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## The principle of effective demand: another view

Luigi Pasinetti has noted that although the title of Chapter 3 of *The General Theory* is entitled “The Principle of Effective Demand,” the term “effective demand” is used only once, in an incidental sentence on page 31. Pasinetti raises an important issue—namely, that since the “term ‘principle’ is normally used for something fundamental,” why does Keynes never come back explicitly to this principle?

### Keynes’s principle of effective demand

Long before Keynes, classical economists had attributed the existence of unemployment to less than pure competition in the market. Keynes (1936, p. 192) was convinced that these “weaker classical spirits,” who relied on the necessary condition of imperfect competition with less than perfectly flexible wages and prices to explain unemployment, did “injury to their logical consistency.” In a general theory of employment, the existence of unemployment equilibrium was independent of the degree of competition in the system (Keynes, 1936, p. 245). In other words, the assumption of less than perfect price flexibility was neither a necessary nor a sufficient condition to explain persistent unemployment.

Instead, Keynes developed an expanded demand classification<sup>1</sup> system to demonstrate that Say’s Law “is not the true law relating the aggregate demand and supply functions . . . [and hence] there is a vitally important chapter of economic theory which remains to be written and *without which all discussions concerning the volume of aggregate employment are futile*” (Keynes, 1936, p. 26, italics added).

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<sup>1</sup> “Classification in economics, as in biology, is crucial to scientific structure. It was Keynes’ extraordinarily powerful intuitive sense of what was important that convinced him that the old classification was inadequate. It was his highly developed logical capacity that enabled him to construct a new classification of his own” (Harrod, 1951, pp. 463–464)

Say's Law specifies that all expenditure (aggregate demand) on the products of industry is always exactly equal to the total costs of aggregate production (aggregate supply), including gross profits. Letting  $D^w$  symbolize aggregate demand and  $Z^w$  aggregate supply (both measured in wage units, i.e., nominal values deflated by the money wage rate), then

$$D^w = f_d(N) \quad (1)$$

and

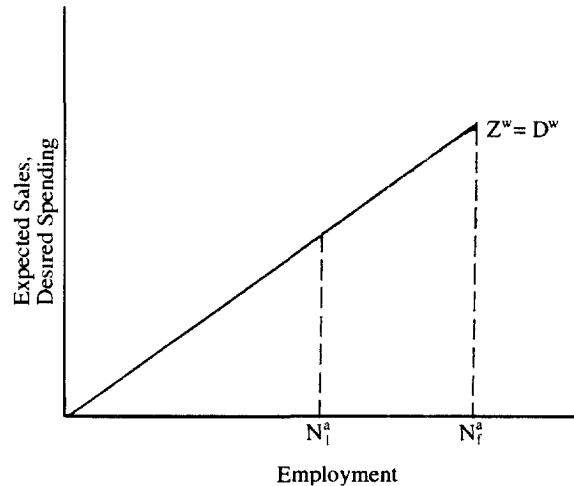
$$Z^w = f_z(N) \quad (2)$$

In an explanation to Dennis Robertson, Keynes stated that he spent so little time developing aggregate supply conditions because the aggregate supply function "is only a concoction of our old friend the supply function. Virtually the whole rest [of *The General Theory*] . . . is, therefore, directed to discovering what determines  $D$  [aggregate demand]" (Keynes, 1973b, p. 513). In other words, Keynes insisted that the assumed conditions of supply were *not* what distinguished his approach from the "old" classical analysis of his day. The fundamental difference was that Keynes (1936, p. 33) recognized the possibility of an "insufficiency" of demand no matter what the conditions of supply. Classical purely competitive as well as imperfectly competitive supply conditions are consistent with Equation 2. The existence of monopolistic power in product or labor markets, therefore, is not a necessary condition for the analysis of effective demand.

What is more important is that Keynes specifically denied that fixed nominal wages and prices were a necessary condition for underemployment equilibrium.<sup>2</sup> One complete chapter<sup>3</sup> of the *General Theory* demonstrates why the existence of instantaneously flexible money wages can not assure full employment—even if no coordination failures exist. "For the Classical Theory has been accustomed to rest the supposedly self-adjusting character of the economic system on the assumed fluidity of money-wages; and, when there is rigidity, to lay on this rigidity the blame of maladjustment. . . . My difference from this theory is primarily a difference of analysis" (Keynes, 1936, p. 257).

<sup>2</sup> His initial assumption of fixed wages was a "simplification, with which we will dispense with later, . . . introduced solely to facilitate the exposition. The essential character of the argument is precisely the same whether or not money wages, etc. are liable to change" (Keynes, 1936, p. 27, italics added).

<sup>3</sup> 23 pages, or 6 percent of the entire text.

