of reality. Most of us would agree that economics is a conceptual system. Yet, does economics experiment? Experiment tests a theory. A fully tested, successful theory is coherent, realistic and empirically relevant. To get this, we know the physical sciences make use of theoretical and empirical models. Does economics use theoretical models? They do, in the sense that any statement proposing an economic policy must be based on a theoretical model. This model may be only implicitly still, without it, where would the idea of a coherent policy come from? Moreover, the predictions of the desired outcomes of the policy can be taken as analogous to the hypotheses borne by a theoretical model. Of course, it is easier to see economics makes use of empirical models: A policy calls for a change in the government's intervention in the economy; this will cause economic changes which should be evaluated; evaluating economic changes and presenting the evaluation in a comprehensible way is just a form of empirical model building. Any inconsistencies between the policy (or theoretical) model and evaluating (or empirical) model indicate that extension or refinement of the economic ideas behind policy may be warranted if government action is to be effective. In rationalism, such development of ideas is called the growth of knowledge.

In presenting the rationalist thesis of the growth of economic knowledge by telling a story of the conceptual basis and evaluation of an actual economic policy, the author is aware of some lack of rationality in historical episodes. The narrative ignores this inaccuracy. After all, the aim is to show how economic theory scientifically can be applied to direct intervention in the economy.

This aim is facilitated by the choice of policy to be studied, the Regional Employment Premium. The Premium was a money wage subsidy devised by the Keynesian economist and policy adviser, Nicholas Kaldor. Kaldor's writings provide hints of the theoretical basis, turnings and problems which gave birth to the Premium idea. Also, much information on the models behind the Premium is confidential under the Official Secrets Act for 34 more years; the discussion in the article of the reasoning behind the models is an interpretative synopsis and extended analytic commentary on statements and figures which had appeared in confidential and other documents about the Premium. The aspect of confidentiality and, also, some incompleteness of information, encourage an idealistic reconstruction of the account of the Premium.

In modelling a small part of the growth of Keynesian economics, the order of the essay follows the order elements in the hierarchy of the scientific framework, beginning with presuppositions.

3. FOUNDING PRESUPPOSITIONS

It is commonplace in the history of sciences to remark upon the simultaneous occupation of a single scientific discipline by two or more incompatible competing conceptual frameworks and theoretical plurality is no more common than in economics. This paper is concerned with Keynesian economics. More specifically, it deals with the economies coming out of the General Theory of Employment, Interest and Money, a tractate which is acknowledged to have succeeded in differentiating a scope and axioms of a new economics: it was elaborated by adherents who shared Keynes' driving interest in providing an 'orderly means of thinking out practical problems', an elaborate, solid, engine of analysis of the contemporary economy. More narrowly, the study will be of the short period, comparative equilibrium analysis introduced by The General Theory; this analysis postulated the possible existence in a decentralized private economy of equilibria with substantial involuntary unemployment but presupposed as the normative state a full employment equilibrium to have full employment therefore may necessitate

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the intervention of government into the private economy.

2. AXIOMS AND THEOREMS

As is well-known, the leading concept of the General Theory was aggregate effective demand. In the closed economy assumed through most of the text, the main determinant of effective demand was the demand to invest. The entrepreneurial investment decision was positively a function of the marginal efficiency of investment compared to the rate of interest. Hence, the main cause of insufficient aggregate effective demand and the accompanying unemployment was a marginal efficiency of investment too low to exceed the rate of interest. However, when the assumption of a closed economy was removed, the analytics route leading to the occurrence of persistent unemployment became more complicated. What follows is a historical narrative of a developing research program within the corpus of a Keynesian paradigm of the workings of an open economy.

