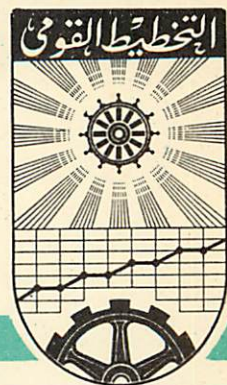# UNITED ARAB REPUBLIC

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Cost Plus and Full Cost Pricing
Techniques in a Public Enterprise

by

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Cost Plus and Full Cost Pricing Technique in a Public Enterprise.

It is said that in many cases the current price policies adopted by state enterprises in many developing countries are based on what are termed cost plus and full cost pricing principles, and this is often the case it would appear in the U.A.R. to judge from the views expressed in Professor Hansen's paper (memo. 294 page 13-14). It is often argued that there is little difference caused as far as pricing is concerned by the adoption of such techniques, because it is suggested that they frequently approximate, for all practical purposes, the theoretical requirement that long run marginal costs should equal price at the point where the condition of equilibrium is fulfilled. That is to say not any marginal cost price will do: it must be that marginal cost out of a large possible number which fulfills the double condition. The cost plus and full cost indeas (which are in many ways quite different) are essentially practical pricing rules, so that what in effect is being said is that if those rules are adopted, then, practice accords with theory, and, if the rules implied by these two techniques are followed, a near optimum condition in respect of the allocation of economic resources as between competing employments would result in the developing country which adopted them. But it may be worth some inquiry before coming to what would appear, to be a fairly happy conclusion. For if the proposition is valid, the job of economic planners is made very much easier, because all the State owned enterprises need be instructed to do is to accept and apply the rule or rules concerned.

One of the commonest interpretations of the cost plus rule is as follows. It is a technique whereby the price of the product is built up from known determined costings made on the basis of cost investigations. Costings of inputs used to produce the output of a previous period are used as data, and by reference to this essentially historical material , an appearance is given of working from the 'known' to the 'unknown' which is the price to be determined., which is applied to a future period or future periods depending upon the boldness of the pricing authority. This procedure would appear to avoid an issue which is obvious. This is that the cost plus approach does not require an independent assessment of market conditions before the price is decided.

One possibly unsophisticated version of the cost plus approach may be formulated by saying that the price is obtained by adding to average direct costs a conventional profit margin, i.e. the decider fixes the price by the simple process of adding to an historically determined average direct expense (which is also determined intuitively in some cases) some definite profit margin. The main argument used in support of the approach to pricing is that the decider believes that in the not very long run the demand for his product is likely to be very responsive to price changes if too high a price is charged. This view may have some merit in situations of oligopoly or near oligopoly, where there is an upper limit to price at which a single seller knows or believes he knows, the other sellers will not follow. The right price is around this 'kink' in the demand function, which is then rationalised by the cost and profit margin chosen. If this is so, it may be accepted that the price is just as much as function of demand considerations as cost considerations, and anyway based on a hunch rather than on an investigation of market conditions.

The right price may or may not have ethical overtones, which are just as much characteristic of firms in capitalist countries as government in developing ones. It is certainly not a monopoly of the former, though is les easy to believe and accept in the latter case, because it conflicts with the profit maximising principle.

Once the cost-plus decider has fixed the price, usually the demand is met up to the limit of production capacity, if the market will take it, at the nominated price, that amount of supply., unless there are opportunities of stocking or de-stocking. This means that the factors affecting the average direct costs (because this is usually used as the primary basis upon which to start fixing the price) must affect price. So that when the prices of inputs change, say in the form of changes in the level of wages and salaries or of raw materials, the price will change quite independently of the conditions in the product market. Moreover, this method of fixing prices carries with it the conventions used in assessing input prices: for example, raw materials inputs may be priced on the basis of first in last

out methods, or last in first out or cost or market value whichever is the lower and so on.

