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[author] Massimo DI MATTEO

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Pigou's *Theory of Unemployment*: what "classical" macroeconomics really was.[1]

Massimo Di Matteo
DEPFID
Università di Siena

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Abstract

The paper is centred on Pigou's core framework of *Theory of Unemployment* (TU) and his arguments on the determinants of unemployment in the short period are discussed. In this reconstruction I will show what actually are the implicit assumptions in TU on the behavior of the non wage earners in the non wage sector. Pigou's argument is further clarified in the Appendix via a simple model. As a result, hopefully, one can better assess Keynes' criticism of TU. From my analysis it is also confirmed the idea that classical and neoclassical schools were rather close in viewing the problem of the (un)employment determination, making almost right the label ("classical") Keynes gave to his predecessors.

Introduction.

[1] I am heavily indebted to M. Caminati and M. Zenezini for detailed criticism and useful suggestions.

As Pigou's *Theory of Unemployment* (hence TU) was considered by Keynes in the *General Theory* as the prototype of the classical views on the causes of unemployment, the first has been evaluated in reference to the latter.[2] In what follows I will endeavour to concentrate on Pigou's core framework and discuss his arguments on the determinants of unemployment in the short period. In this reconstruction I will show what the implicit assumptions in TU actually are. As a result, hopefully, one can better assess Keynes' criticism of it. From my analysis it is also confirmed the idea that classical and neoclassical schools were rather close in viewing the problem of the (un)employment determination, making almost right the label ("classical") Keynes gave to his predecessors.

The plan of the paper is as follows. In the first section a synthetic exposition of Pigou's core approach is given. This will be accomplished by eliminating all the complications and qualifications that are not essential to the argument and have been found so annoying by most of the readers because of the exposition strategy followed by Pigou (hence P.) in his book. In the second I will describe the effects on employment of changes in the demand for labour at a given real wage, whereas the third is dedicated to the effects of real wage variations on employment. In repeating the arguments by P. I will make it clear what are the implicit hypotheses behind TU that make the whole theory very different from Keynes'. The last section concludes showing that the approach taken by P. as reconstructed in the paper appears to have its roots in the classical as well as neoclassical schools.

1 Pigou's core argument.

Let me start by reminding the reader that the exposition by P. is fastidious in that, instead of setting the model in its simplest form, deriving its main properties and only then adding complications, he takes up various qualifications[3] and discuss them one after the other making for the reader very

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[2] It must be noted that not all considered Keynes' position as wholly correct.

[3] They include: the consideration of different centres of production, the fact that wage goods (WG), as well as non wage goods (NWG), sectors include several items, the existence of monopolistic elements, the fact that production process takes time, the substitution/complementary relations among goods, foreign relations, welfare provisions, expectations of future price changes, etc.

difficult to disentangle herself from this web.[4] Therefore I will expose what appears to be the core of TU, hoping to contribute to a clarification of P.'s views and elucidate the essential features of his approach.

P. discusses the problem in a two sector framework composed of wage goods (hence WG) and non wage goods (hence NWG) and abstracting from monetary complications (introduced only in Part IV). It is also assumed that luxury consumption and capital goods are lumped together in NWG as in the short period (but not in the long, as P. repeatedly remarks)[5] they can be considered on the same footing.

I will follow this setup and be actually concerned with the real part only. Indeed, according to P., monetary considerations can be discussed at the end as they do not modify the conclusion in any essential way.[6]

In his work P. is interested in discussing what determines the amount of unemployment in the short period having clear in mind that the actual level of unemployment can be different in each different short period.[7] To keep the analysis as simple as possible, P. maintains that the would be wage earners (labour force in modern language) are more or less fixed in number[8] so that unemployment is simply the difference between them and employed workers.[9]

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[4] Another disturbing feature is that according to P. (109) the first 182 pages (out of 319 of the whole book) are preparatory! Not to mention the huge amount of misprints that have been spotted.

[5] E.g. Pigou (75, 145-6).