The postulates pertaining to international trade in Keynesian economics particularly parrot Marshallian premises. Of course, The General Theory put forward a theory of aggregate incomes of the components of aggregate effective demand in the closed economy: income, consumption and investment; and the latter a function of income (since expectations of sales proceeds partly were based on current sales and income) as well as the rate of interest and the supply price of capital. Nevertheless, the category of net exports briefly mentioned in The General Theory was stated to depend only on relative prices of products of trading countries. Moreover, Keynes' collaborator and disciple, Joan Robinson, in his seminal chapter on foreign exchanges in Essays in the Theory of Employment (1937), and Keynes' editor and biographer, Roy Harrod, in his textbook, International Economics (1960) maintained the functional relation between the demand for net exports and relative prices this is
evident in both sources by their use of Marshallian price statistics to calculate the change in the trade balance consequent upon a deviation of the currency which had the effect of lowering the price paid by foreigners for a country's exports and raising the price of imports paid by national buyers. Given a change in price dependent expenditure on net exports, the equilibrium level of aggregate output and employment then would be affected according to the principle of the multiplier.

The price-trade argument has peculiar import within the Keynesian framework because it extended the basis for possible inconsistency between the Keynesian normative and systemic outcomes. While a full employment level of investment and net exports was the desired situation, it was unlikely that the pricing mechanism of the private economy would secure a high level of net exports in the context of Keynes' theory of price making. Keynes thought that prices would rise as full employment was approached at least two reasons, bottlenecks in supply of specific products and increases in money wages. Thus, as full employment was near in one country, the effect of price inflation would be to raise or worsen a negative trade imbalance. According to the multiplier principle, this would tend to cause a cumulative contraction of income and impede full employment. So important was the lack of stability of the price level as full employment was approached that one of the three calculi explicitly written in The General Theory traced the mechanism by which prices rose:

\[ p = 1 + \varepsilon_0 (1 - \varepsilon_m) \]

which meant that the price level rose with aggregate effective demand \( \varepsilon_0 < 0 \) if output was inertial given an increase in demand \( \varepsilon_0 < 0 \) and/or wages were highly responsive to increases in aggregate demand for labor \( \varepsilon_m < 0 \). To this calculus, Keynes added the famous asymmetry proposition that the price level was constant when effective demand either decreased below the full employment level of output or increased within the range of substantial unemployment. The implications of this proposition in respect to the open economy was that the imbalance of trade would be least negative and most stable when the level of exports and home consumed output was substantially less than full employment output.

This paper takes up the theme of the conflict between the normative outcomes of the comparative static open economy and normative situation of full employment and balance of trade. Particularly, the conflict became a major force in the production of knowledge within Keynesian economics. On this occasion, the attempt to counter or solve the processes of the private open economy resulting in an unemployment equilibrium is seen as providing the context experimentation in the real economy.

3. BUILDING THE THEORETICAL MODEL

1) Preliminary Reasoning

The particular subject of the experiment was Britain in the mid 1960s. The nation had been manifesting chronically and over recent years rapid wage and price inflation and a negative imbalance of trade during an international regime of fixed exchange rates with tight foreign credit as well as inadequate domestic currency reserves. The policy had been conceived as composed of two domains, a central region in a situation of over-full employment equilibrium (LU) and a peripheral region in a situation of equilibrium with heavy unemployment (HL). In the past, the rate of inflation had been slowed and the negative trade imbalances eliminated by means of deflationary measures taking place at the national level, but Keynesian observers considered that the consequent fall in effective demand in the high unemployment region led to unacceptably high levels of unemployment therein; meanwhile, inflation to alleviate this problem of regional unemployment in time was succeeded by a recurrence of a trade deficit. The perceived failure of national demand management to produce evenly distributed full employment with a trade balance, but rather either high employment with a trade deficit or an uneven distribution of employment with a trade balance, suggested to analysts that they might be seeing effects of Keynes' asymmetry postulates. The wage and price adjustments given changes in effective demand would differ in situations of full employment and unemployment; when employment was nearly fully nationally, the increases in effective demand due to the refractory measures were raising the money wage and price level and damping the price competitiveness of tradeable outputs when the level of employment was lowered, leaving a large pool of unemployment in the HL region to be drawn upon by the LU region, the money wage and price level became stable, heightening price competitiveness and permitting trade to balance, although at a low level.