This means that if input prices change as they affect the average direct costs, there will be a new commodity price on new contracts, though old contract prices will be left unchanged., the 'loss', if input prices are rising being absorbed by the additional profit margin. So that in respect of current contracts, the gross margin (i.e. the margin between average direct costs and the price will fall, so that there may be a difference between the anticipated margin and the realised margin. With respect to new contracts entered into once the price of inputs has increased, the price will be increased so as to cover the higher average direct costs and the same anticipated margin as before, so that price need not rise by the full extent of the increase in input prices because of the attempt to make the additional profit margin element a costant figure, presumably because equity considerations are quite invariable.

This interpretation of cost plussing entails that since the price is based on past, already experienced costs of the average direct sort, the actual techniques used in assessing this cost are very relevant to the price fixed.

Now since the level of average direct costs can be expected to vary to a greater or lesser extent with output, the curve of the average direct costs becomes relevant to pricing. If we take the case where production takes place up to the limit of capacity, and ignoring for the moment the falling average direct cost phase usually experienced in the early stages of output, and assuming that raw materials prices etc remain the same, and that the operations of chance events may be ignored, the cost plus technique would imply a constant price for contracts entered into by the decider. It has to be noted moreover that this view also ignores the rising average direct cost phase as output nears the physical maximum for the public enterprise. This means again that though demand conditions may change within fairly wide limits, price will not be altered so long as the assumed conditions continue to apply. This implies that the cost plus decider acts

in effect as a quantity adjuster, if and when market conditions change up to the limit imposed by full capacity working, and price is inert. This suggests, for example, that the state enterprise decider would act clean contrary to the principle of maximising the use of existing capital in those cases where there was a volume of demand below full capacity operation, which in turn would imply a reduced value of the so called capital coefficient. It also means that in respect of the fluctuations of demand within wide limits that the cost plusser really has no price policy worthy of the name.

For current production a least, the cost plusser if he is a sole producer, which is very likely to be the case in a developing country would only be able to adjust supply to demand by increasing output up to full capacity if demand were increasing, and vice versa reduce output at the expense of increasing idle capacity if demand were decreasing. Also depending upon the size of the profit margin the policy of maintaining prices would not allow the cost plusser to take advantage of favourable turns in demand.i.e. not allow him to act as a monopolist at such periods, though it is to be noted, this conclusion is not necessarily valid. For if the plussage of the nominated margin were very high there is nothing contradictory in the state enterprise acting as a monopolist would.

Usually however the price which is charged is such as to create a demand which is greater than which can be met by full capacity operation , for one can expect the State to nominate "1" the lower end of the price range , in which case a rationing of supplies will be necessary , while the heavy demand lasts . In effect the plusser gives up the profit opportunities inherent in the situation, so that , if he wants to maintain the price and operate at full capacity , he must introduce imports , if of course he is allowed to control these . But there is no necessary

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"1" In The interests of public policy as is argued below.

reason why the gap between the full current supply and demand at the
nominated price should be exactly filled by imports.

If the state enterprise decider is enjoined to be an inflexible costs
plusser , then he is likely to be in considerable difficulties in res-
pect of levels of demand at the nominated price beyond full capacity
operation. Below it, he is likely to be constantly advised to find alter-
native outlets for his excess capacity.

But, it is often argued that the convention need not be as rigidly
applied as this , which , if such is the case, poses the question of
what the principle or convention involved in cost plussing really is .
One again we are in the problems of interpretation of practice. It is
if course possible, as indicated above, for the state enterprise decider
to raise prices on new contracts when capacity working is low, and thus be
price flexible because average direct costs are likely to be higher in
the early production runs . If the decider were to accept the flexibili-
ty inherent in this possibility he would seem at such periods to acting
contrary to commonsense, for he would be raising prices when demand was
very low. But, of course, taking the case of full capacity operation, then
average direct costs are likely to be rising, due to extra labour costs,
and increased user costs, and price could be increased, which would be
a more sensible policy at that juncture, Or again, the decider might
seek to allay the impact of rising average direct costs at both ends of
the function by reducing the margin in periods of low activity, and raising
it in periods of high demand.

Clearly , and abstracting from possibilities of varying the profit
margin addition , the assumed shape of the average direct cost function is a
highly relevant matter as to flexibility in pricing for the less rigid

cost plusser if he is to retain any principles at all . Where this costs
function is significantly U-shaped the discretionary element emanating
from this cause is clearly very wide, as it is of course where the fun-
ction is V-shaped: where on the other hand the function is flat the
area of discretion is very narrow, which brings up the question of what
the shape of the function really is, before we can say how much discre-
tion will be attainable by the decider.

