now follow out *one possible line of generalisation* of the results obtained

[13]It may appear that this is assumed only for argument's sake. This is not necessarily so. Suppose there has been a general rise in wages but no change in the rpices of raw materials in the industry concerned. Then the upc of firms having a high ratio of wage to material costs necessarily rises in a greater proportion than the upc of firms having a low ratio.

for the simple case. In the simple case p rises in the same proportion as u in all firms, and $\bar{p}$ rises in the same proportion as $\bar{u}$ (the average upc in the industry). The *supposition* here - for this "line of generalisation" — is that the second result still holds true, i.e., $\Delta\bar{p}/\bar{p} = \Delta\bar{u}/\bar{u}$ (and so there is no change in profit margin in the industry as a whole). So, the question of "generalisation" pertains only to the behaviour of prices and profit margins in individual firms. This is answered at once from proportion (a) stated above. Since it is now assumed that $\Delta\bar{p}/\bar{p} = \Delta\bar{u}/u$, it follows at once from this proposition that for any individual firm

$$\frac{\Delta p}{p} \gtreqless \frac{\Delta u}{u} \text{ according as } \frac{\Delta u}{u} \gtreqless \frac{\Delta\bar{u}}{u}$$

i.e., according as the firm belongs to G_3, G_2 or G_1. It follows that firms in G_1 *gain*, firms in G_3 *lose* and firms in G_2 *neither gain nor lose* in terms of profit margin. The fact that there is no loss or gain (in this sense) for the industry as a whole can therefore be seen as a *mutual cancellation* of these gains and losses of individual firms. This in sum is the "line of generalisation".

It is necessary now to look into the validity or otherwise of the "supposition" (or hypothesis) on which the above line of generalisation is based. For this purpose we have to start from the "solution" of Kalecki's price system, not just its "building blocks" as above. This means that our reference point is now given by Kalecki's equations for p (which simply casts (a) in a specific firm) and $\bar{p}$ in the sense of its "determination" (which replaces the "definition" of $\bar{p}$ given in (b)). Since the second equation already subsumes the first equation, we need refer only to it. Let us take this equation in its "final" form :

$$\bar{p} = \frac{\bar{m}}{1-\bar{n}}.\bar{u}$$

It follows at once that our "supposition" is valid *if* both $\bar{m}$ and $\bar{n}$ are *given* a priori. Now, $\bar{n} = \sum \sigma n$ is clearly given for our problem, but $\bar{m} = \sum \gamma m$ is not *not necessarily so*, for γ (= the relative share of firms in the total prime cost of the industry) necessarily *changes* if u does not change uniformly over firms. In particular

$$\Delta\gamma \gtreqless 0 \text{ according as } \frac{\Delta u}{u} \gtreqless \frac{\Delta\bar{u}}{u} \qquad (3.5.1)$$

i.e., according as the firm belongs to G_1, G_2 or G_3. So,It is necessary to *revise* the line of generalisation given above in view of this fact.

Let us first derive the *basic result* for our problem. Let us simply substitute $\bar{m}$ by its explicit definition in the equation for $\bar{p}$. We then have

$$\bar{p} = \frac{\sum \gamma m}{1 - \bar{n}} . \bar{u}$$

Treating both γ and $\bar{u}$ as variables, as we must, we now see that

$$\frac{\Delta \bar{p}}{\bar{p}} = \frac{\Delta \bar{u}}{\bar{u}} + \frac{\sum m \Delta \gamma}{\sum m \gamma} \tag{3.5.2}$$

This is the *basic result* for our problem.

Clearly this equation defines a generalisation of our earlier "line of generalisation" or in other words the latter is obtained as a "special case" of (3.5.2). Let us now discuss the *defining condition* of this special case, which is obviously the following

$$\sum m \Delta \gamma = 0 \tag{3.5.3}$$

We can subdivide the "special case" into *three subcases* (called simply "cases" below). Case 1 is the "simple case" started from, where $\Delta \gamma = 0$, all firms. Now, by definition $\sum \Delta \gamma = 0$. It follows that (3.5.3) is again satisfied if the *value of* m *is uniform over firms*[14]. This is Case 2. Both these cases are of a "structural" nature.

Case 3 is given by (3.5.3) as a *general proposition* without the special conditions of Case 1 and Case 2. This is best seen as a generalisation of Case 2 as follows. Let us consider $\sum m \ \Delta \gamma$ as a *weighted sum* of γ with m as weights. The *simple sum* $\sum \Delta \gamma$ is by definition zero. So, the weighted sum is also zero if the weights are all uniform. This is Case 2 of our "special case". Starting from this case, let us now "perturb" the values of $m, \Delta \gamma$ remaining unchanged, such that there is *no systematic bias of the perturbed values of* m *with respect to the values of* $\Delta \gamma$. I.e., m and $\Delta \gamma$ are "uncorrelated". Then again (3.5.3) must be true. This is Case 3 of our "special case", in some sense the "general case" within the "special case".

Let us now proceed to the *truly general case*, the basic result for which is already

[14]Granting that m and n are inversely related (as we have argued) this means that n is also uniform over firms. Thus we are here back to Kalecki's "spcial case" of his price system.

given (3.5.2). It follows at once from this equation that

$$\frac{\Delta\bar{p}}{\bar{p}} \gtreqless \frac{\Delta\bar{u}}{\bar{u}} \quad according\ as \quad \sum m\,\Delta\gamma \gtreqless 0 \tag{3.5.4}$$

This gives us the revision of the earlier line of generalisation. It is now seen that $\bar{p}$ can indeed rise in a greater or lesser proportion than $\bar{u}$. Accordingly the profit margin of the whole industry goes *up* or *down* — ultimately because there has been a general *rise* in costs! The first possibility surely appears "paradoxical". This calls for some explanation.

Before we take this up we return to an earlier question. This concerns the magnitude of increase in $\bar{p}$ directly in relation to the rise in u's taken place, without reference to $\bar{u}$. To answer this question, we have to start back from the "original" form of the equation determining $\bar{p}$, i.e.,

$$\bar{p} = \frac{\sum \sigma m u}{1 - \bar{n}}$$

It follows at once from this equation that

$$\Delta\bar{p} = \frac{\sum \sigma m\,\Delta u}{1 - \bar{n}} \tag{3.5.5}$$

This is the result we were looking for.

Let us now remember that $m\Delta u$ represents the firm's own "partial adjustment" of price to a change in its upc. This comes in the very first step of the price adjustment process discussed in the last section. In fact the change in $\bar{p}$ in the first step of the adjustment process is simply $\sum \sigma m \Delta u$ (This follows at once from (3.4.1) and (3.4.2)). So, the absolute increase in $\bar{p}$ over the whole process is now seen to be a "blow up" of this "first step" increases by the factor $\frac{1}{1-\bar{n}}$ which in turn sums up all the following steps. This establishes the crucial significance of this "first step" — equivalently the firm's own "partial adjustment" — for explaining the *magnitude* of price rise in the system as a whole. The same is to be said about the parameter m, for it is simply the coefficient of the "partial adjustment".

Let us now return to the paradox. Let us first obtain the expression of $\Delta\bar{p}/\bar{p}$ from (3.5.5). We have

$$\frac{\Delta\bar{p}}{\bar{p}} = \frac{\sum \sigma m\,\Delta u}{\sum \sigma m u}. \tag{3.5.6}$$

We take Δu and hence $\Delta\gamma$ as given for all firms. So the focus is on the values of m in the expression $\sum \sigma m \ \Delta u$. Now the defining condition for the "paradox" is $\sum m \ \Delta\gamma > 0$, i.e., there is a *positive correlation between the values of* m *and* $\Delta\gamma$. This is to say the same as that firms with a relatively large cost rise (large $\Delta u/u$) have on the whole large values of m, i.e., of the coefficient of their own price adjustment to the change in cost. It then follows from (3.5.6) that $\Delta\bar{p}/\bar{p}$ has in this case a *larger* value than in the case of "no correlation" for which we already know that $\Delta\bar{p}/\bar{p} = \Delta\bar{u}/\bar{u}$. Since $\Delta\bar{u}/\bar{u}$ is the same in both cases, it must be true that in the first case ("positive correlation") $\Delta\bar{p}/\bar{p} > \Delta\bar{u}/\bar{u}$. This is how the paradox arises.

3.6 The Force of Monoply

In the course of setting out his price theory Kalecki wrote

> "The influence of the emergence of firms representing a substantial share of the output of an industry can be readily understood in the light of the above considerations". (215,II)

This fits in exactly with the programme we are following. Kalecki's "above considerations" stands for the theory so far, argued purely in terms of "competition". The element of monopoly is now introduced into the picture by "firms representing a substantial share of the output of an industry", tacitly abstracted so far.

Let us now have Kalecki's statement of this "influences":

> "Such a firm knows that its price p influences appreciably the average price $\bar{p}$ and that, moreover, the other firms will be pushed in the same direction because their price formation depends upon the average price $\bar{p}$. Thus, the firm can fix its price at a *higher level than would otherwise be the case*. The same game is played by other big firms ..."(215,II)

Clearly, this subsumes the account of the force of monopoly in Kalecki which we gave in the last chapter. The key point is that the firms under reference *know* that their price influences appreciably the average price $\bar{p}$ *and* that $\bar{p}$ enters the pricing of other firms. So, these firms tacitly acquire the role of "price leader" in the market. If they raise their price, they are aware that $\bar{p}$ will rise and hence so will the prices of other firms. Analogous results hold if they reduce their price (Kalecki's "same direction"). The question is what does this "knowledge" or "awareness" lead to - higher price or lower price ("than would otherwise be the case")?

Now, "higher price" means by definition a higher *profit margin*, a "gain" in that sense. But there is also a "gain" to the policy of "lower price", though not as straightforward as this. Suppose big firms do lower their price. Then so must the smaller firms. As a result, the "weaker" among them become *non-viable*, and so get squeezed out of the market, implying a rise in the *market share* of big firms. This

is the "gain" here. But obviously such a policy is based on the price being an active instrument of competition, which is already denied. Hence the policy of "higher price" wins out. This seems to be the full argument behind Kalecki's position on this question. We note in the passing that under this policy the profit margin of smaller firms also rise. So, the policy acts as a "protective umbrella" for weak firms.

Let us now turn to the *formal* side of the matter. A higher price "than would otherwise be the case" means by definition an *upward shift* of the price function $f = mu + n\bar{p}$. Clearly, in the present context this is to be understood in a *comparative* or *cross-sectional* sense, i.e., the proposition under reference is that the price function of a big firm generally lies *above* the price function of a small firm[15] Obviously, this result may be produced by many alternative combinations of differences of the parameters (m, n) between big and small firms, the only logical requirement being that at least one of the parameters is higher for the big firm.

This is basically where Kalecki leaves us. But we can go much further on the basis of our conceptualisation of these parameters given earlier. Surely a big firm has greater independence and lesser dependence in its pricing than a small firm [16]. So it has a higher value of m and lower value of n than the other. What is now *added* is that this difference results in the above "aboveness". This means that the higher value of m of the big firm *more than offsets* the effect of its lower value of n upon price. This proposition sums up all the implications of "bigness" - or of the element of monopoly - in terms of Kalecki's equation for the firm's price on the basis of the analysis so far.

Rest of the section is devoted to a conceptual analysis of the *profit margin of big vs. small firms* on the basis of our interpretation of the parameters. This is our work. There is no textual counterpart of this analysis in Kalecki.

Let us remember that there is no direct representation of profit margin in Kalecki's analytical framework. It is represented by the gross margin $(p-u)/p$ as a "surrogate". Clearly, the behaviour of profit margin is in this sense reflected in the behaviour of the ratio p/u, which we will denote by y. We in fact treat y as the surrogate for

[15]We say "generally" because we have passed here from the policy of "big firms" to across-the-board comparisons. There must be numerous "ifs" and "buts" in this. So, we can talk here only of a general tendency and not a mechanical relation

[16]This is already suggested by Kalecki's arguments. All we are doing here is bringing in the specific weight to these terms given earlier.

profit margin in the present analysis.

Let us divide both sides of Kalecki's equation for a firm's price by u. This gives us the equation

$$y = m + n.(1/z) \tag{3.6.1}$$

where

$$z = u/\bar{p}.$$

We can call (3.6.1) the *profit margin equation* of the firm. Now, given the price function of all firms $\bar{p}$ simply reflects the average cost condition in the industry as given by $\bar{u}$. (See (3.3.4)). So, $z = u/\bar{p}$ gives us the "cost position" of the firm under reference in the whole industry[17]. The lower the value of z the lower the cost position of the firm in the industry, i.e., the greater its *cost-efficiency*.

Now, we understand easily "cost efficiency" as a universal factor in profit margin. The greater the cost-efficiency, the higher the profit margin. This factor is duly recognised in (3.6.1) but only with a "weight" n which comes from the firm's pricing. The reason is this. The cost-efficiency of a firm is understood here in a *relative* sense, relative to cost conditions in the whole industry which in turn is taken to be reflected in the average price $\bar{p}$. So, the factor of the firm's price upon the average price, and that is measured by n. The other factor to enter the profit margin in (3.6.1) comes purely from the firm's pricing.

Surely, "price" is also a universal factor in profit margin. In a way, (3.6.1) simply resolves the profit margin between these two factors, price and cost-efficiency, "price" understood in the sense of "pricing". Let us now bring in the factor of *big vs. small firms*. The interesting thing is that the resolution (or decomposition) works *differently* for the two. This follows solely from our interpretation of the parameters, m and n. For the big firm m is large, n is small. So the *primary* factor in its profit margin is its *own pricing*, the "independence coefficient" of its pricing to be precise. The factor of cost-efficiency is secondary. Opposite is the case of the small firm (small m, large n) etc. This is where cost-efficiency comes of its own.

We have to end with a qualification of this analysis. We have already mentioned that the device of using the "gross margin" as a surrogate for profit margin does raise problems in comparative or cross sectional analysis. The present analysis is a

[17] "Cost" is here understood as prime cost.

case in point. It is entirely possible, and may even be likely, that a big firm has also a higher ratio of overhead to prime costs, i.e., there is a positive correlation between firm-size and the parameter δ defined earlier. So, we cannot straightaway deduce a high profit margin from a high gross margin of a big firm vis-a-vis a small firm.

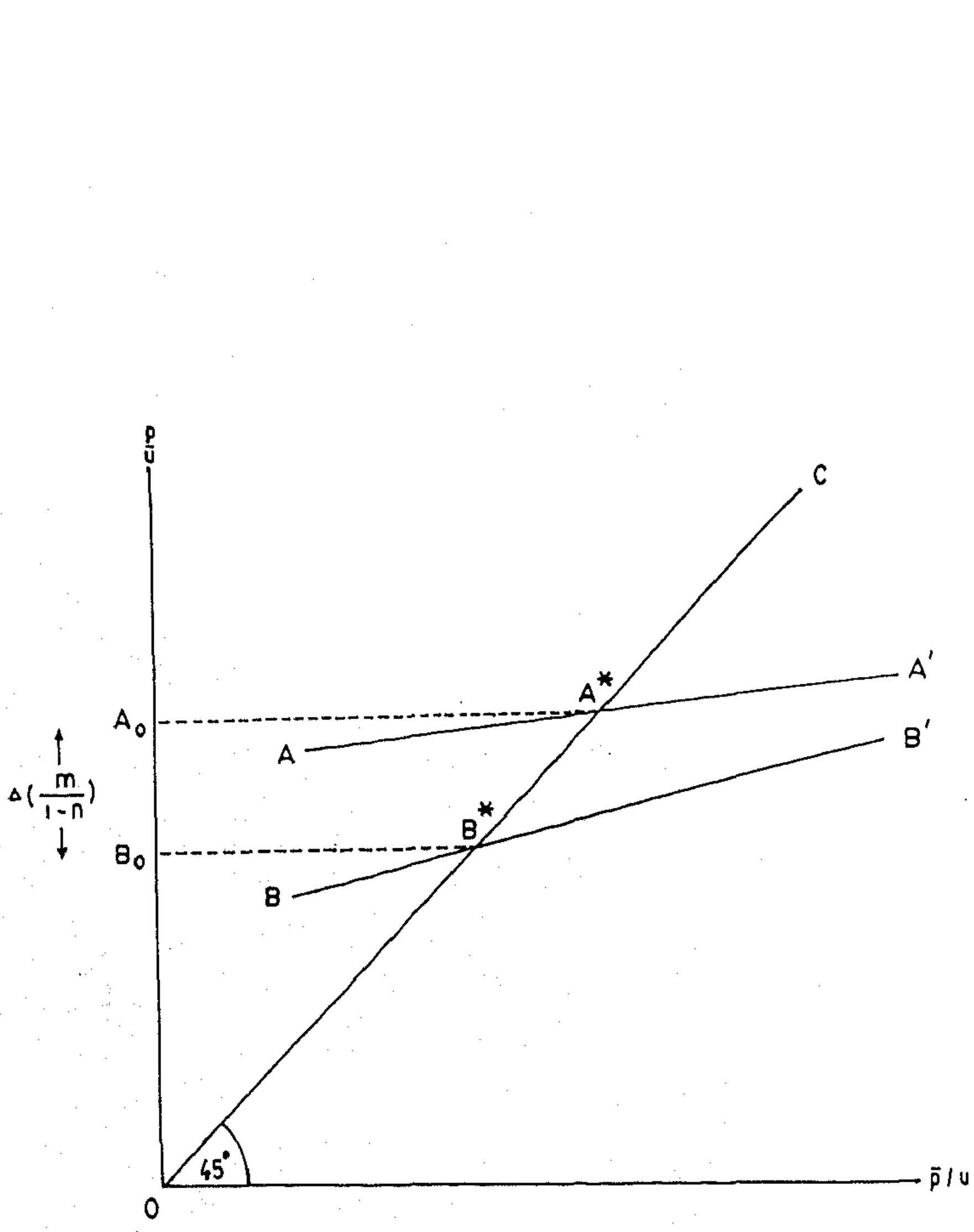

Fig. 2: Effect of Change in Degree of Monopoly
[The higher degree of monopoly reflected in the price function A A' as compared with B B' is measured by the the distance A_0 B_0]

3.7 "Degree of Monopoly"

Let us recall Kalecki's statement that firms with a substantial share of the output of an industry are able to set price "higher than would otherwise be the case". As already noted this means that increase in firms size is generally associated with an upward shift of the price function f and hence also of the *profit margin function* implicitly defined in (3.6.1), for it is simply a monotone transformation of f. Kalecki found a way of giving a neat algebraic expression to this "shift" through a diagrammatic analysis of (3.6.1). He interpreted the shift as a result of "increase in the degree of monopoly" (211, II). Hence the algebraic expression was a measure of this "change". This is how the "degree of monopoly" came into the formal orbit of his analysis. We should really call this the degree of monopoly *as expressed in price formation*, for we have understood the *apriori* from the beginning as a reference to firm *size* in the industry considered and we keep to that all through. Kalecki's procedure was somewhat different. We will come to that later.

Let us now go over this bit of analysis. At the end of this we shall see that the way Kalecki drew his diagram is of a special interest from our point of view. Fig. 1 is essentially a reproduction of Kalecki's diagram (Fig.20;212,II). The straight lines AA' and BB' represent (3.6.1) for two different firms. Since AA' lies above BB', it is understood that the first firm is larger than the second firm. This come to the same as saying the first firm has a *higher degree of monopoly* than the second firm. As of now, the measure of this "difference" is simply *some* measure of the distance between AA' and BB'.

Let us now introduce the 45^o diagonal OC in the diagram. Since $u < 1$ for each firm, OC intersects both AA' and BB'[18]. The respective points of intersection are given by A^* and B^*, and their intercepts on the (p/u) axis are given by A^o and B^o. Obviously, A^o lies above B^o. Kalecki now proposed the distance $A^o\ B^o$ as the relevant measure of the difference in the degree of monopoly enjoyed by the two firms for the purpose of his theory.

The algebraic expression of this measure is obtained as follows. At the point of intersection of the straight line representing (3.6.1) and the 45^o diagonal, we have by

[18]Since we already have the condition $n < \beta$(3.2.5), it is tacitly assumed at this point that $\beta < 1$ for both firms.

definition

$$\frac{p}{u} = m + n\frac{\bar{p}}{u}$$

and

$$\frac{p}{u} = \frac{\bar{p}}{u}$$

Hence

$$\frac{p}{u} = \frac{m}{1-n}$$

So, the distance $A^o\ B^o$ represents simply the difference in the value of $m/(1-n)$ of the two firms (indicated as $\Delta(\frac{m}{1-n})$ in the diagram). From this we have Kalecki's *basic proposition* on the subject :

> "A higher degree of monopoly will be reflected in the increase of $m/(1-n)$ and conversely". (212, II)

This boils down to saying that the ratio $m/(1-n)$ itself is an expression of the firm's degree of monopoly (as expressed in price formation). We can call this Kalecki's "formula" in this respect. We mention that this enables us to translate our summary proposition on the variation of the parameters m and n across firms of different size given earlier into a purely algebraic statement, viz. the pricing of a larger firm is generally characterised by a larger value of m and smaller value of n *such that* the ratio $m/(1-n)$ is also higher.

From here we can pass to Kalecki's "formula" for the degree of monopoly in an industry as a whole. For this purpose Kalecki first defined the "representative firm" in an industry as the firm for which $m = \bar{m}$ and $n = \bar{n}$. Next, he defined the degree of monopoly in an industry to be the samew as the degree of monopoly enjoyed by its representative firm. From these two definitions we have at once the ratio $\bar{m}/(1-\bar{n})$ as the expression of the degree of monopoly in the industry. This was Kalecki's "formula" under reference.

We now call attention to the fact that in our diagram the straight line AA' has a *smaller slope* than BB', *exactly as in Kalecki's diagram* (212, II). Stated in full, this means that AA' has *not only* a higher intercept on the (p/u) axis (as it must) *but also* a smaller slope than BB'. In other words, the "shift" of the profit

margin function comes with this definite "tilt". All this comes to saying simply that the bigger firm (represented by AA') has a *larger* m and *smaller* n in its price equation than the smaller firm — precisely the conclusion we drew from our conceptualisation of these parameters. Thus there *is* some evidence of Kalecki's support of this "conclusion". This is what is of interest about the way Kalecki drew his diagram from our point of view — the "definite tilt" is already there.

The difference of Kalecki's procedure from what we have now given is simply this, that he *defined* "increase in the degree of monopoly" by the shift, BB' to AA'. (212, II). No causal explanation like our "firm size" was given. This left the whole notion hanging in the air. This is our misgiving about the way he went about this term mentioned earlier.

It is to be stated that Kalecki's procedure left him free to discuss freely "causes of changes in the degree of monopoly" or "factors underlying change in the degree of monopoly in the modern capitalist economy", as he did (215-16, II). This was so to say the "plus" side of his procedure.

Let us briefly review Kalecki's "causes" or "factors". The first cause or factor he stated - "first and foremost" he said - was precisely "the emergence of firms representing a substantial share of the output of an industry". (215, II). To be clear, this *increased* the degree of monopoly in his sense of this term. Clearly, this means that what we have taken as a *definitional* relation was treated as a *causal* relation by Kalecki. Substance of the argument remains the same.

Other causes of changes in the degree of monopoly considered by Kalecki were (a) replacement of price-competition by competition in sales-promotion, (b) changes in the power of trade unions and (c) changes in the ratio of overhead costs to prime costs. We have taken (a) to be part of the very framework of the theory. However, nothing is yet said about its quantitative effect upon price or its significance in Kalecki's "formula" for the degree of monopoly. We come to this shortly. We will take up (b) separately at the end of the next chapter. That is where, we feel, it properly belongs. (c) remains a *trouble spot* in Kalecki's analysis. For the time we simply note the following. One, Kalecki clubbed together two very disparate things under this heading, viz. (i) "depression", and (ii) "introduction of techniques which increase capital intensity i.e., technical innovations of this sort (215,II). We will take up (i) separately as consisting a "special corner" of Kalecki's theoryu, which, we

feel, is its proper designation. Thus we are left here only with (a) and (c;ii), i.e. "sales promotion" and "technical innocations" (of the sort mentioned) to discuss. Two, Kalecki's analysis of (c) as "cause of change in the degree of monopoly" was one and the same as his explanation of the "indirect influence of overheads in price formation", mentioned earlier.

Let us now discuss. First, we note that according Kalecki's definition, the *costs* of sales promotion must be counted as *overhead costs*. Thus, we are led here to Kalecki's "indirect influence of overheads in price formation" starting from both the factors under refrence. This said, we must now express a very basic *reservation* against Kalecki. he simply defined a *mechanism* for the "indirect influence", and that consisted of "*tacit agreement* among firms in an insdutry to *protect profits*"(215,II). Surely, this is a very powerful thing. We have no quarell over that. But let us just set this in the present context. We are then presented with the phenomenon of sales promotion and innovation by tacit agreement! Kalecki himself wrote at one point, "Capitalists do many things as a class, but they certainly do not invest as a class". (455, II). Do they advertise and innovate as a class?

However, there is something more to say on this subject. We have already seen that overhead costs are not just left out or ignored in Kaleckis theory of the firm's pricing. It enters the pricing process through the parameter δ and hence α that we introduced into the picture in formalising Kalecki's initial arguments. Similarly sales promotion enters the pricing process through the parameter β. It is true that these parameters are not directly related to "price setting". That falls on the parameters m and n. But we have also argued that the two sets of parameters are *related* between themselves. So, changes in the values of α and β must show up *at some point* in changes in the values of m and n and hence upon the actual setting of price. This, we feel, is the correct way of handling the notion of "indirect influence" in Kalecki's framework.

At the substantive level, we can say that both sales promotion and technical innovation have a "positive" influence upon price relative to upc, i.e., they would both tend to increase the ratio p/u. Whatever be the precise way in which (m, n) are related to (α, β) this must mean an increase in the degree of monopoly in the sense of Kalecki's "formula". Thus we do end with a broad justification of Kalecki's causes of changes in the degree of monopoly under reference. However, we should explicitly qualify that nothing is stated here about the actual *mechanism* by which

the above "effects" or "influence"are obtained. The arguments just given are purely conceptual not operational.

3.8 Special Corner I (Boom)

At the end of his price theory, Kalecki raised the question "whether our formulae[19] hold good in boom" (218, II). However, in the discussion that followed he considered only the more specific question whether "prices *exceed* the level indicated by these formulae". He readily granted this *possibility* but then argued strongly against it being the *actuality*, ending with the statement, "this phenomenon is not frequently encountered even in booms" (218, II). Our objective here is basically to give a connected account of all these points in the background of the theory so far.

Let us take as our reference Kalecki's "formula" in the abbreviated form already given:

$$p = k.u^{20} \tag{3.8.1}$$

So far, it is assumed that u is "stable over the relevant range of output". Let us now understand the "boom" as signifying a state of demand that takes firms to produce *beyond* this "relevant range". That is to say, that they have crossed the "upturn point" of their upc curve and entered the zone of "increasing cost". It follows that in (2.8.1) u is now an *increasing function* of output x, and hence *so in the price* p. So, further rise in demand causes price to rise.

Thus, *formally* speaking, this kind of rise in price (or "rising price") is *already allowed* in (3.8.1). Viewed in terms of the conventional theory, the "increasing cost" ground for rise in price in response to rise in demand is already allowed or conceded. What remains in the open is only the "excess demand" ground for such price rise. This readily accounts for Kalecki's passing from the first to the second question. That he had the phenomenon of "excess demand" in mind is very clear from his statement immediately after the first question :

> "Indeed in such periods the utilisation of equipment *may* reach the point of practical capacity and thus, under the *pressure of demand*, prices *may* exceed the levels indicated by these formulae". (218, II).

[19]Kalecki was obviously referring here both to his formulae equation for a firm's price (3.2.2) and his formula for the industry price (3.3.4).

[20]This is directly the formula for the industry price. But we can also read it as the formula for a firm's price, given that the price of this firm is equal to the average price.

"Pressure of demand" was simply Kalecki's word for "excess demand".

We now come to Kalecki's argument against the possibility granted in this passage (the word "may") being *actually the case*. Let us have the argument before us

> "It seems, however, that as a result of the availability of *reserve capacities* and the possibility of increasing the volume of equipment whenever *bottlenecks* appear, this phenomenon is not frequently encountered even in booms". . (218, II).

Obviously, Kalecki gives here two reasons for his generally negative conclusion ("not frequently encountered ..."). We may conveniently refer to the two in shorthand as (a) "reserve capacities" and (b) "bottlenecks".

Let us now discuss. Let us start from square one. A priori, "boom" is simply the peak reached in the course of business cycles. This by itself says nothing about capacity utilisation. So, it is possible that reserve capacities are still "available" as Kalecki says. So, production is still "elastic" in Kalecki's sense ruling out the phenomenon of "excess demand" or "pressure of demand". This is clear from Kalecki's analysis of "demand and supply given earlier in Ch. 2.

But of course, once the point of "practical capacity" is reached, the reserve capacities are by definition exhausted. This brings us to factor (b)[21]. This is more substantial. Let us recall that Kalecki always stressed the fact that it takes *time*, often considerable time, to "build up" productive capacity. Let us now grant that firms are already operating at their points of practical capacity *and* demand is still rising. *If* it were the case that firms can now increase their output *only* by building up additional capacity, the pressure of demand would simply be mounting over this whole period. There would then be no way of checking the rise in prices (short of *physical* measures).

The point that Kalecki makes through his factor (b) is (a) the practical capacity firms are *typically set by some bottleneck*, and (b) bottlnecks can be removed *more easily*, taking far less time, than capacity expansion. So, in time, it is still ssible for output to be increased with increasing demand — with a much shorter

[21] Thus a notion of *sequence* is implicitly defined by the two factors : *first* (a), *then* (b).

"lag" than otherwise. As a result, the phenomenon of prices rising under the pressure of demand gets contained, and is not generally encountered[22].

[22]Kalecki infact ended by saying that the phenomenon under reference is "generally restricted" to "war and post war developments".

3.9 Special Corner II (Slump)

We have already met the slump or depression in the course of our discussion of the role or relevance of a minimum profit margin in price formation in sec. 1 of this chapter. Let us continue the analysis directly from that point tying up with Kalecki later on.

We said that in the slump the consideration of a minimum profit margin (our ϕ) in price has to be taken over by the more basic consideration of a *minimum profit per unit of time*, say P_{min}. The technical reason for this is that π is defined with respect to a *notional* output, x_n, and the actual output x has now fallen below - perhaps far below - x_n[23]. This means that the lower bound on a firm's price p defined by this consideration, i.e. (3.1.7), is now of little consequence. Even if the condition is satisfied, the firm finds its actual profit "unacceptable" (or "non-viable"). At this point the really basic consideration of P_{min} has to come into play.

Seen in this background, Kalecki's basic point was (implicitly) that there is *no way* of bringing this consideration into play remaining within the framework of firm's pricing in a "strict" sense as tacitly understood so far - each firm pricing *on its own* in some form of competition with each other. It is this "rule" that has to give way now implying a *fundamental modification* of the mode of price formation. The modification is given, in Kalecki's words, by "*tacit agreement* among the firms in an industry to *protect profit*" (215,II). To complete, the only instrument available to firms for this purpose is *price*. Therefore the prices now come to be set by firms in some from of tacit agreement.

We have already met this argument in a different context in Sec.7. Let us now quote the full argument and tie up with it explicitly within the present context.

> "If the level of overheads should rise *considerably* in relation to prime costs, there will necessarily follow a 'squeeze of profits' unless the ratio of proceeds to prime costs is permitted to rise. As a result, there *may* arise a tacit agreement among the firms in an industry to 'protect' profits,

[23] Whether "below" or "far below" depends both upon the specific value of x_n assumed and upon the difference between the actual price set according to (3.2.2) and the lower bound as it defined in (3.1.7)

and consequently to increase prices in relation to unit prime costs. ..... (This) factor is *especially apt to appear* during periods of depression. The situation in such periods is as follows. Aggregate proceeds would fall in the same proportion as prime costs *if* the degree of monopoly remained unchanged. At the same time aggregate overheads by their very nature fall in depression less than prime costs. *This* provides a background for tacit agreement not to reduce prices in the same proportion as prime costs. As a result, there is a *tendency* for the degree of monopoly to rise in the slump ....". (215-16, II).

Let us now discuss. As already noted, this was Kalecki's argument for "an indirect influence of the level of overheads in price formation", to use his own words (210, II). But the argument takes "overheads *in relation to prime costs*" (our A/ux) and not "the *level* of overheads" as the independent variable. Here lies the *catch*, at least so far "depression" is concerned (and that is all that concerns us here) : The rise in (A/ux) in this case is due to the *fall in output*, x, not any rise in the "level" of overheads, A. It is therefore not possible to establish any influence of the level of overheads upon price formation, direct or indirect, by this argument. As already stated, the argument really establishes a conditional influence of *demand* upon price - conditional upon the "slump" - this, simply because output is "demand-determined".

This clarified, let us now go over the whole passage. The key word at the beginning is "considerably". The word clearly implies that the word-in-line "squeeze of profits" does not mean *any* fall in profit. It means a fall of profit *below* critical value where firms come to *feel* the "squeeze" - they themselves are on the point of being squeezed out of existence. Our P_{min} denotes simply this critical value. P_{min} in turn derives its operational significance from the change in the "rules of the game" already stated.

Before proceeding further we repeat a point already made in a different way : The word under reference appears *misplaced*. The argument really starts from a fall in *output* x which is "considerable". To put this in the involved form of a rise in the ratio (A/ux) can be misleading, as already shown. This is of course not to deny that the whole chain of events talked here would not have occurred *had there been* no overhead costs. The "squeeze of profits" is certainly conditional upon there being substantial overheads, but its cause lies elsewhere.

Let us now get on to Kalecki's "period of depression". There are two points to cross here. One is his repeated use of the word "degree of monopoly". Obviously, the word is to be understood in the sense of his "formula" for the degree of monopoly as expressed in price formation. The other is Kalecki's allowance of a fall in costs, both overheads and prime, more the latter. Undoubtedly, the main point Kalecki had in mind here is the fall in his "demand determined prices of raw materials". Since this factor is left out by us we may as well assume away for simplicity the entire "fall in costs". So, Kalecki's "not to reduce prices in the same proportion as prime costs" boils down to the proposition that prices are actually raised. To review, the price rise is due to a rise in the degree of monopoly in the sense of Kalecki's formula, and this in turn is due to the tacit agreements.

This takes us back to something said earlier. (This is a digression). Our procedure of treating the degree of monopoly enjoyed in pricing as rooted in firm size leaves out the *qualitative* aspects of the notion. Surely, tacit agreement among firms means by definition a *slackening* of the forces of competition - a rise in the "degree of monopoly" in this sense. So, the word appears quite appropriate in the present context.

The remaining points are all for "winding up". First, we call attention to the word "may" in the middle of the passage. Kalecki linked this up with the word "tendency" at the end stating (in a footnote) with some emphasis that this was the "basic" tendency, admitting also the counter-tendency to "cut throat competition". (fn.1;216,II). We also note that Kalecki ended the passage by saying that the tendency of the degree of monopoly to rise in the slump is "reversed" in the boom. (Not included in our quotation). This appears a slip. According to his analysis, the boom and the slump are marked alike by the possibility of a rise in (p/u) relative to his price equations for a "given" degree of monopoly, i.e., a rise in the "degree of monopoly" itself.

Finally we come to the word "this" in "*this* provides a background for tacit agreements ...". As we see, *this* is what gives strength to the "tacit agreements", i.e., to the whole argument quoted. Our reading of Kalecki then is this. Surely the fall in demand and output signified by the "slump" causes a "squeeze of profits in the sense understood. Hence the radical step of coming out of "each firm pricing on its own" to "tacit agreements". Prices are raised, profits are protected - to the extent permitted by such steps vis-a-vis the slump actually set or setting in. This is

the valid substance in the whole argument. But then came the red herring : fall in x is by definition a rise in (A/ux) whence the illusory transference of the argument to the general plane of "indirect influences of overheads in price formation" clubbing together other cases.

We have now completed another detailed textual interpretation. Let us now follow up the benchmark notion P_{min} that we had introduced by setting another benchmark, viz. the *output* at which the slump is taken to "set in" - profits *are* "squeezed" in the sense understood - in the forgoing analysis. Again we take (3.8.1) as our reference for Kalecki's price equation under "normal" conditions (prior to the "slump"). Let P denote the actual profit. By definition under normal conditions :

$$\begin{aligned} P &= (p-c)x \\ &= [p-(u+\tfrac{A}{x})]x \\ &= px-(ux+A) \\ &= (p-u)x-A \\ &= (k-1)ux-A \quad from(3.8.1) \end{aligned}$$

So, if x_S denotes the benchmark output under reference then

$$P_{min} = (k-1)\, ux_S - A$$

or

$$x_S = \frac{A+p_{min}}{(k-1)u} \tag{3.9.1}$$

We can now join up with the analysis of the previous section and give an explicit definition of the "normal" range of output in Kalecki's theory. This is the range going from x_S to x_t (the upturn point of the upc curve).

We have now completed our discussion of Kalecki's price theory. Let us give a brief but comprehensive review of the theory by simply placing its two "special corners" (now fully discussed) in the background of the whole theory. Let us start from the *framework*. As noted in the very beginning (sec.3,ch.1) the framework is defined by *embedding a certain mode of price formation* (pricing by firms themselves subject to some form of competition) *within the structure defined by a certain production condition* (underutilisation of capacity). The "theory within" - within this framework - is set out in secs. 1-7 of this chapter. One cardinal feature

of this "theory within" is that there is *no price-response to changes in demand.* (There is only an output response). One way or another it is precisely this proposition that is now seen to give way in the outlying area of the two "special corners" - outside the "normal" range of output - this, on the basis of a *prior stepping out* of the above framework. Viewed in the *total*, the theory now allows for a *conditional influence of demand upon price*, conditional either upon the "boom" or upon the "slump", through a modification of the original mode of price formation in one case (slump) and a relaxation of the original production condition in the other (boom).

Chapter 4

Income Distribution

4.1 Introduction

As noted in chap.1(sec.3) Kalecki addressed the problem of income distribution in a "modified" class framework having "manual workers" on one side and "capitalists and non-manual workers" on the other side. Having the hindsight of the full development of his price theory, we can clearly see the reason for this[1].

First, it is clear from the way Kalecki used the terms "wages" and "salaries" that he took the two to mean respectively the earnings of manual and non-manual workers. With this, Kalecki simply left behind the worker distinction started with and focussed directly on these income categories. Obviously, in this terminology the "relative share of manual workers in national income" stands as the "relative share of wages in national income" (or "wage share" for short).

Next, we recall Kalecki's definition of *prime costs* as "wages and material costs"(210,II).

[1]Let us recall that in his first paper on the subject[6] Kalecki said that he had "two reasons" for adopting the "modified" class framework in the place of the "original". One of these reasons was just termed "theoretical". This is what is stated below (with the stated "hindsight"). The other reason was said to be "statistical". The operative statement was that the "statistics of national income - includes in salaries certain occupations which should *rather be placed under the heading of profits*". Kalecki kept to this view althrough. There are obviously deeper conceptual issues to this, but we do not go into that.

