

Hartwig, Jochen

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Jochen Hartwig

Keynes versus the Post Keynesians
on the Principle of Effective Demand

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Keynes *versus* the Post Keynesians on the Principle of Effective Demand

Jochen Hartwig*

Swiss Institute for Business Cycle Research

Swiss Federal Institute of Technology, Zurich

Abstract

The American Post Keynesians – those who attach importance to the ‘Big P’ and the absence of a dash between ‘post’ and ‘Keynesian’ – claim to be Keynes’s most literal interpreters, or the ‘truest’ Keynesians (HOLT ET AL., 1998, p. 17). This paper compares the Post Keynesian interpretation of the Principle of Effective Demand, i.e. the D/Z-model, with Keynes’s own presentation in Chapter 3 of the *General Theory* – and finds substantial differences. A reinterpretation of the D/Z-model is offered that would bring it into line with Chapter 3.

Key words: Effective demand, D/Z-model

JEL classifications: B22, E12, E20, E31

* *Correspondence Address:* Jochen Hartwig, KOF, ETH Zentrum WEH, CH-8092 Zurich, Email: hartwig@kof.gess.ethz.ch

1 Introducing the Principle of Effective Demand: a Platonic dialogue

The *Principle of Effective Demand*? Wait a minute... – It states that demand creates its own supply, right? It's the reversal of Say's Law! – Wrong! – WHAT? But that's how I've learned it from my textbook! Look! FELDERER/HOMBURG 1999, Section 32, «Effective Demand»:

Production is determined by the market. Demand creates its own supply, not *vice versa*. Thereby, Say's Law is, so to speak, turned upside down.¹

Well, I didn't ask what textbook authors write. After all, the Principle stems from Keynes; and Keynes writes:

(T)he volume of employment is given by the point of intersection between the aggregate demand function and the aggregate supply function; for it is at this point that the entrepreneurs' expectation of profits will be maximised. The value of D at the point of the aggregate demand function where it is intersected by the aggregate supply function, will be called *the effective demand*. (KEYNES, 1973a, p. 25)

You see: Effective Demand is a *point of intersection* of two curves which Keynes calls D and Z ... – Yes, I know. Those are the aggregate demand curve and the 45^0 -line in the 'Keynesian Cross'. In case of deficient demand, a quantity reaction of output closes the gap. That's why demand determines supply, as I just said. It's well known that the Principle of Effective Demand is about quantity reactions of output that equate saving and investment. Milgate, for instance, writes:

The formal proposition is that saving and investment are brought into equality by variations in the level of income (output). This is the Principle of Effective Demand (MILGATE, 1982, p. 78).

No, no. D and Z have nothing to do with the 'Keynesian Cross'. The two curves as defined by Keynes are in nominal terms while those of the 'Keynesian Cross' are in real terms. Furthermore, Keynes talks about expectations and profit-maximizing. Where are those elements in the 'Keynesian Cross'? Finally, Keynes's aggregate supply function Z is not the 45^0 -line. Z depends on employment, the 45^0 -line does not; Z has a distinguishable price- and quantity-component, the 45^0 -line has not. In short: unlike Z , the 45^0 -line is no autonomous supply function, it's a 'helping line' (SAMUELSON, 1948, p. 257). It's just there to find out which level of income is consistent with the aggregate demand it supports, given the assumptions made about the aggregate demand schedule. – ... Wait a minute. Are you supposing that the Principle of Effective Demand is *not* about quantity reactions? – Right!

¹ FELDERER/HOMBURG, 1999, pp. 102-103 (author's translation).

And the only school that has tried to remain truthful to Keynes's presentation of the Principle is the Post Keynesian school. But guess what! Not even they got it right...

2 The Principle of Effective Demand in Post Keynesian economics

What is meant here by the term 'Post Keynesian'? According to HAMOUDA/HARCOURT 1989, 'post-Keynesianism' is a 'portmanteau term' (p. 2) for three different 'strands' – American post-Keynesians, neo-Ricardians, and Kaleckians – as well as for a number of individuals not belonging to any of these strands, e.g. Joan Robinson and Kaldor. Here, the term 'Post Keynesian' is reserved for the first strand, i.e. the 'Big-P-And-Without-A-Dash' post-Keynesians summoned around the *Journal of Post Keynesian Economics*. The founding co-editors of this journal, Sidney Weintraub and Paul Davidson, share the merit of having rescued Keynes's *D/Z*-analysis from oblivion.

