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Uncertainty and money: Keynes, Tobin and Kahn and the disappearance of the precautionary demand for money from liquidity preference theory

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Keynes answered to critics of the General Theory, in 1937, that they failed to realize that there were two main innovations in that work. The first, was the relationship between money demand and uncertainty; the second was the consumption multiplier. The relation between money demand and uncertainty was in fact the main reason to explain why aggregate demand could fall short of full employment income. However, this was explained by Keynes in 1937 by recourse to a form of precautionary demand for money. In The GT, Keynes had actually merged the precautionary demand into the transactions demand for money, making it very difficult for any reader, friendly or unfriendly, to actually see what he meant in 1937. As a result, Keynes liquidity preference theory of the interest rate in the GT exhibited some important shortcomings that were the subject of many reexaminations, including one by Richard Kahn and another by James Tobin. The paper evaluates Keynes's views, Kahn's and Tobin's solutions to Keynes's dilemmas. At its conclusion it is shown why these themes remain relevant today, particularly when financial systems are in turmoil.

Key words: Liquidity preference theory, The economics of Keynes
JEL classifications: E40, E41, E43

1. Introduction

The publication of *The General Theory of Employment, Interest and Money* (hereafter referred to as GT), in early 1936, generated several public debates. Keynes, however, got personally involved in only a few of them. For one of these, Keynes wrote the article 'The General Theory of Employment', published in 1937, to refute criticisms coming from a number of economists, chiefly among whom were W. Leontieff and J. Viner. In that paper, Keynes

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argued that there were two main theoretical novelties in the GT. The first was the examination of the connection between money demand and uncertainty. The second was the consumption multiplier.

We will not be concerned in this paper with the multiplier, a concept that generated its own heated controversy through the years, even among committed Keynesians. We focus, instead, on the relation between uncertainty and money demand, which remains controversial to this day. As is well known, Keynes in the 1937 paper advanced a specific concept of uncertainty, in contrast to the most commonly accepted treatment of risk within a framework of calculable probabilities. Keynes was concerned with situations where it is not possible even to conceive the universe of possible outcomes of a given process, a requisite for the attribution of *a priori* probabilities. In his view, when facing this kind of uncertainty, agents could not protect themselves, even in theory, through the usual appeal to insurance. Therefore, to seek protection against uncertainty, agents had to find instruments that could be activated in situations that could not, however, be specified *a priori*. Keynes postulated that, in an entrepreneurial, or monetary, economy, this protection would be given by the possession of money.

If this was true, important consequences would ensue for the dynamics of entrepreneurial economies, including its proneness to generate involuntary unemployment. Basically, involuntary unemployment would emerge when the public demanded money, which Keynes postulated in the GT to be non-reproducible, instead of capital goods, the production of which demanded the employment of labour. This was supposed to be the first of the two major theoretical innovations of the GT that had eluded keen critics like Leontieff or Viner.

One could question, however, how convincingly was this argument really presented in the GT. In fact, not only classically-trained economists like Leontieff and Viner had problems with the connection between money demand and uncertainty proposed by Keynes in the GT. Authors who went on to become leading interpreters of the Keynesian traditions, like Richard Kahn, Keynes's own closest collaborator, and James Tobin, in the American Keynesian school, also felt necessary to modify Keynes's original presentation in the GT. In this paper, we revisit Keynes's discussion of money demand in the GT and see how effectively the theory proposed there fulfilled the intentions he clarified in the 1937 article. We also want to use Kahn's 1954 and Tobin's 1958 seminal contributions to help clarify the difficulties faced even by sympathetic readers of the GT when interpreting that theory.

We begin by discussing Keynes's stated intentions in his 'General Theory of Employment' article, to contrast them with the actual treatment given in the GT. This occupies Section 2 of this paper. In Section 3, we examine Kahn's criticisms and proposed modifications, doing the same with respect to Tobin's 1958 article in Section 4. Section 5 concludes the paper with a summary of the main arguments and their implications, including for the modern debate on the workings of monetary policy.

2. Keynes on uncertainty and money

As already mentioned, Keynes, in his The General Theory of Employment, of 1937, criticised some of the initial reviewers of the GT for their inability to understand his meaning of uncertainty and its implications for the behaviour of economic agents, especially with respect to wealth accumulation. As is frequently the case, however, it is

possible to counter-argue that those relationships were clearer to Keynes himself than to those who knew Keynes's ideas only through reading the GT. Certainly, Keynes's views on uncertainty are clearer to those who are acquainted with his treatise on probability. It is debatable, though, whether the GT alone fully conveys the meaning that Keynes attributed to the concept of uncertainty. Be that as it may, in his 1937 paper, Keynes tried to spell out unequivocally, if yet not very precisely, what he understood by uncertainty and what its implications were for the connection between wealth accumulation and money demand.

2.1 Keynes's 1937 argument on uncertainty and money demand[1]

Despite the centrality of the concept of uncertainty to the argument presented in his 1937 paper and its differences with the notion of calculable risk, Keynes curiously refrained from defining it precisely. Mostly, he appealed to intuitive notions suggested by statements like '[a]ctually, however, we have, as a rule, only the vaguest idea of any but the most direct consequences of our acts' (CW 14, p. 113).

In one of his best-known quotations, Keynes may in fact be said to define uncertainty by exclusion and by examples:

> By 'uncertain' knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable. The game of roulette is not subject, in this sense, to uncertainty; nor is the prospect of a Victory bond being drawn. Or, again, the expectation of life is only slightly uncertain. Even the weather is only moderately uncertain. The sense in which I am using the term is that in which the prospect of a European war is uncertain, or the price of copper and the rate of interest twenty years hence, or the obsolescence of a new invention, or the position of private wealth owners in the social system in 1970. About these matters there is no *scientific basis* on which to form any calculable probability whatever. We simply don't know. (CW 14, pp. 113–14, my emphasis)

The 'scientific basis' to which Keynes refers was the information necessary to calculate probabilities, which should allow the reduction of 'uncertainty to the same calculable status as that of certainty itself' (CW 14, pp. 112–13).