**Figure 1** Effective demand under Say's Law

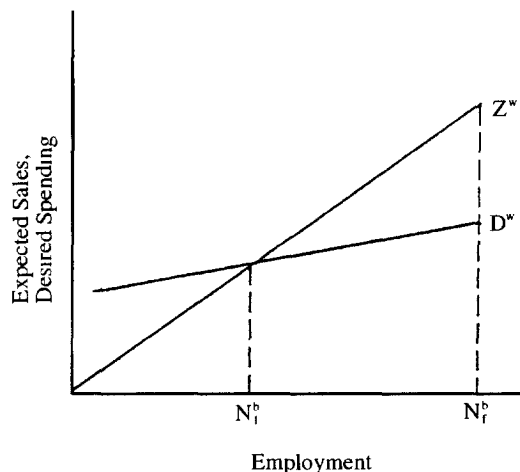
According to Keynes, Say's Law asserts that

$$f_d(N) = f_z(N) \quad (3)$$

“for *all* values of  $N$ , i.e., for all values of output and employment” (Keynes, 1936, pp. 25–26). In other words, in an economy subject to Say's Law, the total costs (including profits and rents) of the aggregate production of firms (whether in pure competition or not) are recouped by the sale of output. There is never a lack of effective demand. The aggregate demand and aggregate supply curves coincide (see Figure 1). In a Say's Law economy, there is never an obstacle to full employment, no matter what the degree of price flexibility in this system.

To develop the “true law” relating  $D^w$  and  $Z^w$  for a monetary, production economy, Keynes produced a general model where the aggregate demand and aggregate supply functions,  $f_d(N)$  and  $f_z(N)$ , need not be coincident (see Figure 2). In other words, in the general case, there is no necessity for the determinants of the aggregate demand function to be identical with the determinants of aggregate supply. This difference in the behavioral determinants of aggregate demand vis-à-vis aggregate supply is, I believe, what Keynes meant by the principle of effective demand in a *general* theory of employment, interest and *money*.<sup>4</sup>

<sup>4</sup> Just as the microdemand and supply curves have different behavioral determinants in Marshall's microanalysis

**Figure 2** The general theory principle of effective demand

Keynes differentiated his theory from classical economics by a taxonomic bifurcation of aggregate demand. As Equation 1 suggests, classical theory fitted all expenditures into a single category of aggregate demand,  $D^w$  (where  $D^w$  is determined entirely by the same determinants as aggregate supply). Keynes, on the other hand, divided all types of expenditures into two demand classes, that is,

$$D^w = D^{w_1} + D^{w_2} = f_d(N), \quad (4)$$

where  $D^{w_1}$  represented *all* expenditures that “depend on the level of [current] aggregate income and, therefore, on the level of employment  $N$ ” (Keynes, 1936, p. 28), that is,

$$D^{w_1} = f_1(N). \quad (5)$$

Logically, therefore,  $D^{w_2}$  represents *all* expenditures *not* related to current income and employment:

$$D^{w_2} \neq f(N). \quad (6)$$

Classical theory then becomes a special case of Keynes’s general analytical system. This classical “special case” requires imposing three additional restrictive axioms to force the aggregate demand function to consist solely of expenditures *equal* to current income at all levels of  $N$ . Demand will then have the same determinants as supply. These three necessary additional classical postulates underlying Say’s Law are: (1) the *axiom of ergodicity*, which asserts that the future can always be sta-

tistically reliably calculated from past and present market data. In 19th century Old Classical theory ergodicity was usually implicitly assumed under the claim that decision-makers possessed perfectly reliable foreknowledge of the future. In New Classical theory, ergodicity is a necessary condition for agents to form rational expectations about a statistically reliably predictable future<sup>5</sup>; (2) neutral money; and (3) *the axiom of gross substitution*, so with perfectly flexible relative prices the model assures that all markets clear<sup>6</sup> instantaneously, and with less than perfect flexibility all markets clear in the long run.

When Keynes was developing his principle of effective demand in the early 1930s, the modern axiomatic theory of value had not yet been developed. Consequently, Keynes could not explicitly label the axiomatic equivalents of the “axiom of parallels,” which he claimed had to be “overthrown” (Keynes, 1936, p. 16) to produce a general theory of employment interest *and money*. Nevertheless, by 1933 Keynes (1973b, pp. 408–409) had noted specifically that in his new “monetary theory of production,” the axiom of the neutrality of money was not applicable in either the short run or the long run. Yet even today, Blanchard (1990, p. 828) proclaims that all macroeconomic New Classical and New Keynesian models “impose the long-run neutrality of money as a maintained assumption. This is very much a matter of faith, based on theoretical considerations [i.e., axiom-based], rather than on empirical science.”

Keynes’s specification of the “essential properties of money” in his general theory relating employment and money requires rejecting the classical postulate that money (and all other liquid assets) are *gross substitutes* for the products of industry.

