SEEL-Systems Engineering Economics Lab
George Boole Foundation

Real Incomes Objective Price Performance Policy (RIO3P)

A Practical Alternative to Conventional Economic Policy

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Reducing or Eliminating Inflation is Fundamental to the Recovery of the British Economy

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The Mechanisms

In his 1966 Inaugural Lecture[1] at Cambridge University, Nicholas Kaldor presented a set of empirical observations — often referred to as "laws" — to explain persistent differences in growth performance among developed economies.

His central insight, confirmed by the then current growth in the Asian Tiger economies (Japan, Thailand, South Korea and Singapore) was that industry and manufacturing act as the primary engine of overall economic growth, through productivity spill-overs, increasing returns to scale, learning effects, and structural labour transfers from lower- to higher-productivity activities and higher income employment.

Kaldor did not propose a specific policy to activate or sustain these dynamics.

His work was diagnostic and descriptive, identifying structural and dynamic relationships, the mechanisms involved, rather than prescribing interventions. The laws, as reviewed and slightly extended in the light of subsequent evidence (without altering their original meaning), are:

- Faster growth of manufacturing leads to faster GDP growth, provided manufacturing is a significant share of output.
- Productivity gains spill over to services and households via better equipment and tools.
- Rapid manufacturing expansion generates increasing returns, learning-curve effects (tacit knowledge from repetition), and feedback loops that lower unit costs — often passed on as lower prices via demand elasticity, reinforcing volume growth.
- Labour transfer from low-productivity sectors (agriculture, traditional services) to industry boosts national productivity and incomes; equipment improvements raise non-manufacturing efficiency.

[1] Kaldor N., "Causes of the slow rate of economic growth of the UK', 1966, Kings College Archives, Cambridge.

- Once labour transfers slow, continued growth requires innovation; labour shortages in primary sectors can stimulate further advances if incentives exist.
- Long-run sustainable growth approximates export growth divided by import income-elasticity, historically driven by competitive production and trade.
- Rapid output/export growth creates virtuous circles between productivity and production — difficult for late-industrialisers without exceptional innovation or policy support.

These laws remain highly relevant.

They explain why neglect of tradable manufacturing leads to stagnation.

However, Kaldor analysed a pre-1973 world of relatively balanced industrial economies. The UK (and many mature economies) now face far more severe and unforeseen structural distortions.

Post-1973 Realities

While Kaldor's productivity-led growth dynamics remain valid, a range of additional challenges creating a much more complex and adverse set of conditions have emerged since 1973 which challenge any industrial policy.

Starting with the 1973 OPEC price shocks impacting petroleum and gas prices, these included prices of some 6,000 derivatives used by all sectors. Prices rose seven-fold between 1973 and 1983 creating an extended period of stagflation[2]. The subsequent offshoring of British industrial production to low wage economies caused a significant deindustrialization and loss of higher paying jobs and a growth in a lower wage and lower productivity services sector employing 80% of the working population and industry manufacturing employment falling from 40% to 7% by 2025.

The Productivity Problem

Associated with the stagflation crisis the recycling of dollars from OPEC countries, mainly Saudi Arabia, created the flow of Petrodollars which contributed to the growth in financialization and globalized investment leading to the offshoring of British industries to lower income countries. Investors began to evaluate corporations in terms of shareholder value as opposed to corporate prospects based on their technological and market potential.

A national statistics measure of productivity developed by the US Bureau of Labor Statistics, the ILO and OECD is total value added or GDP divided by the annual hours of labour input. Under increasing financialization this has lost any direct relationship to technical productivity because profit rates, shareholder dividends, bonuses and wages are nor related to the physical output per physical input calculation. This is no more than the "monetary yield".

As a result, the analysis of productivity in the United Kingdom has become confused to such an extent that rather than correct this erroneous measure, this vital issue of productivity has been relegated to very academic discussions on what is referred to as a "productivity puzzle" and which never result in a resolution of any relevance to policy design.

