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Limitations to Keynesian Demand Management through monetary policy – whither Cartesian policy control

by

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LIMITATIONS TO KEYNESIAN DEMAND MANAGEMENT THROUGH MONETARY POLICY – WHITHER CARTESIAN POLICY CONTROL¹

I. The problem

Monetary policy as a stimulus to growth and employment has become increasingly popular again in the course of the past decade. On the one hand, it has been argued that monetary restriction, i.e. a policy of zero inflation, does not come as a ‘free lunch’ but causes long term damages to growth and employment (see e.g. Akerlof et al. 1996, Wyplocz 2001) – which in turn leaves room for cautious monetary expansion in order to grease economic growth. On the other hand, fiscal policy seems to lose in effectiveness in a global world: according to the Fleming-Mundell-model of open (integrated) economies, fiscal policy is less effective than monetary policy under the realistic assumption of a flexible exchange rate regime (see de Grauwe 1997: 20). Furthermore, the degree of indebtedness of many public finances reduces considerably the room for manoeuvre through fiscal policies, leaving monetary policy as the principal tool of stabilisation. Finally, in the European Monetary Union (EMU) fiscal policy has been completely ‘neutralised’ by the ‘Stability and Growth pact’ of public finances (see Arestis/McCauley/Sawyer 2001). Therefore, the European Central Bank (ECB) comes under mounting pressure to gear its monetary policy to demand management rather than purely guaranteeing price stability.

Due to its acceptance of the ‘classical dichotomy’, the traditional Walrasian economic model cannot consistently be taken as support for such a revival of monetary stabilisation euphoria. Keynesian or Post Keynesian theorising, however, allows for a long term non-neutrality of monetary policy (see Moore 1988: 366ff.; Davidson 1994: 126ff.) – which is often taken as a playground for hydraulic interventionist proposals.² In the following, I will present a fresh model of a credit economy which allows for an exact analysis of the sometimes rather vague components of Post Keynesian model building³ (part II). I will then extend the basic model in

¹ This paper was presented at a conference at the University of Stellenbosch/South Africa organised to celebrate Basil Moore’s 70th birthday. I would like to thank all participants for their comments, particularly Basil Moore, Mark Setterfield and Marc Lavoie.

² In a recent article Arestis and Glickman (1999: 44ff.) mention some political and external (due to the process of globalisation) obstacles and constraints to such a hydraulic policy control but no internal ones.

³ In his most famous book – ‘Horizontalists and Verticalists’ – Basil Moore (1988: XVIII) expresses his hope to have set a new generation of economists on the way towards a reconstruction of economic theory beyond the (then and now) prevailing orthodoxy. I would be glad, if Basil Moore accepted the following piece as a preliminary attempt to do so.

order to introduce commercial banks as agents (part III) and to explore the interaction of the various economic agents (firms, wealth-owners, commercial banks) with the political actor (the central bank). In a next step (part IV), the impact of monetary policy on the decisions of the above-mentioned economic agents and, as a result, the process of income generation and employment will be elaborated. In a final section (V), I will answer the question whether or not monetary policy can be used in a hydraulic way for demand management and what this result implies for policy proposals.

II. The basic model

Although Post Keynesian model building is far from having established a unique, coherent set of equations and equilibrium conditions describing the functioning of markets (see Dunn 2000), monetary endogeneity, the central position of (money) wealth-owners, the logical hierarchy of markets running from money and credit to commodity and labour markets and, as internal link, fundamental uncertainty, seem to be among the undisputed cornerstones of a constructive approach to Post Keynesianism (see e.g. Davidson 1996, Minsky 1996; Heine/Herr 1999: 319).

Baisch and Kuhn (2001) have recently published a formally appealing model of a credit economy (*Risikowirtschaft* – risk economy) which bears many of the central features of Post Keynesianism and, contrary to many other contributions to Post Keynesianism that remain vague with respect to the micro-foundations and functional relations of their reasoning (see Felderer/Homburg 1992; Solow 1979), allows for an in-depth analysis of the working of the model on the grounds of a portfolio-theoretic structure and a clear understanding of the interaction of the various economic agents.

At the outset, economic agents are separated according to their functions, i.e. there are entrepreneurs whose function is simply to produce different types of commodities and services using capital and labour. In order to finance their production, they need to demand credit (or ‘finance’ as it had been termed by Keynes; see Keynes 1937) from commercial banks. Entrepreneurs are the link between the credit and the commodity markets. Secondly, there are wealth-owners who are portrayed as risk-averse portfolio managers splitting their wealth into financial (i.e. deposits at commercial banks) and real assets according to the principles of yield maximisation under uncertainty. Thirdly, there are commercial banks

providing credit to entrepreneurs, accepting deposits from wealth-owners and cash balances from the central bank. Fourthly, the central bank provides the unit of account (money or cash balances) to commercial banks and secures the stability of the banking system (lender of last resort). These different types of agents are often compounded in reality, i.e. entrepreneurs may well additionally be wealth-owners, yet functional separation does not allow for the possibility of functional mixes. The labour and commodity markets (and, thus, the process of income generation) will not be modelled in detail.

