

## Finance and the Cambridge Equation: A Commentary Note

MAN-SEOP PARK

Department of Economics

Korea University

[manseop@korea.ac.kr](mailto:manseop@korea.ac.kr)

Ciccarone (2004) attempts to show that the Pasinetti theorem allows for the profit-making financial sector. In this effort, however, he ends up with unwittingly associating the theorem with the Wicksellian monetary theory. The present note traces the origin of this uncomfortable association to his incomplete understanding of the income of financial capitalists, and tries on its part to demonstrate that the Pasinetti theorem is in the tradition of the ‘monetary analysis’ of the (Post) Keynesian monetary theory, in contrast to the ‘real analysis’ of the Wicksellian theory.

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### 1. Introduction

Ciccarone (2004) is an effort to show that the Cambridge theory of income distribution, represented by the Pasinetti theorem (Pasinetti, 1962), can be conceived to have a built-in financial sector where financial intermediaries provide financial service. This is to complement the efforts in the 1980s which tried to introduce financial assets such as equities, bonds and high-powered money but did not deal, at least explicitly, with financial intermediaries. An explicit dealing with financial intermediaries involves a consideration of the remuneration for their financial activities (‘a profit-making financial sector’). This is surely a welcome effort.

Ciccarone seems to succeed in this effort – but no more than in general direction. The average reader may excuse some degree of confusion, arising from the author’s simple carelessness. However, there is also a particular kind of confusion which even the very lenient reader will take issue with, as it leads the author to endorse a view which is completely at odds with the spirit which has been breeding the theory he wishes to complement. The contrast is that between ‘real analysis’ and ‘monetary

analysis' in the sense of Schumpeter (1954, p. 276).

By way of critical comments on his paper, this note will on its part claim that the Cambridge theory is indeed in the tradition of 'monetary analysis'.

## 2. The income of 'financial capitalists'

The confusion, seemingly innocent at first, lies in Ciccarone's incomplete understanding of the income of 'financial capitalists', who run financial intermediaries (collecting workers' saving and transmitting it to 'industrial capitalists') and thereby get remuneration for their financial service (by charging industrial capitalists at a higher rate of interest than the rate at which they pay to workers). Ciccarone denotes their (total) income by  $P_f$  and uses a definition of  $r$ ,

$$r \equiv P_f / K_f$$

(where  $K_f$  is the capital owned by financial capitalists), to compare it to the rate of return on the capital owned by industrial capitalists ( $\rho$ ) (p. 167). The difference between them (measured by the ratio  $\gamma = r/\rho$ ) represents, for our author, the difference between the risk premium for production and that for financial service.

Now this rendering of  $r$  gives the impression, on the one hand, that the income of financial capitalists consists *solely* of the direct remunerations for their financial service. On the other, as this income is proportioned to the capital owned by financial capitalists, the reader may be induced to regard, as our author indeed does,  $r$  to be on the same level as other rates of return on capital such as that on industrial capitalists' capital or that on workers' capital ( $t$ ).

The fact is, however, that financial capitalists earn *two* types of income. One is the type explicitly mentioned by Ciccarone (arising from their financial service). The other is the type arising from the ownership of their capital. Initially financial capitalists may have begun their business simply by collecting workers' saving and transmitting it to industrial capitalists, without their own capital; charging industrial capitalists at the rate of  $i$  and paying workers at the rate of  $t$  ( $< i$ ), they reap the difference between the two rates as their income (thus,  $i - t > 0$  is the necessary condition for the existence of financial intermediaries). Saving part of this income, however, they start to accumulate their own capital; now by lending this capital to industrial capitalists, they earn interest