Weintraub was probably the first to *draw* *D*- and *Z*-curves. His diagram (WEINTRAUB, 1958, p. 39) is reproduced in Figure 1. Weintraub called the point of intersection of these two curves 'the income-employment equilibrium'. It was Paul Davidson who got back to Keynes's coining 'point of effective demand' (cf. DAVIDSON/SMOLENSKY, 1964, pp. 4-6; DAVIDSON, 1978, pp. 22, 44-49) and who has perhaps been the most influential advocate of the *D/Z*-model ever since (cf. also DAVIDSON, 1994, Ch. 2, DAVIDSON, 2002, Ch. 2).

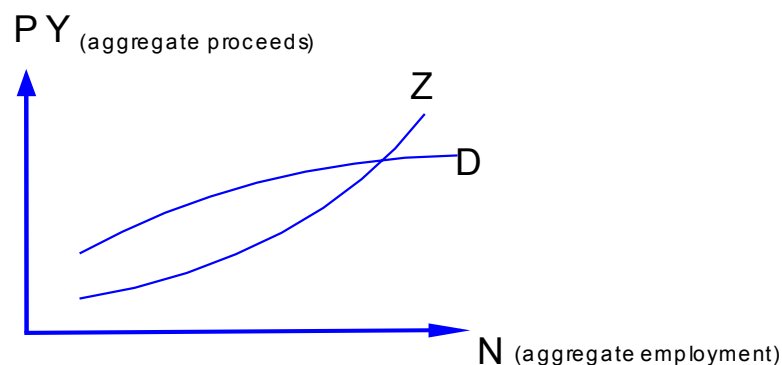


Figure 1: The *D/Z*-diagram

How do Weintraub and Davidson define the two curves? – They write about *Z*:

The *Z*-function ... associates amounts of *N* to expected *Z*-sums in the sense that each expected-proceeds level generates a particular amount of employment. (WEINTRAUB, 1958, p. 25)

Keynes's aggregate supply function represents the relationship between entrepreneurs' expected sales revenues tomorrow and the amount of today's labour hiring that the entrepreneurs require to produce sufficient output to meet tomorrow's expected demand. (DAVIDSON, 1994, p. 19)

Now, let's compare this with the pattern. Immediately prior to the quote given in the introduction, Keynes writes:

Let Z be the aggregate supply price of the output from employing N men, the relationship between Z and N being written $Z = \phi(N)$, which can be called the *aggregate supply function*. Similarly, 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*. Now if for a given value of N the expected proceeds are greater than the supply price, i.e. if D is greater than Z , there will be an incentive to entrepreneurs to increase employment beyond N and, if necessary, to raise costs by competing with another for the factors of production, up to the value of N for which Z has become equal to D .

Obviously, the relationship between expected sales and employment is called 'Z' by Weintraub and Davidson; but Keynes calls it 'D'. What, then, do the Post Keynesians call 'D'?

The aggregate demand function (D) represents the desired expenditures of all buyers at any level of aggregate employment. (DAVIDSON, 1994, p. 19)

WEINTRAUB, 1958, pp. 30-44, also constructs D by summing up the 'intended outlays' (p. 31) of consumers, investors, and the government. Now, whereas for Keynes D represents 'the proceeds which entrepreneurs expect to receive from the employment of N men', that is, a magnitude the suppliers are concerned about, for Weintraub and Davidson D represents something which is contemplated by the other side of the market – the buyers. Since the insistence on adhering strictly to the words of Keynes has been lauded as one of the foremost traits of Davidson (cf. HOLT ET AL., 1998, p. 1), this divergence between 'master' and 'prophet' (*ibid.*) seems odd.

