Plurality in Teaching Macroeconomics

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1 Introduction

In the aftermath of the Great Depression, there was turmoil in the field of Macroeconomics, which resulted in the Keynesian 'revolution'. However, the current Great Recession, the worst crisis that capitalism has faced since then, has failed, at least so far, to generate an upheaval in the teaching and practice of Macroeconomics. This seems bizarre as if nothing has happened and the economists are just going about doing business as usual. Without going into the politics of why this is so, let me just focus on how Macroeconomics ought to be taught to students at the intermediate level, which gives them an overall perspective on the subject[1]. I must note that this article has been inspired by an editorial published in EPW [2013].

Macroeconomics as a subject proper came into existence with the writings of John Maynard Keynes[2]. There were debates during his time about how to characterise a capitalist economy, most of these are still a part of the discussion among economists. Keynes [1936, 1937] argued that capitalism is a fundamentally unstable system so the state needs to intervene to control this instability.

Keynes [1936] has been interpreted in different, often contradictory, ways. In today's context, they can be broadly classified in two categories: Post Keynesian and New Keynesian. Ideally, a macroeconomics curriculum as a pedagogical exercise should give equal weightage to the two traditions to give the students a holistic perspective on the subject. This is more so because the policy prescriptions flowing out of these paradigms are palpably at variance with each other and such a training can help the students make an informed judgement. This paper is divided in five sections. Section 2 presents the central question that Keynes raised followed by two sections each dealing with the Post-Keynesian and New-Keynesian traditions respectively. The last section concludes the paper.

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[1]What is presented here is just an outline of how it could be taught and is not in any sense exhaustive. The same holds for the references.

[2]While Michal Kalecki arrived at most of the Keynesian conclusions ahead of Keynes, he was inaccessible to the English readers as his initial writings were in Polish.

2 The Keynesian Problématique

Keynes [1937] presented a simplified version of his arguments made earlier
in Keynes [1936]. It would suffice here to just use the former as the basis
for the discussion to follow. The central question that Keynes [1936, 1937]
raised was whether capitalism is a self-regulating system i.e. it reaches full
utilisation of capital and/or labour or a fundamentally unstable one that in
general there is a *simultaneous* underutilisation of capital and unemploy-
ment of labour?

Prior to Keynes, it was believed that there could be unemployment of
labour provided there is a downward rigidity of real wages in the labour
market which restricts labour demand ahead of its supply at that level of
real wages. So, unless these rigidities are removed, unemployment cannot
be removed (see figure 1). So, the causality moved from real wages $\to$
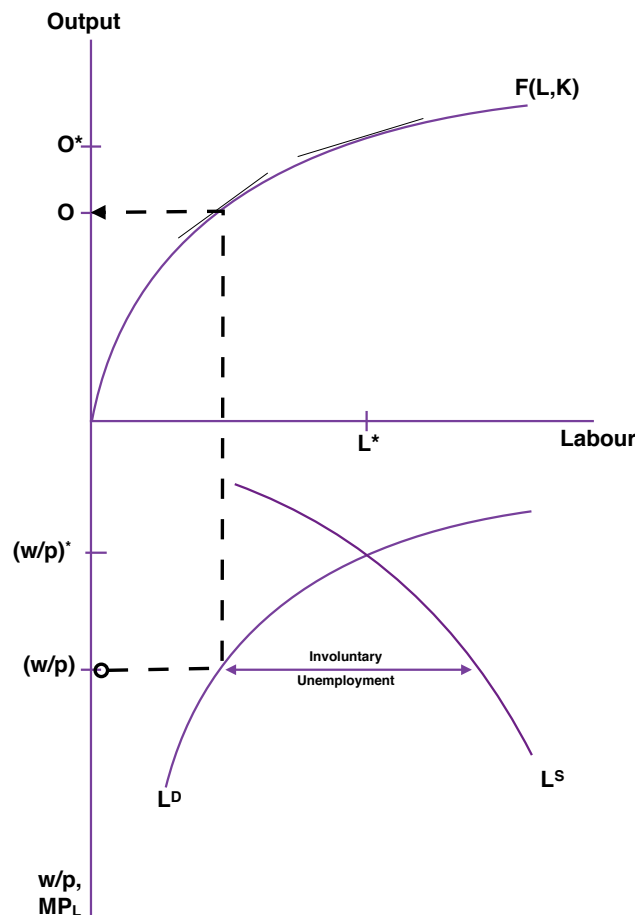employment $\to$ output (through the production function).

Figure 1: Real Wage Rigidity and Classical Unemployment

On the contrary, Keynes' explanation for unemployment was just the reverse (see fig. 2) i.e. since the causality moves from investment $(I) \rightarrow$ output $(O) \rightarrow$ employment $(E) \rightarrow$ money wages $(\bar{w}) \rightarrow$ marginal cost $(mc) \rightarrow$ prices (p) (hence the real wages $\bar{w}/p$), investment is primarily at the source of it.
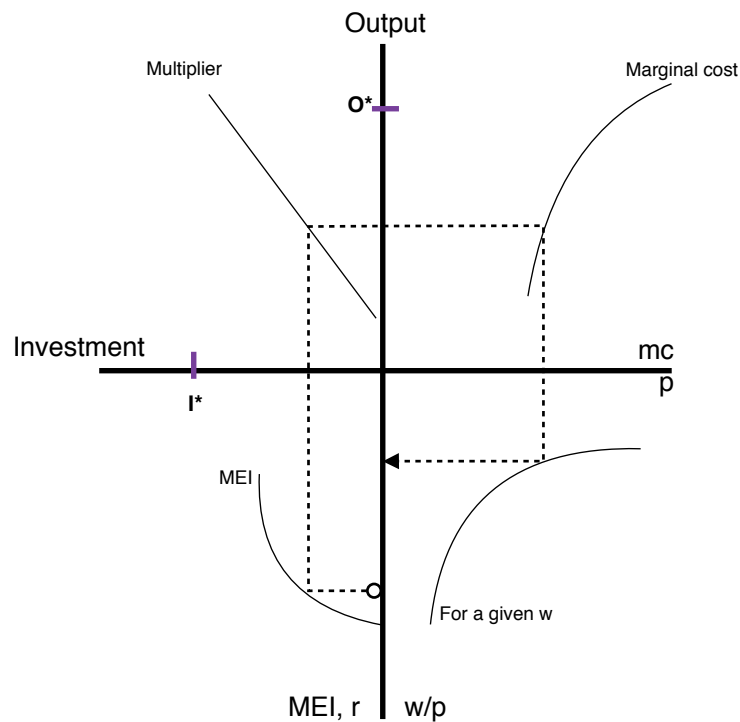

Figure 2: Investment, Multiplier and Keynesian Involuntary Unemployment

Since investment determines the level of employment, absence of involuntary unemployment requires the investment to be at a level which generates the output corresponding to full employment. For that to happen, following two conditions need to be fulfilled *together*:

1. that *this* level of aggregate investment lies on the investment function, which Keynes named as the marginal efficiency of investment (MEI) schedule.

2. that the real rate of interest is such that *this* MEI is materialized.

Keynes argued that there is many a slip between the cup and the lip for these two conditions to be satisfied. In the event that they are not, the capitalist state should intervene and push the economy towards its potential. But why can't these conditions be satisfied?