The next step was to use these postulates to construct a theoretical model of the two region (LU and LU) state. In particular, to model the distinct relation between the change of the money wage and unemployment in each region. It was necessary to specify the institutional set-up which arranged money wage changes; as Keynes had stated, while the institutionalization of money wage determination did not lend themselves to theoretical generalization, their effects on the economy were of great importance. It was specified as a historically given condition that money wages were established by means of trade agreements.
union bargaining and in Britain this happened to be largely centralised, as money wage changes in both regions were similar in magnitude and frequency and, moreover, occurred in the economic context of the central region. Given this exogenous condition and theoretical postulates, the model of the money wage adjustment mechanism in the low unemployment region was written as

\[ W_{LU} = f(L_{LU}) \]

this meant that the rate of money wage changes in the LU region \( W_{LU} \) depended on the percentage of unemployment in that region \( L_{LU} \). Since unemployment was related inversely to effective demand, the model for the LU region was a ‘demand pull’ model. The model of money wage changes of the HU region was written as

\[ W_{HU} = f(W_{LU}) \]

meaning that money wage inflation in the HU region \( W_{HU} \) depended on the pace of money wage changes occurring in the central region \( W_{LU} \). This was a ‘cost push’ model. The demand pull and cost push models were given an empirical interpretation by using regression analysis of time series data in respect to the two regions. The statistical analyses indicated that a rise of one percent in unemployment in the LU region had been associated with a marked fall in annual money wage inflation in the LU region, most of which appeared to have been passed on to the HU region. In addition, an estimation of the relation

\[ W_{HU} = f(L_{HU}) \]

showed that unemployment \( L_{HU} \) and money wage inflation of the HU region \( W_{HU} \) were not associated significantly. Within the historical limits set by the data, the empirical approximations arrived at through the regression analyses therefore confirmed the hypotheses embodied in the model. Then, policy advisers reasonably concluded that if in future unemployment were to be raised slightly in the LU region but significantly reduced in the HU region, the paradoxical result would be a net fall in unemployment with a decrease in the rate of money wage inflation. From this conclusion, it followed that intervention into the private economy to alter the distribution of effective demand and then employment and unemployment between the regions might attain the prescriptive end of full employment with a trade balance.

How would the government alter the regional distribution of effective demand? In Keynesian economics, real aggregate demand in the presence of unemployed resources determines the level of the supply of aggregate output. Should regional aggregate demand as a whole be altered or intervention influence one of the components of Keynesian aggregate demand -- gross planned investment, consumer expenditure, net exports or current public expenditure? Net investment had the purpose of expanding the capacity to produce and sell current output and by definition would not be called for in a region with unemployed capacity; the current situation was of national recession and unemployed capacity was a feature attributed to the LU region. Even some replacement of capacity would not be needed. Yet, let’s say the government encouraged investment or consumer expenditure or raised public expenditure in the HU region. After a while, the regional distribution of unemployment would have altered. It would take longer for the consequential fall in wage and price inflation to come through. The improvement in competitiveness of net exports would occur by means of a circuitous and lengthy process. Why not directly act on net exports? Since economists thought along Marshallian lines that expenditure on net exports was price responsive, a subsidy lowering the price of tradeable output of the HU region would improve the national balance of trade and at the same time shift effective demand and employment from the LU to the HU region.

The classic Keynesian diagram drawn from Chapter 21 of *The General Theory* was available to designate what the subsidy had to achieve in the two regions and nation.
the expected efficiency wage (w_e), the expected money wage (w_m) given labor productivity (L) and a margin (z) covering expected raw material and overhead costs (z) and profit (P), the margin was determined by taking a percentage mark-up (z) on the efficiency wage, that is,

\[ p = k w_e \]

where

\[ w_e = \frac{w_m}{L} \]

\[ z = p - w_e \]

and

\[ z = c + P. \]

Given this definition of price, how could the price level be reduced? Raised productivity (L)? Productivity was a variable believed to be amenable to external control but only in the long term. The mark-up was known to have been historically constant within a narrow range around the conventional value of 2; it was unlikely the government would get entrepreneurs to agree to lower this steadfast mark-up. To reduce the price level, clearly it was necessary to decrease the money wage.