[2] McNeill, H. W., "The Bank of England: 1975-2025 – The Economics Consequences for the People", The George Boole Foundation, 2024.

In an economy where inflation is eroding real incomes and the purchasing power of the pound there needs to be a different measure of productivity that eliminates the smothering effect of financialization. The most transparent measure of productivity which measures the relative increases in productivity in relation to real incomes generation is "Price Performance" measured by the Price Performance Ratio (PPR)[3].

The Price Performance Ratio (PPR)

The PPR is a measure of the percentage change in unit output prices in response to the percentage rise in aggregate unit costs.

$$PPR = \Delta UP/\Delta AUC$$

Where ΔUP is the percentage change in unit output prices; ΔAUC is the percentage change in aggregate unit costs.

This strips away the overload of financial baggage carried under financialization by exposing the following breakpoints:

PPR value	Price Productivity	Inflation	Profits	Consumer purchasing power (B2G,B2B,B2C)	Real Productivity
PPR < 1.00	High	Reduced to below input rate	Fall	Rise	Rises
PPR = 1.00	Neutral	Maintained input rate	Stable	Fall at inflation rate	Neutral
PPR > 1.00	Low	Exceeds input rate	Rise	Fall at faster rate	Falls

Where the transactions involved can be:

- B2G – business to government;
- B2B – business to business;
- B2C – business to final consumers.

As can be seen a PR of less than unity (PPR < 1.00) reduces output price inflation to below that of the input price inflation rate thereby raising the value of the pound's purchasing power and consumer real incomes. In this case the profit rate falls but in terms of consumers this is the preferred state. A policy designed to raise the real incomes of consumers needs to address the issue of company profits.

The services productivity problem

As can be appreciated from Kaldor's references to productivity, the ability of industry and manufacturing companies accustomed to altering designs and technologies to reduce unit costs and prices is easier than the case of service companies who normally are not able to alter the nature of the products they sell or services they provide unless they can substitute lower cost products for higher cost products. Service companies therefore have limited options for reducing prices in the face of rising costs. In general, they have to resort to anticipatory pricing.

[3] The PPR was elaborated by Hector McNeill in 1975. McNeill H. W., "PPR-Price Performance Ratio", Real Incomes Org, 2008.

Anticipatory Pricing

Anticipatory pricing[4] involves, for lack of productivity and substitution options, the raising of output prices in response to rising input costs. This is to maintain profits, employment and survival as well as to build up cash flow to be able to afford the next period's purchases of inputs facing rising prices. This is the common reaction of service companies to rising input prices. The problem with anticipatory pricing is that being risk-averse companies tend to raise prices at a faster rate that the market rates of rises in input costs leading to a worsening inflationary situation. In the 1990s, anticipatory pricing led to hyperinflation in Brazil.

The IDIS Economy

The result has been a permanent import dependency in the form of an exogenous (imported) cost-push inflationary channel feeding an endogenous (domestic/national) economy based on anticipatory pricing.

The United Kingdom has ended up as an **I**mport **D**ependent **I**nflationary **S**ervices (**IDIS**) economy with the world's second most negative balance of payments and extreme debt reliance leading to several financial crises. Poverty and income disparity are increasing.

Inadequate policy responses

There have been initiatives supposedly designed to contribute to investment and increased productivity and growth but there has never been a British Industrial & Manufacturing Development Policy worthy of this name.

Very common and repetitive propositions by various governments have included the notion of the creation of a dedicated lending facility through "industrial development banks" as well as aid in the form of grants, subsidised loans, tax allowances, marginal tax rate reductions, such as with Mundell-Laffer supply side economics, super-deductions and R&D grants.

What has been attempted has not been successful.

The Mundell-Laffer supply side experiment applied in 1981 resulted in 600,000 home repossessions, increased unemployment and income disparity.

