

# Monetary policy in the *General Theory*

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## Abstract

The theory of interest rate is central to Keynesian macroeconomics. This paper provides an interpretation of Keynes' conventional theory of the interest rate. Accordingly, the interest rate can only be determined in the market, if expectations converge. The central bank is a market-maker, because of its capacity to manage expectations and to affect market outcomes. On the other hand, interest rate and asset prices determine the rate at which wealth is converted into income. This may be a crucial consideration when discussing the question of what monetary policy can do.

*Key words:* Determination of interest rates, term structure of interest rates, financial markets and the macroeconomy, monetary policy.

*JEL classification:* B22, E12, E43, E44, E52.

## 1. Introduction

On the occasion of the 60<sup>th</sup> anniversary of the *General Theory (GT)*, Meltzer (1996) argued, with some force, that "... the main points on which Keynes labored have either long since been incorporated into standard macroeconomics or disappeared from sight." Perhaps because many feel the same way today that, as far as I know, there has been no "the *GT* after seventy years" conferences or special journal issues in that part of the world that has stronger claims on the intellectual heritage of Keynes. From this perspective Ankara is somewhat an "unlikely" place for such activities, but not without a good reason. In this part of the world the government is still seen by many as the main vehicle of achieving higher life standards. It is clear

that the received “Keynesian” position that active government policy is necessary and possible is congenial to this understanding. It is therefore once again imperative to look at the content of this received “Keynesian” position. My aim will be limited to Keynes’ theory of the interest rate as presented in the *GT*. I argue that Keynes believed that interest rate determination would not be possible without a central bank. A brief discussion of the nature of the power that central banks have in manipulating the interest rate concludes.

## 2. The Keynesian controversy

As is too well known, Keynes rejected, what at the time was and still is the orthodox position that employment is determined in the labor market. The reason, however, why he has become so prominent an economist is not only what he proposed instead, but also how he reached that conclusion. The essence of his alternative theory is that employment is determined in asset markets, as has long been recognized by able scholars like the late Hyman Minsky. This is why the interest rate theory (or the theory of asset price determination as Minsky (1982) would put it) is so central to Keynes’ argument. To set the stage for the arguments of this paper let me burden the readers with a simple model of an economy in which money consists of a given stock of gold and has two uses:

$$M = M_1 + M_2, \quad (1)$$

where  $M$  = given quantity of gold,  $M_1$  = quantity of gold used for transactions purposes,  $M_2$  = quantity of gold held as a store of value.

Let us suppose

$$vM_1 = pY, \quad (\text{Quantity Theory}) \quad (2)$$

where  $v$  = velocity of money assumed to be constant,  $p$  = price (in terms of gold) level of output,  $Y$  = output. Now, suppose that the economy and is in equilibrium with a given level of employment and output. What would be the effect of an increase in demand for gold as a result of portfolio adjustment in favor of gold, meaning a fall in  $M_1$  in favor of  $M_2$  in the present context, or an increase in liquidity preference as Keynes would put it? The orthodox answer is of course that, given  $Y$  as determined in the labor market, an increase in liquidity preference reduces the price of output, viz. Eq. (2).

For Keynes, on the other hand,<sup>1</sup>

*“Unemployment develops, that is to say, because people want the moon;-men cannot be employed when the object of desire (i.e. money) is something which cannot be produced and the demand for which cannot be readily choked off”* (p. 235).

This means, in the present context, that the increase in  $M_2$  ( $= -dM_1$ ) is the counterpart of reduced demand for investment expenditures (I):