How could this occur when Keynes' argument against money wage cuts as a remedy for unemployment took up a section of any postwar popular commentary on The General Theory? A money wage cut would be a remedy for unemployment if it resulted in a rise in aggregate effective demand. However, a cut in money wages might well lead to a less than proportionate reduction of prices, thereby reducing real incomes of wage earners and an absolutely and relatively wage earners had a relatively high propensity to consume and the direct result of this distributional change most likely would be a decrease of the aggregate propensity to consume. And at the downturn a cycle, expectations of future sales proceeds were increasingly decreasing. Hence, the fact that entrepreneurs noted their money costs were cut temporarily might not be enough to raise the marginal efficiency of investment in relation to the rate of interest so that investment expenditure possibly would decline.

Responding to these well known problems, one of Keynes' correspondents, Nichola Kaldor, came up with an apt solution. How about a money wage subsidy which reduced money wage costs while maintaining money wage earnings? Indeed, the subsidy would overcome the adverse distributional effects of a money wage cut while permitting prices to fall.

At the same time, a flat rate money wage subsidy granted for each employee of the enterprises of the HU region which supplied exportable output and potential import substitutables in part would act analogously to and would achieve the beneficial effects of devaluation of the currency. The effect upon the value of exports in terms of foreign currency would be the same as a fall in the exchange rate. Joan Robinson and Roy Harrod had theorised. And the conventional arithmetic algebra to think out the components of a change in the balance of trade would pertain equally to devaluation and the subsidy: (1) if foreign demand was price responsive, the quantity demanded of exports (X_d) would rise (to x^*_d), that is, \( X_d = x^*_d \) \( p > 0 \)

the "volume effect" would be positive; (2) if the price elasticity of foreign demand exceeded unity, the adverse terms of trade.

\[ X_d \left( p^*_d - p \right) > 0, \]

would be overcome and (3) the value of exports would increase. That is,

\[ X_d p^*_d - X_d p > 0 \]

the balance of trade effect would be positive.

A regional wage subsidy also could perform things devaluation could not, Keynesians argued. Devaluation adversely affected the gold value of a country's currency reserves whereas a subsidy on employment costs would not moreover, a subsidy, unlike devaluation, would not incur inflationary effects of a rise in the domestic price of imports. A subsidy on the efficiency wage would have the extra advantage that the cost of the adverse terms of trade would not be borne by the HU region but by the nation (entrepreneurs of the HU region received the cash bonus and then lowered prices). Furthermore, if the subsidy were deficit financed and lead to a rise in real national income, existing tax rates would yield increased tax revenues; over time, these would pay off the principal and interest on the debts in the long run, the subsidy would not impose any public cost and might permit tax rates to be lowered. Lastly, since regions within a nation have a single currency, the tool of devaluation was not available to a country suffering from balance of trade problems; indeed, there hardly could be recordings of trade deficits at the regional level, but to the extent that a depressed region actually was suffering from chronic trade deficits, a wage subsidy was a useful substitute for devaluation. Following these lines of reasoning, the money wage subsidy should be granted to enterprises involved in trade.

(iii) From Tautology to Causal Statement

"Trading enterprises" simply were taken by policy makers to be coterminous with manufacturing enterprises in reality. Most trade of the HU region was in manufactured commodities. The manufacturers upon receipt of the subsidy duly were imagined to account a reduction in the money wage bill (w_m) and efficiency wage (w_e) directly reduce their prices, leaving a constant price margin (z) and maintaining per unit money profits (P) whilst effectively raising their percentage mark-up (z) on the efficiency wages with constant money wage earnings and money profit, the distribution of income would be constant. This was consistent with the definition of the mark-up price. Nevertheless, the definition could not show that entrepreneurs actually would be willing to reduce prices. Entrepreneurs would behave this way if they expected demand to be price responsive. In terms of Chapter 5 of The General Theory, such an expectation would have been based on the repeatedly realised price-reduction-revenue-raising plans of entrepreneurs in export and import substitute markets.