(at the rate of  $i$ ), and this becomes part of their income.<sup>1</sup> Thus the total income of financial capitalists is<sup>2</sup>

$$F = (i-t)K_w + iK_f$$

Ciccarone's  $r$  is then

$$r = F/K_f = i + (i-t)(K_w/K_f)$$

$r$  is simply a ratio of the *overall* income of financial capitalists to their capital. On the one hand, it does not stand for the rate of return on their capital in the usually understood sense of the term (as for  $\rho$ ,  $i$  or  $t$ ). On the other, it is more than a measure of the return on their financial service alone. The former rate of return is represented by  $i$  and the latter measure (per unit of their own capital) by  $(i-t)(K_w/K_f)$ .<sup>3</sup>

It may be argued that to conduct discussion summarily in terms of  $r$  or more explicitly in terms of  $i + (i-t)(K_w/K_f)$  is simply a matter of convenience. But the former practice carries a danger of obscuring the fact that financial capitalists earn two types of income, which should be analytically distinguished from each other. Our author falls the victim to this danger, and all the problems starts from here.

The ratio  $\gamma = r/\rho$  plays a central role in Ciccarone's exposition throughout the paper. This is particularly so in three instances: first, in Section 3 where he checks if ' $\gamma = 1$ , that is, ... the risk of enterprise is the same for production and for financial firms' (p. 167); secondly, in Section 4 where he proceeds on the supposition that financial intermediaries have the power to set  $\gamma$  exogenously (pp. 170ff); and thirdly, in Section 5 where he describes how the investment decisions of industrial capitalists are affected

<sup>1</sup> One may see here a parallel to Pasinetti's celebrated pointing out of Kaldor's 'logical slip' (Pasinetti, 1962) regarding workers' income, which eventually led to the Pasinetti theorem.

<sup>2</sup> For the total income of financial capitalists, we use  $F$  rather than  $P_f$ , reserving the latter for the interest accruing to their capital.

<sup>3</sup> This stricture may sound too harsh for Ciccarone. In fact, the part of the interest on worker's capital which would have accrued to workers if financial intermediaries had not charged them is taken by financial capitalists, and Ciccarone's  $P_f$  stands for the part of the *total profits* which come to belong to financial capitalists, either directly in the form of interest on their capital or indirectly in the form of 'takes' from workers' interest. But the fact remains that he throughout the paper conceives  $r$  as the rate of return to the financial service, thereby missing out the direct form of the income of financial capitalists.

by the difference between  $r$  and  $\rho$  (pp. 171–175).

All these three instances have something to do with the understanding of the ‘risk and trouble’ (p. 168) involved in the industrial and the financial activities. Let us take up the first instance first. Whilst industrial and financial capitalists suffer from the ‘risk and trouble’ associated with their activities, workers are not subject to it: they simply entrust their saving to financial capitalists and get interest at the rate of  $t$ . There may be a difference between the degree of ‘risk and trouble’ faced by industrial capitalists and that faced by financial capitalists. For Ciccarone, this difference is represented by the difference between  $\rho$  and  $r$ . The question is, however, if this is an economically reasonable representation. Our answer is in the negative.

The ‘risk and trouble’ faced by industrial capitalists in comparison with workers is reflected by the difference between the remuneration on the former’s capital ( $\rho$ ) and the remuneration on the latter’s capital ( $t$ ). Now, the ‘risk and trouble’ faced by financial capitalists *vis-à-vis* workers must be represented by the *net* remuneration on their activity of intermediating *workers’ capital* to the final users: the difference between the lending rate of interest ( $i$ ) and the deposit rate of interest ( $t$ ). As only a part of the total income of workers (interest received on their capital, excluding wages) is extracted as relevant for comparison, so must only a part of the total income of financial workers (interest received from industrial capitalists for lending workers’ capital, excluding interest arising from their own capital). Then, the measure of the ‘risk and trouble’ faced by industrial capitalists *in comparison with financial capitalists* must be the difference between the above two measures of the ‘risk and trouble’, which is reduced to the difference between  $\rho$  and  $i$ . From the perspective of industrial capitalists, it does not matter how the interest they pay for borrowed capital is split between the intermediaries and the ultimate lenders. What is important is the *net* remuneration *they* get from their industrial activity, and this must reflect their ‘risk and trouble’ that they suffer from in comparison with financial capitalists. Thus, the case where ‘the risk of enterprise is the same for production and for financial firms’ (p. 167) must be the one where  $\rho = i$ , not  $\gamma = r/\rho = 1$  as for Ciccarone.