First, since investment (I) is a decision, which inherently entails expectations about an uncertain[3] future, its returns are unstable with respect to the magnitude of investment. Let's say that an investment project with a certain life of periods has a stream of expected returns. The average efficiency of this investment is given by that rate of discount, which generates a present value exactly equal to the total cost of investment and the marginal efficiency given by the return on investment at the margin. Keynes believed that the marginal efficiency of investment falls (see fig. 3(A)) as the amount of investment rises because of two reasons: (a) every additional unit of capital adds lesser to the output than the previous one (decreasing returns to scale because labour is also increasing in the process), which he believed was a long-run factor; (b) cost of investment rises because the price of capital goods rises as a result of its increasing demand (a short-run factor).

Quite aside from fundamental uncertainty, there is some risk premium (ρ) consisting of lender's/borrower's risk. Lender's risk consists of the premium that the lender adds to take into account the risk in the event the expected rate of returns turns out be different from that claimed by the borrower. On the other hand, borrower's risk consists of the premium that the borrowers themselves assign to the project in the event that the expectations do not turn out to be true.
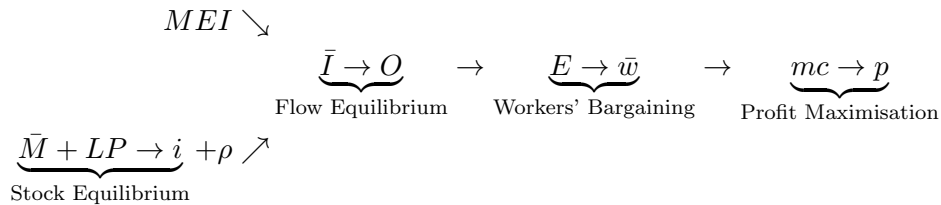
Rate of interest (i) enters this decision-making in terms of opportunity cost of earning returns on interest-bearing financial assets like bonds. A capitalist is making a choice between investing in real capital and in financial assets which gives a prospective *real* return i.e. nominal minus the expected inflation. But how is the division done? On the margin, the expected returns on the two should be the same. But how is the rate of interest determined? We discuss this point next.

Second, in the world of exogenous money of Keynes [1936, 1937], the nominal rate of interest is determined by the demand for and *fixed* stock of money ($\bar{M}$). A part of the demand for money is given by its purpose for monetary transactions, which for simplicity can be taken as a constant fraction of the nominal level of income. Rate of interest is that premium which must be paid at the margin for the asset holders to absorb the remaining stock of money (Keynes [1937] called it inactive balances) since money is a non-interest bearing asset. If the demand for these inactive balances is less than its *given* supply, then the interest rates will decrease to entice the asset-holders to absorb the remaining liquidity. This gives us a negative relationship between the nominal rate of interest and liquidity preference (LP). But this preference for liquidity (despite zero monetary return) is not just dependent on the current rate of interest but also on *long term state of expectations*, which for simplicity, can be assumed to be given by

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[3]Uncertain in the Keynesian sense of fundamental uncertainty and not some calculable probabilistic risk

the stream of *expected* rates of interest. To show this, if for a given level of current rate of interest, the expected rate of interest rises, then the demand for inactive balances will rise even if the current rate of interest is high because the agent will want to wait for tomorrow to buy the interest-bearing asset rather than buying it today. In other words, a higher expected rate of interest would *shift* the liquidity preference outward for a given level of current rate of interest. Moreover, there is a minimum level of nominal rate of interest (which can even be zero in certain circumstances) below which it cannot fall, which is given by the lender's risk (famously known as the rate of interest associated with the liquidity trap).

One can show this causality for the *ex ante* investment in the following manner which can be read together with the rest of the Keynesian causality:

$$MEI \searrow$$

$$\underbrace{\bar{I} \to O}_{\text{Flow Equilibrium}} \quad \to \quad \underbrace{E \to \bar{w}}_{\text{Workers' Bargaining}} \quad \to \quad \underbrace{mc \to p}_{\text{Profit Maximisation}}$$

$$\underbrace{\bar{M} + LP \to i}_{\text{Stock Equilibrium}} + \rho \nearrow$$

Assuming, for simplicity, the rate of inflation to be zero (i.e. the real and the nominal rate of interest are the same), it can be seen from the above that the level of economic activity is determined by the level of *ex ante* investment, which itself is determined by the point at which the *downward* sloping MEI intersects the exogenously given rate of interest and risk premium. This level of investment in turn determines the output through the output multiplier and the level of employment through the employment multiplier. This level of employment determines next period's level of money wages through workers' bargaining. These wages and given level of labour coefficient determine the marginal cost which in turn determines the level of prices in conditions of perfect competition.

This entire process is presented in figure 2. The arrow *originates* on the y-axis in the third quadrant, where the MEI and the interest rate determine the level of investment. This level of investment then through the route of income multiplier (with an intercept representing autonomous factors of demand) determines the level of output in the second quadrant (demand determines its supply). For that level of output, the marginal cost (based on the given money wages) determines the level of price in the first quadrant. For the same given money wage, the real wage as it were comes out of the wash for this price level in the fourth quadrant. It can be seen clearly that 'fixity' of money wages plays a role in providing an anchor to the price system but is not responsible for unemployment. It is the lack of ex ante investment in comparison to its full employment counterpart that generates involuntary unemployment.

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The central component, investment, depends on unstable expectations showing in a volatile MEI and interest rate, which is dependent on an unstable liquidity preference schedule (captured by the stream of expected rates of interest). So, there are two independent reasons for why the economy might not settle down at the full employment equilibrium except by chance. It is *this* chance that the orthodox theories before Keynes had focussed on, which is why Keynes [1936] called this equilibrium a *special* case of his *general* theory of employment, interest and money. And the remedy to this problem of simultaneous unemployment of labour and excess capacity, according to him, lied in an astute combination of fiscal and monetary policies with a clear preference for the former because of its *direct* impact on the level of activity.

3 The Post-Keynesian Response

The post Keynesian response developed through the writings of one of his contemporaries, Kalecki [1971] and his pupil at Cambridge, to name a couple like Kaldor [1986], Robinson [1971]. I will present here the essential arguments they made as either a critique or addition to what Keynes [1936] wrote.

3.1 Different components of the Post-Keynesian framework

3.1.1 Kalecki [1937]'s principle of increasing risk and MEI

Kalecki [1937] argued that a determinate level of investment in Keynes [1936] required the MEI function to decline with the volume of investment. In the absence of that, the level of investment becomes indeterminate since both the MEI function and the interest rate plus risk function will either run parallel or coincide (see fig. 3(A)). But in reality not only is it determinate but within an industry, there are different sizes of the firm which is also impossible to explain in Keynes' argument.

Kalecki [1937] argued that both the underlying assumptions in Keynes [1936] need to be questioned to answer these questions. On the one hand, diseconomies of scale do not have any economic justification since the same unit of enterprise could just be replicated leading to just a doubling of the potential output. On the other hand, imperfect competition (which will lead to a declining MEI function) doesn't fit well with the Keynes' otherwise perfectly competitive framework and it also cannot explain different firm sizes within an industry.