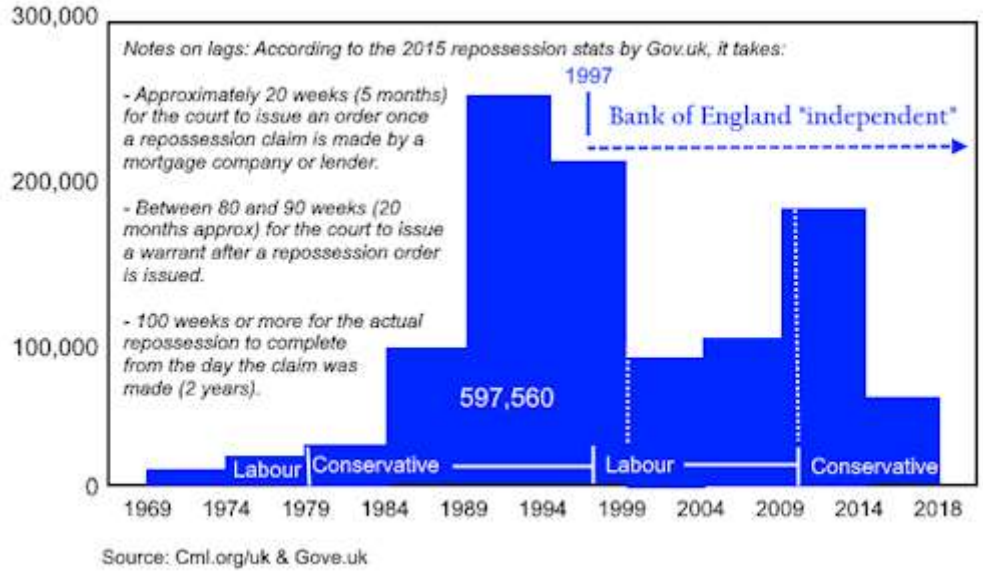
Predictably, with a significant deindustrialization and rise of a large services sector, the options for price reductions based on productivity reducing unit costs through technological change or substitution have become increasingly difficult to achieve resulting in a fall in productivity and national growth rates.

Ineffective Incentives for Growth

A recent (2024) National Audit Office (NAO) report[5] on initiatives designed to stimulate growth managed by the Treasury/HMRC, largely based on several £ billions in tax allowances have not been associated with any estimates of growth impacts. In the case of R&D grant activities there has been a considerable amount of fraud. The main issue has been advancing money or tax holidays without any obligations on the part of those receiving these benefits to deliver the intended results making this whole exercise speculative.

[4] McNeill, H. W., "Anticipatory Pricing", SEEL, 1985.
[5] NAO, "Tax measures to encourage economic growth" 31 Jan 2024, Treasury/HMRC

UK House Repossessions 1969-2018



McNeill, H. W., "*The Bank of England: 1975-2025 – The Economic Consequences for the People*", Page 45, George Boole Foundation, 2024.

Macroeconomic Counter-Inflation Instruments Create Austerity

When it comes to the dominant overall macroeconomic policy environments applied since 1973, these have included a combination of Keynesianism, Monetarism, Mundell-Laffer supply side economics and MMT (K3M). These all rely upon monetary means to stimulate demand, monetary manipulation, or fiscal deficits. They all make use of policy instruments which in attempting to lower inflation create austerity. This has shaped the economic environment to one of reduced prospects and the discouragement of investment .

K3M instruments all create austerity in their attempt to lower inflation

Paradigm	Instrument	Objective	Outcome
Monetarism	Interest rate	Lower inflation	Austerity
MMT	Taxation	Lower inflation	Austerity
Keynesianism	Borrowing	Lower unemployment	Austerity
Mundell-Laffer SSE	Taxation	Lower inflation	Austerity

For example, considering the UK has an IDIS economy which undermines real incomes, the raising of interest rates to reduce inflation only raises financial costs on business loans, consumer credit and mortgages which further reduces real incomes, depresses demand and creates austerity.

Similarly, raising taxes to reduce demand to reduce inflation has a similar effect of reducing real disposable incomes, depressing market demand and creating austerity.

It is notable that K3M policies contain no policy instruments designed to stimulate productivity.

