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Monetarism & The Cost of Living

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Monetarism & The Cost of Living
Executive Summary

The British Strategic Review (BSR) is an annual publication providing an analysis of the emerging interaction between a dominant economic theory and policy, monetarism, and the real economy.

However, events since February, 2022 related to the Russian actions taken in the defence of the Donbass populations in Eastern Ukraine have resulted in the UK government imposing sanctions against Russia, which have impacted Britain resulting in an exacerbation of an already evolving cost of living crisis. These economic circumstances require an urgent resolution. Therefore, this Special Edition of the BSR has been issued as a contribution to the exploration of options available to resolve this crisis.

The result of sanctions imposed against Russia by levelled by the USA, UK, the European Union, Australia, New Zealand and Japan against Russia, has created a state of affairs very similar to the 1973 sanctions applied by OPEC against today's sanction imposers. The paradox is that whereas in 1973 these sanctions were applied by a major petroleum and gas export group, this time round, some 50 years later, the same negative consequences for these economies has arisen as a result of these major petroleum and gas importing countries attempting to sanction Russia and these sanctions resulting in a significant negative impact on the economics of the sanctioning countries.

The negative consequences have been a general rise in prices for hydrocarbon energy resources and their derivatives which in turn have begun to impact a widening array of products and commodities. The pattern is similar to the 1970s and it is worth noting that the stagflation that combined high inflation with rising unemployment, at that time, endured over 20 years from the mid-1970s to the mid-1990s.

The first British Strategic Review, "*Monetarism and The Real Economy*" explains why monetarism, adopted in 1975 was later applied in an attempt to kill inflation by raising interest rates to very high levels. This only exacerbated the state of the economy causing a rise in unemployment and thousands of house repossessions as a result of sound mortgage contracts, taken out by families in good faith, being converted into sub-prime mortgages as a direct consequence of an inappropriate monetary policy; these families never received any compensation for this arbitrary decision-making by the then Thatcher Conservative government. The Conservatives lost the following general election.

This fiasco, led Gordon Brown to make the Bank of England independent as his very first act as an insurance policy to prevent the Labour government suffering a similar fate by being exposed to the same risks. It became prudent to farm out the setting of interest rates to "an independent Bank of England" so as to distance this business from "government decisions".

In reality, making the Bank of England independent exacerbated the policy management domain by distancing both the constituency and parliament from any effective oversight or influence over important macroeconomic decisions, taken by the Bank, and which affect them.

The effective lack of analysis and quality of advice by the Bank of England became very apparent in the poor showing of the Bank's response in the evidence sessions of the recent Lord's Economics Committee[1] review of quantitative easing. The title of the Committee's report reflects the lack of confidence of the Committee in the rationale of QE as, "*Quantitative Easing: a dangerous addiction*?"

A conclusion of the first edition of this Review was that continuing with monetarism as the principal macroeconomic paradigm and expecting the Bank of England to be able to handle the cost of living crisis with its set of inadequate policy instruments and an irrelevant mandate, means the government is in no position to solve the stagflation or cost of living crisis. This is an unacceptable state of affairs. There is some urgency in bringing to the notice of economists and policy makers information and arguments to explain why the existing economic theory and policy framework is inadequate as a basis for analysis and formulating propositions for a change in direction. There is a need for practical and effective solutions.

The first edition of the British Strategic Review contained a good deal of advocacy for the alternative Real Incomes Policy (RIP) emphasizing possible options within that framework. However, the current cost of living crisis now affects a population that has become more aware of the immediate significance and negative consequences of inflation for their wellbeing.

This Special Edition of the British Strategic Review presents some examples of how RIP would operate in more detail in the hope that this additional level of exposition can aid understanding to an increasingly aware and therefore critical readership. Examples of how options can work will hopefully provide a more structured identification of the important gaps in monetarism and the associated family of theories and policies that adhere to the logic of the aggregate demand model. These include, Keynesianism, monetarism, supply side economics and modern monetary theory. Hopefully, on completing this document, the reader will have a more detailed appreciation of the real limitations of monetary theory and practice and why this approach has prejudiced so many people. It is also hoped that the reader will have a better appreciation of why RIP is a policy based on a demonstrably transparent and distinct macroeconomic theory which, in practice, can provide a more effective means of eliminating inflation, raising productivity and achieving a sustained growth in real wages.

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17th July, 2022

[1] House of Lords, Economics Committee, "*Quantitative easing: a dangerous addiction?",* July, 2021.

Introduction

This Special Edition of the British Strategic Review will highlight the main reasons that Real Incomes Policy (RIP) is a distinct macroeconomic theory and policy proposition from the conventional policies of Keynesianism, monetarism, supply side economics and modern monetary theory. This is of significance because, as will be explained, these policies, were unable to control the stagflation of the 1970s or help the economy recover from the 2007-2008 financial crisis. This policy failure is beginning to repeat itself in relation to the current cost of living crisis which has many aspects that are the result of policy-induced negative consequences for constituents.

RIP was developed over the period 1975 to 2022 to address gaps in economic theory and practice. The basic theoretical logic and the RIP paradigm was specified in 1976[2] and refinements to theory and policy proposition details have continued throughout the development period to date.

The motivation to initiate this work was the fact that the limited set of policy instruments at that time could not address stagflation without prejudicing constituents to varying degrees. The objective was to identify gaps in economic theory and policies which prevent an effective macroeconomic policy implementation to reduce inflation and lower unemployment under conditions of stagflation. The policy instruments in question at the time included base interest rates, money injection, government borrowing, taxation and government expenditure. Today, some 50 years later, this policy toolkit remains the same. These policy instruments all act on the assumption that the Aggregate Demand Model (ADM) is the rational basis to guide the management of the macroeconomy**.**

A principal problem people face in the cost of living crisis is rises in prices of essential goods and services, and a widening segment of the population, faces a decreasing ability to purchase basic essentials for survival. An assumption of the ADM logic is that too much monetary injection creates excessive “demand” and inflation resulting in pressure on wages leading to more inflation and labour pricing itself out of the market, linked to the Phillips Curve – see Annex 1.

In the face of inflation, monetary policy responds by raising interest rates and/or taxation to “cool down” the economy by reducing credit, disposable incomes and “demand”. However, all examples of this policy response resulted in a generalised economic depression as well as an increasing disparity in incomes with policies generating winners, losers, and some, who remain in a policy neutral impact state. Here we refer to constituents and companies.

The question arises as to why sector companies are unable to deliver policy objectives? To answer this question, it is necessary to see to what extent policy objectives comply with corporate objectives, on the one hand, and the interests of constituents, on the other.

[2] McNeill, H. W., “*The Real Incomes Approach*”, Intercomex, Rio de Janeiro, 2016.

Therefore, the line of enquiry that ended up with the RIP proposal was initiated by returning to basic principles and reviewed the microeconomic, rather than macroeconomic, logic and decision imperatives under conditions of stagflation in order to trace the determinants of output price inflation. Inflation, of course, is the result of price-setting by companies in response to supply side factors such as input price inflation. Underlying objectives are normally to set competitive prices. Even under high macroeconomic monetary injection conditions, there are no mechanisms to cause a passive rise in output prices of goods and services. Unit prices generally respond to input cost rises (cost-push inflation). The fact that companies alone set prices, raises questions as to the actual mechanisms whereby raised money volumes are supposed to result in inflation; if at all.

Money volumes

All conventional approaches (Keynesian, monetarist, supply side economics and modern monetary theory) are based on the ADM which presumes that inflation is a demand-pull phenomenon when, in reality, under competitive conditions, it is not. Paradoxically, the mechanisms that relate policy to inflation became more evident during the 12 years of quantitative easing (QE). During this period the evidence generated by QE during the period 2008-2018 included:

- Most funds flowed into asset markets resulting in the funds made available for supply side investment being significantly reduced
- The prices of assets rise significantly because asset markets become speculative where the assets are purchase in the hope of their value rising above the purchase price with the objective of reselling or holding as a basis for augmenting wealth
- Asset market prices rose with each tranche of QE
- Demand, productivity and real wages in the supply side goods and services sectors declined
- Prices of goods and services remained depressed

During the end of this period the evidence generated by QE during the period 2018-2022 included:

- The high rates of inflation in asset markets began to leak into factor input markets affecting companies and constituents. For example, the prices and rents for land, housing, commercial real estate including retail units, offices, factory units and warehouses fed into a cost-push inflation affecting companies and consumers, all became more evident
- The freedom of banks and hedge funds to purchase commodities and to hold them on a speculative basis raised the prices of food, energy and other essential supply side inputs.

Monetary policy logic

It is notable that none of these outcomes were included as the stated objectives of QE by policy makers when this policy was introduced. Since these effects were largely unexpected these outcomes demand a more detailed examination of the monetary logic of inflation, or more specifically, the core of monetary logic in the form of the Quantity Theory of Money (QTM)

The Irving Fischer's QTM is the most widely cited[3] it is the simple identity:

$$M.V = P.Y \quad \ldots \quad (i)$$

Where M is money volume; V is the velocity of circulation[4] within a given time period; P is the "average" price; Y is the income spent on goods and services.

Recalling the effects of QE on asset prices it is notable that the QTM contains no variables that represent assets. There are some 7 major classes of assets and 2 other money states that represent money that does not circulate in the supply side goods and service production sectors. These include:

Asset classes

1. Land - l
2. Real estate & construction (domestic and commercial) - r
3. Precious metals - p
4. Objects of Art and rare items - a
5. Commodities - c
6. Shares - b
7. Financial instruments (e.g. paper and derivatives) - f

Other non-circulating money classes

8. Savings - s
9. Offshore investment - o

None of the key variables, listed above, that represent the destinations of most QE money are included in the QTM identity.

Since prices are set in a competitive basis by companies, it is evident that the determinants of the mechanisms of corporate price-setting are also missing from the QTM.

