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The arithmetic relations between total expenditure and the resulting current and financial account balances as determinants of the revenue-related need for means of payment in an economy

Wolfgang Stützel

Translated from Stützel (1958 [1978]: 208–219) by Christoph Ellermann, Fabian Lindner, Severin Reissl and Ruben Tarne

Introductory note by the translators: In the following paragraphs, Stützel derives some balance mechanic relationships between revenue and expenditure surpluses, on the one hand, and the volume of credit necessary to finance these, on the other. He then moves on to consider the balance sheet of the banking sector and its relationships with the volume of credit. Insights from both exercises are subsequently used to synthesise the ‘orthodox’ and ‘modern’ theories of credit. The few parts of Stützel (1958 [1978]: 208–219) which were excluded from the translation are the ones in which Stützel directly refers to other parts of the book which are not translated here, as well as some footnotes referring to issues or publications which were topical at the time at which Stützel was writing but which are of very limited interest for our purposes. Furthermore, we omit a short passage in which Stützel briefly introduces the ‘straddle effect’, a concept which is important in his discussion of the quantity theory of money (ibid.: 229–255) but which does not feature any further in the section we are translating. For more on the quantity equation from a balance mechanics perspective, see Tarne (2016). The text below is a direct translation from Stützel without any changes or amendments, including Stützel’s use of emphases and quotation marks.

1 GENERAL BALANCE MECHANICS AND CHANGES IN THE VOLUME OF BANK CREDIT

a) The net value and gross value [...] of shifts of net financial assets

If a previously defined group G_L is running a revenue surplus g and hence its complementary group G_R the corresponding expenditure surplus g , we say that there has been a shift of net financial assets of the magnitude g from G_R toward G_L . Obviously, given empirical conditions, g will only be sufficiently defined once we specify precisely which group subdivision we would like to take as a basis. The same is true when we, calling g ‘financial saving’, measure the financial saving of some group by *netting* increases in financial assets (increase in savings deposits + purchase of debentures + etc.), concurrent decreases in financial assets (for example, running down of savings deposits), as well as new borrowings (for example, consumer credit) and, following this principle, attempt to make any statements

about the magnitude of the financial saving of an economy. This task, too, can only be sensibly defined once a subdivision of groups is given, since, as is well known, this ‘financial saving’ is zero for the world economy, and for a single national economy it is always exactly equal to the current-account balance during the period in question. Any statistic about ‘financial saving’ in an economy can thus – unless it wants to end up merely establishing the current-account balance in a somewhat roundabout way – sensibly only be set up as a statistic of *shifts* of net financial assets. Yet this statistic is thereby already under obligation to delineate precisely from whom to whom net financial assets are supposed to have been shifted for this shift to be classified as ‘financial saving’.

Under the described procedure, any revenue and expenditure surpluses that occur within the groups in question are offset against each other. Hence, we sometimes call the magnitude of such shifts of net financial assets from certain defined groups to their complementary groups the ‘*net* value of shifts of net financial assets’. If we refrain from this netting, that is, if we sum up all individual revenue surpluses (or – what amounts to the same thing – all expenditure surpluses), we usually obtain a larger value. This is obviously equal to the shift of net financial assets of the aggregate of all those with expenditure surpluses toward the aggregate of all those with revenue surpluses. We call this the *gross value of shifts of net financial assets*.¹

This gross magnitude, too, usually still contains nettings, not interpersonal ones to be sure, but *intertemporal* ones, and more of them the longer the chosen period for which the gross value of shifts of net financial assets is to be established. The special case in which the gross value of shifts of net financial assets is zero and in which additionally no intertemporal nettings occur, so that the gross value will remain zero even for a division into the smallest periods, we call ‘*strict*’ revenue–expenditure lockstep. Needless to say, this is a wholly unrealistic and theoretical limit case. For individual economic units, periods of revenue surpluses usually alternate with periods of expenditure surpluses, which we should wish to offset against each other as soon as we define the revenue–expenditure balance for longer periods. In this way we can generate revenue surpluses (expenditure surpluses) for individual economic units ‘since the creation of the respective currency’. We call these ‘*cumulative revenue surpluses*’. The ‘cumulative revenue surplus’ of any economic unit is identically equal to its net financial assets. We call the sum of all cumulative surpluses (or expenditure surpluses) of the aggregate economy the ‘*cumulative gross value of shifts of net financial assets*’. If deposits with or liabilities to a single universal bank were the only forms which net financial assets could take, that is if there were no direct credit among the individual economic units, the ‘cumulative gross value of shifts of net financial assets’ up to a certain point in time would be equal to the length of the balance sheet of the universal bank at that point in time.^{T1}

