

## Balance mechanics and business cycles

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*(First and very preliminary version.  
Comments are very welcome)*

### *Abstract*

The concept of balance mechanics – developed by the German economist WOLFGANG STÜTZEL – is important for understanding important logical relations within an economy. Furthermore, balance mechanics can also be used as a framework to compare – seemingly – quite different models of business cycles.

STÜTZEL has sketched some thoughts about how to develop a theory of business cycles: He developed four “model cases” of business cycles: (I) a process of mutually self-financing (investment) expenditures; (II) an application of the (naïve) quantity theory; (III) the importance of surpluses and deficits for entrepreneurial profits and business cycles; (IV) the importance of liquidity changes for business cycles – an interest-sensitive economy.

This paper works out STÜTZEL’s rather rudimentary considerations more systematically and shows how the theories of the business cycle STÜTZEL had in mind are related to theories discussed today. It is shown that modern business cycle theories are examples of only two of his model cases – (II) and (IV). But the financial crisis has shown that it is necessary also to have in mind models belonging to (III). Therefore STÜTZEL’s system points to a blind spot in macroeconomic models used before the crisis.

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## 1. Introduction

Balance mechanics as such is concerned mainly with purely logical relationships that are valid regardless of any state of the economy or regardless which behavioural assumptions are taken when developing an economic model. This concept which was developed by the German economist WOLFGANG STÜTZEL (STÜTZEL 1978, 1979) can be mainly used to clear up fallacies of composition or as a consistency check for existing economic models. Nevertheless balance mechanics can also be used as a framework to compare – seemingly – quite different models of business cycles.

STÜTZEL was convinced that many controversies in economics resulted from the fact that the participants of these controversies did not make clear to themselves the purely logical relations described by balance mechanics. Therefore he hoped that a clearing-up of these relations would, on the one hand, exonerate the discussion from pseudo problems so that seemingly different theories reappear as quite similar if the logical relations are marked out clearly (STÜTZEL 1979, p. 81). That can be demonstrated, e.g., when looking at different theories concerning the reasons for interest. STÜTZEL (1979, p. 331 ff.) showed that by looking at historical theories of interest they can nearly all be reduced to quite simple (and nearly trivial) statements.<sup>1</sup>

On the other hand, working out more clearly the relationships emphasized by balance mechanics can make it much easier to compare models whose content is indeed different. Looking at the issues concerning balance mechanics can facilitate the comparison and can avoid the common traps one can fall in when comparing models: by criticizing different assumptions or by emphasizing certain methodological principles one often ends at talking about seemingly different – and incomparable – paradigms that are considered as mutually incompatible and also as superior to each other, depending on the respective points of view. But looking at the – often not explicitly made – assumptions concerning the relations of balance mechanics criticizing as well as comparing models can be much more fruitful.

Additionally, focusing on the balance mechanics makes clear from the outset that the institutions of a monetary economy are taken seriously. Therefore it is one instrument of connecting the real and the monetary aspects of an economic problem – which is not done in every model of the business cycle. That is by no means indispensable for every model but it will be doubtful whether a model that makes dubious or simply fallacious assumptions concerning balance mechanics can be helpful when asking for the reasons and inner workings of business cycles.

All in all, the paper wants, on the one hand, to remind of a largely forgotten way of systematic thought about business cycles but also hand out an invitation to start communication (again) between so-called orthodox and heterodox approaches towards business cycles as both can be integrated into the system proposed by STÜTZEL.

The paper will proceed as follows: in section 2, some principles of balance mechanics that are important or the problem at hand will be introduced. Section 3 explains the theory of business cycles as it is sketched by STÜTZEL in his work and the four “model cases” of business cycles

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<sup>1</sup> That applies to the reasons for the *existence* of interest in general, not necessarily to the determination of the *level* of interest. SCHMIDT (2016) has reconstructed STÜTZEL's arguments and shown that he is indeed right.

he explains. Section 4 shows how modern developments in business cycles can be compared using the system outlined in section 3. It will also show that most “mainstream” models before the financial crisis left out considerations relating to one of the “model cases” that became important for the explanation of the financial crisis. Section 5 draws some conclusions.

## 2. Balance mechanics<sup>2</sup>

Balance mechanics is mainly concerned with accounting relations and the (logical) relations between groups in the aggregate economy. The explanation of the concept in this section will be brief, as this was done already in several other papers (SCHMIDT 2011, 2012, 2017; LINDNER 2012, 2015). The following points focus on relations concerning net financial assets and means of payment as these are central to STÜTZEL’s systematic of business cycles.

An economic unit’s net financial assets are the difference between financial claims on other economic units and financial liabilities. Financial claims on other economic units can be: open bills resulting from sales of goods, bonds entitling the owner to interest payments, creditors’ claims on their debtors due to loans handed out etc. As money also constitutes a financial claim (against the central bank in the case of currency and against a commercial bank in the case of checkable deposits, i.e., the promise of a bank to deliver cash) each means of payment is a financial asset but not the other way round. Liabilities, on the other hand, encompass all kinds of obligations to pay: liabilities due to the purchase of goods, to loans taken out, to bonds issued, etc.

As each financial claim of one unit is a liability of equal size for another unit the amount of net financial assets in the aggregate is equal to zero. For the same reason, if one unit has an expenditure, another unit necessarily has a revenue of equal size. Therefore, on an aggregate level revenues and expenditures must be necessarily equal. Financial assets can be shifted around in the economy but remain necessarily zero.