It is also notable that the QTM in policy discussions tends to be relate exclusively to the prices of goods and services as the key factors affecting the cost of living. Assets, however, are seldom mentioned in this context, in fact, they are normally ignored.

[3] Fischer, I., "*The Purchasing Power of Money",* 1911

[4] The velocity of circulation is the number of times the funds change hands as a result of transactions within a defined period

The Cambridge Equation[5] was an attempt to at least introduce savings as reserve non-circulating funds whereby individuals or companies maintain a degree of liquidity or ready cash also for investment as own cashflow or equity. This was an important initial attempt to bring the QTM into the realms of reality. In a modified[6] form, this step was correct, and is presented below:

$$(M - s).V = P.Y \quad \ldots \quad (ii)$$

Where s is savings as a non-circulating monetary asset. Note that the impact of savings is to reduce M and therefore to reduce P.Y or real incomes or the actual value of goods and services transacted.

A more realistic identity

A more representative identify of a theory of money quantities needs to include all of the types of assets which are missing from the QTM and this identity is an extended Cambridge Equation[7] created by introducing all of the encapsulated non-circulating money held in assets or that flows out of the economy (offshore investment) as follows:

$$(M - (l + r + p + a + c + b + + s + f + o)) .V = P.Y \quad \ldots \quad (iii)$$

Each of these determinants l through o are listed on page 10. To reflect this identity's closer approximation to reality. This is referred to as the *Real Money Theory (RMT).*

Just to clarify the point, the average price of goods and services, including what constituents consider to be basic essentials for survival, can be represent by the following rearrangement of the RMT:

$$P = \frac{((M - (l + r + p + a + c + b + + s + f + o)) .V)}{Y} \quad \ldots \quad (iv)$$

Assuming the velocity of money being constant[8] the average price of goods and services can be seen to be reduced by the money that has flowed into the asset markets, into saving or overseas.

A notable identify is that of income Y as:

$$Y = \frac{((M - (l + r + p + a + c + b + + s + f + o)) .V)}{P} \quad \ldots \quad (v)$$

[5] The Cambridge Equation is the result of contributions by various economists including Alfred Marshall, John Maynard Keynes and Arthur Cecil Pigou.

[6] This identify has been modified to follow the same logical mathematical format as the Real Monetary Theory an extended Cambridge Equation.

[7] McNeill, H. W., "*A Real Money Theory*", Charter House Essays in Political Economy, HPC, 2021.

[8] Under QE the velocity of money within the supply side production sector declined significantly

Assets and inflation in goods and services

An explanation for the spill-over from assets prices into goods and services prices was set out in the BSR 2022 and is summarised below:

$$\downarrow Y = \frac{((M - (\boldsymbol{l} + \boldsymbol{r} + p + a + \boldsymbol{c} + b + + s + f + o)).V)}{\uparrow P} \quad \ldots \quad (v)$$

Assets such as land, real estate and commodities, such as energy, are inputs to the supply side production as well as costs for consumers. Such rises in supply side input costs will result, eventually, in the need to raise prices (P) resulting in a decline in the purchasing power of Y.

Therefore, the build-up of price speculation in assets in largely encapsulated markets, eventually leaks into production input prices in the supply side production, leading eventually to inflation in the prices of goods and services and in the case of housing rises in rents and pricing to level s beyond the purchasing capacity of low wage constituents.

Theoretical issues

The original QTM and the Cambridge Equation makes no reference at all to where a considerable amount of monetary injections end up i.e. assets. The RMT, however, does indicate which assets absorb considerable amounts of injected funds. The RMT therefore makes an important fact more explicit. This is that the average prices referred to in the QTM and Cambridge Equation are not in fact related to money volumes because this volume or value, has not been corrected for the funds flowing into assets, none of which are represented in these identifies.

Therefore, the actual determinants of prices are missing from the QTM and Cambridge Equation. Although it might be assumed that this realization has arisen as a result of the analysis of the impact of QE, assets such as land and real estate and commodities, as well as precious metals have been transacted for as long as the QTM has existed. In spite of this, such assets were never included in these identities. These identities and the theories that hang on the credibility of the QTM and Cambridge Equation are all, accordingly, seriously flawed.

Predicting prices

The above notes call attention to a secondary theoretical and practical issue. The effect of the Cambridge Equation extension, as the RMT, provides a means of separating monies tied up in assets, savings and offshore flows from the net remaining funds that constitute the value of real incomes (P.Y), representing purchased goods and services. However, as has been explained goods and service prices are set by companies and not by general money volumes. They are determined by the individual supply

side conditions of each company. The most influential determinants of price setting by companies are changes in unit input costs.

Therefore, none of the three identities discussed possess the determinant functions or mechanisms whereby prices are set and therefore these identifies cannot be used to estimate prices as a function of money volumes.

The significance of these findings

The QTM and the Cambridge equation have no utility in determining the relationship between money volumes and prices because most of the factors determining prices are missing from these identities. This renders them to have no utility or logic in support of monetary decisions related to theory or practical policy design and the determination of expected impacts. Given the scale and profound macroeconomic impact poor decision making on the economy and constituents, there remains a significant gap in the understanding of any relationship between money volumes and prices. Therefore, there are significant logical and functional gaps in the economic theory of monetary policy and doubts as to the efficacy of decisions and policies based upon such theory.

Distinctions between asset, goods and service prices

Prices cannot be predicted using these identities because the mechanisms that set prices at any point in time vary according to whether the object priced is a good, service or asset. Assets tend to absorb large monetary injections causing rises in prices in a speculative but passive fashion. However, the particular mechanisms of price-setting by goods and service companies are specific to the individual circumstances of each company

Goods and service prices are generally determined by corporate business rules related to price-setting strategies that account for:

- Unit variable costs
- Overhead costs
- Physical productivity
- Financial productivity
- Margins and return
- The price elasticity of consumption according to consumer disposable incomes
- Knowledge of competing product prices

In terms of supply side production of goods, such as in manufacturing, there is a series of complex considerations designed to maintain margins and competitivity while production conditions change in relation to unit costs and varying consumption levels according to different competitive pricing and competing products, while adjusting process productivity and retaining labour.

Once produced, goods are essentially stored and many become “off-the-shelf” items enabling a rapid response to customer requirements involving attention to logistics and delivery processes as opposed to production processes.

There is, therefore, in the case of manufactured products two distinct operations:

- Production involving the creation of the product
- Distribution services involving the storage, off the shelf distribution and delivery from inventory of the final product

In the case of distribution services and services in general, they are normally delivering goods a customer requires that are “off the shelf” items produced by supply side production activities such as commodities, food and gas to cook things in the case of a restaurant, or placing items on shelves, in the case of a supermarket. Service provisions rely on the availability of these services inputs or other services to respond to the immediate and/or ongoing requirements of customers.

As a broad generalization, supply side manufacturing production has more factors that can be manipulated to adjust to changing market conditions such as rises in input costs through minor re-design decisions and “shop floor innovation” involving simple changes in process sequencing and layout, linked to resource allocations, materials substitution or elimination, altering energy requirements, product size and weight and enhancing logic embedded in systems. As a result, there are several ways or degrees of freedom to maintain prices at competitive rates and thereby influence the consumption of their products and production volumes.

Because services, in general, make use of, or pass on, products and commodities that are bought in and not altered, they face a reduced means of optimizing “service design” when prices rise, there are fewer degrees of freedom to do much about this and influence the consumption of their product lines[9], other than raising prices.

Because manufacturing has a wider range of options to manage the quality and price of output, this also signifies that manufacturing can shape the impact of innovation of all users of manufacturing output in terms of accessibility of prices, utility of products and the contribution of devices and capital equipment to the efficiency of production in other manufacturing units, to agriculture, office work, retail and wholesale trades. More fuel efficient vehicles, for example, can help improve logistics service margins. Manufacturing output shapes the trajectory of the impact of innovation on the productivity of all sectors in the economy; manufacturing design and productivity, in this sense, is the principal source of real growth.

[9] McNeill, H. W., “*The consequences of being a nation of shopkeepers*”, Cambridge-Economics Network, 2022.

Real growth

Real growth is the combination of ***physical productivity*** (more for less) and such efficiencies enabling ***a reduction in unit prices as a form of price productivity***. This results in the purchasing power of any nominal disposable income to rise because more can be purchased for a fixed nominal income. This is because, in this instance, the purchasing power of the currency has risen. Note, this effect and benefit is mainly related to manufacturing innovation. The fundamental conclusion to these observations is that manufacturing activities help generate the rise in consumption of its own products through the management of the process of price-setting. As a result, there is a growth in real incomes emanating from manufacturing innovation and increasing efficiency. Another interpretation of this reasoning is that the manufacturing process is able to stimulate increased consumption (demand) for their own products without any additional market factors involved[10], including money volumes in the economy.

Services' heavy reliance on devices and goods from supply side production manufacturing and primary industries such as agriculture, and the relatively lower degrees of freedom of services to control their costs means that any innovation within the services sector is heavily reliant upon the prices and quality of manufactured products. As a result, even although over the last decade, information and communications technologies and networks have resulted in a revolution in logistics and the application of operations research optimization methods, services remain heavily dependent upon the productivity advances of these manufactured products to remain "competitive".

Learning and innovation

One of the most well-established mechanisms whereby companies improve their physical productivity is the learning curve. This was revealed first by Theodore Wright[11] in 1936 where production data on aircraft frames provided the quantitative evidence for gains in productivity resulting from learning. The learning was based on the repetition of specific tasks in aircraft frame production which resulted in operators becoming more efficient, taking less time, making less mistakes, generating less waste and therefore reducing the resources required to create an aircraft frame. The result is a steady reduction in unit costs of production.

