

## **The Financial and Monetary Crisis: Rethinking Economic Policies and Redefining the architecture and governance of international finance**

Effective Demand: Uncertain expectations, profitability and financial circuit

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**Effective Demand:  
Uncertain expectations, profitability and  
financial circuit**

by

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*Keynes's vision, which one can trace back to his youth, has to do with the logic of choice, not under scarcity, but under uncertainty (Skidelsky, 1992:538)*

*By "very uncertain" I do not mean the same thing as "very improbable". (Keynes, 1936:148).*

*[T]he point of the aggregate demand function, where it is intersected by the aggregate supply function, will be called "the effective demand" (Keynes, 1936: 25)*

**Summary**

The principle of effective demand is the most distinct macroeconomic novelty within *The General Theory*. It can only be understood as a consequence of decision making in a business environment characterized by fundamental uncertainty. Entrepreneurs do not know, and cannot know, what the future will bring with certainty. On the other hand they have to make decisions on production, investment and employment which take time and range into this uncertain future.

In this paper I will trace the impact of uncertainty on effective demand in four dimensions: expected aggregate demand, supply price of production (profitability), the

role of bank credit and finance and rather briefly the availability of supply factors and environmental sustainability.

The analytical procedure takes methodologically departure from within Critical Realism. The social ontology of the business environment is considered as characterized by uncertainty, because – to paraphrase Keynes - ‘we simply cannot know the future’. How can sustainable development and the impact of the macroeconomic growth process be analysed meaningfully given these methodological conditions?

It has become a part of the *critical realist* and post-Keynesian interpretation of *The General Theory* (1936) to stress that the social ontology of the macroeconomic reality is only partly visible and analytically changeable which is reflected in a path-dependent development through historical time. Such a constantly changing macroeconomic process is at best understood through the lenses of an open system analysis, where uncertainty is given a prominent role. Hence, it is an epistemological challenge to undertake a *realistic* macroeconomic analysis of output and employment which can be facilitated by the ‘principle of effective demand’ developed by Keynes for that purpose.

## **Introduction about ‘uncertainty’.**

### **a. Macroeconomic uncertainty with microeconomic implications**

*Keynes's perception was that economies did not behave in the way economists said they did, that something vital had been left out of their accounts, and it was this missing element which explained their malfunctioning; Keynes accused economists of his day of abstracting from the existence of uncertainty (Skidelsky, 1992: 538-9).*

Keynes developed his understanding of uncertainty throughout his economic writings. *A Treatise on Probability* from 1921 was mainly about individual decision making in an uncertain environment dependent on what information was available. Through the 1920's Keynes got a vast number of practical experiences from his work in the financial sector, which was a great source of inspiration to develop his theory of ‘liquidity preference’ – how institutional organisation, individual uncertainty and different ‘degrees of confidence’ could explain parts of the working of the financial system, of the transmission of monetary policy and of the development in the long term rate of interest.

But it was not until he had finished the writing of *A Treatise on Money* (1930) that he fully realised that the role of uncertainty had much wider implications. During the early 1930's he started to doubt that a realistic macroeconomic analysis could be kept within the boundaries of a closed model analysis. Because, if uncertainty plays a significant role at all stages of decision making, then coordination failures are unavoidable in this ever changing macroeconomic environment. Stability (not to speak of general equilibrium) would be like a mirage. In stead, the macroeconomic system will be moving along a continuous path-dependent route, where a terminal point is at best unknowable, but more likely not existing.

It has become a part of the *new* post-Keynesian interpretation of *The General Theory* (1936) to stress that the social ontology of the macroeconomic landscape is only partly visible and guided by causal mechanisms which at the best can be represented analytically as a path-dependent track record through historical time (Jespersen, 2009a).

This constantly changing and only partly knowable macroeconomic process is analysed through the lenses of an open system, where uncertainty is given a prominent role. This has to be so, because, uncertainty is all over the place in macroeconomics. This is the epistemological challenge to realistic macroeconomic theory.

*Economics is a science of thinking in terms of models joined to the art of choosing models which are **relevant** to the **contemporary world**. It is compelled to be this, because, unlike the natural science, the material to which it is applied is, in too many respects, not homogeneous through time, (CWK, XIV, 1937: 296/97, my emphasis)*

## b. Microeconomic uncertainty with macroeconomic implications

Uncertainty is caused by lack of information. Hence, it appears with different intensities and 'states of confidence'. One can feel oneself more or less uncertain, but except for very rare cases all economic activities are characterized by some degree of uncertainty, because one cannot know nor estimate the exact outcome. Individual expectations are by the logic of the activity uncertain due to this inherent lack of information (which is enforced by a constantly changing environment).