<sup>5</sup> Classical theory deals with a system in which “relevant facts were known more or less for certain . . . facts and expectations were assumed to be given in a definite and calculable form, and risks, of which, though admitted, not much notice was taken, were supposed to be capable of an exact actuarial computation. The calculus of probabilities, though mention of it was kept in the background, was supposed to be capable of reducing uncertainty to the same calculable status as that of certainty itself” . . . [whereas] 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 . . . By ‘uncertain’ let me explain I do not mean merely to distinguish what is known for certain from what is probable . . . About these matters there is no scientific basis to form any calculable probability whatever *We simply do not know*” (Keynes 1973c, pp. 112–114, emphasis added)

<sup>6</sup> In the absence of ubiquitous gross substitution, all existence proofs of general equilibrium, that is, all markets clearing simultaneously, are jeopardized (see Arrow and Hahn, 1971, pp. 15, 127, 215, 305)

Money (and all other liquid) assets possess two essential properties (Keynes, 1936, pp. 230–231). These are:

1. The elasticity of production of money is zero. In essence, money is nonproducible by the use of labor in the private sector. *Money does not grow on trees*. Money (and all liquid assets) therefore cannot be harvested by hiring otherwise unemployed workers to harvest money trees whenever people demand to hold additional liquid assets as a store of value.
2. The elasticity of substitution between money (and all other liquid assets) with respect to the producible goods of industry is zero. Accordingly, any increase in demand for liquidity (nonproducibles to be held as a store of value), and the resulting changes in relative prices between nonproducible liquid assets and the products of industry, will not divert the demand for liquidity into a demand for producible goods and services. Keynes (1936, p. 241) insisted that “the attribute of ‘liquidity’ is by no means independent of these two [elasticity] characteristics” and therefore as long as wealth owners used any asset whose “elasticities of production and substitution may be very low,” involuntary unemployment equilibrium is possible.

Since classical theory assumes that only producibles provide utility, then, in the long-run, only a “lunatic” would want to hold a nonproducible good as a liquid store of value no matter how relative prices change. Keynes (1936, chapter 12, 1973c, pp. 112–115), on the other hand, used the concept of uncertainty to explain why, even in the long run, people would reveal a preference for holding liquid nonproducible assets such as money as a store of value no matter how high its relative price rose vis-à-vis the products of industry.

Keynes argued that the future is uncertain, rather than merely risky in the probabilistic sense. If nonproducibility is an essential aspect of the characteristic of liquidity, then when agents fear an uncertain future they will refrain from exercising some of their income claims on current resources by buying liquid assets to hold as a store of value. This holding of nonproducible liquid assets can provide a long-run security blanket against uncertainty by postponing the need to spend one’s claims on real resources, thereby providing utility in a way that producibles cannot.

Hahn (1977, p. 31) has demonstrated that unemployment occurs when “there are in this economy resting places for savings other than reproducible assets” and the existence of “any nonreproducible asset allows for a choice between employment-inducing and nonemployment induc-

ing demand" (Hahn, 1977, p. 39). *Hahn's "resting place" analogy implies a zero elasticity of substitution between nonproducible assets used as savings and the producible goods or industry. Nonproducible assets must, by definition, have an elasticity of production of zero.*

In an uncertain world, he who hesitates to spend on producibles and holds nonproducible liquid assets instead is free to make a decision another day. By jettisoning the classical axioms of ergodicity and gross substitution, Keynes could demonstrate that as a general case,

- (a) unemployment is possible in a money-using entrepreneurial economy, and
- (b) money cannot be not neutral in either the short run or the long run.

The axiomatic microfoundations of classical economic theory, on the other hand, assure that all income is always spent on the products of industry.<sup>7</sup> In the simplest classical case, all current expenditures are equal to current income, as utility maximizers are constrained by their income (budget line constraint) in their choice among good A and all other producibles. To spend less than one's income on the products of industry (i.e., to use a nonreproducible as a vehicle for saving out of current income) is to reveal a preference for a position below the budget line and thereby to engage in non-utility-maximizing behavior.

The aggregate of all this microfoundation classical utility-maximizing spending would be classified under  $D^w_1$ . For classical utility-maximizing agents, therefore, the marginal propensity to spend out of current income must be equal to unity. Any additional supply of the products of industry must increase all agents' income *par passu* (the microequivalent is an upward shift in budget constraint lines) and thereby create an exact equivalent additional total demand for the products of industry. (In an intertemporal setting with gross substitutability over time, agents plan to spend lifetime income on the products of industry over their life cycle.

<sup>7</sup> Classical microfoundations assume that the earning of income always involves disutility, while the products of industry are the *only* scarce things that generate utility. It therefore follows that if future outcomes are knowable (i.e., ergodic), then utility maximizers will bear the irksomeness of engaging in income-producing activities only to the point where the marginal disutility of earning income equals the expected marginal utility of the products of industry that the agents "know" they want to buy. All utility-maximizing agents are on their budget constraint line, allocating *all* their income to purchasing producible goods and services. A demand to hold nonproducible money or other assets solely for liquidity purposes is irrational, given the special assumptions of the classical case. Money is therefore merely a neutral veil!