Probabilities cannot be calculated when it is not possible to identify the full set of events that *can* result from a given cause, so one cannot say, with certainty, that one element of that particular set of outcomes *will* definitely result from that cause. Keynes makes it clear that it is not just a question of possibly overwhelming complexity of calculations, as is the case of, for instance, weather forecasting. It is rather a question that, with social processes, *uncaused causes*, to use Shackle's expression, may operate as true innovations, that is, as unpredictable ruptures with past experience making a given development process unique. Uncertainty causes any element of knowledge liable to possibly become suddenly obsolete when an unpredicted and unpredictable new cause operated to change the course of a given process.[2] Knowing that the future is thus uncertain, human beings' expectations tend to be unstable and subject to drastic change, making any commitment to future scenarios inherently risky.

[1] This section is an exploration of the article 'The General Theory of Employment', published originally in *The Quarterly Journal of Economics*, February 1937. The quotations are taken from its reprint in the Collected Works of John Maynard Keynes, volume 14 (Moggridge, 1973), hereafter referred to as CW 14.

[2] A distinctive characteristic of any variant of the Keynesian theory of expectations is the recognition of the importance not only of estimating the future behaviour of the relevant variables but also of assessing the degree of confidence the decision-maker has on her estimates. The present author has discussed Keynes's concepts of probability and uncertainty in Cardim de Carvalho (1992), chapter 4, an approach strongly influenced by G.L.S. Shackle's writings. See also Runde (1994) for a similar view.

Keynes argued that uncertainty was a stronger characteristic in processes that could extend into the longer term:

> Thus the fact that our knowledge of the future is fluctuating, vague and uncertain, renders wealth a peculiarly unsuitable subject for the methods of the classical economic theory. (CW 14, p. 113)

Classical methods were those Keynes associated either with certainty or with calculable risks.[1]

The point Keynes was making was not immediately clear at the time. As Kahn observed, in commenting on the paper before publication: 'there is nothing to explain why the hypothesis of a calculable future would, if legitimate, result in full employment' (CW 14, p. 108). Nowadays, we need not dwell on the matter.[2]

It is important to notice that Keynes was not just proposing that at least some economic processes could be conceived as indeterminate, but stressing the fact that agents *knew* them to be uncertain. In fact, it was the *behaviour* of economic agents that interested Keynes to the extent that those behaviours were shaped by the *feeling* of uncertainty.[3] In fact, the demand for money, at least in part, would be explained by the perception of true uncertainty, something the 'classical school' simply could not really understand:[4]

> partly on reasonable and partly on instinctive grounds, our desire to hold money as a store of wealth is a barometer of the *degree of our distrust* of our own calculations and conventions concerning the future. (CW 14, p. 116, my emphasis)

Money, in an entrepreneurial economy, being the means through which any contract obligation is settled, is purchasing power in general form. If the future is uncertain in the sense Keynes used the term, one needs protection against unspecified and unspecifiable future events. Only the possession of money can offer a blanket protection against future disappointments of economic expectations. As a consequence:

> [t]he possession of actual money lulls our disquietude; and the premium which we require to make us part with money is the measure of the *degree of our disquietude*. (CW 14, p. 116, my emphasis)

It is important to notice that, for Keynes, only when one deals with true uncertainty can one speak of disquietude or confidence, since it is only in this case that the decision-maker

[1] 'I accuse the classical economic theory of being itself one of these pretty, polite techniques which tries to deal with the present by abstracting from the fact that we know very little about the future.' (CW 14, p. 115)

[2] See, for instance, Hahn (1984), chapter 7. Hahn criticises Patinkin and shows that payments process that can be reduced to calculable probabilities preserve the fundamental neutrality of money.

[3] It has been called to my attention by one referee the point raised by Dequech (1999) that confidence may have to do not only with the realisation of uncertainty itself but also with the degree of uncertainty-aversion of the decision-maker. Two agents could act in different ways faced with the same perception of uncertainty if they are averse to uncertainty in different degrees. Keynes does not refer to situations where some decision-makers are expected to act as if uncertainty simply did not matter, as in his discussion of animal spirits in *The General Theory*. It is not clear, however, if the argument is intended to illustrate the importance of distinguishing a *new* variable, an independently-measurable uncertainty aversion, or just to illustrate the relative uselessness of trying to calculate what is almost completely impossible to calculate [as the benefits of an expedition to the South Pole, example given in The General Theory (Keynes, 2007, p. 162)]. But, as with risk-aversion, uncertainty aversion may be a function of the gains and losses expected to be possible results of a given choice, as in the way Shackle (1952, 1979) deals with the problem, without having to introduce another unobservable variable. Of course, the choice of models, in the end, is a question of maximising explanatory power, which is an empirical question.

[4] 'Money, it is well known, serves two principal purposes. . . . In the second place, it is a store of wealth. So we are told, without a smile on the face. But in the world of the classical economy, what an insane use to which to put it! For it is a recognized characteristic of money as a store of wealth that it is barren; whereas practically every other form of storing wealth yields some interest or profit.' (CW 14, p. 115)

is conscious of the limitations under which any prediction of future events is made. The higher perceived uncertainty is, the lower will be the confidence in one's own expectation and the higher will be one's degree of disquietude.[1]

In the 1937 paper, thus, the theory Keynes proposed to explain the interest rate was based on the interaction between the demand for hoards, derived from the search for protection against uncertainty, and the supply of hoards by the banking system. For a given quantity of money, '[t]he rate of interest is the factor which adjusts at the margin the demand for hoards to the supply of hoards' (CW 14, p. 117). Thus, again for a given quantity of money, 'fluctuations in the *degree of confidence*' affect 'not the amount that is actually hoarded, but the amount of the premium which has to be offered to induce people not to hoard' (CW 14, p. 116, my emphasis).

As Keynes had already done in the GT, he assumed in the 1937 paper that the quantity of money was fixed by the monetary authority. The demand for hoards would then determine, given the supply, the interest rate that the marginal efficiency of capital investments had to top if new investment was to be realised and employment in the capital goods sector to be generated to reach full employment when desired savings were positive. The concern with the behaviour of investment took Keynes to the second part of the paper where he discussed the consumption multiplier and the determination of aggregate income.