Risk is defined as socially measurable, but individually uncertain activities. If an identical activity is undertaken by a large number of people who act independently of each other, e.g. natural death, then an exact number might be calculated with regard to the 'macro-death rate' of the entire population. In these cases a private insurance company or some other institution could transform the individual uncertainty with regard to specific outcomes, might be established at a profitable basis. In the society in which we live, one can take out an insurance against the narrow economic consequences of e.g. theft, fire accidents and death. Buying an insurance imply that individual uncertainty, with regard to the money aspects of such incidents, is removed. But, as we know, most activities have also unforeseeable consequences. Therefore, even a well designed insurance contract can only reduce the degree of uncertainty, because it goes against the idea of a private insurance company to accept commitments which imply incalculable risk, i.e. uncertainty.

One important conclusion is that privately organized business can rarely fully change individual uncertainty into socially calculable risk. The real value of financial savings will always be uncertain. For instance, no one can predict the future inflation, which is characterised by macroeconomic uncertainty. Even the average living age of human beings is statistically unpredictable, which a number of pension funds regretfully have realized.

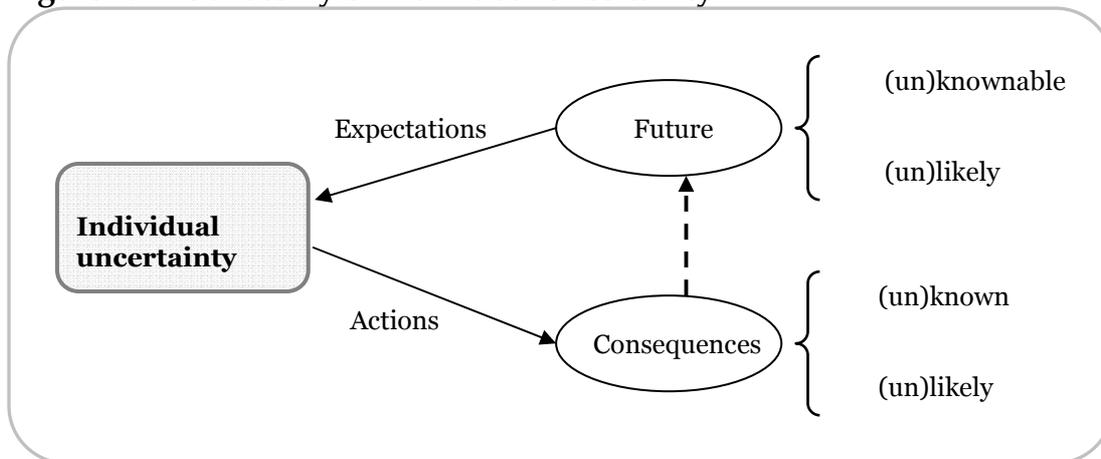
When the implication of individual uncertainty is not analytically understood there is an acute risk of committing the fallacy of composition, Jespersen 2009a: chapter 7.

At the individual level there are three obvious appearances of uncertainty:

Undertaking an individual activity

1. without having full information about the institutional environment
2. without much knowledge of the macroeconomic context and other decisive parameters for decisions (e.g. economic policies)
3. without have full knowledge about the consequences of our actions

**Figure 1: The anatomy of individual uncertainty**



Source: Jespersen (2009): chapter 4

We are all, as individuals, acting without knowing the exact consequences, and we also act without having full information about external factors, which make an impact on the outcome. Furthermore, we simply cannot know the future, because the macroeconomic reality is (partly) hidden, (Jespersen, 2009a: chapter 2). Hence, it would be misleading and pretentious to assume that agents have full knowledge about the future – so-called ‘rational expectations’. In fact, to assume rational expectations in macroeconomics is not in any real analytical sense rational – one may rather say that ‘it is to assume our difficulties away’, (Keynes, 1936: 34).

Keynes main research question was, what are the implications of undertaking a realistic macroeconomic analysis under the assumption of people acting rationally under the condition of uncertainty? In fact, he intention was to handle the very realistic assumption that people do behave rationally; but not necessarily on an individual basis by following, for instance, conventions, group related behaviour or set up organized institutions. All were behavioural principles which intended to reduce the unforeseeable and unpredictable consequences of limited information and unknowable external events. This has to be so, because even though information is limited and consequences are uncertain economic decisions have to be undertaken with regard to production, consumption and investment. They cannot be postponed until uncertainty has been cleared. If we ask for certainty as a precondition for acting – then we cannot act, which, of course, in some way is an act by itself. Hence, anyone does act one way or the other on the back-drop of uncertainty. The really intrigue question is then, how to make a proper macroeconomic analysis, where uncertainty is given the epistemological role which it deserves.

Keynes’s *Principle of Effective Demand* developed in *The General Theory* is an example of an open system analysis, which incorporates uncertain expectations at the individual/business level and transfers them into a coherent macroeconomic theory of output and employment as a whole.