The long-run marginal propensity to spend is unity.) Consequently, in either the short run or the long run,  $f_d(N) = f_z(N)$  for all values of  $N$  and Figure 1 is relevant.

To demonstrate that his taxonomy was a general analysis that could lead to nonclassical results, Keynes had to demonstrate that his second expenditure category,  $D^w_2$ , was not related to current income and employment by being equal to “planned” savings (which can be defined as  $[f_z(N) - f_1(N)]$ ). For if  $D^w_2$  is assumed to be equal to planned savings out of current income, then

$$D^w_2 = f_z(N) - f_1(N) \quad (6)$$

and

$$D^w = D^w_1 + D^w_2 = f_1(N) + f_z(N) - f_1(N) = f_z(N). \quad (7)$$

Comparing Equation 7 and Equation 2 shows that, in this situation, aggregate demand and supply are identical and therefore Say’s Law is applicable.

To assure that Equations 6 and 7 are not a general case, Keynes asserted that crucial future events are uncertain in the sense that these events cannot be either perfectly foreknown or statistically predicted by analyzing past and current market price signals. In such a nonergodic environment, future profits—the basis for current  $D^w_2$  investment spending—can neither be reliably forecast from existing market information nor endogenously determined from today’s “planned” savings function  $[f_z(N) - f_1(N)]$  (Keynes, 1936, p. 210). Rather, investment expenditures depend on the exogenous (and therefore by definition, sensible but not rational) expectations of entrepreneurs, or what Keynes called “animal spirits.” Thus

$$D^w_2 \neq f(N), \quad (8)$$

in either the short or long run.

Explicit recognition of the possibility of two independent classes of current demand expenditures for producible goods and services based on a smaller axiomatic foundation underlies Keynes’s principle of effective demand as a more general theory of employment equilibrium than classical theory. The latter becomes “a special case and not . . . the general case” (Keynes, 1936, p. 3), where the category of “all expenditures *not* related to current employment” is empty. In terms of Equation 4, classical theory states:

$$D^w_2 = 0 \quad (9)$$



and therefore

$$D^w_1 = f_1(N) = f_2(N) = Z, \quad (10)$$

for all values of  $N$ .

The next logical task for Keynes was to demonstrate that “the characteristics of the special case assumed by classical theory happen not to be those of the economic society in which we actually live” (Keynes, 1936, p. 3). In other words, Keynes had to demonstrate that even if  $D^w_2 = 0$ , the  $D^w_1$  function would not be coincident with his macro analogue of the age-old supply function.<sup>8</sup> To do this Keynes had “to throw over” the classical axioms of neutral money (i.e., the possession of money per se provides no utility) and gross substitution.

If these restrictive axioms are jettisoned, then some portion of a *utility-maximizing* agent’s income might be withheld from the purchase of producible goods and diverted into buying nonproducibles—especially as one’s income increases. Consequently, the marginal propensity to spend out of current income on the products of industry is less than unity. In an uncertain world, the possession of money and other nonproducibles liquid assets provide utility by protecting the holder from fear of not being able to meet one’s future commitments. As long as producible goods are not gross substitutes for savings (i.e., savings are the Hahn “resting places” where savers hold nonproducibles liquid assets, including money, for *liquidity* purposes), then no change in relative prices can induce income earners to buy producibles with that portion of income they wish to use to purchase additional long-run security (against nonergodic economic conditions) by holding liquid assets.<sup>9</sup>

In sum, Keynes’s principle of effective demand, which is applicable to an explanation of a general theory of employment in a money economy, must be applicable to an uncertain (nonergodic) world. When money

<sup>8</sup> Even if  $D_2$  were to be defined in some way as related to aggregate income, that is,

$$D_2 = f_2(N), \quad (7')$$

so long as

$$f_1(N) + f_2(N) \neq f_2(N) \quad (8')$$

for all values of  $N$ , then Say’s Law is not applicable. Hence even if  $D_2$  is defined as related to employment, neoclassical theory is still a special case where  $f_1(N) + f_2(N) = f_2(N)$  for all values of  $N$ .