Kalecki argued that the assumption of a risk premium *independent* of the level of investment under the conditions of external finance is not justified. In fact, the risk increases as the level of debt as a proportion (gearing ratio) of one's own capital rises for two reasons. It endangers the wealth position

of the borrower as well as the increase in 'illiquidity' in the event of a distress sale. If not the borrower, at least the lender who is entrusting the former with her own capital will assign a higher risk premium with a rise in the gearing ratio beyond a certain point (at/after the point denoted by own capital of the borrower). As is obvious, a firm with a lower own capital will have the risk curve rising much ahead of a firm with a higher own capital, thereby, leading to a comparatively lower level of investment.

Steindl [1945] further built upon Kalecki [1937] by arguing that instead of constant returns to scale, there are increasing returns to scale. So, even within an industry larger firms will have access to techniques, because of minimum scale of operation required, which have higher rates of profit. This will show up as an upward sloping MEI i.e. an exact opposite of what Keynes had shown. So, smaller firms might be at a disadvantage both because of a rising risk curve and MEI function.

In an oligopolistic set-up, given that large firms are producing for more or less fixed market shares, the level of investment could be limited by the market and not by access to credit. In other words, the MEI after increasing to a certain point becomes vertical corresponding to the market share. Fig. 3(B) shows that there could be a combination of firms, smaller ones constrained by credit and larger ones primarily by market. This makes the effect of interest rates limited mostly to relatively smaller sized firms and, hence, higher the concentration in an industry lower the effectiveness of interest rates.

At the macroeconomic level, the investment function[4] can be seen as analytically constructed using two components: (a) that which is determined by the interest rate plus the risk premium and the MEI (depicted by the intercept of the investment function in figure 5); and (b) which is determined by the level of output (shown by the upward sloping investment function in the investment-output plane). The arrow originating in the fourth quadrant gives primacy to the intercept of the investment function determined by the MEI and the risk premium and the interest rate. Since the intercept is less responsive to the interest rate for reasons given above, the MEI curve is almost vertical except at very high rates of interest where even for larger firms, the opportunity cost of investing in real capital becomes too high. So, the fluctuations in the autonomous level of investment is primarily driven the fluctuating component in the MEI.

But what determines the rate of interest? We discuss it next.

3.1.2 Endogenous money, short and long-term rate of interest

In Keynes [1937], the rate of interest was determined by the stock equilibrium in the demand and supply of inactive balances. Since the supply of

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[4]A more comprehensive and recent discussion of different investment functions is available in Setterfield [2010].
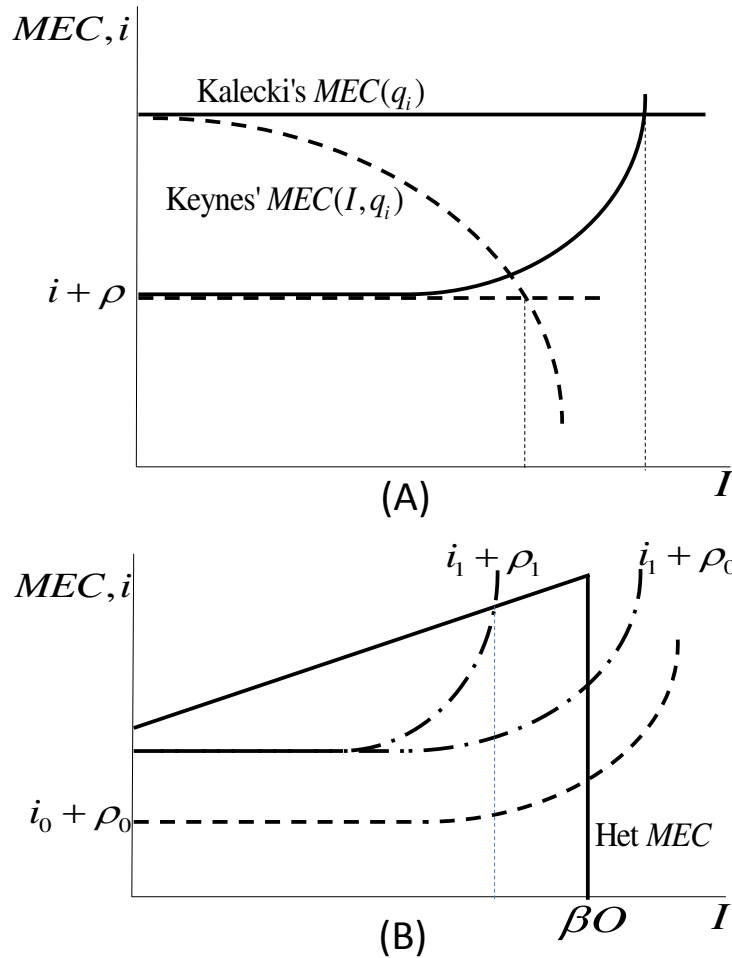
Figure 3: (A) Keynes' Downward Sloping MEI Vs Kalecki's Horizontal MEI; (B) MEI in an Oligopolistic Set-up

inactive balances is *fixed* and its demand is inversely related to the rate of interest, the rate of interest adjusts to bring the latter in equilibrium with the former. So, the supply of money is *exogenous* while the rate of interest is *endogenous*.

As opposed to this, Kaldor [1986] argued that in the modern world of fiat money, supply of money *cannot* be argued to be exogenous. In fact, it is the interest rate that the central bank can control and even that, the short term rates of interest (for eg. the repo rate for India or federal funds rate for the US). At that rate of interest, the level of money demand determines the supply of money. So, the causality in this stock equilibrium moves from interest rate → expected rate of interest → demand for inactive balance → supply of inactive balance. So, it moves in the reverse compared to Keynes'

causality. But this is not the end of the story since what matters for investment, if at all, is the *long-term* rate of interest since the terms of two assets i.e. capital goods and the financial asset have to be comparable. How are the two rates linked?

[Kalecki, 1939, ch. 6] presented such a linkage. In order to do that, we need to bring in a representative short term asset (say a treasury bill) and a long term asset (say a consol) and ask the question as to how does a wealth-holder decide between these two assets? What are the relative (dis)advantages of holding one over the other? Since the term of a consol is more than that of the bill, it is not the current rate of interest on bills that matters but what its expected value i_S^e will be over the term of the consol. While bills protect the integrity of the principal, consol can depreciate in value, the risk of which can be estimated. On the other hand, the expected short term rate of interest is subject to uncertainty, even though the current rate of interest on bond is not. Moreover, rebuying of bills over the relevant period also involves some costs. Assuming these costs to be negligible, the condition of indifference of a wealth holder requires the expected short-term rate of interest to be equal to the long term rate of interest net of the expected depreciation.

Any change in the expected short-term rate of interest will affect the long-term rate of interest as well but this relationship will not be one-to-one because the risk of depreciation is not exogenous but varies with the current yield on the consol. This is so because for every rise/fall in the long-term rate of interest, its expected depreciation falls/rises. So, a fall/rise in the central bank rate, there is a fall/rise in the long term interest rate along with a rise/fall in expected depreciation. Given that on the margin, the long term rate of interest *net* of the expected depreciation has to be equal to the expected short-term rate of interest, change in the latter is only *partially* reflected in the long term rate of interest and expected depreciation. Based on this, Kalecki [1939] argued that in a world of uncertainty, the only basis for making an expectation about the interest rate could at best be some sort of an average of its past values. So, at this step itself the fluctuations in the actual short-term of interest is evened out reflected in a relatively stable expected rate. Since investment is dependent on the long-term rate of interest, which itself does not follow a one-to-one relationship with the expected rate, the volatile movement of investment across the business cycles cannot be explained by interest rates. Moreover, it limits the scope of monetary policy as a countercyclical instrument during a business cycle.