## **The Principle of Effective demand**

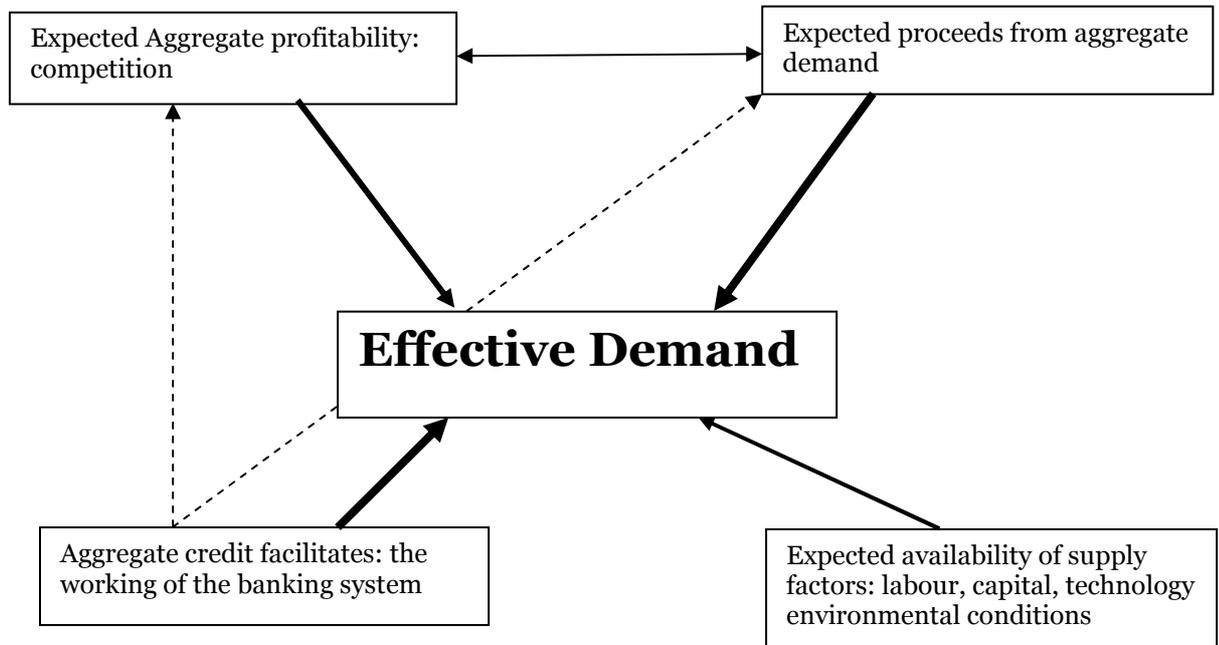
*As I now think, the volume of employment is fixed by the entrepreneur under the motive of seeking to maximise his present and prospective profits; whilst the volume of employment which will maximise his profit depends on the aggregate demand function given by his expectations of the sum of the proceeds. (Keynes, 1936: 77)*

*Effective demand* is one of the distinctive analytical concepts that Keynes developed in *The General Theory*. Demand and demand management have thereby come to represent one of the distinct trademarks of Keynesian macroeconomic theory and policy. It is not without reason that the central position of this concept has left the impression that Keynes's macroeconomic model predominantly consists of theories for determining demand, while the supply side is neglected. From here it is a short step within a superficial interpretation to conclude that Keynes (and post-Keynesians) had ended up in a theoretical dead end, where macroeconomic development is exclusively determined by demand factors.

Fortunately, a rich post-Keynesian literature on 'Effective demand' has emerged during the last years overcoming the above mention misinterpretation and adding more arguments to the subtle analytical concept than in fact can be found in *The General Theory*, see for instance Hartwig, 2007 and Gnos, 2009.

As mentioned, the intention of this paper is to give an example of how an important macroeconomic causal relationship can be modelled on the basis of both supply and demand factors with the inclusion of specific institutional conditions such as different forms of competition and the working of the financial sector. The choice of the analytical method plays a determining role for the macroeconomic 'behaviour' that can be deduced on the basis of an aggregate model-structure based on the assumption of rational microeconomic behaviour under condition of uncertainty within a relevant institutional context and supported by empirical observations. Obviously, this methodological procedure is contrary to methodological individualism, where representative agents within a given market structure optimize with full information about the general market clearing equilibrium.

**Figure 2: Outlines for the macroeconomic principle of effective demand**



**Explanation of the figure:** Effective demand determines how much output and employment the business sector as a whole plan to undertake in the next ‘production period’. It consists of (at least) four analytical components:

1. Expected (by the business sector) aggregate demand in money terms
2. Expected (by the business sector) costs and likely profitability in money terms, dependent on the degree of competition
3. Bank credit facilities and costs (rate of interest ect.)
4. Availability of factors of production

In any case, it is the behaviour of profit-seeking firms acting under the ontological condition of uncertainty that is at the centre of post-Keynesian concept of effective demand. It is entrepreneurs’ *expectations* with regard to demand **and** supply factor that determine their plans for output as a whole and by that the *effective demand* for labour.

Therefore, it was somewhat unfortunate that Keynes called his new analytical concept ‘effective **demand**’, which may have contributed to misleading generations of open minded macroeconomists to concluding that it was exclusively realized *demand* for consumer and investment goods that drives the macroeconomic development. Hereby a

gateway for the IS/LM-model interpretation of effective demand was opened, where demand creates its own supply.