<sup>9</sup> Cf Keynes (1936, p. 235): “Unemployment develops, that is to say, because people want the moon;—men cannot be employed when the object of desire (i.e., money) is something which cannot be produced and the demand for which cannot be readily checked off”

and all other liquid assets possess certain essential properties, agents can then obtain utility (by being free of fear of possible future insolvency or even bankruptcy) only by holding a portion of their income in the form of nonproducible liquid assets. If the gross substitutability between liquid assets and producible goods is approximately zero (Keynes, 1936, Chapter 17; Davidson, 1994), then whenever agents want to save (in the form of nonproducible liquid assets) money is not neutral, even with perfectly flexible prices. Thus the general case for the behavioral aggregate demand function underlying Keynes's principle of effective demand is

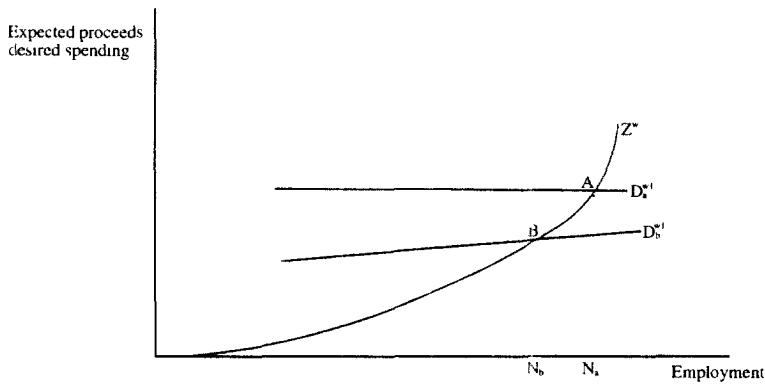
$$D^w_1 = f_1(N) \neq f_2(N), \quad (11)$$

whereas the propensity to save or planned savings [ $f_2(N) - f_d(N)$ ] is equal to the amount out of current income that utility-maximizing agents plan to use to increase their holdings of nonproducible liquid assets. The decision to save today means "a decision not to have dinner today. But it does not necessitate a decision to have dinner or to buy a pair of boots a week hence or a year hence or to consume any specified thing at any specified date" (Keynes, 1936, p. 210).

By proclaiming a "fundamental psychological law" associated with "the detailed facts of experience" where the marginal propensity to consume is always less than unity, Keynes (1936, p. 96) finessed the possibility that Equation 10 is ever applicable. If the marginal propensity to consume is always less than unity, then  $f_1(N)$  would never coincide with  $f_2(N)$ , even if  $D^w_2 = 0$ , and the special classical case of the principle of effective demand is not applicable to "the economic society in which we actually live" (Keynes, 1936, p. 3).

Consequently, *the basic message of Keynes's principle of effective demand is that too great a demand for savings in the form of liquid (nonreproducible) assets (for a given level of entrepreneurial investment spending) can prevent "saved" (i.e., unutilized on involuntarily unemployed) real resources from being employed to expand the economy's productive facilities.*<sup>10</sup>

<sup>10</sup> In essence we can think of "saving" as being of two types—saving type-A (or NIPA saving) and saving type-B. The more familiar economist's concept of saving—what I have labeled type-A—is derived from the national income and product accounts (NIPA). This type-A saving Basil Moore has correctly indicated is that form of "saving [that] is the accounting record of investment." Saving type-B, on the other hand, has been ignored by most economists even though it conforms to the more usual, colloquial concept, where things that are "saved" are *not* used in this accounting period. Given this latter conceptualization, all idle resources (whether they be

**Figure 3** Effective demand and wage flexibility

We have now reached a position to understand what Keynes meant when he argued that even with instantaneous price and money wage flexibility the labor market need not clear. In Figure 3, assume a discrete one-time exogenous decline in the aggregate demand function from  $D^{w1}_a$  to  $D^{w1}_b$ . If nothing else occurred, employment would fall from  $N_a$  to  $N_b$  as the point of effective demand declines from point A to point B. Even if money wages and product prices instantaneously fall, however, the aggregate supply function,  $Z^w$  in Figure 3, will be unchanged, because, by construction, it is deflated by the money wage. Having fixed the position of the aggregate supply function, Keynes can insist that for classical economists to demonstrate that completely flexible prices will assure full employment they must demonstrate what the effects of the instantaneous decline in all nominal wages and product prices have on the various components ( $D^{w1}_1$  and  $D^{w2}_2$ ) of the aggregate demand function. In other words, by deflating aggregate supply by the money wage, Keynes has fixed one blade of the aggregate demand–aggregate supply blade scissor (to use Marshall’s scissor analogy) so that any change (cutting of the employment cloth) must be explained by movements in the aggregate demand blade of the scissor.

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labor, capital, or land) not used today are saving type-B. In other words, whenever saving type-B is greater than zero, resources that are available to be employed in today’s production process at the going (real) market price are involuntarily unemployed

Will the *pari passu* fall in all market prices and wages increase the propensity to consume or the inducement to invest (*both measured in wage units*) or lower the interest rate sufficiently so that the aggregate demand function is sufficiently “greater measured in wage units” (Keynes, 1936, p. 260) to shift the point of effective demand back from B to A in Figure 3? Keynes (1936, pp. 262–267) attempted to outline the complications that have to be discussed if one is to explain a possible shift in the aggregate demand function (measured in wage-unit terms). Moreover, Keynes specifically indicated why what others have labeled the “Keynes effect” of a falling interest rate due to a decline in transactions demand for money cannot be relied on to restore full employment.<sup>11</sup> Essentially, Keynes argued that if the money supply were endogenously related to entrepreneurial requirements to finance payrolls, then falling wages would imply reducing outstanding bank loans to entrepreneurs, thereby reducing the nominal money supply *pari passu* with the decline in the transactions demand for money. Accordingly, there would be no “Keynes effect” if the money supply were endogenous—as it typically is in a modern entrepreneurial economy where the major form of money is bank credit.