1. In practice, this magnitude can currently not be measured; for example, even for processing merely the statistic of savings deposits for this purpose it would not be sufficient to know, in addition to the total change in the stock of savings deposits, the sum of all credits and all debits to savings deposits over the course of a year. Rather, one would have to know for all individual savings accounts the difference between initial and closing balance and then add together all positive and negative differences separately.

T1. *Translators’ remark:* In this and the following paragraphs, Stützel somewhat unusually makes an implicit assumption, namely that the banking system in question functions exclusively through the use of credit lines/overdrafts and hence that there is a complete and automatic reflux mechanism at work (cf. Lavoie 2014: 194). In other words, all bank creditors at any point in time only hold claims on the bank, whilst all bank debtors at any point in time only hold liabilities toward the bank, since in the assumed system an agent’s claims on the bank are automatically offset against their liabilities toward the bank. If this were not the case, Stützel’s remarks regarding the length of the bank’s balance sheet would not be strictly correct in all cases. Below, Stützel makes this assumption explicit and relaxes it.

If, during a following period, all individuals previously running revenue surpluses (bank creditors) again only ran revenue surpluses, and all individuals previously running expenditure surpluses (bank debtors) again only ran expenditure surpluses, then the cumulative gross value of shifts of net financial assets, and hence the length of our bank balance sheet, would grow precisely by the gross value of shifts of net financial assets during that period. If, conversely, however, all individuals previously running revenue surpluses, and only these individuals, had *expenditure* surpluses during the period in question, the cumulative gross value (length of the bank balance sheet) would shrink precisely by the current gross value of shifts of net financial assets. [...]

b) Macroeconomic gross volume of credit and the volume of bank credit

aa) Global accounting relations

The sum of all assets on the financial accounts of *all* economic units equals the sum of all liabilities in the financial accounts of all economic units. This is merely a different way to express the statement that the sum of net financial assets for the whole economy is zero. We will call this sum of all assets or all liabilities in financial accounts the ‘*macroeconomic gross volume of credit*’. If all economic units only had *either* assets (means of payment and other claims) *or* liabilities on their financial accounts, and thus in particular if there were no banks, which after all live off having both assets and liabilities on their financial accounts, then the macroeconomic gross volume of credit would be equal to the cumulative gross value of shifts of net financial assets. In all other cases, that is, as soon as some economic units hold financial assets as well as liabilities, the macroeconomic gross volume of credit will be greater than the cumulative gross value of shifts of net financial assets. Thus it is, for instance, in our case above, in which there were no direct claims between non-banks but only bank deposits and bank credit, exactly twice as large as the cumulative gross value of shifts of net financial assets as soon as we count the universal bank, which holds both financial assets and liabilities, as an ‘economic unit’.^{T2}

The sum of all assets on the financial accounts of a group is usually not equal to the sum of liabilities on these accounts. Rather, there usually remains a balance. As is well known, this balance is referred to as the net financial assets of the group. This is true for all groups, and hence also for banks. The difference between all financial assets of banks (bank credit including ownership of bonds, bills, and notes of other banks) and their liabilities (deposits, bank debentures) is equal to the net financial assets of banks.

Gross volume of bank credit	{	Volume of bank credit	Net financial assets of banks
			Deposits of non-banks
			Cash holdings of non-banks
	Inter-bank debt		

The net financial assets of banks are also equal to the magnitude by which the declared value of their equity capital (including all reserve accounts) exceeds the value of their tangible assets. It can of course also be negative if the banks possess a large quantity of tangible assets.