One should notice that in The General Theory of Employment Keynes did not use the language he himself proposed in the GT to classify the modalities of money demand. In particular, he did not distinguish between precautionary and speculative demands for money. He contrasted money required by 'the active circulation for the transaction of current business' to 'inactive balances, i.e. for hoards' (CW 14, p. 117). The demand for hoards was explained at least three times in the paper as a reaction to the *lack of confidence* in expectations about the future, as shown in the three quotations above on the point.

In sum, Keynes criticised his classical commentators in this paper for not having noticed that his argument in the GT was that: (i) uncertainty caused a demand for money to emerge to satisfy the public's lack of confidence in their expectations about the future; (ii) that the interest rate was a measure of this degree of confidence, since it measured the reward wealth-holders demanded for parting with liquidity and the reward should increase with uncertainty; and (iii) that when uncertainty rose, therefore, interest rates would go up and investment would fall. This line of argument was complemented in part two of the 1937 paper by the consumption multiplier showing that the impact of the fall of investment on aggregate demand would be higher than the value of the fall of investment itself. This sequence of arguments constituted *the general theory of employment* Keynes was proposing in the GT but it seemed to have escaped classical critics. Was Keynes's criticism fair?

[1] It is the conscience that the basis for calculations is precarious that makes confidence so important. 'The state of long-term expectation, upon which our decisions are based, does not solely depend, therefore, on the most probable forecast we can make. It also depends on the *confidence* with which we make this forecast—on how highly we rate the likelihood of our best forecast turning out quite wrong. . . . The outstanding fact is the extreme precariousness of the basis of knowledge on which our estimates of prospective yield have to be made. Our knowledge of the factors which will govern the yield of an investment some years hence is usually very slight and often negligible. If we speak frankly, we have to admit that our basis of knowledge for estimating the yield ten years hence of a railway, a copper mine, a textile factory, the goodwill of a patent medicine, an Atlantic liner, a building in the City of London amounts to little and sometimes to nothing; or even five years hence.' (Keynes, 2007, pp. 148–50, emphasis in the original)

2.2 Keynes on liquidity preference in the GT[1]

In the GT, the demand for money is presented in chapters 13 to 15, dealing with the determination of the interest rate. Keynes had already introduced in previous chapters the notions of the *consumption multiplier*, which made aggregate demand depend on the volume of investment, and of *marginal efficiency of capital*, whereby investment was shown to depend on the interest rate. One of the central points of the GT was, in fact, to show that the interest rate is not the price that brings investment and savings into equality, but that '[i]t is the "price" which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash' (Keynes, 2007, p. 167). Thus, the interest rate is proposed to be 'the reward for parting with liquidity for a specified period' (Keynes, 2007, p. 167) instead of being the reward for waiting or abstention from present consumption.

A liquidity-preference schedule could then be identified as 'a potentiality or functional tendency, which fixes the quantity of money which the public will hold when the rate of interest is given; so that if r is the rate of interest, M the quantity of money and L the function of liquidity-preference, we have M = L(r)' (Keynes, 2007, p. 168)

Liquidity preference, therefore, is defined in terms of the exposure to yet undefined risks that parting with liquidity implies for a wealth-holder. Liquidity preference is initially introduced as a result of a precautionary motive and of a speculative motive. Three pages later in the same chapter, Keynes modified his definition of liquidity, to make the concept of liquidity preference also to include the transactions motive (Keynes, 2007, p. 170).[2]

Both the precautionary and the speculative motives are proposed to result from 'the existence of *uncertainty* as to the future of the rate of interest' (Keynes, 2007, p. 168, emphasis in original). The precautionary motive refers, in chapter 13, to 'the risk of disappointment' of '[t]he actuarial profit or mathematical expectation of gain calculated in accordance with the existing probabilities—it if can be so calculated . . . ' (Keynes, 2007, p. 169). The speculative motive to hold money, on the other hand, emerges when some wealth holders believe that interest rates will rise in the future (Keynes, 2007, p. 170), as did the *bears* Keynes identified in the Treatise on Money. Thus, while the precautionary motive was defined in a somewhat fuzzy fashion, the speculative motive was proposed to lead to clearly identifiable actions on the part of wealth holders.

Uncertainty was considered in diverse ways in each motive. For instance, both the precautionary and the speculative motives should be affected by the existence and degree of organisation of market for existing debts:

> in the absence of an organized market, liquidity-preference due to the precautionary-motive would be greatly increased; whereas the existence of an organized market gives an opportunity for wide fluctuations in liquidity preference due to the speculative-motive. (Keynes, 2007, p. 171)

The existence of secondary markets for existing debts should affect the precautionary demand for money to the extent that, in the presence of such markets, holding interest-earning debts would be less risky to some degree, reducing the attractiveness of yieldless money. On the other hand, the possibility of changes occurring in the prices of debts in the future opened up the possibility of speculating on possible future values of these contracts.

[1] Page numbers refer to the 2007 reprint of *The General Theory* by Palgrave MacMillan.

[2] As Hicks (1967, pp. 15–16) pointed out, however, it may not be appropriate to classify the transactions motive as a reason to demand money, since the demand for money in this context 'is just the indirect consequence of decisions taken for quite other reasons, with no direct calculations of their monetary repercussions'. On the other hand, as to the precautionary and speculative motives 'the notion of a voluntary demand for money is unquestionably appropriate'. (Hicks, 1967, p. 17)

It is interesting to notice that while the speculative motive is clearly described, the precautionary motive is somewhat murky. It was first defined as arising from the uncertainty about the disappointment of profit expectations (Keynes, 2007, p. 169) but a little later it was defined as a reaction to the uncertainty about the marketability of a given debt (Keynes, 2007, p. 170).

The motives to demand money will reemerge in chapter 15 of the GT. In the latter, Keynes formally defined three motives to demand money: (i) the transactions motive, comprising the income motive and the business motive; (ii) the precautionary motive; and (iii) the speculative motive.

The transactions demand for money is defined in the traditional way. It is the quantity of money demanded in anticipation of payments for goods and services and, for a given structure of contractual payments in the economy, depends upon a supposedly stable velocity of circulation of money.

The precautionary motive is defined as providing 'for contingencies requiring sudden expenditure and for unforeseen opportunities of advantageous purchases, and also to hold an asset of which the value is fixed in terms of money to meet a subsequent liability fixed in terms of money . . .' (Keynes, 2007, p. 196). It is striking that neither confidence, disquietude nor even uncertainty itself are mentioned as central factors operating through the precautionary motive.