Other Post Keynesians have followed Keynes's track more closely in that they recognize that D refers to aggregate demand as expected by the suppliers.² (Let's postpone a discussion of Z until the next section.) Then the question arises: what shape does the D-curve have? In Weintraub's and Davidson's presentation, the D-curve is strictly concave. But while it is uncontroversial that the aggregate demand curve *as realized ex post* must be strictly concave as long as the marginal propensity to consume is smaller than one (Keynes's 'fundamental

² Cf. WELLS, 1971 (Ch. 12), MILLAR, 1972, ROBERTS, 1978, PARINELLO, 1980, KOENIG, 1980, CHICK, 1983, WELLS, 1987, VICKERS, 1987, AMADEO, 1989 (Ch. 6), DEPREZ, 1997.

psychological law') and as long as there are decreasing returns to labor,³ it is less clear why the same should hold for the D-curve in expectations terms. As PARINELLO, 1980, pp. 68-70, notes, the individual producer's expected demand curve is a horizontal line in a diagram with his own offers of employment as abscissa and his own expected proceeds as ordinate (cf. also WELLS, 1987, p. 512). No single producer expects his own proceeds to be negatively influenced if he cuts back employment, but if all of them did so, then aggregate proceeds would certainly be smaller. But how does this aggregate result come about? Certainly there should be some kind of connection between the individual behavior of the producers and the aggregate result. An explanation is offered in the next section in the context of a reinterpretation of the Principle of Effective Demand.

3 Reinterpretation of the Principle of Effective Demand

Following CHICK, 1983, pp. 16-21, this section argues that, in order to fully understand the Principle of Effective Demand, we have to visualize the economic process as a sequence of production periods. The production period is mainly an analytical concept. But in order not to be a false abstraction, it should have some grounding in reality. Indeed, it has. Entrepreneurs do plan for certain periods of the future. The production period is characterized by the length of time that an entrepreneur is bound by his employment decisions taken at the beginning of that period. The term of the wage contract and the period of notice for work contracts seem to be important elements that influence the length of the production period for an individual firm. Keynes turned to comparative statics because, as he wrote to Ohlin, the production periods of individual firms 'are all of different length and overlap one another' (KEYNES, 1973b), a property that seemed to be inconsistent with the idea of a macroeconomic production period. But Keynes probably overstated the difficulties inherent in the concept of production periods. The rules of collective bargaining and legal regulations concerning the beginning and the end of the accounting year tend to bring the production periods of

³ Cf. AMADEO, 1989, p. 105, fn. 1. Keynes's acceptance of the 'first classical postulate' (cf. KEYNES, 1973a, pp. 17-18) implies three assumptions that stem from (neo)classical theory. First, competition is assumed to be perfect or at least 'free' (in a Marshallian sense). This means that firms are unable to dictate the market price for the commodities they produce – or, put another way, that entrepreneurs expect to face an infinitely price-elastic demand. The second assumption is that firms maximize profits. Finally, decreasing marginal returns to labor are assumed; cf. ROBERTS, 1978, p. 558, KOENIG, 1980, p. 447, AMADEO, 1989, p. 13, and PALLEY, 1997, p. 296.

individual firms into line.⁴ Another solution to the problem of establishing a macroeconomic production period is to make it very short so that the individual firms' periods won't overlap any more. Keynes considered this possibility in the *General Theory*.⁵

Entrepreneurs decide at the beginning of the production period how much to produce during that period, and they deduce from this decision how much employment to offer. From the definition of the production period follows that they are not able to revise these decisions during the production period. It is the Principle of Effective Demand that guides their decision how much to produce. Their cost conditions together with the aim to maximize profits are reflected in their supply function (Z). The price component inherent in the Z -function is a 'level of aspiration'. It is not the market price level an entrepreneur *expects* (as in the bulk of the Post Keynesian literature on Z), but the proceeds he must have for the last unit of output at each level of employment to satisfy the profit maximizing condition. This unit supply price will grow with employment under conditions of decreasing marginal returns to labor. On the assumption that labor is the only variable input in the production process, the supply price is given by:

$$P^s = w \cdot \frac{dN}{dY} \quad (1)$$

– with w = nominal wage rate, N = employment, and Y = value added (cf. CHICK, 1983, p. 66). To repeat: this results from profit maximizing of a firm that cannot dictate the market price (cf. fn. 3 above).