On the contrary, it is the interaction between the sum of the individual firms' sales expectations (aggregate demand) and their estimated production costs (aggregate supply) that together with a number of institutional conditions (bank credit, labour market organization, global competition and technology) determine the business sector decisions on output as a whole and employment.<sup>1</sup>

Thus, it is my intention with this paper to eradicate the often presented point of view that Keynes's macroeconomic theory does not have microeconomic foundation or supply side considerations. In fact, *Keynes's economics is a theory of rational choice under uncertainty*, Skidelsky, 1983.

### **Firms' production plans determine 'effective demand'**

The supply side in the goods market is an aggregate presentation of firms' cost functions considered as a whole. It shows a relation between what Keynes called 'supply price', i.e. the sales proceeds that, given the production function and cost structures, is needed to '*just make it worth the while of the entrepreneurs to give that employment*' (Keynes, 1936: 24). This means that behind the supply curve there is a combination of variable costs plus an expected profit at different levels of employment. At each level firms try to maximise their profit, if they succeed there is no (further) incentive for firms to change production or employment.

These assumptions entail that the *aggregate supply function* (what Keynes called the Z-curve) is upward sloping and represents the proceeds that has to be expected by the industry as a whole to make a certain employment 'worth undertaken', see the Z-curve in figure 3. In fact, this *aggregate supply function* looks like it was taken directly from a standard, neoclassical textbook, where *decreasing marginal productivity of labour* within the representative firm is assumed; the main difference is that Keynes is dealing with the aggregate sum of heterogeneous firms i.e. the industry as a whole<sup>2</sup>.

The other equally important part of effective demand is *aggregate demand function*, which is the value of the sales that firms as a whole *expect* at different levels of *macro-activity* measured by employment (as a whole).

In order for firms to act on the best information available they have to form expectations about future sales which have to be both empirically based and forward looking at the same time: *let  $D$  be the proceeds which entrepreneurs expect to receive from the employment of  $N$  men, the relationship between  $D$  and  $N$  being written  $D = f(N)$ , which can be called the Aggregate Demand Function.* (Keynes, 1936: 25, my emphasis).

It is a definition of few words that opens the possibility for a number of hypotheses with regard to how the entrepreneurs' total expectations of proceeds are formed. But to me it seems undeniable that Keynes is speaking about a macroeconomic relationship. How much money will be spent in society as a whole on consumption and investment at different levels of activity (measured by employment)?

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<sup>1</sup> Adding the institutional conditions is an extension compared to Keynes's presentation in *The General Theory*.

<sup>2</sup> Firms do not have to undertake profit maximizing behaviour, and there might not be decreasing labour productivity.

The concept of aggregate demand can perhaps be best understood with reference to the far newer statistical concept of a 'business sentiment index'. The business sentiment index is based on a survey among a cross-section of firms of their expectations about sales in the nearer future. This published index helps to form expectations of sales proceeds for the industry as a whole and even for the entire macro-economy. It is assumed that on this information firms make a kind of survey-based expectation with regard to the most likely development in sales and proceeds in the nearer future.<sup>3</sup> This expectation of aggregate demand (as a whole) is a useful point of departure for the *individual* firms when they have to form their specific expectation of future proceeds. This sales expectation<sup>4</sup> will therefore centre around the future *macroeconomic* demand (and on the intensity of international competition).

Accordingly, Keynes's *macro*-theory has a microeconomic foundation of firms trying to maximise profit, but differs from neoclassical theory by introducing uncertainty related to the future, which makes an explicit introduction of *aggregate demand* relevant i.e. the *expected sales proceeds by business as a whole*.

The implication of this behaviour under uncertainty by the individual firms is that it is not reasonable to expect the individual demand curve to be infinite price-elastic at the ruling market price, see Hartwig, 2007. In the short run firms have to behave under the constraint of a somewhat constant market share and a fixed stock of real capital. In this case it would not be rational for individual firms to plan their future production as though they operated under the condition of a horizontal demand curve and should not expect the market price to be solely given 'from outside', not to speak about being constant. This means that the neoclassical assumption of firms exclusively adjusting the production on the basis of a given price (and cost) structures leaving demand neglected can be discharged, when uncertainty prevails. In the short run firms know that the aggregate demand at the macro-level is confined. On the other hand market prices will be somewhat flexible. Both aspects have to be included in the individual firm's production plans.

This semi-closed analysis of firms operating under the constraint of a bounded market share makes it relevant to assume firms (as a whole) to behaving like a monopolistic competitor who has to react on a change in aggregate demand. In addition, the aggregate macro-behaviour is not in dissonance with the assumption the individual firms try to maximize profit given the available, but uncertain knowledge about the future: costs, sales proceeds, market share and competitive conditions (domestic and foreign).

In this case it has been explained, why post-Keynesian economics has dismissed the neoclassical abstraction that the macro-supply curve can be presented by the behavioural relationship of one representative micro-firm. In post-Keynesian theory firms are assumed to behave with respect to their uncertain knowledge about aggregate demand (demand as a whole), and that they can only achieve a (un)certain share of this aggregate demand.