Before introducing the speculative motive, however, Keynes takes an unexpected turn. Arguing that both the transactions and the precautionary motives 'will partly depend on the cheapness and the reliability of methods of obtaining cash, when it is required' and will also be influenced by 'the relative cost of holding cash', Keynes will state that '[i]n normal circumstances the amount of money required to satisfy the transactions-motive *and the precautionary-motive* is mainly a resultant of the general activity of the economic system and of the level of money-income' (Keynes, 2007, p. 196, my emphasis)

In other words, the precautionary motive became a variation of the transactions motive, and disappeared from the model as an independent form of behaviour! The demand for money explained by uncertainty as such, by the degree of disquietude of the public, by the lack of confidence on one's own expectation, which Keynes proposed one year after the publication of the GT as being one of the two revolutionary innovations of the book was in fact subsumed in the most traditional of motives: the transactions motive to hold money. Nothing is said about how these elements could be subsumed by the variable *income*, which, being the determinant of the transactions motive to demand money, also became the explicit determinant of the precautionary demand for money. No wonder the classical critics of the GT could not see why the relationship between money and uncertainty was so important to Keynes's argument. They did not see it because Keynes hid it in the old quantity theory of money![1]

The speculative demand for money is defined in chapter 15 in a similar way to what is offered in chapter 13. Each wealth holder is presented with the possibility of buying debt or holding money. If a given agent judges the current rate of interest to be lower than what is expected to be the 'normal' rate of interest, he will hold money to avoid having capital losses in the future when the interest rate rises back to its normal level and the price of debt falls. If he judges the current rate to be above the normal rate, he will hold securities instead.

[1] As Keynes recognised, if the speculative demand for money happens to be zero, his liquidity function will reduce to the quantity theory of money (Keynes, 2007, p. 209).

In this context, the liquidity function will be defined by two components L_1 and L_2 and

$$M = M_1 + M_2 = L_1(Y) + L_2(r)$$

Again, no word is said about the influence of uncertainty, confidence or any other variable related to them.[1]

The question cannot be avoided: why did Keynes, who later wrote that *confidence in expectations* in a context of uncertainty was the main factor to explain why people hoard money, and therefore to explain the level of the interest rate, choose to concentrate instead on a variety of demand for money, the speculative demand for money, which is explained by agents holding *definite* expectations as to future interest rates in the GT?[2] Why did he neglect the factor that he would later state to be the key element to mark the difference between his and the classical theory?

The hypothesis we propose is that in the GT Keynes wanted to describe *mechanisms* that could explain unemployment instead of raising more revolutionary arguments relying on murkier concepts such as true uncertainty and its role in *new* approaches to the workings of entrepreneurial economies. The GT is, to some degree, an essay in persuasion. Keynes refused to engage in debates of a more philosophical character, trying to connect his theory as much as possible to the classical tradition.[3] Despite Keynes's well known rejection of formal models as an appropriate language to describe complex economic processes, in the GT Keynes made frequent use of them, including in the chapters referred here on liquidity preference. As Kahn pointed out:

> Sufficient has been said to demonstrate the unsuitability of thinking of a schedule of liquidity preference as though it could be represented by a well-defined curve or by a functional relationship expressed in mathematical terms or subject to econometric processes. Keynes himself often gave way to the temptation to picture the state of liquidity preference as a fairly stable relationship, despite his intuitional horror of undue formalism, but his treatment at least can be justified by the need at the time for a forceful and clear-cut exposition if it was to carry any weight at all. (Kahn, 1972, p. 90)[4]

[1] This equation contributed to strengthen the perception of stability of the money demand function. Usually plotted as a descending curve in the interest rate/money space, it is assumed that once the level of income, Y, is given, the position of the function is determined, since $L_1(Y)$ becomes the intercept of the function. The impact of changes in the perceived degree of uncertainty (and, thus, of confidence) is therefore lost, even as a shift factor.

[2] And one should keep in mind that *definite* expectations are not the same thing as *correct* expectations. In fact, both bears and bulls are assumed to hold definite expectations, but of course cannot hold correct expectations at the same time.

[3] That the GT was an attempt to persuade the community of economists, where the overwhelming majority of members shared classical views, can also be surmised by the successive changes in the intended structure of the book, as Keynes recorded it in the planned tables of contents he prepared for its several drafts. As shown in volume 13 and 29 of his Collected Works, the GT was originally conceived to be presented as a direct challenge to the classical tradition, arguing that classical economists focused on the wrong type of economy, a *cooperative economy*, while Keynes focused on *entrepreneurial*, or *monetary, economies*. In the first tables of contents prepared by Keynes, the challenge was to be put right on chapter one, dedicated to the concept of monetary economies. In the published work, this fundamental challenge was replaced by much milder statements about the validity of specific postulates of classical theory and of the adequacy of classical theory for a specific, but not for the general, type of market economies.

[4] Uncertainty and confidence were not only new variables, which challenged classical conventional wisdom. They were also difficult concepts to define formally and empirically. Keynes's own approach was somewhat vague: '[t]here is, however, not much to be said about the state of confidence a priori. Our conclusions must mainly depend upon the actual observation of markets and business psychology.' (Keynes, 2007, p. 149)

In this line of reasoning, what Keynes really aimed at in the GT was to show how the interaction between supply of and demand for money could end up determining an interest rate that was too high to allow the investments necessary to reach full employment to be realised.[1] To unclutter the argument, Keynes seems to have decided to shed light on the speculative motive to demand money, whereby the *interest elasticity of money demand* could be established and monetary policy is transmitted. This meant minimising the more revolutionary elements of his theory, the demand for money as a defense against uncertainty and the effect of changes in the state of confidence on money demand and the interest rate. It is possible, however, that the realisation that classically-trained readers were not convinced by his argument led Keynes to the more radical approach proposed in 1937.