The formula for the Z -curve thus reads:

$$Z = P^s \cdot Y(N) = \frac{dN}{dY} \cdot w \cdot Y(N) \quad (2)$$

Z is calculated by multiplying each conceivable output quantity (which is dependent on employment) by the (supply) price that maximizes profits. Contrary to the Post Keynesian

⁴ It should be noted that HICKS, 1982, 1985 as well as LINDAHL, 1939 also envisaged the economic process as a succession of production periods. FONTANA, 2004, p. 79, points out: 'Besides, as he [Hicks] explains, when agents make decisions they have in mind a stage-by-stage temporal frame. It was not only for theoretical convenience but also for the realism of the study that period analysis had to be considered superior to continuous analysis.' Nell presents the same argument somewhat differently: "Continuous output' should not be overstressed. Even under Mass Production the seasons, traditional holidays and social customs provide a framework that sets definitive marketing dates toward which manufactures aim. ... So, while under continuous production there need be no common starting and finishing points, these will often exist, nevertheless' (NELL, 1998, p. 205).

⁵ 'Daily here stands for the shortest interval after which the firm is free to revise its decision as to how much employment to offer. It is, so to speak, the minimum effective unit of economic time' (KEYNES, 1973a, p. 47, fn. 1).

interpretation outlined in section 2, there is no element of uncertainty – or expectation-building – involved as long as the entrepreneur is certain about his cost conditions.⁶ The supply price is *not* the price expected to rule in the market, nor is the supply price, multiplied by the corresponding output quantity, a measure for expected demand (or expected sales). The supply price is the purely hypothetical price that is just sufficient to maximize profits for each volume of employment. This hypothetical price is then compared to the price that is really expected to rule in the market (see below).

The supply functions of individual firms can be aggregated straightforwardly (cf. DAVIDSON, 1987), which yields the aggregate supply function of the economy: $Z = \phi(N)$. Due to diminishing returns, the quantity component of Z grows at a decreasing rate while the price component grows at an increasing rate. Altogether, Z could be a straight line – for instance, when the production function is given by $Y = \alpha N^\beta$.⁷ If, on the other hand, Z is assumed to be convex (as in Figure 1), this implies that, with rising employment, the profit share will grow as Z departs more and more the straight line depicting the wage bill.⁸

For Keynes, Say's Law does not hold because of fundamental uncertainty in a monetary production economy (cf. KEYNES, 1973c). Therefore, each entrepreneur is forced to form expectations about how much he might be able to sell. This leads to (to quote VICKERS, 1987) 'the producer's expected demand curve'. But contrary to VICKERS, 1987, p. 98 (and also to WEINTRAUB, 1958, pp. 30-44), the price level implicit in the expected demand curve need not be equal to the price level implicit in the supply curve at the same level of employment. Here lies a decisive shortcoming of the Post Keynesian interpretation. WEINTRAUB, 1958, p. 32, writes:

(I)t should be apparent, however, that embedded in each point on the aggregate-demand function, D , will be the same prices that are found in Z at corresponding N -points.

His idea is that, with rising employment, people will earn more and can afford to pay a higher price. So we have a 'family of Marshallian industry demand curves' (WEINTRAUB, 1958, p. 32, cf. also DAVIDSON 2002, pp. 35-36) in a diagram with employment as abscissa and with the price level as ordinate – each of them being defined for a certain money income. The

⁶ In terms of KEYNES, 1973a, Ch. 6, the only relevant cost component entrepreneurs are not certain about (and that is thus subject to expectation-building) are user costs; cf. KOENIG, 1980, pp. 432-435, for a thoughtful discussion of this issue. But user costs do not enter Z , cf. KEYNES, 1973a, p. 24, fn. 2. We can thus take all the cost components that do enter Z to be known to entrepreneurs.

⁷ Cf. DAVIDSON, 1962, p. 454.

⁸ Keynes seems to assume that the profit share rises with employment, cf. KEYNES, 1973a, p. 17, fn 1.

higher the supply-price and associated employment levels are, the farther to the right the respective industry demand curve lies. We can read people's 'intended outlays' off these curves for each supply price level, join the points up, and get a 'demand-outlay function'. This function is then transferred to aggregate employment/aggregate proceeds quadrant to yield the D-curve of Figure 1.