[6] "In recent years (..) economists have been inclined to concentrate attention on the money end. The result (..) has been to overstress somewhat the role that money plays in more normal times and to put in the background very important factors of a non monetary character. For this reason, among others, I have chosen to write my book from the real end and to bring in the monetary factor only at a fairly late stage" (Pigou: Preface). Although there was a hint already in Pigou (1941:128), Pigou's (1943) effect is still to come signalling a change in P.'s assessment of the relative importance of real and monetary factors. The Pigou's effect will make a real difference making the classical analysis consistent, although probably unrealistic, in front of Keynes' attack.

[7] On the relation between unemployment at t=0 and that at different periods see the discussion in Chapter VI of Part I.

[8] See in particular §6 in Chapter I of Part I. P. argues (51-2) that a change in the real wage can alter the willingness to work of wage earners, but does not explicitly refer to a supply of labour function.

[9] "A man is only unemployed when is both not employed and also desires to be employed"(P.3) and later (P.4) P. specifies that "desire to be employed must be taken to mean desire to be employed at current rates of wages (..)".

The latter in turn are determined by the demand for labour.[10] Hence attention is concentrated on the latter variable.

P. states that in the long run unemployment will be roughly zero as in competitive conditions the real wage stipulated for will be such that demand for labour will equal supply:

"There will be always at work a strong tendency for wages rates to be so related to demand that everybody is employed.(..) The implication is that such unemployment as exists at any time is due wholly to the fact that changes in demand conditions are continually taking place and that frictional resistance prevent the appropriate wage adjustments from being made instantaneously."[11]

In addition P. argues[12] that, due to various factors, in his time "there is reason to believe (..) that the goal at which wage policy aims is sometimes (..) a wage rate substantially higher than the rate which (..) would yield nil unemployment."[13]

The long run can therefore be defined in a logical sense as that period where a complete adjustment of all prices to quantities has taken place whereas in the short run demand continuously fluctuates and relevant prices do not adjust immediately. In the latter case unemployment will be positive and, as just remarked, this could also happen in the long run. The long period however can also be thought in a chronological sense: in this case unemployment can be on average positive being the result of several adjacent short periods.

In TU the short period is defined as a situation where

a) "industrial equipment (..) may properly be regarded as (..) fixed[14]

b) the real wage is given and equal in both sectors.[15]

If to these two, the hypothesis[16] is added that non wage earners in the WG sector maximize profits, then the amount of WG produced can immediately be computed.[17]

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[10] Leaving aside, once again, the complications induced by unfilled vacancies, discouraged and additional workers, all diligently discussed by P.

[11] P.(252)

[12] P. (253)

[13] See also P. (27,188).

[14] P. (39-40).

[15] See P. (33,63). The technology also is given, as it is clear from what P. says in discussing changes in labour productivity later in TU.

[16] "(..) the quantity of labour demanded (..) at any given rate of real wage is such that the value in terms of wage goods of its marginal net product (..) approximates to that rate of wage (..)"(P.41).

How much employment is forthcoming in the economy as a whole? To answer this question P. reminds the reader, first, that non wage earners are assumed[18] to consume a certain amount of WG (C in P.'s notation) and secondly that the WG can be increased or diminished (S in P.'s notation) out of stocks already held.[19] If to these quantities we add the WG that have been paid to the workers employed in the WG sector itself, there remains a quantity of WG that sets what I will label the maximum amount that can be used in NWG industry. And accordingly the maximum amount of NWG that can be produced, given the technical conditions and the real wage in the NWG industry. P. argues if actual and maximum employment are always equal. It is apparent that, even in this case, full employment does not obtain necessarily. In general therefore in the short run there will be a certain amount of unemployment. On the equality between maximum and actual I will come back in a moment.

The model is thus very simple, having a recursive structure. Given technical conditions[20] and the real wage in the WG sector, the amount of WG that maximize profits is produced. Given the consumption of these goods by the non wage earners, the change in stocks, the real wage in both sectors and the technology in the NWG sector, according to P., employment in the NWG sector is determined.

So far P.'s analysis which is less than complete if is to be considered as a description of a (short run) equilibrium.

