Visualizing the Gap

Introduction: The Need To Show The Underlying Deficiency

The central contention of the Social Credit critique of contemporary economic management (or rather mismanagement) is the existence of a gap between prices and incomes in the operation of any modern economy - i.e. an economy based on debt-finance and multi-stage, mechanized production. This *underlying deficiency of purchasing power*, makes it impossible to liquidate the costs of production without resorting to increased debt and/or a large trade surplus - since prices cannot fall below costs without putting the continued operation of an enterprise in peril, (unless it can rely on direct or indirect government support). Furthermore, the critique contends that this gap is bound to grow as the economy becomes more sophisticated - i.e. as production involves more and more stages, and use of machinery increases - entailing spiralling debt and increasing trade tensions if the necessary financial remedies are not applied.

This contention is a very serious challenge to the existing economic paradigm, which is based on Say's Law - the notion that supply creates its own demand - i.e. that an underlying deficiency of purchasing power is impossible because the production process generates incomes (in the form of wages, rents, interest and profits) equal to the cost of output. Because this notion is firmly established in the minds of many (perhaps most men), it is imperative to demonstrate the validity of the contention as clearly as possible. To this end, a combination of diagrams and mathematics will be employed.

The Visualization.

The visualization of the operation of the economy will be based on a series of columns - commencing with three main ones, representing the bank, a consumer goods firm and the households whose members receive incomes from that firm (as wages, salaries, bonuses, etc..) and a small minor one representing time. With the addition of new entities, new columns will be added. It should be noted that one could easily use the bank column to represent the entire banking system, the consumer goods firm's column to represent the entire sector of consumer goods, etc...

Black lines represent the flow of financial credit, while red lines represent the flow of costs. The time factor operates downwards - i.e. the lower line, the later that particular flow takes place. Times like t=1, represent production cycles - the time required to generate one set of goods.
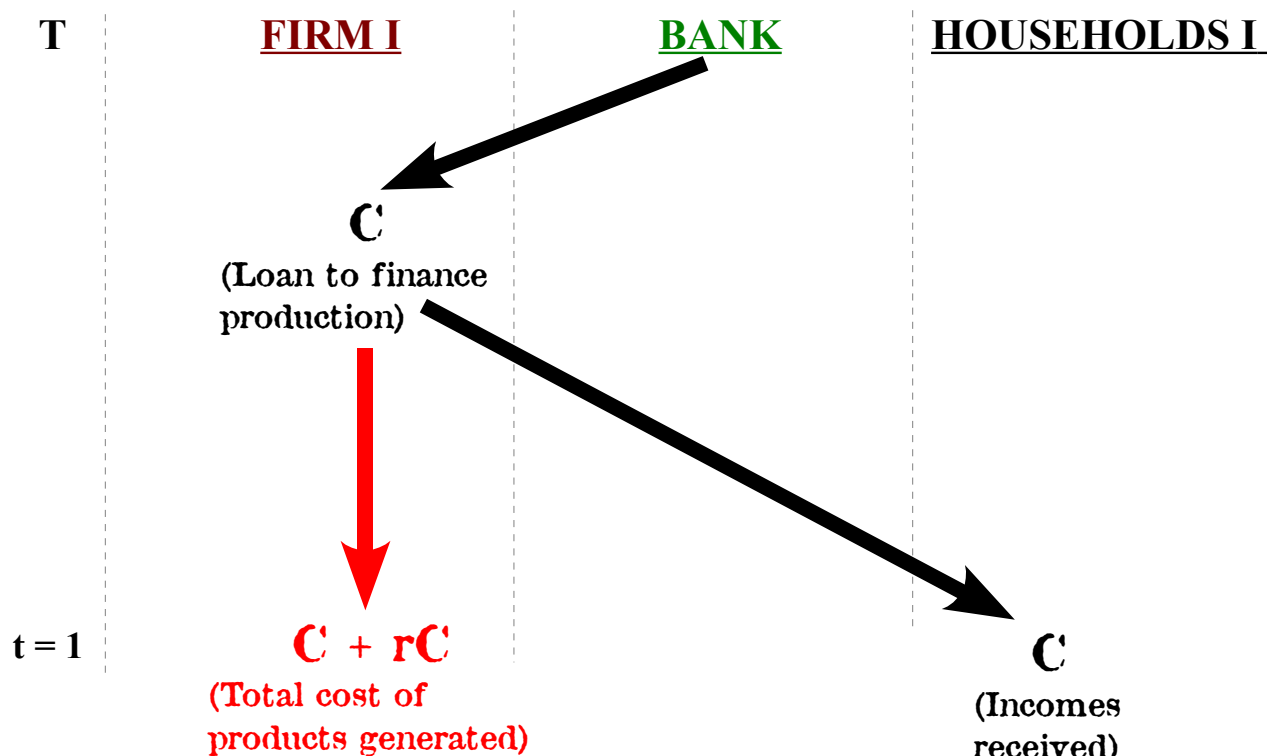
The Original Sin.