Although Weintraub spends some time arguing that the slopes of the two curves D and Z (so constructed) could deviate from each other, formally, they cannot. Because both curves have been defined as equal to $P^s \cdot Y(N)$, they could only deviate from each other if we assume a different production function underlying each of them. Or, having assumed a profit share rising with employment to derive the convex form of the Z -curve, we now would have to assume the opposite to establish that D is concave. No solution can be reached along these lines. Interestingly enough, Weintraub argues empirically (1958, pp. 39-42). He sets the income magnitude relevant for Z as equal to the sum of wages, profits and fixed payments made by firms while he accounts for redistribution through taxes and transfers in the income magnitude relevant for D . So, do we have to conclude that Keynes's Principle of Effective Demand is all about income (re)distribution (as the title of Weintraub's book might suggest)? And further, would D be identical to Z if there was no income redistribution? And, given Davidson's assertion (1994, pp. 22-23; 2002, pp. 21-22) that Say's Law holds that D equals Z for all levels of employment, do we have to conclude that it's precisely the redistribution of income by governments that prevents Say's Law from becoming operative? – This would hardly be regarded as a Post Keynesian conclusion. It's the Post Keynesian failure to distinguish clearly between the supply price level and the demand price level that leads into this trap.

The price level implicit in the supply curve is a 'level of aspiration', and it shifts with employment. The price level implicit in the expected demand curve, however – the proceeds each individual entrepreneur thinks he will be able to receive for a unit of output –, is independent of the level of employment he offers. Each entrepreneur has to form an expectation with respect to the price that can be enforced for his product on the (at least to some degree) competitive markets that characterize contemporary economies.⁹ (As noted before, Keynes took for granted a high degree of competition.) The expectations about the

⁹ In his excellent reconstruction of the microfoundations of Keynes's theory, KOENIG, 1980, p. 435, writes: 'Les valeurs p_j , q_j correspondent aux recettes monétaires que les producteurs *devraient obtenir* pour maximiser leurs profits. Ces recettes sont confrontées par les entrepreneurs à celles qu'ils *peuvent espérer de retirer* de la vente de leurs produits et qui se fondent sur leurs anticipations relatives à la demande' (emphases added).

enforceable price will be largely influenced by last period's experiences and probably also by 'fundamentals' (that were the central theme for the labor theory of value).

Keynes has some responsibility himself for the confusion that has so far surrounded this issue in the Post Keynesian literature. On p. 24 of the *General Theory*, he writes that the aggregate supply price (Z) 'is the expectation of proceeds which will just make it worth the while of the entrepreneurs to give that employment'. On the next page he writes: 'let D be the proceeds which entrepreneurs expect to receive from the employment of N men'. Since for all levels of employment except one (the point of intersection) Z and D differ, and since entrepreneurs certainly cannot 'expect' two different levels of proceeds at a time, that is, for the same level of employment, Keynes was ill-advised not to eliminate the words 'expectation of' from p. 24 of the *General Theory*. The only justification for leaving these two words at their place is that they might refer to user costs which are uncertain (cf. also KEYNES 1973a, pp. 44-45).

Contrary to the supply curves, the individual demand curves cannot be aggregated straightforwardly. To repeat: since no single producer expects his own proceeds to be negatively influenced if he cuts back employment, the producer's expected demand curve should be a horizontal line in a graph with his own offers of employment as abscissa and his own expected proceeds as ordinate. But although it is true that no entrepreneur will expect to sell more just because he employs more people, each entrepreneur will expect to sell more if he expects *aggregate* employment to be higher in the next production period because each entrepreneur knows that in this case aggregate demand will be higher. If we interpret the employment quantity with regard to the individual entrepreneur's D-curve as the share of expected aggregate employment for an individual firm, then the D-curve of every single firm (as well as the aggregate D-curve) will be strictly concave. – There is a range of conceivable total employment levels along with the specific share of an individual firm. The expected proceeds of each firm grow with this share, but due to diminishing marginal returns to labor, (real) income and also sales proceeds are expected to grow at a decreasing rate. – Few scholars have so far considered this solution. It is implied in KOENIG, 1980, pp. 437, 454, and explicit in CASAROSA, 1981, p. 192. But Casarosa believes the solution to be 'completely incompatible with the theory of the firm operating in an atomistic (let alone perfectly competitive) market', and claims that 'the notion that the expected demand function is the producers' estimate of the expenditure function is clearly a theoretical aberration which has strangely survived' (*ibid.*). Casarosa is right that the notion of firms forming *ex ante* expectations about their market share is incompatible with the microeconomic theory of the small