Let us see what is actually implied in his view that actual is equal to maximum employment. Indeed the above means that in equilibrium all profits (net of C) obtained in the WG sector are exactly equal to the wage bill in the NWG sector (or savings out of profits equal investments). At time 0 in the WG sector the following obtains:[21]

$W_{WG} + R_{WG} = WG_0 = C + W_{WG} + W_{NWG}$

where WG_0 is total product of wage goods at time 0, R_{WG} the profits in the WG sector, W_{WG} is the wage goods paid to the workers of the WG sector, W_{NWG} is the

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[17] If the marginal productivity of labour is decreasing as it is usual under assumption a). See e.g. (P.51).
[18] P.(21-5)
[19] As I said qualifications such as welfare provisions, foreign sector, etc. are disregarded.
[20] With decreasing marginal returns to each factor.
[21] My notation is different from P.'s.

wage goods paid to the workers in the NWG sector, and C is the consumption of wage goods by non wage earners. Clearly after profits in the WG sector have been maximized by equating the given real wage to the marginal productivity of labour, W_{WG} is known; P. considers that C is also determined, therefore all profits net of consumption will buy W_{NWG}.

But at the same time in a two sector model we require that in equilibrium production is absorbed by demand in the NWG sector: this means that all profits obtained in the economy are spent in the NWG industry, partly via a transfer from the WG sector as wage goods to the workers employed in NWG sector, partly as a demand for the NWG sector output (luxury and investment goods). In the sequel I will refer to this as the macrobalance condition, a condition that appears to be implicitly satisfied in P.

In other words the condition states that it must be that the NWG sector employs a number of workers whose production of luxury and investment goods completely exhausts the profits of the WG sector (after taken into account the consumption of these goods by non wage earners) and the profits in the NWG sector itself.

The wage fund[22] sets an upper limit to the amount of employment that results in the NWG industry. Non wage earners maximize profits in the WG sector and, if all profits are spent in the way just described, the actual amount of employment equals the maximum amount allowed by the wage fund.

This is taken for granted by P. in his reasoning without explicit discussion. In TU everything is described not even in real terms but actually in physical volumes.[23]

The gist of P.'s argument can be revealed in the following demand. What else could non wage earners do with their profits in a non monetary economy? After consuming a given part (C), they can only employ them in the NWG sector, namely invest. And what can they do with the profits obtained in the NWG sector? They can only consume them buying the goods produced: this must be true whatever relative prices will be (although P. never mentions prices in this respect).

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[22] I will come back later in the paper to discuss the extent to which the wage fund doctrine is accepted by P.

[23] One of the consequence of this habit is highlighted in the final section of the paper.

But are they willing to do that? The answer that we can derive from P. is in the affirmative as they have no other option. Non wage earners do not hoard goods, as the cost of storing is (presumably) assumed to be higher than a (possible) value appreciation. Again the introduction of money will not matter as, for the followers of the quantity theory of money, it never pays to hoard money, in addition to the quantity strictly necessary for transactions.

Let us however check P.'s argument more carefully. In the NWG sector the real wage is given, technical conditions and industrial equipment are given too. If non wage earners spent all the profits earned in the WG sector in the way just indicated it is not certain that they are maximizing profits in the NWG sector, as the wage and the employment are already determined.

In other words the assumption by P. that non wage earners do spent all their profits in the NWG sector could imply that they are content with whatever return they get in the sector. In contrast to the WG sector it is assumed here a rather passive behaviour of the non wage earners when producing investment goods.

Let us see whether we make P.'s argument as reconstructed consistent with profit maximization in the NWG sector. One could assume that entrepreneurs in the NWG sector can select the capital/labour ratio in the short run. This is not possible, however, given P.'s definition of the short run. In addition it would imply that given the real wage and total employment they can vary almost without limit the capital/labour ratio to reach the preferred position.[24] In particular there could be cases where capital falls short of the amount required or alternatively is redundant. The same argument applies, *mutatis mutandis*, if we refer to a variable degree of capacity utilization.

One could imagine another situation where in the NWG sector only labour is employed with constant returns and that the price of the good is equal to the wage. But none of these hypotheses can be found in P.

[24] In addition investment goods are actually bought for their prospective return, a concept totally absent from P.'s considerations: indeed it would imply a totally different approach. See e.g. the approach taken by Morishima starting from his book on Walras (Morishima 1977). Incidentally this considerations cast some doubts on the validity, even in the short period, of the assumption of lumping capital goods and luxury consumption goods together in the same sector as demand reflects different considerations for the two type of goods.