In a footnote to this definition he explicitly wrote "salaries are included in *over head costs*". With this, we have a complete integration of the worker-distinction into the structure of price formation in Kalecki. From the way these two types of cost enter price formation in his theory we can now see at once that if a theory of income distribution were to be erected on the basis of the price theory then it must have "wages" on one side and "profits *and* salaries" on the other side. Stated in technical terms, both profits and salaries are part of the "mark up" in the final form of Kalecki's equation for the industry price (3.3.5) - which was the gateway to his theory of income distribution - while "wages" belong to the "base" of this mark-up[2].

This explains how Kalecki's theory of price formation conditioned the basic structure of his theory of income distribution. How the latter came out of the former - the "turning", or the "basic theory" - is taken up in the next section. That again involves a considerable reorganisation of Kalecki's arguments. To set this out it is necessary to go through the precise *purpose* or *motivation* of Kalecki's theory.

This was set out very explicitly by Kalecki himself in his first paper on the subject. At the end of the first section of the paper, which summarised the basic statistical data that Kalecki had at his disposal at this point, he wrote:

> "As we see on the basis of statistical data, the relative share of manual labour in gross income shows only *small changes both in the long and in the short term.* We shall try to explain this 'law' and to establish conditions under which it is valid".(7,II)

Thus his whole motivation stood at this time as giving a *theoretical explanation of this observed "stability" of the wage share.*

With more statistical data available, kalecki did not hold on so strongly to this empirical point in his later writings([10],[15]). His objective now was to provide a theoretical framework for explaining the *actual* behaviour of wage share over time, whatever it be. Analytically, this boiled down to developing a theoretical framework for explaining the behaviour of the wage share *with respect to changes in national income.* Its actual behaviour over time then fell our simply from time series data

[2]Since we did not ourselves use this term earlier we simply mention that the "mark up" in (3.3.5) is given by the term $[\bar{m}/(1-\bar{n})-1]$.

on national income where it was possible to speak of "long term" and "short term" behaviour in the sense of "trends" and "cycles". This is of no consequence for our purpose.

We shall organise Kalecki's arguments precisely as stated, i.e., around the behaviour of the wage share with respect to changes in national income. the reason why this is a "reorganisation" is this. Kalecki set out his arguments within the format of the problem of *determination* of wage share and so, formally speaking, the motivation or purpose of the theory appeared simply as this "determination". We simply *avoid* this. We do not address anywhere the question of determination in our presentation of the basic theory i.e, in the next section[3]. Nothing of analytical significance is lost thereby. This will become clear from the "review of Kalecki" that we provide in the following section, where we also make clear the reason for our avoiding the notion of "determination" in the present context.

It is necessary to give some further clarification of our work here before we can begin on it. Kalecki built up his theory of income distribution from the level of any given industry (stage one) to "industry" as a whole or the industrial sector of the economy(stage two) and then to the whole economy (stage three). In the first stage he turned his price theory in the direction of income distribution; in the second stage he established his basic "theorem" on income distribution and in the last stage he painstakingly "generalised" the theorem to cover other sectors of the economy. (Both the words "theorem" and "generalisation" are Kalecki's (227,II)).

In our case, the third stage doesn't come in because of our self-imposed boundary of a "purely industrial economy". So, we will be concerned all through with a *simplified version* of Kalecki's theory[4]. The other point to state is that it is no longer necessary to separate out the first two stages of Kalecki's theory once we leave out the question of "determination". So, in the end we build up the whole theory in a *single step* focussing directly upon the "turning". We shall call the end result arrived by this route *Kalecki's fundamental theorem on the relative share of wages in national income* (or his "wage share theorem" for short). Of course this is a simplification of Kalecki's theorem. More importantly, it reflects a different objective or motivations already explained. The two theorems therefore belong rather to *two*

[3]We say "basic theory" for we leave out the element of "wage bargaining" in this section. This is taken up in sec.4.

[4]The "simplification" is removed in Ch.10.

different planes differing in scope as well as view point. The substantial relation between the two theorem is given in sec.3.

4.2 The Basic Theory

We begin with a minor criticism of Kalecki. To go to the notion of "income" and "income distribution" starting from price formation, it is necessary to go through the notion of *value added*, i.e., this is the "link". We note that Kalecki defined this concept as "the value of the product less the cost of materials" (225,II). "Cost of materials" in turn was understood as part of the total prime costs of the firms concerned. Our criticism is that this is not quite true. It means that overhead costs are *part of value added*, as Kalecki himself immediately noted. (Value added, he said, is "equal to the sum of wages, overheads and profits"). But such items as the repair-maintenance cost of plant-machinery are very generally in the nature of overhead costs, but cannot certainly be part of national income originating in the unit under reference.

Having made this criticism, we will now simply lay it aside and proceed with Kalecki. That is to say, we proceed under assumptions that rule out the problem (eg. there are no repair-maintenance costs, or that they behave like prime costs).

We can now begin on the building up of the theory or "model-building". The logical starting point of the theory was price formation in any given industry. Let us write the price equation in the simplified form of (3.1.15):

$$p = k.u, \quad k > 1. \tag{4.2.1}$$

p and u denote respectively the price and unit prime cost for the industry under reference (earlier $\bar{p}$ and $\bar{u}$), while k denotes Kalecki's "formula" for the degree of monopoly in an industry as expressed in price formation.

Let us now turn the theory in the direction of income distribution. Let v, w, z and s denote respectively the value-added per unit of output (more briefly, the unit value-added), wage cost per unit of output (unit wage cost), material cost per unit of output (unit material cost) and the relative share of wages in value-added (the wage-share). By definition,

$$u = w + z \tag{4.2.2}$$

$$v = p - z \tag{4.2.3}$$

$$s = \frac{w}{v}. \tag{4.2.4}$$

This completes the statement of relations of the theory (model equations) at the level of an industry. The macro level is reached through the following definitions of the national income Y and the 'national' wage-bill W:

$$Y = \sum vx \tag{4.2.5}$$

$$W = \sum wx, \tag{4.2.6}$$

The summation is taken over all industries in the economy, the respective outputs or volumes of production of which are denoted x[5].

Finally, let S denote the aggregate wage-share i.e., the relative share of wages in aggregate value-added or national income. By straight forward substitutions it is seen that:

$$S = \sum \lambda s, \tag{4.2.7}$$

where,

$$\lambda = \frac{vx}{\sum vx}$$[6]

Thus, S is a weighted average of s with λ as weights. Obviously, λ defines the relative contribution of different industries to national income = relative share of national income originating in different industries. Kalecki called it the "industrial composition" (226,II). Note, σ and λ are parallel notions. One defines the composition of the output of an industry by firms; the other defines the composition of national income by industries.

This completes the statement of the model. Note, all its equations other than the price equation are purely definitional. This simply confirms the fact that the theory here is a turning of a theory of price formation in the direction of income distribution ("income distribution" in the sense of wage-share).

Like the theory of price formation, the theory here is purely *structural* in nature. The new structural element entering the picture now is the industrial composition, λ. In the theory itself, it plays a role rather similar to γ, the cost shares in an industry. They come in only to define the relevant aggregates. They do not belong to the

[5]As before, subscripts (here the industry subscripts) are omitted, without creating, we hope, any confusion.

[6]$S = \frac{W}{Y} = \frac{1}{Y}\sum wx = \frac{1}{Y}\sum(\frac{w}{v})vx = \frac{1}{Y}\sum s.vx = \sum \frac{vx}{Y}.s = \sum \lambda s.$

"inner structure" which is made up of the market shares and technical relations of production at one level (the "base") and the parameters of the pricing policy of firms (the "superstructure").

We have now completed the "model building" and turn to its *analysis*. The point of enquiry, directly speaking, is the *behaviour* of the wage-share S with respect to *changes in the level of national income* Y. Through this, we proceed to the behaviour of S through *time*.

It is clear from (4.2.5) that there are *two possible sources of variations of* Y, viz. (a) changes in the *unit value-added* v and (b) changes in the *level of production* or *output* x. We will now take up the behaviour of S one by one with respect to *each* of these two sources of variations of Y. Note this defines a purely analytical separation of issues. When we consider (a), the outputs x are taken as given; similarly when we consider (b) the unit value addeds v are assumed given. Interactions are discussed at the end.

Now, v can change either because the price p has changed, or because the unit material cost z has changed (see (4.2.3)). z in turn can change either because of technical change or because of changes in the price of raw materials and the price, any price, can change either because the unit prime cost u has changed or the parameter k has changed (4.2.1). Finally, the unit prime cost can change, apart from the change in the price of raw materials, either because the level of wages has changed or again because of technical changes. It follows from all this that *given* the parameter k *and* the technical relations of production, the *only* source of change in v is the change in the level of wages.

Let us now see how a change in the level of wages, say a rise, may affect the wage-shares, s and S, within the above "givens". Suppose firstly wages have risen in some *particular* industry (or group of industries), *not* in other industries. This causes a less than proportionate rise in the unit prime cost, u, and hence in the product price p of the particular industry, because the unit material cost z has remained unchanged. As a result, there is a *rise* in the wage-share s in this industry, in a *lesser proportion* than the rise in wage. The rise in s leads to a rise in S in proportion to the importance of the industry indicated by λ.

Let us now consider the case of a *general* rise in wages, across all industries. Going back to the particular industry just considered, it is clear that there is now

a rise in the value of z as well, for the prices of raw materials have risen due to the wage rise in industries producing those raw materials. This by itself goes on to *counteract* the rise in the wage-share s just talked. It is clear that if the rise in wage is *uniform* (equi-proportional) across industries, then this "counteraction" is *complete.* This follows simply from the fact that the model is defined by a set of linear equations. As a result, a uniform rise in the level of wages in all industries simply leads to an *equi-proportionate* rise in *all* prices, counteracting completely the above effect. I.e., there is in this case simply *no change* in the wage-share s in *any* industry and *therefore* in the aggregate wage-share.

This is the *central proposition* of the theory, to be presently incorporated in the "fundamental theorem". Before that we give another way of working out this proposition, more in line with the approach of Kalecki.

As already stated, outputs x are now simply given. It follows at once from (4.2.6) that the wage bill W can rise if and only if there has been a rise in the unit wage costs w. Unit wage costs in turn can rise if and only if there has been a rise in the wage-levels because technical relations of production are given. In short, the notion of a "general rise in wages" and a "rise in the national wage bill" are here one and the same.

But a rise in the national wage-bill must by definition be 'distributed' over the different industries. Let us see what this means in terms of the industrial composition λ. By definition,

$$\lambda = \frac{vx}{\sum vx}$$

$$= \frac{(p-z)x}{\sum(p-z)x}.$$

It follows that the rise in wage can cause λ, any λ, to change *only if* it causes the product price p to rise in a proportion *different* from the rise in the unit material cost z in some industry or another (by definition, in two or more industries). This is exactly what is ruled out by the earlier condition of a "uniform" rise in wage. But we need not bring this notion into the present argument. We can say simply that *given* the industrial composition in addition to the earlier "givens" - i.e., given *all* the structural factors present in the theory - there is *no change in the relative share of wages in national income with changes in the wage-bill.*

So much for the behaviour of S with respect to (a). We now turn to (b). We continue with the assumption of *given* structural factors. Let us now remember that unit prime costs u are stable over the relevant range of output. This is true of its components, w and z as well[7]. It follows that changes in the level of production or output x produce *no effect* whatsoever on *any* variable of the model. *Ipso facto*, the wage-shares s and S remain unchanged.

Let us now step a little outside our terms of reference. Changes in the level of production or output are themselves the result of changes in *demand*. Actually, the complete theory here is that changes in demand affect *only* the level of production or output; they do *not* affect prices *either* through the change in output (this is the "stability" assumption just referred) *or* by any independent route (eg. "imbalance of demand and supply"). Because of this, there is a complete separation of *channels* of changes in the level of national income. One is the *channel of demand and output* just talked of. The other is the *channel of wages, costs, prices and value-added* discussed earlier. The first defines changes in national income in "real" terms, the second in "money" terms per se.

Bringing (a) and (b) together, we have what we call Kalecki's fundamental theorem on the relative share of wages in national income - *given the structural factors, there is no change in the aggregate wage share S with changes in the level of national income Y*. In short, S is *independent* of Y. This "independence" in turn is independent of whether changes in Y occur through channel (a) or channel (b).

Turning this proposition around we can say that S is dependent *only* upon the set of structural factors. It is in this sense a *structural constant*[8]. It is convenient to write this proposition as an equation. Let α denote the "structural constant" obtained by appropriate summations in the present context. We can then write:

$$S = \alpha. \tag{4.2.8}$$

We can now consider the behaviour of the aggregate wage share through *time*. It follows at once from the above theorem that it is only "structural changes" (changes in the structural factors) that cause the wage-share to change. It follows that the

[7]Changes in u, w and z follow together from changes in technical relations of production, but these relations are now taken as given.

[8]These are obviously just alternative statements of the same theorem.

wage-share remains *stable* (or relatively stable) *through time* if *either* the structural factors remain stable (or relatively stable) *or* their changes cancel (or broadly cancel) one another in the total. This in one word was Kalecki's theoretical explanation of the observed stability of the wage-share as per the original data-set of reference[9].

[9]Kalecki seems to have later revised his position on this empirical point (229,II). It is evident from what is just stated that this does not matter for the theory itself. The theory appears at this point simply as framework for explaining the actual or observed behaviour of the wage share through time, whatever it be. A similar point with respect to the theory of price formation is already noted.

4.3 Review of Kalecki

We are concerned here with the "final" version of Kalecki's theory of income distribution. This was built up in three successive stages of "determination". In stage one the problem was the determination of the wage share in any given industry, i.e., our s. This was answered by the equation (4.3.1) - "formula" again as Kalecki called it - given below. We give the complete derivation of this equation, which Kalecki did not. By definition

$$
\begin{aligned}
s &= \frac{w}{v} \\
&= \frac{w}{p-z} \text{ from (4.2.3)} \\
&= \frac{w}{k(w+z)-z} \text{ from (4.2.1) and (4.2.2)} \\
&= \frac{w}{kw+(k-1)z} \\
&= \frac{w}{w+(k-1)(w+z)} \\
&= \frac{1}{1+(k-1)(j+1)}, \quad j=\frac{z}{w}
\end{aligned}
\tag{4.3.1}
$$

Kalecki now wrote *first*:

> "The relative share of wages in the value-added (our s) is determined by the degree of monopoly ($= k$) and by the ratio of the materials bill to the wage-bill ($= j$)" (225,II)[10].

and *then*:

[10]Both k and j are Kalecki's notations. But the other notations are not the same as Kalecki's. Our s is Kalecki's w. Kalecki did not introduce any notation for our v, w and z. We also note that Kalecki did not equate k with the degree of monopoly. He wrote "k is *determined by* the degree of monopoly". This is because he had independently defined k has "the ratio of proceeds to prime costs"(225,II).

> "A similar formula to that established for a single industry can now be written for the manufacturing industry as a whole".

This brought him to *stage two* of his work.

The main work here consisted of the following *transformation* of the factor j. For industry as a whole, raw materials come from the primary sector - they are the "raw materials" in Kalecki's sense of the term. Because of this, Kalecki now expressed the factor j as "the ratio of the *prices* of raw materials to unit wage costs". This enabled him to acknowledge the different type of price formation of primary products simply by treating this ratio as a *separate* and *independent* factor in the determination of the wage share under reference (wage-share in the industrial sector as a whole). Simultaneously, the process of aggregation brought him to a recognition of the "industrial composition" as *another factor* in this determination. This way, Kalecki arrived at the proposition that the wage-share in industry is determined by (a) the degree of monopoly, (b) the ratio of prices of raw materials to unit wage costs and (c) the industrial composition (226,II).

This was the "theorem" which he went on to "generalise" to the macro level covering one after another the sectors left out. The *main* sector was the primary sector which we discuss in ch.10. Other sectors can be left out for our purpose. So, we simply give Kalecki's statement of the theorem after the generalisations:

> "It will thus be seen that, broadly speaking, the degree of monopoly, the ratio of prices of raw materials to unit wage costs and industrial composition are the (three) determinants of the relative share of wages in the gross income of the private sector" (227,II).

Since we abstract from the government sector, the notion of "gross income of the private sector" is the same as national income. Since we abstract from the primary sector we have no "raw materials" in Kalecki's sense of the term. So the determinants of the overall wage share (our S) according to this theorem for our case are simply (a) and (c). It is clear that in the present context (a), i.e., the "degree of monopoly" simply covers all the structural factors other than the "industrial composition" (our λ) that we spoke of in connection with what we called kalecki's fundamental wage share theorem. It follows that the substantive contents of the two theorems are

identical (within our simplifications or abstractions). The difference is only in the language. We spoke of the "behaviour" of the wage share in a certain respect, not its "determinations" or "determinants".

It remains to explain why. This is best done from scratch. By "determination" we understood that the "determined" (the dependent variable of the analysis) is determined by the "determinants" (the independent variables) within the "structure" defined by the structural factors (the constants). If we carefully go over the whole sequence of determination we meet in Kalecki in the present context taking careful account of (a) the aggregations involved and (b) the structural factors encountered at each stage, then we see that his statement that the aggregate wage share is determined by the factors as stated boils down at bottom to this statement: the *general level of prices is determined by the general level of wages* (general in the sense of economy-wide).

This is by definition a *one-way relation.* The notion of determination falls to the ground if there is also an *other way relation.* Our point is precisely this. In the real world economy as addressed by Kalecki there *is* a definite *adjustment of wages* (money wages, as talked here) *to changes in the general price level*(in the cost of living index or CLI, to be more precise)[11] We cannot therefore speak of "determination" any longer.

This is what we stated at the outset as our one *non-internal or outside criticism* of Kalecki. He completely ignores the "fact" just mentioned (however see below). The level of wages enters simply as a "given" allthrough his analysis, at all levels (firm, industry and economy). We mention that properly speaking our criticism applies to his determination of the aggregate wage share. This is because at lower levels the CLI appears simply as a "given", in fact as a structural factor, and so there is nothing to quarell with his views on the determination of the wage share (eg. our s) at these levels. It is only at the level of the whole economy that we get to the two-way relation between wages and prices defined respectively through the structure of price formation and the CLI adjustment of wages nullifying the idea of "one way relation" or "determination".

[11]True, this adjustment may be "partial" in more than one sense. This does not affect the logical points we make below. For constructive purpose we simply state that the question for *theory* is always one of abstraction, the *right* abstraction. we fail to see what that can be other than "full" adjustment.

Let us end by setting the above points in a fuller background of Kalecki. This will also enable us to give some further clarifications. First, Kalecki's basic view of wage-determination at all levels was that he took the level of wages as "given" means simply that this whole wage bargaining is placed *outside* the present theory. In fact, this is precisely what gives us the boundary of his "basic theory". Kalecki went on to interpret the two - i.e, take account of the feedback of wage bargaining on price formation and hence income distribution - in a very powerful way. This is precisely our subject in the next section.

Having got "wage bargaining" into the picture, we can give some further clarification of the CLI adjustment of wages. It is possible that this adjustment is secured through the bargaining process itself. The more pervasive phenomenon, we think, is that the adjustment is simply part of the *legal institutional framework* within which the "bargaining" takes place, meaning that no "bargaining" is necessary for this adjustment: it is "automatic" or "apriori"[12].

Let us return once again to Kalecki. Only at one point of his writing do we find him taking account of the CLI adjustment of wages[13]. That was in the context of "hyper-inflation" (pp 94-95,II,[12]). We find this very revealing. We have a purely analytical point in mind. It does not matter for this purpose whether the context is hyper inflation or pure inflation. What is almost definitionally true is that the occasion for CLI adjustment of wages arises in a "felt" sense only in the context of inflation. The analytical point here is that "inflation" may not simply set the "context" for CLI adjustment, this adjustment itself may be an integral part of the very process that generates, or generated, inflation in the first place. Indeed, a moments reflection will show that a system where prices are cost determined and wages are in some sense price determined is inherently liable to wage-price spirals, to inflationary tendencies of a purely "structural" nature[14].

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[12]This is another notion that we have taken from the paper of P.Gajapathy cited earlier

[13]Interestingly, at this point he distinguished precisely the two alternatives we just mentioned

[14]Again we refer to the paper by Gajapathy for a complete model in this respect though his principle of price formation was "classical" (equalisation of rates of profit), far removed from "Kaleckian" in any sense.

4.4 Wage Bargaining

Let us continue with the point that the level of wages is determined by wage bargaining. It is clear from the last section that the actual bargaining can have a more significant effect on wage-shares than what is already allowed only if it *enters* the pricing process in some way or other. The content of this section is essentially to demonstrate that this is precisely what Kalecki's analysis of the effect of the bargaining process carried out by "powerful unions" on the "degree of monopoly" enjoyed by the firms concerned boils down to[15] (216,II). This is why the section serves to conclude our account of Kalecki's theory of price formation as well as theory of income distribution. In fact, we have to see the two theories as "merging together" at this point as distinct from one being "turned into" the other as so far.

Let us start from *square one*. Kalecki in fact assumed a specific *ground* or *basis* of wage bargaining, i.e, of trade union (TU) demand for higher wages. The "ground" was simply that profits are high in some sense (see below). This is why we said earlier that wage bargaining is seen here in a framework of "wages vs. profits".

Let us now come to Kalecki's key proposition on the subject -

> "A high ratio of profits to wages strengthens the bargaining position of trade unions in their demand for wage increases, since higher wages are then compatible with 'reasonable profits' at existing price levels" (216,II).

This can be spelt out as follows.

We start from a situation where the ratio of profits to wages is "high" in some sense. This has already strengthened the bargaining position of TU in its demand for higher wages. Essentially, it demands a share of the high profit, the benchmark for this purpose being its own notion of what constitutes "reasonable profits" for the firm. Note, the benchmark is relative to the bargaining position of TU already achieved. This understood, we can project it back to define also the benchmark for saying that the ratio of profits to wages begun with is "high". Thus the whole argument is rounded off with the notion of "reasonable profit". This is the *new*

[15]Note, the firm concerned is by definition a big firm. This provides the conceptual underpinning to the notion of degree of monopoly in the present context.

element introduced into in the picture now, the significance of which is discussed below.

This brings us to the *second stage* of the analysis, which is concerned with the *effect* of the wage bargaining on the pricing process. We begin here with wages having already risen through the above sort of bargaining, the actual extent of the wage rise depending upon the precise bargaining strength or position of the TU. (This does not come into the further analysis). By definition, this has raised the unit prime cost. The question now is whether the firm can pass on *this* rise in cost to price as earlier, i.e., as per its price equation taken as *given*. The point here is that, if the firm does raise its price as above, then it is essentially back to square one. Profits are again deemed "unreasonable"[16]. Fresh demands are made for raising wages backed again by a stronger bargaining position and so on. From here, we have in a line the "rising tendency of costs", the "adverse effect upon the competitive position of the firm or industry" and the "adoption of a policy of lower profit margin" that Kalecki went on to speak of[17]. The answer to the question just raised is thus *no*. The pricing equation itself is *adjusted* or *modified* reflecting the "policy of lower margins". This means by definition a *downward shift* of the price function, a reduced "degree of monopoly" as per Kalecki's formula. By definition again, the wage-share has now increased *more than* what would have otherwise been the case, more than the rise in the wage share in any particular industry that comes with an "exogenous" rise in the level of wages in that particular industry say due to labour legislation.

Looking back, we can see the essence of this outcome as lying in the firm's perception of a *potential cost-price spiral* lying hidden in its *not* paying heed to the improved bargaining position of TU, with obvious consequences for its "competitive position" in the market as stated. To be aware of the consequences means at bottom that the firm comes to a *compromise*, however tacit, with the TU about what constitutes "reasonable profit", and *keeps within this limit*. This makes it clear

[16]This is not a formal deduction but rather a purposive specification. Since the unit prime cost has risen in a lesser proportion than wages, so has the price. Consequently, there has been *some* fall in profit. It is *assumed* here that the profit is still "unreasonable", which can of course be very well the case.

[17]"If after such increases are granted prices should be raised, this would call forth *new* demands for wage increases. It follows that a high ratio of profits to wages *cannot be maintained* without creating a *tendency towards rising costs*. This *adverse effect upon the competitive position of a firm or an industry* encourages the adoption of a *policy* of lower profit margins" (216,II).

that the new element in the picture is in fact a new element in the *pricing process* of the firm.

Let us to make this explicit. This brings us back to the domain of price formation. Essentially, our objective now is to show how the price theory is brought to a point of conclusion by this "new element".

It is clear that the notion of "reasonable profit" - in the "agreed" sense just understood - comes to define a *purely internal constraint* upon the firm's use of price as instrument of profit. As such, it defines another condition for the firm's pricing to satisfy, besides those of the "competitive barrier" and the "minimum acceptable profit margin". Thus we now have a more complete statement of the internal structure of the firm's pricing.

Let us give a formalisation of this new condition. For this, it is necessary to pass from the notion of "reasonable profit" stated in the absolute to a notion of a reasonable profit *margin* in price. The basic logic of the transformation is already stated. It is to be clearly stated however that this is a more circumspect step now. TU demands for higher wages because profits are high gives a role to the "state of the market" per se in income distribution. This is left out in the present argument[18].

Subject to this qualification, the firm is now seen to impose upon itself the condition that its profit margin *does not exceed* a "reasonable" level, for otherwise there is a trigger-off of the costly bargaining process which it seeks to avoid. Stated formally, this means

$$p \leq (1+\rho)u \tag{4.4.1}$$

where ρ is a parameter implicitly defined by the "reasonable profit margin" just as the parameter α is implicitly defined by the "minimum acceptable profit margin". We can call (4.3.1) the *wage bargaining condition* on the firm's pricing.

Clearly, this condition defines an *alternative* upper bound or limit upon the firm's price, alternative to the limit defined by the condition of the competitive barrier, equation (3.1.3)[19]. At any given time, one of the two conditions must be *redundant*,

[18]To spell out, improvements in the state of the market lead to a greater rise in profits than wages because of the factor of given overheads. The ratio of profits to wages therefore rises "strengthening the bargaining position of TUs in their demand for higher wages". In addition, there is also the factor of stronger bargaining position arising out of the fact of lesser unemployment. All this is left out here.

[19]Beginning with this point, the rest of this argument is essentially a follow up of some points made

i.e., one condition makes the other redundant. It can be argued from *both* ends that the bargaining condition makes the condition of competitive barrier redundant in the *big* firm where alone it is really defined. This suggests in turn a virtual *internalisation* of the pricing process of such firms - it is set between the two limits of a reasonable profit margin and minimum acceptable profit margin[20]. However, this is to argue purely in terms of the limits or constraints upon the pricing. In the pricing formula itself, the consideration of competitive position has a permanent status. This was also the end argument in Kalecki - "this adverse effect upon the competitive position of a firm or an industry encourages the adoption of a policy of lower profit margins". Thus, the *actual* pricing is decided between *inside* and *outside* factors as before.

To proceed further, it is not possible to *formally* link the actual price and a constraint upon price as just defined. (This is a point met earlier). Nevertheless, we can give a heuristic argument to support the conclusion just reached. Essentially, the argument is that the imposition of a new condition or constraint upon pricing must have an effect upon the price itself, given that the condition is "significant" in the a priori sense. But this *is* the case here with the big firm, *given* that it faces a *strong* union. So, its price equation must in fact be altered, and that must mean a *lower* value of the m-coefficient ("than would otherwise be the case"), and hence also of the "degree of monopoly" as per Kalecki's formula.

It remains to conclude on the theory of *income distribution*. So far, the theory is that the aggregate wage-share is determined fundamentally by the degree of monopoly, whether at the firm level or the industry level or the economy level[21]. Let us now bring in the factor of wage bargaining. Kalecki himself subsumed this factor or rather the TU strength backing this factor under his term "degree of monopoly" in the sense in which he used it (the "formula"). This rested on his analysis of "causes of changes in degree of monopoly". We have just upheld the operational content of this analysis so far as the present "cause" is concerned.

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earlier [redacted] in terms of the present subject matter.

[20]We note in the passing that *another* aspect of the problem of *viability* is opened up here. The problem is taken up at the end of the section.

[21]In this statement we have singled out the degree of monopoly as the "fundamental factor" in the determination of the wage share. This rests on the fact that the other factors formally met in the theory are *either* subsumed under this factor *or* simply procedural data required for the purpose of aggregation.

However, this is purely formal. Conceptually, it seems better to us to reckon TU strength as a *separate* factor from the "degree of monopoly" in the process of determination of wage-shares. This is not to say that this factor works *independently* upon income distribution. It works through price formation, on the critical front of "competitive position". This is the theory here. In view of this, we can now sum up the theory afresh as saying that the wage-share is determined fundamentally by the degree of monopoly enjoyed by firms *as conditioned by the purely internal factor of TU strength.*

Now, the bargaining strength of TU is certainly a *structural factor* - a key structural factor of the modern capitalist economy. It follows that the analytical substance of the theory - its fundamental theorem on the relative share of wages in national income - is left unaffected. The aggregate wage-share S remains a structural constant in the sense earlier. It is determined by a set of purely structural factors, now inclusive of TU strength.

However, all this is still a statement from the *formal* standpoint. Deeper down, there is a significant *reopening* of the theory at this point. Starting back from the "basic theory" when *higher wages are passed on to price; profits are protected.* This is made water-tight by assuming unchanged composition. The wage-share is then simply independent of the level of wages. So is the profit-share. Enter now the factor of wage bargaining. Grant a genuine increase in TU strength. The rise in the level of wages then *does* lead to a rise in the wage-share - *with* or *without* a rise in price. This depends upon the agreement regarding "reasonable profits", at what level precisely profits are now considered "reasonable" compared to the earlier agreement. Thus depending upon its *source*, the effect of a rise in wages is either upon price or upon profits - no change in relative shares in one case, exactly balancing rise in wage-share and fall in profit-share in the other case.

Cutting across all differences in substance, this is exactly what Ricardo said[22].

We end by returning to the problem of viability mentioned earlier. The problem

[22] "A rise in wages, from an alteration in the value of money, produces a general effect on price, and *for that reason it produces no real effect whatever on profits.* On the contrary, a rise of wages, from the circumstance of the labourer being more liberally rewarded, or from a difficulty of procuring the necessaries on which wages are expended, does not, except in some instances, produce the effect of raising price, but has a great effect in lowering profits."(p.31,[30]). We acknowledge our debt to the unpublished Ph.D thesis of P.Gajapathy[22] for our understanding of this range of issues.

arises if the union's idea of "reasonable" profit, held firm, is "unacceptable" to the firm (in the sense of its minimum acceptable profit margin at the existing level of production). Clearly, the "reasonable profit" is then *not* "agreed". There appears then to be no way of avoiding the cost-price spiral spoken. The theory becomes again one of "structural inflation". Let us end by simply reiterating that in Kalecki's theory it is assumed that there is an agreed notion of "reasonable profit" between the firm and the TU.

Part II

Macro Theory

Chapter 5

Framework

As noted at the beginning, the framework of Kalecki's macro theory was built around simply two "facts" coming in a line - the "classes" (capitalists and workers) and the "worker assumption" (they do not save). Let us proceed straight to the question - how were the two *brought together*, in what *framework*?

This is a delicate question. We have to distinguish between what *directly meets the eye* and what *lies behind.* The first is straightforward. Kalecki brought the two together in the *framework of national income accounting*, the "balance sheet of gross national product", to use his words (239,II). This was his *principal tool of analysis* in macro theory all through. The theory itself was developed by a systematic analysis of both sides of the accounting or balance sheet, i.e., the so called "income side" and "expenditure side".

Let us now go behind. This has to be little round about. First, we recall Kalecki's fundamental theorem on profits - *workers spend what they earn, capitalists earn what they spend.* Obviously, the first part of the statement is simply a restatement of the worker assumption. The second part gives the *conclusion*, the theorem *proper.*

We have already mentioned that Kalecki gave a clear account of this theorem in his first seminal paper on business cycles [2]. This is the *key statement* for our purpose here -

> "If some capitalists *spend* money, either on investment or on consumption goods, their money *passes* to other capitalists in the form of profits.

> Investment or consumption of some capitalists *creates* profits for others.... Thus capitalists, as a whole, *determine* their own profits by the extent of their investment and personal consumption." (79,I).

There is no formal derivation or "proof" in this passage. Such was not Kalecki's objective here. The objective was solely to show how the above mentioned "conclusion" *comes about in actuality* - by what *process*? After this, all we have to say is that this is the process of *circular flow of earning and spending going on in the economy or society as a whole.* No other way would Kalecki be talking of the "*money-spending*" *of some capitalists* "passing" *to* other capitalists as profit.

This is what lies behind, the "underlying plane of his arguments". Our objective here -in this part of the thesis - is then to see his whole macro theory unfold on this plane. This means a very comprehensive reorganisation of Kalecki's arguments,, for he never gave a systematic account of the theory on this plane. (Enter the tool of "national income accounting"). Our objective is precisely that. (Exit this "tool").

This is not to rule "national income accounting" out of court or even belittle its significance in the present context. The point is that it simply records the outcomes of the "circular flow" in a certain way. As such, it simply drops out of the circular flow, as we shall in fact explicitly see (sec.3, chap.6). Thereafter we can always use it as a convenient tool analysis or a "short cut". In this procedure the "coming out" of national income accounting out of the underlying *process*, i.e., the circular flow, is always kept in mind. We can always step back to get a proper process view of things discussed. This is not possible if one *starts* from national income accounting where the "process" has already dropped out of the scene. Any process-view of things here can only be a make-shift arrangement, not something "fundamental". This is the essential difference between the two approaches.

Let us go back to Kalecki's passage. He first talks purely descriptively of some capitalists "spending money", this money "passing to " other capitalists as profits. The *causal* idea is mooted with word "creation" - "investment or consumption of some capitalists *creates* profits for others". Finally he talks of *determination* - "capitalists as a whole *determine* their own profits by the extent of their investment and personal consumption". This whole structure of ideas is built into the simple statement, *capitalists earn what they spend.*

Let us make this explicit by breaking down the statement into two constituent parts. The statement asserts that capitalists earnings or profits are (a) *equal to* and (b) *determined by* the sum total of capitalists spending. (a) is a *pure relation of the circular flow.* (b) ascribes a *direction of determination* within this "pure relation". We will find it convenient to refer to (a) as Kalecki's profit *equation* as distinct from his profit theorem which is made up of (a) and (b) together.

We have now completed one part of our work in this chapter. The next part is concerned with the criticism of the conventional structure of economic theory implicit in Kalecki's arguments here, what we have been calling his "points of departure" from this framework. After this we shall take a look at his framework in the operational sense of "framing" the problems addressed in the macro theory.

The circular flow is a pure macro notion, notion defined for an economy as a whole. Arguments in respect of it are by definition "pure macro arguments" as we already said in (ch.1 sec.3). The conventional framework of economic theory makes no room for such "pure macro propositions". This is the essential point of criticism implicit in Kalecki's macro theory.

Kalecki was in fact quite explicit on this point. Just before the passage we have quoted, he wrote:

> "The conclusion that the increase in capitalist consumption in turn increases their profits contradicts the common conviction that the more is consumed, the less is saved. This approach, *which is correct with regard to a single capitalist, does not apply to the capitalist class as a whole*". (79,I)

This is a criticism of macro theory understood as theory arrived or obtained "by aggregation" (aggregation of so called micro relations) as distinct from theory "of aggregates" as such (entailed by the just said pure macro arguments). Propositions arrived simply by aggregation are bound by what is already argued about the units aggregated. If this were all that is there in macroeconomics, then what is true of the units (Kalecki's "single capitalist") would also be true of all units taken together ("capitalists as a whole"). This is explicitly denied in this passage. What is true of "single capitalist" is not necessarily true of "capitalists as a whole". Thus, room is

made for propositions which are true *in the aggregate* regardless of happenings in "units" as such.

Let us link this up with some clarification of the concepts of "capitalists' spending" and "workers spending" in Kalecki's macro theory. The basic point to state is that "capitalists spending" covers not only capitalists' spending on consumption, which is their "personal" or "household" expenditure, but also the *investment expenditure of firms*. The ground for this is simply that firms are *owned and controlled by capitalists*. We can also say that "investment" is considered capitalists' expenditure because it is *decided* by capitalists. Workers have no say in it. Therefore "workers expenditure" is simply their expenditure on consumption.

Let us now point out that we have already avoided a *trap* here - trap set by the conventional framework of economic theory. Off hand, it may appear that "investment" is spoken as capitalists spending - as "their" investment (see first passage) - because the assumption here is that capitalists alone *save* and *hence* invest. The "trap" is to be boxed in this notion of "investment of savings". It is to be very clearly stated that there is *no* such notion in Kalecki. The notion of investment is *real* investment, as undertaken in firms - precisely what is expressed by the term "investment goods" in Kalecki's passage. The term is perhaps a little awkward. But the meaning is clear.

Let us now link up with the earlier point. The notion of "investment of savings" is defined only at the *individual* level (single firm/capitalist). To remain boxed in this notion is to remain boxed in the understanding of macro theory as theory "by aggregation". This is now laid aside. By the same token the proposition that investment is decided by capitalists says *nothing* about "savings", who saves what, in what form and so on.

Let us now come to the "framing" of problems in Kalecki's macro theory. This is obtained very simply by putting the notion of circular flow of earning and spendings within Kalecki's class-framework. Obviously, this gets us to the four elements, workers' earnings and spendings, and capitalists earnings and spendings . (We can also put this up as a 2X2 matrix). Careful reading shows that the *determination* of each of these four variables was addressed in some way or other in Kalecki's macro theory. We can say that they give us the complete structure of problems addressed in the theory.

Let us give some clarification of Kalecki's theory in this respect. For this purpose, we arrange the above four determinations as the determination of (a) workers' spending, (b) capitalists' earnings, (c) capitalists' spending and (d) workers' earnings. Obviously, the determination of (a) is given straight by Kalecki's assumption that workers spend what they earn. The determination of (b) is then given by Kalecki's profit theorem. We now note that in proving this theorem Kalecki had to address the question of determination of (c). This explains the order of determination of (a)-(c) in Kalecki's structure of determinations.

Let us now recall the distinction between Kalecki's macro theory *per se* and his macro theory as a whole (see ch.1, sec.3). The former is obtained *prior* to the integration of his price theory-turned-distribution theory into the framework of his macro theory; the later is obtained *through* this integration. The point to state now is that the determination of (a) - (c) fall within the scope of his macro theory *per se*. It is only the determination of (d) that takes to his macro theory *as a whole*. Thus we have a clear "vertical" divisioning of the subject matter with the determination of (a)-(c) falling on one side and the determination of (a) falling on the other.

But what about the determination of *national income*, which we said was the "end problem" of the whole theory? This is another delicate question for us. Of course once we have the determination of (b) and (d), we also have the determination of national income as a whole. There is nothing "delicate" about this. That lies elsewhere.

