
The incompatibility of prolonged technical change and competition
concurrence and the socialisation of entrepreneurial losses through inflation

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ABSTRACT

To the extent that technical change accelerates, *price competition* precludes the full amortization of capital investments. In contrast with the common opinion that both technical change and competition are key characteristics of the capitalist system, they are incompatible, at least when technical change accelerates. Such acceleration then gives rise to forms of *concurrence* – abstinence from price competition, price leaderships, cartels. The particular form depends on the structure of production of enterprises (i.e. the make-up of the stratification of capital). Concurrence is a major determinant of the *inflationary form* of the accumulation of capital. Because it is in their interest, banks tend to accommodate the concurrent price setting of enterprises and so accommodate a socialisation of private losses that would be due to devaluation of capital in the case of price competition. Price inflation also puts enterprises in a relatively advantageous bargaining position vis-a-vis labour.

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INTRODUCTION

The type of interaction, or the type of confrontation, between enterprises in a market may be classified along a continuum of rivalry competition, on the one end, and fellow concurrence, on the other. In the course of this paper we will see that the type of confrontation between enterprises is grounded in the structure of production. This structure again is grounded in the pace of technical change.

More specifically we will see that to the extent that the pace of technical change accelerates, rivalry competition becomes incompatible with the accumulation of capital and thus with the capitalist system generally. In other words the combination is contradictory with the capitalist system. This is in fact the most important conclusion to be drawn from this paper. The conclusion contrasts, of course, with the common opinion that both technical change and competition are generally key characteristics of the capitalist system (Section 2).

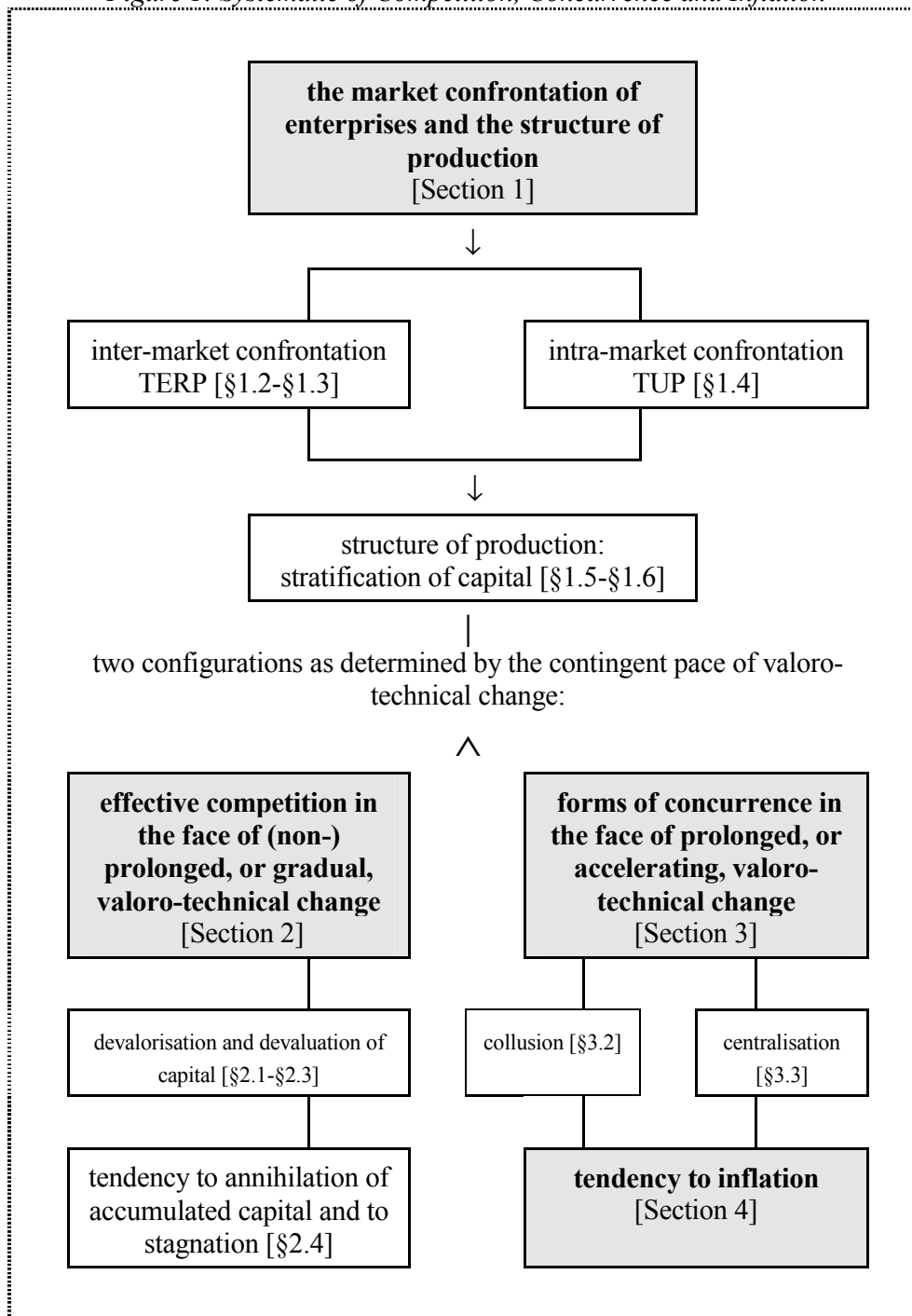
We will see that technical change tends to gain dominance over competition, whence the latter evolves into concurrence between enterprises – abstinence from price competition, price leaderships, cartels (Section 3). This culminates in the inflationary form of the accumulation of capital, characteristic for the past four decades of capitalist development (Division 4).

The theory of inflation proposed strongly deviates from the mainstream theories. The theory proposed has some resemblance with Aglietta's (1976) theory of inflation. Distinct for the approach in this paper is that the link from technical change to inflation is theorised first via a particular model of the structure of production of enterprises (a stratification of plants within a sector of production – cf. Reuten & Williams 1989) and next via concurrent forms of confrontation of enterprises as linked to the type of stratification.

The paper starts with the presentation of a number of key aspects of the general confrontation of enterprises (either competitive or concurrent) as resulting in a tendency to inter-market equalisation of rates of profit, and a tendency to equalisation of prices within a market. It will then be shown how this confrontation is grounded in the structure of production (Section 1).

Figure 1 outlines the systematic of the paper.

Figure 1: Systematic of Competition, Concurrence and Inflation



§1. THE MARKET CONFRONTATION OF ENTERPRISES AND THE STRUCTURE OF PRODUCTION

§1.1. Competitive and concurrent confrontation of enterprises

Within the capitalist system, enterprises are first of all similar as units that have the same aim, that is the production of capital, or, more specifically, the accumulation of capital via the production of surplus-value and the realisation of profit as measured by the rate of profit.