Formulated more precisely: As the revenues of one unit are the expenditures of another unit, a single unit or a group can only then succeed in achieving a *surplus* (a positive difference between revenues and expenditures) if the complementary group<sup>3</sup> is willing to accept (or is trying to achieve) a commensurate *deficit* (a negative difference between revenues and expenditures). For the aggregate economy revenues and expenditures are necessarily identical. For every economic unit (that is: for every single economic unit) revenues and expenditures can differ; for all economic units (that is: for all economic units together or for the aggregate economy as a whole) revenues and expenditures are necessarily the same. The statement which is valid only for a single economic unit or a group is called *partial statement*; the statement which is valid only for the aggregate economy is called *global statement*; and the *relational statement* makes clear how the apparently paradoxical relation between the other two statements can be resolved. Concerning the relation between revenues and expenditure one can formulate the following:

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<sup>2</sup> The content of this section is mainly taken from SCHMIDT (2017), pp. 44-49.

<sup>3</sup> „Group“ and „complementary group“ together make up the aggregate economy.

- *Partial statement:* for each economic unit and each group of economic units an increase in expenditures means a decrease of net financial assets, an increase in revenues means an increase of net financial assets (STÜTZEL 1978, p. 72).

For a (group of) single economic unit(s) it is perfectly possible to decrease its net financial assets, be it by increasing its expenditures with unchanged revenues or by decreasing its revenues with unchanged expenditures. But then one can formulate the following:

- *Relational statement:* an economic unit or a group of economic units can achieve a decrease of its net financial assets by increasing its expenditures only if the complementary group achieves (or accepts) an increase of its net financial assets (STÜTZEL 1978, p. 73).

One has to take into account that one unit's expenditures are necessarily another unit's revenues; analogously, the one unit's deficit is another person's (or several other units') surplus. The increase of one person's net financial assets is therefore necessarily the decrease of another person's net financial assets. Therefore we have the following:

- *Global statement:* the aggregate economy (the collectivity of all economic units) can never change its net financial assets by an increase or decrease of revenues or expenditures (STÜTZEL 1978, p. 73).

One important qualification is the idea of 'behaviour in lockstep' (STÜTZEL 1978, pp.29, 50) that leads to the peculiar result that the global statement applies also to each single economic unit. Referring to revenues and expenditures, that means that every economic unit has exactly the same amount of revenues as expenditures, so that there are no balances (or existing balances stay the same). If all economic units increase their expenditures in lockstep the initial amount of each person's net financial assets is no brake for increasing expenditures as it does not change. If, for example, a unit possesses net financial assets of \$1,000 at a certain point in time, that does not hinder it from making expenditures of \$100,000 – as long as it simultaneously receives revenues of \$100,000. As long as expenditures and revenues move in perfect lockstep there is no limit to expenditures. Therefore the stock of net financial assets at a certain point in time does not limit expenditures as such, but only the possibility of deviating from lockstep behaviour. The importance of this consideration will become evident when discussing STÜTZEL's business cycle theories.

Apart from net financial assets the possibility of lockstep behaviour also applies to the means of payment. Means of payment are banknotes and checkable accounts. In each period receipts and payments of an individual can differ<sup>4</sup>, so that within a period the stock of means of payment a unit possesses can change.<sup>5</sup> But one can also have lockstep behaviour concerning means of payment. That will mean that each receipt a person receives leads to a (nearly) instantaneous payment of the same size. In that case the stock of means of payment a person possesses is not a factor limiting the expenditures of that unit. Quite the contrary: the person can process a large amount of payments with a minimum stock of means of payment. This is of great relevance in

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<sup>4</sup> For a more detailed differentiation between expenditures/revenues and payments/receipts see the appendix of this paper.

<sup>5</sup> Note that the stock of means of payment is not zero in the aggregate and that it can indeed also change in the aggregate: if a bank grants a loan to a customer, the customer's account is simply credited with the amount of the loan; therefore, his/her stock of money (means of payment) increases, that is, he/she gets a receipt. But when crediting the customer's account the bank newly creates these means of payment so that there is no decrease of money on the bank's side.

all business cycle theories that use quantity theoretic arguments – and also, as the other side of the coin, in business cycle theories that disregard the amount of means of payment altogether.

### 3. The system of business cycle theories according to STÜTZEL

STÜTZEL views the problem of business cycles as one of the degree of utilisation of the productive potential of an economy due to an increase or decrease of aggregate demand (for goods and services) or, to use his terminology, changes in total expenditures<sup>6</sup>. STÜTZEL assumes buyers' markets to be the normal condition in modern economies, so that indeed decisions concerning expenditures are the determining factor (instead of decisions on revenues or sales, as would be the case in sellers' markets). These changes in total expenditures very often have causes exogenous to the economic process, e.g. wars or political events.

In this respect, STÜTZEL was a true pupil of one of his academic teachers, WALTER EUCKEN, who said (EUCKEN 1959, pp. 181 ff.) that there is no such thing as *the* business cycle theory as each economic cycle has its own characteristics that do not fit in just one of the many business cycle theories. EUCKEN distinguished between the truth (“Wahrheit”) and the topicality (“Aktualität”) of a theory. According to him, each correctly deduced theoretical system is always true (which could only mean: correct in a logical sense) but it might not be topical as the empirical counterparts of the theoretical concepts analysed in the theory may not exist or not be relevant (EUCKEN 1959, p. 173).