The Learning Curve

The important lesson here is that those involved in making things over time improve their efficiency and this can be measured as a reduction in unit costs of operation. Subsequent analyses by many production engineers and operations managers, across many manufacturing sectors demonstrated that all benefited from the same effect. However, the gains in physical productivity and unit costs reduction depends upon the number of operators, the technologies and technique involved. Each type of process has a distinct learning curve or rate of costs reduction associated with the cumulative throughout.

[10] This is a well-established model promoted by the French economist Jean-Baptiste Say (1767–1832) who was also an owner of industry. A similar concept is attributed to Gerald Ford who is understood to have explained his higher wage payments to enable his work force to be able to purchase his cars.

[11] Wright, T., "*Factors Affecting the Cost of Airplanes*" , Journal of Aeronautical Science, Volume 3, No.2, pp. 122-128, 1936.

As a general example of a learning curve relationship, in some processes the percentage drop in unit costs is a constant for every historic doubling of production. Thus, the same percentage drop would be achieved when 100, 200, 400 or 800 units have been produced as shown in Figure 1. This also indicates that the unit costs reduction exhibits a diminishing return to throughput and is not a straight line.

Figure 1: The Learning Curve showing 10% and 20% coefficients

Some points worth noting

Even with a low learning coefficient of 5%, after four historic doublings of throughput unit costs fall by a total of 19%. A 10% coefficient achieves a unit cost reduction of 35%. A 20% coefficient achieves a unit cost reduction of 60%. Learning coefficients of between 5% and 10% are quite common, so the impact of the learning curve is a potentially significant factor.

These real growth rates due to the learning curve need to be compared with growth rates achieved under conventional policies that might aim for a nominal growth of up to 5% maximum. Invariably such nominal projections never materialise and they flatline because there are insufficient incentives for real growth.

The pre-1929 production model of the economy

Prior to the New York Stock Exchange crash in 1929, the theoretical models of the economy closely approximated the model elaborated by Jean-Baptiste Say[12] (1767-1832) in his work, *"Treatise on Economics – The Production, Distribution and Consumption of Wealth"*. Say emphasized the role of entrepreneurs in identifying opportunities to use resources more efficiently in accomplishing tasks and thereby innovating. More fundamentally his model considered production and the payments of wages and other inputs for production as the main generator of the means of purchasing output of the economy.

[12] Say, J-B., "*Treatise on Economics – The Production, Distribution and Consumption of Wealth",* 1832 edition..

His own shorthand assertion being that, " *…. unless we produce, we cannot consume; unless we first supply, we cannot demand*".

For an economy to achieve real growth the combination of learning and actions by entrepreneurs led to rises in physical productivity and with this more being produced for less, leading to the possibility of altering prices to enhance the purchasing power of consumers or work forces.

Leading up to the New York Stock Exchange 1929 crash, increasing amounts of money was being used to speculate on the Exchange and was tied up in shares as opposed to circulating through the supply side production sectors. This focus on financial trading in the hope of speculative gains became an obsession on the part of people many of whom put up their homes as collateral to take loans to purchase stock. This activity became a form of destructive financialization which resulted in less funds being available for investment and productivity enhancing innovation. As a result of the over-commitment of money to a market whose underlying performance, in terms of corporate prospects, could not justify the rises and levels of share prices, in terms of price-earnings ratios, a loss of confidence resulted in a sudden sell-off and collapse of the market. As a result, a considerable amount of money was lost and therefore withdrawn from the economy. Millions of people lost their homes and were penniless. Disposable incomes collapsed and therefore so did consumption, leading to company closures. The balance between production, income and consumption and the Say model was destroyed as a result of an enormous cash flow gap in the economy. There followed a period of depression marked rising unemployment which lasted up to the beginning of the Second World War.

Events in 1929, 1980s and 2008 from which no lessons were learned

The past financialization and 1929 crash and depression, the attempts to control stagflation in the 1980s leading to collapse in manufacturing and the introduction of QE in 2008 leading to significant rise in income disparity are all testament to a failure to learn policy lessons.

The post-1929 aggregate demand model of the economy

With the growth in the services economy and the relative decline in industry and manufacturing, the state of turnover in the economy, as demonstrated by the New Deal in the USA and explained by John Maynard Keynes[13] in his "*General Theory"* became dependent upon the concept of "demand" which was equated with disposable income. Many economists saw the Say model as being the cause of the economic collapse in 1929 as opposed to recognising that the cause was financial speculation diverting funds away from the supply side production economy.

Although financialization became more evident as a major factor in business decision-making in the post-Gold Standard period starting in 1971, Thorstein Veblen[14] recorded its development in 1921 when he observed the following:

[13] Keynes, J. M., "The General Theory of Employment, Interest and Money", 1935.

[14] Veblen, T., *"Industrial and Pecuniary Employments*", in *The Place of Science*, cited by Russett, C. E, "*Darwin in America – The Intellectual Response 1865-1912*", W. H. Freeman & Co, San Francisco, 1976.

"*Half a century ago it was still possible to construe the average business manager in industry as an agent occupied with the superintendence of the mechanical processes involved in the production of goods and services."*

"But in the later development the connection between the business manager and the mechanical processes, has on average, grown more remote; so much so, that his superintendence of the plant or of the processes is frequently visible only to the scientific imagination... His superintendence is a superintendence of the pecuniary affairs of the concern, rather than of the industrial plant; especially is this true in the higher development of the modern captain of industry."

The Aggregate Demand Model (ADM) came to dominate the thinking of Keynesians and monetarists as well as the more recently developed supply side economists (1970s) as well as the later variant in the form of modern monetary theorists (2000s).

Therefore, the policy variables deployed by these conventional policies are designed to manage "demand" by influencing the amount of disposable income in the economy, not as a result of innovation and real growth within the manufacturing and other sectors, but rather, by simply manipulating the amount of money in the economy. This mode of thinking equates "demand" and economic growth with money volumes as opposed to more output for less productivity and unit price moderation.

Notice that the fundamental contribution of innovation and technology to real growth was removed from the list of principal factors on the new economics policy platform fashioned by the ADM paradigm. If one reads through the fundamental and foundation texts of Keynesianism, monetarism, supply side economics and modern monetary theory and search for the topics of learning, technology, innovation, physical productivity and real growth, very little will be found. The ADM contains almost no reference to learning, innovation and real growth.

Growth is expected to result from enhanced money volumes brought about as a result of changes in interest rates and rate of debt accumulation as well as changes in personal and corporate taxation.

Over time, because of a residual failure rate in commercial development projects is around 30% there is a lower than desirable return on finance. Over time, this has resulted in an accumulation of assets by the financial intermediation sector as a result of repossessions of assets associated with bad loans. On the other hand, increasing amounts of debt have also been created for consumer consumption arising as a result of the relatively slower rate of rises in wages in comparison with prices and corporate profits. Therefore, rather than accumulating financial assets, wage-earners are accumulating financial liabilities.

Over time, with real wages falling, this has created a debt-taxation trap.

The debt-taxation trap

The debt-taxation trap is a state of affairs within which post-1938 government policies have built up a zero-sum policy situation, or a Pareto[15] efficiency position, where no one can benefit from policies without other being prejudiced. This situation is caused when there is no real growth in the economy and, as a result, national accounts and departmental budgets become nominal fixed sums imposing a zero-sum decision space which provides no options for real growth. Increased expenditure by governments always implies incurring future taxation.
The debt-taxation trap is also a result of government expenditures needed to support social welfare and a range of public services. There would be less requirements of some public services if more effort went into stimulating real growth through innovation and rises in productivity and thereby raise real incomes through price moderation, that is, raising the purchasing power of the population.

The rise in the basic notion of demand as being the governor of the economy, in reality, is supportive of the interests of services as the main employment sector and their interest in moving products “off shelves”. Since demand management can certainly drive consumption on this basis, there is, at the same time, less incentive for industry and manufacturing to optimize their rates of innovation and changes in technology and techniques. Under these circumstances, the service economy advances or declines as a function of money available for consumption largely raised by personal or government debt to be reclaimed later in the form of taxation.

Although much of the early innovation and real income growth was based on the investment of savings as equity, made possible by economies and incremental rises in productivity, since the 1970s increasing amounts of invested funds or even consumer purchases have been based on borrowing largely from banks. This process received a significant boost from the recycling of petrodollars starting in the 1970s. This however, carried with it the rising burden of interest rates.

One of the often mentioned aspects of savings is, and as indicated in the Cambridge equation, that some economists consider it to be factor that reduces demand and therefore consider it to be a negative factor in demand management. In the 1960s some Keynesians considered spending, rather than saving, to be a benefit to all. Some equated saving to “hoarding”. The association of QE with close-to-zero interest rates was interpreted by some to be a way to destroy savings and to increase dependency on banks.

On the other hand, the emphasis on borrowing has resulted in a mistiming of investments to increase productivity because when demand is rising there is usually a policy move to restrict demand by raising interest rates and taxes. This results in a disincentive for financed investment necessary to raise productivity.

[15] Pareto - Mock, William B T. (2011). "*Pareto Optimality*". Encyclopedia of Global Justice. pp. 808–809

Supply and demand and the setting of prices

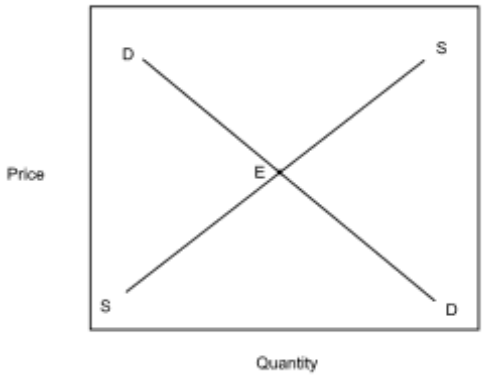
The monetary identities: QTM , Cambridge Equation and the elaborated RMT do not contain any functions of mechanisms to indicate how prices of all factors and in particular goods and services are determined.