firm operating under perfect competition, cf. also ASIMAKOPOULOS, 1991, pp. 43-44. But Keynes – who was concerned with the real world – did not have such firms in mind. In his theory, firms are not ‘atomistic’, but also not powerful enough to dictate the price. They have to form expectations about the price for their products they can enforce and about the market share that might be attributable to them. Here, two cases are possible: if the entrepreneurs have some macroeconomic insights, the aggregate demand curve $D = f(N)$ (which is expectation-dependent¹⁰) will be strictly concave. If they have no such insights, it will be a horizontal line.

As to the shapes of D and Z the following should be noted: Z may be a linear function of N even under decreasing marginal returns (see above). It will be a straight line under constant returns, with the slope given by the wage rate. In this case, the D -curve, too, will be a linear function of N , with the slope given by the marginal propensity to consume multiplied by the demand price level and by the (constant) marginal product of labor. The slopes of D and Z depend crucially on the assumptions made about the ‘production function’ – in other words: about the marginal product of labor. Note also that the case of increasing returns cannot be handled well with the D/Z -diagram because if the Z -curve becomes concave, and the D -curve becomes convex, then the two curves do not intersect, and there is no Point of Effective Demand.

As long as $D > Z$, the entrepreneurs could increase profits by expanding production. Therefore, they fix their labor demand at the point where the D - and Z -curves intersect – ‘for it is at this point that the entrepreneurs’ expectation of profits will be maximised’ (KEYNES, 1973a, p. 25). This point of intersection, the Point of Effective Demand, contains all information about price, output, and employment levels for the next production period.¹¹ One might conceive of this point as an equilibrium, but it is not some kind of ‘market equilibrium’. It is a point where the entrepreneurs’ expectations and aspirations concerning different things, e.g. prices, costs, profits, demand etc. are mutually consistent (cf. also MILLAR, 1972, p. 607). Note that, although the concepts of price and employment are different for both curves (supply price level as a ‘level of aspiration’ dependent on costs *versus* demand price level as

¹⁰ Sometimes Keynes uses the term ‘aggregate demand’ to describe the aggregate demand that has been realized *ex post*. There is a certain confusion here, which will be taken up below.

¹¹ To return to Keynes’s casual confusion in the choice of terms, on p. 259 of the *General Theory* he mentions ‘aggregate effective demand’. Here, he refers to the aggregate demand that has been realized *ex post*. Contrary to this practice, one has to distinguish carefully between ‘effective demand’ (the point of intersection of the D - and

an estimated enforceable price level for the firms' output; employment level of the firms *versus* employment level as the firms' share of expected total employment), they are all mutually consistent at this point of intersection. The supply price level equals the demand price level, and the firms' *de facto* employment equals the entrepreneurs' expectation as to how much of total employment is attributable to the respective firms.

Arguably, the reinterpretation of the Principle of Effective Demand presented here overcomes some interpretative problems as to the meaning and shape of the two curves, so far unsolved in Post Keynesian Economics. Weintraub has contemplated a D-curve in expectations terms in an early AER paper (WEINTRAUB, 1942), but later expressed strong doubts concerning the usefulness of expectational curves, cf. KREGEL, 1985, pp. 547-548. Davidson considers the possibility of interpreting *D* as expected sales proceeds in the postscript to the 2nd edition of *Money and the Real World* (cf. DAVIDSON, 1978, pp. 381-388). There, he also makes clear why he discards this interpretation. Davidson refers to Keynes's above-mentioned letter to Ohlin, in which Keynes expresses his discomfort with the 'Swedish' approach of comparing *ex ante* plans with *ex post* results. This approach is nevertheless essential for the Principle of Effective Demand as exposed in Chapter 3 of the *General Theory*. AMADEO, 1989, pp. 67ff., 90-91, notes that Keynes's growing discomfort with the 'Swedish' approach seems to pervade the *General Theory* itself: Keynes starts along 'Swedish' lines (*GT*, Chapters 3 and 5), but then gradually substitutes (*ex post*) realized magnitudes for (*ex ante*) expected ones and ends up with a presentation that evokes the impression that the Principle of Effective Demand indeed means nothing more than quantity reactions of real income to equate saving and investment (*GT*, Chapter 18). Although Amadeo sees that this implies a theoretical relapse because the whole supply side falls out of the picture, he is ready to follow Keynes down this road because he believes – and this seems to be Davidson's position, too – that the stress on *ex ante* expectations inhibits an equilibrium analysis of output, employment, and the price level (cf. AMADEO, 1989, pp. 106-107). – But isn't there only one chapter in the *General Theory* called 'The Principle of Effective Demand', and isn't this Chapter 3? Chapter 18 presents perhaps a different theory of employment than Chapter 3, but definitely not another version of the Principle of Effective Demand.¹² Furthermore, Amadeo's vision of Keynes's intellectual development away from *ex*