STÜTZEL's aim, therefore, is not to settle definitely when and why changes in aggregate demand come about but to emphasise the relevant parameters of the business cycles and their inner connections. His four “model cases” leave room for different business cycle theories that can be more easily compared with one another if one structures them according to STÜTZEL's systematic.

STÜTZEL sketches four model cases of business cycles, depending whether they are characterized by a lockstep behaviour of revenues and expenditures and/or a lockstep behaviour of payments and receipts. According to this, the following table can be drawn.

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<sup>6</sup> „Veränderungen der Gesamtausgaben“ (STÜTZEL 1968, p. 1007).

<b>Stützel's systematic of business cycles</b>			
		<b>Simultaneous change of revenues and expenditures</b>	
		<b>Yes</b>	<b>No</b>
<b>Simultaneous change of receipts and payments</b>	<b>Yes</b>	<b>Model case I: Process of mutually self-financing (investment) expenditures</b>	<b>Model case III: Importance of surpluses and deficits for entrepreneurial profits and business cycles</b>
	<b>No</b>	<b>Model case II: Application of the („naive“) quantity theory</b>	<b>Model case IV: Importance of liquidity changes for business cycles; interest-sensitive economy</b>

*Figure 1: Stützel's systematic of business cycles  
Source: in dependence on STÜTZEL (1968), p. 1007*

### 3.1 Model case I

This process is characterised by the fact that nearly every economic unit is trying to decrease its net financial wealth by increasing its expenditures. That might be due to a fear of inflation in the mind of economic units so that they try to avoid the loss from it by decreasing financial wealth and increasing its non-financial wealth, that is his/her stock of tangible assets; another explanation might be an increase in optimism that leads to increases in expenditures. If that is done by (nearly) every economic unit so that one unit's expenditures are more or less equal to its revenues, the whole process can take place without significant balances of revenues and expenditures that is surpluses or deficits. There is therefore no significant necessity of loans/credit. Even if each entrepreneur assumes that he/she has to take out a loan to finance his/her investment, by increasing his/her expenditures he/she increases the revenues – and therefore the possibilities for self-financing – of another entrepreneur; if this entrepreneur uses these revenues for additional investment he/she increases the revenues of a third one that can again be used for investment. If additional wages are paid and if these wages are used by the households for increasing their consumption expenditures the firms' expenditures will almost immediately return to them and so on – in the end, also the first entrepreneur who started the process might also receive additional revenues so that his demand for loans is much lower than expected. (STÜTZEL 1968, p. 1008)

If, furthermore, there are no (significant) deviations between the dates of payments and the dates of receipts then there is no need for large or even increasing stocks of means of payment. The need for a large stock of means of payment only arises if the date of receipts deviates from the date of payments. In case of synchronous or lockstep increases of payments and receipts it is difficult to stop or influence this process by monetary policy – be it by changing interest rates or the stock of means of payment, that is the money supply.

The whole process can take place not only in an upward direction but also in a downward one. So a general decrease of expenditures – in order to increase one’s own net financial wealth – leads to a general downturn as trying to improve one’s own situation worsens the situation of someone else. Again, it might be extremely difficult to better this situation by purely monetary means as they do not play much of a role; psychological factors or technological developments might be much more important.

### 3.2 Model case II

The second model case is an application of the quantity theory – or, rather, the “naïve” quantity theory, as STÜTZEL called it (GRASS/STÜTZEL 1988, p. 332 f.). It is the case that, on the one hand, there might be a more or less synchronous development of revenues and expenditures, but that there is a discrepancy between payments and receipts on the level of the economic unit. A quantity-theoretic business cycle theory, according to STÜTZEL, assumes that the amount of expenditures can be determined by the amount of means of payment in use in the economy. STÜTZEL thinks that this is valid only in an economy which is characterised by a high share of institutionally fixed payment dates: for example periodically fixed payments of wages or rents. On the other hand, transactions between firms due to the sale and purchase of intermediate inputs that can spread arbitrarily over the period should not play much of a role.

In this case when the dates of the real transactions are clear and when there are certain institutional regularities concerning payments the quantity of money (however defined) can have a determining influence on the level of expenditures. Here, then, monetary factors become important when explaining the ups and downs of the economic process. But STÜTZEL did not think about this model case to be of much relevance. The reason for that was, in his opinion, the following: the aggregate wage sum depends on the whole economic situation, and this in turn mainly on the amount of transactions between firms, where the quantity of money is practically insignificant. And as long as firms can rely on checkable accounts and/or credit lines there is no possibility to deny them the amount of money necessary for carrying out transactions. Furthermore, a decrease of the quantity of money might simply lead either to intensification of lockstep behaviour so that each unit economises on its use of cash in order to carry out the transactions with lower stocks of money or firms will – like the merchants of earlier times – develop other forms of means of payment, e.g. modern forms of earlier bills of exchange that were no general means of payment but were used as such for transactions between merchants.