Enterprises may also be similar in that they are engaged in a similar physical production and in similar exchange transactions, whence they constitute 'a market'. Enterprises may, in principle, compete or concur in a market. Competition or concurrence is the enterprises's direct or indirect confrontation, in processes of exchange, with rival (competition) or fellow (concurrence) enterprises. In both cases, it is a confrontation in which enterprises force the determinants of the capitalist system upon one another and upon themselves.^{1 2}

The current division presents the confrontation of enterprises in general, thus leaving aside the particularities of competition or concurrence.

§1.2. Inter-market confrontation: the tendency to equalisation of rates of profit (TERP)

The inter-market interaction of enterprises is the direct confrontation, or the threat to it, of enterprises operating in one market by enterprises operating in another, by entering or threatening to enter that market.

The dominance of valorisation (i.e. the production of value-added) over the technical labour-process entails that enterprises are indifferent to the particular output produced, an indifference that is sublimated in the rate of profit as the measure of success. Capital is enforced to continuously (albeit fractionally) take on the form of money (one of the phases of its circuit).³ It is in this form that it

¹ The last sentence paraphrases Marx, regarding competition, in his *Grundrisse* (1939 {1858-59}: 651): 'Competition merely *expresses* as real, posits as an external necessity, that which lies within the nature of capital; competition is nothing more than the way in which the many capitals force the inherent determinants of capital upon one another and upon themselves.'

² It is rather awkward that economists talk and write about competition all the time though rarely provide a definition of the term. In its conciseness, an otherwise fairly good economics dictionary such as that by Bannock, Baxter and Davis (1998) does not seem fit to say what 'competition' in general is. The lemma merely refers to the lemma 'perfect competition'. That lemma opens: 'A model of industrial structure in which many small firms compete [!] in the supply of a single product.' In this way it avoids telling what competition is. The same applies to the currently preeminent microeconomics textbook (often used at the post-graduate level), by Mas-Colell, Whinston & Green, 1995: 314#. [See Tirol#]

³ For neoclassical economics 'capital' most often refers to the physical form of means of production. I

could, in principle, be accumulated and concentrated in any branch of production. Because profit is the driving force of enterprises, capital valorised and validated in one branch will flow to another one when it expects a higher rate of profit from that operation. This flow will affect supply. As a change in supply will have, *ceteris paribus*, an inverse effect on prices and profits, the inter-branch confrontation thus establishes a tendency to equalisation of inter-branch rates of profit (TERP).⁴

§1.3. Inter-market confrontation: TERP-associated 'restructuring of capital'

The process of effectuation of the tendency to equalisation of inter-branch rates of profit (§1.2) is concretised as a 'restructuring of capital', which encompasses two major phases. The first one involves the *liquidation* of existing plants or divisions of an enterprise – either by selling them and/or by the non-replacement of depreciated means of production. The second phase is that of a gradual investment in a new branch of production, or, more likely, that of taking over an enterprise (or a division of it) in a new branch, whence we have *conglomerate take-overs*, followed by investment in the new branch of production.⁵ The two phases may also be combined in processes of *conglomerate merging* of enterprises, together with a shift in investment from the one to the other part of the conglomerate. This type of restructuring of capital, that is, inter-branch 'TERP-associated restructuring of capital', is one that takes place quite continuously.⁶

adopt instead the marxian notion of capital, according to which capital is an entity that continuously, though most often fractionally, takes on the form of: money capital, the physical input forms of capital, capital in production, the commodity form of capital and again the money form of capital (cf. Marx, 1885: Part One; Arthur, 1998). Capital then refers to the unity of these forms as capital value.

⁴ Methodologically, tendencies are abstract determinants the actualization of which is not compulsive. To what extent they are actualised (for example, the extent to which rates of profit are indeed equalised) can not be established at the level of abstraction at which they have been derived. Tendencies are forces that may be counteracted by other tendencies (i.e. other forces), or by other lower level complexities. For the purposes of the current paper we may posit the simplifying assumption of equalised inter-branch rates of profit (via the mechanism set out in the next sub-section).

⁵ The term 'conglomerate' refers to enterprises having vested interests in more than one branch.

⁶ This is one mode of 'restructuring of capital'. Below (§3.3) a second mode will be presented.

§1.4. Intra-market confrontation: the tendency to uniform prices (TUP)

Given the similarity of the physical outputs of a collection of enterprises (§1.1) intra-market confrontation is first determined as price confrontation.⁷ Starting off from any prevailing modal price in a market, there are analytically and practically two positions.

The first position is that of selling below the (current) modal price. Because this would affect profits negatively, the individual enterprise has no interest in doing this, unless it is currently producing at overcapacity.⁸ At a given effective demand, effectuation of price decrease in this case, would imply that other enterprises will be burdened with overcapacity, etcetera. Thus *effective price competition is conditioned by overcapacity*.⁹ In the absence of overcapacity, then, prices will tend to stabilise at the existing level; in other words, *at near to full capacity utilisation price competition fades away*.¹⁰ (Note that this statement is conditioned on the determinants developed so far; it will be qualified in the course of this paper.)

Given the modal price as a result of this (non-)effective price competition, the second position is that of selling above the modal price. However, enterprises are compelled to sell *continuously* (rather than accidentally) their output. Therefore, even if in some period an enterprise would be accidentally in the position to sell above the average market price, it will tend to decline such sales as it would have the effect of repelling buyers in a next period.¹¹ Stronger, continuity considerations will tend to narrow down the margin around the modal price. Intra-market confrontation, therefore, establishes a *tendency towards uniform prices in a market (TUP)*.

⁷ 'First determination': further determinations are taken up in section §5 (6#).

A 'market' is ultimately a relative matter – for both the actors and the economist – depending on the particular courses of action or the problem at hand. Product differentiation is 'normally' another factor in the intra-market confrontation. At some grade of differentiation it is useful to consider a market partitioned or split off (and vice versa two markets as integrated). Theoretically and practically we then have the inter-market determinant of the TERP (4§2).

⁸ When producing at overcapacity, profitability of price decrease would depend on its effect on demand (i.e. the price 'elasticity').

⁹ Cf. Simon Clark (1994: 281-83).

¹⁰ It might be argued that the threat of entry from relatively low rate of profit branches (§2) might induce price decrease. However, in the absence of any form of concurrence (see Section 3) no enterprise has an interest in preempting this.

¹¹ The enterprise could try to convince other enterprises to concur in moving up prices, which indeed takes us to concurrence (see Section 3).

§1.5. Stratification of enterprises and plants; valoro-technical change and stratification of profit rates

In order to emphasise that within the capitalist system techniques of production are not technically neutral but rather invented and applied with a view to profit making, i.e. with a view to the valorisation of capital, I prefer to use the term "valoro-technique of production".