In sum, *Keynes’s principle of effective demand demonstrates that, in a nonergodic world, it is the existence of nonproducible assets that are held for liquidity purposes and for which the products of industry are not gross substitutes that is the fundamental cause of involuntary unemployment equilibrium.* The lack of perfect flexibility is neither a necessary nor a sufficient condition for demonstrating the existence of unemployment equilibrium.

### Comparing Pasinetti’s view of the principle of effective demand

Pasinetti (1999, p. 93) agrees that Keynes’s *General Theory* analysis involves “the *behaviour of a ‘monetary production economy,’*” but he

<sup>11</sup> Tobin (1992, p. 395) correctly recognizes that the answer to this precise question as to whether instantaneously flexible prices and wages will shift the aggregate demand function (measured in wage units) “is a complicated matter.” Tobin sidesteps these complications by stating “and I can not do it justice here.” Instead he falls back on a Walrasian market-clearing flexible price analysis or changes the question to a different (dynamic) context where it is claimed the Keynes effect can play a role (Tobin, 1992, pp. 396–398). Nevertheless, both the Walrasian and Tobin’s dynamic analyses are implicitly founded on all the restrictive classical axioms that Keynes’s principle of effective demand jettisoned. Substituting other models based on classical restrictive axioms does not resolve the complicated issue, which Keynes argued could only be analyzed with his general theory.

argues that “the principle of effective demand belongs to a more fundamental level of investigation.” Pasinetti draws a strong distinction between the behavioral relations in a monetary production economy and “the deeper level to which the ‘principle’ of effective demand really belongs” (1999, p. 93).

Pasinetti adopts a position he correctly attributes to Patinkin, namely that Marshallian demand and supply curves can only be drawn for single commodities, assuming everything else is constant or unchanging. Consequently, Keynes’s aggregate demand and supply curves (as discussed above) were “outside orthodox economics” and “any notion of *aggregate* demand and supply would make no sense” to classical theorists (Pasinetti, 1999, p. 94).

Since Keynes’s aggregate supply and demand curves are behavioral functions (Pasinetti, 1999, p. 95) and since only the aggregate demand function is fully developed in detail in the *General Theory* (Keynes, 1936), Pasinetti (1999, p. 95) insists that “Keynes’s analysis of the [aggregate supply] function remains incomplete.” But, as we have already noted, Keynes had explained to Robertson that he accepted the classical behavior of sellers as the basis of his aggregate supply analysis. In fixing the position of the aggregate supply function by constructing it in terms of the wage unit, Keynes laid the emphasis on changes in the aggregate demand function for explaining changes in the point of effective demand.

Pasinetti ignores Keynes’s explanation to Robertson and instead embraces Tarshis’s argument that Keynes’s aggregate supply function represents a “market structure . . . in terms of an imperfectly competitive market.” Pasinetti apparently accepts Tarshis’s argument that when aggregate demand and supply are developed in terms of income instead of employment, “the aggregate supply function is simply turned into a 45° line from the origin—a geometrical device, not a behavioral relationship—which conveys no information about either costs or elasticities on the degree of imperfection competition” (Pasinetti, 1999, p. 95).

Unfortunately, Tarshis’s argument is wrong. Tarshis’s interpretation of Keynes’s position on aggregate supply is faulty in several ways. First, Keynes specifically denied that his aggregate supply function required imperfect competition. In his 1939 rebuttal of Tarshis’s and Dunlop’s claim that Keynes required an imperfectly competitive market condition for his aggregate supply function, Keynes indicated his “own readiness to accept the prevailing generalization at the time I was writing my *General Theory* . . . that for a closed system as a whole. In a competitive system prices are governed by marginal costs. . . . For my own theory

this conclusion was inconvenient” (Keynes, 1973a, pp. 399–400). Keynes then complains that Tarshis’s criticism of requiring imperfect competition is inconsistent with Keynes’s willingness “to concede a little to the other view” of pure competition (Keynes, 1973a, p. 411), while still showing that *the principle of effective demand* does not assure a full employment output even when prices are equal to marginal costs.