We move on to the second instance. For Ciccarone, financial intermediaries have the power to ‘[fix] the level of the general [lending] rate of interest, but also their own margin’ (p. 170, fn. 9). We take this claim, both its first and the second part, for granted.<sup>4</sup> But we diverge from our author as for the second part in its detail. What would be the ‘margin’ which has real significance to the financial sector (and which it is hence willing to fix), especially if this sector is being characterised as ‘profit-making’?

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<sup>4</sup> There is a vast amount of the Post Keynesian monetary literature on this topic.

As may already have been hinted in our discussion of the first instance, it must be the margin of the lending rate of interest over the deposit rate of interest,<sup>5</sup> for this margin is what reflects and compensates for the ‘risk and trouble’ involved in financial service. Given that the financial sector has the power to set  $i$  exogenously, its power to set this margin exogenously too is equivalent to the power to set the deposit rate of interest,  $t$ , exogenously. Indeed, this seems to be the case in our actual economy: the central bank sets the base rate and financial intermediaries, in consideration of the profitability of their financial activity, add some ‘appropriate’ mark-ups to the base rate to set the lending and the deposit rates of interest.

For Ciccarone, however, that margin is the difference between  $\rho$  and  $r$ . This understanding raises a series of questions. The first question: Would financial capitalists be interested in that margin? The answer: No. Why should they ever be interested in the margin that, even according to Ciccarone, reflects that ‘risk and trouble’ which *industrial capitalists* go through? It is rather this latter group of capitalists who should be interested in that margin. The second question: Then, really, would that margin be significant to industrial capitalists (significant in the sense of giving them some inducement based on *economic* reasoning)? The answer: No. It is doubtful that, to be compensated for the ‘risk and trouble’ which they go through, industrial capitalists would compare the remuneration they receive on their capital with the *overall* income financial capitalists receive (per unit of their capital). A parallel question would go like this: when comparing with workers, would industrial capitalists compare their remuneration with the *overall* income that workers receive (that is, interest *and* wages)? The third question: Would financial intermediaries really have the power to set  $\gamma$  autonomously? The answer: No. Recall that this ratio is affected by not only  $i$  and  $t$  but also  $(K_w/K_f)$ . This last variable is one of the typical values which are to be determined *endogenously* in the long period analysis. It is hoping too much to think that it is possible to set exogenously a variable which contains a value that is typically endogenously determined.

Thanks to our argument up to now, we can be brief as for the third instance. In making decisions on their investment, industrial capitalists will typically compare the rate of return they earn on their capital ( $\rho$  or  $\pi$ , the latter as the gross rate of profits) with that which they pay in return to borrowing ( $i$ ), not with the ratio ( $r$ ) of the overall income of financial capitalists to their capital.

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<sup>5</sup> This margin is what is usually called the ‘(loan-deposit) spread’ in the finance and banking literature.

### 3. The ‘natural’ rate of interest

One may still suspect that the confusion dissected in the previous section would only deform some thin branches of the theoretical tree, which one can remove without endangering the life of the tree. To see, however, how it in fact becomes the life-threatening contamination of the trunk of the tree, we need consider the complete system of equations for the case under consideration.<sup>6</sup>

$$(1) Y = W + P + Z$$

The net national income consists of wages, total profits (including interest on borrowed capital) and the return on financial service.

$$(2) P = P_c + P_f + P_w$$

Total profits are the sum of profits on the capital of industrial capitalists, interest on the capital of financial capitalists and interest on the capital of workers.

$$(3) P_c = \rho K_c$$

$\rho$  is the rate of return earned on the capital of industrial capitalists.