Now it is often argued that from the standpoint of current production
problems (and more frquently implied) that the direct costs constitute
the major part, if not the whole of marginal costs of the short run type,
so that if we take the case where average direct costs are linear and
constant, there is not much to choose between marginal costs and average
direct costs as a starting base for pricing. There is of course the ques-
tion of the profit margin which can be fitted in various ways. It might be
regarded as a constant addition to average direct costs per unit, or
viewed in such a way as to suggest that though prices might not be exactly
equal to marginal costs, they may be proportional to it."1" Indeed consi-
derable ingenuity may be expended on this point so as to make the one
(average direct costs) very much like the other (marginal costs) But of
course there is the point that at high rates of output average direct
costs will rise, and marginal costs will rise faster: with low outputs
average direct costs fall, and marginal costs fall faster. Here there is a
clear divergence, which again can be met with the exercise of a little
ingenuity by asserting (and it is seldom no more than this) that 'normaly'
production will take place on the flat portion of the function.

This standpoint may of course be valid, but it has to be noted that
fairly linear average direct cost functions often come about because when
a production unit is built de nono, deciders often want a high degree of
flexibility, so that quite wide variations in output can accommodatef for
by operating at about the same average direct cost per unit of output. Now

"1" In which case the cost-plusser is presumed intlexible.

this is important in capitalist countries, for there are not only the fluc-
tiations in the total demand for the product to be considered, but also
those fluctuations that derive from competitive action by rival sellers in
the same market. If the latter are absent which they are in a state enter-
prise run industry, then if the technological conditions offer the choice,
plants may be built which have a lower average direct cost for the most
probable output, which is a clear gain emerging from the disappearance of
the need to attain flexibility. This may be so, but if this advantage is to
be reaped (as is argued to be the case, for this is supposed to be one of
the advantages of a planned system), then the cost function is likely to be
more of the U shape or V shape variety., and so average direct costs and
marginal costs for current operations will clearly diverge.

Anyway no one has yet argued that average direct cost functions are
always linear everywhere, except as a simplyfying assumption, though no
doubt it is not far round the corner. In cases where the average direct
cost function is U shaped or is V shaped it is clear that the adoption of a
general rule to the effect that state enterprises should operate so as to
price according to cost plus conflicts with the marginal cost pricing rule,
though possibly the conflict is not so great in the sphere of the manufac-
turing industries where linear cost conditions are supposed to be more
common.

Another important difference between the marginal cost basis and the
cost plus technique for deciding the price policy of a state enterprise is
the fact that the marginal cost idea whatever its context as to period of
time is a prospective, planning, idea. That is to say marginal cost (or
perhaps to apply the idea more widely to cases where output is more lumpy),
avoidable cost, has specifically to do with the future. They are costs (or
more accurately expenses) which need not be undertaken if the particular
plan or project is not undertaken. i.e. the proposal may be avoided. If we
consider the matter in the usual terms, the extra cost of providing an extra
unit of output may be avoided if that extra unit of output is not produced.
The idea in its most fundamental form specifically requires the state

enterprise decider to forget past, already incurred costs, as forgone matters about which he can currently or in the future do nothing, because they are unalterable, in the sense that they are 'split milk', for bygones are forever bygones as the saying has it. As compared with this the cost plus system forces the decider to consider past costs, and indeed to use them in an operational manner. This means that the average direct cost of a future period is firmly based on the cost experience of past periods or a past period., which is presumably open to a degree of selection. Is the past year regarded as relevant, or the costs of the past six months? This view is usually defended on the grounds that the element of uncertainty surrounding the decider about future events is so great that he must have 'something' to base his ideas upon. This is despite the fact that past expenses are essentially not 'costs' at all. If it is argued, that costs in money terms represent the experience of foregoing the lost alternative opportunities, how can this be true of something that has already happened in the past? The 'costly' character of costs is a current experience if it is anything at all, for one cannot forgo something in the past, for it is a contradiction in terms. Yet the cost plus technique accepts past expenses as a guide to future action. The whole approach is on par with the use of difference equations as a method of making extrapolations into the future. It is not neccessary to urge that the cost plus technique ought not to be used in this manner, but it is absolutely essential to be clear as to what in fact is being done.