Given the dominance of the ADM as the macroeconomic policy paradigm it is notable that the common supply and demand diagrams also contain no such information.

All that is presented is what is referred to as an “equilibrium price” at point E where the demand line D-D has the same coordinate values of unit prices and quantities as the supply line S-S, as shown in Figure 2.

The popular supply and demand diagram

Figure 2: Supply & Demand Diagram



What is lacking in this presentation is any indication of the accessibility of prices to people with different disposable incomes.
The process of price-setting needs to consider:

- Unit variable costs
- Overhead costs
- Physical productivity
- Financial productivity
- Margins and return
- Levels of consumption according to price and consumer disposable incomes
- The price elasticity o f consumption according to consumer disposable incomes
- Knowledge of competing product prices

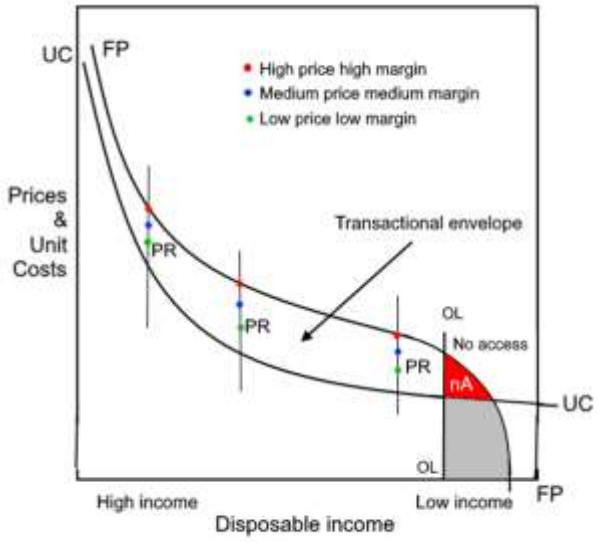
In order to understand these inter-relationships, a Production, Accessibility and Consumption Model (PACM) is applied. This combines, in a single diagram, the maximum prices payable by individuals on different disposable incomes, that exist in the country, for a specific product. This sets an upper

boundary of feasible prices. In the same diagram the unit costs of production associated with total volumes of national throughput (production) can be plotted to indicate the lowest feasible price cut off point associated with a zero margin. Between the unit costs line and the maximum feasible price line lies a "transactional envelope" for a single product across the range of national disposable incomes. The different feasible prices and margins can then be mapped out according to their relative location of prices between the maximum feasible price and unit costs lines.

The production, accessibility and consumption "transactional envelope" for goods

The characteristics of the transactional envelope is that to ensure larger sales, products need to accommodate the price needs of lower income segments by lowering them as can be seen by the drop in the upper price boundary with falling disposable incomes. On the other hand, with higher production throughput, unit cost curves tend to be lower so that the loss in margins due to lower prices is compensated by lower unit costs. At lower levels of national output unit costs tend to be higher. In competitive economies the furthest right position of prices tends to set the prices for the whole market[16]. In Figure 3, movement to the right of the transactional envelope is associated with lower unit prices and higher accessibility of a product resulting in a rise in purchasing power and real incomes of lower income segments. However, there are sections of the transactional envelope where realizable margins are too low and representing an operational limit of the market concerned indicated by the line OL. This line would also be associated ith the most competitive prices in the market.

Figure 3: Transactional envelope



This results in a tail end area within the low income segment where there can be no viable sales at the desired prices by the constituents resulting in a zone of "market occlusion" or non-accessibility indicated by the red area with the nA tag.

[16] The movement from left to right in this diagram can represent the trajectory of the initiation of production and expansion of a product which is sold to higher income consumers first and then gradually penetrates more of the market as a result of lowering unit costs and prices. Mobile phones are an example of this profile.

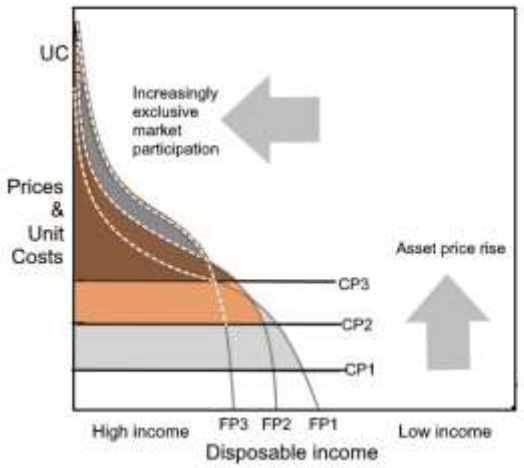
The transactional envelope for assets under QE

One of the notable impacts of QE was the flow of funds into largely expensive assets which were out of reach of the feasible purchasing power of medium to lower income segments of the population. As a result, the transactional envelope's location spans just the medium to high income segments while most of the below average and low income segments are excluded from these markets due to the effect of "market occlusion".

In this case, as was observed under QE with each tranche of QE funding, the prices and costs (CP) of assets rose. This trend can be observed in Figure 4, as CP1, CP2 and CP3.

The transactional envelope is restricted and located in the higher disposable income segment of the transactional envelope diagram while increasing amounts of QE money is absorbed in an increasingly restricted higher prices transactional envelope with feasible price lines moving from FP1, to FP2 and FP3.

Figure 4:Transactional envelope for assets under QE

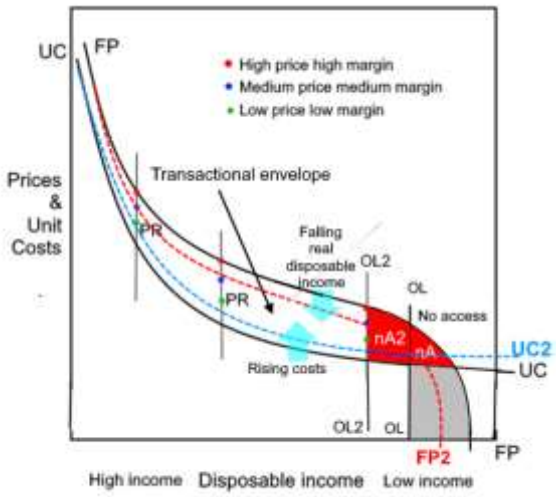


General impact of QE on the transactional envelope for goods

The absorption of QE funds by assets reduces the amount of money in the goods markets and as real wages decline the effective real disposable income declines.

Therefore, the feasible price line drops vertically from FP-FP to FP-FP2 in Figure 5, indicated by the red dotted line.

Figure 5: Transactional envelope of goods and services under QE



The leakage of asset inflation into supply

side production inputs such as land, real estate and commodities results in the unit costs line rising vertically from UC-UC to UC-UC2.

As a result, the market occlusion area (nA is expanded by an additional areas nA2 resulting in

the locking out of increasing numbers of lower income constituents from an ability to secure the product concerned. The operational limit for feasible goods supply at accessible prices moves from OL to OL2.

The policy target

The development work which gave rise to the Real Incomes Approach started in 1975 to investigate how to eliminate stagflation. As a result, the policy target of real incomes was identified as the appropriate macroeconomic target. Real incomes, or the purchasing power available of national currency monetary assets in terms of goods, services and supply side inputs and capital equipment, was considered to be the only policy target which combines the interests of corporate owners, shareholders, wage earners and asset holders.

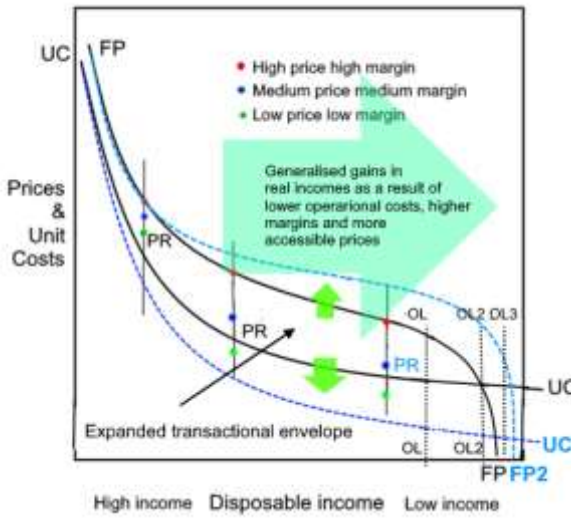
Real incomes integrate and reflect what are often separate objectives which under conventional policies often appear as changing priorities. This is caused by the policy instruments having secondary impacts which cause the current priority to be substitutes by another such as raising interest rates to "control" inflation, depressing both investment and demand resulting in rising unemployment or a change in the exchange rate or the balance of payments.

Real incomes therefore provides a stable target for short, medium and long term policies which is not disoriented by temporary second category targets or by electoral cycles and changes in administrations.

Policy objectives

Even when there are no distortionary impacts of QE it remains the case that some constituents suffer from market occlusion because their disposable wages are insufficient to purchase what they require and in an increasing percentage of cases, this includes basic essentials. The Therefore to raise real incomes on a sustained basis policy needs to encourage a rising real disposable income and a downward pressure on unit costs as illustrated in Figure 6.

Figure 6: The policy objective effect of price and productivity performance



The operational limits for sales need to pushed as far to the right as possible e.g. in Figure 6, to OL3 so as to minimize the percentage of constituents facing market occlusion. Policy should result in a transition in the locations of the feasible price line and the unit costs line from FP-FP to FP-FP2 and from UC to UC2.

The macroeconomic indicators and instruments

To ensure that policy is feasible, the indicators used to measure policy success need to have their values determined in a direct manner by the policy instruments used to implement a policy. Therefore, the policy target whose state is measured by indicators, needs to be easy to understand while being a comprehensive representation of the desirable state of the economy. The target and the indicators should remain a permanent fixture of policy not only in the short term but also in the long term, to secure some level of stability and financial security.