$$(4) P_f = i K_f$$

The interest earned by financial capitalists for lending their capital to industrial capitalists is obtained by multiplying the former’s capital by the rate of interest paid by the latter for borrowing ( $i$ ).

$$(5) P_w = t K_w$$

$t$  is the rate of interest earned by workers by depositing their capital with financial capitalists.

$$(6) Z = (i - t) K_w$$

The remuneration for the financial service of financial capitalists is the difference between the loan interest which industrial capitalists pay to financial capitalists for

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<sup>6</sup> Ciccarone does not set out the system in the way as we present here; however, the system implied in his paper and ours are equivalent (except in two aspects; see footnotes 7 and 8 below). To set out the system explicitly in our way helps see through the problem we wish to discuss below.

using workers' capital and the deposit interest which financial capitalists pay to workers.

$$(7) \quad s_c P_c = gK_c$$

The saving of industrial capitalists is a fraction  $s_c$  ( $0 < s_c \leq 1$ ) of their income (profits) and this contributes to the growth of their capital at the rate of  $g$ . In the steady state, this rate of growth of capital applies uniformly to every kind of capital. Hence,

$$(8) \quad s_f (Z + P_f) = gK_f$$

The saving of financial capitalists is a fraction  $s_f$  ( $0 < s_f \leq 1$ ) of their income (financial service remuneration and interest) and this contributes to the growth of their capital at the rate of  $g$ .<sup>7</sup>

$$(9) \quad s_w (W + P_w) = gK_w$$

The saving of workers is a fraction  $s_w$  ( $0 \leq s_w < s_c, s_f$ ) of their income (wages and interest) and this contributes to the growth of their capital at the rate of  $g$ .

$$(10) \quad i = \eta\rho$$

The rate of interest on borrowed capital, paid by industrial capitalists, is a fraction  $\eta$  ( $0 < \eta \leq 1$ ) of the rate of return on industrial capitalists' capital;  $\eta$  reflects the risk premium of the industrial activity in comparison with the financial activity.<sup>8</sup>

$$(11) \quad t = \mu\rho$$

The rate of interest that workers receive for entrusting their capital with financial capitalists is a fraction  $\mu$  ( $0 < \mu < \eta$ ) of the rate of return on industrial capitalists'

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<sup>7</sup> Ciccarone assumes that  $s_f = s_c$ . The reason for this is his wish to conserve the two-class structure of Pasinetti's original model and compare his own model with Pasinetti's, in order to show that the latter allows for a profit-making financial sector. Nonetheless this is an unnecessarily restrictive assumption, as the Pasinetti theorem, whether in its original form (Pasinetti, 1962) or in the 'more general version' (Pasinetti, 1974), holds even when  $s_f \neq s_c$ . See below.

<sup>8</sup> Instead of condition (10), Ciccarone has  $r = \gamma\rho$ . But our argument in Section 2 strongly discourages us to use this formula. Thus our discussion will be carried out in terms of  $i$  and  $\eta$ . For Ciccarone's own case, always read  $r$  for  $i$  and  $\gamma$  for  $\eta$ .

capital;  $\mu$  reflects the risk premium of the industrial activity in comparison with workers' decision simply to deposit their saving with financial capitalists.

$$(12) \quad g = n$$

Investment is carried out in such a way as to ensure the rate of growth equal to the natural rate of growth, thereby achieving full employment of labour through time.

$$(13) \quad K_c + K_f + K_w = 1$$

This is a normalisation condition; thus, all the variables, except ratios, are expressed per unit of total capital.

The system consists of 13 equations in 13 unknowns. For Ciccarone, the unknowns are  $W, P, Z, P_c, P_f, P_w, \rho, i, t, K_c, K_f, K_w$ , and  $g$ ; the exogenous variables are the technique in use ( $Y$ , which stands for the output-capital ratio), the various saving propensities, the natural rate of growth and  $(\eta, \mu)$ .