We treat each 'enterprise' as one unit. However, especially large enterprises tend to be composed of several divisions and 'plants', each one with – at least internally – separated accounts. In this section I refer to this plant level of the enterprise.¹²

The articulation of the two main tendencies of market confrontation (TERP and TUP, §1.2-§1.4) means that the rate of profit of any one enterprise comes to depend on its production process for any output: the reduction of the costs of production (given the input prices) and increase in the value-productivity of labour.¹³ These are determined by the valoro-technique of production adopted, together with the management of the power of labour in production, as engendering increase in the productivity of labour. The confrontation of enterprises therefore reinforces the compulsion to the accumulation of capital in new valoro-techniques of production. Note that especially the investment of capital in new plants of production tends to be a discrete 'lumpy' process.¹⁴

Accumulation of capital in such new techniques may arise from within a branch or from inter-branch movements of capital (§1.2-§1.4). In each case the initiating enterprise (perhaps allocatable to plants or divisions thereof) secures a rate of profit above that for the existing enterprises (plants) in the branch. The consequent *threat of price competition* and the necessity for continuous valorisation would compel competitors to follow suit. However, each enterprise is burdened with the fixed costs of its already accumulated capital, and will thus only scrap old plants when a new valoro-technique offers net profits ('net' that is, taking into account the costs of scrapping old plants) greater than the profits on its existing plant.

In other words, preservation of *capital* already accumulated may prevent immediate moves towards investment in new-technique and maximum rate of profit *plants*.¹⁵ Scrapping of plants is only enforced when prices no longer cover

¹² We will restrict to this one term 'plant'. Note that for financial or commercial enterprises 'plant' refers to the establishments or branches of such enterprises, i.e. those with at least internally separated accounts.

¹³ The 'value productivity of labour' may be specified as, for example, the value added per labourer per year.

¹⁴ Most of the remainder of this sub-section and the next is a revised version of my earlier work as indicated in footnote #19.

¹⁵ I am drawn into this way of presentation by the conventional neoclassical static equilibrium

prime costs.¹⁶ Before that, the scrapping of plants in favour of investment in new ones is determined, firstly, by the difference in rates of profit on the investment in an already existing plant, and on that in a new plant (inclusive of the capital foregone because of scrapping); and secondly, by the availability of finance.¹⁷

Since, therefore, plants embodying new valoro-technology will in general not be immediately adopted by all enterprises, each branch of production tends to be composed of a *stratification of plants* dated according to technique, cost of production, value-productivity of labour and a resulting *stratification of rates of profit*.^{18 19}

§1.6. Stratification of capital and scrapping of plants

This sub-section treats some further details of the model of stratification set out in §1.5. (The reader satisfied with the general thrust of the argument may skip this sub-section.) Note that I focus on the case of process innovation. With some adaptation the model may also be applied to product innovation.

The concept of stratification implies that at each point in time enterprises within the same branch are physically non-identical. The focus for the non-identity are the characteristics indicated at the end of §1.5: technique, costs, value-productivity of labour and rates of profit. The reason for this non-identity is

analysis of this matter, where the rate of profit is identified with the "physical" plant-rate of profit. Note also that I start off from the 'confrontation' of enterprises in general rather than from the neoclassical idealised case of 'perfect competition'. In neoclassical terms, my starting point would be near to 'heterogeneous competition' or perhaps 'oligopolistic competition'. Salter (1960) has shown that in the case of perfect competition capital would always immediately move to the new-technique plant.

¹⁶ 'Prime costs' are the costs exclusive of those of fixed means of production.

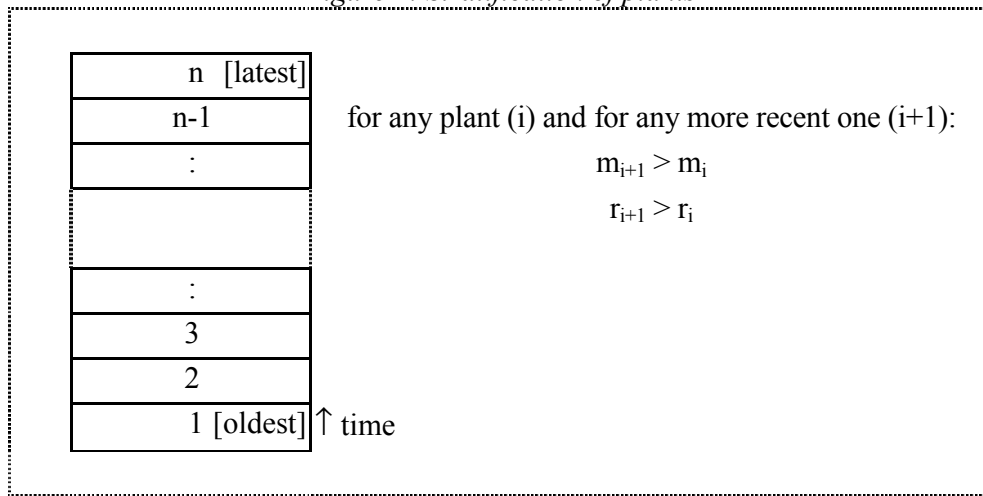
¹⁷ This implies that a maximum rate of profit can only be gained by fully amortised plants. The conceptualisation here and in the remainder of this sub-section and the next differs from neo-classical vintage models (see the references at the end of §1.6).

¹⁸ If rates of profit are calculated over the lifetime of an asset and if there were such a thing as perfect foresight, calculated rates of profit might be equal. This does not however affect the argument (see also note #23 on devalorisation). The presentation in this section highlights that the state of the economy conceptualised is not one of equilibrium, nor of 'perfect competition'.

¹⁹ I first set out the concept and a fairly simple model of stratification in Reuten & Williams (1988: 180-192; and 1989: chs 4-5) and in Reuten (1991). At that time I used the concept and model particularly in the context of a theory of the business cycle and a particular type of technical development (that characterised by an increasing capital-labour ratio) even if I already noted then that the scope of the model is wider than that context. A similar notion was adopted by Brenner (1998, e.g. p. 24 ff). I now explicitly generalise the model to characterise the structure of production underlying market confrontation in general (§1.5-§1.6), competition (Section 2) and concurrence (Section 3).

that enterprises will introduce new techniques of production only when these are expected to result in a higher rate of profit in comparison with capital accumulated in existing plants. However, preservation of already accumulated *capital* may prevent immediate moves towards investment in new-technique and maximum rate of profit *plants*. Therefore capital tends to be stratified according to technique, cost of production, value-productivity of labour and resulting rates of profit (§1.5), as visualised in Figure 2. The oldest plant within a branch is indicated by the number 1, and the most recently invested plant by the number n .

Figure 2: Stratification of plants



where m indicates the value-productivity of labour (value added per labourer per year) and r the rate of profit.