T2. *Translators’ remark:* It should be noted once more that the case Stützel refers to implicitly assumes that bank creditors hold only deposits (that is, financial assets) and bank debtors hold only bank credit (that is, liabilities). Only in this case is the statement above strictly correct.

The net financial assets of banks, like those of anyone else, do not change through pure financial transactions, that is, disbursement of loans, acceptance of deposits, but only through current-account transactions, that is, receipt of interest and commissions, payment of interest, wages, purchase of materials or real estate, write-downs, tax payments, gifts.^{T3}

We will call the sum of all financial assets of an aggregate of banks the *gross volume of bank credit* of these banks. If we subtract from this 'inter-bank debt', that is the claims of these banks on other banks within the same aggregate (including the ownership of notes of other banks in the same aggregate), what remains is the net volume of bank credit, or more commonly the *volume of bank credit* (sum of all claims of banks within this aggregate on third parties) for short.

Thus, the macroeconomic gross volume of credit (sum of all financial accounts) is made up of the following components:

$$\begin{aligned}
 & (1) \text{ Direct credit between non-banks} \\
 & + (2) \text{ Volume of bank credit} \\
 & + (3) \text{ Bank deposits (including bank debentures)} \\
 & + (4) \text{ Banknotes owned by non-banks} \\
 & + (5) \text{ Inter-bank debt} \\
 \hline
 & = \text{Macroeconomic gross volume of credit}
 \end{aligned}$$

The difference between (2) and ((3)+(4)) represents the net financial assets of banks; hence, one can also write:

$$\begin{aligned}
 & \text{Direct credit between non-banks} \\
 & + 2 \times \text{Volume of bank credit} \\
 & - \text{Net financial assets of banks} \\
 & + \text{Inter-bank debt} \\
 \hline
 & = \text{Macroeconomic gross volume of credit}
 \end{aligned}$$

For the aggregate of all non-banks, summing up all financial accounts we get the following picture:

Direct claims on other non-banks	Direct liabilities toward other non-banks
Bank deposits (including ownership of bank debentures)	Liabilities toward banks (including central banks)
Banknotes	
Net financial assets of banks	

The right-hand side of this balance sheet, that is, the gross liabilities of non-banks, is at least as great as the sum of all cumulative expenditure surpluses of non-banks; the left-hand side is at least as great as the sum of all cumulative revenue surpluses of non-banks.

T3. *Translators' remark:* Stützel does not consider the impact of changes in asset prices, that is, he assumes no mark-to-market or 'fair value' accounting.

In the theoretical limiting case thus mentioned, in which the sum of financial accounts is exactly equal to the corresponding revenue–expenditure balances, of course all those who have cumulative expenditure surpluses (negative net financial assets) must not only hold no non-monetised financial assets whatsoever, but also have no holdings of means of payment. If they do have such holdings, the minimum of the gross liabilities of all non-banks will equal the sum of all cumulative expenditure surpluses *plus* the holdings of means of payment of all those who have cumulative expenditure surpluses.^{T4}

The balance between the gross liabilities of non-banks and the gross financial assets (including non-monetised financial assets) of non-banks is – as mentioned – equal to the net financial assets of the banks. Since direct financial claims and obligations among non-banks exactly offset each other, it follows that the balance between all liabilities towards banks of non-banks (= the volume of bank credit) and bank deposits (including bank debentures and banknotes) is always exactly equal to the net financial assets of banks.

bb) Digression: the relationship between the asset- and the liability-business of banks. 'Orthodox' credit theory – 'modern' credit theory – 'third era' of credit theory?

With given net financial assets of banks, there is – as just shown – a strict reciprocal relationship between the change in bank credit and the change in the sum of bank deposits plus stocks of banknotes held by non-banks. The relationships which were the subject of such fierce debate between the so-called orthodox and the so-called modern credit theory (whether deposits of non-banks need to exist before bank credit can be granted to non-banks, or whether credit needs to be created first, which in turn gives rise to deposits), can be represented by the following set of statements:²

Partial statement: For any single bank, it is possible for the liabilities towards non-banks (bank deposits, circulation of debentures, circulation of acceptances outside the banking system, circulation of banknotes outside the banking system) to increase before lending to non-banks increases.