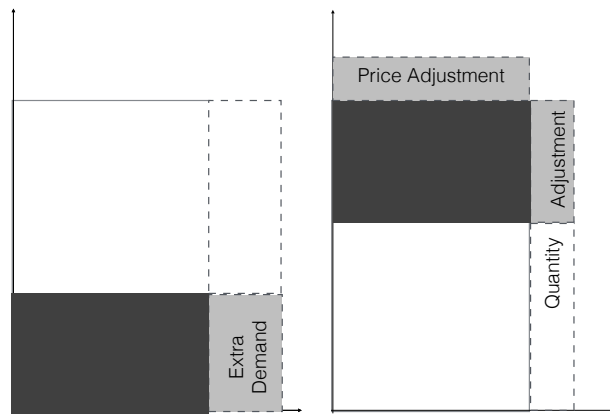### 3.1.3 The Multiplier: Output Vs Price Adjustment

After incorporating these suggestions, investment becomes a function of long term expectations, expected level of demand and the long-term real rate of interest. In this tradition, it is the past level of demand which influences

expectations about the future level of demand. So, for the short-run, the resulting level of investment can be taken as autonomous. How does that determine the level of output and employment for the economy as a whole Kalecki [1971] used Marx's department schema to explain this relationship. **?** presents a neat algebraic representation of this argument.

Abstaining from trade and the government sector, suppose there are two departments of production: investment (I) and consumption goods (II) with different labour productivities, prices, employment level. The two sectors are vertically integrated. Kalecki further assumed that workers consume all their wages whereas capitalists only a part of it. Figure 4 shows the macroeconomic equilibrium to be described below.
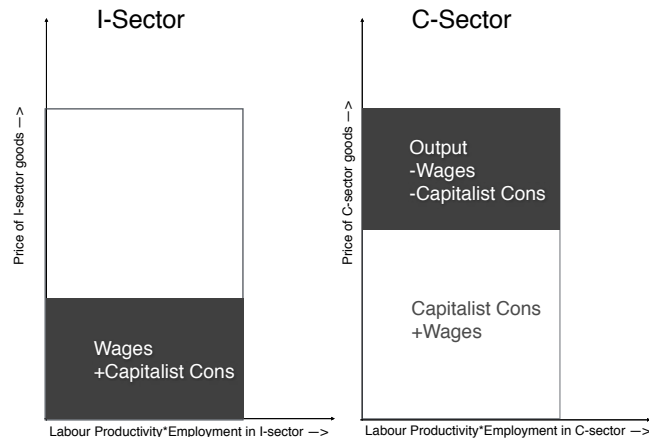
(A) Macroeconomic Equilibrium Between the Two Sectors

(B) Quantity Vs Price Adjustment in C-Sector to a Change in I-sector
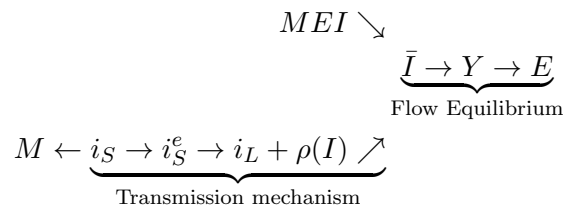
Figure 4: The Multiplier: Output Vs Price Adjustment

Since the workers and the capitalists of both the sectors are dependent

on department II for consumption, department I becomes the leading sector. Macroeconomic equilibrium between the two sectors can be established only when the wage bill plus the consumption demand of capitalists of department I is met by the part of consumption goods left after the wage bill and consumption demand of the capitalistst of department II. For a given level of parameters, this creates a strict proportion between the two departments. Combining the two departments in nominal terms will give us the overall income of the economy.

Any exogenous increase in investment (by movements in MEI and/or interest rates), leads to adjustments in department II either through output changes (ahead of the full employment) or price changes (a case of full employment). Let's discuss them one at a time.

Output adjustment arises because of an increase in the demand of consumption goods as a result of increased wage bill and consumption out of increased profits in department I. Initially, production in department II increases by this amount but since the workers and capitalists in department II itself consume a portion of this increased income, there is a cycle of production that is generated. This cycle of production in department II stops only when the amount left after deducting the wage bill and consumption of the capitalists of department II is exactly equal to the initial increase in demand of department I for these goods. It follows that the overall increase in income is greater than the initial increase in investment, hence, the name *output multiplier*. Also, it can be seen that increase in *ex ante* investment has generated an equivalent amount of *ex post* savings arising out of increased profits of capitalists of both the sectors. Corresponding to the increase in income, there is an increase in employment as shown in fig. 4.

$$MEI \searrow$$
$$\underbrace{\bar{I} \to Y \to E}_{\text{Flow Equilibrium}}$$

$$M \leftarrow \underbrace{i_S \to i_S^e \to i_L + \rho(I) \nearrow}_{\text{Transmission mechanism}}$$

If, however, the production of department II cannot be increased because of full employment, this creates an upward pressure on prices of consumption goods. Any increase in the price with given money wages of workers in department II means a movement of income from the workers to the capitalists of this sector. Since the capitalists save a portion of their income unlike the workers, such a movement generates savings corresponding to the increase in the demand originating in department I. This is the process of *forced savings*.

In both the cases, investment generates an equivalent amount of savings,

whether through an increase in income of both the workers and the capitalists (output adjustment) or through tilting the distribution of income in favour of the capitalists (price adjustment).

The overall process of macroeconomic equilibrium of this framework is shown in figure 5. So, the investment level determined by its two components creates an equivalent amount of savings in the second quadrant. Once the output generated in the process reaches the full employment/capacity level, the adjusment takes place through an increase in the level of prices with wages remaining fixed, thereby increasing the level of savings for that level of output or rotating the savings function anti-clockwise in the second quadrant.

3.1.4   Endogenous business cycles in Kalecki [1971], Minsky [1975]

While the level of investment in a period is autonomous, it changes across periods due to the changes in MEI, the risk premium and the long term rates of interest. And since investment determines income, business cycles are generated because of the cyclical movement in the level of investment. Two such endogenous cycles can be enumerated here: Kalecki [1971], which deals with the inherent instability of the investment process itself and Minsky [1975], which deals with the financial instabilities inherent in the investment process.

Kalecki [1971]   He showed that there is a gap between the decisions and implementation of investment plans. While he made different attempts to formalise his business cycle models, the essence of his argument can be presented as follows. He used the current rate of profit as a representative of measuring the MEI (while also taking into account long-term factors but these affected the trend rate of growth). But since rate of profit is profit divided by the capital stock, this means that gross investment is affected positively by the level of profit and inversely by the stock of capital. If we abstain from the long-term factors, investment tends to move cyclically around its replacement requirements. Let's see how.