Let, for each plant i , the running material costs (A_i) plus the depreciation of fixed means of production ($\delta_i^f F_i$) be simply *measured* by the fraction $\delta_i K_i$ (the f in δ_i^f is an indicator). Writing w for the wage rate, L for labour employed, R for profits and X for the value of the output (price p times quantity of output q), we have:

$$\underbrace{\delta_i^f F_i + A_i}_{\delta_i K_i} + wL_i + R_i = X_i \tag{1}$$

Then any scrapping of plants is only *enforced* when their returns (pq_i) outrun their 'prime costs' ($A_i + wL_i$), i.e.:

$$pq_i \leq A_i + wL_i \quad (\text{returns} \leq \text{'prime costs'}) \tag{2}$$

Thus treating the costs of the fixed means of production as a complete bygone, the plant(s) at the bottom of the stratification may ultimately keep on producing until this point.

However, rather than the complete bygone case, we may suppose the scrap-value of a plant, or its liquidation value, to be LV_i . Suppose that there are no obstacles of finance, technique etcetera, so that any one plant at the bottom could in principle be lifted to the top. In this case, the simple decision criterion would be:

$$R_n / (K_n - LV_i) > [pq_i - (A_i + wL_i)] / LV_i \quad (3)$$

To the extent that LV_i is 'small', then even if the LHS $>$ RHS, it may be profitable to keep the bottom plant going along with an investment at the top by the same enterprise. Equation (3) presents the simple idea. A more sophisticated comparison would go in terms of the discounted profit flow of each alternative.

I end this section with a brief comment on neoclassical models of the structure of firms in a market. Conventional neoclassical theories assume 'small' *homogeneous* plants, or firms, engaged in atomistic competition. It is hard to understand what would then keep competition going. Indeed, that conception of competition is highly ambiguous. As each unit is a perfect copy of every other, no more than comparative static states (differing from each other only to the extent that *exogenous* variables differ) can be described. Such a conception may be traced back to the lack of differentiation between homogeneous capital as value and the heterogeneous embodiment of capital in a technical sense, that is, the double form of capitalist production.

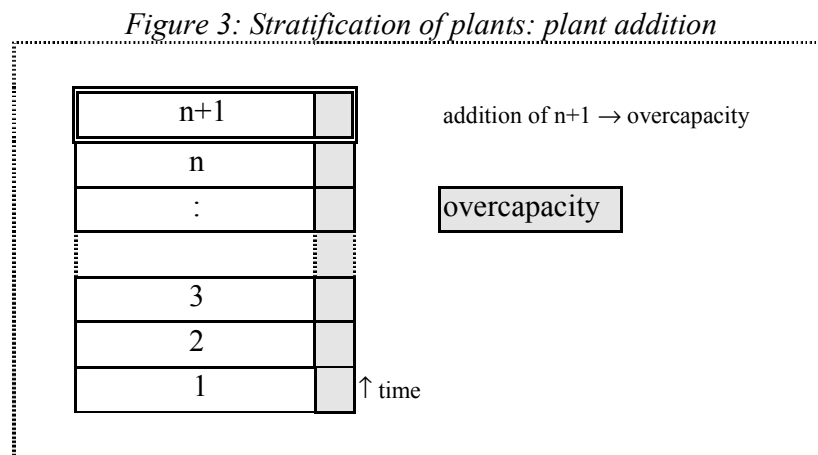
However, neoclassical 'vintage models' are less simplified (the seminal references are Johansen 1959, Salter 1960, Kaldor & Mirrlees 1961/62, Solow, Tobin, von Weizäcker & Yeari 1966 and Cass & Stiglitz 1969; see also Solow 1970: ch.3). One main difference from the concept of stratification as presented in this and the previous sub-section is that in the neo-classical conception, obsolescence of plants is determined by the real wage (wage costs exceeding the average labour-productivity on a plant), rather than by the addition of plants to the stratification, introducing new cost-reducing techniques of production and the resulting price decrease and/or over-capacity (see §2.1).

The notion of the extra profits gained by the enterprise (plant) at the top of the stratification is related to Schumpeter's notion of temporary monopoly profits accruing to the first enterprise to innovate. For Schumpeter these are gradually eroded as the innovation diffuses through the industry and even the economy (see, e.g., Schumpeter 1942). The current paper emphasises that productivity differences between plants are rather permanent.

§2. EFFECTIVE COMPETITION IN THE FACE OF (NON-)PROLONGED, OR GRADUAL, VALORO-TECHNICAL CHANGE – RIVAL CONFRONTATION

§2.1. Stratified dynamic price competition: primary devalorisation of capital

Capital invested in a new plant and added to the stratification operates with up-to-date valoro-techniques of production – those with minimal unit costs of production and maximal value-productivity of labour (§1.5). Prior to scrapping of plants, this investment *increases the total production capacity* of the branch (see Figure 3).



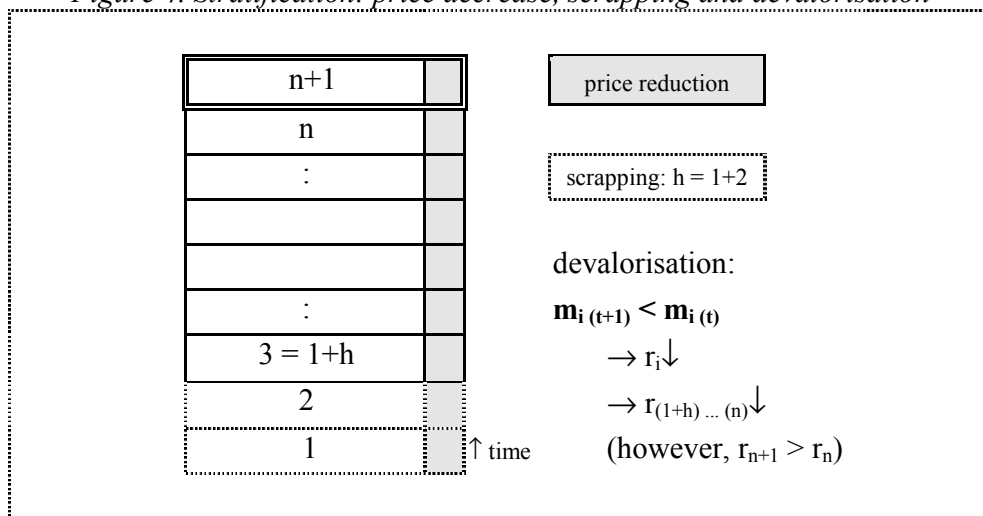
Depending on the effective demand, this induces, in principle, one of two – or a combination of – effects. The first is that plants in the branch keep on operating at over-capacity.²⁰ The second is that prices are driven downwards (which is conditioned by the over-capacity, as indicated in §1.4). In either case, plants at the bottom of the stratification that no longer cover prime costs will have to be scrapped (cf. §1.5-§1.6). We proceed in this section on the case of price decrease (the case of over-capacity and capacity competition has in principle the same effect).