When we say that the determination of national income falls out of the determination of (b) and (d), we make it a *by-product* of these determinations. We do not give it a status of its own. When on the other hand we speak of the determination of national income as the "end-problem" of the whole theory, we make the whole structure or matrix of problems just talked, simply the *means* or *inputs* for solving the end problem. These problems are not given any status of its own . Which way to think? This is the delicate question here, a question of motivation and orientation.

It is true that Kalecki himself leads one straight to second way. To him determination of national income was simply the gateway to pass to the bigger subject of "dynamics of the capitalist economy" - all the way to his "central problem of the political economy of capitalism" - from the subject matter covered here. But this is simply to be back to Kalecki's "tight theoretical structure". But our object has been

(and is) to move away from this, loosen out the tight theoretical structure, open up or reopen things from within, proceed to "new horizons". It is therefore necessary to take a fresh look at the question.

To proceed further is give our *whole reading* of Kalecki for the purpose off this work. The reading is that there is a "central problem" within the subject matter we study. This is what renders the "theory" studied here a "whole" unto itself as distinct from a first or beginning part of the theory of dynamics of the capitalist economy. We state this central problem as the problem of *determination of class-incomes vis a vis the determination of national income as a whole.*

The earlier "end problem" is now explicitly recognised (given a status of its own) but only within a certain structure. This "structure" comes from the matrix of problems talked above, but only with a certain focus. That focus is unequivocally on "income", given the class framework. This way we are led ultimately to a complete *reorientation* of macro theory in the direction of a theory of income distribution conceived in the broader terms of principles governing the income of different classes - "governed" in what form and structure, in relation to one another and to national income as a whole, being all left in the open to these "principles". The *unique* thing about Kalecki in the whole of history of economic thought is that he leads us all the way up to such conception of macro economics even though he himself did not define or formulate it. Rest of the thesis is governed by this perception of our subject matter, Kalecki's macro system.

Let us now end the chapter. We have spoken of a vertical divisioning of our subject matter. There is also a horizontal divisioning which also is already defined though we did not use this term. One side of this decision is given by the *pure relation of the circular flow* (under Kalecki's assumptions). The other side is given by the *direction of determinations* within these relations (again under Kalecki's assumptions). This is what governs our organization of the subject matter in the following chapters, implying a complete reorganization of Kalecki's arguments as stated. The basic content of Kalecki's theory on these two planes are covered in the next two chapters. It will be seen later that there is a certain incompleteness in this programme of work. This is completed in chapter 8. We also point out that because we give precedence to the horizontal division of the subject matter, we meet its line of vertical division, i.e., the integration of Kalecki's price-cum-distribution theory, *twice over* - once on the plane of the above pure "relations"(ch.6,sec.2) and again

on the plane of "directions of determination" (ch.7,sec.2).

Chapter 6

The Circular Flow

6.1 The Profit Equation

Let us begin with a basic clarification. To make an argument out of a circular flow, it is necessary to *cut into* the circular flow at some chosen point. Which point is chosen is not explained thereby. It remains a "given" in the argument.

Let us now turn to Kalecki's statement of the circular flow: "If some capitalists spend money on either investment goods or consumption goods, their money passes ...". Clearly, Kalecki was cutting into the circular flow *at the point of capitalists' spending* - at the point, to put the matter more picturesquely, where capitalists (somehow collected together!) are seen to spend their money buying these goods. As just stated, this "entry-point" is left unexplained. This in fact puts the matter in a certain perspective. The explanation under reference comes through Kalecki's arguments on part (b) of the profit theorem. We are concerned here only with part (a) of the theorem.

A second clarification (purely verbal) may also help. It makes no difference in the present context whether we speak in terms of "some capitalists ... other capitalists" as in the line just quoted or in terms of "all capitalists together" as in the statement of the theorem. So, we simply pass from one to the other according to the context or convenience.

Now, our objective in this section is simply to "spell out" the above circular flow

argument of Kalecki. Kalecki gives us a "whole". He asserts that the money spent by some capitalists on consumption and investment goods "passes to other capitalists *in the form of profits*". But surely the money passes *in the first place* to firms producing these goods as *sale-proceeds*. Profits are simply *part* of sale-proceeds. Our object is to go, if possible, from this "profits" to the "profits" talked by Kalecki, equaling the full amount spent - from this "first view" of profits to its "whole view" in Kalecki which is nothing but his profit equation.

Let X denote the money spent by capitalists (all capitalists) on consumption and investment goods. Let us now see this as *sale-proceeds* of firms producing these goods. Let Z_0 denote the sale-proceeds. By definition,

$$Z_0 = X$$

Now the *profit made* in any sale-proceeds is simply what is left in the sale-proceeds after meeting or deducting the *costs incurred*. So, for the sale-proceeds, Z_0, we have

$$P_0 = Z_0 - C_0$$

where P_0 and C_0 denote respectively the profits made and costs incurred in the sale-proceeds, Z_0. This P_0 defines the "first view" of profits just talked. The "whole view" is obtained through the process described below.

It is assumed that costs incurred by firms consist of (a) cost of purchase of goods from other firms (including so called "services") - all goods actually bought by firms *other than* Kalecki's "investment goods" and (b) payment of wages and salaries. We now note that (a) is nothing but the other side of the sale-proceeds of firms producing these goods. So, this money - the money spent by firms (all firms together) on (a) - *passes back to firms themselves as sale-proceeds.*

What about (b)? This money passes to workers, not firms. But workers spend what they earn - spend by definition on the purchase of so called "wage-goods". Thus, this money *too* passes back to firms as sale-proceeds. In sum, the whole of costs incurred by firms *reappear* as sale-proceeds. This is the essence of the process under reference.

Let us get back to C_0. By the arguments just given, C_0 creates (to use the word of Kalecki) an equal amount of sale-proceeds. This is *fresh* sale-proceeds, not to be

confused with Z_0. Let us denote it by Z_1. By definition,

$$Z_1 = C_0.$$

But Z_1 again divides between one part, profits made (P_1) and another, costs incurred (C_1), where C_1 again creates fresh sale-proceeds (Z_2) and so on. This is the "process".

We note that going by Kalecki's words (see complete passage quoted in chap.5) this is to be called the process of *creation of profits*. What we have just shown is that it is the process of *creation of sale-proceeds in the first place, then of profits as falling out of sale-proceeds*. This clarified, we can now get to the "total view" of profits in the process, which is obtained simply by cumulating or totaling the profits over the whole sequence. The question is whether this "total view" is what Kalecki says.

Let us not hasten. Let us consider first the profits "created" in *the first two steps* of the sequence. By definition,

$$P_0 = Z_0 - C_0$$

and

$$P_1 = Z_1 - C_1.$$

But

$$Z_1 = C_0.$$

So, if we add up both sides of the first two equations, we have simply the total, $P_0 + P_1$, on the left hand side, but on the right hand side, the terms $(-C_0)$ and Z_1 *cancel out* leaving the total as $Z_0 - C_1$. Such "cancellation" is the hall-mark of the *circular* flow. Precisely because the process describes a circular flow, we find things canceling out *on the way* as we move down the process. The cancellations go on all the way. Our object is to see what this amounts to so far as the creation of profits is concerned.

Let us first put together the process as a whole. Formally, the process is defined by the following equations:

$$Z_0 = X \tag{6.1.1}$$

$$Z_k = P_k + C_k \tag{6.1.2}$$

$$Z_{k+1} = C_k, \quad k = 0, 1, 2, \ldots \tag{6.1.3}$$

Let us spend a little time on these equations. Our "process" is the process of creation of sale-proceeds by spendings. The fact of spendings creating sale-proceeds is directly represented in both (6.1.1) and (6.1.3). (6.1.1) seemingly "initiates" the process, but this is only a reflection of the fact that *we* have cut into the circular flow at the point of capitalists' spending. There is no "initiation" of the circular flow as such. (6.1.3) expresses the "reappearance" of costs incurred by firms as sale-proceeds. As already seen, this is the very essence of the process. We may therefore call (6.1.1) the *process generating equation.* (6.1.2) stands on a different footing. It is defined entirely *within* sale-proceeds, which it simply divides into two parts. A succinct way of putting this difference is that while (6.1.1) and (6.1.3) express a "two-sided" view of things, (6.1.2) expresses a "one-sided" view.

Let us now address the main question. Let us convert (6.1.2) into an equation for profit by writing it as:

$$P_k = Z_k - C_k, \quad k = 0, 1, 2, \cdots$$

Now, for $k = 1, 2, \ldots$, we can substitute Z_k by C_{k-1} and write

$$P_k = C_{k-1} - C_k \quad from (6.1.3)$$

But for $k = 0$, we have to write simply

$$P_0 = Z_0 - C_0.$$

Let us now write down the equations in order and add up:

$$\begin{aligned} P_0 &= Z_0 - C_0 \\ P_1 &= C_0 - C_1 \\ P_2 &= C_1 - C_2 \\ \ldots &\quad \ldots \quad \ldots \end{aligned}$$

If we add both sides of the equation, we see the "cancellations" going all the way. We get the total profits, $P = P_1 + P_2 + \cdots$ on the left hand side, but on the right

hand side, we are left only with the "original" sale-proceeds, Z_0. All other terms cancel out. But this "original" sale-proceeds is nothing but the other side of the "original" spendings, the spending of capitalists, X. Put together, we are simply back at Kalecki's "total view" of profits or his profit equation.

Let us set down the results formally. Adding both sides of the above set of equations, we have

$$P = Z_0. \tag{6.1.4}$$

From (6.1.1) and (6.1.4) we have

$$P = X. \tag{6.1.5}$$

We have now completed the task we had set before ourselves. We have spelt out the process of creation of profits talked by Kalecki and seen his profit equation drop out of it. Starting from capitalists' spending as a whole, X, we have ended up with their earnings as a whole, P, traversing purely along this process. This completes the "circle". We have located so to say a circular flow of *capitalists'* income and expenditure *within* the circular flow as a whole.

One last point. We said at the beginning that there is no "initiation" of the circular flow. Neither is there any "termination". Neither does circular flow *begin* with capitalists spending nor does it *end* with their earnings, or earnings being created. Everything goes on. In this extended frame we cannot stop short at the point we have reached. We cannot just talk of capitalists spending as "entry point" to the circular flow. We have to talk of the spending of *profits* created by the expenditure in the ongoing circular flow. Kalecki himself came to this point - the "spending of profits" as distinct from "capitalists spending" - by way of an enquiry into the the *methodological significance* of the profit equation (the "problem of *interpreting* the equation" to use his words (240,II)). This in turn brought him to the very *source* or *origin* of business cycles. To follow Kalecki on this point is therefore to place what we study of Kalecki in the thesis in the wider perspectives of his total subject matter of capitalist dynamics. We come to all of this in the last section of this chapter.

6.2 Integration of the Theory of Price Formation and Income Distribution into the Macro Theory

In this section we simply *continue* with the arguments of the last section to the point of integration of Kalecki's price and income distribution theory into the macro theory. For this purpose, we will *simplify* the price and distribution theory in one respect stated a little later. First, we project our analysis vis-a-vis Kalecki's own account of this "integration" as set out in our basic text of reference [10].

The first point to be stated is that Kalecki took up this subject matter immediately after "proving" his profit theorem - as a *sequel* to or rather *outgrowth* of the same arguments. The idea of "continuity" is thus clear. This is precisely what we want to highlight. We in fact show that the essential continuity runs in terms of pure relations of the circular flow. The notion of "determination" strictly speaking does not come into this though we meet this word in Kalecki's arguments. Thus out essential reference remains the profit equation or part (a) of the profit theorem, not the theorem as a whole.

Secondly, Kalecki set out the integration in the framework of "Marxian schemes of reproduction" (his favourite "tool") - which, he said, was "useful for understanding the problems concerned" (240,II). We do not ourselves use this tool, but there is no problem in fitting Kalecki's analysis into our framework or scheme of the process of creation of sale proceeds. This is explicitly shown at the end of the section.

Finally, Kalecki set out the integration starting off directly from "income distribution". He in fact *suppressed* all references to price formation in this analysis. Our procedure will be quite the reverse of this. We will start off directly from price formation. This is what fits directly into our scheme of "sale proceeds" and "costs incurred". It is not necessary to make any explicit reference to income distribution in this programme.

Let us now state the simplification in our analysis. In Kalecki's price theory, prices are formed out of *prime* costs. We do not have this notion in the present scheme. Our "costs incurred" are *total* costs covering both prime costs and overhead costs - given that these are all costs *incurred* or *actual* costs. (This is to be seen in

the background of the fact that no notion of *change* in output is introduced in this scheme and so distinctions defined with respect to this factor fall by the way). To avoid problems of interpretation, *we will now abstract from overhead costs.* In other words, we assume that our costs incurred are all prime costs, on the basis of which prices are formed. This is the "simplification".

Let us now give an internal motivation for the problems of this section. This will make clear the nature of continuity between the problems of the last section and this section. Our scheme has consisted simply of defining a *process of creation of sale-proceeds* implicit in Kalecki's circular flow argument. But this has given us an equation *only of total profits, not of total sale-proceeds.* Let us now tackle this question.

Let Z and C denote respectively the total sale-proceeds and total costs incurred over the process as a whole, $Z = Z_0 + Z_1 + \cdots$ and $C = C_0 + C_1 + \cdots$. (Note, the total profits, $P_0 + P_1 + \cdots$, is already denoted P). Now, going back to our "process" (6.1.1) - (6.1.3), we at once have from (6.1.2):

$$Z = P + C. \tag{6.2.1}$$

It is easily seen that even if one were to argue through the other equations of the process, one is back simply to this equation, i.e., this is the *only* equation for Z that can be established on the basis of the process under reference. But, like (6.1.2), this equation expresses a purely "one-sided" view of things. Nothing of the "creation" of sale-proceeds comes into it.

It follows that to arrive at an expression of Z reflecting this "creation" - to obtain an equation relating Z to the "other side" - it is necessary to bring *fresh data* into the problem and thus extend the framework of analysis. This is the motivation. We now take the "fresh data" to be provided by *Kalecki's equation for the price* (the "average price") *in individual industries*, subject to the simplification already stated.

We can now begin the analysis. We have to introduce some fresh notations. Let V and U denote respectively the *sale-proceeds* and *costs incurred* (= prime costs) in individual industries. (The industry subscript is omitted). From the price equation just referred, we have the following equation for the sale-proceeds of the industries:

$$V = kU,\ k > 1 \tag{6.2.2}$$

where, to recall, k is a parameter reflecting the *degree of monopoly*, same as the markup of unit prime costs in the formation of the industry price.

Now, each of the sale-proceeds in our scheme, $Z_0, Z_1, \ldots$ is by definition an *aggregate* of the sale-proceeds of individual industries i.e., of V's. Similarly, $C_0, C_1, \ldots$ are all aggregates of U's. A moment's reflection will show that the 'goods composition' or 'industrial composition' of these aggregates are not necessarily the same at each step of the process. Eg. Z_0 is made up of sale-proceeds of industries producing the consumption goods and investment goods bought by capitalists. These industries and goods are not necessarily encountered further in the process. It follows that, if we sum the V's in (6.2.2) to get Z_k, then we must combine the right-hand side terms kU, in proportions reflecting the particular goods-composition or industrial composition of Z_k. By this procedure, we arrive at the following equation for each Z_k:

$$Z_k = \overline{k}_k C_k, \quad \overline{k}_k > 1. \tag{6.2.3}$$

The notation is unfortunate, but this cannot be helped at this point. The step index of the process k is not to be confused with the parameter k of the price equation. In this notation, $\overline{k}_k$ is a weighted average of the parameter k (one for each industry), the weights reflecting the goods-composition of Z_k. As just explained, the goods-composition is not necessarily the same at each step k. Hence the subscript k in $\overline{k}_k$. (Obviously, $\overline{k}_k > 1$, each k).

We have now completed the ground work necessary for the integration of Kalecki's theory of price formation into his macro theory. The rest goes as follows. (6.2.3) is now an *extra equation* in our scheme. The process of creation of sale-proceeds is now defined by the earlier equations *and* this equation, i.e, by (6.1.1) - (6.1.3) and (6.2.3). In other words, we now have an "extended" process.

Let us now explain the nature of this extension. By inverting (6.2.3), we have the costs incurred C_k expressed as a fraction of the sale-proceeds Z_k:

$$C_k = \theta_k Z_k, \quad 0 < \theta_k < 1, \tag{6.2.4}$$

where θ_k is simply the reciprocal of $\overline{k}_k$. But the costs incurred simply reappear as sale-proceeds. This reappearance now takes the following form:

$$Z_{k+1} = \theta_k Z_k \quad \text{from (6.1.3) and (6.2.4).} \tag{6.2.5}$$

In fact, the whole process is now compactly represented by (6.2.5) and (6.1.1).

Let us now solve (6.2.5) recursively. This gives us the following solution:

$$Z_k = (\theta_k \theta_{k-1} \cdots \theta_0) Z_0.$$

It follows that

$$\begin{aligned} Z &= Z_0 + Z_1 + Z_2 + Z_3 + \cdots \\ &= (1 + \theta_0 + \theta_0\theta_1 + \theta_0\theta_1\theta_2 + \cdots) Z_0. \end{aligned}$$

Since $0 < \theta_k < 1$, each k, the series $(1 + \theta_0 + \theta_0\theta_1 + \theta_0\theta_1\theta_2 + \cdots)$ *converges.* Hence the above equation is well defined. But $Z_0 = X$. Hence,

$$Z = (1 + \theta_0 + \theta_0\theta_1 + \theta_0\theta_1\theta_2 + \cdots) X. \tag{6.2.6}$$

This is the equation for total sale-proceeds Z we are looking for. Z is now seen to be a *blow-up* or *expansion* of capitalists' spending X. In fact, the right-hand side of this equation as a whole reflects "spendings", for the θ's are nothing but fractions of sale-proceeds that get spent as "costs incurred".

We note in the passing that in the special case where the θ's are independent of k - i.e., where $\theta_0 = \theta_1 = \theta_2 = \cdots = \theta$, say - the series $(1 + \theta_0 + \theta_0\theta_1 + \theta_0\theta_1\theta_2 + \cdots)$ is simply the geometric progression $(1 + \theta + \theta^2 + \cdots)$. Hence in this case, we have the *following simple equation for Z:*

$$Z = \frac{1}{1 - \theta} \cdot X. \tag{6.2.7}$$

Let us now establish the correspondence between the arguments given above and Kalecki's arguments in terms of the Marxian scheme of reproduction in the context of his profit theorem. Two first points. We do not have Marx's "departments of production" in our scheme. But, it is clear that our "initial sale-proceeds" Z_0 corresponds precisely to the sale-proceeds ("value of production", to use Kalecki's words) of departments I and II of the Marxian scheme. Since the Marxian departments of production are all vertically integrated, their "costs incurred" are simply wage costs and hence the remaining sale-proceeds of our scheme $Z_1, Z_2, \ldots$ all correspond to the sale-proceeds or value of production of department III of the Marxian scheme. Secondly, the context (or background) of the analysis here is simply Kalecki's profit

equation, not the profit theorem as a whole. This in fact is so even in Kalecki's analysis.

Kalecki began by explaining his profit equation in the framework of Marxian departments of production. The equation now means that total profits are equal to the sum total of the value of production of departments I and II - which, in turn, Kalecki went on to write

> "will also determine the production of department III if the *distribution between profits and wages in all departments* is given" (241, II)

This "given distribution between profits and wages in all departments" corresponds precisely to given values of the co-efficients $\theta_0, \theta_1, \theta_2, \ldots$ in our scheme.

The "determination of the production of department III" was now explained by Kalecki in the following words:

> "The production of department III will be *pushed up* to the point where profits carved out of that production will be equal to the wages of departments I and II."(loc.cit)

This is the crucial passage. As already noted, Kalecki's "production of department III" is given in our scheme by the sum $(Z_1 + Z_2 + \cdots)$. His "profits carved out of that production" is given by the sum $(1-\theta_1)Z_1 + (1-\theta_2)Z_2 + \cdots$. "Wages of departments I and II" on the other hand is given by $\theta_0 Z_0$. According to Kalecki's statement, the production of department III is "pushed up" to the point where the profits carved out of that production is equal to the wages of departments I and II - i.e., to the "point" where

$$(1-\theta_1)Z_1 + (1-\theta_2)Z_2 + \cdots = \theta_0 Z_0.$$

This equation falls out at once from our process, for

$$\begin{aligned}
(1-\theta_1)Z_1 + (1-\theta_2)Z_2 + \cdots &= (1-\theta_1)\theta_0 Z_0 + (1-\theta_2)\theta_0\theta_1 Z_0 + \cdots \text{ from (6.2.5)} \\
&= [(1-\theta_1) + (1-\theta_2)\theta_1 + \cdots]\theta_0 Z_0 \\
&= (1-\theta_1+\theta_1-\theta_2\theta_1+\theta_1\theta_2-\cdots)\theta_0 Z_0 \\
&= \theta_0 Z_0.
\end{aligned}$$

It is thus clear that Kalecki meant by the word "pushing up" in the same *sense* as our "expansion" $(\theta_0 + \theta_0\theta_1 + \theta_0\theta_1\theta_2 + \cdots)$ $(= 1 + \theta + \theta^2 + \cdots$ in the "special case").

Let us now go a little further. Kalecki went on to restate the above determination of the production of different departments of the Marxian scheme as determination of the "national output", i.e., of the outputs of all departments taken together. He wrote:

> "The national output will be pushed up to the point where profits carved out of it in accordance with distribution factors are equal to the sum of capitalists' consumption and investment." (loc. cit.)

This corresponds *exactly* to the equation of total sale-proceeds established above. This is more simply seen in the "special case" just defined. Kalecki's "national output" translates in our scheme simply as total sale-proceeds Z[1]. "*Profits* carved out of it in accordance with distribution factors" is, in the special case, simply $(1-\theta)Z$. "Sum of capitalists' consumption and investment" is X. So, the point at which the latter two are equal is simply the value of Z at which

$$(1-\theta)Z = X$$

or

$$Z = \frac{1}{1-\theta} \cdot X.$$

[1]It is to be remembered at this point that because of Kalecki's assumption of vertical integration of production, his notion of "output" (rather value of production) corresponds precisely to our "sale proceeds".

6.3 National Income Accounting

This section is essentially clarificatory. We have now covered a central area of Kalecki's macro theory in terms of the circular flow, going behind the tool of national income accounting. We will now show that this tool itself falls out of the arguments given so far. Note, we do not alter the substance of the arguments in any way. National income accounting is discussed here under Kalecki's assumptions.

Let us now begin. The central concept of national income accounting is "value-added". Let us first clarify the logic of this concept from the standpoint of the circular flow. Let us go back to the costs incurred by firms in our scheme or process, $C_0, C_1, \ldots$. All these terms denote spendings by firms. Let us now consider a particular firm. The costs incurred by it for the payment of wages and salaries create national income *in the firm itself*. The other part - costs incurred on the purchase of goods (including so-called services) from other firms - creates national income *elsewhere* in the economy, not in the firm concerned. Therefore, the firm's "contribution" to national income - equivalently, the national income "originating" in the firm - is defined as its sale-proceeds *minus* the cost of purchase from other firms, which is nothing but the "value-added".

We can now get into national income accounting proper. The value-added in a firm as just defined is simply the sum of profits made and wages paid[2]. If we adapt this statement to our scheme, we have the following equation:

$$Y_k = P_k + W_k.$$

where, Y_k is the part of sale-proceeds Z_k representing "value-added" or "contribution to national income" or "national income generated" and W_k is the part of the costs incurred C_k representing the wage-bill. Hence by summing over the whole process, we have the following equation of national income:

$$Y = P + W. \tag{6.3.1}$$

where, $Y = Y_0 + Y_1 + \cdots$ (= national income) and $W = W_0 + W_1 + \cdots$ (= the national wage-bill).

(6.3.1) defines *one way* of national income accounting. But it represents a *one-sided* view of things. Nothing of the *creation* of sale-proceeds has come into it.

[2]For simplicity of terms, we are now using the term "wage" to cover both wages and salaries.

Arguing through this "creation", we arrive at the *other way* of national income accounting. This is described below.

Let us first explain a difference in view point. Instead of seeing the sale-proceeds Z_k as divided between the profits made P_k and the costs incurred C_k, we now view it as divided between the value-added Y_k and the 'inter-firm' purchases, say G_k. By definition,

$$G_k = C_k - W_k$$

and

$$Y_k = Z_k - G_k.$$

It follows that the process-generating equation now takes the following form:

$$Z_{k+1} = G_k + W_k.$$

So,

$$\begin{aligned} Y_{k+1} &= Z_{k+1} - G_{k+1} \\ &= W_k + G_k - G_{k+1}. \end{aligned}$$

By summation, we now have the following equation of Y:

$$\begin{aligned} Y &= Y_0 + (W_0 + G_0 - G_1) + (W_1 + G_1 - G_2) + \cdots \\ &= (Y_0 + G_0) + (W_0 + W_1 + \cdots) \\ &= Z_0 + W. \end{aligned}$$

But $Z_0 = X$. Hence,

$$Y = X + W \tag{6.3.2}$$

This is the *basic equation* of this section. Note, the steps leading to this equation run completely parallel to the steps or arguments leading to the profit equation. The only difference is that we have now "restricted" the cancellations occurring in the process, more precisely in the "summation" of the process, to the "inter-firm purchases" component of the costs incurred. This simply reflects the shift in the view point stated above.

On the face of it, (6.3.2) is a "mixed" equation, equating national income to the sum of an *expenditure* X and an *income* W. This is however a notational deception. The term W represents *both* the wages paid or the wage-bill and the wages spent or workers' spending. Clearly, it is the spending that reappears as sale-proceeds. This is

what generates the whole sequence of national incomes $Y_1, Y_2, \ldots$ in the above calculations. So, the correct interpretation of W in (6.3.2) is the *spending* interpretation. Thus (6.3.2) does give us the "other way" of national income accounting representing a *both-sided* view of things as we were looking for.

Let us however get rid of the possibility of notational confusion by writing Q for the spending of wages or workers' spending, reserving the term W for the payment of wages or the wage-bill. (6.3.2) is then correctly written as

$$Y = X + Q. \tag{6.3.3}$$

The *two ways* of national income accounting can now be written as a running equation:

$$W + P = Y = X + Q. \tag{6.3.4}$$

The left equation is so to say the *income-way*, the right equation the *expenditure way*. Stated in more conventional terms, they represent respectively the "income-side" and the "expenditure-side" of national income accounting. This completes our demonstration of the "dropping out" of the tool of national income accounting from the circular flow.

Let us reiterate that all the arguments above are based on the tacit assumption:

$$W = Q. \tag{6.3.5}$$

From (6.3.4) and (6.3.5) we at once have the profit equation $P = X$. This was Kalecki's "shortcut". But obviously, viewed in the total, this is really a long-cut or more round about way of deriving this equation.

Let us now record the integration of the price theory or rather the outcome of this integration in the present framework, i.e., in terms of national income. This boils down to transforming (6.2.6), the equation of total sale-proceeds Z, into an equation of national income Y.

This is quite straight forward. The national income generated at each step of our process is a fraction of the corresponding sale-proceeds. Let us denote the fraction by $\rho_0, \rho_1, \ldots, (\rho_k = (Z_k - G_k)/Z_k)$. So, Y can be written as

$$Y = \rho_0 Z_0 + \rho_1 Z_1 + \rho_2 Z_2 + \cdots.$$

Hence using (6.2.5) recursively, we have

$$\begin{aligned} Y &= \rho_0 Z_0 + \rho_1\theta_0 Z_0 + \rho_2\theta_0\theta_1 Z_0 + \cdots \\ &= (\rho_0 + \rho_1\theta_0 + \rho_2\theta_0\theta_1 + \cdots)Z_0 \\ &= (\rho_0 + \rho_1\theta_0 + \rho_2\theta_0\theta_1 + \cdots)X. \end{aligned} \tag{6.3.6}$$

This is the transformation of (6.2.6) that we were looking for. The total national income generated by the capitalists' expenditure X is given by this expansion.

The analogue to the earlier "special case" is given here by the *two conditions* of *uniform* ρ and *uniform* θ. In this case, (6.3.6) boils down to the following equation.

$$\begin{aligned} Y &= (1 + \theta + \theta^2 + \cdots)\rho X \\ &= \frac{\rho}{1-\theta}X. \end{aligned} \tag{6.3.7}$$

This can be simplified further. Let us just recollect that θ is the ratio of costs incurred to sale-proceeds at each step of our process, assumed here to be the same for each step. But the costs are simply the sum of wage payments and inter-firm purchases. Let us now denote the relative share of wages in national income at each step of our process by $\alpha_0, \alpha_1, \ldots,$ $(\alpha_k = W_k/Y_k)$. Under the present assumptions, the α's are also uniform. Remembering the definition of national income as the sum of value-added i.e., of sale-proceeds net of inter-firm purchases, we have the following identity:

$$\begin{aligned} \theta &= \frac{G_k}{Z_k} + \frac{W_k}{Y_k} \cdot \frac{Y_k}{Z_k} \\ &= (1-\rho) + \alpha\rho. \end{aligned}$$

Hence,

$$1 - \theta = (1-\alpha)\rho.$$

Substituting this value of $(1-\theta)$ in (6.3.7) we have:

$$Y = \frac{1}{1-\alpha} \cdot X. \tag{6.3.8}$$

This equation enables one to see the 'expansion' of capitalists' spending X in the generation of national income at its simplest. X generates directly an *equal* national income, say Y_0 $(Y_0 = X)$. The wage component of this national income, αY_0, generates in turn its *equal* national income, for all wages are spent. So, a *further*

national income, $Y_1 = \alpha Y_0$, is generated. Continuing with this process, we have the following view of the generation of *total* national income, Y:

$$\begin{aligned} Y &= Y_0 + Y_1 + Y_2 + \cdots \\ &= X + \alpha Y_0 + \alpha Y_1 + \cdots \\ &= \lambda + \alpha X + \alpha^2 X + \cdots \\ &= \frac{1}{1-\alpha} X. \end{aligned} \tag{6.3.9}$$

Thus the term $\frac{1}{1-\alpha}$ in (6.3.8) is nothing but the summation of the geometric progression $(1 + \alpha + \alpha^2 + \ldots)$ which in turn is a simplification of the series $(\rho_0 + \rho_1\theta_0 + \rho_2\theta_0\theta_1 + \cdots)$ in (6.3.6).

6.4 The Spending of Profits

As already stated, we are concerned here with the question of spending of profits as discussed by Kalecki. This brings out a moot problem with the structure of our own arguments in this chapter. Kalecki discussed the above question very explicitly *in time.* But our own arguments so far have *not* been in time. We shall simply let this "gap" remain for the time, and "jump on" to Kalecki's analysis. The matter is brought up again at the end of the section.

The question that Kalecki was concerned with can be stated as follows: *Do or do not capitalists spend in a given period of time precisely their profits of the preceding period? What are the consequences of either?*

Let us first briefly discuss the logic or rationale of this "time frame". (Kalecki did not say anything on this). The point seems to be simply that profits have to be first *earned* before they are spent. However, this is not enough, for the same point can be made with respect to wages (or salaries for that matter). There is however a difference between this seemingly "same point" when applied to profits on the one hand and wages on the other. Clearing this up, we get into the subject matter.

Wages are *paid.* We can see the spending of wages as *following* the payment without raising any further questions. *This does not apply to profits.* Profits are *made*, made out of sale-proceeds. In *time*, this making or earning of profits has to be defined with respect to an "accounting period" set up for the purpose. The question of spending of (or from) the profits earned in any such period arises only in the *next* period. This, it appears to us, is the reason behind the time frame of reference in Kalecki's question.

Let us see Kalecki's question in its own perspectives. We quote his words:

> "If capitalists always decided to consume and to invest in a given period what they had earned in the preceding period, the profits in the given period would be equal to those in the preceding one. In such a case, profits would remain *stationary*, and the *problem of interpreting the above equation* (profit equation) *would lose its importance.*" (240,II)

Thus, given that capitalists always spend in a given period their profits of the pre-

vious period, we have first the *substantive* conclusion that profits are "stationary". From this Kalecki came to the *methodological* conclusion that the question of "interpreting" the equation "loses its importance". The general point seems to be that no "causality" can be talked in a stationary framework.

Let us now proceed through a formalisation of the substantive argument. Let $P(t)$ and $X(t)$ denote respectively the profits and capitalists' spending in a given period t, $t = 0, \pm 1, 2, \ldots$. The profit equation is now written as

$$P(t) = X(t). \tag{6.4.1}$$

It follows that *if*

$$X(t) = P(t-1)\ \forall t,$$

then

$$P(t) = P(t-1)\ \forall t.$$

This is precisely the *stationarity* of profits talked by Kalecki. We note that by the same argument *if* $X(t) \neq P(t-1)$ *then* $P(t) \neq P(t-1)$. More precisely, $P(t) >$ or $< P(t-1)$ as $X(t) >$ or $< P(t)$.

After this, Kalecki gave a straight answer to the basic question put above. (Do or do not capitalists ...). He just dismissed the "yes" answer with the following words:

> "But such is *not* the case. Although profits in the preceding period are one of the important determinants of capitalist consumption and investment, capitalists in general do *not* decide to consume and invest in a given period precisely what they have earned in the preceding one" (240,II;italics in the original).

This basic *empirical* assertion was now turned into an *explanation of the very source or origin of business cycles*. To quote:

> "This explains why profits are *not* stationary, but fluctuate in time." (242,II;italics in the original)

The formalisation of this argument is already given.

We can now see things in a perspective. Kalecki's profit equation formed the basis of all his macro determinations. As just seen, it also formed the basis of his explanation of fluctuation of profits, the very essence of business cycles or capitalist dynamics. The first subject falls within the boundary of our subject matter in the thesis. The second subject falls outside.

This is clearly not just a division of "aspects" or a "functional" division. It is based on a division *in time*. Going by Kalecki's arguments here, our subject can be pursued within a *single* period of reference. The other (bigger) subject requires a *multi period* frame of reference. We have no quarrel with this. But a word of caution is to be given. Going by our interpretations it may appear that the "periods" referred are simply "accounting periods", however defined. This is *not* so. If we are to see our subject matter in the above scheme then we have to see the "period" as a *very determinate or well-defined structural notion in the durational sense.* However, it will take time to reach this point.

We now come to the *final point* of this section. It is clear that Kalecki's analysis as just discussed rests on the tacit assumption that the *profit equation holds in any given time period.* Having said this, we have to say simply that this proposition is *not yet established.* This is simply because our own arguments here have been *in time.* Consequently, we have not established any *temporal* proposition like (6.4.1).

Let us however not leave things so much in the blank. Let us see what we may possibly argue *in time* on the basis of the analysis given in section 1. We have to begin by seeing the capitalists' expenditure X in time. It is the spending in some *given* time or time-period. From our analysis, we can say that this X creates an equal profit, but we cannot say *when* this profit is created. By the same token, we can only say that profits in any given period comes from capitalists' own spendings - spending 'when' is not answered. So, we may only conclude that *for all time taken together* capitalists earn precisely what they spend.

This is self evidently *not* an operational statement. Besides, we cannot conclude from it that profits in any given period is equal to the sum of capitalists spending in that period.

But it is precisely on this basis that the question of determination of profits is taken up later. The point applies to all other pure relations of the circular flow as well. They are all tacitly assumed to hold in *any given period of time* in the

problem of "determinations". We shall also proceed on the basis of this assumption in the next chapter. In the following chapter we take up the question of *validity* or otherwise of the assumption, albeit within some further structure defined through the analysis of the next chapter. Subject to this qualification, the assumption can therefore be taken as a *provisional* assumption. This also explains why our work on Kalecki's macro theory is logically completed in ch.8.

Chapter 7

Structure of Determinations

7.1 Determination of Profits

We are concerned now with the determination of profits *given* that profits are equal to the sum total of capitalists' spending - with part (b) of Kalecki's profit theorem, *given* part (a). This is exactly how Kalecki himself framed the question when he came to explicitly address it[1]. After deriving the profit equation Kalecki wrote:

> "What is the significance of this equation? Does it mean that profits in a given period *determine* capitalist consumption and investment, or the *reverse* of this?"(239,II)[2]

Next, he carefully laid down his *tool* or *principle* for answering the question:

> "The answer to this question depends on which of these items is *directly subject to the decisions of capitalists.*"

Finally, he gave his basic argument answering the question:

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[1]This was in [9], published years after his first statement and elucidation of the theorem (see 151,II). A more polished version of the analysis was given in [10] which serves as our reference here.

[2]We take this earliest opportunity to point out that the profit equation is assumed here to be satisfied in *any given period of time*. This remains a "datum" for the whole analysis of this chapter.

> "Now, it is clear that capitalists may *decide to consume and invest more in a given period than in the preceding one*, but they *cannot decide to earn more*. It is, therefore, their investment and consumption decisions which determine profits, and not *vice versa*."

This completed his "proof" of the theorem[3].

However, the matter was *not as simple as this*. This becomes evident the moment we take a look at Kalecki's *concluding statement* on the subject. We shall first locate the complexities or just the difference between what was stated at the beginning (above) and what was stated at the end and then look into the intervening discussion to resolve if possible the complexities or differences. This comes to the same as reviewing or reexamining the whole theorem including its precise *scope* and *content*. Needless to say, *proof* of the theorem is relative to all this. So, notwithstanding the categorical nature and self-evident force of Kalecki' arguments just quoted, we have to keep the question of "proof" really in the open. It will be seen that there is more to this matter than meets the eye.

Let us now give Kalecki's "concluding statement":

> "We may now conclude that the *real* gross profits in a *given short period* are determined by *decisions* of capitalists with respect to their consumption and investment *shaped in the past*, subject to *correction for unexpected changes in the volume of stocks*." (240,II)

The determination of profits is talked here (a) in *real* terms, (b) for the *short period*, a reference being made to the consumption and investment decisions of capitalists being "shaped in the past" (prior to the "short period"), and (c) subject to the "correction" of *unexpected changes in the volume of stocks*. These are the points of complexity or difference to be assimilated to the whole argument if possible.

Kalecki in fact had a *very substantial body of arguments* behind each of these points, and they were all *interconnected* or rather *crisscrossed* by certain arguments running through. But all of this stated so tersely that one may lose the thread. Our objective is essentially to impart an *order* on the whole set of arguments, tackling

[3]Note, the fact that the profit equation holds in any given period of time is simply taken for granted in these statements.

inter alia all questions relating to the profit theorem - not just those mentioned above, but also the inter-linking of the proofs of the two parts of the theorem as mentioned earlier (p.130).

However, this is not all taken up here. Point (c) brings up the question of "stocks", the lack of a connected account of which in Kalecki and our objective of filling in this gap in an appendix to the thesis (App.A) are already stated. So we discuss the argument behind (c) in the appendix. However, we will have to take note of a very substantial *framing* of this point that comes straight out of Kalecki's arguments regarding (b). This is just an instance of the "crisscrossing" of his arguments.