Before presenting a full picture of the model, let us put forward some further preliminaries: (1) for the sake of simplicity, I shall concentrate on debt-financed production ignoring the possibility of equity finance or a mix of debt and equity. I shall do so under the assumption that this will not seriously alter the outcome of the principal focus of this paper: the limitations of monetary policy (see Baisch/Kuhn 2001: 152f.).⁴ (2) Collateral requirements play a crucial role in a model which is based on debt and credit: commercial banks provide credit to entrepreneurs only under the provision of full collateral requirements which is the productive capital that entrepreneurs will have purchased with the credit given to them. This procedure reduces the default risk of commercial banks and links the monetary side of the economy (i.e. the creation of real deposits and loans) to the real side of the economy (the creation of productive capital).⁵ (3) The model is a static one-period model, in which the agents act in a forward-looking manner under conditions of fundamental uncertainty.

In fig. 1, the basic model of a credit economy of Post Keynesian orientation is presented. The first quadrant shows the relation between the interest rate on deposits and on financial credit given by commercial banks:

$$i_C = i_D + u \quad (1)$$

(with i_C = interest rate on financial credit; i_D = interest rate on deposits; u = risk premium).

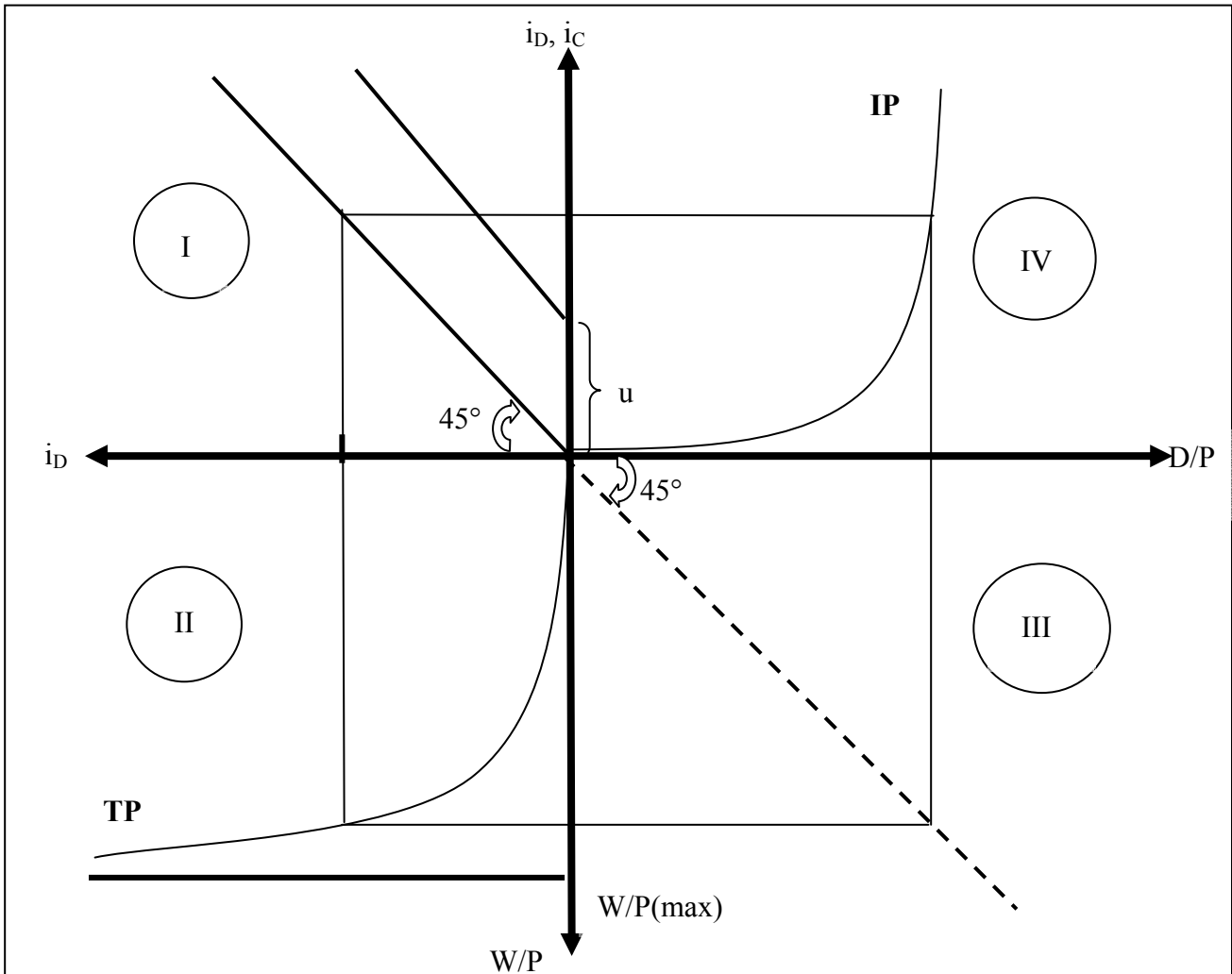
⁴ However, many interesting phenomena of the ‘New Economy’ – such as an asset inflation beyond the discounted value of (possibly expected) future yields – can only be analysed once equity finance is brought into the picture.