It is easy to see how the very existence of debt finance results in a simple disequilibrium between costs and income - the 'original sin' of creditism, (i.e. an economy operating under debt-finance), as it were. In the figure below, we depict a totally labour intensive start-up that borrows an amount C to finance its operations. It is evident that as soon as repayment of the original loan is figured into the costs of the firm, the total amount of costs exceeds the total amount of income generated by the production process that was initiated by the loan. **It must be emphasized that the credit that a bank loans and receives back is not to be confused with its income: the latter takes forms such as interest and bank charges - which we have excluded from this analysis for the sake of simplicity.[1]**

We assume that the firm wishes to pay off its debt and become independent; in Appendix II, we consider a situation where the firm is permanently in debt to the bank.

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[1]The incorporation of interest and bank charges would increase costs, but also expenditure, insofar as some of it is subsequently spent; that said, if any of it is saved, (which is most likely), it will exacerbate the gap as all saving does.

Figure 1: Simple Disequilibrium

T   FIRM I   BANK   HOUSEHOLDS I

C
(Loan to finance production)

t = 1   C + rC
(Total cost of products generated)

C
(Incomes received)

INDEX:

C: (Financial) Credit (Black); Costs (Red)

r: Loan repayment rate

The first black arrow - that goes from the bank to the firm, signifies a loan made by the former to the latter in order to initiate production. The second black arrow - which goes from the firm to the households - signifies the incomes disbursed by the former to the latter, (i.e. wages, salaries, etc... paid out in the course of production.) It is appropriate that the second arrow traverses the bank column, since it is quite common for salaries to be directly debited to the bank account of a particular household.

Thus, we observe that if all incomes are spent, they will not cover the costs of production, since the firm cannot repay its debt - and were it to attempt to do so, it would lack sufficient funds to finance the next round of production, (i.e. it would not be able to pay its workers).

Nonetheless, it is interesting to consider how a firm might escape this situation. If it sold its goods at C rather than $C + rC$, and repaid the bank, it could apply to borrow an amount rC from the bank (either as a new loan or an overdraft) in order to finance the next cycle of production. However, in doing so, it would incur an additional repayment, r^2C (since it would have to repay the overdraft as well as the original loan) - resulting in an even larger gap between Costs and Incomes, $(rC + r^2C)$ - necessitating further loans/overdrafts. Thus, we see how an economy can end up becoming addicted to ever-increasing debt, even before considering savings, mechanization and other factors.

Another method by which this problem might be addressed is through exporting the surplus goods, (i.e. goods costing rC which cannot be sold in the domestic market). Of course, doing so would merely shift the problem to another place, just as borrowing shifts it to another time.

Savings Exacerbate Disequilibrium

So far we have assumed that all income is spent. We will now relax that assumption, since it is quite common for not all money an individual receives to be spent: some is saved.