Let us now begin. It is more or less clear from Kalecki's repeated references to the *decisions* of capitalists regarding their consumption and investment in the opening statement, that his arguments were from the very beginning in *real* terms. We can say that the "decisions" are decisions to *spend* - or "spending decisions" - only on the *outside*. *Inside*, they are decisions on *real* consumption (standard of living[4]) and *real* investment (investment projects).

Let us have Kalecki's own explicit statement in this regard.

> "The consumption and investment *decisions* (of capitalists) will usually to be made in *real terms* ...."

To this he added the point, as if in completion:

> "...and in the mean time prices may change."(240,II)

Obviously, if prices *do not change* the decisions in "real" and in "money" terms are one and the same. (So also are profits). Hence for the purpose here it must be assumed that prices do in fact change. More precisely, we are concerned with the question of determination of profits in the background of *changing* prices. ("In the mean time" meant the time elapsed between the taking or making of the decisions and their carrying out or execution).

From the proposition just quoted Kalecki came to the conclusion that it is *real* profits that are determined by his profit equation. However, his handling or treatment

[4]Very term used by Kalecki in the earlier version (176,I;[9]).

of this point leaves many things in the open. First of all, he introduced the proposition as a "qualification" to his arguments, the nature of which is not very clear to us (see below). To "get over the difficulty", he wrote[5]:

> "both sides of the equation will be *assumed to be calculated at constant prices.*" (240,II)

But "calculating" both sides of the equation at constant prices is something done *purely on paper.* What this means in terms of the *actuality* addressed is left in the open. This is the fundamental openness in Kalecki's arguments.

Let us see if we can fill this in. This goes a long way through the agenda for this section. Let us start from the point that the spending decisions of capitalists are only the outside expression of their real consumption and investment decisions. But even this "outside" is not *observable* in itself. What is observed is only the *actual* spending. It is obvious that Kalecki made the tacit assumption at this point that *capitalists actually spend what they decide to spend*[6].

This is stated basically for the sake of clarity. It can be argued that there is no reason why capitalists should *not* spend what they decide to spend. So, we take the assumption for granted without further words. (However, see fn.7 below).

Let us now put together all the three elements of the argument so far: (a) capitalists spend what they decide to spend, (b) the spending decisions are in real terms and (c) prices have changed. It follows at once that capitalists simply *adjust* their spendings to the change in price taken place - they spend so much more or so much less than otherwise (if price had not changed)[7]. Another way of putting the same point is that *given* the real spending decisions of capitalists, their actual spending at any time depends simply upon the *current prices.* The amount spent is simply the given real consumption plus real investment at current prices.

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[5]Presumably the "difficulty" was that the profit equation is defined in *money* while the consumption and investment decisions of capitalists are in *real* terms.

[6]This tacit assumption has also been noted by Asimakopulous [18]. Referring to Kalecki's opening statement he wrote "Implicit in this statement is the assumption that the *decisions are made effective*" (p.126).

[7]"Spending more" however raises the question of *finance.* We will take up the question in App.A.

Note, the profit equation does not come into this. It comes in only *after* the money is actually spent, when it simply equates profits to the sum total of capitalists spending. It follows at once that if capitalists spending decisions *are* given apriori, then they indeed *determine* the volume of profits made. Something very close to this is asserted *both* in Kalecki's opening statement *and* in his arguments concerning part (b) of the concluding statement. This is the main axis of "criss cross" in his arguments on the present subject. But it is too early to resolve anything. So, for the time we treat the assumption of "given" spending decisions of capitalists as purely *provisional* in nature. Corresponding to this, we have the provisional proof of the theorem just stated. Within this, we now proceed to discuss a question of some significance. This is the question of whether, according to the arguments just given, it is *real* or *money* profits (or *both*) that is "determined". We can also put this as the question of "real" vs. "money" terms interpretation of the profit theorem.

The profit theorem just proved is obviously in *money* terms. This is so simply because the profit equation is defined in money. We can now deflate both sides of the equation by a suitable price index to define it in real terms. But in this "real" profit equation, the "real" spending of capitalists is already given. So real profits are determined by the real spending of capitalists. In short, the profit theorem is true in *both* real and money terms. This can be considered a *strengthening* of the theorem and not a weakening as suggested by Kalecki's word "qualification". This was our discomfiture with this term in Kalecki.

The further point to state in this context is that there is obviously a difference in the *status* of the two interpretations of the theorem. Since what is assumed given apriori is the *real* spending of capitalists, the basic *substantive* determination here is of *real* profits. The determination of money profits shows the *mechanism* of this determination, i.e *how* real profits are determined. The mechanism consists of two parts. One is the circular flow. The other is capitalists' ***adjustment*** of their spendings to price changes taken place. The first belongs to the domain of the circular flow which is independent of all "behaviour"; the second belongs to the domain of capitalist behaviour.

Let us set this out in formal terms. We start from the real spending of capitalists reflecting the real decisions already taken. Let us denote this real spending by $\overline{X}_r$ (subscript r for "real", the bar for "givenness"). From $\overline{X}_r$ we get the actual spending of capitalists $X = p_c\overline{X}_r$ say, where p_c stands for the current prices (in an index-

number sense). This is where the adjustment of capitalists spending to price change comes in. From X in turn we get to $P = X$. This is where the profit equation comes in. Finally, "deflating" P we get back to real profits $P_r = P/p_c$ (Kalecki's "paper calculation"). In sum, we have the chain of determinations:

$$\overline{X}_r \longrightarrow X \longrightarrow P \longrightarrow P_r.$$

The fact that the determination of profits in money takes place "within" the real terms determination simply shows that it defines the *inner mechanism* of the whole determination[8].

We now begin on point (b) in Kalecki's "concluding statement". This is a very substantial point. It brings in the crucial concept of a "short period" which underlied *all* of Kalecki's arguments in the present context[9]. As hinted earlier, this is a very *substantive* notion, not to be confused with the "accounting period" supposedly "short". It was in fact rooted in certain *structural characteristics* of "capitalists consumption" on the one hand and "investment" on the other that Kalecki always kept very firmly in view[10]. These are the matters for discussion now. Through them, we approach *afresh* the question of "proof" of the profit theorem.

Before we begin on this agenda we mention that Kalecki just somehow set out or inserted all this weighty matter in a paragraph immediately following his opening statement. The paragraph was followed by the methodological examination of the "significance" of the profit equation going all the way to the genesis of business cycles that we discussed in the previous chapter. Kalecki did not provide any *analytical* link between the arguments of this paragraph and *either* the opening statement *or* this methodological discussion. It is only in "two qualifications" to his arguments, as Kalecki called them, that one can see the analytical linkage[11]. But Kalecki himself hardly clarified the linkages - the "terseness".

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[8] Having resolved the problems arising out of changing prices, we will now on *assume that prices remain unchanged.* This is a great convenience for we can interpret all our variables, defined originally in money, in real terms as well. This is to be specifically kept in mind for the following discussion.

[9] We take this earliest opportunity of pointing out that this notion is not invoked in Kalecki's "opening statement". This is in fact somewhat of a "paradox" which we explicitly discuss later on.

[10] For this reason we should call it the *Kaleckian short period.* The concept was distinctly his own.

[11] One "qualification" is already discussed. This was Kalecki's "second" qualification. The "first" one was about "unexpected accumulation or running down of stocks" - same as point (c) of his concluding statement. As already stated, we discuss this matter in App.A.

Let us now quote the paragraph referred:

"If the period which we consider is short, we may say that capitalist investment and consumption are determined by decisions shaped in the *past*. For the execution of investment orders takes a certain time, and capitalist consumption responds to changes in the factors which influence it only with a delay."(240,II;italics in the original)

The structural characteristics of both capitalists consumption and investment are here clearly located in *time*. This is the only aspect of both matters that is actually stated here, which we will have to set in the proper backgrounds. To pick up an earlier point, these structural-temporal characterisation of capitalist consumption and investment provide the basic conceptual underpinnings of the notion of what we just called the Kaleckian short period. All of this was taken over to the "concluding statement" where the whole determination of profits or the profit theorem was asserted only for the "short period" as understood here. This, in a word, was the net upshot of the points introduced in this passage.

Let us turn to Kalecki's treatment of capitalist consumption. The first reference is his "Essays" [7]. Kalecki considered here various "factors" that may "influence" capitalist consumption. He came to the conclusion that capitalists' income or profit is the *only* factor worth considering[12]. In the basic text of reference [10] he gave a full fledged formulation of a "consumption function" for capitalists on this basis. The "lag" apart, there are three basic points to note about this formulation. One, the basic variables considered were a *year's* consumption and a *year's* profit i.e, the formulation was in *annual* frame of reference. This tacitly suggested that the "lag" or "delay" in the response of capitalists consumption to changes in profit was *less* than a year. Kalecki's empirical estimate of the lag was in fact of the order of a quarter of a year (250,II). Secondly, Kalecki argued that there is a *stable* part in year's consumption of capitalists i.e, this part does not dependent upon current profits[13]. This was the gate-way to Kalecki's truly *long term* treatment of capitalists

[12]Other factors considered were (a) the rate of interest and (b) the "level of capital values, in particular stock exchange prices". These were in fact considered as possible influences upon "(capitalists) consumption out of a given income (profit) or their 'propensity to consume'". The "influence" of profit or income upon consumption was taken as apriorí - "there must be *some* connection between the income y and the consumption c *out of it*". (261,I)

[13]The term "current profit" is understood here as a year's profit "distanced" by the lag.

consumption, where he in fact changed his ground somewhat between the current reference and later writings. The earlier assumption was that the "stable part" (denoted A) changes proportionately with profits in the long run, which is to say that in the long run capitalists consumption depends *completely* upon profits. This was replaced later by the assumption that A is a "slowly changing magnitude depending upon past social and economic developments" (437,II)[14]. No mention was made of profit. The third point to note was in a way the obverse of the second point. Kalecki argued that capitalists "marginal propensity to consume" (denoted q) is relatively small ("q is probably considerably less than 1" (246,II)). This simply matched the point that A was all through tacitly assumed to be a fairly large magnitude. Kalecki's empirical estimation of q was of the order of .3 (251,II).

Let us now see the "lag" in capitalists consumption in the background of all these points. In fact, the "background" itself is a little incomplete. It is completed only by noting that the independent variable, profit, is in fact *highly variable in time*, subject to wide fluctuations. Once we take account of this point we see at once that Kalecki implied a *strong contrast* between the behaviour-in-time of capitalists consumption on the one hand and profits on the other - unlike profits, capitalists consumption change only *very gradually* through time. This is what all the above points really add up to. Another way of stating the same proposition is that capitalists consumption is relatively *insulated* from current or recent changes in profits, being dominated by long term factors as gone into B - "a slowly changing magnitude..." (final version). This means in the end that in the very short period (quarter of a year) capitalists consumption is *completely* insulated from the *current* change in profit. This, in a word, is what the "lag" means or signifies. We have completely integrated it into Kalecki's general account of capitalists consumption through time, from which it is seen ultimately to follow as corollary.

We will now simply restate the lag-assumption as understood above in a somewhat different language, which is of considerable importance for our purpose. As just seen, the assumption is that in the very short period, capitalists consume precisely what they had *decided* or *planed* to consume, independently of their current profit. This "plan" is determined by long term considerations. This is to say the same thing as that capitalist consumption in the very short period is a *predetermined* variable - *determined by factors operating prior to the period.* It then follows as a corollary

[14]This was in common with a number of parameters of Kalecki's macro dynamic system.

that capitalists do *not* let their consumption to be affected by *purely* short term variations in profit. It is tacitly assumed that they have the *means* for this purpose.

So much for Kalecki's treatment of capitalist consumption. We now turn to his treatment of *investment*. The *very first* point to state is that we have only his treatment of investment in *fixed capital* under reference here. This is because it is only for items of fixed capital - plant-machinery or what Kalecki generally called simply "equipments" or "investment goods" - that one has the notion of "investment order". In fact, this "investment order" is nothing but an order for the production of "investment goods". The order is made by the *buying* or *investing* firm and carried out by the *producing* or *supplying* firm. This institutional specification of the production process or method of production is implicit in the very notion of "investment order"[15].

Let us repeat that the whole question of investment under reference is limited to investment in fixed capital. The rest - what kalecki generally called investment in "inventories" - is left out. This is a bigger abstraction than suggested by leaving out point (c) in Kalecki's "concluding statement". We are now leaving the whole of Kalecki's treatment of "investment in inventories" for discussion in App.A. It is within this restricted scope that the problem of determination of profits is discussed in this section. The above also provides the "framing" of point (c) of Kalecki's concluding statement. It is framed within the general category of investment in inventories, and that because the notion of investment order is specific to investment in fixed capital.

Let us also make a semi-critical point on Kalecki at this point. There are certainly items of fixed capital that one can buy "off the shelf" like any other commodity. This is left out in kalecki where the notion of investment order is applied en block to all "investment goods". We do not meant to blow up this point as we do not know what proportion of total investment is accounted by which form of production.

[15]We have here a very specific *form* of production which we can clearly call *production on order*. This is quite distinct from the general run of *commodity* production where the commodity is *first* produced, *then* sold. Here, the sale so to say is already made: the "order" comes first, then the "production" (="order-execution"). Many new and interesting issues come up for discussion with this distinction. In another appendix to this thesis (App.B) we take up some of these issues especially relevant to problems addressed by kalecki. We shall accordingly curtail the present discussion, confining ourselves only to the main point that is relevant in the present context, leaving the details to the appendix.

Let us now get back to the structural factor about "investment" in Kalecki - "execution of investment orders takes a certain time"[16]. This provided the basis for Kalecki's assumption all through that there is a *lag* between the placement of investment orders and "investment" as such, the relevant variable in the theory. Clearly, the relevant variable is the investment *expenditure* of firms or what we can also call the "expenditure" notion of investment. Kalecki however put this always as the "production of investment goods" (69,I) - meaning , the *value* of production. The two are in fact *completely interconnected.* Kalecki left this vary terse. Let us spell out the point in some details.

The "production" begins here with an order being already placed. A certain expenditure is *committed* by the ordering party (investing firm) in this very "placement", which is nothing but the *value* of the order placed. It is so to say this "value" that is "produced" *over* the execution period, and that is exactly what Kalecki denoted as the "production of investment goods *per unit of time*". A clear statement to this effect is to be found in his very first, seminal paper on business cycles [2]. He started out with two basic variables, W and ν, defined respectively as the "portfolio of orders" at a given point of time and the "period of construction". He then said simply that the corresponding "production of investment goods" per unit time is given by the ratio W/ν (71,I).

Let us simplify the rather complex notion of W down to its elementary unit, viz. the placement of a *single* investment order. To avoid notational confusion, let us denote the value of this order by O. Following Kalecki, we can say that O/ν defines the production of investment goods per unit of time corresponding to the "order" under reference. But O is nothing but the expenditure committed by the investing firm at the beginning, and certainly paid by him before (or 'on') delivery. So, O/ν is nothing but a *distribution* of this expenditure over the time ν. Admittedly, this is "straight-time" or "uniform" distribution. Other distributions are possible. But this is merely a technical point in the present context. So, we can keep to the simplicity of this form of distribution without going further into the issue.

[16]This remained as a hard-core technical element in kalecki's discussion of investment all through, cutting across all boundaries of "systems" (capitalist/socialist/mixed) as well as "problems" (determination of profits as here /mechanics of business cycles / central planning in socialist countries / development process of mixed economies and so on). *In fact, it is only* in his "planning papers" that Kalecki discussed at *length* various conceptual issues arising out of it.

The above should stand as absolutely straight-forward. Precisely because of that, one may not be aware of a possible confusion that we have avoided. We refer to the confusion of the expenditure notion of investment as described above with the *costs incurred* in the production of investment goods. The costs incurred are also certainly expenditure but it is the expenditure of the producing firm. To mistake this "expenditure" for the genuine expenditure notion of investment is simply to leave out *profit* and that is the end of the story. The whole connection with the "creation" of profit that Kalecki was talking of gets snapped.

Let us now fix attention upon the total investment in a *given period of time* - total "production of investment goods" in the sense of Kalecki in this period. We assume for simplicity a *common* or *uniform* execution period for all investment orders[17], and take our "given period of time" to be *shorter* than the execution period. Let us also provisionally abstract from any placement of investment orders in this period. The total investment in the period is then caused entirely by investment orders placed *before* the period. It is in fact nothing but a *fraction* of the total value of such orders[18]. It follows at once that this total investment is simply a *predetermined variable* in the sense defined earlier - determined by factors operating prior to the period under reference (here, all factors entering the investment decision which in turn is nothing but the decision to place an investment order). We can now give up the assumption of no investment orders being placed in the period under reference. Such orders will also contribute to the total investment in the period. But the contribution will be small if the period considered is small relative to the execution period (and there has been no arbitrary jump in the placement of orders). So, we can take the characterisation of investment or total investment in any given short period of time as a "predetermined variable" as *approximately* true. This is all that is relevant in the present context.

Let us now link up again with Kalecki. It is clear that the notion of investment as a predetermined variable as described above is the same as saying that this investment or actual investment *follows* the investment decision with a *lag*. This was the language of Kalecki. he spent much effort in estimating the "lag" on the basis of available data, an inherently difficult task. All he could do was give a guess-estimate

[17]This was Kalecki's assumption all through. We shall however give it up in App.B.

[18]Clearly, the fraction is the same as the fraction of the execution period or construction period that is accounted by our given period of reference.

- "it is difficult to imagine this lag to be less than half a year". Whatever be the exact relation between this "lag" and the "execution period", we can say that the total investment in a given period remains predetermined (in the approximate sense as just understood) so long as the period is short, certainly if it is of the order of a quarter of a year.

We can now begin to pull strings together. First, we have the following *inter-related definitions*: The *Kaleckian short period* is a short enough period of time in respect of which both capitalists' consumption and investment are *predetermined variables*, i.e, variables determined by factors operating prior to the period under reference. Empirically, we can take the period to be of the order of a *quarter of a year*[19].

Next, we have already seen that Kalecki's profit theorem is *proved* if it is assumed that the spending of capitalists is *given* a priori, i.e., prior to the profit equation. But to say that capitalists' consumption and investment both are predetermined in the short period is simply to say that they *are* given apriori. So, we do now have the defense or justification of this assumption on Kalecki's own grounds. Thus we see that there is a complete proof of the profit theorem in Kalecki's arguments regarding the "short period". Let us be clear that this "proof" is obtained (a) in reference to the Kaleckian short period and (b) in abstraction from investment in "inventories". Both directly restrict the *scope* of the theorem as compared with its original statement as well as the proof given at the beginning. We shall see that (b) is indeed dispensable, but (a) is *not*.

Let us also give a self-contained proof of the profit theorem as following from the definitions just set out. Unlike capitalists' consumption and investment, profits is by definition a *currently determined* variable, depending upon current happenings. This lies at the very heart of the whole circular flow argument of the last chapter. We can say that what the "circular flow" does is simply *equate* the *currently determined variable*, profits, to the *sum of two predetermined variables*, capitalists' consumption and investment. By definition, the direction of determination must run from the "predetermined" to the "currently determined" variable. This is the proof.

[19]This duration of the "short period" in Kalecki's macro theory appears to be generally agreed among writers on Kalecki (cf. *Kazimierz Laski's* private communications to Asimakopulous as mentioned in the editorial observations in Kalecki's *Collected Works*, (475,I)).

Let us now turn to the question of the *time frame of reference* in the determination of profits. On the one hand, we have Kalecki's own proof of the theorem given at the beginning where the period of is left unspecified (or unrestricted). On the other, we have just met another proof for the "short period" in a very well defined durational sense of this term. We have also stated that this restriction is indispensable. This is what we now bear out.

Let us recall Kalecki's consumption function for capitalists. According to it, capitalists consumption at any time depends upon *past profits* - past but *not too past*. In a more roundabout way, Kalecki argued the same point for investment - it depends upon past profits, not too past. Kalecki now went on to combine these two propositions in his methodological discussion of the significance of profit equation[20]:

> "Although *profits in the preceding period are one of the determinants of capitalists consumption and investment*, capitalists in general do not consume and invest in a given period precisely what they have earned in the preceding one." (240,II)

We have already discussed the concluding part of this statement. We are concerned now with the opening part (italicised).

We now make the same point as we had in an earlier context: The very idea of "determination" is that of a *one-way relation*. Let us go back to the passage just quoted. If the two periods talked here are *arbitrarily* defined in the durational sense then there is nothing to bar one from conceiving them as *sub-periods* of a longer period *and* take this "longer period" to be the basic period of reference. For *this* period, there *cannot* be a one-way relation going from capitalists consumption and investment to profits, for they are influenced in turn by profits of the *same* period. It follows that the profit theorem *cannot* be true for this period, i.e, the longer period.

We conclude that by *Kalecki's own arguments*, his profit theorem is true or valid *only* for the short period, the Kaleckian short period. If we lengthen the period of reference we get to the area of "interdependence" or "two way relations"[21]. But this

[20]To recall, this discussion was placed in between our two basic points of reference here, i.e, the "opening" and the "concluding" statement, *without* any apparent connection to either.

[21]This argument seems to have been made by Asimakopulous in a paper [20] which unfortunately we could not procure. Our source of information in this respect is the editorial observations in Kalecki's *Collected Works*, (475,I).

in turn is simply to fritter away for nothing the strong one-way relation of the short period. The argument as a whole therefore not only establishes the profit theorem - which *was* the fundamental macro determination in Kalecki's whole scheme - for the short period; this "short period" itself is now seen to be the home ground of the whole argument. This implicitly sets the *time frame of reference* of what we call Kalecki's "macro system". To step out of it is to step into his "macro dynamic system".

It follows that we cannot take Kalecki's own proof of the theorem at its face value of *any* reference period. But *any* reference period certainly allows the reference period to be "short". This is our understanding of the proof now. So, we now have two *alternative* proofs of one and the same theorem. This can be very briefly discussed.

A minute's glance back at Kalecki's own proof shows that it runs exclusively in terms of what capitalists *can* do - they can decide (on their own) to consume and invest more (or less) in a given (short) period than in the preceding period. This is a statement of their "power" or "ability" (implicitly backed, let us remind again, by adequate "means"). The whole power of the theorem derives from this clear focus upon the "power" of capitalists[22]. In contrast, the other proof that we have "unearthed" in his arguments runs purely in terms of the *actuals*, what capitalists actually consume, invest and spend in a given short period. The two proofs belong simply to *two different planes of arguments*

It is however extremely difficult to *sustain* arguments purely in terms of "power" or "ability" (or "potentiality" if you like). One has to *ground* the arguments in actuality at some time. Looking back, we see this to be the real purpose served by Kalecki's passage on the "short period" inserted immediately after the "opening statement". In fact, all his subsequent arguments ran in terms of "actuals" here defined. This is enough reason for taking the second proof *more seriously* than the first. It is the line of reasoning of this proof that is followed later on in the thesis.

It remains to see *together* the proof of the two parts of the theorem. This is to return *comprehensively* to the circular flow view point. As already noted, the very

[22]It is worth recalling in this context a famous statement that Kalecki made immediately after his *first* statement of the theorem way back in [2] - "In a way they (capitalists) are *masters of their own fate*" (79-80,I).

first problem in any argument concerning the circular flow is simply where to "begin" - "cut into" the circular flow. Let us now take a look at the two alternative proofs of the second part of the theorem. The first rests on the *changeability* or more precisely *independent changeability* of capitalists spending in time. The second proof rests upon the essentially *predetermined* nature of capitalists spending in any given short period of time. Our point now is simply that either property singles out "capitalists spending" as the point at which to cut into the circular flow - exactly as in the last chapter. We have seen that the very circular flow then equates capitalists spending to profit, which was the first part of the theorem. By the same token, this is a *proof* of the profit theorem *as a whole*. In other words, we now have a *unified* proof of the whole theorem in the framework of the circular flow.

7.2 The Structure of Determinations as a Whole

We now reach again the point of integration of Kalecki's price-and-income-distribution theory into the macro theory - on the plane of "determinations" per se. Here the two branches of the theory appear in their final form of the wage share theorem on the one hand and the profit theorem on the other. As stated at the beginning, Kalecki arrived at the determination of national income by bringing the two together. We have already given this problem a richer content in our statement of the "central problem" of the whole theory as we understand it. This defines the present subject matter.

This apart, there are two important respects in which our account of the subject matter differs from Kalecki as given in chapter 5 of [10], our basic text of reference. First, for reasons already stated, we simply keep to the time frame of a Kaleckian short period (quarter of a year). For exactly the same reason, Kalecki, on the other hand, shifted to an *annual* frame of reference in this chapter - the analysis here was to serve as *transition* from the macro system per se to the macro dynamic system (or rather to the first round of macro dynamic system). The "transition" falls outside the scope of our enquiry and so we keep to Kalecki's *original* time frame (chapter 3 of [10]).

Let us explain in a few words the basic nature (or content) of this difference. Kalecki's "transition" from the macro system began with his "lagged" formulation of the consumption function of capitalists which was already in the annual frame of reference (this was in chapter 4 of [10]). The formulation enabled Kalecki to treat capitalist consumption as an "endogenous" variable in, so to say, the "first round" of his macro dynamic system. The net upshot was that instead of seeing profits (the profits of a quarter of a year) as determined by the sum total of capitalists spending a per the profit equation, he could now say that a year's profit is determined simply by *past* investment (some "lag" formulation) as per an equation derived jointly from the profit equation and the consumption function of capitalists. With this, he could now project chapter 5 as "establishing a relation between national income and (past) investments" by "combining the results" of his "earlier two enquiries" (251,II). For us, this becomes the simpler problem of establishing a relation between national income and capitalists spending by the above "combination"[23].

[23] We mention that we make similar adjustments to Kalecki's statements and arguments of chapter

Our second difference from Kalecki in chapter 5 of [10] is this. For the purpose of a clear understanding of problems that *may* be created by changes in price, we carry out our basic analysis on *the assumption of unchanged price.* Subsequently, we give up the assumption to see what difference this makes. There is no room for any "prejudgment" or "presupposition" in this procedure. Kalecki, on the other hand, carried out his whole analysis by *starting out* with all his variables as *defined* in "real terms"[24]. This ruled out of court the possibility of any explicit analysis of problems created by price changes (if any).

Lest there be any misunderstanding, let us state clearly that our basic interests remain the determination of variables in "real terms", exactly as in Kalecki. We do not however *define* the system in real terms for this purpose. Once we have analysed the system in full in its original specification, the "real" determinations automatically emerge. No special "assumptions" are necessary. Our device of a two-stage analysis is meant simply to lend transparency to the whole set of questions. If prices remain unchanged then the determination of variables in "real" and in "money" terms boil down to one and the same thing. So, if we arrive at determinations in money terms, we also have the determinations in real terms. This then serves as a benchmark of reference for looking into problems created by price changes (if any).

Let us now begin on the substantive analysis. As just stated, we are concerned with the determination of class incomes vis-a-vis the determination of national income as a whole (the "central problem"). Let us recall that the class of "workers" is already subdivided into "wage earners" and "salary earners". Whether or not one takes this division in a *class*-sense, one has to recognise "wages" and "salaries" as *distinct income categories.* Let us explicitly integrate this point into the structure of the problem by *reorienting* or *recasting* it as follows: Instead of speaking of the determination of class incomes vis-a-vis the determination of national income, we speak of the *determination of the different income categories* vis-a-vis the determination of national income. Given the close connection between "class" and "income categories", this is perhaps not to far removed from the original problem.

Let us now discuss the income categories per se. Actually, we need explicitly discuss "salaries". Salaries are the renumeration of employees having a *more or*

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5 of [10] all through this section without further explanation. Literally, this is "tampering". Let us simply say that there is no "distortion".

[24]We should say *redefined* for the variables are *originally* defined in "money".

less long term employment contract. To this, we have to add the property "with income protected over the period of contract". The precise meaning and significance of this point is made clear later.

It follows at once that salaries - more precisely the *salary bill* - is a *predetermined variable* in the short period. (Indeed this is what makes it part of overhead costs of firms). This sets it completely apart from wages and profits, *currently determined variables* both.

This is clearly a *fundamental analytical distinction* within the three income categories of Kalecki's macro system. "Salaries" fall on one side. There is *nothing to determine* about it in the short period. "Profits" and "wages" fall on the other side, *to be determined.* This is not explicitly stated by Kalecki anywhere, but it is tacitly recognised in his analysis all through (see below). We have brought it to the fore simply because this is the first *analytical* point to make about the structure of determinations in Kalecki's macro system.

We will now proceed to build this distinction into a statement of "national income accounting" which is to serve our basic analytical tool or framework here. But first we have to spend some time on terms, concepts and notations, distancing ourselves a little from Kalecki. (This is in fact already partly done). First, we keep to the notations already introduced. Y is national income, W is the wage-bill, P is profits and X is capitalists' expenditure. Q is now understood specifically as the spending of wage-earners (not workers' spending as a whole). The new notations are: B is the salary-bill, C is the spending of salary-earners. Let us repeat that all these variables are defined in money but are also interpretable as 'real' variables so long as prices remain unchanged.

The notation B for salaries goes back to Kalecki but in a rather involved way. We clear this up here. This goes a long way in clearing up the system itself. Immediately after stating the problem of Chapter 5 of [10], Kalecki set down the result of his earlier enquiry into the relative share of wages and salaries in national income as a "formula" (his word). The formula was:

$$\frac{V}{Y} = \alpha + \frac{B}{Y}. \tag{7.2.1}$$

Let us now carefully note Kalecki's definition of the terms:

"V is the 'real' wage and salary bill and Y is the 'real' gross income of

the private sector. The co-efficient α is positive and less than one and the constant B which is subject to long run changes is also positive."(252,I)

Later, he gave the following substantive characterisation of α and B:

"α is that part of the relative share of wages and salaries in income Y which is *independent of the level of* Y; the other part, B/Y, stands for the *influence of the overhead element in salaries.*"(fn.25;253,II)

We have already distanced ourselves from Kalecki's procedure of starting off with 'real' variables (V and Y). We are now concerned simply with the interpretation and properties of α and B, particularly B. It follows at once from what we called Kalecki's fundamental theorem on the relative share of wages in national income that αY here corresponds precisely to the *wage-bill*; consequently B corresponds precisely to the *salary-bill.* This is not because *we* denoted the "structural constant" of this theorem by α. We have simply chosen the notation consistently with Kalecki. Once α is defined as "that part of the relative share of wages and salaries in national income which is *independent of the level of national income*" it *is* the "structural constant" just referred. Regarding B, we note that Kalecki's statement, "the other part B/Y stands for this influence of the overhead element in salaries", falls short of the *identification* of B with the salary-bill. This is perhaps a reflection of the fact that he was now speaking in an annual frame of reference. This does not come into the problem as discussed here. The more important point is that our B is a *variable* in the proper sense. It denotes the "salary-bill" which is directly observed in itself. This is not to be confused with a *parameter* in an equation as in Kalecki. The only "parameter" in (7.2.1) we recognise is α. In fact having already stated the wage-share theorem as an equation and having explicitly defined the variables W and P, we need neither this equation nor B in the sense of a 'parameter'.

The final point to note is simply this. Whatever be Kalecki's procedure regarding terms, concepts and notations, his *characterisation* of B as "a constant in the short period subject to long run changes" stands simply on his theory of income distribution. A moment's reflection will show that this is simply another way of saying that B, the salary bill, is *predetermined* in the short period. This is why we said earlier that this property of the salary-bill is tacitly recognised in Kalecki's analysis all through.

Let us now begin on the formal analysis. First we state the two ways of national income accounting in the present setup. We integrate the distinction of "predetermined variables" into his statement by marking them with a "bar" on top. We then have the running equation (two equations):

$$P + W + \overline{B} = Y = \overline{X} + Q + C. \tag{7.2.2}$$

The "left equation" gives us the income side of national income accounting, the "right equation" the expenditure side.

Next, we have the assumption that workers' spend what they earn. This must now be assumed for *each* of the two groups, wage-earners and salary-earners. So,

$$Q = W \tag{7.2.3}$$

and

$$C = B. \tag{7.2.4}$$

Finally, we have the *wage-share theorem*, according to which

$$W = \alpha Y, \ \ 0 < \alpha < 1 \tag{7.2.5}$$

This completes the statement of the macro system as a whole.

From (7.2.2), (7.2.3) and (7.2.4) we at once have Kalecki's *profit theorem*

$$P = \overline{X}. \tag{7.2.6}$$

We note in the passing that the macro system can now be compactly represented by (7.2.2), (7.2.5) and (7.2.6). The other two equations (7.2.3) and (7.2.4) lie implicitly behind (7.2.6).

Let us now proceed to "marry" the two theorems. Substituting W from (7.2.5) (the wage share theorem) in the "left equation" of (7.2.2), we have:

$$Y = P + \alpha Y + \overline{B}. \tag{7.2.7}$$

Solving this equation, we have

$$Y = \frac{P + \overline{B}}{1 - \alpha}. \tag{7.2.8}$$

Finally, substituting P from (7.2.6) (the profit theorem) in this equation, we get

$$Y = \frac{\overline{X} + \overline{B}}{1 - \alpha}. \tag{7.2.9}$$

Clearly Y is "determined" by this equation for $\overline{X}$, $\overline{B}$ and α are all given apriori. Retracing steps, we can also say that Y is determined by the equation

$$Y = \overline{X} + \alpha Y + \overline{B}. \tag{7.2.10}$$

(7.2.9) is simply the *solution* of this equation. Depending upon the context we will refer to (7.2.9) or (7.2.10) as the equation determining national income.

We have now reached a vantage point, for the determination of Y subsumes all other determinations in the system. Proceeding in this direction, we get to the "central problem". We may call this the direction of "structure of determinations". The question here is simply *what determines what.* The other direction to look into is the "mechanism of determinations", the *how* question. This takes us back to the analysis of the previous chapter. We will in fact *begin* with this direction or aspect. A certain "come and go" between the two directions comes into the following discussion. We will mention the specific point of interest as we go on. We have not been able to organise the discussion in a more streamlined fashion taking up one subject (direction) after another.

Let us begin with a word on Kalecki. Clearly (7.2.9) defines the "relation between national income and capitalists' expenditure" that Kalecki was looking for. Strangely, Kalecki *did not* arrive at this equation. All he said was that national income is determined by a *pair* of equations, viz. (7.2.6) and (7.2.8). However, it is precisely (7.2.9) that Kalecki had in mind for the substance of this "determination". This is evident from his very next statement -

> "It is clear that the gross income or product Y is fully determined by capitalists' spending X." (253,II)

Now the fact that Y is determined by (7.2.9) rests simply on the "givenness" of the right hand side of this equation. This in turn rests on the fact that both X and B are predetermined while α is a structural constant. When we view this determination from the standpoint of the mechanism of determination, we have to

recognise *first* that we cannot talk of the sum $\overline{X}+\overline{B}$ in any meaningful sense, for X is "expenditure", B is "income". It is necessary to put them on the common denominator of "expenditure". Only then can we talk of the circular flow of income and expenditure which *is* the relevant mechanism. *Secondly*, we have to recognise that we cannot talk of α *just* as the relative share of wages in national income (or as the "structural constant" setting this "share"). It acquires a *further* dimension through the "spending of wages". This way α comes to acquire a "double interpretation".

Let us now show how we are led to each of these two steps following the circular flow framework of analysis. The first step is immediate. The entire salary-bill is spent. This link of the circular flow is already given by (7.2.4). Using this equation we can see the sum $(\overline{X}+\overline{B})$ in (7.2.9) as $(\overline{X}+C)$, which is pure expenditure. Let us denote this sum by H. Let us now follow through. The expenditure H directly creates or generates an equal national income say Y_0. This in turn generates the wage-bill αY_0, α coming from outside. But the entire wage-bill is spent. By this link in the circular flow, we have a further generation or creation of national income, say $Y_1 = \alpha Y_0$. This in turn leads to further generation or creation of national income by exactly the same links and so on. Thus we end up with a whole series-expression of national income:

$$\begin{aligned} Y &= Y_0 + Y_1 + Y_2 + \cdots \\ &= H + \alpha Y_0 + \alpha Y_1 + \cdots \\ &= H + \alpha H + \alpha^2 H + \cdots \\ &= \tfrac{1}{1-\alpha} H. \end{aligned}$$

Substituting back $(\overline{X}+\overline{B})$ for H we get (7.2.9). This is the interpretation of (7.2.9) from the standpoint of the *mechanism of determination* of Y.

The above analysis also makes clear the *second* interpretation of α. Adding the fact that all wages are spent to the original interpretation of α as the wage fraction of national income, we can see α as the fraction of national income that is "spent back" to create national income. It is so to say the fraction of national income that is "automatically spent". Viewed in the total, α now stands as a summation of structural characteristics of *both* the "earnings" and the "spendings" of wage-earners.

This brings us very close to the other direction or aspect of the problem area, the *structure* of determinations. Let us proceed to this through Kalecki. This brings us back to his "pushing up" statement discussed earlier. We have already noted that Kalecki himself identified the passage as statement of the mechanism of determination

of national income. But this was a statement as much if not more of the *structure* of determinations. This is our particular point of interest now. The basic content of the passage from the standpoint of *mechanism* of determinations is already discussed. We will however again touch upon this at the end.

We had earlier discussed only the concluding part of the passage referred above. Let us now give the complete passage:

> "Given that profits are determined by capitalist consumption and investment, it is the workers' income (equal here to worker consumption) which is determined by the 'distribution factors'. In this way capitalist consumption and investment, conjointly with the distribution factors, determine workers consumption and consequently the national output and employment. The national output will be pushed upto the point where profits carved out of it in accordance with the distribution factors are equal to the sum of capitalist consumption and investment."(241,II)

The complete picture of structure of determinations we get here is as follows. A cut-off point is defined by the notion of "distribution factors" (defined simply as "factors that determine the distribution of income" (253,II)). The notion enters the structure of determinations only at the stage of determination of workers' income. Prior to that, there already obtains the determination of profits by the sum of capitalists' consumption and investment. Obviously, the profit so determined is independent of the *level* as well as *distribution* of national income. This is one side of the cut-off point. On the other side, we have the determination not only of workers' income, but also of national income as a whole, stated here as the "national output" being pushed up to a certain point.

Let us now get back to the vantage point. The "level" of national income is here determined *via* its "distribution". Kalecki stressed this point again in Chapter 5 of [10] -

> "The *role* of the "distribution factors" is thus to *determine income or output* on the basis of profits which are in turn determined by capitalists' spending."(253,II)

This was in reference to his depiction of the determination of national income by

means of a *pair* of equations. We can now also clearly see the logic or intended significance of this approach. Once national income is seen to be determined by a pair of equations, one of which is the profit equation, the role of profit is automatically highlighted. It becomes possible to say, as Kalecki does, that national income is determined "on the basis" of profits. However, the statement is liable to misinterpretations, to be guarded against. We come to this later.