Relational statement: A single bank, as well as a group of banks G_L , can (given constant net financial assets of all banks) increase its deposits of non-banks (including the circulation of debentures, acceptances, and banknotes) beyond its own lending to non-banks only if and to the extent that the complementary group increases its lending to non-banks beyond its deposits of non-banks.

In the course of this, the amount by which the group G_L in question increases its deposits beyond the amount of its lending is always exactly equal to the increase in net claims of this group on its complementary group (increase in own stock of other banks' notes, increase in

T4. *Translators' remark:* Stützel here relaxes the implicit assumption mentioned above.

2. In the following we will always speak of the banking system as including the central bank system. Thereby, many of the relationships can be illustrated in a strict, universally valid, and clear manner. However, one problem will thus obviously be almost completely ignored: the specific problems of bank liquidity and the inter-bank market. This topic would indeed offer a very rich area for applying the method of balance mechanics presented here, as well as the juxtaposition of partial, relational and global statement and here, in a sense, lies its origin (Lautenbach's credit mechanics!). Nevertheless, in this book we will not treat it in further detail, since particularly this topic has been dealt with in great detail in the style of the method advocated here by Lehmann, Lautenbach, Pfeleiderer, Gleske and others. Additionally, economic policy in this specific area has in practice been considering the relations, which we term 'balance mechanics' here, with due regard for a long time (as shown for instance in the monthly reports of the Bank deutscher Länder regarding the determinants of changes in bank liquidity).

own deposits at other banks, decrease of nostro liabilities), whilst the complementary group increases its net indebtedness to other banks to the extent that it increases its lending toward non-banks beyond its deposits of non-banks.

Global statement: For the aggregate of all banks, the sum of all deposits (including the circulation of debentures, acceptances, and banknotes) rises by the exact same amount as the sum of their lending.

Therefore, *temporal* discrepancies between increases in deposits and increases in loans are in all cases only possible for single banks or groups of banks. The sum and the average of all of these discrepancies over any period has to be zero for the aggregate of all banks at all times (as long as we abstract from changes in banks' net financial assets arising from purchases, wage payments, interest and brokerage payments, etc.).

The set of statements above was only referring to changes in stocks. Using the general scheme of partial, relational, and global statements, the outcome of the cited controversy, which indeed is now widely accepted, becomes apparent: that, in fact, there is no contradiction between the statements of the orthodox and the modern credit theory as long as one keeps in mind that the former is only valid for single banks and the latter only for the aggregate of all banks. Of course, some propositions of the so-called modern credit theory go beyond what is expressed in the global statement above. The global statement merely ascertains that loans and deposits always have to change at the same time and in the same fashion. As always, arithmetic relationships alone do not allow us to conclude on which side the cause and on which side the effect lies. However, supporters of the so-called modern credit theory very often claim that the cause is only ever to be found on the lending side, and that deposits only constitute the passive reflex of the prior causally (not chronologically) preceding credit expansion.

Thus, for instance, E. Schneider^{T5} thought that calling lending business 'Aktivgeschäfte'^{T6} already indicated that the causal activity for the occurrence of not only a single specific new loan, but also of an expansion of the aggregated banks' balance sheets was to be found on the asset side. To us, this belief does not appear tenable. Every single lending operation and every single deposit-taking operation is a bilateral lending contract. This, of course, does not exclude the possibility that the 'cause' for the conclusion of such contracts is to be sought at times with the lender of means of payment and at times with the borrower. It is, however, unrealistic to assume that the initiative for the lending business should always lie with the bank, while with the deposit business it should always lie with the customers. It would also be wrong to generalise the circumstances which led to the interest rate agreements of German banks,^{T7} and even while these agreements held, it frequently occurred that the initiative for the deposit business was coming from the banks which were competing among themselves for the especially interesting depositors. Similarly, it occurs fairly often that banks

T5. *Translators' remark:* Erich Schneider, to whom Stützel frequently (and often critically) refers in his work, was a highly influential German economist whose work significantly shaped the development of the economics discipline in Germany. In particular, his introductory textbook played a role comparable to that of Samuelson's in the Anglo-Saxon world and advocated a similar synthesis of neoclassical and Keynesian ideas.