⁵ In any case, commercial banks will prevent an overvaluation of real productive capital as it would jeopardise the monetisation of collateral requirements in case of debt default. An under-valuation of productive capital cannot occur under the assumption of perfect competition. In the Baisch-Kuhn model the commercial banking system’s sole function must be seen in securing a correct valuation of real wealth. We shall add another function of the banking system later.

The second quadrant depicts what Baisch and Kuhn call the ‘transformation portfolio’ (TP - *Überlassungsportfolio*) – the part of real wealth⁶ (W/P) private wealth-owners are willing to give up in favour of real deposits (D/P). As the existing stock of real wealth (W/P[max]) includes all kinds of assets which are able to be transformed into a productive (i.e. income generating) process (by the entrepreneurs), wealth-owners are willing to part with real wealth and transform it into deposits in relation to the rate of interest on deposits – the particular shape of the TP-curve indicating risk aversion on the part of the wealth-owner. As any part of real wealth being given up must be invested, the fourth quadrant shows the ‘investment portfolio’ (IP - *Anlageportfolio*) as a function of the rate of interest on deposits. Although the ‘transformation portfolio’ and the ‘investment portfolio’ are merely two sides of one and the same coin, the underlying incentives are logically different in the sense that the wealth-owner may be restricted in his effort to part with real wealth to the extent that he is (un-)able to find investment – due to functional separation, wealth-owners only invest in bank deposits. The third quadrant, finally, simply joins financial and real wealth to secure the identity of $W/P \equiv D/P$.

⁶ The valuation of the stock of real wealth is done by the wealth-owners alone in relation to its (non-pecuniary) yield (Baisch/Kuhn 2001: 70ff.) – therefore, the value of real wealth is unrelated to the changing interest rate on deposits.

Figure 1: The basic model



This basic model, resting on the portfolio decisions of wealth-owners, must be extended in order to incorporate investors (entrepreneurs), commercial banks and the central bank.

III. Refining the model

If we do not want to leave the rate of interest – on deposits and also on financial credit – hanging by its own bootstrap, we shall have to introduce the central bank as provider of cash balances (units of account or money in its narrowest definition), the commercial banks linking the creation of (long term) credit to that of (short term) deposits and cash balances and the entrepreneurial investors who demand real capital and provide jobs according to the principles of profit maximisation.

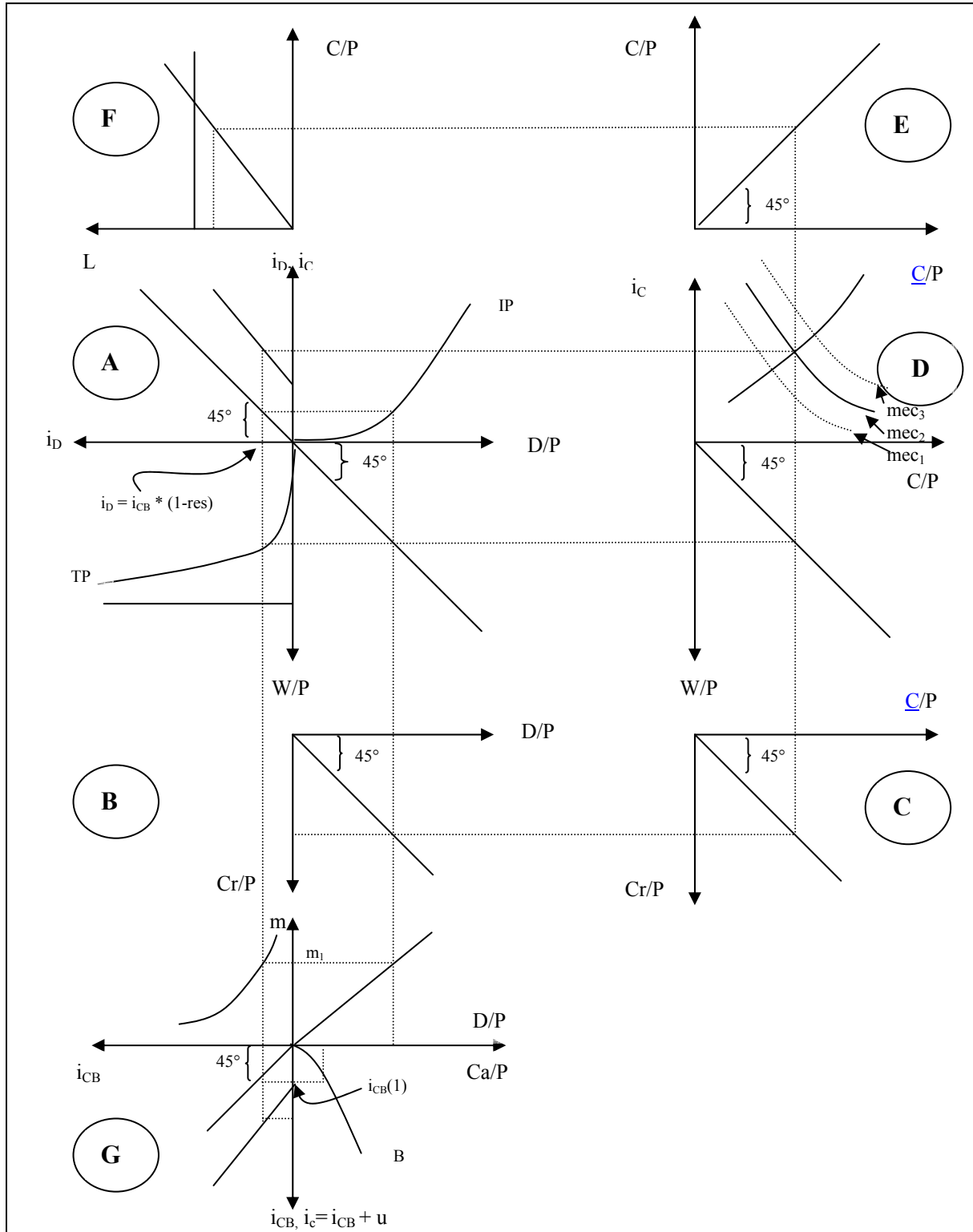
At the beginning, we made the assumption of ignoring equity based financing of productive investment. This establishes the identity of real deposits (D/P), the volume of real credit (Cr/P) and the stock of real capital (C/P) as shown in fig. 2 A-D. Or, to put it differently, the portfolio decision of wealth-owners *uno actu* determines the supply of real credit and real capital in fig. 2D. In order to determine the volume of real investment and, assuming the complementarity of the real capital stock C/P and employment L (as in fig. 2 F), the amount of employment demanded (with the amount of labour supplied as exogenously given), we simply have to introduce an ordinary Keynesian investment function comparing the marginal efficiency of capital (internal rate of interest) with the (external) rate of interest on financial credit (see fig. 2D).⁷