### 3.3 Model case III

The third model emphasises the importance of profits for investment decisions and therefore starts with the Kaleckian equation for profits (KALECKI 2003). In the aggregate, entrepreneurial profits are determined by entrepreneurial expenditures for consumption ( $C_Q$ ) and investment ( $I_n$ ) and by the change in net financial assets of firms ( $\Delta nfa_F$ ).

$$Q_F = I^n + C_Q + \Delta nfa_F$$

One arrives at this conclusion when one takes into account that the increase of the net worth of a firm ( $\Delta nw_F$ ) is, on the one hand, the sum of the increase of net financial assets and of tangible assets (that is: net investment).

$$\Delta nw_F = I^n + \Delta nfa_F$$

On the other hand, the increase in a firm's net worth is equal to the profits not distributed to the firm's owners (as dividends etc.) but retained in the firm (in accounting also known as retained earnings) that is the difference between the profits of a firm and the part of these profits distributed to the households ( $Q_H$ ).

$$\Delta nw_F = Q_F - Q_H$$

Setting equal these terms and solving for corporate profit one arrives at the following equation:

$$Q_F = I^n + Q_H + \Delta nfa_F$$

The increase of net financial assets of the corporate sector is equal to the decrease of the net financial assets of all the other sectors taken together – of households ( $\Delta nfa_H$ ), of the government ( $\Delta nfa_G$ ), and of the foreign sector ( $\Delta nfa_{for}$ )

$$Q_F = I^n + Q_H - \Delta nfa_H - \Delta nfa_G - \Delta nfa_{for}$$

Distributed profits can be used either for consumption or for the increase of net financial assets. As households receiving profit income are part of the household sector the increase of net financial assets in households receiving profit income cancels out and we are left with the increase of net financial assets of households receiving wage income ( $\Delta nfa_w$ ). So the equation is now:

$$Q_F = I^n + C_Q - \Delta nfa_w - \Delta nfa_G - \Delta nfa_{for}$$

That the right-hand side is the macroeconomic determinant of profits can be also seen this way: Investment (an increase in tangible assets in the corporate sector) is a yield for the firm selling the investment good, but *not* a cost for the firm purchasing the investment good. Furthermore, the consumption expenditures of persons financed out of distributed profits are yields for the firms whereas distribution of profit is not a cost, therefore this consumption expenditure is a profit for the corporate sector. Finally, the increase of net financial assets of the corporate sector are the higher,

- the lower is the increase of net financial assets of households receiving wage income (that is due to the fact that each wage payment is a cost for the corporate sector; if wage earners spent all their wage income on consumption goods the resulting yields would just equalize the cost. Therefore each Euro used for an increase of net financial assets decrease corporate profits)
- the lower is the increase of net financial assets of the state, that is the higher is the government deficit – the difference between government expenditures for goods and services ( $G$ ) and net tax revenue ( $T$ );
- the lower is the increase of net financial assets of the foreign sector, that is the higher is the domestic current account surplus ( $X - M$ ).

$$Q_F = I^n + C_Q - \Delta nfa_w + (G - T) + (X - M)$$

Now the idea here is that the investment decision of companies might be influenced by their profit. From the perspective of balance mechanics it is clear that the equation has to be read



from right to left, that is profit is determined by the factors listed on the right-hand side of the equation: firms can decide to spend more for investment or households can decide to change their stock of net financial assets but a company cannot decide to increase its profits.

But from the perspective of behavioural relationships an increase of profits in this period can lead to an increase of investment in the next period. That might work like this: If, for example, households decide to decrease their formation of net financial assets (by increasing their consumption) that leads to an increase of corporate profits; that might lead to increased investment and therefore to a general upswing in the business cycle. On the other hand, an increase in the formation of net financial assets of households – that is not compensated by a higher government deficit or a higher current account surplus – decreases corporate profits and might lead to a downswing. This model can explain the development of the business cycle when changes in the investment decision of firms, changes of net financial assets, and therefore changes in corporate profits are large enough to determine the entrepreneurs' actions whereas the interest rate for taking out loans is only of secondary importance at best. This may be the case in situations where the entrepreneurs' chances of profits are so high that increases of the interest rate are not sufficient to effectively brake investment expenditures; only a large increase in non-corporate net financial assets could cause that. On the other hand, it might be the case that the chances of profit are so low – due to low investment expenditures and high net financial savings of the non-corporate sectors – that even very low interest rates cannot positively influence investment expenditures (GRASS/STÜTZEL 1988, p. 335).

### 3.4 Model case IV

The fourth model lies between the extreme cases of lockstep increases or decreases of expenditures where only institutional and psychological factors – and, as we will see, also technological factors – play a role in determining the results of the economic process (model case I) and the other extreme case where only the changes in corporate profits due to increased investment and decreased net financial assets of the non-corporate sector need to be taken into consideration (model case III). In that intermediate model case IV considerations of liquidity play a role and the changes of interest rates can have an important influence on the entrepreneurial actions.

STÜTZEL himself describes it in terms of the relation between the natural interest – for him, that is the monetary yield one gets by additional investment – and the money interest rate – that is the interest to be paid for loans. If the so-defined natural rate lies above the monetary rate (and if the potential loan-takers are in possession of sufficient collateral), investment expenditures will rise and an upswing will take place. This process might turn into a lockstep increase of expenditures that become and is difficult to dampen by monetary measures but in case of large deficits – that is, high indebtedness – a sudden increase of interest might lead to problems for some firms getting enough liquidity and it might become difficult for the firms to consolidate their debt, that is to substitute short-term bank loans for long-term finance by securities due to higher long-term rates. This might lead to a decrease of investment of certain firms or even interest-sensitive sectors which might cause further decreases of other investment expenditures and therefore to a decrease of aggregate expenditures in general. This general decrease of expenditures might also lead to a process of lockstep decreases that might become difficult to change by monetary means alone.

## 4. Applications of Stützel's system – new perspectives on old problems

In the description of this system of business cycles STÜTZEL refers to some examples of business cycle theories that were central at the time of his writing: the Keynesian multiplier (I), the quantity theory (II) or the difference between the natural interest and the money interest (IV). But is looking at business cycle theories under this perspective still useful today?