A large number of the analyses explaining economic crises caused by economic instability identify excessive indebtedness as the cause. K3M policies have been unable to prevent financial crises linked to excessive credit/debt leverage.

The Knowledge & Calculation Problem

The setting of interest rates and use of taxation tend to be arbitrary because of the highly heterogeneous nature of the conditions and states of companies in different sectors and of constituents. Both Friedrich Hayek and Ludwig von Mises pointed to this as the "knowledge & calculation" problem facing centralised governments and policy-makers.

A Comprehensive Industrial Policy

In response to the 1973 crisis, the Real Incomes Objective Price Performance Policy (RIO3P), was proposed for the UK in 1976, a couple of years before China's embarkation on an export led growth policy. RIO3P is a general growth policy which addresses the requirements of the British economy dominated by SMEs.

RIO3P has been designed to address the principal constraints imposed on the economy since 1973 and, in particular, the following:

- Primarily inflation and the falling value of the pound and real incomes
- Rising poverty and income disparity
- The generally low rate of productivity increase and therefore deficient growth
- The small but high productivity potential industrial sector.
- The very large low productivity potential services sector
- The arbitrary nature of K3M policy impositions or knowledge & calculation problem
- Aversion to bank loans by majority of economic units (SMEs)
- The large negative balance of payments, especially for goods
- Repetitive Budgetary deficits and rising national debt

RIO3P operates at the constituent/transaction level making use of two policy instruments, the Price Performance Ratio[6] (PPR) and a Price Performance Levy[7] (PPL).

The Price Performance Levy (PPL)

The PPL replaces corporate tax.

It is made up of a basic levy "B" - the value being around that of the corporation tax that has been substituted - and a weighting function that causes the PPL to become a variable sliding levy according to the value of the PPR.

Policy Instrument Operations

Firms are automatically rewarded (via rebates) when unit prices rise slower than unit costs (PPR < 1.00), paying a levy below the basic levy B, incentivising productivity gains passed on as affordability. If prices rise at the same rate as costs (PPR=1.00) the basic levy B is paid. If prices rise more than the rise in costs a surcharge is paid in excess of B.

[6] McNeill H. W. "The Price Performance Ratio", Real Incomes Org, 2007.
[7] McNeill H. W. "The Price Performance Levy", Real Incomes Org, 2007

Example of a PPL Array

An example of the application of a "power formula"[8] for the Price Performance Levy (PPL) and the net margins resulting from the variations in PPL according to the PPR is shown below.

For example, the blue line shows that a company may have reduced the output inflation to 8% while facing an input costs inflation of 10% creating a PPR of 0.80.

Instead of paying the basic levy B of 20% the required payment would be reduced to 12.80% because of a rebate of 7.20% gained by the lower PPR. As a result, the net margin on a gross margin of 100 rises from 80.00 to 87.20 a margin increase of 9%..

Variation of Net Margins with PPR

Gross Margin	PPR	PPL	Rebate (-) Surcharge (+)	Net margin
100	1.20	28.80%	+8.80%	71.20
	1.00	20.00%	0.00%	80.00
	0.80	12.80%	-7.20%	87.20
	0.60	7.20%	-12.80%	92.80
	0.50	5.00%	-15.00%	95.00

The Revenue & Margin Multiplier

As a result of our IDIS economy most have become accustomed to rising prices and flat demand caused by stagnating real incomes.

Under RIO3P the generally declining benign inflationary situation has the effect of generating demand and higher consumption as a result of the impact of the income-price elasticity of demand (ipEd). The ipEd is the percentage rise in number of units sold (consumed) with the percentage fall in unit prices which can be multiplied by the new unit price to calculate the rise in revenue and profits.

In the case of the example in the previous section the average ipEd for that product might be 1.5 and sales might be 100 units at a price of £240 each or total of £24,000. The price reduction of 20% would result in a rise in consumption of sales of 30% at the new lower price of £192 but selling 130 units totalling £24,960 and total profit of £11,336. Without the price reduction and PPL intervention the sales would have remained at 100 and an income of £24,000 but at profit of £8,000; a fall in profits of about 29%.