It may be noticed that fig. 2 includes yet another section, namely section G. This section is vital – and has been ignored by Baisch and Kuhn – because, on the one hand, it introduces the banking system as an actor in its own right into the model and on the other hand, it allows us to heal a slip in our argument: we have argued that the portfolio decision of wealth-owners *uno actu* determines the supply of real credit and real capital. This is not quite true as the ‘transformation portfolio’ (TP) may be rationed and the ‘investment portfolio’ (IP) cannot be established without the knowledge of the commercial bank’s willingness to get indebted (or, in Keynesian terminology, the liquidity preference of commercial banks). This crucial element, establishing a truly endogenous money supply as the result of profit maximising commercial banks and entrepreneurs and price setting central banks⁸, is depicted in fig. 2G.

⁷ If we introduce an infinite number of different production techniques (i.e. combinations of capital and labour) and allow for the possibility of re-switching, the negative interest rate elasticity of investment demand becomes obscure (as proven by the Cambridge capital controversy, see e.g. Harcourt 1972). Yet, this assumption and the scenario of a re-switching point seem to be too unrealistic to be taken as a serious constraint in our argument. In any case, the Keynesian investment function argues in terms of ‘capital widening’ rather than ‘capital deepening’ categories; see Heise 1990. Although the determination of employment – and, hence, unemployment – is not a serious focus of this model, at first sight employment seems to be supply-driven (capital stock). However, the capital stock (as the result of an investment process) depends on profit expectations and, implicitly, demand conditions. In a static model, where expectations are assumed to be fulfilled in equilibrium, the supply- and demand-orientations are only two sides of one and the same coin.

⁸ Central banks set a nominal price rather than a relative price – this is the conceptual link between the real and the monetary side of the economy.

Figure 2: The extended model



Note: res = reserves; mec = schedule of marginal efficiency of capital

Commercial banks transform short term debts (deposits from wealth-owners and cash balances from the central bank) into long term credit.⁹ Profit maximisation under conditions

⁹ Of course, the sequence of action is exactly the opposite: by providing long term credit to investors, the banking system as a whole is generating the complementary amount of deposits. Therefore, commercial banks

of uncertainty forces commercial banks to restrict lending according to their liquidity preference. Uncertainty in this context can be separated into two distinct categories: the uncertainty of redemption of outstanding debts associated with the borrower (investor) and the uncertainty of illiquidity associated with the transformation of the term-structure of debts and loans. While the former uncertainty can be taken into account by the provision of collateral requirements (as we have assumed)¹⁰, the latter forces commercial banks to keep a certain ratio of liquid cash balances (Ca/P) to less liquid deposits (D/P). This ratio depends on the credit multiplier m , which is no technical magnitude (as in most textbooks on money and credit) but a behavioural one.¹¹ It depends on the central bank's prime rate (i_{CB}) as the cost of restoring liquidity, the interest rate on financial credit (i_C) as the yield of parting with liquidity and the liquidity preference of commercial banks as their perception of the uncertainty about price stability and future central bank behaviour.¹² Given this liquidity preference of commercial banks, the higher the prime rate (i_{CB}) set by the central bank on a given reaction function (B), the lower will be the credit multiplier m simply due the growing risk of entrepreneurs (as investors) falling into Domar's debt trap.¹³ In order to close the monetary system, i.e. to determine the volume of real debt and credit (and the capital stock), we need to know the investment demand curve as depicted in fig. 2.D. Hence, the endogenous money

can never be deposit-constrained but may be liquidity-constrained in the case of shifting deposits from one bank to another or demanding cash balances.