A deviation from the more conventional treatment of chapters 13 to 15, of course, is the approach offered in chapter 17, on the essential properties of interest and money, a chapter long neglected by most readers of the GT. In that chapter, the essential attribute of money is its *liquidity premium*, that is, the value of 'the power of disposal over an asset during a period [, which] may offer a potential convenience or security' to its holder (Keynes, 2007, p. 226). Every asset may offer some liquidity premium, but money not only has the highest liquidity premium of all assets in a monetary economy, but it is also the only asset for which 'its liquidity-premium much exceeds its carrying cost' (Keynes, 2007, p. 227), which means that it is the only asset that can actually satisfy a precautionary demand as defined by Keynes. A large part of chapter 17 is then dedicated to the identification of elements that confer this property on money, some of them connected to its relative scarcity (the negligible production and substitution elasticities), others connected to its demand (being the asset in which debts are denominated: Keynes, 2007, pp. 233ss). It should be noticed that in chapter 17 Keynes finally admitted that the distinguishing variable to particularise his theory of money demand is the role of confidence:

> The liquidity-premium . . . is partly similar to the risk-premium, but partly different—*the difference corresponding to the difference between the best estimates we can make of probabilities and the confidence with which we make them*." (Keynes, 2007, p. 240)[2]

Again, the argument seems to point to the precautionary demand for money as the essential novelty of Keynes's approach, as far as the relationship between money and uncertainty is concerned, rather than the speculative demand for money.

2.3 Summary of the argument

There seems to be a significant gap between the approaches offered by Keynes in the GT itself and in his defense of the GT against its critics in 1937. The GT clearly emphasises the speculative demand for money, while the 1937 paper focuses on factors like confidence, and the role of money as a protective device against unpredictable adverse events. But the theory offered in the chapters on liquidity preference of the GT is not unfortunate just

[1] 'The difficulties in the way of maintaining effective demand at a level high enough to provide full employment, which ensue from the association of a conventional and fairly stable long-term rate of interest with a fickle and highly unstable marginal efficiency of capital, should be, by now, obvious to the reader.' (Keynes, 2007, p. 204)

[2] In an apparent confirmation of the hypothesis defended in this paper, Keynes went on to add 'When we were dealing, in earlier chapters, with the estimation of prospective yield, we did not enter into detail as to how the estimation is made: and to avoid complicating the argument, we did not distinguish differences in liquidity from differences in risk proper. It is evident, however, that in calculating the own-rate of interest we must allow for both.' (id., p. 240)

because it conceals what Keynes later declared to be essential. They are particularly unfortunate in that *concealment was done by merging the innovative element, the precautionary demand, with the most traditional of monetary theories, the quantitative theory of money*, the validity of which is confined precisely to the transactions demand for money.

The explanation for the dissonance that is proposed in this paper was Keynes's desire to convey the notion that involuntary unemployment was caused by a divergence between actual interest rates and the interest rates that would support full employment. The latter would be those equal to the marginal efficiency of capital for a volume of investment equal to full employment savings. Keynes seemed to give priority to describing the mechanisms through which this divergence could emerge and last for indefinitely long periods, instead of its deeper causes, a priority he seemed to have abandoned in the 1937 paper.

An important result of these choices, however, was that while the two-types-of-motive reduced from the three-motives scheme of the GT became universally known as 'the' Keynesian theory of money demand,[1] the deeper discussion of 1937 was largely ignored by economist readers, in much the same way that Keynes's debate with Ohlin on the relation between savings, investment and the interest rate was also neglected. Keynes's monetary theory in the GT then became the target of friendly and not so friendly critics for some flaws that can traced to the problems identified in this section. In the rest of this paper we discuss two of these criticisms. First we examine Kahn's and afterwards Tobin's reconstructions of Keynes's theory of liquidity preference, both concerned with very similar implications of the approach offered in the GT.

3. Richard Kahn's 'Some notes on liquidity preference'[2]

Both Kahn and Tobin objected (the second implicitly, as we will see in the next section) to Keynes's grouping of motives to demand money, merging the precautionary demand into the transactions demand for money, on the one hand, and the speculative demand on the other. Kahn, however, agreed with Keynes that the interest elasticity of the demand for money function is due to the operation of the speculative money, while Tobin tried to derive it from what rather seems to be a form of precautionary demand.

According to Kahn, it is difficult to separate the precautionary from the speculative motives since both deal with inactive balances, where money is held as an asset instead of a means of payment held in anticipation of planned expenditures.[3] The difference between them, Kahn proposed, has to do with uncertainty:

> But in principle the precautionary motive can be said to operate in so far as some persons think that the rate of interest is likely to move; the speculative motive in so far as some persons think that on balance it is likely to move one way rather than the other. (Kahn, 1972, p. 81)

[1] By being absorbed, for instance, in the IS/LM family of models, which became inextricably associated with Keynesian theory.

[2] Richard Kahn's paper, 'Some notes on liquidity preference', was published in *The Manchester School*, 1954. References in the present paper are taken from its reprint in *Selected Essays on Employment and Growth* (Kahn, 1972).

[3] Even though, in a sense, the speculative motive shares with the transactions motive the nature of being demand for money to acquire something, not demand for money as such, as Hicks suggested. In the first case, it is demand for money in anticipation of an asset purchase, whereas in the latter it is to acquire a good or service. The speculative demand is a class of inactive balances only with respect with goods, but it is demand for money as a means of payment in a planned transaction, not as an asset, as it is the case with the precautionary demand.

In other words, the precautionary demand has to do with the *possibility of change*, while the speculative motive is a bet on a *certain direction of change*. Kahn's own approach was to make the speculative demand for money a definite bet on the direction of change in future interest rates, to be affected by the confidence with which the wealth-holder entertains this expectation of change. Thus, 'what the precautionary motive does is to give the speculative motive something to bite on' (Kahn, 1972, p. 87)

As a matter of fact, Kahn criticised Keynes's absolute separation between the two motives precisely because it prevented him from considering the influence of *conviction* on speculative demand decisions (Kahn, 1972, p. 88) His own solution was to consider that '[h]ow far [a] person gives way to the operation of the speculative motive depends on the extent of his feeling of risk and uncertainty about the behaviour of the rate of interest' (Kahn, 1972, p. 82) But the influence of conviction, or confidence, to use one of Keynes's own terms, on the demand for inactive balances works through the precautionary demand for money. According to Kahn, the influence of the degree of conviction on the operation of the speculative demand for money, therefore, 'demonstrates how impossible it is to identify the quantity of money held on account of the speculative motive as something different from the quantity of money held on account of the precautionary motive. The two motives do not act additively: the demand for money is a complicated outcome of their interplay' (Kahn, 1972, p. 85)

Kahn suggested, in fact, that the situation may be even more complicated because different groups of people face different sources of uncertainty in different degrees:

> At the one extreme is the feeling of *income risk*, at the other extreme the feeling of *capital risk*. It is more picturesque than accurate to associate income risk particularly with widows and orphans, and while the feeling of capital risk is experienced particularly by financial institutions, it in fact applies very widely. (Kahn, 1972, p. 82)

The distinction is relevant, according to Kahn, because if income risk is more important for a given group of people than capital risk, there will also emerge a precautionary demand for securities rather than for money when uncertainty rises. Thus, contrary to what Keynes suggested, the demand for money may not be a precise barometer of distrust.