We have now got Kalecki's own complete statement of the *structure* of determination in his macro system. It remains to *align* it explicitly to what we have called the "central problem" of the system. Before we take this step, we review Kalecki's passage as statement of the *mechanism* of determinations as he himself meant it to be.

We have clarified again and again that the "mechanism" under reference is the circular flow of income and expenditure. This point of view runs through the whole of Kalecki's passage. It comes at the very beginning ("profits are determined *by* the sum of capitalists' consumption and investment"). Next, it is made very clear that the determination of workers' income by "distribution factor" rests on the basis of workers spending their earnings - "workers' income, *here equal to workers' consumption*". The final point to note in this sequence is the word "consequently" in the following sentence - "capitalists' spending conjointly with distribution factors determine workers' consumption and *consequently* the national income". "Workers' spending" here has the *same* force as capitalists' spending - they *together* set or determine the level of national income irrespective of the fact that their own causalities are very different from one another. We can say that this was Kalecki's own comprehensive statement of the circular flow as he saw it - his version of the "theory of effective demand"[25].

We now come to the step of *aligning* the structure of determinations discussed above to the "central problem" of Kalecki's macro system (as already recast). We

[25]To be correct and complete, we should call this the statement of Kalecki's theory of effective demand at its very *endpoint*. This is because the *forces* of effective demand as we have in Kalecki - the "predetermined" nature of capitalists spending on the one hand and the "budget constraint" view of workers' spending on the other - are completely realised in the determination of *profits*. Nevertheless, we cannot speak of a "theory of effective demand" in the proper sense until we bring it to bear upon the *level of employment*, which is possible only by going from the determination of profits to the determination of national income as a whole, given that these are "real terms" determination, as indeed is the case here.

have to begin with "salaries" for it is the *logical first*. The problem of determination of salaries does *not* fall within the scope of the present system. Here the salary-bill is *predetermined*. The matter ends there. Regarding profits, we have only to repeat: Profits are determined *independently of the level as well as distribution of national income*. Regarding wages, we first sound a word of caution. Off hand, it may appear that the wage-bill W is *determined* by (7.2.5). This is *not* the case because the relation between W and Y is a *two-way* relation. (7.2.5) defines only *one* of the "two ways". The other relation is the just mentioned determination of Y *together* by capitalists spending X *and* workers spending,represented implicitly by W, for $W = Q$. But W is dependent upon Y. Hence W and Y are determined *simultaneously*. This is where the "vis-a-vis" is *irreducible*.

To put formally, it is true that Y is determined by (7.2.10) which is a single equation in a single variable. But this equation is obtained by substituting αY for the wage bill W. So, the "solution" of this equation is the same as the *simultaneous* solution of the two variables, Y and W, and that is the simultaneous determination of these two variables.

It remains to explain why Kalecki's procedure of handling the "structure of determinations" is liable to *misinterpretation*. He says that national income is determined by the pair of equations (7.2.6) and (7.2.8). These are two equations in the two unknowns P and Y. But P is in fact determined by (7.2.6). Just from this, one may conclude that Y is determined by (7.2.8), given P.

But this does not make sense. (7.2.8) is the solution of (7.2.7). This equation is defined completely within the "income side" of national income accounting. "Given profits" is also an assumption regarding this side. The approach then boils down to a complete separation of forces in the determination of profits (determined by forces of "expenditure") *and* in the determination of national income (determined by forces of "income"). But this is *not* the case as we have seen above.

We have now come to the *final* part of the section. So far, it is assumed that prices remain unchanged. We now give up this assumption. In view of this, we now distinguish all "real" variables by the subscript r. Let us start back from the arguments of the previous section. It is the *real* spending of capitalists, X_r that is *predetermined* in the short period. If prices change, the actual spending X is simply

adjusted. From this we have the chain of determinations via the circular flow:

$$\overline{X}_r \longrightarrow X \longrightarrow P \longrightarrow P_r.$$

Let us make one simple observation at this point. Nothing is assumed here about the direction and magnitude of price change. They remain so to say "unknown". Hence so do the money-variables, X and P. The meaningful determination in the chain just set out is therefore the determination of real profits, $\overline{X}_r \longrightarrow P_r$. Indeed, this is the very theory - the "real" determination holds whatever the behaviour of prices and hence also of the money-variables referred.

Let us now come to the problems of this section. It suffices to talk about the determination of real national income Y_r. The question then is the relevant transformation of (7.2.10) for this purpose, for this is the original equation that determined Y and hence also Y_r so far.

Let us momentarily *abstract from salaries.* The equation is then transformed by conversion of the money-variables X and Y to the 'real' variables X_r and Y_r into the equation[26]

$$Y_r = \overline{X}_r + \alpha Y_r. \tag{7.2.11}$$

Since X_r is predetermined and hence given and α remains a structural constant, Y_r is now determined by solving this equation.

$$Y_r = \frac{\overline{X}_r}{1-\alpha}. \tag{7.2.12}$$

So far so good. Let us now bring back salaries into the picture. We have seen that the salary bill B is predetermined in the short period. That was under the assumption of unchanged prices. It can be argued that the statement holds even when prices change. This is only to say that the employment contract of salary-earners 'protects' their income in money, not the real income. To spell out, protection of 'real' income means by definition that salaries are adjusted to changes in price[27], as part of the employment contract itself. Whatever be the 'facts,' in a theory where the behaviour

[26]This means that Y and X are both deflated by a price-index. The price index must be the *same* in both cases. α remains unaffected.

[27]We should say *relevant* prices (some CLI). However it is difficult to fit this into the already noted requirement of a common deflator for using the balance equations of national income accounting. Hence we leave the point aside.

of real wages is left purely to the behaviour of prices it is hard to think otherwise of salaries.

But if the salary bill B remains predetermined then the *real* salary bill B_r is a *currently* determined variable. It is, to go one step further, an 'unknown'. (The argument is already given). But if this be so, then the real national income Y_r *is no longer determined*, for (7.2.11) is now replaced by the equation

$$Y_r = \overline{X}_r + B_r + \alpha Y_r. \qquad (7.2.13)$$

and B_r is an "unknown". To repeat, this equation cannot serve to determine Y_r, for while X_r is predetermined (and hence given), but B_r is not "given" in any sense of the term.

The only way out of this negative conclusion is to *assume* the protection of 'real' salaries in the sense just clarified. It is the real salary bill that is then the predetermined variable. The salary bill B itself becomes a currently determined variable, but this of no consequence for the problem at hand. With X_r and B_r both predetermined and hence given, Y_r is now determined by (7.2.13)[28].

This is very anomalous to say the least. In a world where salaries are adjusted to price changes, so, one would think, are wages. But then we run into problems of *consistency* mentioned earlier (Ch.4,sec.3), and the whole theory becomes insecure.

Is there a way out? The answer is a partial 'yes'. Let us remember that the discussion here is for a given Kaleckian short period. Now, the calculation (and publication) of CLI to govern the adjustment of wages to prices will certainly take some time. We can put this "lag" to be greater than the duration of the Kaleckian short period (quarter of a year). This means that the level of wages depends upon *past* prices and not current prices. In the time frame of the Kaleckian short period we then do *not* have the "two way relation" between the national wage bill W and national income Y. We have only the "one way" relation defined by (7.2.5). The structure of determinations is reinstated. This saves the day.

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[28]We can now see that *this* is the assumption that Kalecki slipped into his definitions without, we think, being aware of it. Having defined Y and V in 'real' terms, Kalecki just wrote "the *constant* B which is ...". Clearly, this B had to be defined in *real terms*. It is our B_r. The "constancy" of B_r means by definition that B is proportional to the current level of prices,i.e, the salary bill is adjusted to price changes, fully and instantly. Needless to say, all this is very weighty.

The end-line however is not yet written. The above arguments tacitly abstract from salaries. Once it is brought back, we again have the real salary bill as an "unknown" (or "currently determined variable"). This appears to be a *dead end.*

Chapter 8

The Multiplier

8.1 The Problem

In ch.6 we derived "pure relations" of the circular flow under Kalecki's assumptions. There was no time reference in this. We raised the question whether the relations are necessarily satisfied in any given period of time. We now take up the question within the "structure" defined by the direction of determination in those relations. This in fact means a very substantial *reframing* of the original question. Essentially, we now take a fresh look at the *structure of determinations* of Kalecki's macro system *keeping the above question in the open.*

Let us orient the problem accordingly. The "given period of time" in respect of which the question was originally raised is now understood as a *given Kaleckian short period of time.* Secondly, since the structure of determinations of Kalecki's macro system is in fact subsumed under the determination of *national income*, we now direct our question to this determination. The question then is simply whether the equation:

$$Y = \frac{1}{1-\alpha} X \quad [1] \tag{8.1.1}$$

is necessarily satisfied in a given short period? What is the structure of determinations if not? It will be convenient to refer to this equation as the "original equation of national income".

[1] "Salaries" are left out.

We will now explain how the problem comes under the heading of the "multiplier". First a word of clarification. The "multiplier" is generally understood as the effect (all that goes into the effect) of changes in investment upon real national income or output. But in Kalecki it is not "investment" but (real) "capitalists' spending" is that determines real national income in the short period. So, we have to understand the notion of the multiplier here as pertaining to the effect of *changes in real capitalists spending upon real national income or output*[2]. This can be called the multiplier in the *Kaleckian frame*. (More on this in a minute).

Let us now return to our original question. The question is defined with respect to a *given* short period. It is in principle possible that the answer to it can be found *from within* the happenings of the period concerned. A moments reflection will show that in this case the "multiplier" does *not* simply come into the question.

Let us spell out this point. Capitalists spending is *predetermined* and hence *given* in any given short period of time. We can meaningfully talk of *change* in capitalists spending only on a *longer time-view*. It follows that the multiplier comes into our question *only if* the question *cannot* be answered by a "closed" single-period analysis. This will be seen to be indeed the case, given the further assumptions we make to answer the question. But for the time, the whole "entry" of the multiplier into the question-area has to remain as *provisional*.

Let us now move *constructively*. Granting that the *past* does come into the problem area, let us focus attention upon the *immediate* past, i.e, upon happenings in the short period immediately preceding our given period. Note these happenings are *given historical data* for our purpose, and that includes capitalists spending.

Let us denote capitalists spending in the preceding (also called the "initial period") period by X_0. We can now discuss the effect of $(X - X_0)$, the change in capitalists spending between the two periods, upon national income. We are interested in this "effect" only in so far it is *realised within our given period of reference* (also called the "current period"). Once we know this, we also come to know the

[2]We will simplify matters by assuming that *prices remain unchanged* through the whole time we talk of. This does not really matter as prices do *not* in fact change *as a result of* changes in the real spending of capitalists i.e, in the *demand* for goods or services coming from capitalists. "Exogenous" price changes can be corrected by suitable deflators. We leave out this linguistic complication. Under our assumption all variables defined in money stand also for corresponding real variables, eg. national income for real national income or output etc.

current period level of national income Y, for the initial period national income Y_0 is again a given historical datum for our purpose. In short, we come to know Y *via* the "multiplier" m defined as $(Y - Y_0)/(X - X_0)$[3]. By the very structure of this term, our question is then also answered. This broadly explains the chapter heading.

This brings us to two related observations. First, the "multiplier" is very much an element of the conventional framework of macro economics, one of its basic analytical tools. It is clear that we are using this tool for a very distinctive purpose coming from within the general body of Kalecki's macroeconomic-analysis. There is no notion of "tie up" with conventional framework of analysis in this.

Secondly, the multiplier *process* formed an integral element of Kalecki's macro economic-analysis from the very beginning (see eg. 79,I; 190,I). However, he used neither the "multiplier" nor the "multiplier process" as an analytical tool. It was therefore not necessary for him to give a precise analytical formulation of the process. We will have to fill in the blanks as necessary on our own[4], and we shall try to do this in keeping with the overall structure and general spirit of Kalecki's arguments. For this reason, the multiplier analysis given here can be said to belong to the Kaleckian frame. A first substantive point in this regard is already mentioned.

It remains to state a *provisional* assumption on the basis of which we carry out the main analysis, subsequently given up. The assumption is that the "original equation of national income" was indeed *satisfied in the initial period.* This leads to the following structure of the problem.

Note first that the pairs of variables (X, Y) and (X_0, Y_0) are already defined respectively for the current period and the initial period. So, (8.1.1) is now automatically defined for the current period. The corresponding equation for the initial period is:

$$Y_0 = \frac{1}{1-\alpha} X_0 \tag{8.1.2}$$

So our question now is whether (8.1.1) is necessarily satisfied given (8.1.2) - with what implications for the structure of current period determinations if not.

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[3]This notion of the multiplier - which is defined with respect to two consecutive Kaleckian short periods - is to be clearly distinguished from the *a priori multiplier* obtained by differentiating (8.1.1)with respect to X.

[4]These "fillings" are also part of the "further structure" within which we frame our original questions in this chapter.

8.2 Formulating the Multiplier Process

We are concerned with the effect of the change in capitalists' spending between the initial period and the current period upon the national income of the current period. But we do not know how exactly capitalists' spending changes *through* time. Indeed, the question appears simply inscrutable. Nevertheless, it will be necessary to say something about this to answer our question by means of the "tool" chosen. This "something" can again be accorded a provisional status in the whole analysis.

With these observations, we now assume that in some sense capitalists' spending has changed from the *very beginning of the current period.* The "sense" is made more precise later. The reason why we make this assumption is simply that it means that the effects or consequences of the change in capitalists' spending, whatever they be, work through the *whole* of the current period (possibly beyond) for us to discuss. This gives so to say a "full body" to our problem.

The first, direct and straightforward effect of the change in capitalists' spending - the change in the *demand* for goods and services coming from capitalists - is the *output response* to any change in the demand. This already defines a *component* of the end point (current period output) that we want to arrive at. Let us now define the other components. The output-response - the *change* in output taken place - leads to a (proportional) change in the *wage bill paid* (for wages, being prime costs, are proportional to output) and this in turn leads to a (equal) change in *workers' spending* (for workers spend what they earn). Since prices are assumed unchanged, the change in workers' spending means a proportional change in the *demand* for goods and services coming from workers. This means a *fresh* output response and so on.

We have now got the *three links* of the multiplier process viz. the effect of (a) change in demand upon output, (b)change in output upon the wage bill, and (c) change in wage bill upon workers' consumption. Stated more precisely, these three links make up a *chain*, and the chain *replicates* itself over and over again. This "replication" is the multiplier process at work. The "components" of our end point are ultimately the sum total of the chain effects in so far as they fall within the current period.

It remains to specify the process *in time*[5]. How the "chain" replicates over in time is settled in between. It is not an independent question.

Though Kalecki was not interested in this range of issues, he did imply a clear time-view of link 1 in his condition of "elastic production". It is in respect of the link 2 that we meet a virtual 'blank'. The link itself covers a wide range of issues to be discussed. We have only a fleeting reference to the "beginning" issue in Kalecki. The rest has to be argued on our own. We mention that this in fact is the *crucial* link, for it defines the replication of the whole "chain" spoken above. Finally, Kalecki did take clear time-view of link 3 at one point of his analysis. Our object is to piece together the "multiplier process" out of these ingredients in Kalecki, supplying missing links as necessary.

Kalecki meant or at least *used* the condition of elastic production in a way to mean that that there is an *immediate* and *full* or *complete* output-response to any change in demand. Put differently, the change in demand is met "exactly" and "instantly" by change in the volume of production or output. As a result, *output is always equal to demand*[6]. This is the time specification of link 1 in our "Kaleckian" formulation of the multiplier process[7].

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[5]Henceforth we use the term "process" (multiplier process) to mean the *process in time*. This is a significant step in our use of this *tool* ("process") in the thesis. It is worth reviewing the earlier uses and see the whole thing in a perspective. The earlier uses were (a) the process of adjustment of prices defining "price mechanism" (sec.2, ch.3) and (b) the process of creation of sale proceeds defining the "circular flow" (ch.6). (The present use is therefore (c)). (a) was defined in reference to the *change* in the cost data taken place in an industry. But we did not locate this "change" in *time*. Consequently we did not see the ensuing price changes in time. This does *not* mean that the changes take place "out of time", whatever that may mean. It means that "time" - the time taken for the changes - were of *no relevance* for the question in hand. Hence no mention was made of them. (It is quite another question whether the "times" referred have any meaningful specification). Let us now move on to (b): There was no reference *either* to "change" *or* to "time" in it. Both were deemed *irrelevant* in the sense just explained. But then there came the question whether the results are *valid* in time in the sense as explained. This is what brings the "multiplier process" into our problem. "Time" is of the very *essence* of the problem here. It is only by careful time-view or time-specification of the links of the process that we can make it serve its purpose or tool-role. "Change" has also come in, but only on a provisional basis as already noted. In sum, what to "put into" a process is simply a question of purpose. Dogmas are avoided.

[6]These points are further discussed in the App.A

[7]Note, this can be said to be a *structural* specification, for it makes no reference to "change" as such. By the same token, the specification overcomes the limitation of possible *conjunctural* elements in the very notion of "response to change". Our time specification of the other links will also be

We now come to link 2. The fleeting reference that we have in Kalecki on the "beginning" of this matter is simply a reference to the fact of "payment of wages at certain intervals (of time)" (94,II)[8]. We now follow this up with a basic *empirical* point our own. The interval at which wages are paid is *generally much shorter* than the Kaleckian short period. We can "realistically assume" - to use a word of Kalecki (see below) - that wages are paid weekly. There are then some $N = 13$ or 15 wage payment intervals in our basic period of reference - so many times wages are *freshly* paid (and possibly spent) within the period, dividing the period itself into these *sub-periods*.

It is hard to overrate the significance of the step just taken for our purpose. We now have one pure *time-datum*, the wage payment interval or the "week", to *complement* the Kaleckian short period or a "quarter". Between the two, the whole *time dimension* of the analysis gets set. By the same token, we have now prepared the ground for a number of *structural specifications to go into the* formulation of the multiplier process. We shall first complete this circuit and then continue with the time specification of link 2, after which we pass to the time-specification of link 3.

First, we take that our short period *begin* at the beginning of some week, and that the weeks *begin* with a payment of wages. By definition, the week *lasts* till the next wage payment while the short period (also called just the "period") *lasts* for N weeks. We will let the symbol $t = 0, \pm 1, 2, \ldots$, denote the successive weeks (a two-way unending sequences as it must be). The "current period" is *defined* as covering weeks $1, 2, \ldots, N$. So, the "initial periods" covers weeks $-N+1, -N+2, \ldots, 0$. Thus $t = 0$ stands for the *last* week of the *initial* period.

Once "weeks" are defined, so are capitalists spending in the weeks. It is then liable to *change between weeks*. This is the problem of *inscrutability* about the notion of change in capitalists spending through time mentioned at the beginning of the section.

We will now *banish* the problem. One way apparently of doing this is simply *not* to talk of change in capitalists spending between weeks as "change" as such. One

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"structural" in this sense of the term.

[8]Kalecki put forward this fact in a paper on "hyper inflation" [12] as one reason why "real wages under hyper inflation are usually falling" (*94,II*).

talks instead of the "time-distribution" or "phasing" of the given capitalists spending of a given short period. What would have otherwise appeared as "change", then appears as the unfolding of the time-distribution or phasing.

Unfortunately, this brings one to the problem of "time" and "Time" in the sense of Georgescue-Roegen (135,[23]). The Kaleckian short period is a purely *durational* notion (defined in Roegen's "time"). The word "given" does locate it in the real time-axis (in Roegen's "Time"). But the word remains empty. No substance is given to the location. How then to speak of the time-distribution of capitalists spending in successive periods when the "periods" themselves are in no way distributed in or over time (Roegen's "Time")!

So, our banishing the problem has to be more *drastic*. Traversing through time (the weeks) we assume as if there has been *no* change in capitalists spending for quite some time (at least N weeks) *till* there is. This "is" defines the transition from week 0 to week 1 in our scheme. The "change" in capitalists spending between our two periods is then automatically defined *from the very beginning of the current period*. The "banishment" is completed by assuming that there are *no further changes* in capitalists spending for quite some time (at least for N weeks). This means that there is only a *once-and-for-all* change in capitalists spending in the time-domain of our analysis, taken place exactly "between" the two periods. The artificiality of this conception of change in capitalists spending is completely admitted.

Let us now denote capitalists spending in week t by x_t. By the assumptions just made

$$x_{-N+1} = x_{-N+2} = \cdots = x_0,$$

$$x_1 = x_2 = \cdots = x_N = x \ \ say.$$

Hence,

$$X_0 = Nx_0, \quad X = Nx.$$

Let us now complete the "circuit". Let y_t denote the national income or output produced in week t. By definition

$$Y_0 = \sum_{-N+1}^{0} y_t, \quad Y = \sum_{1}^{N} y_t.$$

Secondly, we can now formulate link 1 (output is always equal demand) as an

equation in the weekly scheme, viz.

$$\begin{aligned} y_t &= d_t \\ &= x + q_t \end{aligned} \tag{8.2.1}$$

where d_t denotes the "demand" in week t, which comes by definition either from capitalists (x) or from workers (q_t). Obviously, q_t stands equivalently for workers' spending.

Let us now pick up link 2 from the point where we left it off. So far, we have simply viewed the payment of - the wage bill in time. The problem now is to link or relate the wage bill paid to output produced - *in time*. We start from the simple point that the firm (any firm) has to first *calculate* the wage bill before paying it. The question is how precisely the wage bill is "calculated". (How "time" comes into this will be clear as we go on).

The background for this purpose is given by our earlier discussion of the concepts of "wages" (p.148) and "salaries" (p.149), particularly the latter. We said that salary earners not only have a relatively long term employment contract, the very nature of the contract "protects" their income over the whole duration of the contract. Let us now spell this out. Salary earners certainly have their *job-specifications*, and can be assumed to work according to those specifications. But no precise measurement of the *work done* comes into the calculation of their salary-bill (say, the monthly salary-bill, which is very usually the case). So, their renumeration or income *does not vary with variations in their work-load*. The question of variation with the *output produced* therefore does not simply arise. It is in this sense that their income is "protected" over the contract period. The fact that salaries are part of the overhead cost of firms follows as a corollary.

Let us now come to *wages*. To bring the wage-salary distinction in sharp relief, we assume at this point that wages are governed by the so called "piece wage system"[9]. At the very center of this system lies the notion of a *work measure* to govern the calculation of wages to be paid. This means simply that the amount paid, or to be paid, as "wage" to any worker depends upon the precise amount of work done as per this measure. So, the worker(s) may in fact have a long term employment contract,

[9]We leave out other wage systems, eg. the so called "time wage system" because they bring in rather loaded notions, eg. "hiring and firing", which are not very relevant to the purpose at hand.

but the wages they receive depends upon the work done. Their income is therefore *not* protected over the duration of the contract. This is the difference[10].

We now have to guard things from another side. The "work done" is not *volitional.* The work is in fact "given" or "assigned" or "ordered" by the employer (firm). It is tacitly assumed at this point that the amount of work ordered depends upon what *output* the firm is producing, i.e its current production. This is what makes the wage bill part of the prime costs. Finally, since the total prime cost is proportional to output - this is nothing but Kalecki's "stability" of unit prime costs over the "relevant range of output" - so is the wage bill. It follows that the *wage bill is proportional to current production.*

This statement is liable to a mathematical *miss*specification. Enter first the fact that wages are paid weekly, and then the profound fact that no measurement is possible of work *not* done or not *yet* done. It follows that the *wage bill paid by a firm in a week* - at the "beginning" of the week, as it must be - can be proportional only to the output produced in the *last* week.

This is the correct mathematical specification of the proportional relation between the wage bill and "current production". The factor of proportionality is already denoted by α. So, the equation is :

$$w_t = \alpha y_{t-1} \tag{8.2.2}$$

where w_t denotes the wage bill of week t (paid this week).

It remains to see link 3 - the relation between the wage bill and workers spending - in time. As already stated, we have this straight from Kalecki:

> "We may realistically assume that workers spend all their income, and that *they spend them immediately.*"(96,II)

Interpreted in the weekly scheme, the assumption can be stated as follows. *The wage bill paid in a week* (at the week beginning) *is spent in the week itself* (through the week). In other words

$$q_t = w_t. \tag{8.2.3}$$

[10]Note, the dependence of the wages upon the work done is a *proportional* relation. The factor of proportionality defines the "wage rate" in the dimentionality defined by the chosen "measure of work".

The three links of the chain defining the multiplier process are now defined respectively by (8.2.1),(8.2.2) and (8.2.3). Putting them together we have the process as a whole. By substitution, the process can be represented by the single equation:

$$y_t = x + \alpha y_{t-1}, \quad t = 0, \pm 1, 2, \cdots. \tag{8.2.4}$$

This is the process defined in two-way unending sequence of weeks. But for *our purpose*, the process is *defined* only for $t = 1, 2, \ldots$. Within this, our *interest* focuses upon the range $t = 1, 2, \ldots, N$. I.e, our interest is in this "truncated process".

We can say that y_0 defines the *initial condition* of this process *because* y_0 is a *given historical datum* because it is simply the output produced in the last week of the initial period. This simultaneously connects happenings in the current period to happenings in the previous (initial) period. A closed single-period analysis of our problem is therefore *not* possible. This finally establishes the relevance of the "multiplier" for the problem.

Note also that the inter-period link in the happenings is also the *only* inter-week link in the happenings of the current period. This link is defined exclusively by the time-specification of link 2 of the "chain" defining the process. So, this *is* the crucial link defining the replication of this "chain" in time. Our claim to the multiplier process just formulated being "Kaleckian" rests *both* upon this identification *and* upon the time-view we have taken of this link, which, we believe, *is* "Kaleckian" in nature and spirit.

8.3 Analysis

Let us begin straight by solving our process equation (8.2.4). The solution is given by:

$$y_t = y^* + (y_0 - y^*)\alpha^t, \quad t = 1, 2, \cdots \tag{8.3.1}$$

where

$$y^* = \frac{1}{1-\alpha}x. \tag{8.3.2}$$

Since $0 < \alpha < 1$, y_t converges monotonically to y^*, from above or below according as $y_0 >$ or $< y^*$. This is the *fundamental property* of the multiplier process.

Let us link up with our problem. Comparison of (8.3.2) and (8.1.1) at once shows that the "original equation of national income" can be written as

$$Y = Ny^*(= Y^*, say). \tag{8.3.3}$$

It follows at once from the fundamental property of the multiplier process that this equation is satisfied *if and only if*

$$y_0 = y^*.$$

This in turn means that output (the weekly output) is *stationary* in the current period.

Now y^* is defined by (8.3.2). But y_0 remains *undefined* in the *analytical* sense, i.e it is not *related* to any other variable of the system. Stated mathematically, we do not have any "equation" for y_0. Only when we have an appropriate equation, we have a meaningful answer to our question.

Let us now take up the question of "equation for y_0". We follow a route which introduces the *main line of argument* of the section.

We begin with the question of the *time taken* for the multiplier process to converge (also called the time taken by the multiplier process to "work out" or more simply to be "over"). Obviously, we can say the process is "over" for all practical purposes if α^t has become *negligible*. The relevant question is whether the process is over *within the current period*, i.e whether α^N is negligible. This has to be argued *numerically*, and that sets the mainline of argument.

Let us set out the matter carefully. Let us first agree that α^t has become "negligible" if it has fallen below 1%. Let us now focus upon the values of the two parameters, N and α. Let us keep N fixed at $N = 15$ and tilt the balance in favour of a negative answer to our question by choosing a substantially "high" value of α. (Obviously, the smaller the value of α the faster the convergence of (8.3.1)). Let $\alpha = 0.75$.

It is found that α^t has become "negligible" for $t > N_0 = 13$. So, we do *not* get the "negative answer". The multiplier process has indeed *worked itself out within the current period.* Stated mathematically,

$$y_t = y' \quad for \quad t > N_0. \tag{8.3.4}$$

This is the *fundamental result* of the section.

We can now return to the question of the "equation for y_0". We have just obtained a result concerning the *last* week(s) of the *current* period. By the same arguments, a parallel result must hold for the last week of the *initial* period. Noticing the definition of y' it is clear that this "parallel result" is simply that

$$y_0 = \frac{1}{1-\alpha} x_0. \tag{8.3.5}$$

This is the "equation for y_0" we were looking for. Note, the equation is obtained *independently* of the provisional assumption that the "original equation of national income" was satisfied in the initial period.

We can now return to our main question. Comparing the equations of y_0 and y', (8.3.5) and (8.3.2), it is clear that (8.3.3) is satisfied *if and only if* $x = x_0$, which is to say

$$X = X_0.$$

Thus the "original equation of national income" is satisfied in the *current period* if and only if there has been *no change in capitalists spending between the two periods.* We repeat that the proposition is independent of whether the "original equation" was or was not satisfied in the initial period.

We are now through with *one* part of our problem and turn to the *other.* Mathematically speaking, the problem here is to obtain, if possible, an equation for the current period national income Y, which can be said to *determine* Y, given that

capitalists' spending has actually changed, $X \neq X_0$. As already stated, we approach the question via the *multiplier*, m defined as

$$m = \frac{Y - Y_0}{X - X_0}, \quad X \neq X_0.$$

This means simply that we first decompose Y as follows

$$\begin{aligned} Y &= Y_0 + (Y - Y_0) \\ &= Y_0 + m(X - X_0) \end{aligned} \tag{8.3.6}$$

By substituting the values of Y_0 from (8.1.2) and m (to be found) we then obtain the required equation for Y. So, this is where we come to use (8.1.2) i.e the provisional assumption we started with.

Finding out the value of m involves three steps. First, we have to find Y out of the solution of the multiplier process given in (8.3.1) Next, we have to find $(Y - Y_0)$. Finally we find the ratio $(Y - Y_0)/(X - X_0)$. From (8.3.1) we have the following expression of Y:

$$\begin{aligned} Y &= \sum_{1}^{N} y_t \\ &= Ny^* + (\alpha + \alpha^2 + \cdots + \alpha^N)(y^* - y_0). \end{aligned} \tag{8.3.7}$$

Let us now move to the second step. We have just assumed (8.1.2). A *moment's reflection shows that this* means that the weekly output in the initial period was *stationary*. Hence,

$$Y_0 = Ny_0. \tag{8.3.8}$$

We can now argue as follows:

$$\begin{aligned} Y - Y_0 &= Ny^* + (\alpha + \alpha^2 + \cdots + \alpha^N)(y_0 - y^*) - Ny_0 \\ &= N(y^* - y_0) - (\alpha + \alpha^2 + \cdots + \alpha^N)(y^* - y_0) \\ &= [N - (\alpha + \alpha^2 + \cdots + \alpha^N)](y^* - y_0) \\ &= [(1 - \alpha) + (1 - \alpha^2) + \cdots + (1 - \alpha^N)](y^* - y_0) \\ &= [(1 - \alpha) + (1 - \alpha^2) + \cdots + (1 - \alpha^N)]\tfrac{1}{1-\alpha}(x - x_0) \text{ from (8.3.2)\&(8.3.5)} \\ &= \tfrac{1}{N}[(1 - \alpha) + (1 - \alpha^2) + \cdots + (1 - \alpha^N)]\tfrac{1}{1-\alpha}(X - X_0). \end{aligned}$$

From this, we at once have the required expression of m (the third step):

$$\begin{aligned} m &= \frac{Y - Y_0}{X - X_0} \\ &= \frac{1}{N}[(1 - \alpha) + (1 - \alpha^2) + \cdots + (1 - \alpha^N)]\frac{1}{1 - \alpha}. \end{aligned} \tag{8.3.9}$$

We will now take a little time off our programme. The term $1/(1-\alpha)$ is nothing but the *a priori multiplier*, which we also denote as m^*. So, (8.3.9) already gives us *the relation between* m *and* m^*. Let us discuss the precise nature of this relation, which is obviously of some interest of its own.

We can write the relation between m and m^* as follows:

$$m = \delta m^*$$

where

$$\delta = \frac{1}{N}[(1-\alpha) + (1-\alpha^2) + \cdots + (1-\alpha^N)].$$

Now, δ is simply an *average* of N terms each of which *is a proper fraction.* Hence, δ *is also a proper* fraction. Thus m *is a fraction* of m^*. In other words, only a fraction of the value of the a priori multiplier is *realised* within the current period. The reason is as follows. It is already seen that given reasonable values of parameters, the multiplier process converges within the current period. But the "convergence" has taken time. Over this time, the outputs y_t are all either greater than or less than the output y^* depending upon the initial condition ($y_0 >$ or $< y^*$). This is why the actual value of the multiplier realised in the current period is less than the a priori multiplier. The sequence $(1-\alpha), (1-\alpha^2), \cdots$ simply expresses the differences $\mid y^* - y_t \mid$ in a pure form free of dimensions.

Let us also have an estimate of the order of magnitude of the difference between m and m^*. It is found that for the previously chosen values of α and N ($\alpha = 0.7$, $N = 15$), δ is about 85%. Thus the difference is about 15%. This cannot be considered "negligible".

Let us now return to the main program. First, we have a significant simplification of (8.3.9) based on our chosen values of parameters. We have seen that for these values, $\alpha^t = 0$ for $t > N$ and $N > N_0$. Hence the finite series $\alpha + \alpha^2 + \cdots + \alpha^N$ sums up to the value $\alpha/(1-\alpha)$. Using this result, we can now write (8.3.9) as :

$$\begin{aligned} m &= \frac{1}{N}\left[N - \frac{\alpha}{1-\alpha}\right]\frac{1}{1-\alpha} \\ &= \left[1 - \frac{1}{N}\frac{\alpha}{1-\alpha}\right]\frac{1}{1-\alpha}. \end{aligned} \tag{8.3.10}$$

This is the simplification.

Let us go back to the decomposition of Y given in (8.3.6). Substituting the value of m just obtained, we see that

$$\begin{aligned} Y &= Y_0 + \left[1 - \tfrac{1}{N}\tfrac{\alpha}{1-\alpha}\right]\tfrac{1}{1-\alpha}(X - X_0) \\ &= \tfrac{1}{1-\alpha}X_0 + \left[1 - \tfrac{1}{N}\tfrac{\alpha}{1-\alpha}\right]\tfrac{1}{1-\alpha}(X - X_0) \quad \text{from (8.1.2).} \end{aligned}$$

After simplification this reduces to the equation:

$$Y = \frac{1}{1-\alpha}X - \frac{1}{N}\frac{\alpha}{(1-\alpha)^2}(X - X_0). \tag{8.3.11}$$

This is the equation we were looking for. X, X_0, α and N are all given a priori though for different reasons (X_0 is historical datum, α and N are parameters and X is a predetermined variable). Hence Y is *determined* by (8.3.11).

Formally, (8.3.11) appears as a *generalisation* of the original equation of national income which is obtained from it as a "special case" (case of no change in capitalists' spending, $X = X_0$). However, this generalisation is not due to any *new* factor introduced into the picture. What determines national income is still capitalists' spending and nothing else. The difference is simply that this force is now expressed through both the "level" and the "change" in capitalists' spending. The point is that there is no *independent* force behind the "change" as such. For this reason, it is appropriate to say that (8.1.1) is a *modification* or *adjustment* of the original equation. Obviously, the second term on the right side of (8.3.11) defines the "adjustment factor".

This brings us to the *final* question viz. the *order of magnitude* of this term or factor. Another way of putting the same question is the "degree of approximation" in approximating the "true equation" (8.3.11) by the "original equation" (8.1.1). To answer this question, it is necessary to extend our numerical framework to include the order of magnitude of the change in the volume of capitalists' spending taken place. This is meaningfully done only in *relative* terms. This in turn calls for a transformation of (8.3.11) where the adjustment factor is expressed in a multiplicative form. Using the notation introduced in (8.3.3) let us now write (8.3.11) as

$$Y = (1 \pm \beta)Y^* \tag{8.3.12}$$

where

$$\beta = \frac{1}{N}\frac{\alpha}{1-\alpha}\left|\frac{X - X_0}{X}\right|.$$

It is understood that β enters (8.3.11) with + sign if $X < X_0$ and − sign if $X > X_0$.

Let us again tilt the balance in a negative direction ("bad approximation") by supposing that capitalists' spending has changed very substantially between the two periods, say $(X - X_0)/X$ is about 50%, i.e capitalists spending has *risen* by about one-third. Combining this information with the earlier parameter values ($\alpha = 0.7,\ N = 15$), we find that β is about 5%. This does not appear bad! Considering the order of magnitude of the change in capitalists' spending, we have to say that the original equation provides quite a good approximation to the "true" or "modified" or "adjusted" equation. This is the main result of the *chapter*.

It remains to discuss the implications of withdrawing the provisional assumption that the "original equation of national income" was satisfied in the initial period. This is a little intricate. It may appear at first sight that this assumption does *not* simply enter the "main result" because (a) by the very definition of the multiplier process (a first order difference equation) Y depends upon y_0 but *not* upon y_t, for $t > 0$, and (b) the "equation for y_0" used in defining (8.3.12) was obtained independently of the assumption under reference. However, this overlooks the fact that the "adjustment factor" in this equation is defined in terms of the change in capitalists spending, $(X - X_0)$, and X_0 gets into the picture by the relation between y_0 and X_0, which is defined through (8.1.2) (the "provisional assumption"). So, once the provisional assumption is given up the adjustment factor gets altered. A second approximation becomes necessary for the goodness of approximation to be understood relative to the change in capitalists spending.

Rest of the matter is inextricably bound with our assumption of changes in capitalists spending taking place "exactly" between periods. Once capitalists spending begins to change "within" any particular period, the multiplier process initiated there by gets "carried over" to the next period instead being "over" within the period. The "spill over" will introduce further terms in the "adjustment factor". Further approximations becomes necessary. This however is *not* to say that our "main result" is very materially affected. In fact, the result may be *strengthened* for *opposite* reasons, in the opposite cases of "cumulation" and "cancellation".

This may be taken for a *full turning of the circle*. Though a "closed" one-period *analysis* of our problem is not possible (put differently, the problem is not *analytically* treatable within this framework) the *result* of a closed one-period analysis of

the problem of determination of national income (same as determination according to the "original equation of national income") is not *materially* affected under a wide range of variations regarding the behaviour in capitalists spending through time.

Let us end by giving a summary of our results. The "original equation of national income" is nothing but a pure relation of the circular flow under Kalecki's assumption. It is shown that this relation holds good in *any given short period of time* under, and only under, *complete stationary conditions* (no change in capitalists spending either between "periods" or between "sub-periods"). Secondly, it is shown that under non stationary conditions, the equation actually "determining" national income of a given short period of time is approximated quite well by the "original equation". Hence the actual structure of determinations of the macro system is not much affected by the stationarity or otherwise of the system.

8.4 Concluding Observations

We have not even mentioned so far the *original* question that set us on the problem of this chapter, viz. whether or not Kalecki's profit equation is necessarily satisfied in any given period of time. Let us say straightaway that the answer is 'yes' *if and only if* there is no change *either* in capitalists' spending x or in the wage share α. This is clear from the forgoing analysis *if* profit is taken to be defined as $(1-\alpha)$ fraction of national income.