Figure 2: Disequilibrium Exacerbated by Saving
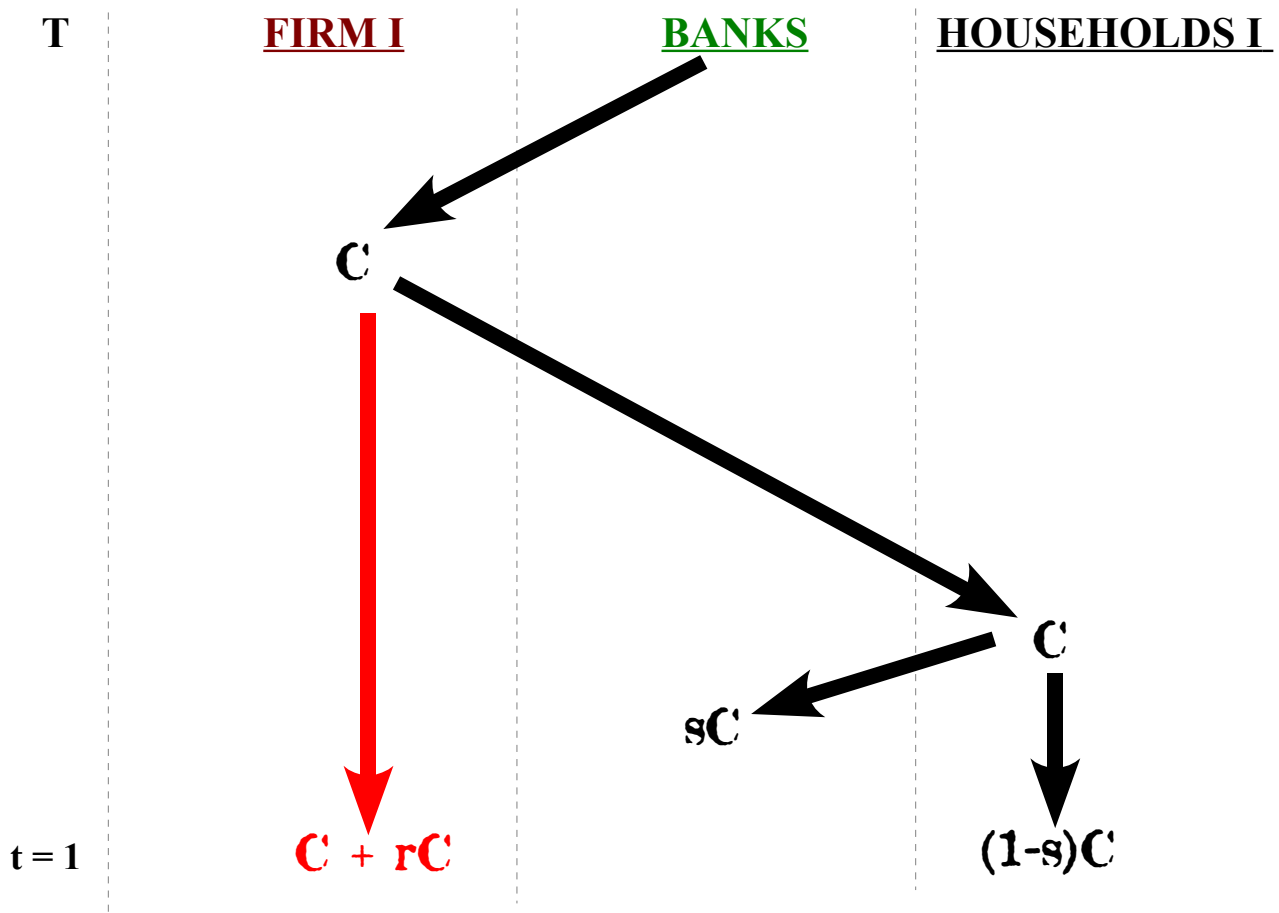
INDEX:

C: (Financial) Credit (Black); Costs (Red)
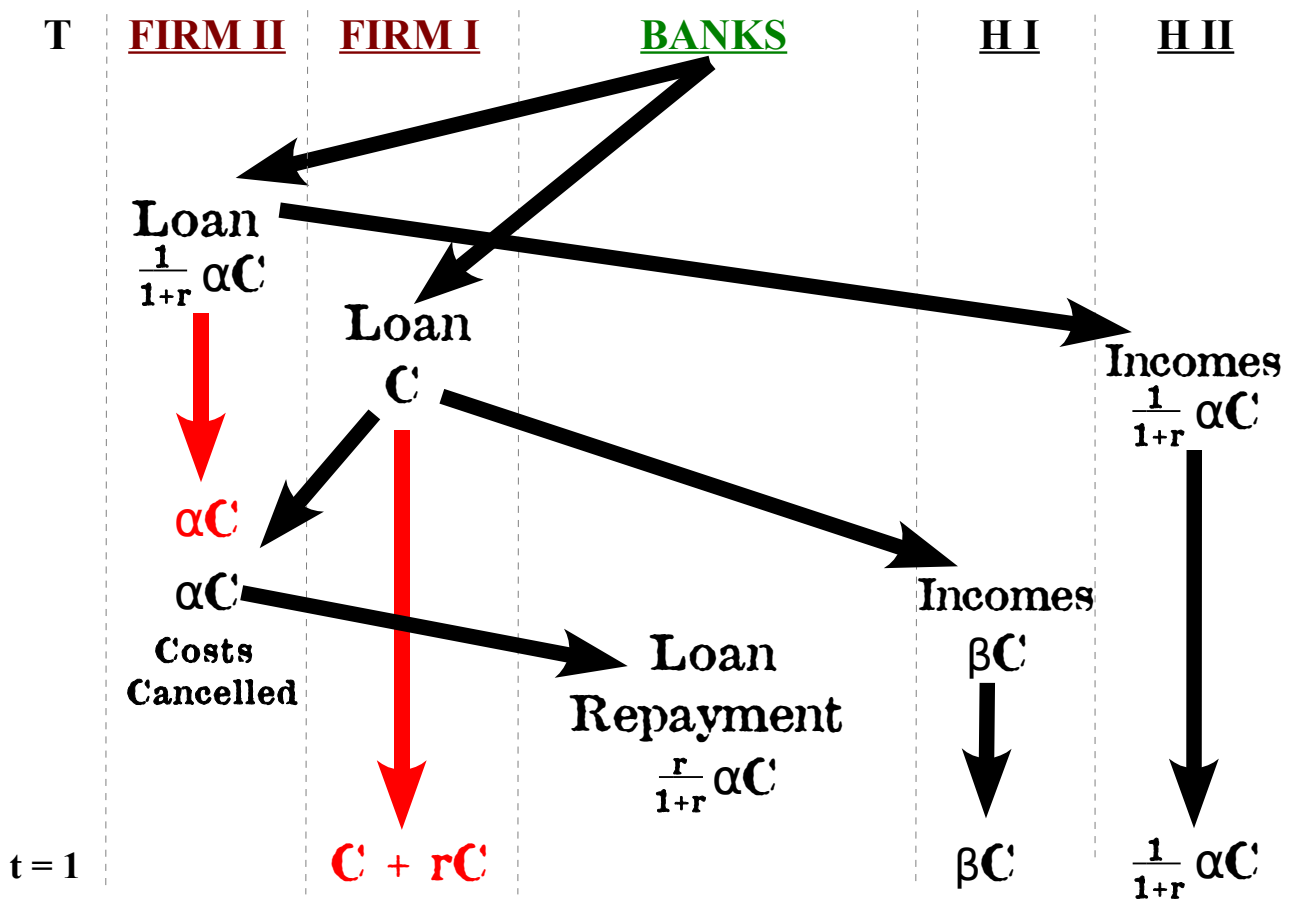**r**: Loan repayment rate
s: Savings rate.

Thus, with saving, the gap between costs and expenditure widens. Mathematically, it is $(r + s)C$, reflecting the amount of money saved as well as the amount that has to be repaid to the bank. For the sake of simplicity, I will ignore saving in the next few visualizations, but will be reintroduced in the final one. It is worth bearing in mind that a similar analysis would apply if households had personal loans, which needed regular repayment.

Multi-Stage Production - Further Exacerbation.

To conveniently visualize multi-stage production, we will add two extra columns for every extra stage of production - one representing the firm (or firms) involved in that stage, and the other representing the households whose members work for these new firms. For further simplicity, we will limit ourselves to only one extra stage- hence, Firm II and Households II.

Let us suppose that Firm II supplies raw material to the consumer goods firm, Firm I. Like Firm I, Firm II has bank loans to repay as well as workers to pay. As is usually the case, it will pay its workers prior to, and make its loan repayment after, selling its output. This is depicted as follows, (where HI and HII refer to Households I and Households II respectively):

Figure 3a: Multi-Stage Production

INDEX:

C: (Financial) Credit (Black); Costs (Red)
**r:** Loan repayment rate

The important point here is that since $\alpha + \beta = 1$, it follows that total incomes (namely, $\beta C + \frac{1}{1+r}\alpha C$ - which simplifies to $(1- \frac{r}{1+r}\alpha)C$) must be less than C, and thus, even less than total costs, (which are C + rC), *because part of the financial credit (money) has returned to the bank without ever becoming a consumer credit (income)*. This is what Major Douglas pointed out a century ago in *Economic Democracy*:

'Further, if the interaction between production for profit and the creation of credit by the finance and banking houses is understood, it will be seen that the root of the evil accruing from the system is in the constant filching of purchasing power from the individual in favour of the financier, rather than in mere profit itself.'

(*Economic Democracy*, pages 65-66).

To facilitate the reader's understanding, a numerical example is provided below, with C being ¥880, r being 10%, and α as well as β being 0.5.