Under monetarism the targets have always kept changing from targeting inflation rates to attempting to influence unemployment or the balance of payments, to encourage investment, or deal with increasingly dire social problems such as poverty. These adjustments are made by applying a very threadbare set of policy tools: interest rate setting, money injection based on debt, government lending, taxation and expenditure. These instruments are fairly ineffective and as a result policy lacks traction. Traction is the state of progressing towards a desirable state to the desired degree within a desired time frame. If targets keep changing no medium to long term evolution in real growth is really possible. As a result, policies have the habit of generating winners, losers and those who somehow remain in a neutral policy impact state.

The policy instruments

The target of real incomes is also the target which embodies real growth. Real growth has been defined as rises in physical productivity and the beneficial adjustment of prices to raise real incomes. Policy instruments need to support managers and work forces to be able to bring about such transitions based on simple and transparent mechanisms which companies can use to their own advantage. Therefore, the policy instruments need to have relevance to corporate and work force operations rather than be generalised top down impositions on the whole macroeconomy. In this way companies can adjust their response according to the specific conditions of each one and thereby avoid the arbitrary impacts of centralised ”*one size fits all*” which introduce unfair differentials in the ability of firms to respond to policies.

Rather than maintain the zero-sum approach to policy, the policy instruments, combined with the policy target of real incomes, needs to achieve a state of affairs that approximates a positive systemic consistency[17] with shareholders, wage-earners and consumers benefiting.

Instrument specifics – price inflation

On the question of price inflation, it is only companies who set price and price changes through their pricing decisions rather than centralized impositions or money volumes. With rising input costs, this becomes a challenge. However, our understanding of the operation of the process of the learning curve, which is applicable across all industries and manufacturing enterprises, we know that unit costs of operation can be estimated and projected according to expected levels of production over time. Therefore, the degree to which current costs will decline is known, within reason, as is the ability to lower

[17] Positive systemic consistency

unit prices in relation to the future unit costs levels. The normal unit cost changes and unit price adjustment procedures are a close to real-time action with price adjustments following unit cost level rises. On this basis it is assumed that today's inflation can only be adjusted at some point in the future.

The objective of Real Incomes Policy, on the inflation front, is to encourage companies to reverse the sequence of the pricing decisions, by reducing current unit prices to the level that will be feasible at a predefined time in the future. In terms of corporate cash flow this can be compensated by a variable levy which compensates for unit output price reductions by its amount being proportional to the degree to which prices are reduced.

The effect of price reductions in a generally inflationary environment would normally result in the firms concerned penetrating their markets more effectively as a result of the price reductions. As a result,[18] the consumers of these products would benefit from a rise in purchasing power with respect to the product concerned. As can be appreciated, the broader this policy effect the more generalised across more firms in a wider range of manufacturing sectors, would be the counter-inflationary impact and the more generalised the gain in consumer real incomes.

Instrument specifics – measuring productivity

Real growth, the policy objective , is made up of two types of productivity:

- Price productivity
- Physical productivity

Price productivity

Price productivity can be measured by the degree unit output prices change with respect to changes in aggregate unit costs. This can be measured by the Price Performance Ratio (PPR) which is a measure of the percentage change in unit output prices associated with the percentage change in aggregate unit costs[19].

Calculating the PPR for any period is a relatively simple calculation.

$$PPR = \frac{\delta Po}{\delta Pi} \quad \ldots. \quad (vi)$$

Where:

δPo is the % change in output prices associated with δPi the % change in aggregate unit costs

The PPR formula for inflationary conditions is slightly different from the formula for deflationary conditions (see Annex 2)

[18] The price elasticity of consumption tend to be higher form smaller firms and under inflationary conditions price elasticities of consumption rise with the rate of inflation, therefore the relative benefits in terms o market penetration/share rise.

[19] Whereas unit prices refer to a single output, aggregate unit costs refers to the sum of all input costs (the product of input quantities and their respective unit prices) divided by the volume of output.

The PPR has some basic values which indicate whether a company contributes to an increase, maintains the same level or reduces inflation.

These relationships are shown in the table on the right.

As can be seen a PPR greater than unity (>1.00) increases the rate of inflation above the input rate. A PPR of unity (1.00) maintains inflation at the rate of input inflation and a PPR of less than unity (<1.00) reduces inflation to below the input inflation rate. Therefore, one objective of policy is to encourage companies to operate at PPRs of less than unity.

Table 1.
Price performance ratio (PPR) and inflation

PPR value	Effect on inflation
> 1.00	Increases inflation above input rate
1.00	Maintains inflation at input rate
< 1.00	Reduces inflation to below input rate

Physical productivity

The second part of productivity is physical productivity which is measured by the physical output quantity of the required product specification (saleable) that is produced from a measured quantity of inputs using machinery, tools, energy and human resources who apply specific techniques to carry out each process task. Conforming with the learning curve relationships, it is known that a specific volume of output will need to be completed before it is possible to attain a new lower level of unit costs. In addition to this, innovations, some of them quite low cost, such as changes in layout of processes or introducing a simple technique to reduce breakages or losses and waste of some kind can incrementally improve the input-output ratios, productivity and lower unit costs still further.

By calculating the viable unit price reductions associated with expected future reductions in unit costs, and then actually reducing unit prices by that amount at the beginning of a trading period, the price elasticity of consumption (demand) will normally result in an increased in sales and this results in increased throughput. This raises the number of production tasks completed which in turn drives unit costs down as a result of the learning curve effect. Therefore, the short term relative price reduction (price productivity) helps advance the improvements in physical productivity. These two components of productivity are complementary and therefore need to be carefully coordinated.

Instrument specifics - real incomes generation and distribution

The problem of income disparity and the problems of those whose wages are insufficient to purchase basic essentials has been reviewed and such conditions are self-evident in the British economy. The question arises, therefore, if Real Incomes Policy instruments can end up raising real incomes in terms of corporate income and consumer real incomes or purchasing power, how are the wages of labour forces in companies to be managed?

As in the case of price setting and physical productivity the gains here are entirely a matter for the capabilities and circumstances of each company. Indeed, the whole spirit of the Real Incomes Policy errs on the side of voluntary participation as a strategy to be applied to introduce such a new policy into the economy. This is preferable and likely to be more feasible than attempting to carry out a “big bang” switch in policy applied to the whole economy.

A voluntary approach has the advantage of enabling comparison with companies operating under the conventional policies that combine interest rate policies, debt, corporate and personal taxation so as to measure the comparative advantages of the current conventional system and RIP.

The voluntary nature of this approach has an important constitutional element to it with respect to the payment of wages.

In the calculation of the PPR, unit costs is the sum of the physical inputs, depreciation of equipment and plant and wages divided by the physical output for a production period. Depending on the nature of a sector, the technologies used and state of the market, each company will be faced with different abilities to associate marginal drops in unit prices with marginal rises in wages. To some degree the rise in demand resulting from price reductions can help compensate for any marginal rises in wages. On the other hand, if marginal reductions in prices are significant there should be no need to increase nominal wages because the general macroeconomic effect is to raise the value of real wages as a result of the generalised impact of price reduction.

On this question some means of establishing wage targets should be linked to the general state of inflation in the economy.

These details should be worked out within a forum of corporate ownership and labour representatives, again on a voluntary basis, but as a condition of being accepted as a participant in a RIP framework. Government should not stand aloof from such negotiations and agreements but should actively participate in order to understand the sector issues and be able to determine what are realistic expectations for the success of RIP in different industries and manufacturing sectors. The feedback of the main actors is extremely valuable in introducing beneficial alterations to policy instruments.

The reason for this is that one of the most easily applied policy instruments to encourage the movement of PPRs downwards and productivity upwards is a levy. It is proposed that this would be applied on a variable basis to provide incentive for price and physical productivity increases, it will need to set at some feasible basic level.

Carrot or stick incentives?

There are basically two types of incentives under conventional systems. One is a disincentive “stick” to tax activities that need to be eliminated or reduced. This negative approach encourages a range of elaborate schemes to reduce or avoid the tax.

Positive incentives or “carrots” reward companies for doing things deemed as needed. These tend to be more successful, are more widely supported and therefore can gain traction and deliver on policy objectives.

The Price Performance Levy

The proposed levy, referred to as the Price Performance Levy (PPL) is a carrot incentive and would be based on a weighting of the PPR achieved by each individual company, somewhat like a variable VAT imposed according to some company specific condition. Under RIP the condition is the level of the PPR achieved.

The levy formula is heavily weighted by the price performance ratio (PPR). Its purpose is to lower the levy to the degree the PPR is lowered as an incentive to apply business rules to maximize returns while reducing inflation.

The PPL does not have to be used as a source of government revenue or fiscal instrument. The levy can be applied to provide rebates in proportion to the degree that companies regulate prices through increased productivity so as to stabilize or reduce unit prices and thereby enhance real incomes by increasing the value of the currency. The PPL also has the function of reducing financial risks associated with technology investment.

The structure of the PPL would be a basic fixed levy on margins which would be raised in cases of PPRs greater than unity (>1.00) and reduced in cases of PPRs lower than unity (<1.00).

There are many different ways to construct PPL formulae depending on the types of relationships between the Basic Levy (BL) and the PPR to generate a PPL. Initially, it would appear to be rational to introduce a BL and then fine tune this, by altering the particular formula used.

As a result of experience in running such a scheme it might be appropriate to introduce different types of PPL according to the capital intensity or labour-intensity of industry, the technologies deployed and prospects in terms of sustainability impact on the environment and contribution to combatting climate change. The fine tuning can be used to target efforts linked to accelerate progress in reducing differences in income between specific regions.