Ciccarone's main claim arising from the analysis of this system is that 'full employment steady growth requires financial intermediaries to set the lending rate of interest and the intermediaries' margin at the levels which remunerate both a "normal" risk of enterprise ... and a "normal" risk of financial activity' and that 'the real economy can pin down the "average" rate of interest ... and yet allow the financial system freedom in determining the constellation of rates around that average' (p. 164). This 'average' rate of interest is later dubbed the 'natural rate of interest' (p. 175), in order to emphasise that under this rate of interest the economy grows at the natural rate of growth, thereby achieving full employment through time.

The key to this claim is the power of financial intermediaries to '[fix] not only the level of the general rate of interest, but also their own margin' (p. 170, fn. 9); that is, the exogenous setting of not only  $(\eta, \mu)$  but also  $i$ . With this, however, the system is over-determined. A solution is to allow the rate of steady-state growth to be endogenously determined.<sup>9</sup> The resulting rate of growth will, save by a fluke, diverge from (usually be lower than) the natural rate, thereby creating the state of growth with permanent unemployment. The financial sector setting  $i$  at a 'wrong' level (p. 172), given  $(\eta, \mu)$ ,<sup>10</sup> the economy will be pushed off the Golden Age growth path. There

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<sup>9</sup> Formally speaking, condition (12) is replaced by a new condition:  $i = \bar{i}$ .

<sup>10</sup> For Ciccarone, it should read: 'If the financial system sets  $r$  at a 'wrong' level, given  $(\gamma, \mu)$ '. Observe his referring to the 'right  $\gamma$ ', the 'wrong level of  $r$ ' or the 'right  $r$ ' (p. 172).

exists a particular, ‘natural’, rate of interest which guarantees  $g = n$ , given  $(\eta, \mu)$ . To maintain full employment constantly, on goes our author, the financial sector must adjust itself to maintain that ‘natural’ rate of interest, given  $(\eta, \mu)$ .

The monster has raised its head over the surface.

By now the reader must begin to sense that she is being drawn dangerously into the realm of the spirit which is very different from (even opposed to) the one in which she has been thinking she is. In this realm, the ‘natural’ configuration of the economy is determined by the real forces, and the monetary forces, by setting the monetary rate of interest at a ‘wrong’ level (that is, at the level different from the ‘natural’ rate), would disturb the harmony of the real economy. Ciccarone’s system, with the exogenous variables and the endogenous variables as mentioned above, is a typically Wicksellian ‘real analysis’ system. One may oppose that  $\eta$  and  $\mu$ , which are among the parameters of the system, represent monetary factors. However, the ‘risk and trouble’ they represent is, at bottom, a *real* factor in the sense of reflecting the state of objective uncertainty and/or the state of subjective judgment: they do not represent the economic (or even political) decisions of monetary institutions. What represents these decisions in the above system of equations is the lending rate of interest ( $i$ , which he erroneously identifies as  $r$ ) and the deposit rate of interest ( $t$ ); and, according to our author, they<sup>11</sup> serve only to distort the harmonious configuration resulting from the real factors.

But is it not true that the Cambridge theory is in the tradition of Keynes? And is it not true that Keynes is celebrated for proposing that monetary factors are no less effective in configuring the equilibrium state of the economy? In particular, the Cambridge theory being a long-period theory, should it not endorse the view that the monetary factors are as effective as the real ones in forming the long-period configuration of the economy, not merely in disturbing a pre-determined long-period configuration? The Cambridge theory should be in the tradition of ‘monetary analysis’.