There are three components to an investment process followed chronologically: orders, production and delivery, each spaced by time. The level of profit in a period is determined by the production of investment goods (itself determined by the orders made earlier) in that period through the multiplier noted above whereas the stock of capital changes only once the delivery has been made. So, an investment order sets in motion two process at the same time. On the one hand, it increases the level of profit once this order is put into production. On the other hand, the delivery of these produced goods adds to the capital stock only when they rise above the level of replacement requirements. So, what happens to the rate of profit is dependent on the relative movements of these two processes. In the recovery phase of a business

cycle, rate of investment rises because profits are rising but eventually this rate starts falling because once the deliveries cross the level of replacement requirements, capital stock itself starts rising. As the rate of increase of orders falls, this process gets aggravated further since the profits are not rising at the earlier rate whereas deliveries of the earlier orders start pouring in. This opposite movement brings investment orders to a halt which eventually starts declining because the capital stock is still rising. This downward fall is the recessionary phase of the cycle. This process bottoms out when a fall in investment leads to a fall in the deliveries eventually below the level of replacement requirements leading to an absolute fall in the stock of capital, thereby, recovering the rate of profit. Once again the recovery starts.

Minsky [1975]   Minsky argued that instability of finance required for investment creates the business cycles. Expectations about profits are based on current conditions, so during periods of optimism, capitalists might over-invest both because of low borrower's as well as lender's risk. This increases their gearing ratio, thereby, increasing the stock of debt while increasing their potential profits, the undistributed part of which are cash flows. So, he wrote about three regimes of finance: hedge (cash flow is more than both the principal and interest commitments), speculative (cash flow is enough to only pay for interest commitments and not the principal) and ponzi (cash flow is less than both) which this process of investment expansion results in in that order. Such a movement leads to bankruptcy of firms indulging in ponzi finance and more the number of such firms more is the possibility of a financial crisis, thereby, increasing the lender's as well as borrower's risk. This restricts investment and ultimately leads to its collapse.

3.2   Policy and output-inflation trade-off

So far, we have not discussed the last link in the Keynesian framework, i.e. determination of nominal wages and prices except partly while discussing price adjustment. Kalecki [1971] had famously said that while the prices are demand-determined for the primary goods it is cost-determined for manufactured goods. The overall inflation level of the economy will then be a weighted average of the two inflation rates depending, weights determined by their share in the overall expenditure. So, the dynamics for inflation in these sectors require different policy response.

In the case of manufactured goods, Keynes [1936], Kalecki [1971] provided a theoretical argument, which was empirically studied by Phillips [1958], that the level of wages is determined by the bargaining power of the working class, which varies positively (inversely) with the level of employment (unemployment). Workers bargain for an *ex ante* wage share but can actually make only a nominal claim in the form of a nominal wage, the calculation of which takes into account last period's price level as an indi-

cator of the future price level. This process generates an inflation dynamics since current prices, which are a markup over these negotiated wage cost, get linked to the last period's price. This was the dynamics which generated the famous Phillips curve showing a positive relationship between inflation and the rate of employment[5].

This generated the so-called policy trade-off between output and inflation. A higher level of output entailed higher inflation so it was upto the policy maker to make the choice of correct combination between the two. This framework, however, was questioned both by Friedman [1977] and Rowthorn [1977] though from different perspectives. They argued that the expectations of the workers is not static but dynamic so they project not last period's price but its level of inflation to calculate current nominal wage demands. So, it is not the *level* of inflation which is a function of the rate of employment but the *change* in its level. So, there is a rate of unemployment called the non accelerating inflation rate of unemployment (NAIRU) where the level of inflation is static and on either side it is either increasing or decreasing continuously (inflation instability). While Friedman made an additional assertion that NAIRU also corresponds to the full-employment level, Rowthorn [1977] argued that having different dynamics these two rates are totally different.

This upward sloping Phillips curve, however, has been challenged both on theoretical as well as empirical grounds. While a rise in nominal wages are acceptable to workers, an absolute fall might not be acceptable and even if that is not the case, there will at least be downward rigidity in prices in the presence of oligopolies (Patnaik [2009]). So, while there might be a deceleration of inflation, there will hardly ever be a *dis*inflation in the economy. There could be a whole range of employment (and output) for which the prices in the manufacturing sector will not fall even though they happen to be on the decelerating side of NAIRU. To calculate the overall inflation rate for the economy, we need to calculate the weighted average of manufacturing goods' inflation, which is flat along the x-axis for a certain portion and increases afterwards, and the primary goods inflation which is determined by different dynamics altogether. Thus, we get an inflation curve which has a horizontal portion and then slopes upwards (see figure 5). What if the economy is stuck in this portion i.e. with low employment and no impending inflation instability? It is here that the role of policy becomes central.

3.2.1 Monetary Vs Fiscal Policy

The preceding discussion tells us that for the monetary policy to be effective, the following transmission mechanism has to work. An expansionary mon-

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[5]To be sure, Phillips' study was a relationship between the change in nominal wages as a negative function of the rate of unemployment
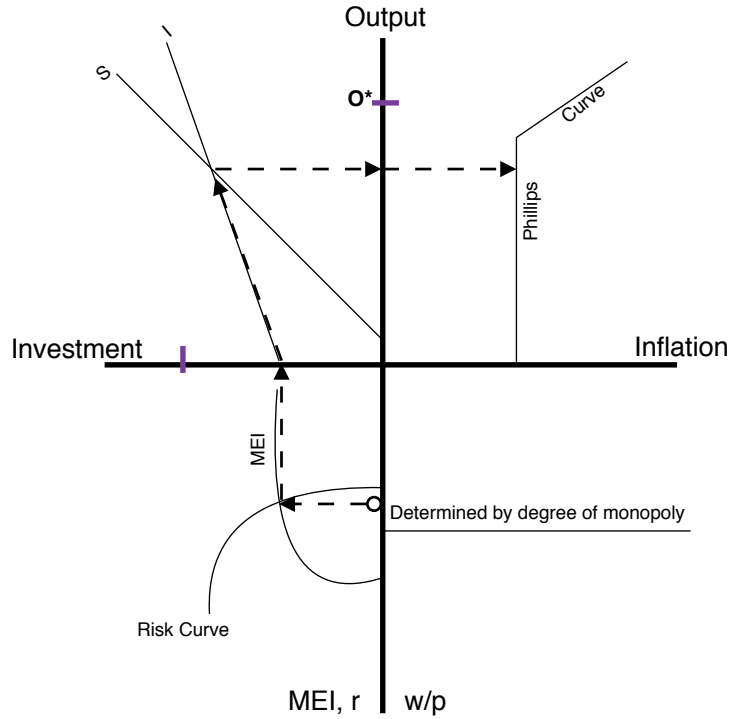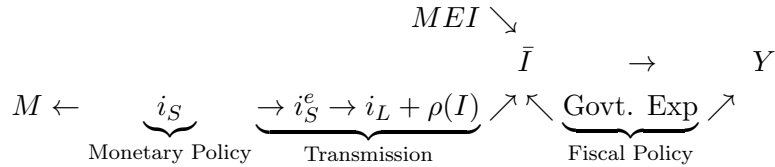
Figure 5: Macroeconomic Equilibrium in the Post-Keynesian Framework

etary policy i.e. a fall in the nominal central bank rate will have to affect the nominal expected bank rate, which together with its effect on inflation determines the real bank rate[6], and that in turn will have to affect the real long term rate of interest and that will have to affect the level of investment. Consider this with the possibility that the long term rate of interest does not have a one-to-one correspondence even with the expected bank rate. All of this makes the monetary transmission even more difficult. Keynes had famously referred to this as 'many a slip between the cup and the lips'.