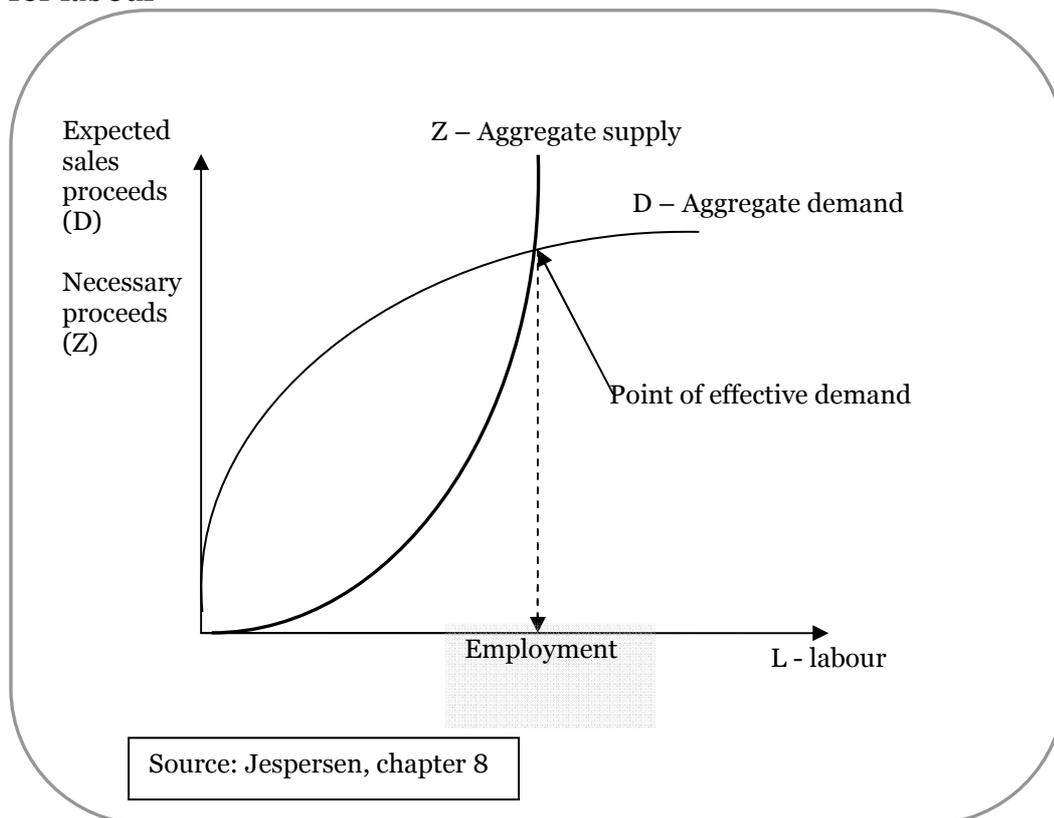
Finally, it was important for Keynes to make clear that aggregate supply and aggregate demand are two clearly separated entities; but not entirely independent of each other. Keynes's main objection against 'classical' theory is exactly, that it equates the macro-supply and macro-demand functions in such a way 'that supply always creates its own demand'. But, of course, the conclusion that demand always creates its own supply is equally misleading.

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<sup>3</sup> 'nearer future' means analytical a period that corresponds to the time of implementation decisions related to hiring and firing in the labour market.

<sup>4</sup> How the total sales would be distributed among the individual firms within the branch would be of lesser importance in a macroeconomic perspective.

**Figure 3. Aggregate supply and aggregate demand together determine *effective demand* for labour**



### Market structures and interdependence

The degree of competition on the output-market determines the size of profit that can be achieved by the entrepreneurs. Post-Keynesian literature therefore distinguishes between two distinct market forms: *perfect competition* and *monopolistic competition*. This distinction leads to different results with regard to the size of profit and to how much employment a certain level of aggregate demand can be expected to generate in the short run. One of Keynes's main points was precisely to demonstrate that his theory was 'general', that it was valid no matter what form of competition prevailed on the goods and labour markets.<sup>5</sup> In fact, effective demand is a relevant analytical concept even in cases

<sup>5</sup> The post-Keynesian literature distinguishes between 'fundamental-Keynesian' and 'Kaleckian' (named after the Polish-born economist Michal Kalecki, 1899-1970) economics - an often rather subtle distinction, King (2002). With regard to pricing on the goods market two different principles are assumed: marginal cost pricing and mark-up pricing respectively, which can be attributed to two different competitive conditions. The distinction is not important, since Keynes can be interpreted as covering both market forms, which not least Keynes (1939) confirms. For Keynes it became increasingly important to understand reality which made him in this respect come closer to the mark-up pricing assumption like Kalecki.

where firms were not profit maximising. Probably, he chose to assume profit-maximising behaviour and perfect competition even on the demand side of the labour market out of analytical convenience rather than realism.