$$p dI = dM_1 \quad \text{or} \quad dI = dM_1/p \quad (3)$$

As a result output falls by  $dY = k dI$ ,  $k$  being the simple multiplier. Whether or not this can in fact be a permanent equilibrium position has been the central controversy in standard macroeconomics. Hicks, a young analytical economist at the time of the publication of the *GT*, proposed the well-known IS-LM formulation of the *GT*, and it must be added with some reasonable support from reading the *GT* itself, which later became the main vehicle for incorporating the *GT* into standard macroeconomics. Accordingly, Keynesian equilibrium came to be seen as a special case resulting from *ad hoc* nominal rigidity assumptions. This view that the results of the *GT* stem from nominal rigidities persists in present theories that try to provide endogenous or rational explanations why nominal rigidities might be present. The current wisdom that separates macroeconomics into the short-, the medium- and the long-run has its roots in this view. To the credit of Keynes, the fact that in the short-run there can be need for activist policy is no longer disputed. But as Meltzer (1996) convincingly argues, the main thrust of the *GT* was, on Keynes' terms, "...the study of changes in the scale of output..." which Meltzer interprets to mean "...a study of factors affecting the long-run stock of capital available to firms, in this case to firms in the aggregate." So what did Keynes have to say about policy in this respect?

It is not easy to distinguish between Keynes' arguments as pertaining to the long or the short run in any systematic way. In fact it is doubtful that he made any such distinction in a systematic way. He did argue, however, that the source of the problem of the capitalist society was that capital could command a rent, as land does, because of its scarcity, while there was no "intrinsic" reason for such scarcity because capital can be produced, but its production is held back

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<sup>1</sup> All quotations from the *GT* are from Keynes (1973). We shall indicate only the page numbers from which quotations are taken.

because men want the “moon”. On the other hand, the sentence immediately following the last quotation is: “*There is no remedy but to persuade the public that green cheese is practically the same thing and to have a green cheese factory (i.e. a central bank) under public control.*” (p. 235). Now, what exactly Keynes meant with this, and whether this is a statement about the long or the short run, shall always remain a matter of dispute. Nevertheless, there is a place for another attempt to fill in the gaps and to point to problems in Keynes’ theory.

### 3. Money and interest

Since we assumed that an increase in  $M_2$  is the counterpart of a reduced demand for investment expenditures, we must suppose, in the interest of a consistent theory<sup>2</sup>, that

$$\text{wealth in terms of gold} = W = M + p_K K, \quad (4)$$

where  $K$  = capital stock and  $p_K$  = market price (as opposed to production price) of capital goods in terms of gold. Now, let us depart from the standard formulations and suggest the following demand for money as a store of value function:

$$M_2^d = L(i_s, i/i^e, z)W = L(i_s, i/i^e, z)[M + p_K K], \quad L_1 ? , L_2 < 0, L_z > 0 \quad (5)$$

Here,  $0 < L(i_s, i/i^e, z) < 1$  is the proportion of wealth that wealth owners wish to hold in terms of money (gold); and this proportion depends on  $i_s$  = short-term interest rate,  $i$  = “interest rate”,  $i^e$  = “expected interest rate”,  $z$  = exogenous shift parameter. The  $i/i^e$  variable is suggested by the following famous passage from the *GT*:

“...what matters is not the absolute level of  $r$  but the degree of its divergence from what is considered a fairly safe level of  $r$ , having regard to those calculations of probability which are being relied upon” (p. 201).

On this interpretation  $i^e$  must be thought as the “fairly safe level of the rate of interest, having regard to those calculations of probability which are being relied upon.” The exogenous shift variable ( $z$ ) is an attempt to capture the volatile nature of liquidity preference that Keynes placed so much emphasis as will be seen below. There is

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<sup>2</sup> This line of reasoning was forcefully imposed by Tobin and his associates culminating in Tobin’s highly influential 1982 paper. Several themes from this work will be apparent in what follows. It must also be added that Tobin (1982) is an important milestone in the incorporation of the main points on which Keynes labored on into standard macroeconomics.

also some support for the inclusion of the short-term rate of interest in the *GT* as will be indicated below.

Now consider the following famous passage from the *GT*, according to which the interest rate:

*“...is the ‘price’ which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash...”* (p. 167).

That is, if the quantity of available cash,  $M_2$  in the present context, were known, it could be equated to the demand for it to solve for the rate of interest. This is of course what is done in the IS-LM tradition, where the simple demand for money function is used to determine the split of  $M$  into  $M_1$  and  $M_2$  in equilibrium. Now with the present formulation of demand for money (Eq. 5), this is not a straightforward procedure, because

- (1) There are three variables to be determined in the demand for money function:  $i_s$ ,  $i$ ,  $i^e$ ;
- (2) The demand for money function is indeterminate without knowing  $p_K$ , the price of capital, even if  $K$  is assumed known<sup>3</sup>;
- (3) Finally, but more to the point, the available volume of cash is indeterminate.