$$M \leftarrow \underbrace{i_S}_{\text{Monetary Policy}} \underbrace{\rightarrow i_S^e \rightarrow i_L + \rho(I)}_{\text{Transmission}} \nearrow \begin{array}{c} MEI \searrow \\ \bar{I} \quad \rightarrow \quad Y \\ \nwarrow \underbrace{\text{Govt. Exp}}_{\text{Fiscal Policy}} \nearrow \end{array}$$

Fiscal policy (FP), on the other hand, was considered to have a direct impact on the level of output, private investment and employment. It re-

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[6]This is so because inflation itself may depend on the nominal interest rate due to the cost channel of monetary policy for a given spectrum of their profit margins (Patnaik [1997], Lima and Setterfield [2010]). And it is possible that there is a commensurate movement in inflation leaving the real rate unaffected.

futed the three famous objections to fiscal policy: crowding out of private investment as the interest rates rise, inflation as a result of monetisation of this deficit and increased foreign indebtedness to finance the fiscal deficit. First, a higher government expenditure in a world where interest rates are determined by the central bank cannot lead to an increase in the interest rate and affect private investment adversely. On the contrary, it increases the level of capacity utilisation for private firms, so their levels of profits also swell. This is the *crowding-in* effect. Second, monetisation of deficit is not the case of too-much-money-chasing-too-few goods since running of the deficit itself adds to the pool of goods. Third, increased foreign indebtedness has to do with the leakage of demand from the economy through imports resulting from an expansionary process but that has nothing to do with government expenditure *per se*. In fact, by controlling the kind of activities which are less import intensive, such an expenditure unlike private investment can plug these leakages.

All in all, a higher level of fiscal expenditure could push the economy towards full employment and the business cycles could be tamed by using countercyclical fiscal policy implemented in conjunction with an astute monetary policy.
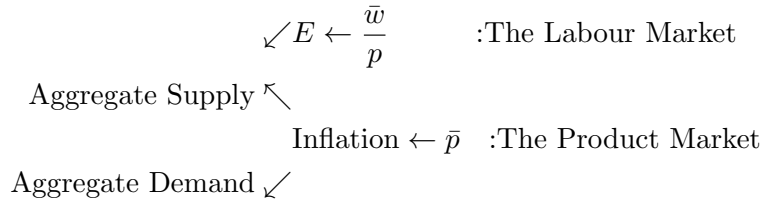
3.2.2   Kalecki [1943]'s political aspects of full employment

Given his training in Marxian economics, Kalecki [1943], however, was far more cautious in drawing the last conclusion. He argued that on pure economic grounds, it might make sense for the capitalists to accept expansionary policies as they generate profits for them as well. But capitalism is not just an economic system but a political system beset with class antagonims. The opposition to full employment policies from the capitalists could be on different grounds.

First, capitalists do not mind trading off a portion of their profits for this purpose because 'under a regime of permanent full employment, the 'sack' would cease to play its role as a 'disciplinary' measure.' Second, capitalists are wary of the areas in which the government might spend, so, subsidies are opposed on moral grounds while public investment on the fear of nationalisation of such assets. Third, capitalists use business cycle as a controlling device to maintain their hegemony in the production process. But with an entity which could stabilize this fundamentally unstable system, this powerful controlling device itself disappears.

4   The New Keynesian Response

Without any loss of generality, one could state that the other interpretation of Keynes [1936], popularly known as the new Keynesian economics today, reads the Keynesian problématique from the right to the left i.e.

$$\swarrow E \leftarrow \frac{\bar{w}}{p} \qquad \text{:The Labour Market}$$

Aggregate Supply $\nwarrow$

$$\text{Inflation} \leftarrow \bar{p} \quad \text{:The Product Market}$$

Aggregate Demand $\swarrow$

Having interpreted Keynesian framework as above, the attempt here is to provide microeconomic foundations to the otherwise *ad hoc* assertion of wage-price rigidities in the old version.

4.1 The Basic New Keynesian Framework

Research in this tradition has been practically divided on the output market and labour market. Involuntary unemployment has been explained by showing various mechanisms through which ridigity in *real wages* manifests itself. On the other hand, disequilibrium in the output market is generated through some form of price rigidity. Let us look at the labour market first. The *causality* here is critical since the fundamental source of instability is some form of rigidity in either the price or the wage or both.

4.1.1 Labour market and Real Wage Rigidity

Disparate attempts have been made in this tradition to explain why the labour market stabilises at real wage rates higher than the market clearing ones, thereby, generating involuntary unemployment. They can be categorised as follows: (a) efficiency wage due to adverse selection, labour turnover, shirking, fairness; (b) insiders wield a higher bargaining capacity than the outsiders (Snowdon and Vane [2005] present a comprehensive literature survey of this and other macroeconomic schools of thought).

Efficiency Wage Theories   These theories maintain that the productivity of workers are directly proportional to the level of real wages. So, the same number of workers could produce more if the real wages are more. Does that mean that you keep increasing real wages? No, because the rate of increase of effort itself diminishes as the real wages rise. Firms would try to minimize the wage cost per *efficiency* units, so it possible that this *efficiency* real wage is greater than the market clearing equilibrium wage. These theories also attempt to explain why the efficiency rises with real wages.

Adverse selection model talks of the signalling by the firms through higher real wages to the workers with best abilities and avoid the 'lemons' in the labour market (Weiss [1980]). Salop [1979] showed that turnover costs of hiring and firing workers is very high so, the firms are willing to pay higher

real wages to deter them from quitting. To control shirking by the workers, which is otherwise difficult to measure, firms are willing to pay higher real wages (Shapiro and Stiglitz [1984]). Workers might not just be worried about their wages alone but also the relative wages, so the firms in their attempt to being 'fair' to their workers pay higher wages Akerlof [1982].

Insider-Outsider Models These models focus on the reasons for why those unemployed do not offer labour at lower than prevailing wages, thereby, bringing the labour market equilibrium where the all offering work are indeed employed. Here, unlike the case of efficiency wages where the firms are willing to pay extra for higher productivity, it is the interaction between the insiders and the outsiders who ensure that real wages are not bid down.

Knowing that there are costs involved with firing the insiders and hiring the outsiders, for eg. search costs, severance pay and litigation costs, training the new employees, the outsiders use this as a leverage to negotiate for higher real wages. Presence of labour unions increases this leverage further as they can decide to go for actions like strikes, shut-downs, thereby increasing the costs till their demands are met. To avoid these costs, firms acquiesce to these demands, thereby, creating a wage differential between the insiders and the outsiders.

A canonical representation of such a disequilibrium in the labour market is shown in figure 6. In the fourth quadrant, the level of unemployment U is generated because the real wages fail to adjust to their 'natural' level. This is shown through the arrow originating on the y-axis in the fourth quadrant.