¹⁰ Reducing the risk premium on financial credit to transaction costs incurring in the course of monetising collateral requirements.

¹¹ As this ratio is crucial, the microeconomic behaviour underlying its determination must be made more explicit: commercial banks are profit-driven enterprises. Therefore, they are tempted to expand loan creation to its extreme (which is only limited 'technically' by reserve requirements; labelled 'res' in fig. 2(A)). However, although loan creation *pari passu* generates deposits, commercial banks may become liquidity-constrained in the case of wealth-owners demanding cash balances for whatever reason. Or, as Dymski (1988: 516) puts it: "The more credit banks create to satisfy loan demand, the fewer funds are available for redistribution to meet depositors' demands for liquidity." The uncertainty of being forced to provide idle cash balances reflects the liquidity preference of commercial banks and explains why they do not necessarily expand loan creation to its technical extreme. They would only do so if they could expect to gain any amount of cash balances from the central bank at a fixed rate – which of course is the assumption of the 'accommodative endogeneity approach' to the money supply (see Pollin 1991). Obviously, I do not subscribe to that view – neither do I accept central banks as pure price setters and quantity takers, nor would I agree with the idea that the cost of restoring liquidity can be accepted as constant (see Moore 1991: 126). This cannot be so as the term-structure of deposits is different from the term-structure of loans, which results in an increasing marginal cost curve with growing loans(= deposits)-to-cash balances ratio. What will happen if commercial banks form wrong expectations about these costs can be studied with the savings and loan associations in the USA during the first half of the 1980s (see Stiglitz 2003: 36ff.).

¹² This is, as distinct from the transaction cost content of the risk premium described above, what Keynes called the 'liquidity premium' associated with cash-holdings according to the 'finance motive' (see Keynes 1937: 210ff.) and must be included in u of equation (1).

¹³ Accepting the idea of a credit multiplier does not necessarily include the rejection of the money supply being demand-driven. Whether the money supply should be regarded as demand-driven or, rather, supply-determined depends on whether the amount of cash balances or the amount of loans (= deposits) in the 'credit margin' is predetermined. If it is the amount of loans – as the accommodative (horizontalist) view would suggest – we may speak of a demand-driven money endogeneity, and if it is the amount of cash balances – as the structuralist view would suggest – we may speak of a supply-driven money endogeneity.

supply does not merely follow investor's credit demand in a passive, hydraulic way as the 'horizontalist view' (which I have elsewhere dubbed the 'neo-banking school'; see Heise 1992)¹⁴ seems to argue, but is determined simultaneously by expected profitability and liquidity preference considerations.