(iv) An Experimental Montage

The channels along which the wage subsidy might cause the designated changes in effective demand and employment at regional and national levels were traced by a system of Keynesian accounts represented as Figure 1. The starting point of the accounts was a temporary, annual deficit-financed public expenditure which subsidised the money wage bill of manufacturing enterprises and led to the reduction of manufacturing prices. The accounting items broadly were categorised as changes in net exports, multiplier effects and changes in output, employment and unemployment. The accounting framework contained three classes of items, accounts at the level of each region and the nation. As the accounting framework portrays, the scientific validation of the policy rested on the numerical entries assigned to the items of each class turning out.
to match the metrical pattern required by policy goals. Precisely, the numerical entries had to indicate changes in the predicted direction. If the accounting integers came out as zero or negative for the LU region and positive for the HJ region and nation, the proposed policy would have been demonstrated to be workable.

This essay is arguing that this accounting system was what constituted the theoretical model in our experiments. The accounts visually and numerically structured the hypothetical effects of the proposed wage subsidy. The complete model, including the formulation of predicted changes in international and regional trade, appears in Figure 2.

(v) Formal Calculations

The model shows that the subsidy could be successful. The signs of the entries are right. Still, a more important issue is how the results were arrived at.

The numerical account of change in trade occurred along the lines of the orthodox Keynesian account of the effects of devaluation in a country with unemployment and a trade deficit. Marshallian price elasticities of demand were used to calculate the volume effect (lines 1-5). Given the increase in the volume of exports made in the HJ region (1.2), a reckoning was made of the terms of trade effect on the national balance of payments (1.1). A further reckoning was made of the increase of imports in additional output, given the Keynesian calculus of the propensity to import (line 6).

The particular price elasticities which were used were as follows (Line 1) To delineate an increase in exports at the level of the HJ region and nation, the price elasticity of foreign demand for exports was used in the form \( \frac{dx}{dp} \), meaning the change in the quantity demanded of foreign exports \( (x_f) \) given the change in the price of these exports \( (p) \), \( (1.2) \). The drop in the price level of HJ import substitutes was deduced to lead to a fall in imports of the HJ region by applying the cross elasticity of demand for imports, \( \frac{dM}{dp} \), the change in quantity demanded of foreign output \( (M_f) \) given the fall in price of domestic output \( (p) \), \( (1.3) \). The price elasticity of regional demand for regional exports \( (x_r) \), \( \frac{dx_r}{dp} \), was applied to calculate a rise in the HJ region's exported output. \( (1.4) \) The cross elasticity of HJ demand for LU output \( (x_{HJ-LU}) \) given the fall in the price of HJ import substitutes \( (p) \), an operator of the form \( \frac{dx_{HJ-LU}}{dp} \), measured a decrease in imports of the HJ region, or increase in import substitutes of the HJ region. \( (1.5) \) The substitution by foreigners of exports of the HJ instead of the LU region was calculated by means of the cross elasticity of foreign demand, expressed as \( \frac{dx_f}{dp} \), the shift between regions of foreigners demand for regional exports given the fall in price of HJ exports.

The ranges of values required in the model for the various price elasticities (lines 1-5, col. 4) were those required for a successful currency devaluation. The particular values assigned to the various elasticity concepts were the conventional "rule of thumb" estimates of elasticities which had been reached using statistical measuring techniques. For example, the conventional of the mid sixties was to assign a value of 2 to the price elasticity of demand for exports. -- With a 3 per cent fall in the price of HJ manufactures, the volume of exports would rise by 6 per cent. -- The price elasticity of HJ regional demand for regional exports was guessed to be slightly higher due to the openness of the regional economy and was put at 3.5. Of course, when the rule of thumb estimates were inserted into the elasticity formulas, the resulting changes in volume demanded \( (dx, dM) \) merely indicated the possible direction of future changes in trade due to the subsidy. Fortunately, the directions of changes turned out to be desirable. Demonstrably, the subsidy would cause a rise in the total value of net exports at the national level and shift of net exports from the LU to the HJ region (line 7).