4.1.2 Product Market and Price Rigidity

Aggregate demand plays only a passive role because it is assumed to be sufficiently elastic to price changes. So, if only the prices were completely flexible (a vertical supply schedule), there would never be a problem of lack of aggregate demand because price adjustment will take care of any disequilibrium in the output market. Therefore, most of the theories in this tradition focus on the reason for why prices are rigid to adjust whether as a result of imperfect competition in the product markets or rigidities in wages in the labour market. Cyclical movements in output take place because of the interaction between an upward sloping aggregate supply curve and a downward sloping aggregate demand curve.

Aggregate Supply Function The aggregate supply curve is central to this framework. The attempt here is to show that prices are not completely flexible so there is always part price and part quantity adjustment to any macroeconomic shock that takes place whether from the demand or the supply side. Such shocks, therefore, persist through fluctuations in output and employment around the full-employment equilibrium. Before we go into

the reasons for why prices are rigid, let's see how this generates an aggregate supply curve which is positively sloped in the inflation-output plane.

The new Keynesian price mechanism is derived from microfoundations of optimal pricing by firms with some degree of price rigidity. It is captured by assuming that in each period, a random fraction of firms do not reset their price based on the profit maximization exercise i.e. marginal revenue equals the marginal cost Calvo [1983]. As the output rises, marginal costs rise, which should have translated into a rise in prices but not all firms do that simultaneously. Hence, the prices rise but not to the same extent as they would have had all firms followed the profit maximisation exercise. The fact that there is always a fraction of firms sticking to their past prices creates some degree of rigidity in the overall inflation, the degree of which is directly proportional to that fraction. This gives us a positively sloped aggregate supply curve. Now, let's see why the prices are rigid in the first place.

New Keynesian models are based on firms engaged in imperfect competition i.e., the firms instead of being price takers are price makers. So, the firms choose both the price and output depending on the principles of profit maximisation. A firm will increase its production by one unit only if the additional revenue generated is greater than the additional production cost. This additional revenue itself will depend on the extent of an increase in sales and the fall in prices. If the sales increases proportionately higher than the fall in prices, additional revenue will be generated (this proportion is measured by the elasticity of demand). On the other hand, the increase in marginal cost will depend on the increase in labour cost arising out of the falling marginal productivity of labour. Firm's profit maximising point will be where the additional revenue is equal to the additional cost i.e. the famous microeconomic condition for imperfectly competitive markets, marginal revenue is equal to the marginal cost. So, the price chosen will be such that this condition is satisfied. This makes the prices a function of nominal wages, marginal productivity of labour and elasticity of demand (which is inversely related to the markup).

Despite this being the profit maximising principle, there are firms which might not let the prices change even if the condition so demands. And one of the most written about reasons is the theory of *menu costs*. These costs could involve printing of new price lists and menus as well as renegotiating contracts with both the downstream and upstream firms. While they seem trivial in explaining macroeconomic fluctuations, they produce large macroeconomic fluctuations as shown by Mankiw [1985], Akerlof and Yellen [1985]. So, the firms do not just take the cost of production into account but also these menu costs while deciding whether to change their prices. Higher the menu costs higher will be the resilience shown by prices to move towards their profit maximising levels.

There were, however, doubts cast within this tradition on the extent to

which small menu costs could explain the rigidity in prices. So, the menu cost theory was appended by other *real* rigidities. It was argued that the other real factors like the marginal productivity of labour or the elasticity of demand could behave in a way that even relatively low menu costs could generate siginificant price rigidities. So, it is possible that a fall in industry level output does not generate a fall in prices because either the desired markup might rise (elasticity of demand falls) as a result of greater collusion or the marginal cost does not fall or both.

In Fig. 6, I show the implications of price rigidity generating an upward sloping aggregate supply curve (the New Keynesian Phillips Curve or NKPC in short), which makes output adjustment *necessary* for any macroeconomic equilibrium. So, the causality in the product market moves from price rigidity to output, which is below its 'natural' level (that determined by flexible prices and wages) as shown by the direction of the arrows in the second quadrant. It is important to see that if the prices had been completely flexible, the NKPC will be vertical at the 'natural' level of output (shown by the dotted line). At this point in the absence of wage-price rigidities, the labour market equilibrium is given by the profit maximisation condition of marginal revenue is equal to the marginal cost i.e. labour demand curve, which is derived from the production and demand functions under conditions of imperfect competition, is equal to the labour supply curve determined by the labour-leisure choice of the workers (equilibrium combination shown by dotted lines in the fourth quadrant). It can also be seen that with an upward sloping NKPC, a fall in output as a result of a demand shock leads to an actual fall in output which does not get self-corrected since the prices do not adjust fully.

Aggregate Demand Function   The aggregate demand curve of the New Keynesian framework is arrived through intertemporal optimisation of a representative consumer who is trying to find an optimal bundle of labour and consumption today given the budget constraint which, apart from the current income, includes the income coming from purchase of bonds out of current savings (Galí [2009]). This intertemporal optimisation condition results in today's consumption being directly related to the expected consumption tomorrow and inversely related to the expected real rate of interest (inversely related to the expected bond price) minus the discount rate. The inverse relation results from the fact that a higher expected rate of interest means a higher opportunity cost for today's consumption while a higher discount rate gives lesser importance to tomorrow's consumption. So, what matters is the net impact of the two in deciding the optimal path of consumption. This consumption function, in a baseline model, is converted into the output-interest rate space by abstracting away from other sources of demand i.e. all output is consumed.
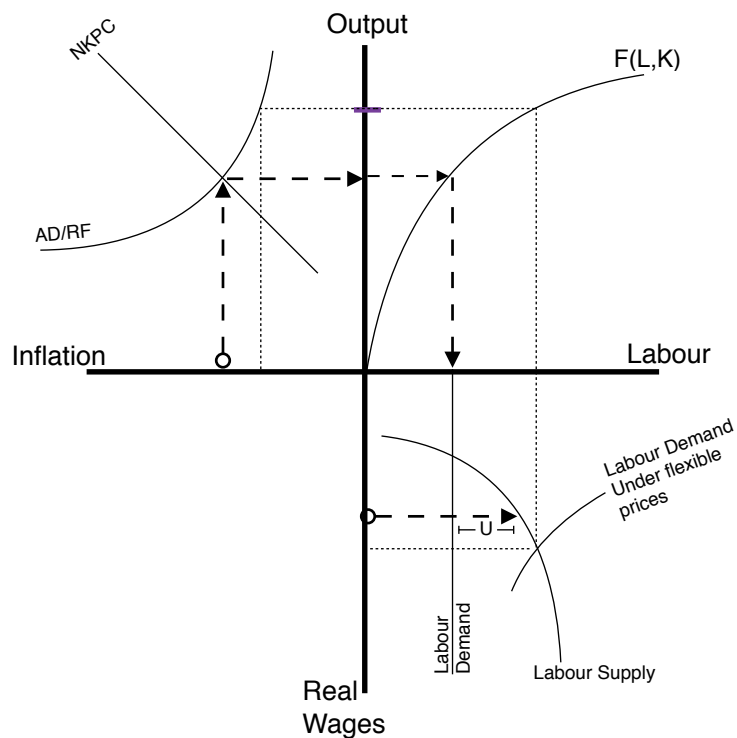
Figure 6: Macroeconomic Equilibrium in the New-Keynesian Framework

To understand this framework, we need to bring its two components, aggregate demand and supply in the same frame. While the aggregate supply function is located in the output-inflation plane, the demand function is in the output-interest rate plane. They can be made compatible by converting the demand function into the output-inflation plane. It can be done in two ways depending on the assumption of exogenous or endogenous money. In the case of exogenous money, for an exogenously given rate of growth of money supply, the aggregate demand (AD) curve will be negatively related to the rate of inflation because a fall in inflation means an increase in real balances and, hence, a higher real balance effect. In the case of endogenous money, the central bank can play the role of ensuring the inverse relationship. A fall in inflation loosens the hands of the central bank to decrease the interest rates and expand the level of output and vice versa. So, we still find a downward sloping demand curve but it is generated through policy intervention. This curve is also called the reaction function (RF as shown in fig. 6) as it depicts the movements in output as a reaction of the policy intervention of the central bank.