If on the contrary non wage earners do maximize in the NWG sector as well, it is not certain that all profits obtained in the WG sector will be invested in the NWG sector. There is dilemma, therefore.

Can one complete P.'s analysis in a consistent way that solves the dilemma? The crucial point, that P. apparently misses, is that, if they want to maximize profits, non wage earners in the NWG sector must equate the physical marginal productivity of labour with the *product wage* which differs in value from the real wage in the WG sector. So that relative prices should be included in the analysis, if the process of profit maximization in the NWG sector were to be properly accounted for. In the Appendix a model that embodies this observation is proposed.

The reason why there is no such an analysis is probably the habit of thinking in real terms that leads him to overlook that it is the *value* of all profits that has to be equal to the *value* of the NWG product. Relative prices are never taken into consideration by P. in his analysis. [25]

2 Effects of a change in the demand for labour.

Let us now follow P. in his argument that no changes in the level of employment are possible unless something happens to the wage fund. Given the recursive nature of his model, this is obvious. We will reconsider however his reasoning in the light of the remarks we have just made.

Let us start from his analysis of the effects on employment of a change in the demand for labour at the prevailing real wage. In his book P. examines this situation after his analysis of the effects on labour demand of changes in the real wage but for my purpose it is more convenient to start from this case.

P. argues[26] that a change in the aggregate demand for labour cannot lead to a change in employment unless the wage fund is able to expand or contract: if this

[25] Klausinger (1998) actually introduces relative prices in order to make P.'s analysis complete, but he introduces other elements such as the rate of interest and the expected yield of investment goods that are not considered by P. in his real analysis. Ambrosi (2003) also completes P.'s analysis but, among other things, he argues as if the position reached by the economy is on the production possibility curve that entails full employment (a concept not consistent with P.' analysis).

[26] In Chapter IX of Part III.

is not the case a decision to engage more labour in one occupation has to be compensated for by an equivalent decrease of employment in another occupation, even if we are in presence of unemployment.[27]

Although P. does not say it explicitly, it appears that here he means that the real wage has to fall in the WG sector so to provide extra wage goods to the extra workers in order to satisfy the increased demand for labour. This incidentally would obtain even if the real wage in NWG sector stay constant.

In my opinion however, the fall in wage in the WG sector is a sufficient condition but not a necessary one. If, on the contrary, the real wage fell in the NWG sector only, the unchanged amount of profits of the WG sector would employ more people in the NWG sector and accommodate the increased demand. By the way this could increase total amount of profits in the NWG sector. As we will see later in the paper P. objects to this line of thought.

Let us now go through the various steps of P.'s argument. If the real wage is given, following an increase in the demand for labour in the NWG sector, either one of the two following cases must happen, according to P.: a) the wage goods that are needed are taken away from other occupations within the NWG sector, or b) there is a reduction in C and/or S. Under a) aggregate employment does not change: it is revealing that P. does not sketch in detail a mechanism whereby an increase in the demand for labour in one sector of NWG could lead to decrease in another sector of NWG.

P. is well aware that, in the face of an increased demand, credit can be obtained, but this will not make any difference to the substance of the argument:

"When (..) the people controlling a particular occupation elect to engage more workpeople there (..) [t]hey attempt (..) to supplement their private resources by borrowing (..). These borrowing are (..) in forms of money loans, but, in substance, they are loans of the wage goods on which the borrowed money (..) is spent."[28]

Under b) employment can increase but it is a very unlikely outcome because non wage earners do not reduce their consumption of wage goods:

[27] P.(143).

[28] (P. 144)

“Non wage earners are very unlikely voluntarily to undertake other than small percentage changes in their consumption of wage goods, even though their desire to use them as a means of hiring labour alters largely, since their desire to consume them is presumably inelastic. (..) No substantial variations in the “wage fund” available to pay labour are likely to come about through direct reactions on the consumption of wage gods by non wage earners.”[29] On the other hand stocks cannot be depleted if not for a minor amount:

“Plainly, however, this source of supply being a fund and not a flow it cannot be drawn for long (..).” And concludes: “Hence reaction on S, like reactions on C, are not, in general, important.”[30]