We may suppose the enterprise that added the new plant to initiate the price competition, i.e. an effective price decrease. Thus when plant (n+1) is added to the stratification (1,...,n), and when h plants are scrapped, the previous stratification (1,...,n) becomes (1+h,...,n,n+1). (See Figure 4.) Due to the price decrease, the revenue of the remaining part of the *previous* stratification (1+h,...,n) decreases, whereas the revenue of the new stratification (1+h,...,n,n+1) typically increases with the average rate of growth (to keep the presentation concise we assume that the share of the branch in the total

²⁰ This is likely in case of a price leadership (treated further in Section 3).

economy remains constant).²¹ We call the decrease in revenue of the capitals in the previous stratification, *primary devalorisation of capital* (decreased valorisation of capital).²² Its bench-mark is the valorisation of the same capitals in the previous period. Thus (primary) devalorisation is due to the value-labour productivity for any one capital (enterprise, plant) lagging behind that in the previous period.²³ Thus, because investments and costs are unaffected whilst revenue decreases, the rate of profit (r) of the capitals accumulated in the remaining part of the previous stratification ($1+h, \dots, n$) decreases.²⁴

Figure 4. Stratification: price decrease, scrapping and devalorisation



²¹ In case of (macroeconomic or branch) stagnation the revenue may remain constant or decrease. Generally one branch may of course grow above average.

²² The meaning of 'primary' will be explained later on (§2.3).

²³ Devalorisation should be distinguished from 'devaluation of capital' (see below). Devalorisation has nothing to do with the (calculated) normal returns for the *depreciation* of means of production (δK). It might be argued that to the extent devalorisation is foreseen at the point of investment, it is incorporated in calculating the 'marginal efficiency of capital'. But even if there were perfect foresight in this, the argument is unaffected. It cannot prevent devalorisation. Note that even with devalorisation, the net profits over the lifetime of the asset may still be positive and 'optimal' (see further §2.4).

²⁴ At the new price, the rate of profit of the capital invested in the new plant ($n+1$) will **tend** to be above the average rate of profit of the capitals making up the previous stratification ($1, \dots, n$) at the previous price; or also above the rate of profit of the plant (n) that was previously at the top of the stratification. In any case, since the new plant ($n+1$) operates at lower costs and higher productivity than the previous plant (n), the rate of profit of the new plant capital at the new price is above both that of the n th and the average rate of profit.

In other words, it is because of the relatively greater value-productivity of the labour employed by the enterprise/plant added to the stratification (n+1) that its comparative profitability increases, since the value productivity of the labour in the (1+h,...,n) plants thereby decreases (typically by a decrease in output prices). Therefore, not only is the value-productivity of labour' (m_i) stratified increasingly from (1,...,i,...,n), but it also tends to decrease (devalorisation) for all i when the stratification is extended. I call this interaction of production and price competition through time 'stratified dynamic competition' (cf. Schumpeter, 1942, who coined the term 'dynamic competition').

In sum, stratified dynamic competition is a process of accumulation of capital along with the driving out, from the bottom of the stratification, of plants belonging to competitors. (In case, and to the extent, that these plants are driven out prior to their full amortisation, there is an annihilation of accumulated capital – see §2.4).

So far we have a tendency to equalisation of inter-branch rates of profit (TERP) (§1.2), which, together with the tendency to uniform prices in a market (TUP) (§1.4) gives rise to a *intra-branch stratification of plants with corresponding stratified rates of profit* (§1.5). The addition to the stratification of new valoro-technique embodying plants gives rise to (primary) devalorisation for the previous stratification and thus to a decline in the rate of profit for that previous stratification.

§2.2. (Primary) devalorisation as expressed in (primary) devaluation of capital

In terms of accounting the presentation in §2.1 is based on the convention of historical (dated) accounting. Alternatively, enterprises (when they, through competition, have become aware of the stratification change) may immediately apply the alternative convention of current cost accounting (or present value or replacement value accounting) whence the (primary) devalorisation of capital is expressed in a (primary) **devaluation of capital** as a balance sheet modification. In fact this second convention is most often the practice today.²⁵ Its dubbed 'advantage' is that the implied losses are not revealed in a permanent decline of the rate of profit but rather in a immediate capital loss.

Thus, depending on the accounting practice, (primary) devalorisation may be manifested either directly in a declined rate of profit or in an annihilation of previous valorisation and accumulation of capital. The net effect (the cash flow effect, i.e. the sum of depreciation allowances and profits) is the same.

²⁵ This accounting method was originally set out by Kovero in 1912 and by Schmidt in 1921; cf. Polak (1940: 15-16).

§2.3. Generalised dynamic price competition and 'derived' devalorisation or devaluation of capital

Generalised dynamic price competition gives rise to generalised price decrease. Even if no new profit-increasing techniques are available for a particular branch, it is still affected by the technical change and price competition of other branches. Suppose an enterprise currently producing at the bottom of the stratification, moves to the top (n') by merely duplicating the technique of the top plant (n). Then because of the generalised price decrease the fixed capital outlay of the new plant (n') is nevertheless lower than that of (n), whence (n') is in a position, in principle, to decrease the output price. Again we have a devalorisation for the previous stratification, in this case a secondary one, that we call **derived devalorisation of capital**. Again, depending on the accounting convention, the implied rate of profit decrease may alternatively be expressed as a **derived devaluation of capital**.

In sum, primary devalorisation/devaluation stems from changes in the labour process, induced by the valoro-technical change, in the branch under consideration. Derived devalorisation/devaluation comes about by a 'mere' price change due to process changes in other branches; it tends to multiply through the economy, thus developing into *general price deflation*.

Figure 5. Summary of primary and derived devalorisation and devaluation of capital

effect of introduction new valoro-technique	historical cost accounting: effect on profits	current cost accounting: effect on capital accumulated
intra sector	primary devalorisation	primary devaluation
inter sector	derived devalorisation	derived devaluation

From a one-sided physicalist (use-value) approach it might seem that the derived devaluation of capital does not affect the reproduction. Indeed, physical reproduction (that is, the number of units of output of a plant) need not be affected by the input price decrease because new means of production can be bought at the lower price. But this does not take away the fact that the accumulation of capital (or the valorisation potential) has decreased. This becomes obvious when a plant is wholly financed by loans: then the amortisation reserves may be sufficient to buy a new plant, but not to cancel the loans.

So far the presentation of competition has been phrased in terms of price competition. Along with it we have quality (or product) competition. For the primary devalorisation (or devaluation) of capital, the distinction is not relevant because quality competition has the same effect. The same applies for the derived devalorisation (or devaluation) with respect to producer goods since their quality increase has a cost of production decreasing effect.