The answer given in this paper is yes: looking at different business cycle theories by using STÜTZEL's systematic one can quite easily see the blind spot of models used before the financial crisis and why certain problems did not come into the focus.

My thesis is: the large majority of business cycle models developed and used before the financial crisis fall largely in the categories I and IV. But to recognize problems that led to the financial crisis it is also helpful to think of situations and processes that fall largely in the category III.

Concerning modern approaches concerning business cycles, the following table shows their place in Stützel's systematic and will be explained in the next sections.

<b>Modern macroeconomics within Stützel's system</b>			
		<b>Simultaneous change of revenues and expenditures</b>	
		<b>Yes</b>	<b>No</b>
<b>Simultaneous change of receipts and payments</b>	<b>Yes</b>	<b>Model case I: New Classical Macroeconomics, Real Business Cycles</b>	<b>Model case III: Post Keynesian models (e.g. Minsky); Balance-sheet recession</b>
	<b>No</b>	<b>Model case II: „Full money“ proposals</b>	<b>Model case IV: New Keynesian Macroeconomics</b>

*Figure 2: Modern business cycle theories in STÜTZEL's systematic  
Source: author's presentation*

### 4.1 Real Business Cycles and its variants as realizations of model case I

The theory of real business cycles, developed in the 1980s and part and parcel of the macroeconomic theory since then – also as a building block of the New Keynesian macroeconomic models – can be seen as an example of a business cycle theory of the model case I.

The basic idea of RBC (e.g. PLOSSER 1989) was to model business cycles as rational responses of utility-maximising individuals to technological shocks, be they positive or negative. The

optimising representative individual reacts to changes in technology and productivity by changing his/her consumption and labour supply decisions. A positive technological shock leads to an increase in the real wage and makes it profitable to increase labour supply, so that production increases; the reverse holds true for a negative technological shock.

The central hypothesis is that employment is determined by the supply-side following the maximisation of expected utility resulting from consumption of goods and enjoyment of leisure time. As other behavioural assumptions than maximising utility are not considered, it is not possible to derive changes in the total expenditure by, e.g. waves of optimism or pessimism but one has to rely on technological shocks. But what is important in the present discussion is the following: these models are essentially non-monetary, but they can be reconstructed as models with revenues/expenditures and receipts/payments that move in lockstep. Therefore you have upswings and downswings – induced by technological shocks – that are characterized by no (significant) change in net financial assets or means of payment.

With the implicit or explicit assumption of lockstep behaviour concerning expenditures/revenues and receipts/payments, the models fall into the class I and many results that are characteristic for RBC models can simply be traced back to these assumptions. One example is the textbook model by ROBERT BARRO (2008, pp. 122-168): in his basic macroeconomic model he explicitly assumes that in each period the stock of means of payment in the hands of an individual does not change. This leads to the result that liquidity considerations play absolutely no role in determining the rate of interest (which also leads to the unimportance of monetary policy); on the contrary, interest is only influenced by changes in the demand for tangible assets (real capital). If the stock of tangible assets increases, the marginal product of capital decreases and therefore also the rate of interest. The capital market is modelled as perfect in the sense that each surplus and each deficit leads at once to a purchase or emission of bonds to keep the stock of means of payment constant. Furthermore, surpluses and deficits are principally allowed but they do not play much of a role. BARRO and also other proponents of the RBC approach seem to assume that balances and therefore changes in net financial wealth either do not influence the decisions of economic units or that the bonds traded are not bonds in the traditional sense (giving a claim on a certain nominal payment) but are rather promises of future deliveries of goods so that changes in assets are always changes in tangible assets: If people want to increase their stock of assets they choose tangible assets in the first place so that differences between revenues and expenditures in the traditional sense of the term cannot occur.<sup>7</sup> So it is justified to subsume this class of models into Stützel's model case I.

These models leave practically no room for stabilising macroeconomic policy because it is simply not necessary: all decisions are carried out by optimising agents that always move on their intended demand and supply curves and change these decisions due to technological shocks. Macroeconomic policy cannot improve the results.

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<sup>7</sup> For a more detailed critique of BARRO's model using the tools of balance mechanics, see SCHMIDT (2017), pp. 58-64.

## 4.2 New Keynesian macroeconomics and its variants as realizations of model case IV

The New Keynesian Macroeconomics started with the perspective chosen by the RBC approach, that is it accepted the idea of an optimising/maximising individual that strived for the intertemporal optimum of consumption and leisure. But it tried to make good the problem that monetary policy did not have an active role in the economic process – what is necessarily the case if one assumes lockstep behaviour in expenditures and payments. Therefore the New Keynesian macroeconomics tried to integrate certain rigidities concerning price and/or wage formation. Instead of perfect competition the models usually assume monopolistic competition so that the firms have a certain scope for determining prices above marginal costs. But this price-setting process does not work perfectly due to certain rigidities. The reason for these rigidities are not important – they may be due to menu costs (AKERLOF/YELLEN 1985) or one assumes that due to some exogenous reasons only a part of the entrepreneurs can change their prices (CALVO 1983).

The most important thing is that these changes lead to a role for stabilising policy of the central bank. The rigidities in the price-setting process lead at least temporarily to balances between revenues and expenditures (and also between receipts and payments). Furthermore, aggregate demand is influenced by the real interest rate. In case of a demand shock that in turn also influences the inflation rate the central bank carries out a stabilizing interest rate policy. In the simplest New Keynesian model there exists no investment, so monetary policy has to make sure that the income equals consumption so that saving equals zero. Here the interest rate policy has to make sure that no permanent differences between income and expenditures come into effect. On the other hand, the central bank has to defend an inflation target by increasing the real interest rate above the level that would lead to a full-employment market-clearing of the goods market in order to reduce the inflation rate (and the other way round if the actual inflation rate undershoots the inflation target).