P. does not exclude in principle that an increase in the demand for labour in NWG sector could lead to an increase in employment, provided that there is a reduction in the consumption of WG by non wage earners, namely an increase in their savings. In this way he makes it clear that the important factor for the increase in employment is what item is reduced: if non wage earners agree to reduce their consumption of WG and increase the demand for luxury consumption goods or for capital goods, employment can increase; if on the contrary the reduction comes from a fall in luxury good consumption in favour of an increase in capital goods, this will not vary employment. This derives from the assumption that in the short period luxury consumption goods and capital goods are lumped together.[31]

And he exemplifies this in the contest of the (then) ongoing discussion about the so-called “Treasury view” as follows: “(..) Just as there is no net addition to the aggregate demand for labour, and so to employment, if wage goods are shifted to road making from machine making, so also there is no net addition if they are shifted to it from the making of luxury motor cars or silk dressing-gowns or other articles of consumption too costly to enter into wage goods.”[32]

What about stocks? It is clear that P. misses the fact that a reduction in inventories signals, as we would say today, an increase in the aggregate demand

[29] (P. 146-7).

[30] (P. 147).

[31] As said this overlooks the possibility that the same profits can buy more workers if the wage is reduced in the NWG sector alone.

[32] (P. 145)

(and therefore a possibility of getting out of the recession) and concerns himself only with the limited amount of them that can be used to back an increased demand for WG. It is also clear that in the above circumstances there is no reason for *planned* stocks to fall in the face of either an increase or a steady level of economic activity: but this is not P.'s argument, as we have just seen.

Let us now turn to P.'s argument in the case of a fall in the demand for labour in NWG. P. argues that there will be either an increase in the demand for other NWG (although again he does not specify exactly how this could happen) or non wage earners would increase C; in addition S too would (probably) increase. But if the demand for C is relatively rigid, as just argued, there remains only the possibility of an increased accumulation of stocks. Whereas the latter could be possible almost indefinitely, thus signaling an important asymmetry between the case of a fall and that of an increase in demand, P. himself points out that there are heavy costs to it:

"There is however a difference between the case of an expanding and that of a contracting demand for labour. In expansion there is an absolute limit to the draft that can be made on stocks to finance the expansion, since it is impossible for them to fall below zero. In contractions there is no such absolute limit. It is physically possible for drafts *into* stocks to continue indefinitely."

So it appears as if he is about to envisage a dramatic effect on employment of a fall in the demand for labour in NWG sector, but in fact he goes on:

"Owing to the high cost and the risks of loss involved in holding large stocks, their absorbing capacity is (..) restricted."[33]

Even in this case then the conclusion is that no effect on employment is likely to appear. So this implies that non wage earners will necessarily change the composition of their expenditures between luxury consumption goods and investment goods, even if nothing is changed in the rate of interest or relative prices or expectations to make these other goods more desirable than before: an example of passive behavior.

[33] (P. 147-8). P. also asks himself another question, namely whether a transfer among individuals can make a difference to aggregate employment. For example it might be that a transfer from one set of non wage earners to another set induces a temporary "gluttability of wants" (to use Robertson's expression), an accumulation of stocks and a fall in aggregate employment but, according to P.(155), this again cannot go on for long "in view of the high costs and heavy risks".

That P. does not take into account the macrobalance condition in a proper way can also be inferred from his discussion[34] of the effects of an autonomous increase in C, the demand for wage goods by non wage earners.[35] This, he maintains, will not have any effect on the quantity of labour anywhere demanded.[36] He appears to overlook that in this case the surplus available for employment in the NWG sector is reduced as the macro balance condition immediately reveals. So what is happening implicitly, according to P., is that stocks must be falling: again an example of passive behaviour. Since they cannot fall further once they have reached zero, what will happen? P. does not tell us. In addition here P. appears to be in contradiction with what he himself stated a few pages earlier and that I have already summarized, namely that a reduction in C, although unlikely, could lead to an increase in employment.

3 Effects of a change in the real wage.

Let us now come to the effects of real wage reduction discussed by P. at length in the second part of TU. It ought to be said that here a fall (increase) means a lower (higher) level of the real wage: in other words we are performing a comparative statics exercise. According to P.[37], in the short run an increase (fall) in the real wage does not induce the substitution of capital (labour) for labour (capital), this being a long run result which is arrived at step by step.