Let us rescue our Keynesian reader from the Wicksellian realm. Let  $i$  and  $t$  replace  $\eta$  and  $\mu$  in the commandship of the economy. As we have argued in Section 2 above, the exogenous setting of  $i$  and  $t$  is supported by the power of financial intermediaries to ‘[fix] the level of the general [lending] rate of interest, but also their own margin’. And *they* are the monetary factors of our model economy, reflecting the economic decisions of monetary institutions. The long-period rate of profits on the capital of industrial capitalists which is compatible with full employment of labour – thus which can be called the ‘natural’ rate of profits – is determined endogenously

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<sup>11</sup> More precisely, only the first rate. The second rate is endogenously determined.

depending, in particular, on these monetary factors. The ratios  $\eta$  and  $\mu$  between this ‘natural’ rate of profits on the one hand and  $i$  and  $t$  on the other are accordingly determined. These values of  $\eta$  and  $\mu$  are those which would appear in the ‘very long run’ where all sectors and components of the economy grow at the common rate,  $n$ , and will continue to remain at the current levels unless there is any exogenous disturbance. Thus they must be conceived as the ‘normal’ difference between  $\rho$  on the one hand and  $i$  and  $t$  on the other, thus reflecting the level of ‘risk and trouble’ that all involved will regard as ‘normal’ for the industrial activity (*vis-à-vis* the financial activity) and for the financial activity (*vis-à-vis* workers’ decision to deposit their saving). Different values of  $i$  and  $t$  will produce different configurations of the ‘natural’ position of the economy. It is the monetary factors that determine the real-side configuration of the economy, not the way round. This is a ‘monetary analysis’.

The upshot is that, once one understands properly the power of the financial sector to set the rates of interest, *any* lending and deposit rates of interest are compatible with the ‘natural’ configuration of the economy with full employment. There is no particular level of  $i$  (and  $t$ ) – what Ciccarone calls the ‘natural rate of interest’ – which is, given the other parameters of the economy, the sole level that guarantees the full employment growth. By implication, there is no inherently ‘wrong’  $i$  (and  $t$ ) that would push the economy off the harmonious state of affairs.

If the actual economy diverges, as it will usually, from this ‘natural’ configuration, one should seek for the reason elsewhere than the ‘mis-setting’ of the rates of interest by the financial sector. The Keynesian answer will be: deficient effective demand. Even on this issue, our author is illuminating, if only negatively.

Let us look at his treatment of the dynamics of the economy (pp. 171–175). If the investment behaviour of industrial capitalists is influenced by the difference between  $\rho$  and  $i$  (in the Joan Robinson way; see Ciccarone’s Figure 1, p. 174), then the resulting rate of growth will coincide with the natural rate only by a fluke.<sup>12</sup> Ciccarone traces the reason for this (usually, the rate of growth lower than the natural rate) to the ‘mis-setting’ of the lending rate of interest by financial intermediaries. Thus he argues that ‘[t]he economy can move toward ... the full employment rate of growth only if ...  $\gamma$  decrease[s]’ (recall that, for Ciccarone, the decrease in  $\gamma$  means, erroneously, a decrease in the lending rate of interest). The fact is, however, that *no* amount of decrease in the rate of interest could bring about the natural rate of growth (though the same decrease will increase the actual rate of growth up to a certain level),

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<sup>12</sup> That is, condition (12) is replaced by a new condition specifying an investment function:  $g = g(\rho - i)$ ,  $g' > 0$ .

once the shape and position of the investment function is such as to produce an under-full employment rate of growth in equilibrium. This is because changes in the rate of interest will cause, using the terms in elementary economics textbooks, movements *along* the investment function. What is needed for the achievement of the natural rate of growth is a *shift* of the investment function. This shift cannot be effected by ‘some institution (e.g. an inter-bank arrangement, or a monetary authority under central banking), which should have the power either to impose a certain  $\gamma$  directly, or to influence the financial system through moral suasion’ (p. 175). To effectuate the shifting of the investment function, ‘moral suasion’ should rather be tried on entrepreneurial capitalists in order to boost their ‘animal spirits’, or a more direct method – such as direct public investment – should be used.

Now our Keynesian reader will be relieved to be back home.