## Figure 3b: Multi-Stage Production - Numerical Example
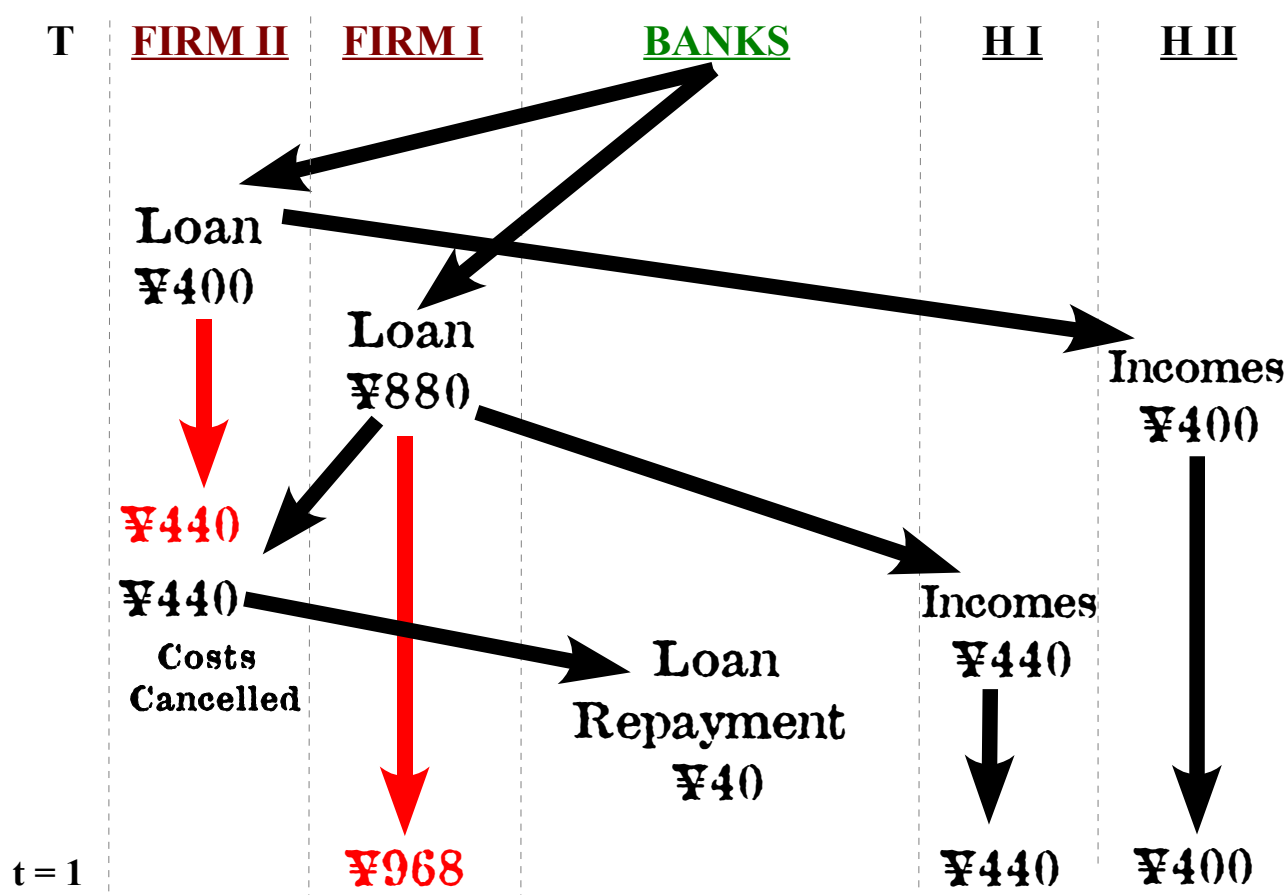
As we can see from this simple example, at the end of the first time period, products costing 968 yen have come on to the market, but the total income available to purchase these products is 840 yen. Thus, even if all income is spent, (an assumption which we will remove later - in Figure 8b), products worth 128 yen will remain unsold.

The components of this 128 yen of missing money, is the 40 yen loan repayment by Firm II, and the 88 yen loan repayment (rC, with C being 880 yen and r being 10%) of Firm I. To solve this problem, we can, following Major Douglas, supply a National Dividend of 64 yen each to the two sets of households, or apply a National Discount of 13.22% (approximately) to bring prices in line with incomes, with the National Credit Office supplying the missing 128 yen to Firm I - or any mixture of these two proposals that covers the gap.