T6. *Translators' remark:* In German accounting terminology, 'Aktivgeschäft', literally 'active business', denotes any business of banks which is booked on the asset side (the 'active side', translating literally from the German) of their balance sheet, for example the granting of a new loan (even though this new loan also creates a deposit, the loan itself is booked on the asset side of the bank's balance sheet).

T7. *Translators' remark:* Interest rate agreements between German banks were legally in existence from 1932 onwards and were fully abandoned in 1967.

would very much like to lend higher sums to certain borrowers and exert themselves to attract high quality borrowers. It often happens that banks cannot easily find the possibility to extend credit according to their own wishes, since those customers who are considered credit-worthy are already very liquid. In these cases the causal initiative for the occurrence of a particular lending deal switches over to the borrowers.

And even if it had been established, for the individual new lending contracts of a certain period, from which side the causal initiative arose, it would still not be valid to deduce from this alone – as E. Schneider does – on which side the causal activity for the change in the length of the entirety of all bank balance sheets (a stock-variable) lies. This becomes apparent when we, following the set of statements above which incorporated only relations between stocks, look at the connection between the flows arising from individual lending operations (new lending per period, new deposits per period, loan repayments per period, deposit outflows per period) and the corresponding stocks.

Partial statement: Each individual bank must expect that an increase in its new lending per period will lead neither to increased repayment of its previous lending nor to an increased inflow of deposits, but only to a decrease of its net claims on other banks (including central banks).

Relational statement: If a bank or a group of banks increase their new lending, this will only fail to lead to an increase in repayments of their own previous lending or to an increased inflow of deposits if and to the extent that this new lending is used by the recipients of the means of payment to repay bank loans previously granted by the complementary group or increase the inflow of deposits toward banks which are part of the complementary group.^{T8}

Global statement: The increase in new lending per period is invariably accompanied by an equal increase in the flow of loan repayments and/or new deposits.

The relation between the flow of new lending per period and changes in the total volume of bank credit is hence exclusively determined by the division of the flow of new lending mentioned in the global statement into the two flows 'loan repayment' and 'new deposits'.

To examine this question, we consider a situation in which the prospects for immediately getting access to bank credit or obtaining means of payment through liquidating one's own stocks of securities are so favourable and reliable that hardly anyone is inclined to hold larger amounts of interest-free banknotes or low-interest bank deposits. Suppose further that non-entrepreneurs' financial saving predominantly takes the form of purchases of bonds and shares. At the minimum, suppose that any increases in savings deposits are offset by withdrawals from savings deposits for the purpose of purchasing securities.

In such a situation (a very favourable environment for debt consolidation), banks' new lending per period may rise to any amount whatsoever – the means of payment thus created will be quickly passed on by their recipients through purchases of commodities or securities, until they finally reach recipients who will chiefly use them to repay their own bank loans. Here, causal activity for the creation of any individual new loan may well lie with the banks. But since nobody is willing to increase their stock of bank deposits, no expansion in the stock-variable 'volume of bank credit' occurs, despite the sharp increase in new lending per period.³ *Conversely, in other cases one can very well attribute causality to economic units' propensity to use inflowing means of payment neither for*

T8. *Translators' remark:* This is Stützel's very roundabout way of saying that repayment flows to the group or deposits with the group will only increase to the extent that the newly created means of payment are not used to repay loans granted by the complementary group or to make deposits with the complementary group of banks.

3. Evidently, this is a situation in which the so-called 'credit multiplier' hardly contributes anything to the explanation of the matter.

purchasing commodities nor for purchasing securities, but to deposit those means of payment with banks or to hold them in the form of banknotes in explaining why new lending does not generate an equal increase in loan repayments but instead, on balance, leads to a rise in the stock-variable volume of bank credit.

In these cases, the buoyant formation of bank deposits (and not the increase in new lending) would be the actual ‘cause’ of the expansion in the volume of bank credit.