As mentioned above Keynes did in 1936 undertake his macro-analysis under assumption of 'perfect' competition in the sense of real wage being determined by marginal productivity – goods prices are given from outside the individual firm while the aggregate demand had to be shared between firms in the market for final goods. In that case effective demand is determined as the intersection point between aggregate supply and aggregate demand, which also determines the analytical 'profit-equilibrium' (CWK, VII: xxxiii). At the point of effective demand there will be no endogenous tendency in the business sector to change production or employment, because firms are assumed to maximise profit, as illustrated in figure 3.

If competition were reduced, the obtainable profit would increase. Such a change could be illustrated in figure 3 by a lift in the Z-curve. That would change the intersection point and cause the effective demand to fall. Reversely, an increased competition would have the opposite effect by a reduced level of required profit.

We see that there are a number of analytical advantages by separating aggregate demand and aggregate supply. Hereby, the understanding of the forces behind a change in the *principle of effective demand* is improved. Uncertain expectations introduce a wedge between expected demand and required profit. On the other hand it would be a serious analytical failure to assume that these two curves are entirely independent. For instance, intensified competition from abroad could also imply that the aggregate demand for domestic product is reduced. It could also be argued that reduced good prices will increase real wage and by that increase purchasing power for consumer goods. It is important not to neglect the interrelationship between the two curves as illustrated by the rather thin double arrowed line in figure 3.

## **The importance of monetary circuit**

Keynes's presentation of the 'principle of effective demand' came rather early in *The General Theory*, chapter 3 and 5. Both aggregate supply and aggregate demand was defined, as explained above, in money terms. Keynes spoke about the supply price of output (Z-curve) and the expected proceeds of sales (D-curve); but Keynes did not at that early stage take into consideration the financial aspect of organizing and undertaking production. Of course, he was fully aware that production takes time from the moment it is decided upon until it is sold in the shops. The passing of time causes uncertainty, because firms do not know with any kind of certainty what proceeds the output will generate.

But it is not enough just to be patient and wait until the production is sold and the firms get the proceeds from the sale. Production costs have to be financed, because firms have to pay the factors of production currently. Workers will not (and cannot) wait to receive their wage until the goods are sold and firms have received means of payments. This time gap in payments gives private banks a unique role to play, when effective demand has to be realized. Firms can only use bank credit for this bridging process in the form of working capital, because bank deposits are accepted as means of payments. It is only deposits by financial institutions that have this specific and important property of being accepted as means of payments, which is needed to transform production plans into

effective demand. By legal arrangements (often combined with a government guarantee of bank deposits) bank deposits are unconditionally used as money.

This is the important contribution by the *monetary circuit theory*: effective demand cannot be realized unless there is access to working capital in the forms of bank credit, Graziani (2002). What really matters in the monetary circuit are financial assets considered as generally accepted means of payment. Of course, Keynes had that perspective in mind, when he in 1933 changed the heading of his lectures held in Cambridge from 'a pure theory of money' into 'a monetary theory of production'. Money and real sector activities cannot in any meaningful and analytical sense be separated. In some way Keynes had anticipated that conclusion, when he wrote *A Treatise on Money* (TM), published in 1930. Here he demonstrated that a well functioning banking system could provide whatever means of payment that was needed for serious business purposes. Therefore, as long as the banking system is working in a proper way, the money supply is endogenous and would not be a constraining factor on effective demand. It is not until the banking system cease to function properly that the monetary circuit confine the effective demand. In that case the aggregate supply curve moved upward, because firms need a higher proceed to compensate for the wanting bank credit. Furthermore, there is a risk that a credit squeeze will lower the demand curve, because firms do not expect to sell as much as previous and expect to receive a smaller revenue.

In fact, to stabilize the monetary circuit there could be put forward good arguments for a separation of the activities of 'business banks' from other financial institutions. In his TM Keynes argued, that *industrial circulation* (current deposits by business banks) should be separated from *financial circulation* (savings deposits by investment banks). *Industrial Circulation* and only that should have the status of means of payments (together with central bank notes), see Jespersen (2010).

On the other hand if the banking system is not well functioning, which was overwhelmingly demonstrated in the aftermath of the collapse of Lehman Brothers investment bank, bank credit suddenly became a co-determining and constraining factor on effective demand. Effective demand shrunk due to a fall in working capital. The z-curve could not be financed by bank credit as usually! The business sector had to improve on its profit rate to become less dependent on the banking sector. This increased profit mark-up made the z-curve swing to the left in the diagram. Furthermore banks raised their rate of interest which made working capital more expensive and added to the amount of necessary proceeds. No wonder that the effective demand did fall immediately, when the business sector could not get the usually working capital. Hence, less people were employed and the usual multiplier effect entailed in the AD-curve started to work backward. These relationships are indicated in figure 3 by two dotted lined leading from the banking sector to aggregate supply and aggregate demand.

How could an important part of the industrial circulation suddenly disappear? Simply, because one of the largest US investment banks went bankrupt and all deposits were frozen (for a while). Lehman Brothers had debt close to \$600 bill. and only own capital of \$ 22 bill. (Wikipedia). Registered loss in 2008 was \$ 7 bill., but with more to come. Lehman Brothers was heavily dependent on short term borrowing in the interbank market, when it was denied access to that market and the Fed turned it down due to too little collateral, the game was over. The bank became illiquid over night, and was on its road to insolvency. Hence, deposits in Lehman Brothers were no longer liquid and could not be used as means of payments. There was not yet a universal federal deposit guaranty. Deposits were frozen until a legal arrangement was established.