Supply Chain Real Incomes Multiplier

It is only relatively recently that governments have recognised the strategic economic significance of supply chains as critical components to China's economic growth and success.

Under RIO3P, companies volunteering to participate in a pilot scheme should find their competitive position changing rapidly in their favour which should encourage more to volunteer.

[8] "power formula" is one of a family of PPL formulae which intensifies the weighting given to the Price Performance Ratio (PPR)

Under a RIO-3P regime, the impact of the PPR/PPL accounting in supply chains can result in incremental or stepwise reductions in inflation or prices at each subsequent transaction in the supply chain, if the PPR < 1.00, as one progresses down a supply chain. This should increase the motivation for government and sectors to attempt to bring as many supply chain nodes onshore.

This is illustrated below. "A" through "E" are different supply chains each with 3 participants with the same PPR values ranging from 0.25 to 1.20. For illustrative purposes, each supply chain has the same high input inflation rate of 15%. The output column shows the resulting inflation at the consumer level.

By way of example, the supply chain "D" imports a product facing a 15% inflation, if each of the three sequential operators in that supply chain has a PPR of 0.50 the final consumer faces a price inflation of 1.90% or an 87% rise in purchasing power for the item concerned.

The Impact of Price Performance Ratio (PPR) on Output Inflation in a 3 Node Supply Chain

Supply Chain	Input Inflation	PPR	PPR	PPR	Output inflation
A	15%	1.20	1.20	1.20	25.90%
B	15%	1.00	1.00	1.00	15.00%
C	15%	0.95	0.95	0.95	13.50%
D	15%	0.50	0.50	0.50	1.90%
E	15%	0.25	0.25	0.25	0.23%

Raising Productivity of non-Industrial/Manufacturing Operations

RIO3P is unusual in addressing the productivity requirements of non-industrial and manufacturing companies, in the form of service companies. Such companies have limited capabilities to manipulate technologies to gain technical or physical productivity gains, so the yardstick of "price productivity" is applied. Therefore, with service companies dominating the UK economy and being able to reduce their prices and receive the PPL rebates, they can contribute directly to real growth in terms of purchasing power generation.
This results in a far greater proportion of the SME population of companies, some 5.5 million, being able to contribute to the raising of baseline productivity and escape from the inflationary impact of anticipatory pricing thereby supporting national real incomes growth.

Business Implications: A New, Dynamic Price-Setting Discipline

Under RIO3P, companies retain full freedom to set their own prices — but now within a transformed strategic context. The decision analysis for price-reduction-setting strategies under RIO3P involves the application of specific but different Business Rules[9] to ensure profitability. Pricing needs to explicitly balance desired margins, targeted growth rates, and anticipated market share expansion against the elasticity of demand surge that lower or stable prices can unleash.

[9] Business Rules are statements that define or constrain some aspects of a business actions by guiding decision analysis and operational decisions including price setting and marketing strategies. Such rules can specify actions to be taken under certain conditions e.g. under a specific regime such as RIO3P, to help ensure consistency and an ability to combine profitability with compliance with the overall policy objectives.

After 50 years of low-growth stagnation, many UK firms — especially SMEs — are unaccustomed to rapid demand expansion. Those who prepare carefully to coordinate their investment in capacity and processes, ahead of the curve, could thrive spectacularly.

On the national growth rate front RIO3P Business Rules include tactics to increase national growth rates by reducing conventional price reduction time frames from up to 24 months planning horizons to real-time implemented decisions today. This compresses the periods required to secure the same rise in price productivity results in a more rapid rise in the national growth rate well above any recent experience — potentially approaching close to sustained double-digit gains, further enhanced through compounding supply-chain effects.

RIO3P creates a compounding real incomes growth without relying on K3M austerity-prone demand stimulus, monetary manipulation, or fiscal deficits.

The General Benefits of RIO3P

The following table lists key additional problems that have arisen since Kaldor's time (many at scales he could not have contemplated) and how RIO3P resolves these issues in each case.