Consider:

*“...different people will estimate the prospects differently and anyone who differs from the predominant opinion ...may have a good reason for keeping liquid resources in order to profit...”* (p. 169).

*“...the individual who differs from the market in the other direction (those who expect the long-term rate to fall) will have a motive for borrowing money for short periods in order to purchase debts of longer term. The market price will be fixed at the point which the sale of the ‘bears’ and the purchases of the ‘bulls’ are balanced.”* (p. 170; bracket and the emphasis are added).

This clearly a different view of interest rate determination then saying that interest rate is the price that equates the desire to hold cash in the form of cash with the available quantity of cash.<sup>4</sup> Because here

<sup>3</sup> See the Appendix 1 for an exposition of the issues involved.

<sup>4</sup> Note also that there is a justification for including the short-term rate in Eq. 5. The short-term rate relative to expectations determines the purchases of “bears”. It can be argued that a higher short-term rate should reduce the demand for money, i.e. the sign of the partial derivative in Eq. 5 should be negative. However, because of possible multicollinearity between the short-run rate and the other two rates, especially given practices of modern central banking whereby the short-term rate is the main instrument

the available quantity of cash is simply the purchase of bulls, which is indeterminate, and the usual equilibrium determination is not possible.

Given that equilibrium is at the point where ‘the sales of the bears and the purchases of the bulls are balanced,’ it must be characterized by a convergence of expectations. If expectations diverge widely, there could be no balance between the sales and purchases. I shall now suggest an account of Keynes’ theory in the light of this observation. We may start by supposing that:

$$(i^e)_k \sim D_k(\mu_k, \sigma_k) \quad (6)$$

where  $D_k(\mu_k, \sigma_k)$  is the  $k^{\text{th}}$  agents “subjective” probability distribution concerning the “safe rate”.<sup>5</sup> Here,  $\mu_k$  might be thought of as what the  $k^{\text{th}}$  agent considers to be the safe rate. Thus, an investor is a “bear” or “bull” according to  $i/\mu_k$  “having regard to those calculations of probability which are being relied upon,” i.e.  $\sigma_k$ . So unless the distribution of bears and bulls are known the quantity of available cash is indeterminate. At times all investors may become “bears” so that the available quantity falls to zero, viz. the liquidity preference becoming absolute. Therefore, at any point in time the “balance” will depend on the distribution of individual distributions of the safe rate,  $\Gamma(D_k(\mu_k, \sigma_k))$ .

Thus, market outcome depends on the overall distribution  $\Gamma$ , which can take any shape. Now, Keynes remarks immediately after referring to the “highly psychological nature” of the interest rate that:

*“... the long-term market-rate of interest will depend, not only on the current policy of the monetary authority, but also on market expectations of its future policy. The short-term rate...is easily controlled by the monetary authority, both because it is not difficult to produce a conviction that its policy will not greatly change in the very near future, and also because the possible loss is small compared with the running yield... But the long-term rate may be more recalcitrant when once it has fallen to a level, which on the basis of past experience and present expectations of future monetary policy, is considered ‘unsafe’ by representative opinion...”*

*Thus a monetary policy which strikes public opinion as being experimental in character or easily liable to change may fail in its objective of greatly reducing the long-term rate of interest*

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of policy, the effect might be more complicated. This is the reason why  $L_1$  is left open in Eq. 5, pending further consideration.

<sup>5</sup> We are assuming a two-parameter distribution for individuals for convenience.