| ACCOUNT OF CHANGES IN ANNUAL EXPENDITURE AND INCOME AFTER SEVERAL YEARS OF DEFICIT FINANCED MONEY WAGE SUBSIDY AND PRICE LEVEL REDUCTION |
|---|---|---|
| **FIGURE 1. THE ACCOUNTING FRAMEWORK** |
| **Changes in HJ Region** | **National Changes** | **Changes in LU Region** |
| Increased imports | Increased import subsidies | Decreased exports |
| Additional imports from abroad | Rise in output | Negative multiplier effects |
| Total rise in output | Rise in employment | Fall in employment |
| Rise in employment | Fall in unemployment | Rise in unemployment |
| Fall in unemployment | Fall in wage | Inflation |

| FIGURE 2. THE ACCOUNTING MODEL |
|---|---|---|---|
| **Item** | **Class** | **1. ** | **2. HJ Region** | **3. LU Region** | Calculus and Required Values |
| 1. Foreign exports | + | + | 0 | \( dx/dp > 1 \) |
| 2. Foreign import substitutes | + | + | 0 | \( dx_{HJ-LU}/dp > 1 \) |
| 3. Regional exports | + | + | 0 | \( dx_f/dp > 1 \) |
| 4. Regional import substitutes | 0 | + | + | \( dx_{HJ-LU}/dp > 1 \) |
| 5. Shift of foreign demand for exports between HJ-LU regions | 0 | + | + | \( dx_f/dp > 1 \) |
| 6. Import content of additional output | - | - | 0 | \( mpp < 1 \) |
| 7. Total change in net exports | + | + | + |
| 8. Multiplier-accelerator effects | + | + | - | \( Kea/kH < Kea/kH \) |
| 9. Total change in aggregate effective demand | + | + | + |
| 10. Change in employment | + | + | + | \( dE/dY > 0 \) |
| 11. Change in unemployment | - | - | + |
The projected changes in trade were compounded by the multiplier, given estimates of multipliers arrived at in respect to the two regions (line 8). The final sum (line 9) came out to be a fall in the value of output of the L.U. region and a rise in the value of output of the H.U. region and nation. Then, given estimates of the elasticity of employment in respect to output, calculations were made of a fall in employment of the L.U. region and rise in employment of the H.U. region and nation (line 10). Conversely, the percentage of unemployment was accounted to rise in the L.U. region and fall in the H.U. region and nation (line 11).

Because unemployment of the L.U. region and wage inflation had been demonstrated to be negatively correlated (as 8.9 above), the reduction in the gap at the national level between potential and actual effective demand was not projected to worsen inflationary pressures and reduce the gain in trade. Indeed, the modellers could infer that inflation would fall slightly. Does this mean that improvements in output, employment and trade therefore could be projected as permanent if the subsidy were temporary? A permanent increase in the annual net product could be achieved to the extent that entrepreneurs in the H.U. region do not raise prices to pre-subsidy levels after they stop receiving the subsidy. This would happen if the entrepreneurs, seeing their standard level of output has already reached a higher level, reorganized production so as to make the most out of the newly available economies of scale and increasing returns.

With this subsidiary reasoning, the policy makers concluded that it had been proved that the regional wage subsidy would work as hypothesized. The proof rested on the highly deduced accounting model which was internally verified by satisfying the specific criteria derived from Keynesian functional relationships in the context of traditional Keynesian policy goals and budgetary principles. On the grounds of this rationalist proof, the subsidy was enacted.

4. MODEL OF EMPIRICAL EFFECTS

After several years, an evaluation was made of actual changes caused by the subsidy. Observations were taken of changes in the rates of output, subsidies, and prices. Most important, the evaluators by using regression analysis were able to confirm confidently that the subsidy led to a large increase in employment of the H.U. region.