§2.4. Generalised dynamic price competition and the pace of valoro-technical change: price deflation and the paradox of beneficialness – tendency to annihilation of accumulated capital and to stagnation

The impetus to valoro-technical change is generated by, first, the limits of profit augmentation in the limits of possible increase in the intensity of labour (not treated in this paper); second by the competitive process as outlined so far. The result is the investment of capital in valoro-technology and in methods of application of valoro-technical change (not treated in this paper). The second factor in particular has a self-reinforcing effect. Even so, the *pace* of valoro-technical change is contingent. However, when this change gets triggered such that its combination with price competition generally precludes the full amortization of (modal) capital investments – as revealed in continuous devaluation of capital –, and when this multiplies through the economy in the form of price deflation, then it develops into a system-destructive or at least a paralysing force.

Insufficient amortization implies that the general accumulation of capital is to some degree annihilated. Then the uncertainty about this annihilation (or the expectation of annihilation) tends to dampen investment. This is first revealed in a dampening of bank credits provided to enterprises. Thus the production of surplus-value dampens and so the part of surplus-value in the form of interest that accrues to banks dampens.

Further, and more specifically, for the bank credits that are being provided, general price deflation implies that their redemption is impeded.²⁶ The process could only be kept going if the banks were prepared to continually finance this non-redemption gap, i.e. by a permanent increase in lending to enterprises. Ultimately this outruns the securities that the enterprises can provide to the banks.

Thus the result is not only a decrease in the quantity of bank finance, but also an increase in its risk and uncertainty. Any, probable, risk premium that banks will put on the going interest rate, will further dampen the investment.

General price deflation brings on two subsidiary problems for enterprises. One is that wages tend to be sticky downwards. A second, non permanent, problem is that the prospect of price decrease may have the effect of postponement of purchases of consumer durables as well as purchases of means

²⁶ Although this is generally so, it is most obvious for the case in which the bank credit is used for the purchase of fixed means of production (MP). The depreciation (δ MP) returns in many tranches, with each next tranche being smaller than the earlier one because of primary and secondary devaluation. Redemption of the bank credit may still be possible to the extent that profits outweigh the devaluation (or, in terms of historical costs calculation, to the extent that profits are still positive, i.e. to the extent that there is still valorisation of capital).

of production in the branches with a relatively slower rate of technical change (e.g. services).

Both technical change and competition are often conceived of as beneficial features of the capitalist system (not least of all in ideological discourses). However it appears that prolonged technical change in combination with price competition does not fit the system.

§3. FORMS OF CONCURRENCE IN THE FACE OF PROLONGED VALORO-TECHNICAL CHANGE

§3.1. Tendencies of concurrence

Competition and concurrence are two opposite poles on a continuum. The definite form of concurrence is the merging of fellow enterprises ('centralisation'). In between we have – on the competition side – a tacit or explicit abstinence from competition, and – moving to the concurrence side – the tacit or open resignation to the price-leadership of a particular enterprise, and next silent or open price cartels and/or quantity cartels.²⁷ I use the term 'collusion' for the latter forms, i.e. price-leaderships and cartels.²⁸

We have seen that price competition is conditioned by overcapacity (§1.4). Generally, however, enterprises have no interest in continuous overcapacity and price competition because of the effect on profits, and least so in any resulting devaluation of capital (Section 2). This 'mere' averseness to price competition, however, is articulated by an increasing pace of valoro-technical change (§2.4). This turns the averseness to price competition into 'almost necessary' *tendencies of concurrence* (here and elsewhere 'necessary' refers to necessity for the continued existence of the capitalist system). Tendencies of concurrence can be specified as the 'tendency to abstinence from price competition' (§3.2), further the 'tendency to collusion' (§3.2), and ultimately the 'tendency to centralisation of enterprises' (§3.3).

²⁷ In the case of price or quantity cartels associations of enterprises regulate the minimum price or the maximum output. In principle the (pace of) the implication of technical change might also be the subject of regulation. However, price and/or quantity agreements are easier to monitor.

²⁸ The phenomenon of collusion is as old as the early emergence of capitalism. In 1776, at the time of merely the gradual emergence of manufactural capitalist production, Adam Smith wrote: "People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices." (1776-i: 117 – cf. pp 59 and 129 on 'combinations' not to raise wages.)

§3.2. Range and density of stratification and contingent forms of concurrent collusion: abstinence, price leaderships, cartels

With an accelerating pace of valoro-technical change, tendencies of concurrence in one form or another are generally 'almost necessary' – because outright competition would tend to paralyse the accumulation of capital (cf. Section 2). However, the particular form of concurrence is contingent. A main reason for this is that (a degree of) entrepreneurial concurrence, rather than being an aim for the enterprise, is seen to be *instrumental* for the profit-making of the individual enterprise. Thus any concrete shape of abstinence or collusion in particular is a temporary or more long-lasting element in the profit-making strategy of the individual enterprise.

Given this contingency, an important factor determining the form of concurrence is the relative size of enterprises. However, this size itself is an outcome of prior competition or of concurrence (see §3.3). In this section we will neglect this size. Then, given the contingency of the particular form of concurrence, each one main form of abstinence and collusion tends nevertheless to be associated with particular make-ups of the stratification of capital (enterprises/plants) (§1.5). The first element of this make-up is the 'range of stratification', which indicates the value-productivity difference between the top and the bottom of the stratification. The second element is the 'density of stratification', which indicates the number of enterprises or plants operating in a branch of production.

The *range of stratification* determines to what extent (and at what costs) the top plant of the stratification is in a position to expel plants from the bottom of the stratification. The addition of a plant at the top of the stratification increases the production capacity of the branch. Normally this plant operates with up-to-date valoro-techniques of production (§1.5) and it so increases the range of stratification to some degree. We may assume that the expected over-capacity has been taken into account prior to the investment. It depends on the length of the range whether price competition might be a profitable action at all (an action directed at expelling extra enterprises/plants from the bottom of the stratification so as to increase capacity utilisation for the top). In case the range is sufficiently long, the new plant enterprise *is in the position* to initiate this price decrease, and so may function as *price leader*, setting the price at a level that maximises its revenue.²⁹ This position and the shape of the stratification generally grounds the concurrence in the form of the resignation to the price-leadership of the top

²⁹ When the price is near to the prime costs of the plants at the bottom of the stratification, then with a long range (large productivity difference between top and bottom) the top plant can engage in price competition at positive profits. When the range is short price competition may mean losses for the top as long as the bottom is not enforced to quit (when the bottom quits capacity utilisation and hence profits increase for the top).

enterprise. (Note though that the vesting or the affirmation of price leadership may require price competition, which so vests a degree of concurrence.) Given this (vested) top plant's position, other enterprises will abstain from price competition.