Second, and more important, using income instead of employment for the independent variable in the aggregate supply function does not strip this function of its behavioral characteristics. Even if Keynes’s aggregate supply function is specified in terms of a wage unit measure of aggregate income, this function remains a behavioral function with costs and elasticities embedded in it. It is not a mere geometric device devoid of behavioral context as Pasinetti (1999, p. 94) claims. For if one divides aggregate supply price of income in nominal terms by the wage unit [i.e., the money wage for ordinary labor (Keynes, 1936, p. 41)], then one obtains a measure of income (output) in terms of a “labor standard” equal to hours of labor required for each unit of output produced. This function need not be a straight line.<sup>12</sup> If the aggregate supply function in nominal terms is curvilinear (reflecting, say, increasing costs and less than perfect supply price elasticities), then dividing it by a money wage parameter will *not* change its shape.

In other words, the aggregate supply function, even when expressed in money income terms deflated by the wage unit, will still embody the returns to labor and therefore reflect production flow supply–price elasticities. Accordingly, Tarshis and Pasinetti are not correct in claiming that the aggregate supply curve, when made a function of  $Y_w$ , conveys absolutely no information regarding production costs, etc. The shape and position of the aggregate supply function in  $Y_w$  terms reflects production elasticities (and the degree of monopoly) and is not per se a 45-degree line. In fact, only if the production function has a constant elasticity of production will the aggregate supply curve in  $Y_w$  terms be a straight line emanating from the origin—and even then not necessarily at 45 degrees.

It is at this point that Tarshis (and Samuelson) led Pasinetti down the garden path of accepting Samuelson’s simple mathematics of income determination analysis (Samuelson, 1948) which strips aggregate supply of all cost, price, and productivity relationships between inputs and output. Samuelson’s “simple mathematics” has become the standard-

<sup>12</sup> If the aggregate supply function in nominal terms (reflecting increasing costs and supply price elasticities) is curvilinear, then dividing it by a money wage parameter will not change its shape.

ized textbook misinterpretation of Keynes. I believe Samuelson's "simple mathematics" is not only an unfortunate misreading by Samuelson of Keynes's own writings, but it ignores the tremendous investigative work that Sidney Weintraub (1958) did in reconstructing the aggregate supply and demand curves. Moreover, Samuelson's misinterpretation results in an overemphasis on Kahn's multiplier as the essential ingredient of Keynes's revolution—which is again a misconception of Keynes's principle of effective demand.

Although some scholars, for example, Patinkin, have argued that Keynes's revolution was centered on the multiplier concept, there is a much more fundamental foundation for Keynes's revolution. After all, if the revolutionary essence of the *General Theory* was simply the multiplier, then the proper name would have been the Kahnian Revolution, for Keynes merely transformed Kahn's employment multiplier measured in terms of employment units into an expenditure multiplier (Keynes, 1936, p. 115) measured in either nominal or money-wage unit terms. It would be hard to justify the canonization of Keynes in the economic literature if all he had done was to focus attention on a concept that a former student had developed and published years before Keynes's *General Theory*.

In the second volume of his excellent biography of Keynes, Robert Skidelsky (1992, pp. 442–443) disagrees with Patinkin's argument that the multiplier is the essence of Keynes's revolution. Skidelsky (1992, p. 442) insisted that the basic theme of Keynes's *General Theory* was that "monetary forces were not temporary disturbances . . . they entered fundamentally into the determination of equilibrium states. All economic values were monetary values, which meant that the theory of money and the theory of production could not be separated" In other words, it was Keynes's liquidity preference theory of money that was the revolutionary aspect of Keynes's analysis.

Skidelsky (1992, p. xi) indicated that, for putting forth this argument, "Don Patinkin has reproached me with having adopted a 'post-Keynesian' interpretation of Keynes's economics."<sup>13</sup> Skidelsky's response to Patinkin's reprimand is: "If I am guilty of this fallacy, I can say only that this is how Keynes's economics appeared to me." Skidelsky notes that by 1932, the "main building blocks of Keynes' general theory: time preference (the consumption function), expected quasi-rents (the marginal efficiency), liquidity preference and the supply schedule for output had

<sup>13</sup> In conversation with me, Skidelsky indicated that Patinkin accused Skidelsky of "swallowing the Post Keynesian argument hook, line, and sinker"

been linked up *without the multiplier*" (Skidelsky, 1992, p. 466, emphasis added). The multiplier was later added for strategic political reasons, Skidelsky explains, for it promised "more employment at less cost to the government than the Treasury calculations had allowed. And the beauty of it was that the expenditure would miraculously provide the savings to pay for it, without taking them from other uses" (Skidelsky, 1992, p. 450).

If the biographer of Keynes is to be believed, then Kahn's multiplier concept cannot be the fulcrum upon which Keynes's principle of effective demand depended. Rather, it is the Keynes-Post Keynesian view that Keynes's principle of effective demand rests on:

1. the essential elasticity properties of money and all other liquid assets.
2. the reasons why savers demand money (and other liquid assets) to hold as a store of purchasing power rather than buying the purchase of durable products of industry for store of value purposes.