Therefore the overall effect on employment of such a change may be decomposed in the direct effect on the amount of WG produced and in an

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[34] (P.159)

[35] The context is still that of a given real wage.

[36] The point has already been noted, in the context of the validity of Keynes' criticism to P., by Cottrell (1994a). However he does not mention the following passage by P. (1949). It is surprising that in the context of an evaluation of Mill's wage fund doctrine P. writes (P. 1949:177): "(..) we encounter at once the objection that non-wage-earners, employers or others, when the wages fund is given, may, if they choose, make the wages flow larger or smaller by varying the amounts of their own consumption; by, for example, in any year cutting down their consumption and handing over what they would have consumed in extra real wages to work-people. This objection is plainly fatal. How was it that Mill prior to his recantation failed to see the force of it?" And later (P.1949:178-9) he remarks: "There is, however, in the way of the wages fund doctrine a difficulty more deep seated than this; (.) that while a capital of goods in process is always essential, there is no need for any stock of wage goods at all - for any wages fund, predetermine or otherwise". Here (P. 180) he admits that this *can* lead to more employment in the NWG sector: "It may be added to or subtracted from [wages flow] according as non wage earners purchase and consume a smaller or a larger quantity of wage goods. (..) If, throughout, employment is held fixed, this is all. Variations in the wages flow are simply reflected in equi-proportionate variations in the real wage rate. An increase in the wages flow may, however, well be partly taken out in an increase (..) of employment."

[37] (P. 38-9)

indirect effect on the amount of NWG. The total effect can be computed giving a numerical value to the overall elasticity of the demand for labour with respect to a change in wages, the elasticity being composed of two parts, accordingly. Following back on the envelope calculations,[38] P. asserts that during marked depressions the direct elasticity is much larger than 1 whereas in booms is almost negligible.[39] On this basis P. argues that WG production will increase, as a fall in the real wage induces profit maximizing firms in the WG industry to demand more labour with a substantial increase in employment.[40]

P. then examines what will happen in the NWG sector as well. He proceeds by steps. Suppose first (following P.[41]) that the production of WG is not altered; then the only effect of a fall in the real wage is that the reduction of workers income be exactly matched by an increase in the income of non wage earners. This can either be wholly consumed (an increase in C, but P. considers this to be rather rigid), added to stocks (again not plausible for reasons already given) or can be destined to increase the wage bill of the NWG sector. Here all the considerations about the macrobalance condition expressed in sect.1 of the paper apply.

However we know that there will be an increase in the production of wage goods and therefore, P. asserts, in the production of NWG. Again here to have an equilibrium we have to postulate that the macro balance condition applies.

A similar effect on employment can be achieved via an improvement in the technology of the WG industry.

Indeed, according to P.,[42] an improvement in the productivity conditions of the WG sector, leads to an increase in employment:

“If, (..) there is an improvement in productivity (..), it necessarily follows that the quantity of labour demand in the wage good industry is increased. It also necessarily follows that the amount of the surplus of wage goods over and above what is used up in paying wages in the wage good industry is increased. (..) Of this additional surplus, (..) some part will also be devoted to employing more labour in home non wage good industries.”

[38] According to the meticulous and detailed review of the TU by Opie (1935: 299) all P.’s calculations are really pure guessing.

[39] (P. 89)

[40] (P. 96-7)

[41] (P.73)

[42] (P.160)

Let us finally discuss the case[43] where the real wage falls in the NWG sector, a situation we have already hinted at. There could not be an increase in overall employment. P. maintains: "*When the real-not the money-rate of wages ruling in the wage good industries is given*, the quantity of labour demanded in these industries is determined (..) by the wage rate in relation to their productivity functions (..). Nothing that happens in the non wage good industries can, from the short period standpoint (..), benefit the wage good industries (..)."[44]

P.'s argument is that otherwise an infinite amount of employment is implied:

"The people set to work on road making (..) have, *pro tanto*, more money to spend; they spend it, and so set to work more makers of the wage goods that they buy; these, by spending their money, set to work more makers of the wage goods that *they* buy; and son indefinitely. Indeed, (..) it is only because some of the wage earners' goods are bought from abroad that the setting of a single new man to work on road making does not cause an infinite number of men to obtain employment in making wage goods."[45]

P. is reiterating his point that the given the real wage and the fact that the marginal productivity is decreasing, profit maximization in the WG sector, implies a maximum amount of wage goods. Again to this view considerations referred to in sect.1 of the paper apply.