Should the range of stratification be 'short' (i.e. insufficiently long for the top enterprise to be in the position to threaten with price decrease) then the course of concurrence is co-determined by the *density of the stratification* (the number of enterprises/plants operating in the branch as divided over the several layers of the range). First, for a short range together with a relatively small density, enterprises will tend to engage in *cartels* so as to overcome the problem of overcapacity and potential 'cut throat' price competition as resulting in devaluation of capital. Second, for a short range together with a large density, price competition does not pay, hence enterprise will tend to *abstain from price competition* and to evade building up overcapacity (see Figure 6).³⁰ Although even in this case the engagement in cartels might be more secure, a relatively large number of enterprises makes it more difficult to arrive at cartel agreements.

Note that to the extent that technical change accelerates, cartels tend to be substituted by price-leaderships.

Note that to the extent that the tendency to concurrence results in networks of enterprises – especially in the case of cartels – this tendency counteracts the TERP (§1.2) because of the barrier of breaking into the existing networks.

Figure 6: Tendencies of concurrence on the axes of range and density

		range (productivity difference)	
		long	short
density (number of enterprises)	large	price-leadership	abstinence
	small	price-leadership or cartel	cartel

§3.3. The final form of competition and concurrence: the tendency to centralisation, and centralisation-led ROC

We have seen that with an acceleration of valoro-technical change competition between enterprises tends to evolve into some degree of concurrence, and 'near to necessarily' so (§2.4, §3.1). Even if the particular factors of the range and density of the stratification play a role in the make-up of the concurrence, their particular

³⁰ Two important categories are branches with relatively few (services), or with quickly depreciating means of production.

forms of abstinence versus collusion (price leaderships or cartels) remain contingent and may contingently change over time. As indicated, a main reason for this is that these forms of concurrence are not an aim for the enterprise but rather an instrument for their profit-making (§3.2). This instrumentality also applies to the 'final' form of concurrence, namely, the merging of fellow enterprises within a branch, that is, the vesting of some degree of centralisation of capital.³¹ In this case, however, otherwise possible competitive recurrences between the concurrents (in this case the merging enterprises) is not an intended strategic consideration.³² The same applies to the take-over form of centralisation. However, to the extent that the centralisation creates an unevenness in power within a branch, it may temporarily reinforce competitive tendencies geared to the vesting of a price leadership or to the expulsion of competitors or at swallowing them up. In this way the centralisation of capital tends to develop into a self-reinforcing process.

Generally, centralising actions within a branch tend to evoke centralising actions by other enterprises so as to counteract the shift in the balance of power. Then, along with a more or less permanent subordinate centralisation, major centralising restructuring of capital tends to come in waves.

The logical, and ultimate, centralisation of capital is that of vesting a monopoly in a market. 'Ultimately' this best suits a planned introduction of new valoro-techniques of production.³³

³¹ The final form. The ultimate shape of this form of concurrence is of course the centralisation of all capital in one inter-branch monopoly, the pen-ultimate shape being the centralisation of all enterprises within a branch into one monopoly.

³² Usually at least. Nevertheless, it may be an initially unintended occurrence. For various reasons ('culture', non-fitting activities, finance) enterprises may split up.

³³ It best suits a planned introduction of valoro-techniques. This is irrespective of the criterium for that planning. The 'best' criterion is the rate of profit. This says nothing new. The form of monopoly seems frightening for many. However, more threatening to the capitalist system is that it openly puts the 'why' of the criterion on the agenda. To some extent this is a cosmetic matter because cartels are also engaged in forms of planning – it is just that to perceive five front windows instead of one seems socio-psychologically more comforting.

§4: THE TENDENCY TO CONCURRENCE AND INFLATION

§4.1. A note on the definition of inflation: nominal inflation (inflation) and real inflation

There has been some discussion in the marxian oriented literature as to how 'inflation' should be defined (e.g. De Brunhoff, Cartelier, Aglietta, De Vroey). The question is if inflation should merely be identified with price increase (as is common in the current mainstream literature) or if it should be defined in reference to changes in labour productivity. This may briefly be explained as follows. Set the average rate of 'competitive price decrease' analytically at $c\%$ per year. Set the actual average increase of prices at $a\%$ per year. The latter rise in the price level is commonly called the rate of inflation (i.e. $a\%$). For reasons of communication I accept this common definition (it may be called '*nominal inflation*'). I call the gap between the rates of the competitive reference prices and the actual rise in prices the '*real inflation*' (i.e. $c\%+a\%$). Thus 'real inflation' is the gap between actual prices and prices implied by productivity increase. Note that this is a theoretical concept and that it is hardly measurable. (Though they do not use this terminology, the notion of real inflation derives from the authors mentioned above.)

§4.2. Prolonged valoro-technical change and the tendency to inflation

The technical change and the rise in labour productivity that the capitalist system enforces might be expected to result in *price decrease*.³⁴ However, the constellation of prolonged technical change together with competition is almost *incompatible* with the capitalist system. (By 'almost incompatible' I mean that the constellation engenders a tendency to stagnation.) The main reason is the primary and the derived devaluation of capital, as presented in Section 2. We have seen that this implies a degree of annihilation of the general accumulation of capital, and that this tends to dampen investment. We saw also that this affects not only production enterprises but also banks. For the latter it not only affects the quantity of their credit provision, but also their risk and uncertainty.

For these reasons, banks and production enterprises have a common interest in evading general price deflation. One side of the mechanism through which general *price inflation* is reached is 'simply' the profit maximising concurrence of production enterprises as presented in Section 3. The other side is the willingness of banks to accommodate it via their credits to enterprises as affecting money in circulation. In doing so, banks in fact *accommodate a socialization of private losses*. That is, they socialize private losses that would be due to the devaluation of capital induced by valoro-technical change in the absence of price inflation.³⁵

³⁴ Note that this is also how it is advocated in ideological 'pro-market' and 'free market' discourses.

³⁵ In fact, some socialisation of losses already emerges when the banks accommodate prices that *decrease*, without decreasing tantamount to the productivity increase (cf. §4.1). The concept of

Relative to a deflationary constellation, price inflation results in a increased profit of enterprises and banks.³⁶ Its counterpart is a loss of purchasing power for social actors with non-equity financial assets (including 'small savers') and of actors with fixed incomes or with incomes that are (in part) adapted to inflation with a time-lag.³⁷

Note that even a constellation of zero inflation makes quite a difference in comparison with some deflation because it takes away the derived devaluation of capital.³⁸ Any inflation turns a potential derived devaluation of capital into an actual derived **revaluation of capital**.³⁹

Finally, inflation puts employers (enterprises as including banks) in an advantageous bargaining position. At a given, bargained, nominal wage, price decreases implied by labour productivity increase would automatically compensate labourers for the productivity increase. In case of inflation (or in case of a price decrease less than productivity increase – §4.1) labourers will have to re-bargain for the productivity compensation or even for a mere maintenance of the purchasing power of the initial wage. (In the case of partial or full compensation these compensations tend to come about with a time-lag – cf. §4.3.)