These two characteristics are the foundations of Keynes's argument that a lack of effective demand cannot be automatically cured by market forces, even in a purely competitive world. As Skidelsky pointed out: "If Marx is the poet of commodities, Keynes is the poet of money. The struggle between consumption and . . . investment . . . is fought with the weapons of goods and money, and it is money, ultimately—in chapters 15 and 17 [of the *General Theory*—]which controls the outcome. . . . [money] is first and foremost a store of value, an alternative to consumption and investment, a 'subtle device' through which the fear of the future takes its revenge on the hopes of the present" (Skidelsky, 1992, p. 543).

The overemphasis on the multiplier as part of the principle of effective demand, (see Amedeo, 1989, p. 1) occurs because most economists misunderstand the Marshallian concept of *ceteris paribus*, where the latter is the attempt in logic to set up the equivalent of the "controlled experiment" in the hard sciences. As I point out in my book, *Post Keynesian Macroeconomic Theory* (Davidson, 1994, pp. 40–41):

In a controlled experimental environment, the investigator chooses two like populations of subjects—one is designated the control group, the other the experimental group . . . Then the value of one variable for the experimental group is altered and any significant differences between the groups are recorded [and attributed to the altered variable of the variable].

Thus if we have two identical economies A and B, where the control group is exposed to exogenous spending of \$1000 and the experimental



group \$1500, the resulting difference in the level of output and employment is attributed to the higher expenditure level in economy B. Thus the multiplier does *not* explain how economy A expands over time as exogenous spending changes.

### **Pasinetti and the fundamental relationship of the principle of effective demand**

If I understand him, Pasinetti believes that a 45-degree straight line representation of the aggregate supply function somehow reveals a “more fundamental relationship” than Keynes’s behavioral aggregate supply function, which represents how profit-maximizing entrepreneurs decide on the hiring of labor to produce output *to be sold in a market-oriented, money using, entrepreneurial economy*. Pasinetti declares that since the 45-degree line is simply a geometric concept devoid of any meaning regarding how new production comes about, it is therefore a movement toward something representing more “fundamentals” than entrepreneurial profit-maximizing behavior in the face of production and cost phenomena. In delving for such fundamentals, Pasinetti revives what Davidson and Smolensky (1964, pp. 12–13) called a forecasting model, which adopts an inverse form of Say’s Law where, as Davidson and Smolensky note in discussing the 45-degree supply-line textbook fallacy, “aggregate supply merely accommodates to changes in aggregate demand without any changes in prices, while at the ceiling, output will not expand when demand increases. Thus, investigators believed that they could ignore supply phenomena and merely try to forecast demand.”

In Pasinetti’s (1999, pp. 99–100) words: “behind the [45-degree] diagram there is . . . a *production* economy [with] . . . capacity and a corresponding labour force. . . . But they only represent *potential* production. *Actual* production will be realized only for the amount for which demand is expected. Actual production will thus turn out to be whatever effective demand is expected to be. In this sense, effective demand generates production . . . quite independent of any behavioral relations.”

But of course that is not true, for as Keynes recognized, if entrepreneurs actually produce and bring to market a volume of output that is less than effective demand, “there will be an incentive to entrepreneurs to increase employment . . . up to the value of  $N$  for which  $Z$  has become equal to  $D$ ” (Keynes, 1936, p. 25). What Pasinetti has missed was encapsulated in Keynes’s comments in his 1937 lectures (Keynes, 1973c, pp. 181–183), where he stated:

If I were writing the book again I should begin by setting forth my theory on the assumption that short-period expectations were always fulfilled; and then have a subsequent chapter showing what differences it makes when short-period expectations are disappointed.

For other economists, I find, lay the whole emphasis and find the whole explanation in the *differences* between effective demand and [full employment] income; and they are so convinced that this is the right course that they do not notice that in my treatment this is not so. . . . The main point is to distinguish the forces determining the position of equilibrium from the trial and error by means of which the entrepreneur discovers where the position is . . . *ex ante* decisions [of buyers and savers] in their influence on effective demand relate solely to *entrepreneurs'* decisions . . . the disappointment of expectations influences the next *ex ante* decisions. . . . [but even if we] suppose the identity of *ex post* and *ex ante*, my theory remains. . . . I should have distinguished more sharply between a theory based on *ex ante* effective demand, however arrived at, and a psychological chapter *how* the business world reaches its *ex ante* decisions.<sup>14</sup>

The essence of applying the principle of effective demand to a monetary economy lies in the behavioral relationship people display toward money (i.e., liquidity preference) and entrepreneurs display regarding *ex ante* market profit opportunities. In a world of barter, whatever is produced is produced, and anything not demanded by others involves the reservation demand concept of Phillip Henry Wicksteed. That is apparently the fundamentals to which Pasinetti's principle of effective demand seem, to me, to apply.

What Keynes's general case theory of effective demand demonstrates is that the unemployment problem is nested in three words "liquidity, liquidity, liquidity"!

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