And finally P.[46] concludes with a sentence that is really the most synthetic expression of P.'s viewpoint: as one can see he postulates, once again, a passive behavior on the part of non wage earners in the NWG sector:

"(..) the thousand extra £ spent by the new employees taken on for road making goes to buy wage goods which would have been created anyhow and which, if not so bought, would have employed other labour, have been consumed by non wage earners, (..) or have been placed in store".

This feature of the approach by P. certainly has a very antikeynesian flavour. Far from being those who rule the roost, non wage earners both as producers and *qua* investors display a rather passive behavior and adapt to what is happening

[43] (P. 74-5)
[44] P.(75) emphasis in the original.
[45] (P.75)
[46] (P. 75-6)

in the rest of the economy, namely to the decisions of the producers of the wage good sector.

4 Conclusions.

How can we characterize P.'s theory or approach?

His methodology is Marshallian at least if we accept Boland's (1992) reconstruction of Marshall's methodology, Marshall was always looking for a framework in which he could determine one variable at time in order to make the analysis clear. He framed the discussion in such a way that everything else was for the moment fixed, either because determined in another context or because considered constant within the time period chosen. The same appears to be valid in P.'s case, as it exemplified by the recursive nature of his short run model.

Let me summarize its main features. At least in the WG sector there is a downward sloping demand curve for labour and profits are maximized by equating the marginal productivity of labour to the given real wage: certainly a neoclassical feature.

On the other hand the idea of wage goods is classical in its nature. In some members of the classical school the concept of wage fund was advanced to argue that an increase in wages would result in a fall in employment. The reason being that the fund (or capital) was fixed, maybe because it was last year's (agricultural) profit.

On the other hand Marshall (1920) in his Appendix J rejects the extreme version of the wage fund theory but it appears to accept that there is some point in it. He further argues that it was applied in support of some important theses that could be defended without it: this is exactly what P. will do in later works. [47]

How does P. deal with the wage fund theory? By fixing the real wage in the short run, he takes the wage fund to determine employment rather than wages. And instead of considering the amount of capital given from previous year period, he

[47] In addition Marshall states that the wages fund doctrine relates only to the demand side of the question, a viewpoint that, as been shown in the paper, is also P.'s. He also argues that the capital that is applied to support labour in any new industry as a consequence of government's intervention must have been withdrawn from some other industry so that policy cannot change overall employment: a thesis completely shared by P. as reconstructed in the paper.

obtains his result by assuming the maximization of profits in the wage good industry.
This however would not be sufficient to determine overall employment, if not supplemented by an appropriate hypothesis regarding profits.
He adds another classical ingredient, namely that wage earners do not save and non wage earners spend all their profits[48] in non the wage good industry, which produces luxury consumption and investment goods. In particular they spend all those obtained in the NWG sector in the purchase of NWG goods: these have been brought to the market by spending all the profits (save a negligible amount) earned in the WG sector.
Therefore the WG sector actually rules the roost in that the conditions prevailing there determine the size of the other sector and consequently overall employment.
In classical economists too production conditions in wage goods played an important role in the determination of the rate of profits; in P. their role is crucial in the determination of employment in the short run.
In this respect P. appears to accept the classical vision of two kinds of goods, the wage goods and the others. You need a surplus of the first to be able to produce the latter: the relation between the two types is asymmetric. This conception, although declined in various ways by different classical authors (and contemporaries also), fades away in the neoclassical school.
The nature of the short period equilibrium described by P. is such that, although full employment does not result necessarily,[49] it does not follow that there is room for an extensive State intervention to increase employment.
More generally, according to P., unless you better the conditions for the non wage earners in the WG sector, employment cannot be increased: this will happen either through a reduction of the real wage rate and/or an improvement in the technical conditions of producing wage goods. Viewed in this light it appears to be a short run version of a macro model of a classical type concerned, however, with quantities produced and assigning again a central role to the WG

[48] Except a negligible amount.
[49] In general there is a limited role for prices to riequilibrate at least in the short run the equilibrium towards a full employment situation.

sector. Ricardo thought that if one could ameliorate the technical conditions in the wage good sector, for any given real wage, then profits would be higher and growth (and possibly employment) be sustained.[50]

On the other hand if you include in the NWG sector only capital goods, you can see P.'s approach as one where non wage earners maximize profits in the WG sector and their profits, after deducting consumption, namely savings, go to buy capital goods in the NWG sector. This can be considered as a version of a short period neoclassical real model where savings are invested so that supply conditions do determine actual employment and again only a reduction in the real wage (and/or technical progress) can increase employment.