*because  $M_2$  may tend to increase almost without limit in response to a reduction of  $r$  ... The same policy, on the other hand may prove easily successful if it appeals to public opinion as being reasonable and practicable and in the public interest rooted in strong conviction, and promoted by an authority unlikely to be superseded.*

*It might be more accurate, perhaps, to say that the rate of interest is a highly conventional...phenomenon. For its actual value is largely governed by the prevailing view as to what its value is expected to be. Any level of interest which is accepted with sufficient conviction as likely to be durable will be durable ...” (p. 202-3).*

Based on the last paragraph, Keynes seems to be suggesting a “conventional theory of interest rate,” as has been argued by some scholars (see Rogers, 1989). What is meant by the term “conventional” is not at all clear in the above context,<sup>6</sup> and the ensuing literature has not been clearer in this respect either. Now, he was certainly of the opinion that left to itself and in the absence of a monetary authority, the sale of “bears” and the purchase of “bulls” may never balance, or even if it did, the ‘balance’ would be subject to violent fluctuations, and it could “...fluctuate for decades about a level which is chronically too high for full employment;-- particularly if it is the prevailing opinion that the rate of interest is self-adjusting, so that the level established by convention is thought to be rooted in objective grounds much stronger than convention, ...” (p. 204).

What is noteworthy here is the possibility that “the established or the conventional level” might be rooted in ‘*objective grounds much stronger than convention*’, and the “desire for the moon” can prevail for decades, but it is hard to see the overall meaning of the statement. I believe that such ambiguities associated with the notion of the “conventional”, dissipate, if we accept that Keynes was arguing that the outcome depends very much on the central bank policy. In terms of notation introduced above, Keynes’ argument reduces to writing

$$\Gamma(D_k(\mu_k, \sigma_k)) \sim \Gamma(\mu, \sigma) \quad (7)$$

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<sup>6</sup> Likewise, the ambiguous terms like “public opinion” and “public interest” are not at all clear. The “public” in the present context cannot be general public, but rather it should be what today is called “the markets”, and Keynes is known to refer to portfolio managers of his time as the “wealth-owning class”. If so, it is not at all clear what “public interest” could mean.

to the extent that a central bank can manipulate investor expectations so that individual distributions converge. This means that the market outcome itself becomes a two-parameter distribution and the Bank has some clout in imposing the possible range of values for the parameters of the distribution that the markets take with some confidence. Moreover, the distribution  $\Gamma(\mu, \sigma)$  will be stable provided the central bank (which is *unlikely to be superseded*) is promoting a consistent and credible policy (*not experimental in character*).<sup>7</sup> Thus, in Eq. 5,  $i_s$  is “easily controlled by the central bank” and is given,  $i/i^e$  can be replaced by unity, subject to some variation, on account of the fact that under the guidance from a successful central bank we have  $i/i^e \sim \Gamma(1, \sigma)$ . I think this is the sense in which the “conventional” theory is to be understood.

#### 4. Final remarks

The monetary policy setting outlined above does in fact coincide with what modern day central banks are doing. The main policy tool is the short-term interest rate and central banks operate so as to “manage expectations” within a broad framework of policy that is shared by the markets. The aim of the policy, however, is usually based on some notion of “price stability” because it is believed such stability is more conducive to long-term capital development of an economy, than attempting to maintain a “low” real interest rate. In fact, central bankers today look for inspiration in Friedman (1969) who argued that monetary policy couldn’t maintain a “low” real interest rate, but could only aim price stability. This contrasts with the idea that a “green cheese factory” can maintain a conducive atmosphere to make “man” believe that the “green cheese” is the “practically” same thing as that unproduceable object of desire = money. It is precisely to this point of view that Friedman objected with lasting practical success so far.

I end this discussion by pointing to a fundamental neglect in Keynes that may be in the list of reasons for the success of the “monetarist” backlash. Consider the net asset and investment position of the New York State and Local Retirement System provided in Appendix 2. The system, one of many institutional investors, controls assets of some 140 billion dollars and provides benefits to 264 096 members as of 31 March 2006. On average 22 000 dollars were paid in benefits per participant, which is below per capita income in the

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<sup>7</sup> The idea of what today we call “credibility” and “time consistency” are present in these quotations.

US. Observe that the fund is dependent on investment income to pay benefits as contributions can meet only half of benefit payments and that investment income is subject to fluctuations.