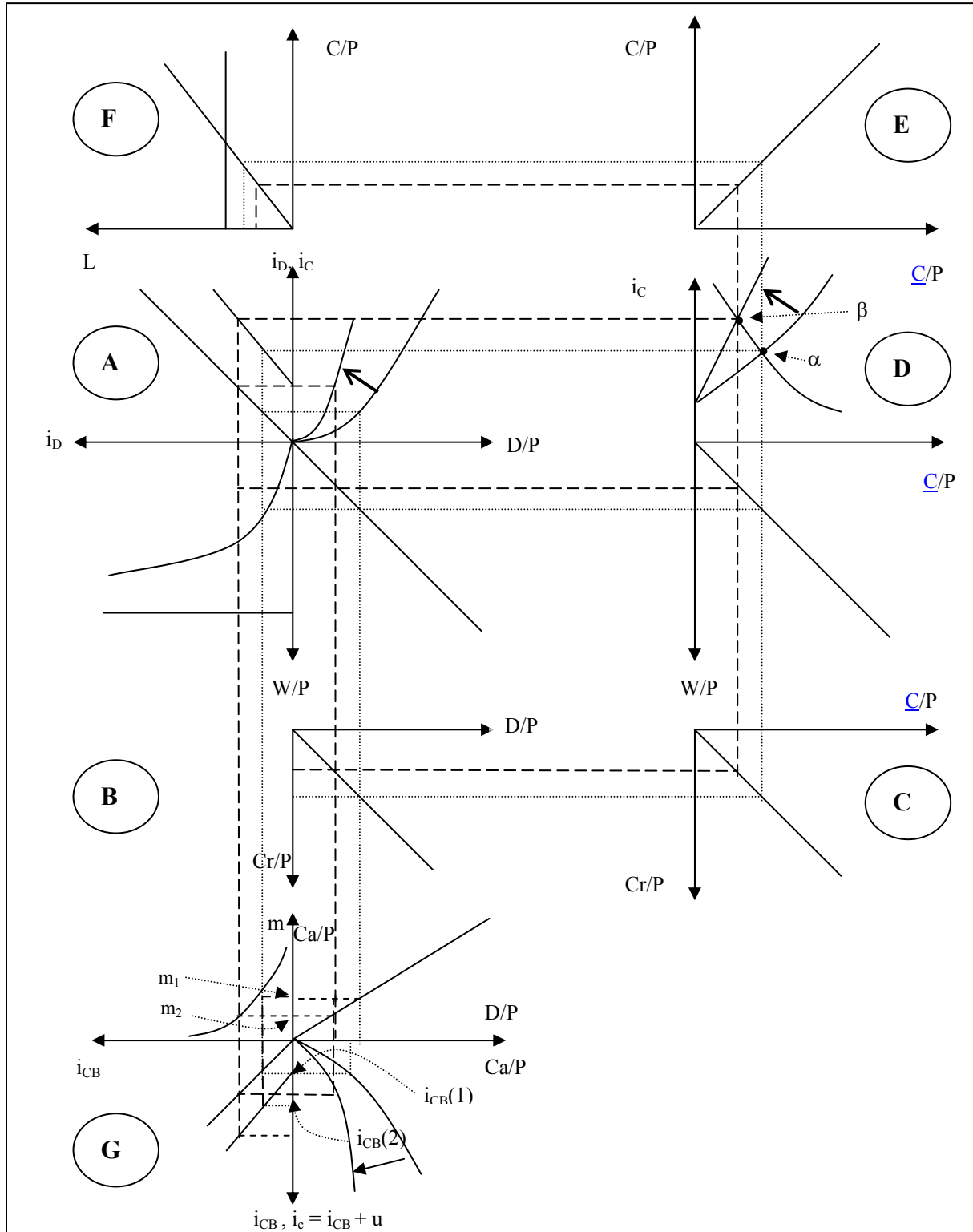
IV. Monetary policy

At this stage, the ground is prepared for investigating the impact of monetary policy (i.e. a change in the prime rate set by the central bank) on real magnitudes such as the volume of real investment and, finally and most important, employment or, as it is termed more technically, the transformation mechanism of monetary policy.

As a first step, a more restrictive policy stance by the central bank is portrayed in fig. 3G by a shift in the central bank's reaction function and an increase in the central bank's prime rate from $i_{CB}(1)$ to $i_{CB}(2)$. Clearly, a first immediate result will be an increase in the rate of interest on deposits and on financial credit (as in fig. 3A) and a fall in the credit multiplier m (as in 3G): commercial banks will hold fewer cash balances, yet will reduce the amount of outstanding real credit (as in 3B) and real deposits even further, thus reducing the 'credit margin' (i.e. the ratio of real credit to real cash balances). Although wealth-owners are willing to transform more real wealth into financial wealth as the interest rate on deposits rises, the 'investment portfolio' indicates that they cannot succeed as long as entrepreneurs reduce the amount of real investment according to their schedule of marginal efficiency of capital (a movement from α to β in 3D). Finally, the result of a policy of monetary restriction will be a drop in employment due to capital shortages in fig. 3F.

¹⁴ The 'horizontalist view' may also be captured by making the central bank's reaction function (B) completely interest elastic (see Moore 1988a and Moore 1988b). However, this would raise questions about the stability of such a monetary economy – the system would be lacking a crucial constraint (see Heise 1992:290ff.). A positively sloping reaction function can better be brought in line with the 'structuralist view of endogeneity' (see Pollin 1991) and may capture a 'leaning against the wind' policy stance (see Palley 1991).

Figure 3: The extended model and restrictive monetary policy



In a few moments it will be apparent that the kind of hydraulic, deterministic policy control¹⁵ which our example exhibits only works in one direction: by setting the cost of restoring liquidity, the central bank is able to control monetary expansion in a restrictive way only. Let

¹⁵ Accepting this kind of policy control implies that money supply becomes exogenous in a control sense although it is endogenous in a purely quantitative way.

us assume that the central bank reduces its prime rate again from $i_{CB}(2)$ to $i_{CB}(1)$ in the next step. Of course, one would expect to regain the former macroeconomic position including a higher amount of employment as indicated by the light dotted lines in figs. 3 and 4. However, this is only one, and clearly the most optimistic, scenario that will come true only under the condition of stable inflation expectations correctly anticipated by wealth-owners, commercial bankers and investors alike. In this case, a drop in the bank rate will increase m , the volume of real deposits, real credit and real capital – hence a return from β to α in fig. 4D.

But what will happen if inflation is expected to rise in the course of an increase in real credit, investment and employment as the (short-run) Phillips curve suggests?¹⁶ In that case, two reactions are possible: (1) commercial banks will not react at all, leaving real credit, investment and employment unchanged – i.e. the economy stays at point β . This behaviour may be rational if the commercial banks anticipate the central bank's restrictive reaction in response to mounting inflationary pressure.¹⁷ The prime rate set by the central bank would have been considered to be too low and unsustainable.¹⁸ As can be seen from fig. 4G, this scenario includes an increase in the liquidity preference of commercial banks (shift in the m -curve) leaving the credit multiplier unchanged at m_2 instead of increasing it to m_1 . (2) Wealth-owners will enforce their 'transformation portfolio' if expected inflation is reducing the real interest rate on deposits as compared to the yield of real wealth. In this case, the scarcity of real wealth being transformed into financial wealth and, finally, real capital imposes yet another interactive equilibrium termed γ in fig. 4D.¹⁹ The result is a policy contingency in the triangle marked by α , β and γ .