State addressed	RIO3P effect
Extreme deindustrialization (manufacturing/agriculture workforce from ~40% in 1973 to ~7% today; unprecedented in developed economies).	Targets transactional trade sectors first; PPR rebates make import substitution and export growth the cheapest path to higher cash flow, reversing hollowing-out through productivity-led competitiveness.
Chronic cost-push inflation dependency (average ~5% inflation p.a. since 1973; a 40% depreciation each decade with nominal "growth" reliant on imported price rises).	Inflationary pricing becomes profit-reducing because PPR > 1 triggers increased levy; price productivity gains rewarded via rebates & a rapid, sustained disinflation without austerity or recession.
Stagnant or falling real incomes for the majority (despite nominal wage rises, purchasing power eroded by inflation in basic essentials prices).	Real incomes rise automatically as productivity lowers unit costs/prices; no nominal wage changes needed because such broad-based gains benefit all constituents.
Debt-financed public services and perpetual "affordability" excuse (borrowing to plug fiscal gaps caused by weak real tax base)	Real purchasing power of tax base and government revenue rises; progressive shift from deficits/restrictions to ability to increase fully funded Budgetary provisions without borrowing.
Since 1973, annual deficits have arisen because purchasing power of tax base and government revenue have been too low to cover Budgetary provisions resulting in borrowing adding to the national debt.	The general rise purchasing power in cash flows, incomes, profits, tax base and government revenue reduces and eliminates deficits and reverse the growth in national debt leading to its reduction in a growing rather than austerity economy.
SME debt aversion and credit rationing (high rates, onerous collateral, poor bank lending post-2008).	Well-managed SMEs build debt-free investment equity via repeated rebates; build-up of organic cash reserves fund scaling without banks or personal guarantees as debt-free growth.
Weak virtuous circles in mature economies (Kaldor's feedback loops broken by low manufacturing share and import dependence).	PPR creates universal incentive gradient; productivity → affordability → volume demand → further productivity, restoring compounding real income benefits at scale.
Vulnerability to external shocks (energy, petroleum derivatives e.g. fertilizer, commodities, supply chains).	Domestic productivity focus reduces import reliance; moving-average smoothing handles volatility; import substitution accelerates development of rising resilience
Rising poverty and disparity (basic essentials inflation impacts lowest incomes hardest resort to food banks & charity).	Targeted early application to food, water, energy, housing, health → fastest poverty reduction via falling real prices + general rise in low income constituent purchasing power/real incomes.
Currency depreciation and balance-of-payments weakness (chronic deficits, 40% per-decade loss).	Disinflation + productivity revival strengthens currency; improved trade balance via substitution/exports reduces deficits.
Service companies in services with few options to increase productivity to lower unit costs and prices.	Depending upon the PPL settings the non-physical productivity-related reduction in prices can receive rebates to make up margins.

Very heavy industrial plants with fewer options to lower unit costs through physical productivity improvements.	Depending upon the PPL settings the non-physical productivity reduction in prices can receive rebates to make up margins – discretionary policy decisions.
Price-setting by companies constrained in arbitrary ways by centralised dimensioning of policy instruments creating winners, losers and some in a neutral policy impact state.	Company management have complete freedom to set prices at a PPR to maximise the combination of profits and revenue according to the projections of the impact of lower unit prices on the income-price elasticity of demand.
The arbitrary nature of centrally imposed policy instruments on a heterogeneous population of companies and constituents creates a “knowledge & calculation problem for the government policy.	Companies and constituents can control the degree to which RIO3P impacts their affairs by possessing control over PPR and PPL paid, eliminating the “knowledge & calculation problem” through the devolution of the analysis and decisions to corporate & constituent levels..

Next Steps

RIO3P is ready.

The analytical groundwork spans five decades.

The question is no longer whether a workable alternative exists — it is whether decision-makers are willing to adopt one that prioritises real incomes over a continuation of nominal illusions.

For technical specifications, simulation models, or pilot design, contact SEEL via hector.mcneill@boolean.org.uk.

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