The simultaneous consideration of the precautionary and the speculative motives and of income and capital risks avoids the weaknesses of Keynes's approach in the GT at the cost of a considerable increase in the complexity of the theory. Now definite results can only be obtained after specifying the larger number of elements that define each possible class of outcomes. Some previously unknown constraints emerge, like the need to specify values for the degrees of bearishness or bullishness and the importance of income or capital risk to determine the final impact of an increase in uncertainty over the demand for securities and money.

The general gist of Kahn's solution, however, can be simply stated and seems to be more in line with Keynes's restatement of priorities in 1937 than the presentation in the GT. We can summarise it in two propositions. First, it is a mistake to conflate the transactions and the precautionary demand into one liquidity function having income as the independent variable. The precautionary demand for money has much more in common with the speculative demand for money, not only because they are both forms of inactive balances but, mostly, because they are forms of retaining wealth through time. The interaction between the precautionary and speculative demand, in addition, avoids the trap of finding specialised portfolios (in money or in securities) as the result of the operation of the speculative demand for money.

Second, the interrelation between the precautionary and the speculative demand does not invalidate the idea that the interest elasticity of money demand is explained by the latter. The precautionary demand, in the interest rate/money space determines the *position* of the curve, as the transactions demand does. However, it does not depend on the level of income but on the state of confidence on expectations, as defined by Keynes in the GT (Keynes, 2007, p. 148). Therefore, *variations in the perceived level of uncertainty displaces the liquidity preference curve in the interest rate/money space up or downwards*. Reconstructed in this way, the motives-to-demand-money model of the GT can be easily reconciled with Keynes's statements in the 1937 paper, in which changes in the rate of interest may result from changes in the degree of confidence (or in the perceived level of uncertainty, which is the same thing) for a given money supply or from changes in money supply for a given state of confidence.[1]

4. Tobin's 'Liquidity preference as behaviour towards risk'[2]

Tobin, like Kahn and, in fact, many other critics of Keynes's presentation of liquidity preference theory in the GT, also took issue with one result of the operation of the speculative demand for money: the specialisation of portfolios of bulls (all in securities) and bears (all in money). The aggregate portfolio would contain money and securities, but each individual investor would either entirely demand securities or money.

According to Tobin, this counterfactual result was due to the unusual form of uncertainty that Keynes postulated in the chapters of the GT dedicated to liquidity preference. According to Tobin, '[w]hen [Keynes] refers to uncertainty in the market, he appears to mean disagreement among investors concerning the future of the rate of interest rather than the subjective doubt in the mind of an individual investor' (Tobin, 1987, p. 248).

The main implication of this particular (and peculiar) notion of uncertainty, that perhaps one could call 'systemic', would be the possibility that rational investors could entertain different evaluations as to the *normal* level of the rate of interest of the economy and none of them be necessarily *a priori* wrong. The *normal* rate of interest would not be determined by the system, but would be indeterminate so that each individual investor could, based on his own experience, judge by himself what its value should be.[3] Tobin's criticism is the same as that raised by Kahn when he argued that Keynes's presentation of the speculative demand did not leave any room for the influence of confidence or degrees of conviction on the portfolio choice decision.

Tobin's aims with his 1958 work were twofold: (i) to offer an alternative model of the demand for money that preserved its sensitivity to interest rate changes; and (ii) to explain why individual investors would keep diversified portfolios in terms of money and securities. To achieve both results, Tobin explicitly reintroduced a form of precautionary demand in his scheme, that is, the demand for money as a result of perceived uncertainty. In a sense, Tobin sets himself a similar task as Kahn's, to construct a theory of money demand where one cannot tell which part of money holdings is due to precaution and which one is due to speculation with the future price of securities.

[1] In fact, in the GT Keynes seemed more interested in relating the interest rate to monetary policy, while in 1937 he seemed more interested in relating it to uncertainty. But there is no necessary contradiction between the two objectives once the nature of the liquidity preference schedule is appropriately presented.

[2] Tobin's 'Liquidity preference as behaviour towards risk' was originally published in 1958 in the *Review of Economic Studies*. Reference is made here to its reprint in *Essays in Economics*, Vol. I, (Tobin, 1987).

[3] One has to remember that Keynes rejected both Fisher's *real* rate of interest and Wicksell's *natural* rate of interest.

The way Tobin did it was to model explicitly the effects of introducing uncertainty in the portfolio choice. Differently from Keynes, though, uncertainty would be modelled as calculable risk, measured by the variance of the distribution of probabilities of future capital gains.

The model is simple. Tobin assumes the existence of two assets, riskless (and returnless) money and a risky security, a perpetuity, which offers two types of returns: interest income at a rate r, and capital gains g. Capital gains, which depend on future interest rates, are assumed to be normally distributed with zero mean and variance σ_g. The total return of a portfolio depends on the proportion in which it is allocated to securities (A_1 to money, A_2 in securities, $A_1 + A_2 = 1$). Under these conditions, the expected return of the portfolio is given by:

$$E(R) = A_2 r = \mu_R \tag{1}$$

Portfolio risk is given by

$$\sigma_R = A_2 \sigma_g \tag{2}$$

From equations (1) and (2), one obtains

$$\mu_R = \sigma_R (r/\sigma_g) \tag{3}$$

For a given rate of interest r and a given variance of capital gains distribution σ_g, average returns, μ_R, are an increasing function of the variance of the total portfolio, σ_R. Total portfolio risk, on the other hand, is a function of A_2, the proportion that is dedicated to securities.