In a monetary economy income and savings are realized in terms of money and wealth accumulates into large sums over time. And those who manage these funds, whether they are wealth owners of the type Keynes had in mind, or institutional investors that are supposed to provide a minimum income to their beneficiaries, are in search of an “acceptable” rate of return. That is, in a different role, the “interest rate” or more generally the developments in asset prices, determine the rate at which wealth is converted into income. In other words, interest and money are about income distribution in the final analysis. Thus, the question reduces to whether central banks can determine income distribution. There is no easy answer, neither at a theoretical level nor at a practical level, especially because in matters of income distribution the outcome is not independent of the social bargaining power of the claimants. And the power of the financial “markets” is not to be ignored, on account of the fact that millions of small individual “voter-investors” are involved through funds like the NY retirement system. Keynes ignored this side of the coin and had a somewhat simplistic vision of the wealth owners who he thought could be easily managed to accept a low rate of return in return for “safety”.

### Appendix 1

Here we sketch a model to show that it is not easy to conceptualize the Keynes' system as a closed simultaneous equation system that can be subjected to the method of comparative statics. We start with the basic idea that the market value of capital is the present value of what is expected of it:

$$p_K K = \sum_0^T \frac{\text{expected profits}}{(1+i)} \quad (\text{A})$$

We can then formulate an investment function in the spirit of Keynes,<sup>8</sup> whereby investment depends on the ratio of market to replacement cost of capital:

$$I = I(p_K K/p_K) = I(p_K/p), \quad I' > 0 \quad (\text{B})$$

$$Y = (1/s) I \quad (\text{C})$$

Here we have assumed that the cost price of capital in terms of gold is the same as that of output ( $p$ ). These equations together with Eq. (5) form an open system and the solution depends on how expectations and the monetary policy setting are formulated.

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<sup>8</sup> Minsky implicitly suggests this type of a function when emphasizing the "two prices of capital" in formulating his famous financial instability hypothesis. Of course, it can also be understood in terms of the q-theory of Tobin (1982).

## Appendix 2

| Summary Statement for New York State and Local Retirement System, in<br>billion USD |       |              |
|---|-------|--------------|
|   | 2005  | 2006         |
| A. NET ASSETS (end of the period)   | 128.0 | 142.6        |
| A.1. Investments  | 126.0 | 140.4        |
| A.1.1 Domestic Stock  | -     | 68.5 (48.8%) |
| A.1.2 International Stock   | -     | 20.0 (14.3%) |
| A.1.3 Government Bonds  | -     | 19.8 (14.1%) |
| A.1.4 Corporate Bonds   | -     | 9.1 (6.5%)   |
| B. INCOME ACCOUNT (net<br>increase in assets over the period)                       | 7.2   | 14.5         |
| B.1 Additions   | 13.0  | 20.7         |
| B.1.1 Net Investment Income   | 9.7   | 17.6         |
| B.1.2 Total Contributions   | 3.3   | 3.1          |
| B.2 Deductions  | 5.8   | 6.2          |
| B.2.1 Benefits Paid   | 5.7   | 6.1          |

*Source:* Yearbook of the NY State and Local Retirement System.

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## Özet

### *Genel Teori*'de para politikası

Faiz kuramı Keynesgil makroiktisatta merkezi bir konumdur. Bu makalede Keynes'in 'konvansiyonel' faiz kuramının bir yorumu geliştirilmektedir. Buna göre faizin belirlenebilmesi için bekleyişlerin yakınsaması gerekir. Bekleyişleri yönetebildiği ölçüde merkez bankaları piyasa yapıcısıdır ve faiz oluşumunu etkiler. Öte yandan faiz ve varlık fiyatları servetin gelire dönüşme oranını belirler. Para politikasının neyi yapıp neyi yapamayacağı tartışması açısından bu nokta önemli olabilir.

*Anahtar kelimeler:* Faiz hadlerinin belirlenmesi, faiz hadlerinin vade yapısı, finansal piyasalar ve makroiktisat, para politikası.

*JEL sınıflandırması:* B22, E12, E43, E44, E52.