## Availability of supply factor: labour, capital, technology and environmental conditions

*The sense in which I am using the term [uncertainty] 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 do not know (Keynes, 1937: 113).*

### Increased real capital

Keynes had little to say in *the General Theory* about the availability of supply factors: labour, capital, technology environmental conditions not to speak of macroeconomic growth, which is quite understandable taking the economic situation in the first half of 1930's into consideration.<sup>6</sup> On the other hand Keynes was very conscious about the importance of long-term expectations for the undertaking of real investment; but as Keynes said in 1937, what can we know with certainty about any important matter 30-40 years ahead? - 'about these matters there is no scientific basis on which to form any calculable probability whatever'. Keynes was working within the framework of an open system, where the degree of uncertainty increases with the length of the planning horizon, (CWK, XIV: xx).

Keynes had analysed the main driving factors within a macroeconomic path which was not in general supply constrained; but he did not make an explicit analysis of the capacity increasing implications of real investment. Post-Keynesian economics were left alone with regard to growth theory. Harrod (1939) made an attempt to overcome the gap in *The General Theory* of real investment being demand augmenting without having a direct supply effect. Harrod could have made some arguments related to the Z-curve, how it might change as a consequence of enlarged capital or improved technology and by that making the principle of effective demand capturing some of the dynamics derived from increased productivity. However, Harrod kept his theory within an analytical framework of a closed system, where planned investments were assumed to be similar to realised saving. There was within this analytical model no room left for micro or macro uncertainty, although the model demonstrated an inherent instability due to lack of substitution between factors of production and lack of stabilisation policies.

In real life real investment is partly undertaken due to convention (what to do with profits), and partly due to animal spirit (an entrepreneur acting more like an artist than a stereotype capitalist). But, when real investments have been decided and are on stream, future business activities will be influence by these investments, because the macroeconomic development is path-dependent. Yes, endogenous growth theory is relevant also when uncertainty prevails, (Lavoie, 2006). Hence, business cycle and growth trend cannot be separated. Firms invest in boom periods due to increased profit and optimism, whereas disappointed expectations will often have a negative effect through reduced state of confidence.

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<sup>6</sup> One of the few exceptions is the beautifully written essay on *the Economic Possibilities of our Grandchildren* published in 1930 and included in CWK, IX, where Keynes just plaid with the idea that economic growth could go on forever fuelled by the ever increasing productivity.

## The long-term productivity and sustainable development

As far as I know, Keynes never wondered about the relationship between growth and exploitation of natural resources. In the inter-war period the supply of coal was vast and oil becoming more plentiful. Although the smog in larger industrial areas was already in the 1930s a daily nuisance, the alternative of a life without coal would have been unbearable. Of course, Keynes had noticed that the overall productivity had increased considerably even through the years of depression.<sup>7</sup>

Increased productivity was in no way a new phenomenon. Looking at the macroeconomic development throughout the past two centuries would also have demonstrated a constantly increasing real wage and real production. The market-economic system had been able to display continuously growing productivity *per capita*, often in combination with reduced working hours. The reasons for the increased labour productivity are manifold (increased capital stock, education, innovations **and exhaustion of natural resources** among other things), which has increased the supply side capacity. Increased productivity reduces unit labour costs, which – *ceteris paribus* – increases the effective demand for production, but does not necessarily increase the demand for manpower.

The increased supply potential can be illustrated by a change of the Z-curve in figure 3. It moves as mentioned above to the right in the diagram when labour productivity and the capital stock are increased. If the increased supply potential arises from an increased factor productivity (decreased marginal costs), then the Z-curve will rather have a tendency to move downwards (swing to the right), which will increase the effective demand for labour measured in units of efficiency. Hence, what we do not really know is how labour and capital efficiencies evolve through time.

Even under the assumption of an unchanged D-curve, the effective demand for output will increase when the Z-curve is moved to the right. If productivity is increased, then the intersection point between the D- and Z-curves will move – *ceteris paribus*.<sup>8</sup> This is due to the fact that the intersection point between the production that the firms expect to sell (D) and the costs of undertaken the production (the Z-curve) is moved, which causes an increase in effective demand for output. On the other hand, nothing unequivocal can be said about the employment effect, because the increased productivity drives a wedge in between production and employment. Production can be increased, without it automatically leading to increased employment. It is a well-known empirical phenomenon and is called 'jobless' growth. In order to determine the employment effect, the connection between production and employment must be continuously corrected for the changed productivity.

An increased effective demand for production is thus not in itself a guarantee for increased employment in a growth perspective with increased work productivity. This requires that effective demand increases faster than labour productivity. Increased employment is therefore dependent on the expected volume of sales running faster than the development in labour efficiency.