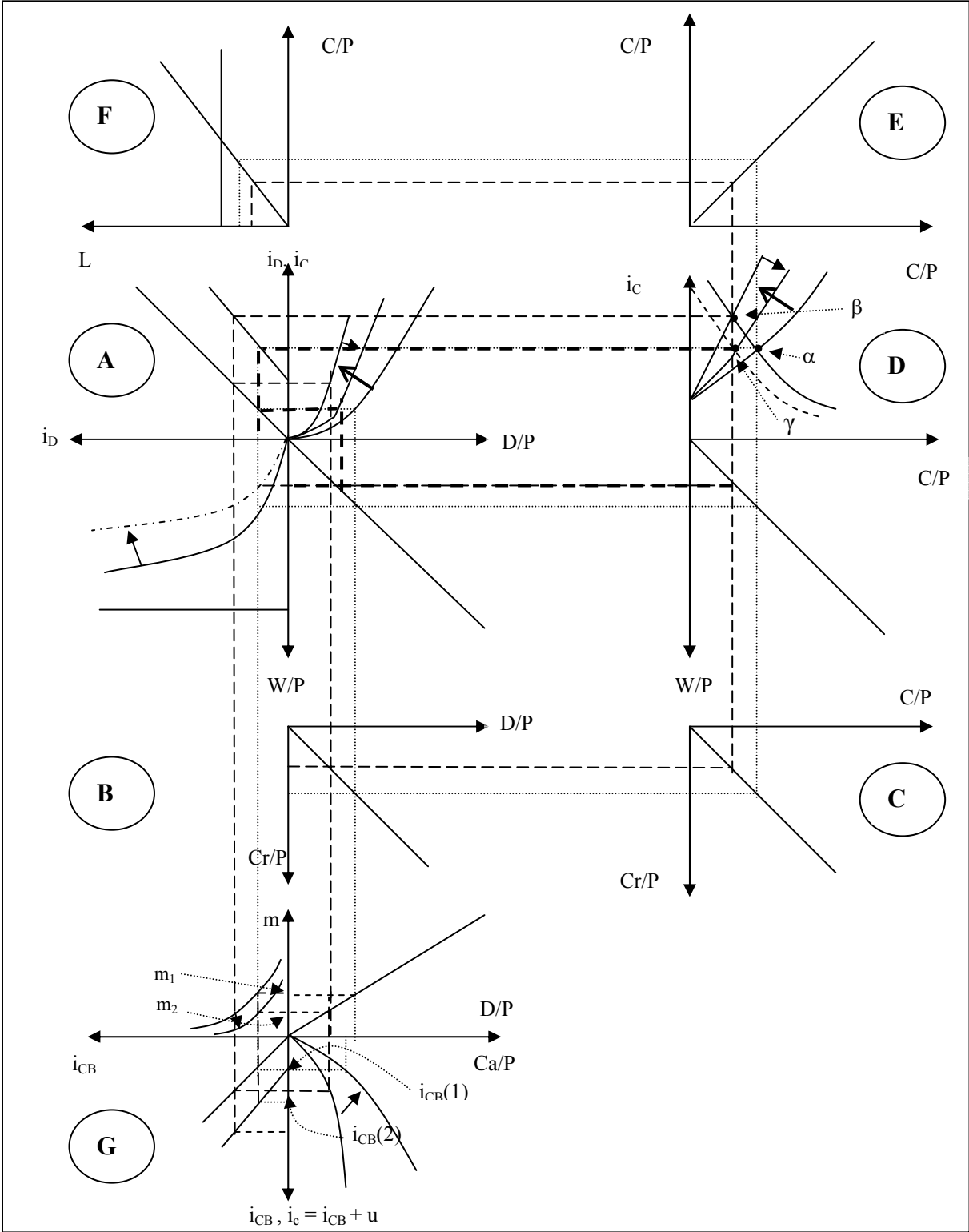
¹⁶ This can be made plausible by assuming an ordinary price-setting function which equates the price level with nominal unit labour cost multiplied by a mark-up factor representing market conditions in commodity markets. The nominal wage level, in turn, depends – among other factors – on the employment gap, i.e. actual unemployment as compared to equilibrium unemployment. For an interesting model on the line of argument put forward here see Isaac (1991). The rationale for the implicit assumption of asymmetric inflation expectations will be put forward later.

¹⁷ This is particularly rational if the central bank is known for pursuing a policy of 'inflation targeting' as most independent central banks seem to do (see Bernanke/Woodford 1997). Indeed, 'inflation targeting' may be a useful tool to increase the transparency of central bank behaviour.

¹⁸ In this setting, commercial banks become the primary mover of the economy very much in line with Keynes's ideas: „The control of finance is, indeed, a potent, though sometimes dangerous, method of regulating the rate of investment“ (Keynes 1937: 210f.).

¹⁹ In fig. 4 not all the consequences – such as for employment and credit creation – have been portrayed in order not to make the figure overly confusing. However, point γ can be an equilibrium point only, if the expected profitability of investment will suffer, i.e. an inward shift of the investment-demand curve as indicated by the dotted line in 4D. This, of course, is quite plausible as the income generating process has been harmed.

Figure 4: The extended model and expansionary monetary policy



Another reasoning is needed, however, if we consider a deflationary environment. Under such circumstances, real wealth-owners would clearly like to transform as much real wealth as possible into financial wealth as long as commercial banks are considered to be safe.