4.2 Policy Recommendations

4.2.1 Dominance of Monetary Policy

Interest rate is the policy instrument of the Central Bank (CB). An optimal policy rule is such that the CB tries to minimize the loss function arising from the deviation of the actual level of output and rate of inflation from the targeted one. As a rule of thumb, an approximation of this exercise is now called the Taylor's rule.

Any demand shock in the economy could be dealt with the monetary policy instruments. An initial fall in the output will prompt the central bank to decrease the interest rates, which for a given discount rate, increase the level of consumption today in the baseline model. This will mitigate the initial problem purely through a calibrated interest policy approach. So, in normal recessions, monetary policy should be allowed to bring about stabilisation in the economy.

A supply shock leads to an increase in inflation at all levels of output (AS shifts up). The central bank intervenes by increasing the rate of interest, thereby, controlling output and hence bringing inflation down (movement down the new AS curve).

It can be seen that in their theoretical and, hence, in their policy approach, they have put Keynes [1936] on its head. The only condition in which they do not give primacy to monetary policy is in conditions of *deep* recession as is happening today where economists like Krugman are talking in somewhat Keynesian language. What difference does a deep recession make? It brings liquidity trap into the picture. If the level of output falls to such an extent that it is impossible to stimulate the economy through monetary policy since there is a lower bound of zero for the interest rates, active fiscal policy will be required. Sans this possibility, expansionary fiscal policy is distortionary. In this respect, they are consistently anti-Keynesian. So, the same economists in the mainstream framework, who are talking the language of Keynes, will become anti-Keynesian as soon as the Great Recession is over.

4.2.2 Supply-Side Policies and the Labour Market

Lindbeck and Snower [1988] argue that the bargaining power of the insiders need to reduced whereas those of the outsiders increased for the involuntary unemployment to be reduced. So, the policy recommendations with respect to the insiders are as follows: (a) reducing the hiring and firing costs through softening of job security legislation; (b) reformed labour laws to lessen the powers of the trade unions and the likelihood of strikes. On the other hand, to enhance the powers of the outsiders, following steps could be taken: (a) to increase the marginal productivity of labour through improved training; (b) improving labour mobility; (c) profit-sharing arrangements which bring

greater flexibility to wages; (d) keep the unemployment compensations low so that they act as an incentive for job search.

5 Conclusion

The current Great Recession, the worst crisis that capitalism has faced since the Great Depression, has failed, at least so far, to generate a change in the teaching and practice of Macroeconomics. This seems bizarre as if nothing has happened and the economists are just going about doing business as usual. In light of this, the current paper attempted to address how Macroeconomics ought to be taught to students at the advanced intermediate level, which gives them an overall perspective on the subject.

References

George A Akerlof. Labor contracts as partial gift exchange. *The Quarterly Journal of Economics*, pages 543–569, 1982.

George A Akerlof and Janet L Yellen. A near-rational model of the business cycle, with wage and price inertia. *The Quarterly Journal of Economics*, pages 823–838, 1985.

G.A. Calvo. Staggered prices in a utility-maximizing framework. *Journal of monetary Economics*, 12(3):383–398, 1983.

EPW. An economics that demystifies economics. *Economic and Political Weekly*, 48(38), Sep 2013.

M. Friedman. Nobel lecture: Inflation and unemployment. *The Journal of Political Economy*, pages 451–472, 1977.

J. Galí. *Monetary Policy, inflation, and the Business Cycle: An introduction to the new Keynesian Framework*. Princeton University Press, 2009.

Nicholas Kaldor. *The Scourge of Monetarism*. Oxford University Press, 1986.

Michal Kalecki. The principle of increasing risk. *Economica*, 4(16):440–447, November 1937.

Michal Kalecki. *Essays in the Theory of Economic Fluctuations*. New York, Russell & Russell, 1939.

Michal Kalecki. Political Aspects of Full Employment. In *Selected Essays in the Theory of the Capitalist Economy*. Cambridge University Press, 1943.

Michal Kalecki. *Selected Essays on the Dynamics of the Capitalist Economy.* Cambridge University Press, 1971.

J. M. Keynes. *The General Theory of Employment Interest and Money.* A Harvest Book/ Harcourt, Inc., 1991 edition, 1936.

J. M. Keynes. The General Theory of Employment. *Quarterly Journal of Economics*, pages 209–221, 1937.

Gilberto Tadeu Lima and Mark Setterfield. Pricing behaviour and the cost-push channel of monetary policy. *Review of Political Economy*, 22(1): 19–40, 2010.

A. Lindbeck and D.J. Snower. *The Insider–Outsider Theory of Employment and Unemployment.* Cambridge, MA: MIT Press., 1988.

N Gregory Mankiw. Small menu costs and large business cycles: A macroeconomic model of monopoly. *The Quarterly Journal of Economics*, pages 529–537, 1985.

Hyman P Minsky. *John Maynard Keynes.* Columbia University Press New York, 1975.

Prabhat Patnaik. *Accumulation and Stability Under Capitalism.* Clarendon Press, Oxford, 1997.

Prabhat Patnaik. *The value of money.* Columbia University Press, 2009.

A.W. Phillips. The relation between unemployment and the rate of change of money wage rates in the united kingdom, 1861–19571. *Economica*, 25 (100):283–299, 1958.

J. Robinson. *Economic heresies: some old-fashioned questions in economic theory. Joan Robinson.* Macmillan, 1971.

R.E. Rowthorn. Conflict, Inflation and Money. *Cambridge Journal of Economics*, 1:215–239, 1977.

Steven C Salop. A model of the natural rate of unemployment. *The American Economic Review*, pages 117–125, 1979.

Mark Setterfield. *Handbook of alternative theories of economic growth.* Edward Elgar Publishing, 2010.

Carl Shapiro and Joseph E Stiglitz. Equilibrium unemployment as a worker discipline device. *The American Economic Review*, pages 433–444, 1984.

Brian Snowdon and Howard R Vane. *Modern macroeconomics: its origins, development and current state.* Edward Elgar Publishing, 2005.

Josef Steindl. Capitalist enterprise and risk. *Oxford Economic Papers*, 7: 21–45, 1945.

Andrew Weiss. Job queues and layoffs in labor markets with flexible wages. *The journal of political economy*, pages 526–538, 1980.