As this approach emphasizes again the difference between the real interest rate that clears the goods market and the interest rate set by the central bank, the Wicksellian distinction between the natural rate and the money rate of interest comes to mind; the proponents of this approach call therefore call it a Neo-Wicksellian theory (WOODFORD 2003, p. 49).

In the years before the financial crisis this class of models was the dominating one when discussing business cycles and the possible actions of stabilization policy. Monetary policy – in terms of interest rate policy – became the main stabilization tool whereas fiscal policy was placed in the background. And the years before the financial crisis, called the “great moderation”, seemed to confirm this point of view.

## 4.3 “Full money” proposals as applications of model case II

Most modern business cycle theories do not rely on simple quantity theoretic arguments, so that Stützel’s model case II seems more or less empty today. WOODFORD, the most important proponent of the New Keynesian macroeconomics says that NKM is compatible with the quantity theory. That is due to the fact that he uses a (traditional) money demand function where the real money demand is positively influenced by real income and negatively by the interest rate. If

this money demand function is stable, then growth of the money stock and inflation will develop in parallel – provided that the money supply adapts elastically to the money demand (WOODFORD 2008). This consideration results from the endogeneity of modern money due to the money-creating abilities of the banking sector. But the traditional quantity theory has argued just the other way round: it is the exogeneity of the money supply or its independence from money demand, respectively, that leads to the importance of the monetary system for economic dynamics (SPAHN 2016, p. 172).

Nevertheless, in the wake of the financial crisis arguments resembling the traditional quantity theory came up again, but not so much on a theoretical level but in the form of policy proposals for a so-called 100%-money in the tradition of Irving Fisher or “full money”. The idea behind these proposals (e.g. DYSON/HODGSON/JACKSON 2014, HUBER 2013) is to limit or even abolish the money-creating capacity of the banking system as this capacity is seen – due to excessive credit creation – as one of the causes of the financial crisis. Only so-called “full money” created by the central bank is to be regarded as means of payment. The banks would be reduced to mere intermediaries: they can lend only these means of payment that have given to them for this purpose by households transferring them to some kind of saving account; full money deposited in a checkable account must not be used for that. The proponents of this view hope to preclude bank runs as households do no longer have to be worried whether a crisis will wipe out their checkable accounts (saving accounts can still be hit in a crisis). Furthermore, by steering the amount of money brought into circulation by the central bank or the state, the proponents want to dampen business cycles.

But one can argue (e.g. FONTANA/SAWYER 2016) that it is highly doubtful whether the amount of expenditures can really be controlled by controlling the money supply. Limiting the amount of money in circulation might simply lead to a more intense economising on cash and an increase in “lockstep behaviour”; maybe it would also lead to the invention of other means of payment that are valid (and trusted) within a certain sub-sector of the economy. But nevertheless, these proposals are heavily discussed, at least in Germany, and in Switzerland there will be a referendum on the introduction of such a system.

#### **4.4 STÜTZEL’S model case III as blind spot of many macroeconomic models**

If one looks at the financial crisis and the underlying forces leading to it one cannot deny the fact that the large disruption came from large and unsustainable balances of certain sectors – especially the household sector. But balances between revenues and expenditures as important factors determining or influencing business cycles did not play much of a role in mainstream macroeconomic models before the crisis.

But the crisis has indeed shown that large balances of certain sectors can lead to unsustainable developments that can change the direction of the economic process and also lead to a financial crisis. Before the crisis, only the deficits of the government sector have been regarded as a problem by most economists. Only some – mainly (Post-)Keynesian – economists regarded high levels of indebtedness, that is: large balances of the private sector as a problem. The most prominent example was HYMAN MINSKY with his so-called financial instability hypothesis (MINSKY 1986). MINSKY’S starting point is that normally investment is financed by a mixture

of loans and equity. On a macroeconomic level, he argues that a rise in investment expenditures leads to an increase in profits which might be due to optimistic expectations feeding into further investment expenditures. Furthermore, he assumes that the increase in investment finance is connected with higher debt ratios – whereby it is not exactly clear whether Minsky did not confuse a partial with a global statement. But nevertheless, this led to his financial instability hypothesis:

“This hypothesis explains how financial fragility emerges endogenously over the business cycle. As an expansion proceeds, rising asset prices and strong investment returns buttress optimistic expectations. Competing to develop capital assets and serve growing markets, firms take on more debt. So debt obligations rise, absolutely and relative to income levels. This expansion of liabilities permits asset prices to continue rising, but at some point the weight of debt obligations overwhelms the prospect of further gains, and asset prices are exposed as unsustainable. This undermines confidence, leads to a collapse in investment and asset prices, and causes a possibly precipitous downturn in overall economic activity.” (DYMSKI 2011, p. 333).