Equation (3) works as a 'budget' constraint in Tobin's model. It describes how much risk an individual investor has to accept in order to reach a given expected return. Which combination of risk and return will be actually chosen will depend on the risk preferences of each investor. Tobin draws indifference curves to reflect these preferences and obtains the two results he desired, a demand for money function that is sensitive to interest rates (and with the right sign) and individual investors' portfolios that are diversified, containing both money and securities.[1]

Unfortunately, as Tobin promptly acknowledged, these neat results are entirely dependent on the specific shape and position of the indifference curves between risk and return one selects. The graphical solution presented by Tobin is, in fact, more of an illustration of a *possible* result than a proof developed from his stated premises. In fact, Tobin shows that even risk prone investors can reach equilibrium solutions that show sensitivity to interest rates but with the wrong sign. Perhaps even more worrisome, a special category of risk averters, which Tobin called 'plungers', would seek corner solutions, with specialised portfolios. To achieve general results one would have to be able to place additional, possibly *ad hoc* constraints on indifference curves, which, Tobin acknowledges, would be awkward to justify.

Thus, as Kahn before him, Tobin also failed in his attempt to construct a model in which the explicit consideration of uncertainty could explain diversification of portfolios at the same time in which a significant degree of interest elasticity of money demand was preserved under more or less general conditions.

Interestingly, both papers seem to share the assumption that one does not need to take into consideration Keynes's strong view of uncertainty to explain the behaviour of the

[1] See the graphical solution in Tobin, 1987, p. 250.

demand for money.[1] This is, of course, explicit in Tobin's approach but, perhaps more surprisingly, Kahn also made clear that in his paper 'the words "risk", and "uncertainty", are used in the conventional manner as indicating the degree of dispersion of the probability distribution, and the reliability of the probability distribution' (Kahn, 1972, p. 81n) Still, the central message of both papers, that the precautionary demand for money is the key channel to relate money demand and uncertainty, seems to survive this limitation. First, it was by no means obvious in the 1950s that dispersion of results could not be taken as a measure of uncertainty, since the latter, in a sense, means precisely that one cannot know what is going to happen because a lot of things can actually happen in the future. Frank Hahn's demonstration that calculable probabilities would eliminate the need for money, mentioned in footnote x, p. 000, above, was still a long time ahead. Particularly in the case of Kahn's paper, one should notice the reference to the *reliability* of the probability distribution. What did he possibly mean by that? Only under uncertainty is there room for concern with reliability, another word, in fact, for confidence.

In addition, both Tobin and Kahn discuss the demand for money assuming a different aggregative structure than the one in *The General Theory*. As Leijonhufvud (1968) showed, and in fact Keynes clarifies in chapter 13 of that book (Keynes, 2007, p. 167fn), there are two assets in the GT model: *money* and *debts*. In such a model, of course, there can be only one interest rate: 'the' interest rate. The interest rate paid on 'the' bond will compensate for all the *moneyness* elements lacking in bonds, including uncertainty in all of its senses. Tobin and Kahn, in contrast, dealt explicitly with the short-term interest rates, paid on the immediate money substitutes, like short-term debt. Kahn explicitly mentions that he was dealing with repetitive, largely reversible movements in the prices of securities, not with investments, assuming that in the case of securities prices 'the concept of a probability distribution is perhaps less unhappily applied to expectations' (Kahn, 1972, p. 81fn). In fact, Keynes himself did something similar in his treatment of short-term expectations in chapter 5 of *The General Theory*.

In any case, the formal modelling of probability distributions by Tobin had a much stronger influence on the literature than Kahn's vaguer references to them. One could perhaps suggest the hypothesis, for future study, that it may have been precisely the reason why the 1958 paper, written to defend an important proposition of Keynesianism, in the debate against monetarism, that money demand is interest elastic, ended up fathering the anti-Keynesian models of capital asset pricing models.

5. Conclusion: why should we care?

One may think that this whole discussion about the disappearance of the precautionary demand for money from the GT is just another curiosum, an arcane game of words and labels to entertain hagiographers of Keynes. In fact, it is not. Generations of economists have been trained in macro and monetary economics through the use of money and demand supply models where stable relations between money demand and its determinants, income and the interest rate, are assumed by construction. Anybody whose macroeconomics training was based on the use of IS/LM models never actually heard about the ways in which perceived uncertainty can affect the demand for money and, thus, the level of interest rates.

[1] Bibow (1998, p. 260) argues that Tobin was justified in employing the concept of risk since in his model the distinction between uncertainty and risk did not matter 'in terms of their economic effects'.

There are four essential implications of the correct identification of the roles of the three motives to demand money:

- As both Kahn and Tobin insisted, the traditional analysis of the transactions and the speculative motives to demand money, which seems to closely correspond to what Keynes actually proposes in the GT, misses the role of variables such as conviction or confidence, which are important only when one considers that agents feel uncertain about the expectations they entertain about the future. A byproduct of this limitation is the empirically false proposition that individual portfolios of bears and bulls should be fully specialised in terms of securities or money.
- The stability of the liquidity preference schedule (or the money demand function) is overestimated in the formulation offered by Keynes in the GT. Shifts of the liquidity preference schedule are assumed to result only from changes in income levels, which cause variations in the transactions demand for money. This contrasts with the stress on the fragility of such functions proposed by Keynes in 1937, which authors close to him, like Kahn, insisted on being an essential element of his theoretical approach.
- Connected with the preceding argument, one important implication of properly considering the impact of changes in the degree of confidence through shifts in the liquidity preference schedule is the realisation that the impact of monetary policy may be less predictable in moments of increased uncertainty, as is the case during financial crises. In these periods, while monetary policy may induce changes *along* the liquidity preference schedule, changes in perceived uncertainty may *shift* the whole curve, causing the final outcome to become indeterminate. Besides, both Kahn and Tobin point out that the shape of the precautionary demand function may be more complex than one may think at first, either because of possible differences of risk aversion (Tobin's argument) or because of different motivations and beliefs on the part of economic agents (Kahn's argument).
- Finally, the proper understanding of why money can ultimately satisfy a precautionary demand for safer assets may shed light on the properties of liquidity itself and why, in moments of stronger stress, the monetary liabilities of monetary authorities, that is, the money created by the State, may become the choice asset of the economy. During normal times, other assets become substitutes for currency as liquidity vehicles. During crises, however, private liabilities that are fully acceptable currency substitutes in normal times tend to be rejected and a flight to the safety of public securities and currency takes place. Why this is so can be better understood when one explicitly considers the role of uncertainty and confidence in the demand for wealth vehicles.