However, entrepreneurs as well as commercial banks will make their actions dependent on the central bank's ability and credibility to lower interest rates: if the central bank's prime rate has reached a lower limit – say zero per cent – or is not expected to fall any further for a period considered long enough to lower deposit rates accordingly, neither will commercial banks increase their lending nor will entrepreneurs increase their volume of real capital. This is a modern version of the standard Keynesian 'liquidity trap' which does not depend on 'speculative' cash holdings (money demand) but on a credit multiplier (i.e. money supply) process which becomes interest-inelastic. In such a case, monetary policy has completely lost its effectiveness in stimulating the real economy.²⁰

Clearly, policy control by the monetary authorities is asymmetric in nature: while restriction works in the intended way, the effects of expansionary monetary policy depend on its expected impact on prices and the overall inflationary or deflationary circumstances. In order to determine and predict such an impact, interactions of monetary and wage policy and the process of capital accumulation must be put into the picture. But before doing so, let us resume, and close, the consideration of a restrictive monetary policy by pointing out that the result reached above – i.e. that of deterministic policy control under a restrictive policy stance – rests on the implicit assumption of price rigidity in a downward direction.²¹ If disinflationary or, rather, deflationary processes are allowed to occur in the aftermath of a restrictive increase in the central bank's prime rate, position β would not be sustainable as the real burden on debt-financed capital acquisition will increase (external rate of interest) and shift the investment-demand curve inward. If this prompts prices to fall even further, a destabilising scenario may result and, as we have argued, monetary policy may become incapable of re-flating the economy again. Hence Keynes' prominent verdict in book V of the General Theory that a stable price level and – as its foundation – a stable level of money-wages is the most advisable policy proposition (see Keynes 1936: 270) and empirically documented price and money-wage rigidities²² the proviso of stability in a monetary production economy.

²⁰ This seems to be what we have been experiencing in Japan since the late 1990s when the Bank of Japan reduced its bank rate to zero, yet commercial banks refrained from expanding their lending.

²¹ Obviously, we have simply assumed a fix-price model in a restrictive direction and a flex-price model in an expansionary direction which explains the asymmetric results.

²² See e.g. Andersen 2001, Kahn 1997, Smith 2000.

V. Economic policy after Cartesian policy control

The correct macroeconomic policy mix has always been an important tool of ‘fine tuning’ stabilisation policy in Keynesian models since the famous IS-LM-neoclassical synthesis.²³ However, ‘policy mix’ in a Post Keynesian understanding does not merely translate into implementing an exact dose of monetary and fiscal policy stimuli up until full employment has been established, but a coordinated effort among the quasi-autonomous policy actors, the central bank (monetary policy), the political actor (fiscal policy) and the social partners (wage and income policy) in order to create a ‘macroeconomic constellation’ that allows for an economic growth without inflationary pressure and mounting fiscal debt (see e.g. Nordhaus 1994, Rankin 1998).²⁴ Inflationary pressure can be prevented only if the vicious circle of profit and income inflation in the case of output and employment growth is broken with the support of a concerted action, and the tax-wage-price spiral prevented due to the sustainability of public finances. These are necessary prerequisites for the economic agents (the commercial banks, investors, wealth-owners and consumers) to form systematic anticipations beyond the Phillips curve arithmetics. Hence, economic policy can be best portrayed as ‘coarse tuning’ in the sense of creating a favourable ‘macroeconomic constellation’ rather than ‘fine tuning’ economic outcomes in order to reach certain predetermined policy goals.

This is neither the place to unfold the game-theoretic background and requirements of a coordinated policy strategy nor to describe the exact contributions of the single actors involved (see Heise 2002) but rather the moment to summarise the findings: monetary policy cannot be used in a hydraulic way for ‘fine tuning’ demand management as in most textbook versions of Keynesian policy proposals. Its mechanics are asymmetric and particularly blurred in an expansionary direction. Therefore, to put all the weight of stabilisation policy on the shoulders of the central bank would clearly overstretch its potentials and underestimate its difficult strategic position in a policy game.

However, that does not necessarily mean a nihilistic approach to policy control in general and monetary policy control in particular (see e.g. Fitzgibbons 2000: 103ff.), but rather the confession of limited interventionist capabilities and the need for institutions that reduce the

²³ When it comes to policy proposals, most Post Keynesian economists become quite traditional Keynesians or, at least, their demand-management proposals are difficult to distinguish from those of orthodox Keynesians, see e.g. Arestis/Sawyer 1998, Epstein 1994/95; Epstein/Gintis 1995, Davidson 1991. This, of course, does not apply to those Post Keynesians in the tradition of George Shackle.

²⁴ And, of course, the Post Keynesian paradigm, which allows for long term interdependencies between monetary, fiscal and income policies, is best suited for inquiring into these interactions.

level of uncertainty about future policy stances and, therefore, macroeconomic outcomes important for the decisions of microeconomic units. And, of course, central banks may even refuse to utilise the small room for manoeuvre they actually have if they are uncertain about their signalling capacity and credibility in a non-cooperative environment. In that case, the central bank can at least be blamed for inflicting higher costs for providing price-stability than are necessary (see e.g. Bibow 2001).

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