It is interesting that STÜTZEL himself already had an idea about financial stability when explaining his model case III:

“This case shows that ‘financial stability’ of the whole economy and ‘financial stability’ of the single corporation do not need to go hand in hand, as it is often described. For one can see: a very favourite climate on the capital market insofar as it facilitates the consolidation<sup>8</sup> of their debt, that is improve the *financial stability of the individual corporation*, can just contribute to an excessive increase of total expenditures and to an endangerment of the value of money so that the *financial stability of the aggregate economy* is worsened. On the other hand, it can be the case that the central bank has to worsen consciously the possibilities of consolidating debt, that is to impair the financial stability of individual corporations to maintain the stability of the value of money and to avoid an overheating of the business cycle.” (STÜTZEL 1968, p. 1011, italics in the original, own translation<sup>9</sup>)

Of course, STÜTZEL just thinks about inflation and an overheated economy, but it seems to be straightforward to extend these considerations to include also the possibility of a financial crisis. Without going into the details of recent considerations and models developed in the wake of the financial crisis one can safely say that they pay much more attention to the build-up of – in the end – unsustainable balances, especially if you look at households. Here, STÜTZEL’s considerations that a sudden increase of households’ net financial assets – due to a decrease of consumption expenditures – could lead to profit decreases and therefore also decreases of firms’ expenditures here worked in both directions: in the period before the financial crisis many households increased their indebtedness so that in the aggregate households became a deficit sector in some countries; in the Eurozone, the most telling example is Spain (see figure 3).

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<sup>8</sup> By consolidation, STÜTZEL means: converting short-term debt, mainly bank loans, into long-term debt, mainly long-term securities.

<sup>9</sup> In the original: „Dieser Fall zeigt, daß die ‚finanzielle Stabilität‘ der Gesamtwirtschaft und die ‚finanzielle Stabilität‘ der einzelnen Unternehmungen durchaus nicht immer so Hand in Hand zu gehen brauchen, wie es häufig dargestellt wird. Man sieht nämlich: Ein sehr günstiges Kapitalmarktklima kann gerade in dem Maße, in dem es den Unternehmungen die Konsolidierung ihrer Verschuldung erleichtert, also die *finanzielle Stabilität der einzelnen Unternehmungen* verbessert, dazu beitragen, daß die Gesamtausgaben übermäßig anwachsen, der Geldwert gefährdet, also die *finanzielle Stabilität der Gesamtwirtschaft* verschlechtert wird. Umgekehrt kann es sehr wohl sein, daß die Zentralbank die Konsolidierungsmöglichkeiten bewußt verschlechtern, also die finanzielle Stabilität der einzelnen Unternehmungen beeinträchtigen muß, um die Stabilität des Geldwerts zu erhalten und eine Übersteigerung der Konjunktur zu vermeiden.“

## Financial balances in Spain (% of GDP)

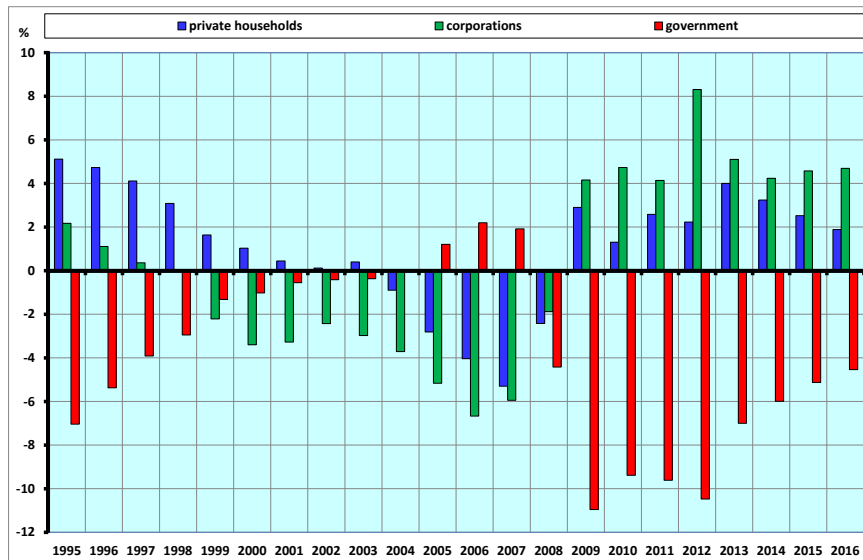


Figure 3: Sectoral financial balances in Spain  
Source: AMECO database, own calculations

The effect on profits was sometimes (partially) compensated by large current account deficits, but when the resulting bubble burst, all indebted private units tried to decrease their liabilities and therefore decreased their expenditures to repair their balance sheets – which is why Richard Koo coined the term balance-sheet recession (Koo 2014).

The question is which role the central banks played in the build-up period of the crisis: Sometimes it is argued that they should have increased interest rates much earlier to prevent the build-up of the bubble, but I think a good case can be made that the increases in asset prices were that large that it might have been difficult to prevent it by interest rate increases alone and that a hawkish monetary policy might have contributed to negative effects in other sectors of the economy that are more interest-sensitive. This is why such crises also make the case for stringent financial regulation beyond mere interest rate policy – and why these models belong to STÜTZEL’s model case III.