Policy - distribution of aggregate real incomes through a Price Performance Levy

The objective of the Price Performance Levy (PPL) is to share out the benefits of lower PPRs and therefore the corporate contributions to real income levels between consumers, corporate ownership and employees. The measure of real incomes "performance" is the PPR (Price Performance Ratio) so the PPL is designed to respond to the PPR values achieved in an equitable fashion by allowing this performance measure to provide a fair net of levy position. This is essential for microeconomic

management to gain transparency and predictability of outcomes through business rules that permit the manipulation PPR values to achieve desired net of levy real incomes benefits.

Examples of Price Performance Levies

The Real Incomes Approach provides for a very large range of options for applying PPLs to aggregate incomes according to the PPR. Below two types are discussed. The basic calculation of PPLs is to apply a corrective coefficient based on the PPR value to a Basic Levy expressed as a percentage e.g. 20%.

PPL Power functions - intensifications

When policy makers wish to change the intensity of size of the incentive to lower PPRs a power function can be used to calculate the PPL coefficient. Thus, the table below shows the effect of different PPR power functions on the size of the Levy to be applied to operational margins with a basic levy of 20%:

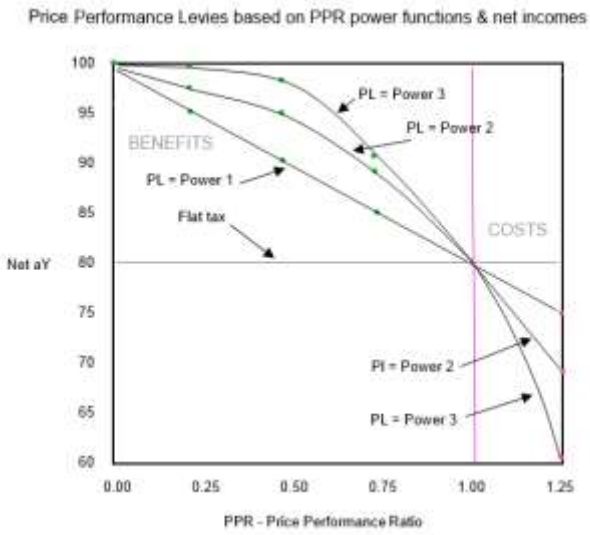
Table: Some PPL power functions applied to a basic levy of 20%.

Some PPL power functions applied to a basic levy of 20%
The percentages indicate the levy to be paid according to the respective PPR
For comparison a conventional tax or flat tax can be assumed to be 20%

	PPR power function					
	PPR^1		PPR^2		PPR^3	
PPR	PPL%	net aY%	PPL%	net aY%	PPL%	net aY%
0.00	0.00%	100.00%	0.00%	100.00	0.00%	100.00%
0.25	5.00%	95.00%	1.25%	98.75%	0.31%	99.69%
0.50	10.00%	90.00%	5.00%	95.00%	2.50%	97.50%
0.75	15.00%	85.00%	11.25%	88.75%	8.44%	91.56%
1.00	20.00%	80.00%	20.00%	80.00%	20.00%	80.00%
1.25	25.00%	75.00%	31.25%	68.75%	39.06%	60.94%

Key:	Benefit		Flat tax		Prejudice	

Figure: Some PPL power functions applied to a basic levy of 20%



PPL Slide functions - linear reductions or augmentations

Slide functions simply add or deduct from the basic levy value in proportion to the PPR achieved.

The examples below show a basic levy of 20% weighted up or down by 0.25 to generate the PPL value.

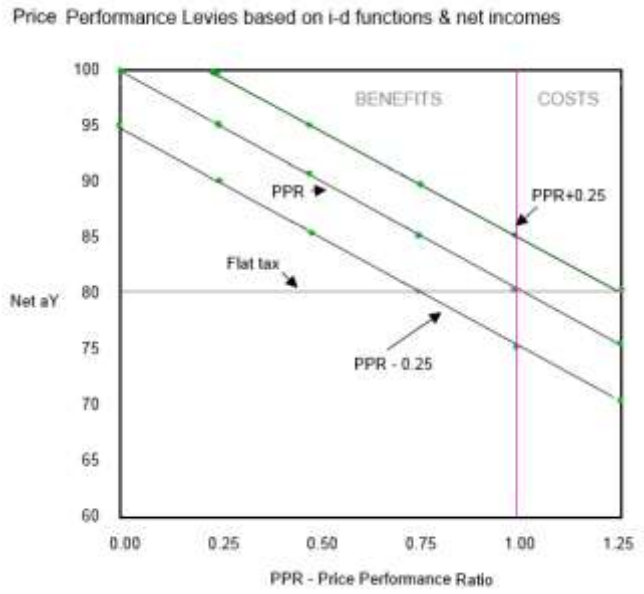
Table: of performance levies based on slide function

Some i-d functions applied to a basic levy of 20%
The percentages indicate the levy to be paid according to the respective PPR
For comparison a conventional tax or flat tax can be assumed to be 20%

PPR	PPR i-c function					
	PPR+0.25		PPR		PPR-0.25	
PPR	PPL%	net aY%	PPL%	net aY%	PPL%	net aY%
0.00	5.00%	95.00%	0.00%	100.00%	0.00%	100.00%
0.25	10.00%	90.00%	5.00%	95.00%	0.00%	100.00%
0.50	15.00%	85.00%	5.00%	95.00%	5.00%	95.00%
0.75	20.00%	80.00%	15.00%	85.00%	10.00%	90.00%
1.00	25.00%	75.00%	20.00%	80.00%	15.00%	85.00%
1.25	30.00%	70.00%	25.00%	75.00%	20.00%	80.00%

Key:	Benefit		Flat tax		Prejudice	

Figure: Graph of performance levies based on slide function



A Note on conventional and flat taxes[20]

In order to provide a comparison of the relative impacts of Price Performance Levy formulae and conventional and flat taxes one can assume in the above tables that the flat tax is where the PPR values are ignored and the tax remains at 20%. The Real Incomes Approach sets out to compensate companies for their contribution to real incomes whereas flat taxes and conventional taxes are neutral to performance and pay no attention to the contribution of the company to the increase in real incomes. Accordingly, irrespective of the performance of a company the tax rate remains the same. Thus, a company undergoing significant growth in nominal terms and generating a high return and profits might also be operating in a non-competitive fashion and in fact be a generator of inflation and contributing to the reduction in real incomes. This company will, under a flat tax regime pay the same tax rate as a company investing and achieving higher performance in terms of contribution to real incomes.

Under a Price Performance Policy, the benefits accruing to companies who contribute to real incomes levels can be observed in the tables above and the accompanying graphs. Under the flat tax the net of tax is the remaining 80% of income. In the case of RIP net of tax income can vary from 80%-100% of gross income, that is levies of between 0% and 20% for PPRs below unity (<1.00).

Where the PPR is greater than unity (>1.00) the flat tax remains the same with a net income of 80% of gross but under RIP the levy becomes a surcharge leaving, in the examples above, net incomes of 61% to 80%.

The price-setting objectives under RIP encourages companies to set prices in order to pay a PPL at a rate tending towards or attaining zero (0%).

Innovation policy

Beyond the confines of a RIP framework environment geared to the promotion of price and physical productivity to eliminate and avoid future stagflation, there remains the more general question of national innovation policies. On this question, the data on the performance of industries and manufacturing in relation to PPRs provides a map of where specific sectors are achieving a relatively easy attainment of price and physical productivity. For example, this would be the case in information and communications technologies (ICT), largely as a result of the effect of Moore's Law[21].

Being able to identify those sectors and their associated technologies facing difficulties in advancing price and physical productivity is a useful basis for identifying where in a process system improvements are required, as a guide to supportive measures.

[20] Under RIP where the PPL is deployed there is in fact no corporate taxation so the comparisons with conventional and flat taxes does not really compare equivalent situations but the advantage of RIP is evident. All revenues under RIP would normally come from personal taxation requiring, of course, reasonable rates of pay for employees made feasible by the more efficient allocation of resources and real income generation.

[21] Moore's Law: In 1965, Gordon Moore predicted that based on the evolution in the etching technologies involved, that the number of distinct logical elements able to be placed on an integrated circuit board would double each year. This turned out to be right. The significance of this is that ICT devices became more powerful, smaller size, consumed less energy and fell in unit price. Ref: Moore, G. E., "*Cramming more components onto integrated circuits*", Electronics, Volume 38, Number 8, April 19, 1965

Figure 7 shows a PPR map as the coordinates of the full range of possible unit price responses to different changes in aggregate unit costs.

Figure 7: PPR map associating unit input cost changes to unit output price changes

Price Performance Ratios (PPRs)
associated with different unit input value movements & movements in unit output prices

Unit input costs	Unit output price change %								
change %	-20	-15	-10	-5	0	5	10	15	20
20	This area represents the innovation target zone				0.00	0.25	0.50	0.75	1.00
15					0.00	0.33	0.66	1.00	
10					0.00	0.50	1.00		
5					0.00	1.00			
0	0.00	0.00	0.00	0.00	0.00				
-5	0.25	0.33	0.50	1.00					
-10	0.50	0.66	1.00						
-15	0.75	1.00							
-20	1.00								

Innovation target zone Desirable states Undesirable states

The policy objective and the interests on companies and workforces is to move performance upwards and to the left. An innovation zone coloured in green indicates a target zone and companies, depending upon the processes they apply will have varying capabilities to move in that direction. This knowledge can provide data for a more strategic approach to solutions linked to state-of-the-art systems and the range of feasible adaptations. Such an exercise can also identify gaps in basic knowledge or analysis on those specific systems components required to develop improved systems.

This can help provide guidance to prioritize the provision of funding on a range of applied developments, as well as basic research provided by the private sector or government. Such data can also provide quantitative data on the potential financial benefits of specific improvements in the operation of state-of-the-art processes.