Neither Kahn, nor Tobin referred to Keynes 1937 paper 'The General Theory of Employment' when they revisited liquidity preference theory, even though Kahn at least was familiar with it, having sent comments to Keynes after reading it in manuscript. Both Kahn and Tobin seemed to have shared the same view as to the shortcomings of Keynes's presentation in the GT. In chapters 13 to 15 of the GT, dedicated to liquidity preference and the determination of the interest rate, Keynes built a rather mechanistic argument, which presented his views on the relation between uncertainty and money in a rather impoverished way, with the aim, perhaps, of minimising the deep divergences he had come to develop with respect to classical economic theory.

Kahn and Tobin felt the need to recover the precautionary motive to demand money, although Tobin did not give an explicit indication that he had it in mind. This allowed them

to develop the notion of precautionary demand as a defensive strategy against uncertainty as such (even though Tobin chose to treat it as calculable risk).

Between the two proposals, Kahn's and Tobin's, the former was certainly the closest to Keynes's, which should not come as a surprise to anyone, given the close proximity between the two. Kahn's articulation of the two motives that recognised money as a form of wealth allowed him to identify the influence of monetary policy on money demand through speculative demand and of the state of confidence through the precautionary motive. The latter would explain the position of the liquidity preference curve in the interest rate/money space, whereas the former would explain movements along the function (although Kahn warned against relying too much on the existence and stability of such curves). In a sense, one can argue that Kahn's article reconciles the two views presented by Keynes, the one in the GT stressing the role of the speculative demand, and the other in the 1937 paper, stressing the precautionary demand and the connection between uncertainty, confidence and the demand for money. The complexities of this relationship, anyway, when one considers different types of risk, as Kahn did, suggest that there was still much to be done in this line of investigation. Unfortunately, Kahn's paper failed to cause an impact on researchers similar to his paper on the employment multiplier.

It seems inevitable to conclude that Keynes's arguments in the GT were flawed. It should be noticed, however, that Keynes himself argued against taking the arguments presented in the GT with respect to liquidity preference too literally. As he wrote one year later:

> I am more attached to the comparatively simple fundamental ideas which underlie my theory than to the particular forms in which I have embodied them, and I have no desire that the latter should be crystallized at the present stage of the debate. (p. 111)

The determinants of money demand have always been of central concern to Keynesian economics, in all of its strands.[1] Tobin's 1958 article allowed the mathematical formalisation of the problem and served as the foundation for both the neoclassical synthesis approach to the determination of short term interest rates and, maybe paradoxically, maybe not, for the development of the radically anti-Keynesian theory of asset pricing, the CAP models. In this tradition, the three motives to demand money became just a didactic device to be used in introductory textbooks and uncertainty, in Keynes's sense, was completely eliminated from the picture.

The legacy of Cambridge Keynesianism, of which Kahn, of course, was a leading practitioner, was also varied. Uncertainty became a leading theme for post-Keynesians. The concept itself has been explored intensely. Its proper definition, and its relationship with issues such as money demand, investment decisions, asset pricing, etc., has almost become a discipline in itself. As to the role of uncertainty in the determination of money demand, one could perhaps differentiate two main lines of development. The first, with roots in the works of Kahn, Joan Robinson and G. L. S. Shackle, was taken up mostly by American post-Keynesians such as Paul Davidson, Jan Kregel, Paul Wells and Hyman Minsky, as well as by economists such as Victoria Chick and Sheila Dow in the UK, which basically followed Kahn's method of juxtaposing the operation of the speculative motive on the precautionary motive to define not only the *nature* of interest rates but also how the value is determined. The emphasis is given, thus, to the precautionary demand for money, that is, the retention of money because of its liquidity premium. Few, if any, references are

[1] Bibow (1998) offers a very instructive discussion of some developments of liquidity preference theory, giving particular prominence to Tobin and Hicks. Cardim de Carvalho (1995) presented the central lines of development of the post-Keynesian approach to liquidity preference.

actually made to the speculative motive. Most of the practitioners of this tradition prefer to use Keynes's opposition between bulls and bears as presented in his 'A Treatise on Money'.

The other strand was led by Nicholas Kaldor, who introduced an interesting twist in the debate, shifting it from the demand for money to the supply of money. Kaldor, and Sidney Weintraub in the USA, believed that the money supply curve was horizontal, that the central bank decides on the interest rate and then freely supplies the necessary amount of reserves to sustain that rate. This view, of course, clashes with the idea that money has to be kept 'rare', so that its negligible elasticity of production can support the liquidity of money. Kaldor believed that it is not possible to single out an asset (or group of assets) endowed with *moneyness* in opposition to other assets.[1] Liquidity should be seen as a question of degree, not of nature. Naturally, the precautionary motive (but not necessarily the speculative motive) loses its meaning in this approach. This approach was followed more recently by Basil Moore and has served to establish a bridge with other traditions of economic thought, notably the circuit theory of money.

Of course, it is not a problem that different interpretations of what-Keynes-really-said or what-Keynes-really-meant coexist. It was the contention of this paper, however, that in this case the coexistence of different views may be due, to a large extent, to inconsistencies in the original treatment of the problem itself, the relationship between money and uncertainty.

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[1] Again, one has to remember that in chapters 13–15 Keynes was using an aggregation structure whereby there were only two assets in the economy, 'money' and 'bonds', in contrast with chapter 17, where a different aggregation is proposed. One may speak of 'the' rate of interest in most of the chapters of The General Theory, since there is only earning asset, but not in chapter 17, where there are as many interest rates as there are assets. Similarly, different assets in chapter 17 have different values for the liquidity premium, as, in fact, Kaldor (1980) has recognised. On the problem of aggregation choices, see Leijonhufvud (1968).