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<sup>7</sup> Within *the Economic Possibilities of our Grandchildren*, mentioned above, he made a calculation of a trend-increase in productivity of 2 percent p.a. - which quadruples production capacity in 70 years (two generations). Then he asked the question, if we accept the living standard of today (1930), then we could reduce the daily/yearly working time considerably – and concentrate on Love, Beauty and Truth, which could also be considered as a kind of sustainable way of life!

<sup>8</sup> Here, the Open System *Ceteris Paribus* method, see Chick (2003) and Jespersen (2009): chapter 6, is used. The outcome of the semi-closed model is only the very first analytical step in a longer chain of reasoning.

What can be said about sustainable development? Unfortunately, very little. If the copper price in twenty years time is something about which we will say, that ‘we simply do not know’, then the physical living conditions in 100 years time is something that we *really* do not know. Uncertainty prevails. On the other hand we could repeat Keynes’s thought experiment. How could we take stock of increased productivity inherently in the capitalist market system? Productivity growth of the usual size implies that aggregate demand will have to grow with the very same speed to keep the balance in the labour market – 2 percent annual growth means a doubling of GDP during 35 years.

In some way it is time to contemplate a stop of further expansion of private consumption in the rich countries, because increased material consumption seems not to make people any happier, perhaps even to the contrary due to externalities, (Layard, 2005). On top of that we know with reasonable certainty that the size of the global population in the developing countries will continue to grow for the coming 30-40 years with another 3 bill. persons. If we further assume a rising living standard for all people in the developing countries to a level which is equivalent to the average of the OECD-countries of today say \$ 30.000/year, then global GDP has to grow quite substantially, before it by the end of this century might stabilise at a much higher level.

But, if the rich countries would use all their future productivity gains (excess capacity) to protect the global environment by energy conservation and pollution reduction – their might be a chance of a reduced uncertainty with regard to sustainability (at least with regard to the greenhouse effect) for the following century, which is the time period where our grandchildren are expected to live. What the living conditions will be in other perspectives: water supply, urban life and incurable deceases, ‘we simply do not know’; but living conditions will be rather unevenly distributed around the globe. Some continents will be relatively unexploited and ‘under-populated’, which might attract people from less prosperous regions and cause tensions and attempts to migration.

The macroeconomic system is not self-adjusting. If we include the consideration of the exhaustible stock of natural resources and unpolluted environment the economy as a whole will become even less self-adjusting. It will presumably follow an unpredictable, but path-dependent track into a seemingly more and more uncertain future. This means that the decisions we undertake (or do not undertake) today will have irreversible implications for the future. That is one of the less uncertain prediction related to the prevalent unsustainable development which is taking place right now, especially as long as policy decisions are building upon the conventional general equilibrium assumption that nature is economically unlimited, then the attitude that business as usual can go on unchallenged into the future will prevail.<sup>9</sup>

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<sup>9</sup> One may recall the fate of Titanic. Some of us are travelling on first class, other on second class and the crowd on low economy class. When then iceberg is hit, there will only be room in the rescue boats for a section of those travelling on first class, the other passengers are left behind on the sinking boat with decreasing chances of survival. The unfortunate thing is, that it is only people at first class, who have the economic power to change the course of Titanic; but they have the least incentives to do anything!

## Conclusion

*I shall argue that the postulates of classical theory are only applicable to a special case only and not to the general case, the situation which it assumes being a limiting point of the possible positions of equilibrium. Moreover, the characteristics of the special case assumed by the classical theory happen not to be those of the economic society in which we actually live, with the result that its teaching is misleading and disastrous if we attempt to apply it to the fact of experience, (Keynes, 1936: 3).*

*The outstanding faults of the economic society in which we live are its failure to provide for full employment and its arbitrary and inequitable distribution of wealth and incomes. The bearing of the foregoing theory on the first of these is obvious (Keynes, 1936: 426).*

Keynes did present an analytical alternative to the prevailing neoclassical general macro-equilibrium framework. In this paper I have argued, that the real difference was the incorporation of *individual uncertainty* into the macroeconomic analysis.

The ‘principle of effective demand’ is one of the major examples demonstrating that taking uncertainty seriously means getting new theoretical insights. The importance of effective demand cannot be understood without explicit reference to uncertainty in entrepreneurs’ decision making process.

Very little can be said about the longer run perspective other than it depends on decisions taken today especially concerning institutions and supply structures. With regard to sustainable development we can hardly know anything, except that uncertainty is increasing the faster we change the actual situation by resource exploitation and increased pollution. Furthermore, it seems quite likely that poor people and poor countries will be hit the hardest through deteriorating living conditions. Whereas, those countries, which have the economic excess to undertake real environmental changes, have the least incentives to do so – they are in a stronger position to protect themselves against the negative impact of changed climate and increased migration.

The private sector cannot on its own account for a sustainable future, because effective demand is a principle based on short term production consideration. Keynes, 1936: chapter 24 concluded convincingly that the principle of effective demand causes the market economy to behave in an unstable way. Even in the short run the macroeconomic market system is not able by itself to provide for full employment and secure a decent distribution of wealth and life opportunities.

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