The cost plus conventions accommodates itself to errors that may creep in because of the above factors by the simple process of accepting as a piece of bad luck situations where the average direct costs per unit are greater than the ones in fact anticipated (on the basis of past results), the shock being absorbed in lower realised margins. The converse situation is treated as a piece of good luck and gross margins are automatically inflated. The general acceptance of these windfall losses and windfall gains respectively, cannot induce the decider to think positively about the uncertainty of future events. This however does not mean that a more rational approach to costing using perhaps past result is un-useful, but

at least the degree of credence given them as indicators of the future
ought to be a continuous subject of re-evaluation. The fact that the ratio-
nal decider may use historical data is probably a red herring, and it cannot
be happily concluded that the cost plus system comes to the same thing as
the marginal approach.

Another important difference is that deciders who normally use the
cost plus approach, are very often tempted to use costing data as an opera-
tional device, which are intended to be used for quite different purposes.
That is to say, costing data which may be used for the purpose of control
of costs can, and are used as a basis of pricing. It is not unkown for
example for cost control data, often in the form of budgetary or standard
cost procedures to become the basis of pricing. These are useful for the
miminisation of costs, but not surely as a medium for planning price deci-
sions .

Lastly, under this heading, it was argued earlier that the rigid cost
plus decider is a quantity adjuster, and in periods of poor trade, since he
cannot presumably alter prices, he is often induced to consider non-price
policies in order to operate at a higher level of capacity. In capitalist
countries, he is tempted to consider product variation or advertising outlays
as alternative methods of filling his order books, and it would be somewhat
ingenuous to accept that in socialist countries that similar devices cannot
be induced. On the other hand when order books are overfull. and prices are
not raised, or not raised to the full extent of the rising marginal costs
in that production area, the boot is on the foot, and the state enterprise
becomes highly courted by those who wish to jump the queue. It is true that
as J.K Galbraith has observed in his 'Price Control' that orderly markets
can be preserved in these conditions simply because buyers are few in man-
ufacturing trade and an 'equitable' apportionment of supply can be made,
Conversely, in the so-called consumer goods trades, there is little pairing
off of sellers and buyers, the market being more impersonal, and it is here
that black market operations occur. So at least was the experience of the
O.P.A. during the last war, and somewhat similar remarks might be made of the
U.K.

We may now turn to the problems associated with 'full cost' techniques. Ordinarily some contrast ought to be made between this technique and cost plus devices, for cost plus may be said to be more of a short run technique, whereas full cost is a long run or a longer run technique. But the general approach is somewhat similar in both cases, the difference being that full cost includes additional costs to the average direct costs of the short run. This is particularly true in respect of depreciation, and other capital costs.

Now full costs again is a method of pricing which may be subject to quite different interpretations. One interpretation is that the full cost price is fixed so as to ensure ex-ante, that the capital and other assets of the state enterprise after including normal profit, is that which would emerge in the long run equilibrium, i.e. the industry reproduces itself by maintaining its capital intact. However another possible interpretation is that the price for the industry is fixed so that net investment takes place at a given planned rate, say so much per quinquennium.

Now it may be urged of the former concept that it accords very nearly to to the idea of marginal cost pricing. For, in the long run when differences between marginal and average costs may be ignored, as all costs are variable, An industry which in this way just covers its costs obeys the optimising allocative rule. This is of course so in the case where an industry is allowed to develop undisturbed by exogenous factors to the required size. All the price fix does, if it can be correctly anticipated, is to reproduce the accepted theoretical condition where the entry and egress of firms has ceased, and capacity is fully adjusted to demand. What we have is a point on the Marshallian supply function., when the factors of production, and the factors of those factors of production have rather nicely settled down. in a stationary state. In fact the state enterprise decider has not merely to anticipated what the price his enterprise ought to charge to ensure that his industry reaches this Nirvana, but also to anticipate (correctly) that every other state enterprise decider does the same. and their decisions will be mutually compatible in equilibrium.