One may question this "if" pointing out that α did not simply enter the determination of the profit equation. The answer to this has to be a little involved. The profit equation was derived by a total summation of the process of creation of sale proceeds by spendings over all its steps or rounds. But what is the operational significance of this "all", or of this "total"[11]?

Mathematically, the first point to state after this is simply that the profit equation can only be *approximately* satisfied if the "summation" is over a *finite* number of steps (truncated process). The deeper point is that we know nothing about the *convergence* of the process and hence about the "degree" of approximation. Indeed the mathematical beauty of the derivation of the profit equation given was that this notion did *not* come into it. The cost of course is that the result has no clear operational significance. Once we contend ourselves with only a finite number of steps, we cannot but see the result as "approximation" to the result of summation over all steps, and the whole question of convergence come up. To answer the question it is necessary to make *some* such assumption as a definite relation between costs incurred and sale-proceeds at *each* step of the process, i.e between C_k and Z_k. This is how α comes into the picture. All this (and more) operationalism is so to say "forced into" the picture the moment we try to follow through the consequences of *change* in capitalists spending through the process. The basic result is already stated. Given all the "further structure" we have brought into the problem, the equation for the current period profit P stands as:

$$\begin{aligned} P &= (1-\alpha)Y \\ &= (1-\alpha)\left[\tfrac{1}{1-\alpha}X - \tfrac{1}{N}\tfrac{\alpha}{(1-\alpha)^2}(X-X_0).\right] \\ &= X - \tfrac{1}{N}\tfrac{\alpha}{(1-\alpha)}(X-X_0) \end{aligned}$$

[11]This point had been made clear in a slightly different form

Let us now change track. We were led to the "circular flow" by kalecki. This was his first, historical statement of the "determination" of profits, upon which we founded our whole analysis in this part of the thesis. Later, kalecki set out the determination of national income, extending the framework as necessary (the "pushing up" passage). He himself referred to this passage as statement of the *mechanism* of determination of national income (253,II). Somehow, he never used this word ("mechanism") in connection with the determination of profit. This seems to have given rise to the misgiving that this is a purely "logical" determination without requiring the support of a "mechanism", that the profit equation itself is a "tautology" or "truism", holding "by definition" in any given period of time. These misgivings, we hope, are now dispelled. The mechanisms of determination of profits and national income are one and the same (circular flow). Both equations as originally stated are only approximately satisfied in a given short period, given that capitalists do not spend exactly the same amount in this period as they had in the previous period. The current period determinations in either case is given by these approximate equations[12].

[12]These "misgivings" have been voiced repeatedly, and then dispelled to his satisfaction, by Asimakopolus [18],[19],[20]. His conclusions are somewhat vaguely similar to ours, but the actual arguments are quite different. Eg. he also talks of profits being "approximately" determined by the equation of profits to capitalists spending but the goods cited are "unintended decline in inventories" and "temporary savings of workers" (p.128,[18]). Suffice it to say (this is the main point) that he keeps all through to the profit equation as "based on national income accounting identities" (p.126,[18]). (It is to be stated here that we have not been able to procure a copy of what appears to be his *main* paper on the subject [20], we know of its contents only through the editorial comments in kalecki's *Collected Works*).

Chapter 9

Workers' Saving

9.1 Review, Motivation and Outline

There is a running division of ch.3-5 of our basic text of reference [10] - where Kalecki set out his macro theory interspersed with a bit of the macro dynamic theory - between the "basic theory" and its "extensions", set out under the respective headings "simplifying model" and "general case". The line of division was given together by the three assumptions - "simplifying assumptions" as Kalecki called them - of no foreign trade, no government expenditure and taxation and no workers' saving. Each was a defining element of the "simplifying model", given up in the "general case".

As this suggests, Kalecki's running concern was to show that relaxing the assumption did *not* fundamentally impair or alter the structure of the "basic theory". This automatically sets the terms of reference ("what difference it makes") for reviewing his "relaxation" as well as for our own work in the area. We are of course concerned only with the relaxation of the third assumption. We will also take the "terms of reference" to be set more exactly by the structure of determinations of the macro theory so far.

Before we take up the above "review", we have to note that there is in fact an *earlier* reference to the matter in [7], [9],[10]. This is where we have to begin the review.

In these references, Kalecki allowed workers' saving only within the class of *salary*

earners - within a *subset* of this called "managers", to be precise. This, he said, was a "more reasonable" assumption to make than the original assumption of workers' saving. A priority was thus implicitly given to saving by salary earners over saving by wage earners.

We note in the passing that Kalecki never explicitly withdrew from this position. However in [10] he made no reference to worker divisions when discussing the implication of workers' saving, presumably because he now found a *general way* of handling the problem. Be that as it may, we will organise our own work in the manner already suggested. In sec.2 we will consider saving by salary earners but *not* by wage earners; in sec.3 we consider savings by wage earners as well. This stands simply on the ground that salary earners are generally "more "well-to do" than wage earners and hence more "likely" to save[1]. We do not need to introduce any subdivision of salary earners to express this point. Other departures from Kalecki will be made clear as we go on.

Let us continue with Kalecki. Kalecki had somewhat different objectives in view (not the structure of determinations) when he first introduced workers' saving in his model (274,I). Let us not make a digression on this account. The relevant point to note is simply that Kalecki now revised or modified his profit equation taking account of saving by "managers". The new equation was stated as follows:

> "Capitalists' and managers' income = investment + capitalists' and managers' consumption" (281,I).

The next point to note is that in the following writings [9], [10], Kalecki *did* use the above equation for the purpose of "determinations", *but* he did this in a manner that way escape one's notice. What he did was simply to *define* profits as *inclusive* of "manager's incomes"[2]. By this one stroke of the pen, he banished the very idea of

[1]Thus, starting from the original assumption as a "first approximation" to the real world, we have, so to say, both a "second" and a "third" approximation.

[2]This was not *separately* stated by Kalecki. One finds it from his general definition of "profit". For the sake of completeness, we give here the *two* definitions as given respectively in [9] and [10]:

> "By gross profits we shall mean depreciation and maintenance, net undistributed profits, dividends, interest, rent and *also managerial salaries*". (151,II)

> "The income of capitalists or gross profits includes depreciation and undistributed profits, dividends and withdrawals from unincorporated business, rent, and interest".

revision or modification. The equation just noted *was* the profit equation. Implicitly, there was *no* workers' saving as "managers" were considered as capitalists. The whole problem was thus shoved under the rug of definitions, rather redefinitions. We will avoid this in our work on the area (sec.2).

Kalecki himself seems to have realised the conceptual defects of this sort of analysis, for he never repeated the above definitions. Indeed, this may be considered the *internal motivation* for his work on workers' saving [10], which we now review.

Let us start from ch.3 of [10]. The subject was "determination of profits". However, Kalecki did *not* address this problem afresh in the "general case". Here, he simply noted the effect of relaxing the earlier assumptions on his profit equation. For our case, this simply stood on a generalisation of the above equation, which we again give in Kalecki's words:

> "Gross profits = Gross investment - workers' saving + capitalists' consumption". (243,II)

The fact that workers' saving is a "drag" on profits was noted.

Let us pass on to ch.4 of [10]. Kalecki began the chapter by the setting out his formulation of the consumption function of capitalists. As noted earlier this was in the *annual frame of reference*(246,II). On this basis, he put forward his theory of the determination of *annual* profit, first for the "simplified model" then for the "general case". This does *not* fall within our terms of reference. This is the main problem we encounter in the work under reference. Let us nevertheless continue with the review. Apart from anything else, this will give us a better perception to set off our own work in the area.

Kalecki's work on workers' saving here was based on two empirical assumptions. Let us give them in his own words:

(a) "Although in general workers' saving s, are *not equal to zero*, their level and absolute changes are *small as compared with total savings.*" (239,II)

(b) "s must show in the course of the business cycle a *pronounced correlation with* total savings".(249,II)

Kalecki now went on to equate "total savings" to "total investment", and "total investment" to total spending of capitalists *minus* their spending on consumption. This set the stage for bringing the consumption function of capitalists into the analysis. Kalecki had already obtained an equation relating total profits in a year to past (lagged) investment via the coefficients or parameters of the consumption function of capitalists for the "simplified model". (This is the equation that "determined" profits in this model). He now showed that allowing for workers' saving simply led to some *adjustments* of these parameters in the equation, the equation itself turning into an "approximate" equation in the process. Neither feature however stood in the way of interpreting the equation as an equation determining (annual) profits. The determination was now seen to be approximate, the substance of the determination being that the total profits in a year is determined by past investment via the *adjusted parameters*. A way was thus found of "handling" workers' saving by suitable adjustment of the parameters of the consumption function of capitalists without altering the basic analytical structure or properties of the original model. This in sum was Kalecki's demonstration of the point that his original assumption was a "simplifying assumption" for his purpose and no more.

Let us review the work from the standpoint of structure of determination of the macro system, by definition the short term determinations. We have to say that the work says *nothing* about the short term (quarterly) determination of profit. This is because Kalecki's "pronounced correlation" - which holds the key to his analytical steps - says nothing about the short term behaviour of workers' saving. To be in the clear, this "correlation" was postulated for the "course of the business cycle", and that meant something like 8-10 years (Kalecki's usual assumption), while the "short term" here is but a quarter of a year. But if the short term behaviour of workers' saving is left in the open, then we can say nothing about the short term determination of profits from the profit equation as just stated. To fill in this gap consistently with the general trend of Kalecki's arguments is the main motivation of our work in sec.3.

Our objective is ultimately to see Kalecki's macro theory as extended by the fact of workers' saving. But mere "fact" is not enough. We have to have a theoretical

understanding of the fact. For this, we must start back from a theoretical understanding of the "original" fact (no workers' saving). Only then can we follow through a trend of arguments, going from the "original" to the "general" fact.

Unfortunately, Kalecki does not give anywhere the theoretical explanations - why workers do not or do save. To him the fact qua fact was enough. Nevertheless we do have an inkling of what, perhaps, he had in mind from one of his statements of the original assumption. We will try to work this out as a theoretical explanation proper.

Let us then begin from Kalecki's statement:

> "We furthermore presume that workers do not save and that they do not live beyond their means."(224,I)

Let us now discuss. Our basic point is that the very words "workers do not live beyond their means" puts an unmistakable stress on *forces* working upon workers' spending as the factor behind their not saving anything. This is to be seen in the background of the fact that nowhere did Kalecki say anything on the *level* of real wages (the "means"). This in fact is a strong point about his theory of income distribution - the whole theory went off *without* any assumption regarding the level of real wages.

Let us now put the matter in terms of the notion of "budget". The assumption under reference is that the *budget constraint* is all there is to explain the actual spending and hence consumption of workers. The above points make clear that this proposition was *not* seen as something following from the actual *size* of the budget, for this "size" is left in the open. Ipso fact, it must follow from the forces working upon workers' spending and consumption. To put the matter concretely, we can put the "forces" as the *social pressures* on workers' consumption - pressure created ultimately by the generation of "wants" by huge capitalist process of mass media advertisement et al. This is what we understand as the general trend of Kalecki's arguments[3].

[3]This is a clear point of *dissociation* of Kalecki from classical economics. The assumption of "no workers' saving" is indeed common between the two. But in classical economics, the assumption always rested upon *some* theory of "real" wages built around *some* notion of "subsistence". Kalecki, on the other hand, *neither* advanced any theory of "real" wages *nor* invoked the notion of "subsistence" (as

distinct from mere "consumption") at any point of his analysis.

9.2 Savings by Salary-earners

We have denoted the salary-bill by B and the expenditure (consumption) of salary-earners by C. Let us denote their saving by D. (All these terms are taken to be defined for a given Kaleckian short-period). So,

$$B = C + D. \tag{9.2.1}$$

This equation replaces (7.2.4) in the macro system. So, the macro system is now defined by (7.2.2), (7.2.3), (7.2.5) and (9.2.1).

Now, B is "predetermined". It follows that if either C or D is predetermined, then so is the other. It is possible to discuss the structure of determinations in the present system just on this basis. But the "basis" itself is purely hypothetical. Let us put in a substantive reasoning in its place. This also goes back to Kalecki.

"Salaries"are not just predetermined in the short period. They are also *relatively stable* in an open-ended time view of the matter[4]. This too is part of the "overhead character" of salaries, which Kalecki himself spoke of[5].

It follows from the above that the actual value of the salary-bill B in any given short period is essentially a *continuation* of its value in past periods over some considerable "past". Because of this, we can apply the notion of "propensity to consume" (or of "propensity to save" if you like) to salary-earners and say that their consumption and savings are *both* determined by their actual income or salary according to this "propensity". There is now no "residual" as there was in the earlier formulation. Further, the very notion of "propensity to consume" is a relatively long-term notion simply because it is a statement of "tendency". It follows that *both* B and D are in fact predetermined variables in the short period.

Let us now work out the implications of the above properties for the structure of determinations of the macro system. We start from the fact that Kalecki's profit equation is now replaced by the equation:

$$P = X - D. \tag{9.2.2}$$

[4]The nature of this distinction is made clear by reference to investment. Investment is a predetermined variable in the short period but certainly not a relatively stable magnitude in time.

[5]Cf. "If salary-earners and rentiers do save they may be expected, in view of the relative stability of their income, to make some positive net saving in all circumstances" (302,I; [7]).

But both X and D are predetermined. It follows that P is in fact determined by this equation. The determination of national income is now given by the equation

$$Y = \frac{1}{1-\alpha}(X + C). \tag{9.2.3}$$

The wage-bill is determined alongside as before.

It is evident that the basic structure of determinations of the macro system as originally established is retained intact. However some details are slightly altered. Profits are still determined by a sum total of predetermined variables, independently of the level of national income. The level of national income is determined conjointly with the wage bill after that. However, all the three variables are now at a *lower* level than earlier because of the lesser *demand* coming from salary earners. This shows up directly as the factor D in (9.2.2) and a little less indirectly in the fact that $C < B$ in (9.2.3). We also note that in the ultimate analysis, B must be considered a "distribution factor" in the sense of Kalecki. Since D is dependent upon B via the propensity to consume, we cannot say any longer that P is determined independently of "distribution factors" as earlier.

9.3 Savings by Wage-earners

Unlike salaries, the wage-bill is a currently determined variable in the short period, depending completely upon the current level of national income. Our first point (purely negative) is that it is difficult to see the saving of wage-earners as related to their current income in this time frame. The reason is simply that the saving *decision* is by definition a decision taken in a *long-term* frame or perspective - the very objective is to provide for the *future*. This has to have a more firm, *longer* term basis than 'current income'.

We have now already given the argument a positive turn. To follow up, it seems reasonable to suppose that this "basis" - basis of the saving-decision - is given by the *average earning of wage earners over a relatively long time past*, at least a year say. The notion of "propensity to save" therefore applies really to this notion of income, the "past average", not to "current income"[6].

This is the essential point of our "fresh view" of workers' saving. The point is in fact already there, implicitly, in our view of saving by salary-earners as well. The difference is simply this. In the case of salary-earners, the point is made rather redundant - it is, so to say, denied its *operational* significance - by the very nature of salaries as a relatively stable magnitude in time. For wages, there is no such stability. This is what makes the point operationally significant here.

Let us denote workers' saving in a given short period by S. According to the argument just given, S is determined not by the current wage-bill W but by the past average quarterly wage-bill of at least a year, which we denote by $\overline{W}$. But to say that S is determined by $\overline{W}$ is to say that it is *predetermined*. This puts S completely on par with D, the saving of salary-earners. The difference in the nature of their income recedes to the background. S and D come to have the same analytical properties and hence play exactly similar roles in the scheme of determinations. The basic structure of determinations of the original macro system is not affected by either.

Let us however not proceed that fast. Let us first spend some more time on the a priori formulation. We consider for this purpose S in the two distinct *historical* backgrounds of rising income and falling income of wage-earners. In the first case,

[6]It is understood that the "past average" does not include the "current income". It is an average taken over a stretch of time ending at the beginning of the current period.

$W > \overline{W}$ and in the second, $W < \overline{W}$.

For the *first* background, our essential point is that workers first make sure that their higher income has come to *stay* before they enter into fresh saving decision. But whether the higher income has come to stay or not is for the *future* to tell. This is only another way of saying that their saving in the short period is predetermined.

Let us now move to the *second* background. At bottom, the notion of saving advanced here is one where workers have definite savings *commitments* to keep at any given point of time. The present background makes one aware of the hidden assumption that the *saving commitments are in fact kept even when incomes are falling*. We completely admit that there must be a limit to such belt-tightening. We will take account of this element at the end of the section.

We note at this point that this idea of "committed savings" is simply inherent in many *institutional* saving programs relevant in the present context. "Life Insurance" is the prime example. Once a worker has taken out a life insurance policy, he commits himself to paying the premium period after period.

Let us now move in a different direction, in the direction of the "line of thinking" going back to Kalecki stated earlier. Our point here is simply that the formulation of workers' saving just given *retains the intrinsic force of the budget constraint upon workers' consumption*, Workers now save[7], but the saving being predetermined in the short period, the impact of any variation in their income falls entirely on their consumption. This expresses completely the idea of "social pressures on consumption" as setting the actual spending and consumption of workers at any given point.

There is another way of bringing out the affinity of our arguments with Kalecki. For this, we simply put the argument to the plane of *capitalists vs. workers*. We have just argued that it is the *savings* of workers that is predetermined in the short period. This stands in clear contrast to the predetermined *consumption* of capitalists. The contrast is intended. The argument is this. Capitalists can *plan* their consumption. They have the *means* for doing this. Workers, on the other hand, have to plan their *saving* if they at all have the means for this. "Planning" in either case is understood in a substantive sense. It has a time dimension.

[7]By "workers" we mean wage-earners in the present discussion.

Let us now return to the question of structure of determinations. We said earlier that S and D play similar roles in the scheme of determinations. This is easily verified. The macro system is now defined by (7.2.2), (7.2.5), (9.2.1) and the following equation:

$$Q = W - S \tag{9.3.1}$$

replacing (7.2.3). After this, we need only write the equation determining P and Y, which are:

$$P = X - (D + S), \tag{9.3.2}$$

$$Y = \frac{1}{1-\alpha}[(X + B) - (D + S)]. \tag{9.3.3}$$

Clearly, the effect of S on P and Y is the same as the effect of D on P and Y.

It remains to consider the problem of limits to belt-tightening mentioned earlier. According to our formulation workers (wage-earners) keep to their savings commitments decided on long-term considerations even when there is a fall in their short-period income. They tighten their belts. There is a limit to this. Should the limit be crossed - wages fall below some critical level - the workers will in general have no alternative to *defaulting* on their saving commitments.

This is a new element in the picture which does alter the structure of determinations argued so far. This is simply because the fact of default depends upon the current income and hence so does the actual saving of workers (committed savings *minus* default). We can assume that the *amount* defaulted depends upon the shortfall of the actual income from its critical value just spoken. But the actual income (wage-bill) depends upon the level of national income. By this route, S gets related to Y. So P cannot be determined from (9.3.2) without the prior determination of Y. This entails a complete reversal of the order of determinations argued so far.

This "logical" point is completely admitted. Let us just say that the phenomenon is "exceptional".

Chapter 10

Primary Sector

10.1 The Basic Subject Matter

We now bring back the primary sector into the picture. To recall, the picture is in *three* panels (price formation, income distribution and macro). Kalecki first *separated out* the primary sector from the mainline of his arguments (panel 1), then *brought it back* into the main line (panel 2) but finally *left it out* (panel 3). Stated more explicitly, he did not pick up the "lead" for going to the macro that he had himself provided in the theory of income distribution. This is a job which we have to take up on our own.

Let us now set out our organisation of the subject matter. This is governed by two main points. The "lead" just mentioned came in the midst of a *review* or *recapitulation* of his views on the price formation of primary products that Kalecki gave while developing his theory of income distribution (panel 2). So, in a way all the three stages or phases of the theory had a "meeting point" in the review or recapitulation providing us with a "vantage point". To take this advantage, we will begin our review at the "middle" i.e, panel 2 or income distribution. We then enter panel 1 through the "backdoor" of this review. After that, it remains only to pass through the "frontdoor" of Kalecki's "lead" to panel 3. This sets out the organisation of this section.

The other point is rather formal. Our search is essentially for the *follow up* of kalecki's "lead". The follow up itself can be sought at different points in the macro

theory. The most logical point to choose or select is Kalecki's formula or equation for the relative share of wages and salaries in national income, for it is in this *form* that Kalecki integrated his theory of income distribution into the macro theory. We will confine our review here (this section) to only this reference. In the next section we pick up another reference in Kalecki of great interest (we show this) in this context. In section 3 we take up some "residual matters".

Let us now begin. Let us recall Kalecki's "ratio of the price of raw materials (= primary products) to unit wage costs" as *one* of the factors determining the relative share of wages in value added (or the wage share) in manufacturing . He now went on to argue that so far as at least the *short period* is concerned[1], the wage share in the primary sector is more or less completely determined by this factor *alone.* This in one word was his integration of the primary sector into the mainline of his arguments. Let us have this in his own words -

> "In agriculture and mining the products are raw materials and the relative share of wages in the value added depends mainly on the ratio of prices of the raw materials *produced* to their unit wage costs." (227,II;italics in the original)

Let us now discuss. To say that the ratio of the price of primary products to unit wage costs is a determinant of the wage share in any sector is to place the determination of this ratio *outside* the theory concerned. It is also therefore a *given* in the theory in this sense. We have already noted that this is true of the "unit wage cost" in the whole theory[2]. It follows that the point is true about primary product prices as well.

It is to be remembered now that the "theory" here is given by Kalecki's theory

[1]This point is to be seen in a perspective. Kalecki readily admitted that his cost-price relations of the theory of industrial price formation (and hence by implication the whole theory of income distribution) were based on "short term considerations" and then immediately pointed out that they are affected by "long term developments" (eg. technical progress) only through possible changes in the coefficients of his price equation (216-17,II). This linkage between the "short term" and the "long term" was *absent* in his theory of price formation of primary products. Here the condition "in the short period remained something *absolute*, *unrelated to anything else.*

[2]The unit wage cost itself is the ratio of the level of wages to labour productivity. They are "given" respectively by wage bargaining and technical relations of production, both fall outside the theory (taken as given structural factors).

of industrial price formation where prices are ultimately purely "cost determined". The "givenness" of primary product prices therefore implicitly stands for a *denial* of the cost determination of these prices. Support of this proposition brings us to Kalecki's views on the price formation of primary products (at present, the "review" or "recapitulation"). Before coming to that we just sum up the present argument. Both prices and unit wage costs of primary products appear simply as given data in the theory of income distribution. Between the two, the wage share in the primary sector is completely determined.

Let us now pass on to Kalecki's "review". Let us just pick up the thread from ch.1. Kalecki's ground for "two types of price formation" was the different "supply condition" of manufactures on the one hand and primary products on the other. Let us now read on.

> "It should be remembered that as distinguished from prices of finished goods (manufactures) the prices of raw materials (primary products) are 'demand determined'. The ratio of raw material prices to unit wage costs depends on the *demand for raw materials*, as determined by the *level of economic activity*, in relation to their supply which is *inelastic in the short run*." (226,II)

We have italicised the key words. Kalecki's "supply condition" of primary products was that the supply is "inelastic in the short run". (We shall presently note the fuller statement). The lead - the macro reference - is in the word "level of economic activity" which is only another name of *real national income*. Thus the argument here was that prices of primary products are determined ultimately by the level of real national income. (They are determined by "demand", and the "demand" in turn is determined by national income). As such, the whole determination of primary product prices is placed *outside* the primary sector. This in turn Implies a tacit denial of *any* role of the "cost of production" in this determination. This completes our acquaintance with the support of Kalecki's views on income distribution in the primary sector coming from his views on the price formation of primary products - via the "review".

Let us now leave behind this "backdoor" and take on the price formation of primary products as *originally* set out by Kalecki. We begin with the fuller statement of the supply condition:

> "The *increase* in the supply of agricultural products requires a relatively *considerable* time. This is true, although not to the same extent, with respect to mining".(209,II)

Let us take our time on this statement. Clearly, the home ground of the supply condition is "agriculture". The condition is then extended to "mining" - "true, though not to the same extent". A big distance is indeed covered by this extension. Let us bring this out in steps.

The "supply" in agriculture originates in *successive harvests* which themselves are separated by "considerable" lapses of time in between, mostly of the order of a year ("annual harvest")[3]. Ipso facto, the very question of "increase" (or "change" for that matter) in supply is *undefined* over a short period. This does not apply to mining where we can speak of the output actually produced in any day, week, month or year as we like, exactly as in manufacturing. This fundamental difference is obliterated in Kalecki's statement of the supply condition simply because the condition is defined in terms of "increase" (or "change"). Essentially, we have a *regrouping* of the three sectors (agriculture, mining and manufactures) on the basis of "time taken for output or supply to change"[4] in place of the more fundamental time-view of output as such. Kalecki's point was that in manufacturing, this "time" is "negligible"[5]; in agriculture and mining, it is "considerable".

Let us now leave behind manufactures. The fact of considerable time required for increasing in the output of primary products was immediately stated by Kalecki as "supply being inelastic in short periods", meaning that the short period supply is simply *given* apriori. We can express this more neatly by using an earlier concept. To say that increasing (changing) the volume of production or output requires a considerable time is to say that the output actually produced in a short period is based on *earlier decisions*. The output is therefore *predetermined*. Hence it is also given apriori.

Let us now follow through the implications of "inelastic supply" for price forma-

[3]Beginning with this statement - which is taken straight from the unpublished Ph.D thesis of V.Narasimhan [28] - our arguments are now virtually a recasting her arguments in the present context. This is not specifically acknowledged any more.

[4]Tacit equation of "supply" and "output" creates problems. See below.

[5]In fact equated to "nought" all through. See App.A.

tion as argued by Kalecki. We quote the whole passage:

> "With supply inelastic in short periods, an increase in demand causes a *diminution of stocks* and a consequent increase in price. The initial price movement may be *enhanced by the addition of a speculative element.* The commodities in question are normally standardized, and are subject to quotation at commodity exchanges. A primary rise in demand which causes an increase in prices is frequently accompanied by secondary speculative *demand.* This makes it even more difficult in the short run for production to *catch up with* demand."(209-10,II)

Let us again take our time on the arguments. As we see, the central point of reference in the arguments is the *stock* of the product though this is mentioned only once at the beginning ("diminution of stocks"). Our point is that it is implicitly carried forward through the whole argument. Bringing this out, we virtually recast or restructure the whole argument in terms of stocks - *after* V.Narasimhan, as already mentioned.

The starting point of the whole argument is an increase in demand already taken place. It is tacitly assumed that the extra demand is *actually met* at least in part for an undefined *initial* stretch of time. Without this, we do not simply have the "diminution of stocks" which was seen to "cause" the price to rise. We note in the passing that *had* the extra demand been *not* met at all at anytime - which is to say that sellers simply sell what they would have otherwise sold, i.e, they keep to a predetermined time path of sales and hence also of the stock - the price rise would have been *greater.* Thus whether or not there has been any meeting of extra demand at the beginning has no bearing upon the conclusion that the price rises (falls) in response to a rise (fall) in demand (more briefly, price responds inversely to the change in demand).

Let us now get back to Kalecki. We have just discussed what he called the "initial price movement". His next point was that this initial movement can be "enhanced by the addition of a speculative element". As we see the term "speculative element" must stand for a *speculative withdrawal* of stocks from sales. We can put this more compactly as the conversion of part of the *ordinary stock* (ready for sale) held so far into a *speculative stock*, this being the stock held in anticipation of price rise, i.e it is to be sold from only in the future after price rise has materialised. Thus,

instead of remaining unchanged, the supply actually *decreases* causing the price to rise *further* (Kalecki's "enhancement"). Kalecki saw the process as facilitated by the facts that the commodities concerned are "normally standardised" and quoted at "commodity exchanges" (future markets).

After this, Kalecki passed to the *buyer-side.* Buyers were now seem to buy (demand) more in anticipation of future rise in price, causing the price again to rise further. Thus the overall situation was one of *decreasing* supply and *increasing demand.* Kalecki ended on an *open-ended* note of "increasing difficulties" for production to "catch up" with demand in the short run.

We have now reached a *critical point* in Kalecki's analysis. It is clear from the last two pages that Kalecki gives us a theory of *price -change* (or price dynamics) of primary products. Nowhere does he touch upon the question of what the price (or level of price) at any point is or may be. This fits in exactly with the way he defined the notion of "demand determined" and "cost-determined" prices at the beginning of the chapter -

> "short term price changes may be clasified into two broad groups. Those determined mainly by changes in the cost of production and those determined mainly by changes in demand." (209,II)

So his proposition that primary product prices are "demand-determined" meant simply that short term changes in the prices are determined (or governed) by changes in demand. We have just gone over the complete argument (or theory) behind this proposition. Nothing wrong in that. But in his review or recapitulation of this theory later Kalecki used the term in *different* sense. Here it means that the *actual level* of price at any point is determined by "demand in relation to supply which is inelastic in the short run". In sum we have first a "change" sense of the term "demand determined price" which is tehn simply turned into a "level" sense of the term without further arguments.

This appears to us to be a very *serious gap in Kalecki's analytical reasoning.* We see no way of bridging this gap. In a literal sense, this appears a "dead end".

The point to state here is simply that Kalecki went on to build up the rest of the theory - the whole distribution theory and macro theory - on the basis of the "level"

sense of the proposition that primary product prices are demand determined. We simply *assume* at this point that some sense can be given to this proposition and *proceed on this basis.* There seems to be no other way of proceeding further[6].

So equipped, we now move on to the *macro.* As already stated, our reference point here is Kalecki's formula or equation for the relative share of wages and salaries in national income (Ch.7,sec.2). We have already discussed it critically in the context of the "purely industrial economy" (Ch.4,sec.3). We will now add further criticisms.

Nothing is said here about the eventual outcome of the arguments. To make things clear, we will proceed in *two steps.* First, we discuss the equation in terms of the wage-and-salary bill of *industry or manufactures*, the primary sector staying in the *background.* After this, we get back to the original interpretation of the equation treating the primary sector *on par* with industry.

Let us recall the equation. We state it here in terms of the wage-salary-bill in absolute terms and not as its "share" in national income as earlier[7] . We then have:

$$V = \alpha Y + B, \quad 0 < \alpha < 1, \quad B > 0. \tag{10.1.1}$$

In our step 1, V and Y stand respectively for the wage-salary-bill and the value added in *industry.* As for α and B, we recall that for the purely industrial economy B has to be interpreted precisely as the "salary bill" and α as the "structural constant" in what we call Kalecki's fundamental theorem on the relative share of wages in national income. The interpretation of B carries over to the present context, but the interpretation of α *does not.* It is necessary now to see α - by definition the *wage share* in manufactures, for B/Y is the "salary share" - in the light of Kalecki's *own* theorem on income distribution (226-7,II), which again we reviewed at length earlier.

Let us see what this means. According to this theorem the wage share in manufactures depends, among other things, upon "the ratio of primary product prices to unit wage costs" (factor (b) in Kalecki's "list" of distribution factors in this theorem[8]).

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[6]Since the whole "theory of price formation" as Kalecki *actually* gave is thus simply left behind, we state very clearly that we find this to be a *very substantive theory.* But it is a theory of price dynamics, not of price determination *in any sense*, for the "dynamics" is seen to be completely open ended. Set in a macro background, this gives us another route to "structural inflation".

[7]In fact, it is in this form that Kalecki first wrote the equation (236,II).

[8]To recall, the factors were: (a) the degree of monopoly (b) the ratio of raw material prices to unit wage costs and (c) the industrial composition.

But as just seen, the price of primary products *depends ultimately* upon the level of *real national income* (Kalecki's "level of economic activity"). It *cannot* then be true that "α is that part of the relative share of wages and salaries in income Y which is *independent of the level of national income*" (fn.25;253,II). This is our criticism of the equation in the present context.

Let us proceed on. We have just seen that the wage share in manufactures is now *dependent* upon the level of real national income, which we denote by Y_r. One way of accommodating this point is to treat α as a *determinate function* of Y_r, $\alpha(Y_r)$, and not as a "constant" as earlier. A better alternative is to go back to the notation of ch.4 sec.2, and adapt it to the present context. Let us denote the primary sector and manufactures by subscripts p and m. The wage share in the two sectors are then s_m and s_p. We can now say that both are *functions* of Y_r, $s_m(Y_r)$ and $s_p(Y_r)$. This automatically brings us to step 2.

Let us proceed through the due clarifications. The *position* of both the functions depends upon *other* "distribution factors". For $s_m(Y_r)$, we have the powerful factor of "degree of monopoly". For $s_p(Y_r)$, we meet simply a blank. When Kalecki asserted that the short period wage share of the primary sector is determined purely by his factor (b), he meant simply that the effect of any *change* in the price of primary products falls entirely upon *profits*. Unit wage costs remain "given". The relative share of profits in value added therefore changes in the *same proportion* as price. The wage share moves in the opposite direction. It then follows from the chain relation connecting price, demand and real national income that the wage share is *inversely related* to real national income, i.e, $s_p'(Y_r) < 0$.

In manufacturing too, the wage share is now inversely related to real national income, but on *completely different grounds* and in a *weaker form*. The "ground" is in fact the same as that which yields the result that a rise in the level of wages in any *particular* industry leads to *some* rise, less than proportional, in the wage share in that industry (p.78). Here, the level of wages (and therefore also the unit wage costs) remain given. A rise in the price of primary products (= raw materials used in industry) therefore leads to a *less than proportional* rise in unit prime costs. Prices of manufactures rise in the same proportion as unit prime costs (as of given degree of monopoly). Consequently, the wage share declines.

We can now cast the analysis in terms of the *aggregate wage share*, S. Since

S is simply a weighted average of s_m and s_p, it is also a *declining function* of Y_r, $S(Y_r)$. We can also obviously *include* the factor B in the *shape* and *position* of $S(Y_r)$ thereby reinterpreting it as the *wage-salary-bill in the whole economy* as a function of Y_r. A similar reinterpretation of $s_m(Y_r)$ is assumed in the background.

However, it is not proper to give a "go by" to B like this. Notwithstanding Kalecki's categorical statement, "B/Y stands for the influence of the *overhead element in salaries*", we can argue as follows. Going by Kalecki, the *fundamental structural factor* about the primary sector is that its *output is predetermined and hence given in the short period.* Since unit wage costs every where are also "given" apriori, so is the *wage bill* of the primary sector. But this is only to say that the wage bill of the primary sector has the *same properties* as B - it is a "constant in the short period subject to long run changes" (236,II). We can therefore as well say that B stands in particular also for the *short period givenness of the wage bill of the primary sector*[9]. We can now as well *leave out* "salaries". (It is of no consequence for the purpose of this chapter). So, we simply equate B with the wage bill of the primary sector,W_p. Let us also use the "bar" notation to indicate "givenness". Then $B = \overline{W}_p$.

Thus we have *three alternative ways* of representing the *aggregate* wage bill, each replacing in its own way (10.1.1)[10]:

$$W = s_m(Y_r)Y_m + \overline{W}_p \tag{10.1.2}$$

$$W = s_m(Y_r)Y_m + s_p(Y_r)Y_p \tag{10.1.3}$$

$$W = S(Y_r)Y \tag{10.1.4}$$

with properties of $s_m(Y_r)$,$s_p(Y_r)$ and $S(Y_r)$ as stated. In particular,we now see clearly that $s_p(Y_r)$ is *defined* as :

$$s_p(Y_r) = \frac{\overline{W}_p}{Y_p}.$$

[9]We can turn around the same statement of Kalecki - "B/Y stands for the influence of overhead element in salaries" - to say that this *proves* that he simply *left out* the primary sector in his "formula" for the relative share of wages and salaries in national income".

[10]The notational anomaly cannot be helped (sorry). Subscripts m and p stand for manufactures and primary sector, but r stands for "real terms". Thus Y_m and Y_p denote the value added or national income generated in these two sectors, in *money*, while Y_r denotes real national income (not national income generated in an undefined sector indexed rl)

The functional relation obtains simply from the fact that Y_p depends upon the *price* of primary products, which depends upon the *demand* for primary products, which in turn depends upon the *level of economic activity* Y_r.

We are now at the end of our task. Let us just recall the *circular flow relations* "capitalists earn what they spend, workers spend what they earn" and plug it back into the two-way equations of national income accounting. We then have

$$Y = X + S(Y_r)Y \tag{10.1.5}$$

X is capitalists spending, in money. It remains to recall the short period predeterminacy and hence givenness of *real* capitalists spending, X_r. Using the "bar" notation, we now have by appropriate deflation of (10.1.5) the all-important equation:

$$Y_r = \overline{X}_r + S(Y_r)Y_r. \tag{10.1.6}$$

Clearly Y_r is *determined* by this equation. And that subsumes the whole structure of macro determinations talked earlier.

It is thus seen that not *much* difference is created by the primary sector in the overall theoretical structure of Kalecki - provided, of course, we keep to his views on the price formation of primary products as "recapitulated" and not as "originally argued". The macro theory per se (determination of profits) is untouched. (see however next section). So is the basic logical structure of determinations of the macro theory as a whole. The difference lies only in the *form* of some of the relations appearing in the structure of determinations. They are all summed up in the fact that wage share in the economy (also in the industrial sector) is now a function of real national income and not a constant as earlier. This makes no difference so far as the question of "determination" of real national income is concerned. Y_r was determined earlier (purely industrial economy) by (7.2.11). Now it is determined by (10.1.6). The form of the two equations are different. But the substance remains the same.

10.2 A Reinterpretation of Kalecki's Use of Marx's Reproduction Scheme

Let us recall Kalecki's elucidation of the structure of his macro determinations in terms of Marx's "scheme of reproduction" (sec.2, ch.7). In a footnote to this whole discussion Kalecki gave a novel and rather intriguing "turn" to this tool, which enabled him to add certain fresh points to the discussion (fn.19,241,II). This is what we are concerned with here.

Kalecki began the footnote by reminding the reader that his analysis in the text was based on the assumption of "elastic supply". After this, he simply *gave up* this assumption for Department III of Marx's "scheme" - the output of this department is, in his words, at "capacity level", while *retaining* it (the assumption) for the other two departments. Why this particular configuration was never explained by Kalecki. It must strike one as rather *arbitrary* or at best a hypothetical conjecture brought up for *arguments' sake*. But we do not think of such things of Kalecki. We think that he must have had some deeper point - some *empirical base* of the "fresh points" he was to add - in mind. This is the beginning of our "reinterpretation" of Kalecki's arguments in the footnote.

We proceed through two initial points. First, the very concept of "capacity level of production" is specific to *industry* or *manufacturing*. Thus, Kalecki's own interpretation of the Marxian Scheme was in terms of what we call the purely industrial economy. The second point is this. Kalecki always conceded that once the "point of practical capacity " is reached in any particular industry - its output is given by the given capacity level of production - the price comes to be determined by demand in relation to that output. This comes to the same as saying that the price - the industrial price - comes to *behave in the* same *way* as prices of primary products. We can therefore say that "capacity level of production" that Kalecki assumed here for Department III of the Marxian scheme gave him a *backdoor* to bring in the distinct price behaviour of primary products while remaining broadly within the folds of the purely industrial economy.