Note that although price increases are often the outcome of implicit or explicit collusion of enterprises operating in a single market, the outcome of general price inflation is generally not the effect of a conspiracy of 'joint meetings' of bankers and captains of industry. Generally, it is rather the macroeconomic outcome of the single market operations of enterprises and banks seeking their self-interest in terms profits.

socialisation of losses derives initially (to my knowledge) from De Brunhoff and Cartelier (1974) (cf. De Brunhoff 1976) though not in this context of devaluation of capital and competition/concurrence. Aglietta (1976: 313-15 and 365-70) theorizes inflation in terms of 'anticipated obsolescence' which the current paper connects to the structure of production (stratification) and to concurrence.

³⁶ For banks this is a matter of quantity and quality of the finance provided (as indicated above). Note that credits can be made 'inflation proof' for banks by flexible interest rates or by interest rate indexation.

³⁷ Any inflation must be accommodated by banks. Although banks have an interest in a moderate inflation it is also in the interest of banks – united under the umbrella of a central bank – to stay far away from hyperinflation (the level around which money no longer functions as measure, medium and store of value). Both a creeping and a galloping inflation are compatible with the capitalist system. The one or the other range of inflation cannot be further determined within the confines of this paper. (Note that the banks's interest in a moderate inflation fits the informal definition of 'price stability' by the European Central Bank as a general price *increase* of near to 2%.)

³⁸ Again, even in case of zero inflation there may still have been an accommodated socialisation of losses (§4.1).

³⁹ Increasing capital 'reserves' of enterprises are the expression of this revaluation.

§4.3. Concurrence and 'profit push inflation' or 'wage contract regret inflation'

The previous sub-section set out one main determinant of inflation. This valoro-technical change driven inflation is also, we have seen, almost necessary to the capitalist system. However, there are other determinants that may explain inflation, without that inflation being 'necessary'. Here I briefly focus on a determinant that is once again predicated on the existence of concurrence of enterprises.

The capital-labour distribution of income is not 'finally' determined at the labour market. There are two further determinations. The first one is the management of the intensity of labour in production. The second further determination of the distribution of income is the price setting of consumer goods by enterprises (as forcefully stressed by Bellofiore – e.g. 1999: 64-65; 2005a: 132; 2005b.)

We have seen that price increases imply that enterprises in conjunction with banks have the power to undo devaluation of capital. However, they also imply that enterprises have the power to undo the level of wages agreed upon. In the mainstream economics literature the price increases following wage increases have been called 'cost push inflation'. 'Profit push inflation', or 'wage contract regret inflation' would be alternative names. Such profit push inflation is grounded in the concurrence of enterprises. In the case of a constellation of competitive price setting, the level of wages agreed upon would be a irrevocable fact of the distribution of income.

SUMMARY AND CONCLUSION

Section 1 set out how the confrontation of enterprises gives rise to the inter-market tendency to equalisation of rates of profit and the intra-market tendency to uniform prices (§1.2-§1.4). The articulation of these tendencies means that the rate of profit of any one enterprise comes to depend on its production. To the extent that the structure of production is dynamic, as measured by the degree of valoro-technical change, enterprises in a market – or plants thereof – tend to be stratified as to the valoro-technique and concomitant rates of profit (§1.5-§1.6).

Effective price competition is conditioned by overcapacity. We saw in Section 2 that, depending on the degree of valoro-technical change, competition tends to result in a combined accumulation and devaluation of capital (§2.1-§2.2). Generalised 'dynamic price competition' gives rise to generalised price decrease. Then input price decrease affects not only the fixed capital outlay of new plants that move to the top of the stratification, but also that of the previous stratification, whence we have a derived devaluation of capital (§2.3). The pace of valoro-technical change is contingent. However, when this change takes on

such a momentum that its combination with price competition generally precludes the full amortization of (modal) capital investments, it then develops into a system-destructive or at least a paralysing force (§2.4).

Therefore, we saw in Section 3, an accelerating pace of valoro-technical change, must 'almost necessarily' give rise to tendencies of concurrence in one form or another (§3.1). Although the particular form of concurrence (abstinence from price competition, price leaderships, cartels) is contingent, each form tends to be associated with particular make-ups of the stratification of capital, in particular its range and density (§3.2). The final form of concurrence is the centralisation of capital via mergers and take-overs. Centralising actions within a branch tend to evoke centralising actions by other enterprises, whence this centralisation tends to come in waves. The ultimate form of centralisation is of course the vesting of monopoly in a market. 'Ultimately' this best suits a planned introduction of new valoro-techniques of production (§3.3).

Section 4 posited that banks and production enterprises have a common interest in, at least, a moderate general price inflation. Therefore banks tend to accommodate the concurrent price setting of enterprises and so in fact accommodate a socialisation of private losses that would be due to devaluation of capital in the case of price competition. The accommodation of price inflation results conversely in a revaluation of capital. Price inflation also puts enterprises in a relatively advantageous bargaining position vis-a-vis labour.

With an accelerating valoro-technical change, the alleged beneficial key characteristics of the capitalist system, technical change and competition, become incompatible. The price of the dominance of valoro-technical change as revealed in continuous obsolescence (destruction) of means of production is the gradual elimination of nature (not treated in this paper), the elimination of competition, and thus the dominance over the economy by colluding or ever merging enterprises, as expressed in the socialisation of private losses through price inflation.

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The incompatibility of prolonged technical change and competition
concurrence and the socialisation of entrepreneurial losses through inflation

Geert Reuten

EXTENDED ABSTRACT

The structure of production of enterprises in branch – or plants thereof – is stratified as to their technique of production and the concomitant rate of profit. This structure is dynamic as depending on the *degree* of technical change. Depending on this degree, competition tends to result in a combined accumulation and devaluation of capital.

The pace of technical change is contingent. However, when it accelerates such that its combination with *price competition* generally precludes the full amortization of (modal) capital investments, it then develops into a system-destructive or at least a paralysing force. This conclusion contrasts with the common opinion that both technical change and competition are key characteristics of the capitalist system.

Technical change tends to gain dominance over competition. Therefore, an accelerating pace of technical change must give rise to tendencies of *concurrence* in one form or another. Although the particular form of concurrence (abstinence from price competition, price leaderships, cartels) is contingent, each form tends to be associated with the structure of production of enterprises, i.e. the make-up of the stratification of capital, in particular its range and density. The final form of concurrence is the centralisation of capital via mergers and take-overs. (The ultimate stage of this form is the vesting of a monopoly in a market. 'Ultimately' this best suits a planned introduction of new valoro-techniques of production.)

Concurrence is a major determinant of the *inflationary form* of the accumulation of capital. Banks and production enterprises have a common interest in, at least, a moderate general price inflation. Therefore banks tend to accommodate the concurrent price setting of enterprises and so in fact accommodate a socialisation of private losses that would be due to devaluation of capital in the case of price competition. The accommodation of price inflation results conversely in a revaluation of capital. Price inflation also puts enterprises in a relatively advantageous bargaining position vis-a-vis labour. [320]