This is not to blur the differences between Classical and Neoclassical schools: they do remain large not only in their respective theories of value and distribution, but also in their general vision. It must be admitted indeed that the reason why the real wage is taken as given is very different in P. and in the classical economists. In the latter this was an assumption to be valid in the long run for the analysis of value and distribution (linked to the concept of subsistence), here the assumption is a feature of the short run in a theory of employment determination where nominal variables are slow to adjust.

In addition, the concepts of short and long run appear to be wholly Marshallian[51] and with no clear counterpart in Classical school. He firmly adheres to the status of the short run concept and does not allow other elements to creep in (such as price variations).

It emerges that in the field of macroeconomics and employment P., via a reinterpretation of the wage fund theory, mixes neoclassical features (decreasing marginal productivity and maximization of profits) with classical features (centrality of wage goods production and a hypothesis on profits destination).

From what I have argued it seems to me that the labeling by Keynes as classical of his predecessors (including P.) is not wholly inappropriate as there is a considerable amount of agreement between classical and neoclassical schools. And this exactly marks the extreme difference with Keynes' position. According to Keynes what happens in the NWG sector, in particular investment, is the

[50] For a reformulation of Ricardo's theory see eg Pasinetti (1960).
[51] As opposed to Walrasian. See Donzelli (1986)

primum mobile and the WG sector the residual, exactly the opposite of what P. argued.[52] And this is made extremely clear in the present paper referring to the macrobalance condition that expresses the relation between the two sectors and shows the passive behaviour of non wage earners in the NWG sector implicit in TU.

The change in vision could not have been greater.[53]

APPENDIX

Let us set up a little recursive model to complete P.'s approach in a consistent way.

[1] $F'(x) = (w/p_x)^0$

where F is the production function of WG sector, F' is the derivative of F with respect to labour, x is employment in the WG sector, $(w/p_x)^0$ is the given real wage (money wage divided the price of WG) at time 0.

From the equality between marginal productivity of labour in the WG sector and the real wage, we determine the amount of employment in the WG, namely x_0.

[2] $F(x_0) = (w/p_x)^0 \ E + C_0$

where E is total employment and C_0 is the amount of WG consumed by non wage earners and fixed in real terms. This express the wage fund doctrine in P.'s version. From this relation we find E, namely E_0.

[3] $E_0 = x_0 + y$

where y is employment in the NWG sector. From this we determine y, namely y_0.

Then taking into account that WG and NWG are different goods, profit maximization in NWG sector produces

[4] $G'(y_0) = (w/p_x)^0 y_0 \ (p_x/p_y)$

where G' is the physical marginal productivity of labour in the NWG sector which is equal to the product wage. From this we determine relative prices, (p_x/p_y).

Finally

[5] $G(y_0) = (w/p_x)^0 y_0 \ (p_x/p_y) + R_y$

where R_y is the profit earned in the NWG sector, G is the production function in the NWG sector. From this we find R_y.

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[52] This is also Cottrell's (1994a) position arrived at through a different route.

[53] Cottrell (1994a, 1994b) noted this already in discussing with Brady (1994) and Aslanbeigui (1992) .

From the equality of total production and total income it can be found that the wages paid in the NWG sector are equal to the profits in the WG sector:

$F(x_0) - (w/p_x)^0 \; x_0 - C_0 = R_x = (w/p_x)^0 \; y_0$

Namely

$F(x_0)= (w/p_x)^0 \; [x_0 + y_0] + C_0$

In this way the model is complete, but as shown it requires the endogeneity of the price of the NWG, relative to the price of the WG. This is perfectly consistent with a short run analysis if we are prepared to assume that prices are less sticky than wages. As repeatedly stressed, in his short period analysis, P. does not take into account the function of prices.

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