This data gathering and analytical process cannot be accomplished without the full involvement of sector sub-domains grouped according to their basic process technologies, e.g. digital electronics, materials e.g. metallic or products, e.g. machine tools. Each sub-sector should collect performance data from within their memberships to create benchmarks for high, average and low performance so as to provide average or low performers with demonstrably feasible targets for improving their performance. A process extension or advisory service[22] can support data collection and analysis as well as the diagnostics of why certain processes are low or only average performers as a foundation for continual learning within sectors and spelling out pathways to higher performance.

[22] The basic model for this is the agricultural extension services that provide advice to farmers on how to improve productivity by applying the latest knowledge on the determinants of performance.

Emerging economic concepts

Real incomes as an economic concept is well established but under the ADM it is not the prime objective of policy. The development of RIP has resulted in the emergence of several new concepts and terms to be added to the economic nomenclature, including PPR, PPL and RMT[23]. Most ADM theory and policy assumes equilibrium positions in the economy which under inflationary conditions do not exist. In reality, there is no equilibrium under non-inflationary conditions as a result of innovation and change in processes and associated use of resources.

In terms of measuring real growth resulting from RIP there is a need for some additional concepts related to the fact that under inflationary conditions there is no equilibrium for two main reasons:

- All prices of goods and services are moving relative to each other
- The ability of people in different disposable income groups to purchase items they desire varies with their income levels and relative price movements of other goods and services they desire.

For example, under stable price conditions it is possible to calculate the amount by which sales of a specific product will rise with a reduction in price. The measure here is the price elasticity of demand which measures the amount of additional sales associated with a measured price reduction.

The lower the disposable income the larger the proportion of income spent on essentials such as food, energy and abode. As these prices rise the total expenditure ends up going on these essentials and then, for example, there is a self-imposed rationing achieved by purchasing lower quality lower prices food and attempting to consume less energy.

Launching a RIP system

Past attempts to launch new policy schemes on a large scale have sometimes met with disappointments and confusion such as the Poll Tax launch in in 1989 and it abolition in 1990. The Poll Tax was not well understood and in a survey in 1990 it turned out that 78% of the population opposed it.

In the case of RIP, this framework needs to be introduced and adjusted so that the relative benefits for business owners, workforces and consumers are seen to be positive and balanced. It is therefore suggested that RIP be launched on a pilot scale within a sector where companies have volunteered to participate having agreed this decision with their workforce.

There will then be a learning period during which the operational aspects of how any PPL rebates are transformed into bonuses and how these will be distributed between the company, shareholders and workforce. The easiest basis is to set standard returns and negotiated wages and then according to PPL performance pay rebates and bonuses.

It is self-evident that companies participating in the RIP initiative will benefit from the system but this will need to be demonstrated and as a result new firms would be allowed to join the system. It is likely that

[23] RMT-Real Money Theory

companies with specific types of manpower technology mixes will find operating under RIP more beneficial than others with respect to their learning curve coefficients or level of labour-intensity where coefficients tend to be higher in higher labour input industries.

Real time handling corporate accounts, PPR and PPL estimates and the determination of net PPL payments

One of the common practices when any new legislation is introduced relating to corporate finance is for advisers, management consultants, accountants and auditors to introduce ways and means to alter reported accounts to minimise payments.

Under RIP the only way this can operate in a transparent, unbiased fashion and fair fashion is for participating companies to be required to use a specific software to handle all transactions. This program would not only record all transactions for procurement as well as sales but it would also calculate the PPR on a regular basis and the PPL so as to deduct the net PPL value from cash flow.

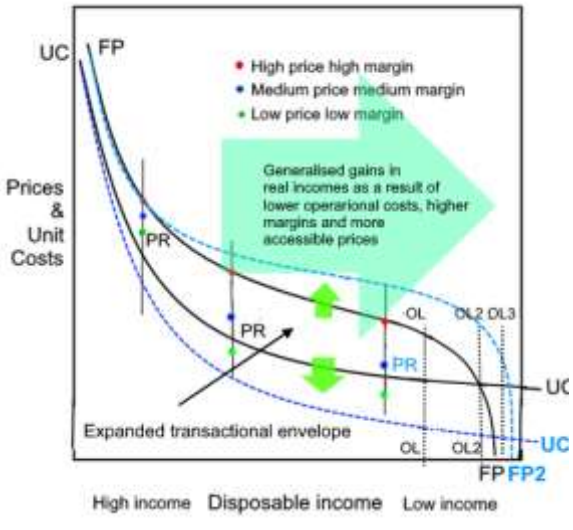
Dividends to shareholders and wages, depending on their levels, could be subject to a withholding personal income tax while bonuses arising from PPR performance could be paid either tax free or at a lower marginal rate.

A constitutional economics

The way monetarism has played out, has created an extreme form of income disparity variously expressed as the 5% or the 1% and the rest. In constitutional terms and in line with James Buchanan's explanation of the role of constitutions as needing to be in the interests of the state, the community and the individual the current state of affairs leaves much to be desired.

A state whose policies impose an extreme form of income disparity only disrupts social harmony of communities by making policy an unfair basis for managing the economy. Since this depression of the real incomes of most people constrains freedom because the dimension of their real income does not permit the acquisition of desired goods and, in many cases, basic essentials, it is self-evident that policy has not been in the interests of individuals in a fair manner.

Figure 6: The policy objective effect of price and productivity performance



Therefore, a basis for approximating an improved constitutional economy that provides a less contentious operation of the economy would be one that combines an evolution in improving physical productivity with either

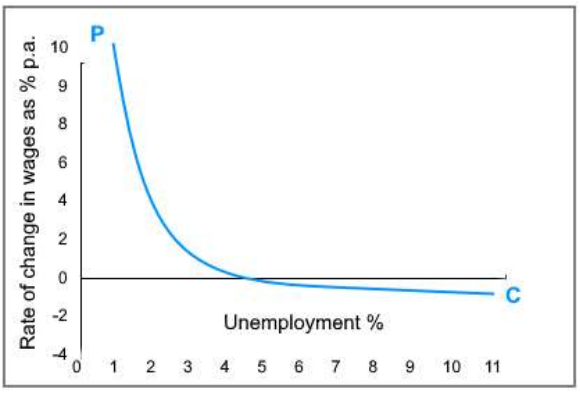
rising wages and/or lower unit prices. This combination can help reduce the negative effects of inflation and eventually eliminate it. Real growth leads to expanded activities and therefore wider employment opportunities and as a result the curse of stagflation, the specific combination of inflation with rising unemployment can be brought under control and also eliminated.

In terms of the transactional envelope analysis the desirable state can be represented by Figure 6.

Annex 1: The Phillips Curve

In 1958, Alban W. H. Phillips (1914-1975), published a paper in *Economica* entitled, "*The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957*" in which he set out the inverse relationship between money wage changes and unemployment in the British economy, based on the data set for that period. The general relationship which came to be known as the Phillips Curve is shown on the left as P-C.

Figure 10: The Phillips Curve

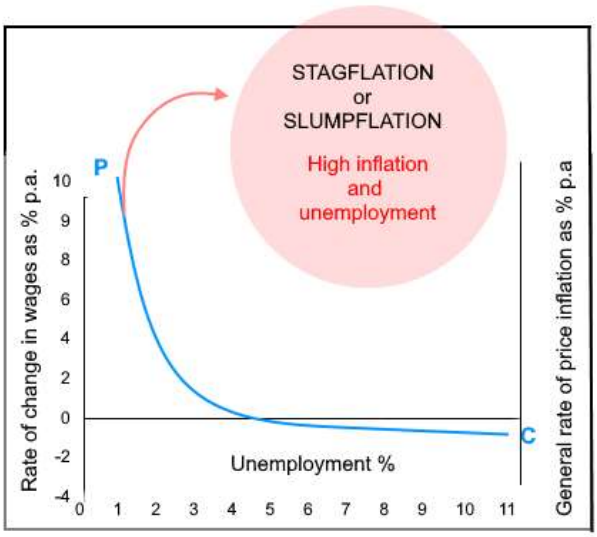


It should be noted that the demand for higher wages is related to nominal incomes compared with changes in prices or income purchasing power. As price rises cause a fall in purchasing power of nominal wages then pressure on wage demands rises. Therefore, there is a direct relationship between inflation, or the cost of living, and wage demands. Thus, wage inflation does not exist in isolation from general price inflation.

Based on the Phillips Curve, the impact of the petroleum price increases was unexpected because the coordinates of high inflation and rising unemployment moved off the P-C curve to a completely different location.

In the absence of adequate productivity gains, high unemployment resulting from high input cost-push inflation and absence of real increases in wages resulted in rising unemployment while maintaining a high level of inflation.

Figure 11: Stagflation (rising inflation and unemployment)



Notions of relationships between productivity and the Phillips Curve

It is arguable that by raising productivity at a sufficiently high rates and applying these gains to lowering output inflation, the rises in wage rates associated with low unemployment would be lower because the purchasing power of the currency would be higher and therefore the motivation for demanding higher rates of wage rises would be less.

In schematic form the original Phillips curve is used to set out different productivity and pricing curves in the diagram on the left.