Z-curve), 'aggregate demand curve' (the D-curve in expectations terms), and 'aggregate demand' as realized *ex post*.

¹² Keynes uses the expression '*Principle of Effective Demand*' in the title of Chapter 3 of the *General Theory*, but hardly ever again. A recent discussion has focused on the question whether the label 'principle' is warranted

ante expectations is questionable. Keynes restated a ‘Chapter 3’-view of the Principle of Effective Demand – based on the notions of fundamental uncertainty and expectations – forcefully in his 1937 article *The General Theory of Employment* (KEYNES, 1973c).

According to the proposed reinterpretation, the Principle of Effective Demand has fatal consequences for certain interpretations of Keynes’s theory. Consider, for instance, the familiar ‘quantity reactions’. – They are simply impossible. Entrepreneurs decide at the beginning of the production period how much to produce and how many people to employ. They use the D- and Z-curves to find out which level of employment will be profit-maximizing, given what they know and what they expect. If their expectations turn out to be wrong, e.g. if they have underestimated demand, they are not able to correct their decisions *ad hoc*. They are bound by them until the end of the production period. Victoria Chick was right to point out that ‘(e)ffective demand is an unfortunate term, for it really refers to the output that will be *supplied*; in general there is no assurance that it will also be demanded’ (CHICK, 1983, p. 65). It is not the *de facto* demand, but the *ex ante* expected demand, that is decisive (together with the Z-function) for output and employment during each production period. If the entrepreneurs have (*ex ante*) over- or underestimated the period’s *de facto* demand they cannot produce more or less *ad hoc* – as in the 45⁰-model. The definition of the production period given above (the length of time that an entrepreneur is bound by his employment decision) implies that corrections could only affect next period’s supply (cf. also PALLEY, 1997, p. 301). The quantity reactions do not take place within the production period but – if at all – in the transition from one period to the next. If, for some reason, entrepreneurs expect the conditions in the next production period to be fundamentally different from those in the actual one so that an expansion in output does not look profitable, then there will be no quantity reaction at all. Quantity reactions are no ‘hydraulic’ device (as the conventional wisdom about effective demand would have it). Not much can be said about them in general within the confines of the historical time-theory that KEYNES, 1973a, p. 293, and KREGEL, 1976 have called the theory (or model) of ‘shifting equilibrium’.¹³

(cf. PASINETTI, 1996, DAVIDSON, 2001). Here, the *Principle of Effective Demand* is taken to state that the quantity of employment is fixed at the *Point* of Effective Demand.

¹³ Note that this approach is very similar to Hicks’s distinction between ‘single period theory’ and ‘continuation theory’. A disequilibrium in the ‘single period’ subsequently leads to different expectations on the part of the entrepreneurs and to adaptations of their decisions. ‘Continuation theory’ then traces out the succession of those periods, cf. HICKS, 1982, HICKS, 1985 and FONTANA, 2004.

4 Conclusion

In Chapter 3 of the *General Theory*, Keynes presents the Principle of Effective Demand in terms of two functions, D and Z . Arguably, the Post Keynesians have been the only ones trying to remain truthful to Keynes's model, but – as has been shown in this paper – their interpretation is at odds with Keynes's own presentation. A reinterpretation is proposed that sees the Principle as a description of the aggregate result of a thought experiment of each entrepreneur aiming to estimate *ex ante* which output and employment level will realize his maximum profit. Quantity reactions, far from being the essence of the Principle of Effective Demand, are rather incompatible with it.

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