## 5. Conclusion

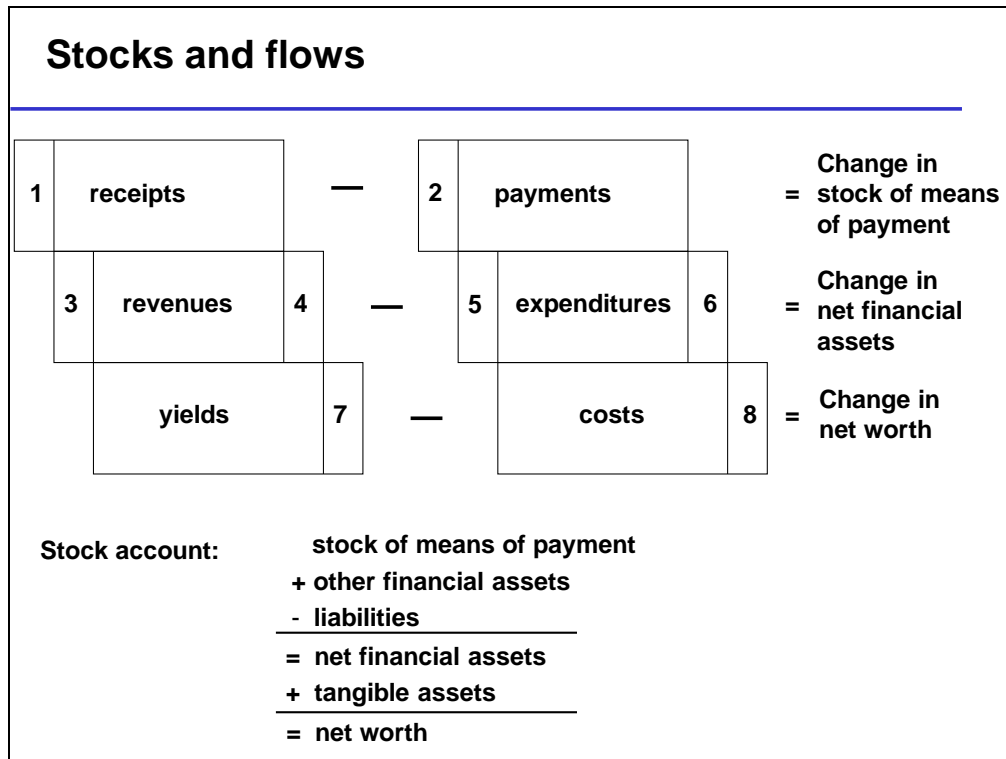
This paper has tried to show that it might be fruitful to use Stützel’s systematic with which he described the different approaches to business cycles. With this systematic it might have come to mind in the years before the financial crisis that there is a blind spot in most mainstream macroeconomic models: that large balances and especially large deficits of the private and, first of all, the household sector might pose a problem when the prices of the assets financed by this indebtedness go down or even collapse. So STÜTZEL’s approach gives a framework that can be fruitfully used to categorise different approaches to business cycles. And if one keeps in mind that all four model cases might have their merit and that all four possibilities for upswings and

downswings should be considered it might help to develop a richer set of models and also of policy proposals to be better prepared for future developments or crises.



## Appendix

The following examples – taken slightly adapted from GRASS/STÜTZEL 1988, p. 59 ff. – show the differences between payments, expenditure and cost and between receipts, revenue and yield (seen always from the perspective of a firm; the numbers refer to the numbers in figure 4).



*Figure 4: Stocks and flows*

*Source: in dependence on BOFINGER (2015), p. 288*

- (1) *Receipt, but no revenue:* This transaction increases the stock of money, but the stock of net financial assets stays the same. Either other financial assets decrease by the same amount as the stock of money increases (asset exchange) or the liabilities increase by the same amount (balance sheet extension). An asset exchange takes place if a firm's customer pays a bill due by bank transfer; this increases the firm's stock of money but the claim against the customer ceases to exist, so net financial assets do not increase. A balance sheet extension takes place if the firm takes out a loan: its stock of money increases as the firm's bank account gets credited with the amount of the loan but at the same time the liabilities of the firm increase by the same amount.
- (2) *Payment, but no expenditure:* This transaction decreases the stock of money, but net financial assets stay the same. That is the opposite of the first transaction: with the decrease of the stock of money other financial assets must increase (asset exchange) or liabilities must decrease by the same amount (balance sheet contraction). An asset exchange takes place if the firm hands out a loan to an employee: the stock of money of the firm decreases

but other financial assets of the firm increase by the same amount (claim against the employee for repayment of the loan); a balance sheet contraction takes place if the firm repays a loan due.

- (3) *Revenue, but no yield*: This transaction increases net financial assets, but net worth stays the same. This is possible only by decreasing tangible assets by the same amount. An example would be the sale of a machine at the price it is assessed in the balance sheet (an asset exchange again).
- (4) *Revenue, but no receipt*: This transaction increases net financial assets, but the stock of money stays the same. The sale of a good on account is the classic example: the claims of the firm against the customer increase, but as he has not paid yet, the stock of money stays the same.
- (5) *Expenditure, but no cost*: Net financial assets decrease, but net worth stays the same. This is only possible if tangible assets increase by the same amount as net financial assets decrease, e. g. by purchasing a machine which shows up in the balance sheet at the purchasing price.
- (6) *Expenditure, but no payment*: Net financial assets decrease but the stock of money stays the same. An example is the purchase of inputs on account: the firm's liabilities increase but as there is no immediate payment, the stock of money stays the same.
- (7) *Yield, but no revenue*: Net financial assets stay the same, but net worth increases. This can take place only by an increase in (the value of) tangible assets. It can be the result of a bequest the firm receives or of an increase in the market value of a tangible asset the firm already possesses, e. g. an increase in the value of property after a change in building laws.
- (8) *Cost, but no expenditure*: This transaction also leaves net financial assets unchanged, but net worth decreases. Therefore, this decrease must result from a decrease of tangible assets. The most important example is depreciation of existing equipment and machinery, which is also called "consumption of fixed capital" in the national accounts.

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