Nonetheless, a problematic observation came out of an industrial inquiry. Seemingly, a large proportion of manufacturing enterprises upon receiving the subsidies would reduce their output prices but raise their profits. Maybe the theory of entrepreneurs' pricing behavior should be rejected. Alternately, the facts might show that industrial inquests might not be the best way to arrive at facts. More, perhaps both fact and theory were kept with the inconsistency between them explained away. A conviction, such an explanation would advance the theory. Now, The General Theory had posited that the behavior of entrepreneurs changed as the economy moved with cyclical periodicity from boom to recession but there is no precise treatment of such changes. In our experiment, the wrong result proves questions about precisely what businessmen do over the cycle. For instance, what is the purpose and timing of their investment expenditure when there is substantial excess capacity? (The subsidy, many entrepreneurs said to reduce prices and shrink employment. In this case, manufacturers can begin a subsidy to make up for decreased total profits following upon reduced sales). In addition, is it possible to generalize at all about entrepreneurial expectations of changing money wages over the cycle? (Maybe entrepreneurs of the H.U. region forewarn a period of rising money wage and reckoned the subsidy could help maintain their mark-ups). More questions can be generated. The point is this. Arguably, an unexpected result in an empirical model serving to test a set of theoretical hypotheses lead to question to the answers to which would enhance the verisimilitude, the concreteness and pragmatic potential, of Keynesian theory. Then the conditions in which instruments of intervention

will work as predicted can be more precisely defined.

CONCLUDING STATEMENT

This article discussed the development of a policy of intervention into the economy. The aim of the essay was to demonstrate the way a proposal of a tool of economic intervention should be developed according to the dictates of the rationalist methodology of the experimental sciences. First, the policy was shown to have sprung from a well organized scientific system. Secondly, to prove that the policy instrument could work as intended, an experiment was carried out. The experiment was undertaken in two stages. In stage 1, an accounting model was drawn up which simulated the possible effects of the proposed policy on strategic variables. The accounts had to show that the intervention would cause changes in the directions required by the policy. This was done. Then, the policy was implemented. After the policy took effect, stage 2 evaluated the effects. This empirical account confirmed and made precise some of the changes represented in the theoretical model. In such as the evaluation turned out not to confirm the original predictions, it invoked some interesting questions. Answering them might be a move towards making the theory more realistic.

HISTORICAL POSTSCRIPT

RCP, enacted in 1967 by a Labour Government, in the early 1970s was reduced in value by a conservative Government and increased inflation, restored by the 1974 Labour Government and terminated by the current regime.

NOTES

1. A didactic argument for rationalism as a viable constitutive of scientific methodology has been put most strongly by the French historian, Gaston Bachelard, both in respect to the philosophical and economic sciences (Bachelard, 1963, 1973; Lecourt, 1975). However, aspects of rationalism have been taken up by a host of scientific methodologists in many fields. Alexander Koyre (1968) and Imre Lakatos (1970) - on the role of instruments of observation in the physical sciences - Carl Hempel (1952) and Barry Hindsen (1977) - on the hierarchical structure of concepts in the empirical sciences - Mary Hasso (1963) and Alice H. Riallina (1969) - on the use of models - Hilda, Homa Katzezialian (1980) and Ayes, Leljouhufi (1976) - on the integration of belief and logic in economics - and Louis Althusser (1969), Leljouhufi and Fritz Mochapf (1960) who have reflected on the realist epistemology of the growth of knowledge.

2. For example, the principles upon which the actual policy statement was based included postulates from Keynesian static and growth economics while the evaluation included questions arising from neoclassical economics. The result was a slightly inconsistent policy statement and lack of correspondence between the statement of goals and evaluation.