Let us proceed on. It is still not explained why Department III is chosen as the "backdoor". This brings us to certain basic *structural factors* (the "empirical base"). Let us argue the points from scratch. Let us go back to Kalecki's designation of

primary products as "raw materials". He was careful to point out that raw materials include *"primary foodstuffs"* (209,II). Obviously, what he meant was that primary foodstuffs need be *processed* to become "food" or "consumption good", and that this "processing" is done in manufacturing or industry. The next point is simply that *this* consumption good is far more important in the consumption basket for workers than of capitalists. Concentrating on the purely consumption side of the picture - away from "raw materials" - we can therefore say that the "weight" of primary products (here, agricultural products) in Department III must be greater than in Department I and II.

There is now a technical problem to tackle. One cannot talk of raw materials as distinct entities in the Marxian scheme of reproduction, for here all the "departments" are vertically integrated. Fortunately, this is not much of a problem so far as primary foodstuffs are concerned, for the value added in their "processing" is much smaller than the value added in agriculture. We can therefore simply abstract from the value added in processing and equate the notion of "primary foodstuffs" to "food" itself.

We have now reached the doorsteps of our reinterpretation of the "turn". The *basic* reinterpretation is obtained through the following simplifications: (a) no non-food or manufactures consumption by workers , (b) no food-consumption by capitalists and (c) no non-food production in the primary sector. (a) and (b) are given up after we have worked out the basic reinterpretation, given that food remains a more important item in workers' consumption than in capitalists'. To give up (c) however is to admit "raw materials". This cannot be done while remaining within the terms of reference of the Marxian scheme of reproduction. The actual issues arising from this source are discussed in the next section.

Let us proceed on. The net upshot of these simplifications is that we now have the following running equation for the "departments", viz.

Department III = Department (or sector) producing food = Agriculture
= Primary sector

Department (I + II) = Manufactures or industry.

With this, we can *recast* the whole argument of Kalecki's "footnote" in a *framework*

of agriculture vs. industry supplanting the Marxian scheme of reproduction. This completes the basic "reinterpretation". The rest of the section is devoted to an examination of Kalecki's arguments in the footnote in this framework, i.e, simply of working out the implications of this reinterpretation.

It remains to state *what* Kalecki was concerned with in this footnote. This is to be clearly distinguished from the matter discussed in the "text", to which the "footnote". The matter in the text was the complete structure of macro determinations. The matter in the footnote was ultimately only the *mechanism* of determination of profits. We recall that the "mechanism" so far is simply the circular flow. There is no change in this regard here. But whereas earlier the mechanism was seen to work in terms - on the basis - of a *given* or *unchanged* distribution of income, now a definite diversion of *redistribution* was added (the "fresh points"). We mention that corresponding to this, there was also a difference in *methodology* between the "text" and the "footnote". All these points are explained in the due course below.

Let us not "introduce" the matter further, but have it directly from source. This is the complete text of the footnote we are concerned with:

> "...if the output of consumer goods for workers is at capacity level, any increase in capitalist consumption or investment will merely cause a rise in prices of these goods. In such a case it is the rise in prices of consumer goods for workers which will increase profits in department III up to a point where they are equal to the higher amount of wages in departments I and II. Real wage rates will fall, reflecting the fact that an increased wage bill meets an unchanged supply of consumer goods" (241,II)

As already stated, our object is basically to follow through the above arguments in the framework of Department III understood as the "primary sector" and Departments I and II together understood as "manufactures" or the "industrial sector". The basic notations (subscripts) for this purpose is already established. However since we have at present a much narrower conception of the primary sector, we will now denote it by the subscript f (f for "food" or "food production").

Let us now begin. Since "raw materials" are already abstracted, the notion of "national income originating" or "contribution to national income", "value of output" or "value of production", and "sale proceeds" here are all one and the same.

These equivalent notions are denoted respectively Y_f and Y_m for the two sectors or departments. The whole macro system is then summed up by the following three equations:

$$Y = Y_f + Y_m \tag{10.2.1}$$

$$Y_m = X \tag{10.2.2}$$

$$Y_f = W \tag{10.2.3}$$

We now come to the difference in methodology between the "text" and the "footnote". In the footnote, Kalecki begins straight with an "increase in capitalists consumption and investment". This notion "increase" (or "change") was absent in the text. Further, the increase or change was understood here in a purely *notional* sense, not to be confused with an actual change in time as discussed in ch.8. Instead of spending an undefined 'original' amount X, capitalists were now seen to spend the amount $X' > X$. The "increase" in capitalists spending is given by the difference, $X' - X = dX$, say. With this, the question of mechanism of determination of profits came to be posed as the question of *how the profit equation gets reestablished* following the above change in capitalists spending. This was the precise subject matter of the passage just quoted. The analogue for this in the analysis so far is the "apriori multiplier", not to be confused with the multiplier process in time.

Let us proceed on. In the purely industrial economy an increase in capitalists spending is met simply by an increase in output, prices remaining unchanged. So, following the increase, Kalecki's profit equation gets *reestablished* simply by the *adjustment of output*. Let us now turn to the present set up. Here capitalists spend exclusively on manufactures, the supply of which remains "elastic". Further the price of manufactures is not related to the price of the primary product (food) as there are no "raw materials". The picture of output adjustment to the change in capitalists spending is therefore retained *intact* so far as the manufacturing sector is concerned. But this now provides only a *partial* basis for the reestablishment of the profit theorem. In the primary sector (agriculture) there is only a *price-response*, *no output-response* to change in demand (spending on the goods). This is the new element in the picture now. The output-adjustment in the industrial sector has therefore to be *complemented* by the price-adjustment in the primary sector to define the *complete* mechanism from the reestablishment of profit equation following the change in capitalists spending. This is the sum and substance of Kalecki's arguments in this footnote.

We will now give a logically complete demonstration of the above propositions. The missing link in the argument so far is simply *how the primary sector comes into the picture.* The answer is simple. The increase in capitalists spending dX leads to a proportional increase in the industrial *output*, which in turn leads to an increase in the *industrial wage bill.* The increase is proportional as unit wage costs are given). But the increase in the industry wage bill leads to a proportional increase in the spending on food, for workers spend their whole income on food. This in turn must *drive up* the price of food as food-supply remains given ("inelastic"). Thus, the increase in capitalists spending leads logically to an increase in *food price.* It follows that the profit equation can now be reestablished, if at all, only by the *simultaneous* output adjustment of the industrial sector and price adjustment of the primary sector.

We will now show that the equation *is* reestablished by the mechanism just stated. We suppress all unnecessary steps. First, we have a running equation of the increase in capitalists spending begun with, dX, to the increase in the value of production of manufactures, dY_m, to the increase in the sum total of wages and profits in industry

$$dX = dY_m = dP_m + dW_m. \tag{10.2.4}$$

The next step is crucial. Increase in the industry wage bill leads to an *equal* increase in the spending on food by industrial workers, which creates an *equal* increase in the value of production of food. But unlike in industry, this is an increase only in the "value" of production, for the "volume" of production (output) remains given ("inelastic"). This is saying the same as that there is only a price response, no output response to the change in demand for food. Such an increase in the value of production goes *entirely* to capitalists. Workers partake nothing of it, as there is no increase either in the volume of employment, for output has not changed, or in the wage rate, for it given apriori. We therefore have a second running equation going from the increase in the industry wage bill, dW_m to the increase in the value of production of food, dY_f to the increase in agricultural *profits*, dP_f. In other words

$$dW_m = dY_f = dP_f. \tag{10.2.5}$$

Combining the last two equations we have at once

$$\begin{aligned} dX &= dP_m + dW_m \\ &= dP_m + dP_f \end{aligned}$$

$$= dP \tag{10.2.6}$$

This completes the demonstration.

Let us get back to Kalecki. First we point out that what we just stated as the "crucial step" is exactly what is asserted by Kalecki when he says "it is the rise in price of consumer goods for workers (our "food") which will increase profits in department III (our "agriculture") up to a point where they are equal to the higher amount of wages in departments I and II (our "manufactures")". The "equal" talked by Kalecki is simply the equation of dP_f (= Kalecki's "increase in profits in department III) and dW_m (Kalecki's "higher amount of wages in departments I and II). What we have put in (missing in Kalecki) is simply the link of this equation to the increase in agricultural profits on the one hand and to the increase in industrial production (which causes the industrial wage bill to rise in the first place) on the other.

We now come to the last point stated by Kalecki - "real wage rates will fall, reflecting the fact that an increased wage bill meets an unchanged supply of consumption goods". We have already noted the fact of the increased wage bill meeting an "unchanged supply of consumption goods (food)" when we said that there is no increase in the wage bill in agriculture. It follows that the increase in wage bill talked by Kalecki is simply that of the industrial sector (his departments I and II). The "fall in *real* wage rates", on the other hand, is a *general* one, for it follows directly from the increase in food price, for unit wage costs are "given" elsewhere.

The same word "fall in real wage rates" takes us to the *redistributive* aspect of the whole process. This is most simply perceived in "real" terms. There is in the present case an increase in the volume both of aggregate wages and profits, though not in the same proportion. (We come back to this point in a minute). This is in *money* terms. In *real* terms, there has been *no* increase in workers' income *as a whole* for food price has risen in exactly the same proportion as the wage bill. But the rise in food price does not touch capitalists, as they buy only manufactures, the price of which in fact remains unchanged. It follows that the rise in aggregate profits in money reflects exactly the rise in *real* profits. Hence at bottom there has been simply a redistribution of "real" income from workers to capitalists.

Another way of depicting the redistribution of income is through the fall in *wage share* as a result of the rise in capitalists spending. This is nothing other than the

inverse relation between the wage share and national income discussed in the last section. We need not repeat the mater. However there is an interesting tail piece about the multiplier process (*not* the time-process as already clarified) to note in this context.

For the purely industrial economy, the apriori multiplier is obtained by summation of a sequence which we can write as follows

$$dY = dX + \alpha dX + \alpha^2 dX + \cdots \tag{10.2.7}$$

α is the wage share or more precisely the "structural constant" to which the wage share is equated as per the wage share theorem. Let us recall that in the presence of a distinct primary sector the theorem does *not* apply even in its home ground of the industrial sector because of the factor of "ratio of prices of raw materials to unit wage costs" in the determination of the wage share in this sector. But this factor is by definition *absent* in the present set up because of the absence of "raw materials" themselves. A little reflection will show that because of this the theorem in fact applies in *toto* to industry or Department I and III in the present set up. To avoid confusion of terms, let us denote the corresponding structural constant by α_m.

From the above, one may conclude that we now have the following "analogue" to (10.2.7):

$$dY_m = dX + \alpha_m dX + {\alpha_m}^2 dX + \cdots$$

However, this is *not* so. The *sequence terminates at the second step*, i.e, at $dX + \alpha_m dX$, because the subsequent steps are all defined through links 2 and 3 of the process, and link 2 stops in step 2. There is no increase in wage bill in agriculture and the question of spending this "increase" does not arise.

A moment's reflection will show that we have the same expression of the multiplier sequence for the whole economy simply because it is the effect of change of capitalists spending upon *real* national income that is defined by the multiplier. Since in the present set up industry prices remain unchanged through the process, dY_m stands equivalently for the change in *real* national income originating in industry. If we now define Y at constant (initial) prices, then we have the following compact statement of all these results:

$$dY = dY_m = dX + \alpha_m dX = (1 + \alpha_m)dX.$$

It remains to introduce (a) non-food or manufactures consumption by workers and (b) food consumption by capitalists, food remaining a more important item in workers' consumption than in capitalists consumption. It is clear that these 'doses of realism' do *not* affect *any* of the basic propositions established above. Response to a rise in capitalists spending will still be some output adjustment in industry and price adjustment in agriculture, the latter will still redistribute real income from workers to capitalists, the overall change in real national income will still be less than what is given by the apriori multiplier. The interesting point is that within this, (a) and (b) have quite *opposite effects on workers' position.* Once workers spend on manufactures, the expansion of the industrial wage bill will not stop at step 1. It will *continue* through workers spending part of the increased wage bill on manufactures, this again increasing the wage bill and so on. Thus in some sense all the three links of the multiplier process get reinstated - to work continuously - *within* the industrial sector. The important point to note is that the increase in the *real* income of workers at each step will be *smaller* than at the previous step because in each step there will simultaneously occur a rise in food prices on account of workers spending the remaining (greater) part of the increased wage bill on food. Hence the successive terms in the sequence will be smaller, much smaller, than in the case of the purely industrial economy, this on account of both the fall in real incomes just described *and* this fall concentrating the additional demand more heavily on food than otherwise (Engel's law). But in any case, there will now be *greater increase in industrial employment* than previously and *some net increase in the real wage bill* not only in manufactures but also for the economy as a whole even though the position of agricultural workers may become worse than before.

Capitalists food consumption has to be argued on a different plane. Their real consumption is *predetermined* and hence *given* in any given short period of time, and we may take this to be so *item by item.* Capitalists consumption of food is then simply a take-away from workers in the absolute, a deterioration for workers as a whole. This is the end of the matter remaining strictly within Kalecki.

Let us relax the strict condition for arguments' sake. Let us suppose that capitalists real consumption is not predetermined, only their real investment is. We begin with an increase in investment. We assume that the additional profit leads to an increase in capitalists consumption of both manufactures and food both (obviously in very different proportions) The later drives up the price of food. The point to

note now is simply that this price rise does *not* affect capitalists' food consumption because they are in a *position to adjust their spending to the price rise taken place.* So, the net amount left for workers consumption gets *smaller.* A moments' reflection will show that there now ensues a process of successive rise in food prices consequent upon the additional food consumption of capitalists at each step of the process. In fact, even without (a) we now have a continuing process, something like the multiplier process working out purely in terms of prices. There is then a *further* net redistribution of food consumption and hence real income away from workers to capitalists. The "deterioration" spoken earlier gets worse, though perhaps marginally so (for capitalists may only marginally increase their food consumption as a result of the rise in profits).

This in sum is the nature of *opposite effects* of workers consuming some manufactures on the one hand and capitalists consuming some food on the other in our complete reinterpretation of Kalecki's passage.

10.3 Some Residual Matters

In this section we simultaneously retrieve two aspects of the subject matte that have gone out of sight by now. One is *raw materials*. The other is *stock*. Together, they take us back to Kalecki's original ideas on the price formation (or price behaviour) of primary products. So, this is what is to be fundamentally retrieved.

Let us say at once that we put certain question mark on these ideas, which in turn are contained within a bigger question about Kalecki's theoretical structure.

Conceptually, there appears to be basic *contradiction* in Kalecki's condition of "elastic production" of manufactures, for how can the supply or production of manufactures remain elastic if the raw materials required (primary products) are "inelastic" in supply? We mention that this in turn puts a question mark on the very idea (or theory) of effective demand in the Kaleckian frame. The two together define the "bigger question".

Let us first state what we can put as Kalecki's own answer to the question. This has to be somewhat methodological. Kalecki's position appears to be that it is precisely here that the assumption of "no foreign trade" becomes a *fetter* on the analysis instead of simplifying it. His answer to the question was, in one word, that *raw material shortages are removed by foreign trade.* This is one aspect of foreign trade - on the import side - which he always highlighted complementing the effective demand aspect of exports. The two went hand in hand. Because of this, Kalecki could maintain that domestic production or output is restrained by effective demand, not by the given or inelastic short run supply of domestic raw materials.

Let us now leave this behind and try to see how the contradiction may be resolved, if at all, remaining within the bounds of a *closed economy.* This has to be argued on our own. Kalecki remains in the background.

Let us begin on a very *general* plane. In industry or manufactures the *problem* of effective demand - same as Kalecki's "problem of markets" (453,II) - shows up directly in the underutilisation of capacity or more precisely, in "excess" capacity. This may also apply to mining, but not to agriculture where the notion of a "productive capacity" defined by fixed capital appears rather remote. This brings up the *prior*

question, what precisely is the *analogue* of "excess capacity" in agriculture[11]?

Directly speaking, the analogue appears to be *acreage restriction*. But this must be a very distant or remote analogy. Unlike excess capacity, acreage restriction has no meaning at the unit (farm) level. It is nothing if not generally agreed by farmers. This cannot be "tacit agreement" as in the case of industry under "special circumstances". These circumstances are general. The agreement has to be very explicit, meaning, usually, nothing less than *state regulation*. (Farmer's organisation is not enough). A "political dimension" is thus brought into the picture. Compliance with the agreements or enforcement of regulations is however quite another thing. As stated by Robinson and Eatwell following the footsteps of Kalecki "each group of producers (farmers) wants *others* to restrict sales (acreage)" (p.152, [31]). Things therefore do not work out as "planned".

It follows that the "analogue" must be a *general (chronic) tendency towards over production* - production in excess of demand at going prices, granting that the prices are "renumerative" at least in some minimal sense. This defines afresh the background or context for a review of Kalecki's ideas.

First, it is obvious that *costs* - more precisely, *profits* - are now brought into the picture, which Kalecki did not simply mention in his account of agricultural price formation. This aside, we have the following physical picture. *If* the excess production (harvest) is released in the market, prices come stumbling down. But the excess *need not* be sold. It can be *stocked* (even "dumped"). Prices are then maintained in tact. If now the demand happens to increase, the farmers are simply able to get rid of the excess stock - assuming this to be the case (no "dumping") - at going prices. The Kalecki-process do *not* take off.

The above is meant simply as *counter point* to Kalecki. As description of the *actuality*, it is conditional upon the same sort of processes, subject to the same sort of limitations, as acreage restriction. Nevertheless, precisely because the excess harvest is an "actuality" to be dealt, farmers' organisation is now more active. The political dimension gets completed by these formation of a "farm lobby" on the one hand and "state support" in the form of actual lifting and non-market disposal of farm stocks on the other hand (no more "regulations") . This political bargaining

[11]For the rest of the section we address only to problems of agriculture.

becomes the decisive element in price formation[12].

Let us get back to the brass tacks. It is clear that Kalecki tacitly assumes that the stock is *scarce* where as it is argued here that the stock can be *abundant* all through. This, in a word, is the point-counterpoint. In our case the production and supply of manufactures continue to remain elastic in the sense of Kalecki, upto a limit set by the magnitude, and time of rise in demand vis-a-vis the magnitude of excess stock as well as harvest-expectations (coming harvest).

Let us now leave behind this too, i.e, assume that Kalecki-process do get into work when demand increases. The point to note now is simply this. The "stock" talked so far is the farmers' stock. But there is at any moment a division of the *total* between "farmers" and "firms"[13]. In the App.A we show that regardless of the size of this "total" - which they know not - firms will have a strong tendency for building up and holding a *reserve* in their stock of "raw materials" (given their price behaviour *a la* Kalecki, i.e a stock over and above what is technically required for supporting their going production. (In fact, this may be read into Kalecki's own analysis of stocks). So, when there is an increase in demand, they can increase their volume of production simply by running down the "reserves". Thus their production and supply is again "elastic" in the sense of Kalecki[14]. This does not cause any increase in the *demand* for raw materials. The Kalecki-process do not again get into work. (The precondition is not satisfied).

There remains a tail-piece to add. Firm's stock-holding is conditional upon prior command over *finance*. Because of this, it is possible that reserve stocks of raw materials exist with *big* firms, not *small* firms. The later thus translate the increase in demand into an increase in demand for raw materials, setting the Kalecki-process at work. But big firms have already largely insulated themselves from the effects of price rise of raw materials by their stock-policy. So, there now takes place a

[12]Cf. "Where an agricultural community is part of an industrial economy, it is often has sufficient political influence to secure protection from the devastating effects of the laws of supply and demand. Prices are regulated by various support schemes, protective devices, or methods of limiting production. Such prices are settled by political means, not by the market."(p.152,[31]).

[13]The following is basically an adaptation from V.Narasimhan's [28] detailed theoretical analysis of the role of big and small trader-producer division of stocks in the price formation of food grains in an under developed country.

[14]The "limit" is given by substituting firm reserves for the excess sock of farmers in the earlier statement.

redistribution of profits from small to big firms paralleling the worker-capitalist redistribution of real incomes talked earlier[15]

One final word. Once agricultural prices are seen as "politically determined", they assume the same states as level of wages or wage rates. Both appear as given data in the system, determined by outside forces. The ratio of unit wage costs to the prices will still be a determinant of wage shares - "distribution factor" in the sense of kalecki) - but this will not affect in any way the behaviour and determination of wage shares as originally described in ch.4, sec.2 (equation (4.2.8)). The wage share theorem remains intact. To put the same point another way, (4.2.8) holds good exactly as stated by Kalecki -

> "α is that part of the relative share of wages and salaries in (national income) Y which is *independent of* the level of Y; the other part, B/Y, stands for the influence of overhead elements in *salaries*."[16].

[15]Workers, we can assume, have *no* stocks. So, they continue to remain at the receiving end of the whole process.

[16]Subject to *other* qualifications stated earlier.

Chapter 11

Concluding Observations

We have put forward the thesis as some contributions to Kaleckian economics in the sense clarified at the beginning. We now give a brief review of what we feel to have been our main "contributions".

We feel that the really basic contribution consists of the work we have done on Kalecki's *framework* (ch.1,sec.3, ch.2 and ch.5). For his price theory, this means basically the framework we have tried to make out of "firm's pricing" integrating other basic elements of Kalecki's theory into it, notably the element of "competition" - which leaves no room for "perfect competition": This amounts to a more or less complete reorientation of price theory, for which Kalecki seem to provide yet the most solid beginning[1] Viewed in these broader terms, our work has been basically in the nature of *clearing the ground.*

In this context we would like to reiterate again the conceptual significance of "firm's pricing" that we worked out (ch.2). This apart we mention our re-placement of the element of monopoly in Kalecki's theory (ch.3,sec.6). By placing the notion of "degree of monopoly" in that background we also hope to have cleared up some of the confusions surrounding this term (ch.3,sec.7). At the level of specific contributions, we mention the analysis of profit margin of big and small firms (ch.3,sec.6) based on

[1]By this we mean giving definite shape to the idea (the reorientation) already mooted. *This* beginning was certainly provided by P.Sraffa[34]. But no one seems to have come anywhere near Kalecki in terms of the breadth and depth - also "height" we may add - of a constructive effort in this direction. Witness the just *completeness* of the theory set out in ch.3, and also the superstructure of a distribution theory built on this basis (ch.4).

our conceptualisation of the parameters of Kalecki's equation of the firm's pricing (ch.3,sec.2).

Turning to Kalecki's macro theory, we have to be more guarded. One basic idea has been to see the analytical framework of this theory as running in terms of the circular flow of earnings and spendings (chs.5 and 6). We would not like to claim anything more than a "provisional" status for this step. Much work remains to be done before one can say that this provides a meaningful way of working up macro-economics. This clearly shows up in the way "time" has come in and gone out of this framework at various points of our analysis (eg. ch.6,sec.4 and ch.8). This is a difficult area.

Things are more definite on the plane of "determinations" precisely because (or so long as) the "passage of time" is ruled out. Even here, we have tried to seek the logical completion of Kalecki's "determinations" through this step(ch.8). However the issues here are completely general, i.e., not specific to Kalecki's theory as such.

Leaving behind this unsettled area, we feel that we have made two rather basic contributions to the subject, one analytical, one conceptual. The analytical contribution consists of the interrelated notions of "currently determined" and "predetermined" variables and the "Kaleckian short period" that we have made out of Kalecki's arguments, in terms of which we have consistently set out' his whole scheme of determinations (ch.7) and worked out a certain extension of this scheme (ch.9,sec.3). Though the ideas are not completely new, no one seem to have turned them into basic tools of analysis as we have done.

The conceptual contribution originates in our delinking the subject matter (Kalecki's macro system) from the "dynamics of the capitalist economy" in the sense of Kalecki and giving it, so to say, a life of its own. This is what we meant at the beginning as turning Kalecki's "tight theoretical structure" into something "freer or more open ended". The result was our own perception of what Kaleckian economics is really about - the *determination of class incomes vis-a-vis the determination of national income as a whole* - resulting in turn in our *three-class reformulation of Kalecki's macro system* (ch.7,sec.2).

This sets the stage for picking up the point we kept for the end of the thesis - the distinction of capitalists "proper" or "entrepreneurs" and "rentiers" (ch.1,sec.3). To make this explicit is in principle to look towards a *four* class reformulation of

Kalecki's macro system. We want to see what this subject or direction may have in store, however little we may be able to see. The viewpoint is strictly *analytical*.

First, we look for possible "leads" from Kalecki for this purpose. One lead, which is already given (ch.9,sec.2), appears almost tailor-made. Let us give it again -

> "If salary earners and rentiers do save they may be expected, in view of the relative stability of their income, to make some positive net saving in all circumstances"(302,I)

The lead consists fundamentally of this *grouping together* of rentiers and salary earners - back again to a *three class framework*, now conceived on a wider basis than earlier[2]. The simplification is obvious.

Let us continue with this statement. We take for granted the "saving" of rentiers and salary earners. This apart, the basis of their grouping is stated to be the "relative stability" of their incomes. For salary earners, this is already explained. The reason why Kalecki ascribed this property to rentiers is given by another "fact" Kalecki consistently held to - "the long term rate (of interest) does not show marked cyclical fluctuations"(276,II). This again contains the seed for another powerful simplification, viz. the identification of rentiers with *interest earners*, or equivalently of their wealth with (long term) *financial assets*. Though not explicitly stated by Kalecki we may take that the savings of salary earners also takes this form. The overlap of salary earners and rentiers does not of course matter once they are grouped together. In fact this solves the problem that "pure" rentiers may no longer be very significant.

From here we are led to Kalecki's monetary and financial theory for further possible leads. Unfortunately this does not take us very far. It will take a little time to explain why.

Let us take a connected view of this subject. The starting point is Kalecki's analysis of the consequences of the financing of investment by *bank loans*. This was very simple and can be outlined as follows. If some capitalists finance their investment by bank loans, then the bank-deposits of other capitalists increase *pro tanto* by the *same* amount (saved profits). The loans can therefore be repaid by

[2]We may call them the "business class" (capitalists proper), the "intermediate class"(rentiers and salary earners) and the "working class"(wage earners).

floating bonds to the same extent - the exactly matching "savings" to absorb the bonds at the going rate of interest is already created (244,II).

From this argument Kalecki came to the conclusion, "the rate of interest *cannot* be determined by the demand for and supply of new capital", i.e., by the "equation" of savings to investment. He therefore claimed that the rate interest is "the result of interplay of *other* factors" (262,II), and went on to develop a purely monetary theory of the determination of rate of interest (chs.6 and 7, [10]). Since Kalecki consistently denied any significant effect of rates of interest on either savings or investment this meant a more or less complete separation of the monetary theory from the "real" theory (what we have studied so far).

There are two basic reasons why this part of Kalecki's analysis does not take us very far in the direction opened. One is simply that Kalecki never had in mind the question of *generation of rentier income* in his analysis of rates of interest which is precisely what links them to the subject proposed. The second reason is more] substantial. Kalecki talked only of the financing of investment, not of the financing of *production* of the *working capital needs* of production. This appears as a very serious gap in his financial analysis[3]. This is the primary level at which the "banks" that Kalecki talks of comes into the working of the economy. Indeed banks owe their very existence to fulfilling these "needs".

It is our view that only by bringing down the view of rates of interest from the plane of "savings and investment" as in Kalecki to the *underlying plane* of "production and distribution" that one can make meaningful progress in the direction opened. "Generation of rentier income" and "financing of production" are simply the two ends of this "bringing down" - of a more meaningful integration of the "real" and "financial" working of the economy on a Kaleckian basis.

We end the thesis with a sketch of what we see as the *analytical core* of this subject or direction. Stated in one word, the core is the *formation* of rates of interest, which must obviously come before their "determination". The first step would be to distinguish the interest on deposits *paid* by banks, which creates rentier incomes, and the interest on loans and advances *received* by banks, which (the loans and

[3]This has been mentioned by several writers, most notably, it seems, by Messori[27]. However, their attempts to remove the limitation are all of a 'technical' nature without touching upon the question of generation of rentier incomes or of income distribution in general.

advances) finances production. Between the two, we have the crucial element of bank *profits*. Once this step is taken, the "real" and "financial" working of the economy get *unified* at the central point of "profit", represented respectively by *firm's profits* and bank's profits. This is the vista opened up.

Appendix A

Stocks

In this appendix we try to provide a systematic integration of "stocks" into the whole subject matter we have covered[1] based principally on the analysis of the behaviour of stocks given by Kalecki in *other contexts*. However, there were certainly "gaps" in this analysis for the purpose just outlined, which we fill on our own. the subject falls on three broad parts dealing respectively with the *theory of output*, *theory of profits* and *theory of consumption*.

A.1 Theory of Output[1]

Let us recapitulate how "changes in stocks" are encountered in Kalecki's statement of the condition of elastic production.[2] A rise in demand is met "mainly" by increasing the volume of production or output because it is also met in part by running down stocks, i.e, the preexisting stock of their products (or "finished goods") held by firms. This is statement about a short period as a whole. It is implicit in this statement that (a) demand is in fact *fully* met or satisfied, i.e, sales = demand, implying in turn that firms do not *run out* of stocks, and (b) the fall in stock consequent upon

[1]Obviously, this question does not arise with respect to the "primary sector" for its whole analysis has been based on "stocks'. So, the primary sector is again left out here.

[2]Though this name is given only here, the theory itself is already touched at a number of points earlier, particularly in connection with the "output decision" underlying Kalecki's account of the firms pricing, the "sketch of the demand side" in this theory and the first of the "three links" in our Kaleckian formulation of the multiplier process

the rise in demand is *not made good* within the short period. In other words, there is both some fall in stocks and some increase in output in the period as a whole, and they together meet fully the rise in demand taken place[3]. Kalecki did not explicitly state these points. Careful reading shows that he had nevertheless a *strong defense* for both, i.e the "defense" was in common. This was that firms generally have a *reserve* in their stocks, something over and above what is *technically necessary* to support their going process of production and sales[4]. In other words, their total stock at any time is generally made up of a *reserve stock* lying over and above the *ordinary stock*[5].

Let us argue this out in full. Let us start from square one. Like the reserve in productive capital, the reserve in stocks serves as an *instrument of competition*. It enables firms to meet even a *substantial* rise in demand *suddenly* taken place and thus 'capture' the 'market' of other firms in the industry should they fail to meet the rise in demand faced. It follows that unless the rise in demand is very large, it is fully met. This is the defense f the proposition (a). We note in the passing that the argument rules out more comprehensively than before the possibility of prices rising under what Kalecki called the "pressure of demand" (218,II) - barring catastrophic events, the phenomenon of "unfulfilled" demand does not just arise.

The defense of proposition (b) goes as follows. If firms had held only ordinary stocks, they would have to more or less immediately make good a fall in stocks, i.e, restore the stocks to its original position. Once they have reserve stocks, they are under no such pressure. They can "wait and see" before committing funds for stock restoration.

Let us return to Kalecki. He advanced the idea of "reserves" with respect to finished product of firms. It is not immediately clear to us why firms should hold stocks of raw materials under Kalecki's conditions. Rather, it appears to us that there was again a "killing of two birds with the same stone" in his arguments. This requires setting out, and that means a *historical* account of Kalecki's ideas on the

[3]Obviously, the fall in stocks occur *first*. We can say that this is what *signals* the need for increasing output. Consequently, output is in fact increased. Thus the statement implicitly contains a complete idea of the *mechanism* of adjustment of output to changes in demand.

[4]The relevant statement is quoted a little later. This is because it brings up other issues which we can come to only later on.

[5]These terms and concepts are taken from the unpublished Ph.D thesis of V.Narasimhan mentioned earlier [28].

subject. But first, we have to clear up the terminology. Kalecki generally used the term "inventory" to cover the *whole* range of stocks reserving the term "working capital" to denote the range *excluding* the finished product, the stock of which he simply called "stocks" (unqualified). We go along with this terminology here though it appears rather queer to us[6].

The general problem Kalecki was concerned with in these writings was the behaviour of "inventories" in the course of business cycles. The point most stressed in the earlier writings ([7],[9]) was that there was an *opposite moment* of "stocks" on the one hand and "working capital" on the other. What was meant was that as demand and output move in one direction (say, increased), working capital also moves in the *same* direction (increased) but stocks move in the other direction (decreased), all of this occurring in a given short period of time[7]. Clearly, this "opposite movement" of stocks is the *same* as the fall in stocks with a rise in demand and output being "not made good" within the period. Since this proposition tacitly rests on the assumption of existence of reserve stocks, we can say that the "same direction" movement of demand, output and working capital tacitly *denied* the idea of "reserves" in working capital. In other words, Kalecki's "initial" position on this question was the *same* as what we had just stated. (Firms have reserves in their stocks only of the finished product, not of raw materials).

To proceed on, Kalecki seems to have changed his position on the *total* change in stocks (i.e, the change in his "inventories") with changes in demand and output within the earlier writings. (This may have been purely "tactical" for his purpose[8]). Initially, he assumed that the opposite movements of stocks and working capital,

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[6]To recapitulate, we have ourselves used the term "working capital" in a *comprehensive* sense covering not only the *whole* range of stocks referred, which defines only the *physical* component of working capital, but also its crucial *financial* component, viz. the liquid capital or "fund".

[7]Let us just give one statement from these writings - "While working capital rises with output, stocks usually move in the opposite direction" (169,II). This was written in the background of a "short period *dt*" postulated at the beginning for the whole analysis (163,II). It was also argued in the meanwhile that output is set by demand. So, the "opposite movement" of this statement is exactly the same as stated above.

[8]The "purpose" was simply to *include* an account of changes in inventories within the overall mechanism of business cycles originally argued in abstraction from these changes, i.e, argued on the basis only of "investment" in fixed capital. Kalecki's *basic* point in this context remained to the end that the "mechanism" is defined fundamentally by the behaviour of investment in fixed capital. So called "investment" in inventories has no explanatory role in the process.

simply *cancel* one another so that there is no net change in inventories (169,II). Subsequently he took the net balance of the two components to be *propositional* to the change in output taken place (177,II). This was the beginning of the so called "acceleration principle" as theory of investment in *inventories* in Kalecki's writings.

One "bird" that Kalecki "killed" with the stone of the reserve stock idea was this. The idea enabled him to formulate a comprehensive theory of investment in inventories as a whole without having to deal with its separate components. This "general formulation" went as follows. Given the acceleration principle, the opposite movements of stocks (in Kalecki's sense of the term) with changes in output could only be a *transient* movement. In the end or eventually the stock would have to move in the same direction (and in the same proportion). It follows that the acceleration principle itself must work with a *lag* or *delay*. (This was the "second bird").

Kalecki in fact put forward the above argument as *theoretical explanation* of the "lag" in the investment of inventories, the "lag" itself being taken as an *empirical fact*. Let us quote this passage, awaited so far, in full:

> "... *empirical* investigations of changes in inventories show that here also a significant *time-lag* between cause and effect is clearly discernible. This is accounted for by the fact that a rise in output and sales does not create any immediate need for an increase in inventories, because a part of inventories serves as a *reserve* and, therefore, it is temporarily possible to increase the speed of turnover of total inventories. It is only after some time that inventories are adjusted to the new higher level of output. Similarly, when output falls the volume of inventories is accordingly curtailed, but only after a certain delay and in the meantime there is a decline in their speed of turnover." (290-91,II)

We have already set out the content of this passage in different words. Let us just tie up with Kalecki's terminology. By "speed of turnover" Kalecki meant the ratio of output to stock. Clearly if with a rise in demand there is both a fall in stock and a rise in output in the short period, the ratio is increased on both counts. This is Kalecki's "temporary" increase in the speed of turnover.

We can now address the question raised earlier. Let us first clarify that the term "raw materials" is used here in the firm-specific sense, not in Kalecki's macro-sense

of the term. Now, if the raw materials in question is itself an *industrial* product then its supply is "elastic". When output is increased, the firm can simply buy the required additional quantities of the raw materials at the going prices. There is no reason why the firm would hold a reserve stock of the raw materials. The case is quite different if the raw material is a *primary* product, *and* the supply condition and price behaviour of primary products are as stated by Kalecki in his price theory. The firm can then buy additional quantities of raw materials, if at all, only at higher prices. This is enough ground for the firm to hold the reserve, which it can then draw down to increase the volume of production. (It is assumed that relevant "supply conditions" are generally known to firms). From the above, we conclude that reserve stocks of raw materials exist with firms only if the raw materials are "inelastic" in supply. It appears to us that this must have been Kalecki's general position on the subject[9]. In other words, his speaking of "reserves" in total inventories in the passage quoted represented rather a verbal freedom afforded by the term "inventories" as he defined it than a genuine extension of the notion from its original home ground of "stock" in Kalecki's sense (product stock) across board.

We have now completed one part of the subject matter of this section. In this part, the focus upon attention has been on *stocks*; "output" remained rather in the background. We now focus more directly on *output*. This is argued much more on our own than so far[10].

Let us first establish a general equation for this part. The *general equation* of output of a firm in any given period of time is simply the following:

$$X \equiv Z + \Delta S. \tag{A.1.1}$$

Where X and Z denote respectively the volume of production (output) and volume of sale in the period and ΔS denotes the change in the volume of stocks (product stock) over the period as a whole (= closing stock *minus* opening stock). Note, *demand* is here implicitly represented by "sales". (The argument is already given). I.e, Z also denotes the volume of demand faced by the firm in the period under reference. So, (B.1.1) gives us the general relation between demand, sales, output and stock.

It is clear from this equation that what we called Kalecki's output theorem (out-

[9]Cf. His original position which he in fact never explicitly withdrew.

[10]The only argument given so far which is strictly on our own is the argument in fn.2 of this appendix.

put equal to and determined by demand) is not generally valid. The general question of our concern now is simply the *significance* of this proposition for the "theory in Kalecki as a whole. This can be argued only through the *output decision* of the firm. This establishes the precise point of focus now on.

Let us establish the basic *scope* of the discussion. If a firm wants to add to its stock (or to run it down), it can do so only by *producing* more (or less) than what it would have otherwise produced. It follows that the firms output decision *includes* the decision to augment or deplete the volume of stocks. This so called "investment decision" falls within the scope of the present discussion[11].

We now go on to establish a *framework* for the firm's output-decision. On the face of it the framework is defined by (A.1.1), for after all it gives a general representation of all relevant variables. However, this is deceptive. (B.1.1) is defined with respect to some *particular* period of time or other. This is not quite "general". To say that (A.1.1) defines the framework for the firm's output decision in any precise sense of the term is to say that these are *apriori set or fixed points of time* at which the firm takes its output decision. These "points of time" are simply the "beginnings" beginnings of the successive periods, of which the particular period of reference is one. This appears very much of a straight jacket. It means for example that having taken its output decision for a month (or day or year if you like) the firm simply waits till the end of the month for a fresh decision, *come what may*. It appears much more sensible to say that *once* an output-decision is taken, the output is produced as decided - open-endedly in time - *till* the occasion arises for *changing* the decision. Put differently, for taking a *fresh* output decision, *whenever* that may occur. There is no way of fitting this proposition into the scheme of "periods", however defined.