Needless to say, the price structure in the process of reaching this equilibrium, must be such that there is little need to distinguish between historical and replacement costs as a basis for the valuation of depreciation. Clearly the price charged under this approach will be higher than the cost plus as interpreted, because the cost-plus has been regarded as a short-run technique and the full-cost as a long run one. Much will depend as to differences in the price levels implied by these two techniques on the amount of depreciation included in the cost plus technique as compared with the full cost. Indeed given the respective rates of depreciation included and the rate of production in both cases, it might be suggested that the ratio between the cost plus and the full-cost prices should approximate to the relative costs on both bases assuming that the profit addition is the same. Of course the addition of the relevant costs of net investment in the second interpretation of the full-cost principle will make price levels higher still.

In all, the cost-plus and the full cost principles are subject to such extermely wide interpreations in theory and practice, that it is not possible to state to what extent they will approximate to some theoretical optimum pricing and costing rules. The cost-plus and full cost rubrics may be useful to economic planners, provided (which is not usually the case) that the components of cost and the profit addition are exactly defined. However even where this is the case, economic planners ought to be cognisant with the full effects of the two techniques. which it has been the purpose of this paper to decribe. The rubrics ought also to be of some value, where is desired to lay down a general rule to cover all state enterprises, but where it is necessary to attain wide latitude of interpretation. But the administrative simplicity of this may be bought at a high price., in terms of the effects of the procedures.

The major difficulty with both the techniques is that the prices fixed by reference to them may differ widely or narrowly from the prices which fulfill the condition of equilibrium, for there is no necessary reason why they should coincide. Flexibility may be attained and both requirements may

be fulfilled by interpreting the principle in various ways. Failing this,
it would be possible for the decider to avoid excess supply or excess
demand respectively by resort to stocking up or de-stocking proceedures,
but there might be expensive in interest terms, as compared with greater
price flexibility. On the other hand there may be a premium on price sta-
bility, but this does not imply that more stable prices ought to be attained
via these two techniques rather than any other alternative methods. Failing
stocking or de-stocking, the avoidance of excess demand or excess supply
must rely upon import policy or on competitive supplies form the private
sector, the former perhaps being too important a consideration to leave to
the uncorrected application of particular techniques.

If it were accepted that the primary rule in pricing is to price so as
to fulfill the requirements of the condition of equilibrium in the not very
long run, then, the full cost and cost-plus techniques ought to be regarded
as subsidiary techniques, justifiable on other grounds, but not as aids to
pricing. But even from this standpoint the two rules are not necessarily
very useful. Both systems are, notoriously, not likely to make managers cost
conscious and are usually only applied in crisis conditions. The failure to
control costs is swallowed by price increases, and in the conditions of
developed countries there is usually insufficient competition ot ensure a
stricter regard for low ering costs. Indeed from this viewpoint cost control
systems such as standard costs are much to be preferred. Peversely perhaps,
the acceptance of the 'standard cost' as the cost target to aim for (pro-
vided that the standard could be changed so as to force cost reductions)
might amelio-rate the position. In sum both techniques are not very satisfa-
ctory standards of performance even where the discretionary element allowed
in them is small.

However it would be idle to pretend that the cost-plus and full-cost
rules are merely introduced in developing countries as media of control
over state enterprise operations. For, their main raison'd'etre is that,
provided the term cost and the profit addition can be suitably interpreted,
they can be made to fit in rather snugly into social and economic policy

requirements, so as to attain, the summum bonum of a moderate profit which is not sufficiently high to offend susceptibilities, and a moderate price for the consumer. That is the techniques are intended as a means of political pricing, irrespective of whatever economic merits or demerits they may have. Indeed they may be a rationalisation of the requirements of social and political policy if this view point were accepted. The criteria of evaluation applied above are not very useful, and the proper approach to the problem would be very different. In which case the economist can say little of value except to point out consequences in supply and demand terms. But perhaps this is useful because it is a characteristic of politicians everywhere that they believe that the public can have its cake and eat it.