3. The General Theory, like the Treatise on Money, treated the trade balance as a form of investment. In analyses of the effects of devaluation, this treatment was kept so the primary change in the balance figured as the multiplication of the multiplier. The formula for the multiplier of the open economy, Harrod's trade multiplier, included the marginal propensities to import and save. The multiplier looked like this:

\[\Delta Y = \frac{1}{K}\]

\[K = \frac{1}{\alpha + (1 + \delta)}\]

\[X = \frac{dX}{dY}\]

4. Another example is the extension of Harrod's dynamic equation in order to put the theoretical argument that a negative trade balance could be accompanied by long-term
full employment (Ball, 1962).

5. In Keynesian thinking, the fall in the price of tradable output must cause an excess supply of money. However, our experiment occurred in the midst of a recession, portrayed as a period when uncertainty of the future was great and, as Keynes writes (1936, Ch. 13, III), the liquidity preferences of the public are increasing steeper than the quantity of money. Hence, the price fall would not affect the rate of interest and then investment.

On purely formal lines, Kaldor thought the wage subsidy would reduce the price level by an equivalent percentage, thereby reducing margins and profits.

6. A montage is both a formal system and possible picture of the real world.

7. The notation means: mp, marginal propensity to import; KL, multiplier of the effective demand; 

Where the autonomous expenditure, dE/dY, elasticity of employment in respect to output. See p.15 above for other symbols.

In respect to lines 1-2 and 3-4, respectively, a weaker condition for the success of the subsidy is the Marshall-Lerner condition, dD/dp = dD/dp = 1.

8. The subsidy would be paid for the time people took to respond to the change in prices. Studies of the effects of devaluation indicated that demand responses occurred over a three to five year period.

9. Various statistical devices were used to isolate the variable to be measured and control for changes in exogenous (policy and cyclical) conditions.

10. Logical positivism, of which modern neoclassicists are major proponents, would say a "wrong" result meant that the theory on which the policy was based should be disposed of (Friedman, 1977; Katsuzaian, 1980).

FOOTNOTES

a. 1936, Chapter 21, III.

b. Keynes, 1939.

c. 1936, Ch. 20, I.

d. 1936, Ch. 18, I, Metcalfe/Cowling, 1966.

E. Hansen, 1953; Stewart, 1967.


g. Worswick, 1936.

h. Kaldor, 1946c.

I. Keynes, 1939; Kaldor, 1964a.


k. Minsky, 1976, p. 78.

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KEYNES AND THUROW: THE SOCIALIZATION OF INVESTMENT

Tom Cate*

In a previous paper,

1 we investigated the relationship between the policy recommendations which John Maynard Keynes (1883-1946) develops in his early writings, writings which are written in response to the important events and issues of his day, and those of his two major works, the Treatise2 and the General Theory.3 In this paper we concluded that the policy recommendations of the Treatise, allowing for some institutional differences, are identical to the policy recommendations of his phenomenological writings: namely, the general level of prices can be stabilized in one of three ways: (1) by changing the basic rate, (2) by using a trident of control the basic rate, the forward exchange rate, and the buying and selling points for gold, or (3) by implementing a loan-financed, government-sponsored domestic investment program.

Although there are scattered references throughout Keynes' early writings to the problem of unemployment, a careful perusal of those writings leads to the conclusion that the term "unemployment" is used in a very different context from that found in the General Theory. In his early writings, the context is strictly Ricardian and Marshallian unfavorable changes in the general level of prices or artificial restrictions of the international terms of trade result in periodic and temporary movements away from an equilibrium at full employment. In the General Theory, however, Keynes perceives a persistence of unemployment and concludes that a developed capitalist economy could reach an equilibrium at less than full employment. This context is completely foreign to the economics of Ricardo and Marshall, as expressed in Keynes' early writings. In none of these writings does Keynes recommend the policy advocated in the General Theory; namely, the implementation of a loan-financed, government-sponsored domestic investment program designed to move the economy from an unemployment equilibrium to one of full employment.

Thus, one theme which is common to Keynes' early writing and to his major works is the development of a set of public policy proposals which is designed either to stabilize or to increase the volume (level) of employment. This theme is the one about which most

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