Let us now go one more step. The argument so far is rather "subjective". But it is at once "grounded" in the basic *technical conditions* of industrial production,

[11]Quite apart from the fact that this so called "investment decision" is included in the output decision, the term is highly confusing as "investment" is also understood synonymously with *change* in stocks (in the general sense of this term), whether expected or unexpected, desired or undesired etc.. Perhaps it is best to eschew the term "investment" in the present context and talk simply but comprehensively of changes in stocks. We shall go on with this language in the next section. In this section we do speak of a firm's "investment" or "disinvestment" in stocks or inventories, but this is always understood as the firm's *own* investment or disinvestment, what it itself decides on. As just stated, its investment or disinvestment in stocks - "stock" in the sense of Kalecki - is simply a component of its output decision.

i.e, of factory production. The output in a firm or factory is typically produced as a *rate* per unit of time - per hour, per day (working hours), per week (working days) and so on. Hence it must be decided in this *form*. This is the framework.

Let us clarify[12]. Let x denote the *rate* of production or output decided by a firm. This means that so long as the decision is not revoked (a fresh decision is made) the output produced over any given period of time is simply *proportional* to the length or duration of the period. The "rate" is simply the factor of proportionality. By definition, the "rate" so defined is *independent* of *both* the duration of the period *and* of its precise time-location (location in the real time axis). It is independent of both the "time" in the period and the "Time" of the period in Georgescue Roegen's sense of the terms "time" and "Time".

Let us now leave behind this technical aspect of the question for a firm and turn to the *conceptual* (or economic) side. The output produced in a firm is to serve some *outside* need. In fact, the "need" comes to the firm as *demand*. Let us now link up with frameworks established in the text. The "demand" just talked is nothing but the "expenditure" in the "circular flow of income and expenditure" going on in the economy as a whole getting "distributed" by various factors till it appears, divided by ruling prices, as "demand" before particular firms[13]. Now a moment's reflection: There is nothing in this process to make the "demands" occur as *rate* in the sense just defined[14].

It follows that the output produced in a given period can be exactly equal to the demand faced only by chance or accident. As a general proposition, what we can at *most say* is that the output is *approximately* equal to demand. Let us now

[12]The following definition is taken from an unpublished Ph.D thesis of J.Saha [33] on inventory theory. Our analysis of sales, demand, output and stock given here also owes a lot to this thesis. It is however difficult to make specific acknowledgements because the contexts are so different.

[13]Obviously, the framework here is obtained by embedding the "sketch of the demand side" of sec.3·1 in the "circular flow framework" of ch.5. This "embedding" gives us the occasion to make one rather deep methodological or conceptual observation on Kalecki's price theory. Methodologically speaking, "price" is the most important factor "distributing" demand at all levels. This however is *not* the same as saying that demand-distribution is a "doing" of price, for all "doing" is after all defined within the "making". The question therefore is what firms (the price makers) make price to do. This already sets the question of "doings" of price in a totally different perspective.

[14]We can of course speak of the "rate of demand" simply in the *dimensional* sense of the term (demand per unit of time), which is obviously quite distinct from the notion defined earlier. The "time-average" properly conceived is however a "rate" in our sense.

understand the output theorem in this approximate sense.

Let us put it in a mathematical form. We have to recognise first that the output decision must by definition be based on a *future projection* of demand-conditions, for whenever the decision be made, the output that is decided to be produced is for 'future demand' as reckoned from that point. Let us now tacitly assume *unchanged* demand conditions. We can then say that outlying Kalecki's output theorem lies the simple *decision-rule*:

$$x = d^e \tag{A.1.2}$$

where d^e is the demand per unit of time as *estimated* by the firm. Note, (A.1.2) is saying the same thing as that the firm produces the output *it thinks it can sell* - which is precisely the assumption regarding the firm's output-decision that we had ascribed to Kalecki in the text.

To interpret (A.1.2) as statement of Kalecki's output theorem, in the approximate sense now understood, it is necessary to make a further assumption, viz. *the firm's demand estimation is correct.* Let us now compare (A.1.1) and (A.1.2). Let τ is the duration of the "period" assumed in (A.1.1). Then we see at once that $X = x.\tau$ but $Z \simeq d^e.\tau$. Hence $\Delta S \simeq 0$. This is the theorem.

It follows at once from this demonstration that to say that the firm is producing according to (A.1.2) is to say that it is not itself "investing" or "disinvesting" in stock[15]. Let us now bring this investment or disinvestment into the picture. The question remains what significance (or status) attaches to the output theorem in this context.

Let us admit at once that this is a relatively big question. Many new issues come up. We cannot resolve them with finality. Such is not our intention here. The intention is simply to put forward a consistent line of reasoning.

Let us start from square one. "Investment" or "disinvestment" in stocks means by definition that the existing stock is not "right" as per the desired stock-flow ratio implicit in the acceleration principle. The amount of investment or disinvestment envisaged is then simply the *deviation* of the existing stock from the right amount. (Put differently, the difference between the actual and the desired stock). One pos-

[15]But there may be "unexpected accumulation or running down of stocks" which is nothing but $(x - d^e)\tau$.

sible source of the deviation is obviously incorrect demand estimation. Let us leave this out. The source then must be a *change* in demand conditions.

Now, the argument so far has been that the immediate impact of change in demand conditions falls entirely upon the stock, and that it is the consequent change in stock - Kalecki's "unexpected accumulation or running down of stocks" - that signals the need for change in output, when the output (rate of production) is adjusted to the new conditions are correctly estimated by this time. As we see, this must be one substantive factor behind the firm's "wait and see" in the firm's stock adjustment. That is to say the lapse of time means the availability of more information and hence possibility of better demand estimation. Let us assume that a correct demand estimation is again possible after the "wait and see". The deviation in stock at this point is given by the algebraic sum of the unexpected change in the volume of stock *so far* (both before and after the output adjustment) *and* the required stock adjustment (plus or minus) as per the desired stock flow ratio or acceleration coefficient.

Let us now take a look at the *magnitude* of the deviation. It remains the fact that production is "elastic" as understood in the text - there are no *technical* impediments to changing the rate of production. It follows that there has been only a relatively *small* change in the volume of stock upto the point of output adjustment[16]. To this we have to add (algebraically) the further change in stock caused by incorrect demand estimation. Depending upon the signs this may mean either a larger or smaller change at the end of the "wait and see", but we can in any case assume that the absolute magnitude of the change remains "small". So, the required magnitude of "investment" or disinvestment" is also small.

It is necessary now to translate this investment or disinvestment into a *rate* per unit of time. Only after this can we talk about the *new* rate of production. This brings a second substantive factor into the discussion. There are obviously *organisational costs*, also possibly technical costs, of *too frequent changes in* the rate of production. So, the investment is spread out over a relatively long time. (A little reflection will show that this too is a factor behind the "wait and see" - frequent changes as entailed by hasty decisions are avoided).

The net upshot of these considerations is clearly that the firm's "investment"

[16]It is tacitly assumed at this point that there has not been an *arbitrarily* large rise or fall in demand.

or "disinvestment" in stocks contributes only a *relatively small component to the firms total output decision.* Let us state this as an equation. Let u denote the firm's *rate* of investment or disinvestment. Then the firm's total output decision is given by the equation:

$$x = d^e + u. \tag{A.1.3}$$

According to the arguments just given $\mid u \mid$ is small relative to x. So, d^e remains the *primary* component in the firm's output decision. u is only a secondary component, "small" in comparison with the primary component. So, we again arrive at the conclusion that *Kalecki's output theorem remains true in an approximate sense* - given correct demand estimation as explained above.

It follows that assume that the theorem holds is an *exact* sense - as in Kalecki all through - is only a *convenient simplification and no more.* The "error" cannot by definition vitiate the basic substantive analysis carried out on the basis of the "exact" theorem.

There is a further point to note in this context. The original context of Kalecki's output theorem was his (industrial) price theory with the firm's pricing as its pivot. Remembering this, we have to say that whether the firm is actually investing (or disinvesting, for that matter) in stocks has *no bearing* upon its pricing. It follows that for the purpose of the price theory, it can always be assumed that the firm is not actually investing or disinvesting in stocks. This is to say the same as that the output theorem holds intact in this "approximate" sense as *originally* argued. The *further* approximation caused by "investment" or "disinvestment" is irrelevant.

A.2 Theory of Profits

In the text, we proved Kalecki's profit theorem in abstraction from any changes in the volume of inventories, whether expected or unexpected, desired or undesired. Let us recapitulate that the proof hinged upon only two things, viz. (a) the *profit equation* and (b) the fact that capitalists real expenditure in the whole period is *predetermined.* (a) is obviously unaffected by changes in inventories. (This is further discussed later). As regards (b), we have now seen that there is a "wait and see" or "lag" in the firm's own investment or disinvestment in inventories, i.e, in the so called "desired" change in the volume of inventories. This is only another way of

saying that this investment or disinvestment too is a *predetermined variable* in the short period. It follows that the profit theorem *continues* to hold so long as there are no unexpected (or undesired) changes in the volume of inventories. In other words no "qualification" to theorem is occasioned by the firm's own investment or disinvestment in inventories.

Rest of the section is devoted to a closer look at the nature of the "qualification" - if any - occasioned by Kalecki's "unexpected accumulation or running down of stocks", a currently determined variable par excellence. However, we see no way of *systematically* going about this question *except* by embedding it within a broader set of questions where the original question gets somewhat *marginalised*, to be retrieved again at the end. This "long windedness" of the discussion is explicitly admitted at the beginning.

Basically, we try to give an *objective* analysis of the significance of change in stocks - "stock" in the sense of Kalecki - for "profit". Because the analysis is objective, we have to eschew subjective distinctions like "expected" and "unexpected", "desired" and "undesired" change in stock. We speak simply but comprehensively of changes in stock. This is the *accounting* stand point par excellence.

Let us follow up this point immediately. The "stock" of the firm belongs *exclusively* to it. No one else has any claim upon it. It follows that in the firm's accounting, changes in stock can be reflected only in its *profit*. From this, one has the conclusion that changes in stocks - changes in the *total value of stocks*, to be precise - must mean an *equal* amount of profit, positive or negative as the case may be. Note, the term "total value of stocks" is used in a comprehensive sense. It can change *either* because there has been a change in the *physical* magnitude of stocks *or* because there has been a change in the *valuation* of stocks. We also note in the passing that this "valuation" is by definition *internal* to the firm. Further, *alternative* principles of valuation are possible. This already makes for a good deal of undecidability in the area.

Let us now go over the *basis* for any "reflection" of changes in the total value of stocks in the firm's profit. The general principle here seems to be that in the *end-of-a-period stock* is simply *potential* profit, *not yet realised*. The *source* of this "potential" profit is however the total activity in the period concerned. That it is why it is "accounted" to this period. But the period itself began with a stock -

the end of the *preceding* period stock. So, it is the *change* in stock that matters, and this must by definition be in *value*. So, the change in the total value of stocks over the period as a whole is counted as "profit" of the period.

Clearly, this "type" of profit has to be *sharply distinguished* from the *profit actually made* in the period, i.e, the profit obtained by *selling* and the other the *unrealised profit*. Denoting the two as RP and URP and the total value of stocks as TVS, we then have the following set of definitions:

$$P = RP + URP \tag{A.2.4}$$

$$URP = \Delta(TVS) \tag{A.2.5}$$

$$RP = SP - CP \tag{A.2.6}$$

The further notation used is as follows: SP denotes sale proceeds, CP denotes cost of production (sum of Kalecki's prime costs and overhead costs). P denotes profit or total profit as before. (A.2.2) stands as algebraic statement of the proposition made earlier that change in the total value of stocks must mean by definition an *equal* amount of profit.

We can now embed the above relations in a notion of "value of production" (denoted VP) defined as the algebraic sum of SP and $\delta(TVS)$ -

$$VP = SP + \Delta(TVS) \tag{A.2.7}$$

This stands as the *value-plane analogue* to (A.1.1) which in turn is obviously defined on the physical plane.

So far is simply *preparatory* for our purpose. We have just set out the *firm's accounting* reflecting its own view point. The objective now is to embed it in *social accounting* reflecting the social stand point -which in turn simply mean for our purpose the "working" of the *economy as a whole*, the "circular flow". There is indeed a big "puzzle" here. But first, we proceed through a smaller puzzle.

"Firm's accounting" takes us only to the *income* side of social accounting (read as national income accounting). Let us go over to the *expenditure* side and take a look at (A.2.4) from this angle. SP is by definition "expenditure" or rather the "other side" of expenditure - *others'* expenditure on the product of the firm in question. What about $\Delta(TVS)$?

There is obviously no straight way of "covering" $\Delta(TVS)$ within the notion of "spending" or "expenditure". Just the fact that the "valuation" in TVS is *internal* to the firm is enough to tell us this. There is nevertheless an argument of sorts that "reduces" $\Delta(TVS)$ to "expenditure". This is found even in Kalecki. That is why, specifically, we discuss this point here. This is the "smaller puzzle" just referred.

The starting point of the argument consists of extending the notion of buying and selling to include a supposed 'act' of buying from or selling to *oneself*. I.e, the firm is now seen to sell to itself or buy from itself what it is producing. Obviously, the two notions of "selling to oneself" and "buying from oneself" are one and the same. Let us grant the notion for argument's sake. Since the buying and selling is internal to the firm, they take place at "internal" values. This obstacle to the expenditure-interpretation of $\Delta(TVS)$ is thus removed.

Let us proceed on. For the purpose of accounting it is sufficient to apply to the notion of "self-sale" (or "self-purchase") to the firm's stock of the product *at the end of successive accounting periods*. Let us now suppose that there is an *increase* in the *volume* of stock over a period. In the language just adopted, this means that the firm buys *more* from itself at the end of one period than what it had bought at the end of the previous period.

The next point in this line of thinking consists of "distributing" this increase in the volume of stock bought by the firm between the two points as a "flow" of self-sale over the intervening period. *The notion of "increase" then drops out of the scene.* Assuming no change in the *valuation* of stocks, it becomes possible to talk of $\Delta(TVS)$ simply as the *value of the firm's sale to itself over the period.*

Let us now come to Kalecki. At one point in [7] he wrote

> "Thus we have by definition:
>
> National income = sale of investment goods + sale of consumer goods".
> (253,I)

In a footnote to the word "sale of investment goods" he then wrote:

> "Including increase in working capital and stocks. This type of investment does not often involve a sale, the increase of inventories of a firm being

> created by its own production. Such a case, however, may be considered as the *firm's sale to itself*".

This is exactly what we have spelt out above.

But all this is for the case of an *increase* in the volume of stock over the period. What about the *decrease* or *running down*? A *negative* self-sale? What does that mean?

We conclude that *even* if one were to grant the notion of "self-sale" *and* consider an increase in the volume of stock between two points as a "flow" over the intervening period *and* assume unchanged valuation of stocks all through, one *cannot* in general give an "expenditure-interpretation" to $\Delta(TVS)$ *because* there is nothing to correspond to a decrease in stock in step 2 of this procedure or line of thinking[17].

We can now address the problem of "qualification" of the profit theorem as stated by Kalecki[18]. Discarding any sort of expenditure-interpretation of $\Delta(TVS)$, we have the following "hybrid" argument for the "qualification". Profit is taken to be *defined* as the sum RP + URP (all firms taken together). This is the outcome of the firm's accounting as described. To this is "married" the social accounting of the circular flow of income and expenditure based on the assumption that workers spend what they earn. So, we now have the profit equation (or extended profit equation)

$$RP + URP = X + \Delta(TVS) \tag{A.2.8}$$

where X stands as usual for capitalists spending. But capitalists real spending is predetermined in the short period. Hence *assuming* unchanged prices, X is also predetermined. But $\Delta(TVS)$ is *not necessarily predetermined.* In fact, the "unexpected" component of it is purely currently determined. This again explains why Kalecki's "qualification" was confined to "unexpected changes in the volume of stocks". But we ourselves eschew the distortion between "unexpected" and other sorts of changes in stocks. The significance of this point will be clear at the end. But for the time, we may simply assume that the whole of $\Delta(TVS)$ is "unexpected" so that there is

[17] Kalecki of course just talked of "increase" in the footnote referred. But he himself was to speak elsewhere of "unexpected accumulation or *running down* of stocks".

[18] "The gross profits in a given short period are determined by decisions of capitalists with respect to their consumption and investment shaped in the past, *subject to correction for unexpected changes in the volume of stocks*".(240,II)

yet no divergence between Kalecki and ourselves[19].

We now come to a *root* - the *fundamental* - point to emerge out of the foregoing analysis. URP is by definition equal to - defined as - $\Delta(TVS)$. So, it follows at once from (B.2.5) that

$$RP = X \tag{A.2.9}$$

Further, RP is certainly *determined* by this equation, for X is predetermined[20]. It follows that if we *exclude* URP from the definition of "profit" then we simply retain *intact* the profit theorem. This holds *independently* of the coverage of $\Delta(TVS)$ - expected unexpected etc.

The above may appear purely formal. But in fact it is very *substantive*. The defense of excluding URP from the definition of "profit" is simply this: Profits are made, made by selling. They are made *when* the goods are sold. Account it *then and there*. Avoid the self-delusion that today's stocks will be sold tomorrow, and can therefore be already accounted as profit today. It may not be sold. Time is to show. So, this is firm accounting, or accounting principle - even from the firm's standpoint.

This completes the circle. On the one hand, we do not have to meddle with the notion of expenditure to get $\Delta(TVS)$ into the picture. On the other hand we do not have to meddle with the notion of profit as originally understood - profit as part of sale proceeds. We then remain within - never depart from - the framework of the circular flow of income and expenditure. (A.2.6) then stands *as the profit equation*. The profit theorem holds as a corollary, given the predeterminacy of X. The whole continued extension of (A.2.4) into (A.2.5) is superfluous, or worse - a confusion arising out of the hybrid reasoning of putting together the supposed or presupposed

[19] We note another point of congruence - Kalecki's warning against "exaggerating" the importance of unexpected changes in the volume of stock. He certainly had the condition of elastic production at the back of his mind. We have already seen that the condition implies that the "unexpected changes" are relatively small in absolute magnitude. We give here an argument strengthening Kalecki's proposition. If a firm meets a sudden, unexpected demand it is certainly very likely to *revalue* its stocks - valuing it higher (lower) if demand has gone up (down) for then the stock is turned more (less) quickly. So, the revaluation *counteracts* the change in the physical volume of stocks. Consequently $\mid \Delta(TVS) \mid$ is smaller than $\mid \Delta S \mid$.

[20] Assuming unchanged prices. But as already shown in the text, the "determination" is unaffected by price-changes.

firm's accounting of (A.2.1)-(A.2.4) and the social accounting of the circular flow[21].

Let us now end. Let us just reiterate that the arguments we have given excludes simultaneously the *whole* of $\Delta(TVS)$ from the notion of "capitalists spending" and URP from the notion of "profit". This is independent of all subjectivities (expected/unexpected, desired/undesired etc.). We are not sure that the matter ends there. After all, the "stock" we have been thinking of - the product stock of the firm - is only the *endpoint of a spectrum*. We are not sure that this can be extended - plucked out, to use a metaphor - just like that, others remaining intact. Can one pull strings like that, or there is no string at all? Where exactly do these "others" end?

These are some of the bigger questions that the analysis leads to. They remain in the open.

A.3 Theory of Consumption

Kalecki's theory of consumption consisted of a brief and terse treatment of capitalists consumption on the one hand and a much briefer and terser treatment of worker's consumption on the other hand, we have already gone over both these parts in details. Our objective here is essentially a *conceptual unification* of these two parts. The unifying element is found in the "stock". This goes back to Adam Smith.

First, get the "stock" into the picture. Let us recall Kalecki's *basic* statement on capitalists consumption:

> "There *must* be some connection between their (capitalist) income y and consumption c *out of it*"(261,I)

To this he added later:

[21]This is not be taken from a conflict between firm's accounting and social accounting as such. We have just shown that it is "logical" for the firm to exclude URP from the definition of profit. But this in turn may be "disregarded" in social accounting. Both possibilities remain open, and we do not want to settle anything except analytically, and that is already done. For the point just raised, we simply point out that the conflict appears to be between the "property rights viewpoint" epitomised in the firm's accounting *as defined* in (A.2.1) - (A.2.4) *and* the viewpoint of real "happenings" epitomised in the circular flow.

> "It is not denied that an appreciable *time lag* exists between y and their *consumption* c" (263,I).

This in short was his lagged consumption function of capitalists.

Clearly, when Kalecki talks of capitalists consumption "out of" their income, he takes complete care of the question, how the consumption expenditure is *met* or *financed*. This gets somewhat obscured in the lagged consumption function, for "past profits" is *past*. It does not "exist" in that form in the *present*. What exists - and can finance the present or current consumption, apart from the current income - is the *stock of money* created by past savings (unspent profits). Note, this at once answers the question of *financing* the "predetermined" consumption of given short period of time that we had raised earlier. Given the volatile nature of profits, it is possible that the profit made in a given short period falls short of the predetermined consumption of that period. The deficit is then met from the stock at hand. Capitalists have this "means" which is nothing but a form of savings for them.

Let us just complete the argument. The shortfall of income from consumption just talked is clearly *exceptional*. Normally, capitalists do save. This is saying the same thing as that their consumption is *normally* financed out of their current profits. Financing out of stock is exceptional. In other words, the stock itself is in the nature of a *reserve*. This shows how misleading it may be to think of "consumption" and "production" as parallel processes[22].

Let us now turn to *workers' consumption*. We keep to the "budget constrained" view of workers consumption implicit in Kalecki's writings. The point to state now - and state with some emphasis - is simply that this already implies that workers do *not* have any stock[23]. If they had a stock, the wages received would not have defined their "budget" for the coming *week*. Note, this non-existence of stock at

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[22]This is not to deny an *initial* or *apriori* parallelism - just as the firm's output flows into a stock and sales flow out of the stock, so also the capitalists profits flows into a stock and his consumption expenditure flows out of it. The difference remains that output is produced *for* sale but profit is made not merely or even mainly for consumption. To put as "normal" conditions, *output = sales* but *profit > capitalists consumption*. The first has its complement in the "ordinary" stock. The reserve stock is "special" (argued on other grounds). The second has its complement *only* in the reserve stock.

[23]Except in the definitional sense of the unspent wage mid-week, "week" being the wage-payment interval ("mid" is any intermediate point).

once explains why there *cannot* be any "lag" in the consumption function of workers. Once they receive their wages, workers must *immediately* spend it (or spend from it), for they have no other source of expenditure.

This completes the "unification". We have seen that the underlying element in *both* the "predetermined" nature of capitalists consumption in the short period and the strictly "budget constrained" nature of workers' consumption all through is the *stock* - the "having" of this stock in one case and "not having" in the other.

Let us now see how all this goes back to Adam Smith. We refer to the opening line of famous opening chapter on "division of stock" of Book II of *Wealth of Nations*. His project here was nothing less than explaining the "origins" of capital. The substance of the points he made however remain even when we put them in the immensely narrow framework of questions here. Let us just quote this passage:

> "When the stock which a man possesses is no more than sufficient to maintain him for a few days or a few weeks, he seldom thinks of deriving any revenue from it. He consumes it as sparingly as he can, and endeavours by his labour to acquire something which may supply its place before it be consumed altogether. His revenue is, in this case, derived from his labour only. This is the state of the greater part of the labouring poor in all countries.
>
> But when he possesses stock sufficient to maintain him for months or years, he naturally endeavours to derive a revenue from the greater part of it; reserving only so much for his immediate consumption as may maintain him till this revenue begin to come in. His whole stock, therefore, is distinguished into two parts. That part which, he expects, is to afford him this revenue, is called his capital. The other is that which supplies his immediate consumption;..."

Let us consider in turn the Smith's "labouring poor" and "(would be) capitalists". The little stock of the first, which "he consumes as sparingly as he can, and endeavours by his own labour to acquire something which may take its place before it be consumed altogether" is *no different* from the transient mid-week stock of Kalecki's workers that we just spoke of. Let us now turn to capitalists. We cut out the "would be". Capitalists are there, long emerged. It remains the fact he would still

possess stock to maintain him for weeks and weeks (read in place off Smith's "months and years") with profits flowing in, taking good care normally of the "maintenance". This is *all* we have said in explanation of Kalecki's terseness.

Appendix B

Production On Order

We take off here from our statement of *production on order* (POO) as a form of production distinct from the general run of *commodity production*. We can call the latter more specifically *production for sale* (PFS). In the last appendix we discussed a range of problems arising out of *this* form of production. We shall be concerned here broadly with the parallel/analogous problems in the case of POO. This implicitly sets the discussion on a *comparative* footing.

Let us start from square one. It is more or less obvious that the essential distinction between the two forms of production lies in the 'placement' of the point of contact of producer and product-user (buyer or customer). Under POO, the contact is established with the very placement of an 'order'. This comes *before* production. Under PFS, the contact is established in 'sale' which comes *after* production.

Let us follow on. The very notion of order-placement implies an *agreement* or *contract* between the two parties. By definition, the contract is *fulfilled* when the order is executed, i.e the goods ordered are in fact *delivered*. We can take the time-period of execution to be part of the initial contract. Fulfillment of contract then implies that work is finished in time, and the goods actually delivered (or lifted). So, we would not have in general any analogue to the notion of the "product-stock" of PFS in this case. Even if a stock of finished goods is observed to lie in the firm-premises, it is of no economic significance, for it is in a sense "already sold".

It is clear that the very *measurement of output or production* has to be different under POO and PFS. It is meaningless to look for a direct analogue of (A.1.1) in the

present case. Let us proceed to solve this problem for POO.

First we take the problem to be defined in *value* terms. This has its basis in the simple fact that when an "order" is placed, the money-to-change-hands is already agreed, defining the *value* of the order - same as the value of the goods on delivery. As in the text, we assume straight line or uniform distribution.

Our problem is the measurement of output (value of production) in a *given period of time*. Nothing is assumed about the precise location or duration of the period, *or* about the "execution period". The "execution period" is in fact left simply as an order-specific notion, varying in principle from "order" to "order".

Now, there is a certain total value of work-in-progress at the beginning of our period, which we denote by W_0. By definition, these are all works-in-progress on orders placed before the period. Some of these works will get finished within the period; some will be carried over to the end of the period with further work done. The value of production in the first case is given by the *difference* between the value of orders executed i.e, the value of the goods delivered, and the corresponding part of W_0. In the second case the value of production is given by the *increment* in the corresponding (remaining) part of W_0. To these, we have to add the value of production on orders placed *within* the period. For these, there is no initial work-in-progress. The value of production is given simply by the corresponding value of work-in-progress at the end of the period or - if the work is already finished within the period - by the value of the order itself. We can now add together all these components of the total value of production in the period. Denoting the end-of the period or closing value of work-in-progress by W_c, the value of all deliveries in the period by D and the total value of production by V we have

$$\begin{aligned} V &= D + (W_c - W_0) \\ &= D + \Delta W, \quad \Delta W = W_c - W_0 \end{aligned} \tag{B.0.1}$$

Let us go over this once again. There are two components each of W_0, W_c and D. The two components of W_0 are the work-in-progress at the beginning on (a) orders that are executed within the period, and (b) orders that are carried over to the end of the period. (a) in turn contributes *one* component of D, the *other* being given by orders that are placed and finished within the period while (b) contributes *one* component of W_0, the *other* being given by orders placed in the period *and* carried

over to the next period. So, the accounting is complete.

(B.0.1) stands as a clear parallel to (A.2.4). The underlying physical entities are of course different. This has its basis in the fact that the physical production is carried out within the different sets of parameters in the two cases. The principle of valuation in ΔW is specific to POO. It cannot just be carried over to PFS.

Let us wind up this part of the appendix. (B.0.1) is implicit in Kalecki's verbal discussion of his terms "production of investment goods in general", "production of finished investment goods" and "increment of capital under construction" - which correspond respectively to our V, D and ΔW - in his first paper on business cycles [2] (see particularly fn.6,(70,I)). However, he no where spelt out the interrelations and more particularly the principles of valuations involved. This apart, he assumed all through a common or uniform execution period for all "investment projects", which we have clearly given up in toto. Thus our analysis here stands both as a spelling out and generalisation of Kalecki.

We should also state that Kalecki did give an explicit account of the "valuations" and "interrelations" in his papers on *planning*, the basic reference being [11]. On the face of it equation (3) of this paper is the same as (B.0.1). However, closer reading shows that his "valuations" were all *cost*-valuations, defined in terms of the costs incurred in the production of "investment goods". As pointed out earlier, this simply "kills" the present problem. It is not clear if Kalecki was aware of this problem or whether he meant his "valuation" in [11] to be specific to the problems discussed there (roughly, growth rate of the planned economy), if so, why and so on. We do not go into these questions as they lie outside our terms of reference. For the sake of completion, we mention that Kalecki simply kept to his assumption of uniform execution period in these writings while at the same time recognising it as a "limitation".

Let us also touch here again upon the treatment of investment in fixed capital as a "predetermined variable" in the short period, which underlies the whole Kalecki's profit theorem. We have already explained the *approximate* nature of this treatment. It is clear from the derivation given above that the "approximation" rests on the assumption that the value of orders placed within the period is small compared to the value of outstanding orders at the beginning of the period. This requires not only the assumption that the period is "short" but also the assumption that investment

orders proceed relatively "smoothly" through time - there has been no "jump" in the recent past.

We now proceed to consider the problem - rather, the analogue to the problem - of Kalecki's "unexpected changes in the volume of stocks" in the determination of profits. Changes in the volume of stocks as such are of no consequence in the present context. But these changes are but the reflection of *changes in demand conditions*. Our objective now is to see if there is any parallel or analogue to Kalecki's "qualification" in this context in the case of POO[1].

The problem brings to light a *completely new element* in POO. Under PFS, changes in demand conditions lead simply to changes in the volume of sale (and/or in price, but this factor is broadly argued out by Kalecki, and we keep to that). The straight analogue to this factor for POO is change in the *volume of order-placements*. But this is not all. Consider the case of *deteriorating* demand conditions as in the downturn of a business cycle. This will lead not only to a fall-off in the placement of new investment orders. It will also lead in general to the *revocation* or *cancellation* of some previous orders, particularly if the deterioration is sharp or drastic. This is the new element.

Kalecki himself took clear cognizance of this phenomenon, though not exactly in the context in which we are putting it. In a footnote to an equation depicting the "lagging" of actual investment in fixed capital behind investment decisions, he wrote:

> It should be noticed that investment decisions are not strictly irrevocable. The cancellation of investment orders, although involving considerable loss, can and does take place. This is a factor, therefore, which disturbs the relationship between investment decision and investment as described by (the) equation". (281,II)

We can come to the point we have in mind by marking *three specific points of difference* with what is stated above. In this passage, "cancellations" appear simply as "givens", unrelated to anything. We have already seen it as a consequence of

[1]We should say *genuine* parallel or analogue, for we have already argued that the "qualification" is not really necessary in the case of PFS.

changes in demand conditions[2]. The second difference is in regard of the consequences of the cancellations themselves. Kalecki draws attention to the consequence only in terms of his investment equation (specifically, in terms of the assumption of a fixed lag between actual investment and investment order or decisions, which the equation represented). Our interest lies in the determination of profits or the profit theorem. The question is to see if "cancellations" lead to any *qualification* or *modification* of the theorem[3]. Kalecki simply did not address this question which we just framed in the manner of Kalecki traversing from PFS to POO.

These two points fully explain the difference in the context in which we see or posit the phenomenon of "cancellations". Our third point of difference is internal to the problem just posed. Kalecki talks of the "loss" entailed by cancellations - loss of the buyers or investing firms. This is completely admitted. If a firm cancels an investment order, it gets nothing in return of the payments actually made or to be made. Let us add that the amount of loss must obviously depend upon the time point of the calculation. The closer it is to the order point the smaller the loss and the closer it is to the delivery point the larger the loss. So, there are typically only early cancellations, no late cancellations.

All this is simply spelling out Kalecki. Let us now argue further. We consider the simplest case for our purpose. Let us fix attention upon a particular order which gets cancelled some way through. Let V be the value of the order, τ be the delivery period as per the contract, and P be the profit component of V (profit made on the fulfillment of contract). Let us also measure time from the time point of the order placement as the 'origin' O. Let us suppose that the order is cancelled at some time point τ_0, $0 < \tau_0 < \tau$. The value of the work done on the order at this point is, according to our "uniform distribution" assumption, $(\tau_0/\tau)V = \delta V$ say, $0 < \delta < 1$. We assume that (a) the profit component of δV is precisely δ and (b) the buyer or investing firm has to pay precisely the amount δV, given that he cancels the order at time point τ_0 as assumed. We can say that (a) is the underlying assumption of "uniform distribution" in the accounting given earlier. (b) is considered part of the original agreement. This is discussed further below.

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[2]Note however that there is no "symmetry" in the notion. Cancellation occur *only* under falling demand conditions. There is no analogue to it for rising demand conditions.

[3]The apriori ground for this question is simply that "cancellations" are certainly not *predetermined*.

The buyer's or investing firm's loss in this case is simply δV - this is the money paid for which no return is obtained. But there is also a loss on the *producer side*. If the order was not cancelled, then his profit would have been P. Now, it is only δP. The "loss" is given by $(1-\delta)P$. This arises entirely out of the cancellation. This is the "qualification" to Kalecki's profit theorem here[4]. To restate, profits are said to be "determined" by capitalists spending (in real terms) because the two are equal *and* profits are currently determined but capitalists (real) spendings are predetermined. But the cancellations are certainly not predetermined.

Let us now conclude. As already stated, we have considered the simplest case for our purpose. There will generally be a "penalty clause" for cancellation. This will affect the *distribution of loses* between producer and buyer. But that is not what our argument has been about. It is simply the presence of a producer's loss that matters for our purpose. This appears unavoidable, given competition - always in Kalecki. We can also say that the producer's loss depends upon the "degree of monopoly".

[4]Let us remark in line with Kalecki that the importance of this new factor should not be "exaggerated".

References

A. Writings of Kalecki

1. "The Business Cycle and Inflation", (originally in polish), Polska Gospodarcza, 13/48, 1932, (pp.147-155).

2. *Essay on the Business Cycle Theory*, Institute for the Study of Business Cycles and Prices, Warsaw, 1933, (pp. 65-108,I).

3. "On Foreign Trade and 'Domestic Exports'", (originally in Polish), *Ekonomista*, 3, 1933, (pp.165-173,I).

4. "The Essence of the Business Upswing", (originally in Polish), *Polska Gospodarcza*, 16/43, 1935, (pp.188-194,I).

5. "A Theory of Commodity, Income, and Capital Taxation", *Economic Journal*, 47/3, 1937, (pp.319-325,I).

6. "The Determinants of Distribution of the National Income", *Econometrica*, 6/2, 1938, (pp.3-20,II)

7. *Essays in the Theory of Economic Fluctuations*, George Allen and Unwin, 1939, (pp.234-318,I).

8. "A Theory of Profits", *Economic Journal*, June-September, 1942, (pp.151-161,II).

9. *Studies in Economic Dynamics*, George Allen and Unwin, 1943, (pp.118-180,II).

10. *Theory of Economic Dynamics: An Essay on Cyclical and Long-Run Changes in Capitalist Economy*, George Allen and Unwin, 1954, (pp.207-238,II).

11. "The Influence of the Construction Period on the Relationship between Investment and National Income", *Ekonomista*, 1, 1957.

12. "A Model of Hyper-Inflation", *The Manchester School*, 32/3, 1962, (pp. 90-95,II).

13. "Trend and Business Cycle Reconsidered", *Economic Journal*, 78/2, 1968, (pp. 435-50,II).

14. "The Problem of effective Demand with Tugan-Baranovsky and Rosa Luxemburg", *Ekonomista*, 2, 1967.

15. "Class Struggle and Distribution of National Income", *Kyklos*, 24/1,1971,(96-103,II).

16. *Selected Essays on the Dynamics of the Capitalist Economy 1933-70*, Cambridge University Press, 1971.

17. *Collected Works of Michael Kalecki* (in seven volumes), (ed.) J.Osiatynski, Clarendon Press, Oxford.

B. Other References

18. Asimakopulos,A. "Profit and Paper Profit: Some Kaleckian Evolution: A comment", *Journal of Post Keynesian Economics*, 6/1, 1983.

19. Asimakopulos,A. "Profits and Investment: A Kaleckian Approach", in Harcourt,G.C. (ed.), *The Micro Foundations of Macroeconomics*, Macmillan, Delhi, 1978.

20. Asimakopulos,A. "Kalecki on the Determinants of Profits", in Fink et. al (eds.), *Economic Theory, Political Power and Social Justice*, Springer, New York, 1987.

21. Gajapathy,P. "A Mathematical Note on Prices and Profit Rate in a Competitive Process", *Technical Paper* No: D/7/75, Economic Research Unit, Indian Statistical Institute, Calcutta, 1975.

22. Gajapathy,P. *The Economics of Ricardo: A Reworking*, Unpublished Ph.D Thesis, Indian Statistical Institute, Calcutta, 1987.

23. Georgescue Roegen,N. *The Entropy Law and the Economic Process*, Harvard University Press, Cambridge, Massachusetts, 1974.

24. Hicks,J. *Economic Perspectives: Further Essays On Money and Growth*, Clarendon Press, Oxford, 1977.

25. Hicks,J. *Crisis in Keynesian Economics*, Oxford University Press, Calcutta, 1974.

26. Lerner,A.P. "The Concept of Monopoly and the Measurement of Monopoly Power", *Review of Economic Studies*,1933-34.

27. Messori,M. "Financing in Kalecki's Theory", *Cambridge Journal of Economics*, No.15, 301-313, 1991.

28. Narasimhan,V. *An Essay on the Formation and Dynamics of Marketed Surplus and Price of Foodgrains*, Unpublished Ph.D Thesis, Indian Statistical Institute, Calcutta, 1986.

29. Osiatynski,J. "Editorial Introduction and Comments" in *Collected Works of Michael Kalecki*, Vol.I (1990) and Vol.II(1991), Clarendon Press, Oxford.

30. Ricardo,D. *The Principles of Political Economy and Taxation*, London, 1815, (page references in the thesis are to the Everyman's Library edition, London, 1911).

31. Robinson,J. and Eatwell,J. *Introduction to Modern Economics*, New Delhi, Tata Mcgraw-Hill, 1974.

32. Saha,J. *A Contribution to Inventory Theory*, Unpublished Ph.D Thesis, Indian Statistical Institute, Calcutta, 1986.

33. Smith,A. *The Wealth of Nations*, Edinburgh, 1776, (page references in the thesis are to the Modern Library edition, London,1937).

34. Sraffa,P. "The Law of Returns under Competitive Conditions", *Economic Journal*,1926.