Such deliberations, according to which an increased formation of deposits can be the cause for the phenomenon that new lending does not – as usual – lead to corresponding loan repayments but instead to an expansion in the volume of credit, are by no means unrealistic. In West Germany for example, these deliberations repeatedly had to be entertained in order to explain certain changes in bank balance sheets. For instance, the tax-induced sharp rise in the formation of savings deposits in December 1954 was the reason why a smaller proportion of Christmas sales were paid upfront. This in turn meant that business and trade could not repay as quickly as usual the loans they took out for the seasonal peak. Similarly, the high fiscal deposits of the years 1953 to 1956 were the reason why trade and industry could repay far fewer bank loans than they could have repaid if the Treasury had returned all tax revenues to the economy via public servants’ salaries, pensions, and public investments.

In a grand overview of the entire conception of credit theory, we deem it important to emphasise three different aspects, which can be called the ‘index fossils’ of three consecutive stages of credit theory and which at the same time – as thesis, antithesis, and synthesis – ‘sublate’ the contradiction that is often seen between these propositions and unify them in a coherent edifice of credit theory.

The general thesis would be the indisputably true proposition of orthodox credit theory that no bank has ever lent a Mark unless it had received this Mark previously or simultaneously from depositors or other banks, or it had earned it in earlier times.⁴ The *thesis* in a specific sense would be the proposition of orthodox credit theory according to which deposits taken from non-banks have to increase *first* before bank loans can be expanded. This thesis would be confronted by the *antithesis* of modern credit theory. It claims not only that the increase in the volume of credit is always exactly equal in size to the increase in deposits, but also (in an excessive pendulum swing to the other side) that causal activity is *always* to be sought on the side of lending business and not on the side of deposits. A certain *synthesis* can be reached when one recognises that the specific thesis of orthodox credit theory is only valid as a partial statement, and that the specific thesis of modern credit theory about the causal priority of the asset side is only occasionally – but by no means always – valid as a global statement; that instead, the preferences of non-banks for deposits at times also exert causal force in determining changes in the volume of bank credit. This in turn should of course not be understood in the incorrect sense, which is sometimes advocated by orthodox credit theory, that a bank could not grant any loans whatsoever without having previously obtained deposits from *non*-banks. Rather, it should be understood in the completely different sense that if there is no propensity to form new deposits in the aggregate economy, any increase in new lending must lead to an equivalent rise in the flow of loan repayments. Thus, the extent of deposit-formation determines how much of the flow of new lending is on balance reflected in an effective increase in the stock-variable volume of credit.

We have the impression that, for example, the staff of the Bank deutscher Länder has long been working along the lines of this ‘synthesis’ (as evidenced by their reports). By

4. In the case of so-called Anglo-Saxon accounting, the granting of a loan to customer A and the ‘taking’ of a deposit from this customer A coincide.

contrast, if one labels the rounded theory presented here as ‘progress’, some parts of academia ‘lag behind’ somewhat to the extent that they still often present the asymmetric theses of ‘modern’ credit theory as being of general validity, or they present the juxtaposition of the theses of orthodox and modern credit theory in a way as if one had to decide in favour of one and against the other.⁵

The ‘balance mechanic’ deliberations outlined here ‘sublate’ the seemingly contradictory theses of orthodox and modern credit theory in a Hegelian sense. The relation between the lending business and the deposit-taking business of banks is analysed in economic terms as a framework of mutual, strict, and simultaneous conditional relations, in which causal activity may at times lie more with one side and at times more with the other. If this is recognised, we argue that credit theory thus reaches a ‘third stage’. Just as the beginning of so-called modern credit theory in Germany is associated with the publication of Albert Hahn’s *Economic Theory of Bank Credit* [1920 [2015]], we would date the beginning of this ‘third era’ to the middle of the thirties, when A. Hahn’s one-sided approach was overcome by the works of W. Lautenbach. These works completed the circle by demonstrating that, particularly for the aggregate economy, deposits can very well be a decisive factor in determining how much of any new lending actually shows up as an expansion in the volume of credit.

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5. Pfleiderer noted generally and, in our view, rightly so that ‘the popular controversy of credit theory, whether priority lies with the lending or the deposit-taking business of banks can be explained largely by the fact that nobody actually examined to what extent the different banking operations alter the volume of credit’ (Pfleiderer 1943: 265).