#### 4. The financial system and the Pasinetti theorem

The Pasinetti theorem in its original form (Pasinetti, 1962) states that, in a full-employment two-class economy, the economy-wide rate of profits ( $\pi$ ) is determined solely in reference to the natural rate of growth and the saving propensity of capitalists, in complete independence of technology and the saving propensity of workers:

$$\pi = n/s_c$$

This theorem is based on two conditions. One is that of the steady-state growth: all the sectors and components of the economy grow at a common rate. The other is that of the uniform rate of return on all types of assets. In Pasinetti (1962), this condition takes the form of the same rate of return on capitalists’ capital and workers’ capital:  $\rho = i$ .

With profit-making financial capitalists, would we need a different condition to get the same result? No. The condition  $\rho = i$  continues to be the needed one, along with the condition of the steady-state growth. The economy-wide rate of profits ( $\pi$ ) is

$$\begin{aligned}\pi &= \rho K_c + [iK_f + (i-t)K_w] + tK_w \\ &= \rho K_c + i(K_f + K_w)\end{aligned}$$

Thus,  $\rho = i$  yields  $\pi = \rho$ , and one already has, as the ‘more general version’ of the Pasinetti theorem (Pasinetti, 1974),  $\rho = n/s_c$  from (7) (of course, with  $K_c \neq 0$ ).<sup>13</sup>

<sup>13</sup> Contrary to Ciccarone’s claim, thus, ‘the Pasinetti result ... is hence a special case which results’ (p. 167) when  $\eta = 1$ , not when  $\gamma = 1$ . Moreover, as one can easily verify,  $\gamma = 1$  with  $\rho = i$  implies  $i = t$  which in turn implies  $K_f = 0$ . The economy collapses to one where there is no profit-making financial sector! Also, the simultaneous

Note that this result is independent of the saving propensity of financial capitalists (as well as that of workers) and also of the deposit rate of interest. From the perspective of industrial capitalists, it does not matter whether they use workers' capital or financial capitalists' capital, insofar as they pay the same rate of interest on them. For industrial capitalists these two kinds of capital are, after all, the same borrowed capital. If  $s_f = s_w$ , the emergence of profit-making financial capitalists leaves intact the proportion of total capital owned by industrial capitalists ( $K_c$ );  $i$  and  $t$  play a role in splitting borrowed capital ( $K_f + K_w$ ) between financial capitalists and workers. If  $s_f = s_c$ , the same emergence leaves intact the proportion of total capital owned by workers ( $K_w$ );  $i$  and  $t$  play a role in splitting capitalists' capital ( $K_c + K_f$ ) between industrial and financial capitalists.

A short remark will close this note. The financial system that Ciccarone considers is a *loanable fund* system: workers make deposits with financial capitalists, who subsequently loan these deposits out to industrial capitalists – deposits generate loans. Following his cue has shown that the Pasinetti theorem still holds in the face of profit-making financial intermediaries. Recently (in the context of workers borrowing for consumption),<sup>14</sup> Palley (1996) has raised the claim that the Pasinetti theorem ceases to hold in the *credit money* system where financial institutions ('banks') creates credit *ex nihilo*, thereby generating deposits – it is loans that generate deposits. Commendatore (2002) tries to restore the Pasinetti theorem against Palley, but it turns out that the financial system he considers is in fact a loanable fund system, leading Palley (2002) to re-confirm his result. Park (2004) however traces the reason for this negative result to the assumption, held by both Palley and Commendatore (and which happens to be shared by Ciccarone too), that capitalists carry out both the industrial and the financial activities. By conceiving those who perform the financial activity as a separate social class ('bankers', and 'banks' as an institution independent of industrial firms), he shows

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exogeneity of  $\mu$  and  $i$  would make the system of equations inconsistent. From (7) and (10) we immediately have  $i/\mu = n/s_c$ ; with all the variables as exogenously set, this relationship will not hold save by a fluke.

<sup>14</sup> This is the only case that the three antagonists below consider. However, similar arguments can be made regarding the case of industrial capitalists borrowing for investment in capital.

that the Pasinetti theorem can stand unscathed even in the credit money system. New avenues of research are wide open for the Cambridge theory.

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