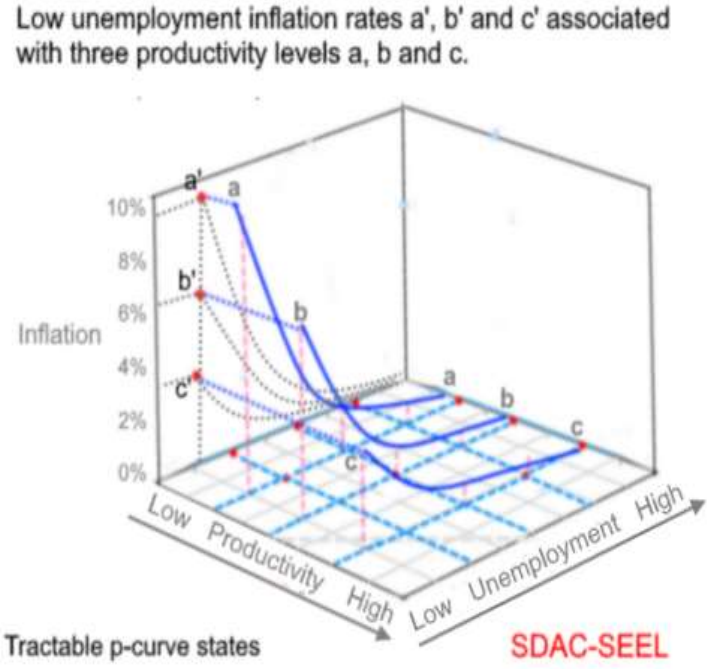
Low productivity with high PPRs would be likely to produce the high wage raises with low unemployment. This is the original P-C curve.

A higher level of productivity combined with a lower PPR is likely to result in a lower rate of wage rises with low unemployment as shown by the curve P'-C.

The objective of RIP is to encourage a combination of higher productivity with low PPRs and a curve approximating P''-C so as to contain the levels of inflation at low unemployment.

By bringing inflation down to lower levels there is an enhanced probability of these levels of inflation being absorbed by the next phase increases in productivity. This compound graph can be projected in a 3D representation as shown in Figure 13 showing the relationship between inflation, productivity and unemployment. Where productivity is able to lower inflation the aim of Real Incomes Policy is to trade off ***price productivity*** against ***physical productivity*** which is essential to secure unit ***costs control***. The degrees to which this trade off can be effective depends upon process technologies and the techniques labour forces have learned to deploy.

Figure 13: 3D representation of Phillips curves locations and productivity



Annex 2: PPR-Price performance ratio[24]

The Price Performance Ratio[25]

In analysing data on the changes in real incomes or purchasing power of a specific quantity of currency, the relative changes in unit output prices need to be monitored and measured. More significantly, the real incomes approach to economics is concerned with the degree to which a company contributes to the general state of real incomes of customers, employees and ownership of the business.

The origins of inflation

As a result of the development work within the Real Incomes Policy domain it has been established that the unit prices of supply side production of goods and services are determined price setting decisions of each economic unit. Under competitive conditions companies that set prices above the prices of competing companies, lose market share. Therefore, monetary injections have no direct impact on supply side unit prices. The main cause of market conditions that result in rising unit prices in supply side output is rising input prices which result in a cost-push inflation.

Cost-push inflation arises from unit price increases of inputs including land, real estate, plant and equipment, human resources, variable physical inputs including energy resources.

Policy-led monetary injections into the economy at moderate to low interest rates leads to speculative purchases of resources held onto as assets because of their likely rise in value (unit prices). These prices can be augmented as a result of large interventions in markets and price call manipulations which cause such asset prices to rise. These price rises, are a form of inflation where competitive price setting is attenuated because asset holding is practiced in the hope of higher sales prices. This effect is accentuated by the fact that the assets concerned are in short supply, either over the long term or momentarily, according to market conditions. Those resources held as assets by asset holders and traders and which are also critical inputs for supply side production, including land, real estate, commodities and energy (e.g. petroleum), are the main sources of cost-push inflation.

The main difference in asset and supply side production inflation is that asset inflation is roughly proportional to monetary injections while supply side output inflation is not directly related to monetary injections but rather to the leakage of asset inflation into the factor input markets of the supply side.

Measuring the contribution of supply side company to inflation

A convenient measure of the degree and direction of contribute on of a specific company to real incomes is the price performance ratio or PPR. This measures the response of unit output prices to changes in unit input costs. The PPR can be generalized to take as the "pointer" the direction of travel of unit input costs. If these are positive, that is, rising, or negative, that is falling the objective of the PPR is to monitor the response of output prices to the recorded changes in unit input costs. The purpose of the PPR coefficient is therefore to see by how much output unit prices rise in response to input unit costs rises with lower rates of unit output price rises reducing the upward pressure on prices. In the case of unit input cost declines there is an interest in seeing by how much unit output prices fall in response to indicate the degree to which benefits are passed on.

[24] McNeill, H. W., "Inflation - Its control through Price Performance Fiscal Policy² - A Real Incomes Approach, Rio de Janeiro, 1976

[25] The final forms of PPR benefitted from suggestions received from Professor Robin C. O. Matthews of Cambridge University in 1981,who suggested that the PPR needed to include cases for deflationary conditions in addition to the original conditions that emphasized inflationary conditions

As mentioned above the "lead" is taken by the direction of travel of input unit costs. Thus, there are two sets of PPR equations. One for rising unit input costs and one for falling unit input costs.

Inflation

Thus, under inflationary conditions the degree and direction in which a company influences price inflation is the Price Performance Ratio (PPR). The PPR can be measured as the ratio of the percentage increase in unit output prices to the percentage increase in total unit input values over a given period of time:

$$PPR = (100(dPo)/Po)/(100(dUC)/UC)$$

$$PPR = (dPo\ .UC)/(dUC.Po) \quad ..... \quad (1)$$

where:

dPo is the increase in unit output prices during the period and Po is the unit output price at the beginning of the period;
dUC is the increase in total input costs per unit during the period and UC is the unit input cost at the beginning of the period.

Deflation

Thus, under deflationary conditions the degree and direction in which a company influences prices can be measured as the ratio of the percentage fall in unit input costs to the percentage fall in unit output prices over a given period of time. Note that this is the inverse of the equation 1 above and it is therefore of the following form:

$$PPR = (100(dUC)/UC)/(100(dPo)/Po)$$

$$PPR = (dUC\ .Po)/(dPo.UC) \quad ..... \quad (2)$$

where:

dPo is the decrease in unit output prices during the period and Po is the unit output price at the beginning of the period;
dUC is the decrease in total input costs per unit during the period and UC is the unit input costs at the beginning of the period.

Desirable & Undesirable States

The relationship between PPR values and the degree to which companies pass on input prices inflation is as follows:

A PPR value of greater than unity (>1.00) results in the rate of input inflation increasing. A PPR value of unity (=1.00) results in the rate of input inflation being maintained at the input rate of increase in the supply side unit output prices. A PPR value of less than unit (<1.00) results in the rate of unit output price inflation being lower than the input rate of unit costs inflation.

The Table below summarises these relationships

PPR value	Change in rate of change
> 1.00	Increased rate of input cost changes
= 1.00	Maintained rate of input cost changes
< 1.00	Reduced rate of input cost of changes

The PPR provides an indication of the degree to which individual firms in a supply chain impact the overall efficiency of the supply chain. The aggregate impact can be arrived at by aggregating the unit input costs (transacted) and the unit output prices (transacted) across a transformation process including: input procurement transaction, external input logistics, internal input logistics, transformation process, internal output logistics (product or services), product sales transactions, external output logistics (product or services) and delivered product or service.

Annex 3 – Some related business price-setting and business rule-related formulae

A Real Incomes Policy – business decision making formulae

The response to moderating or lowering prices of output in an inflationary environment is an increased consumption of the output measured by using several formulae which can be used by business decision makers to plan their pricing and productivity strategies so as to maintain margins and competitive prices.

Price elasticity of consumption

The response to price reduction can be measured by the rise in physical quantities sold or the price elasticity of consumption (pEc)[26]. Formally the elasticity of consumption is the percentage rise in consumption in a period associated with a percentage reduction in price in that same period.

pEc = percentage change in consumption/percentage change in unit price

$$pEc = \frac{[(Q_1 - Q_0) / (Q_1 + Q_0)]}{[(P_1 - P_0)/(P_1 + P_0)]} \quad \ldots. \quad (vii)$$

Where:

Q_0 is the consumption at the beginning of the period;

Q_1 is the consumption at the end of the period;

P_0 is the previous price;

P_1 is the new price .

In the decision analysis to decide on a relative price reduction in comparison with an inflationary market two factors are of importance:

- The pEc is higher for small companies;
- The pEc is accentuated or raised under conditions of inflation.

In order to assess the net result for a company reducing relative prices there is a need to calculate the unit costs and margins associated with the relative price reduction in terms of aggregate income and aggregate margins.

Unit costs

Unit costs are calculated by dividing total costs by physical output.

Physical output O can be represented by the simple equation:

$$O = Cap.\ Cu.\ Ta.\ Y \quad \ldots. \quad (viii)$$

[26] This is the same coefficient as the price elasticity of demand pEd.

Where:

Cap is the maximum equipment capacity (attainable in a full operational day);

Cu is the capacity utilization (decimal percentage, linked to operational settings such as aped of operation);

Ta is the time assigned to operations each day (decimal percentage of maxCap time);

Y is the yield of saleable products (decimal percentage).

Unit costs are estimated by dividing the total operational costs by the output to obtain the cost per unit.

$$\text{Unit costs} = \frac{([I_1.P_{1]}+[I_2.P_{2]}+ \ldots + [I_n.P_{n]})}{(Cap.Cu.Ta.Y)} \quad \ldots\ldots \text{(ix)}$$

Where:

I_n = Input quantity;

P_n is input unit price

The effect of the learning curve is to augment yield (Y) or the percentage of output that is saleable by meeting specific standards of quality as a result of less mistakes, breakages, losses and waste combined with an upward adjustment in Cu and Ta over time as a result of increased sales.

Margins

Margins are measured by deducting the unit costs from the unit price thus:

$$M = P - \frac{([I_1.P_{1]}+[I_2.P_{2]}+ \ldots + [I_n.P_{n]})}{(Cap.Cu.Ta.Y)} \quad \ldots\ldots \text{(x)}$$

Where:

M is the margin.

A reduction in unit prices will result in an initial reduction in the Margin because unit costs would remain the same. Rises in margins can only occur as a result to re-establishing the previous price or by lowering unit costs.