The Time Lag - Another Exacerbating Factor

One of the key claims of the Social Credit critique is that there is a time lag between the expenditure of income and the entry of goods (which were being made by the enterprise disbursing these incomes) to the market. To be precise, wages and salaries are disbursed in the course of the production process, but finished products arrive only at the end of it. We will proceed to provide three conceptualisations of this process - two in which we have multi-stage consumption, and another in which we have profiteering.

Figure 4a: Multi-Stage Consumption (I)
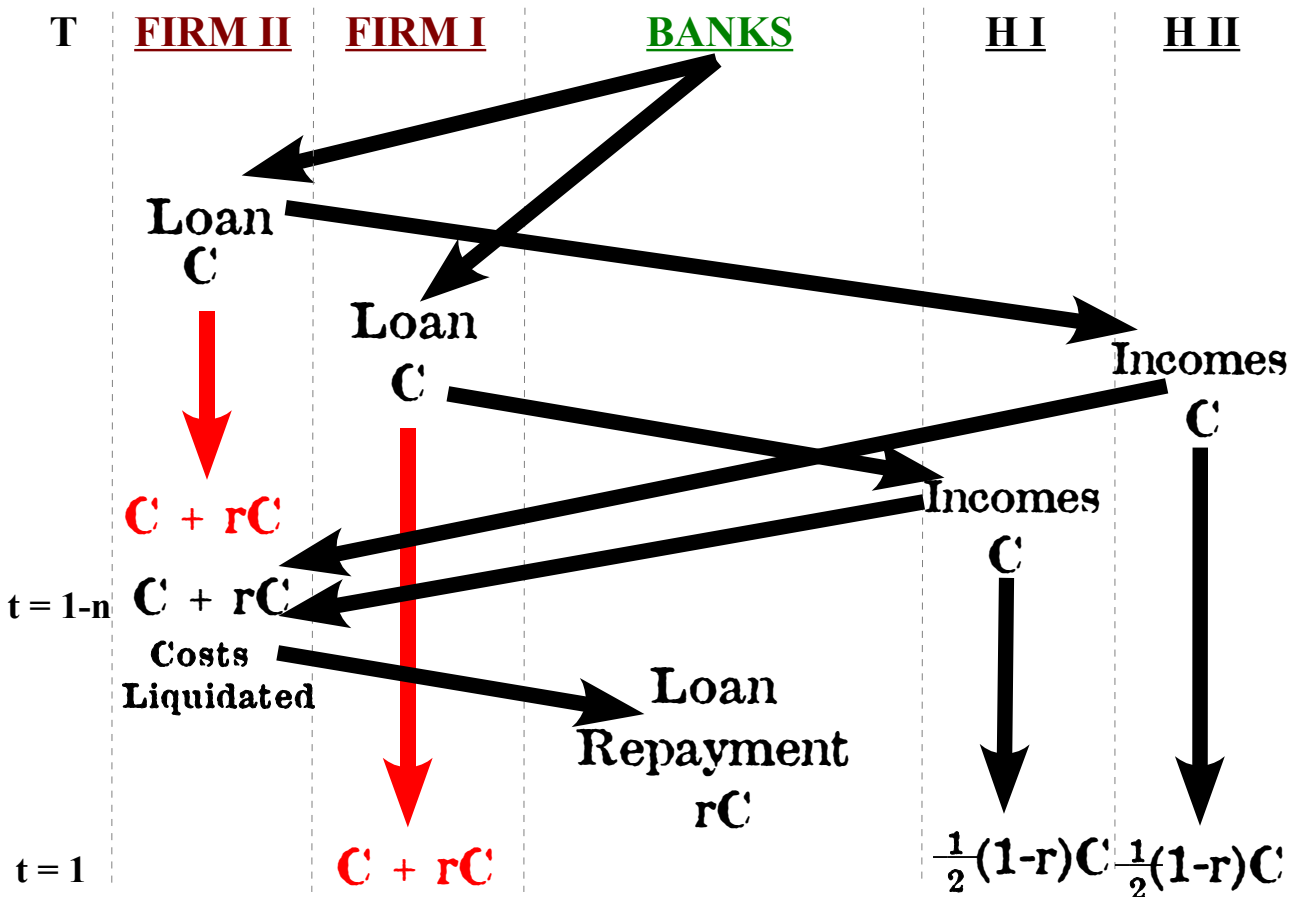
INDEX:

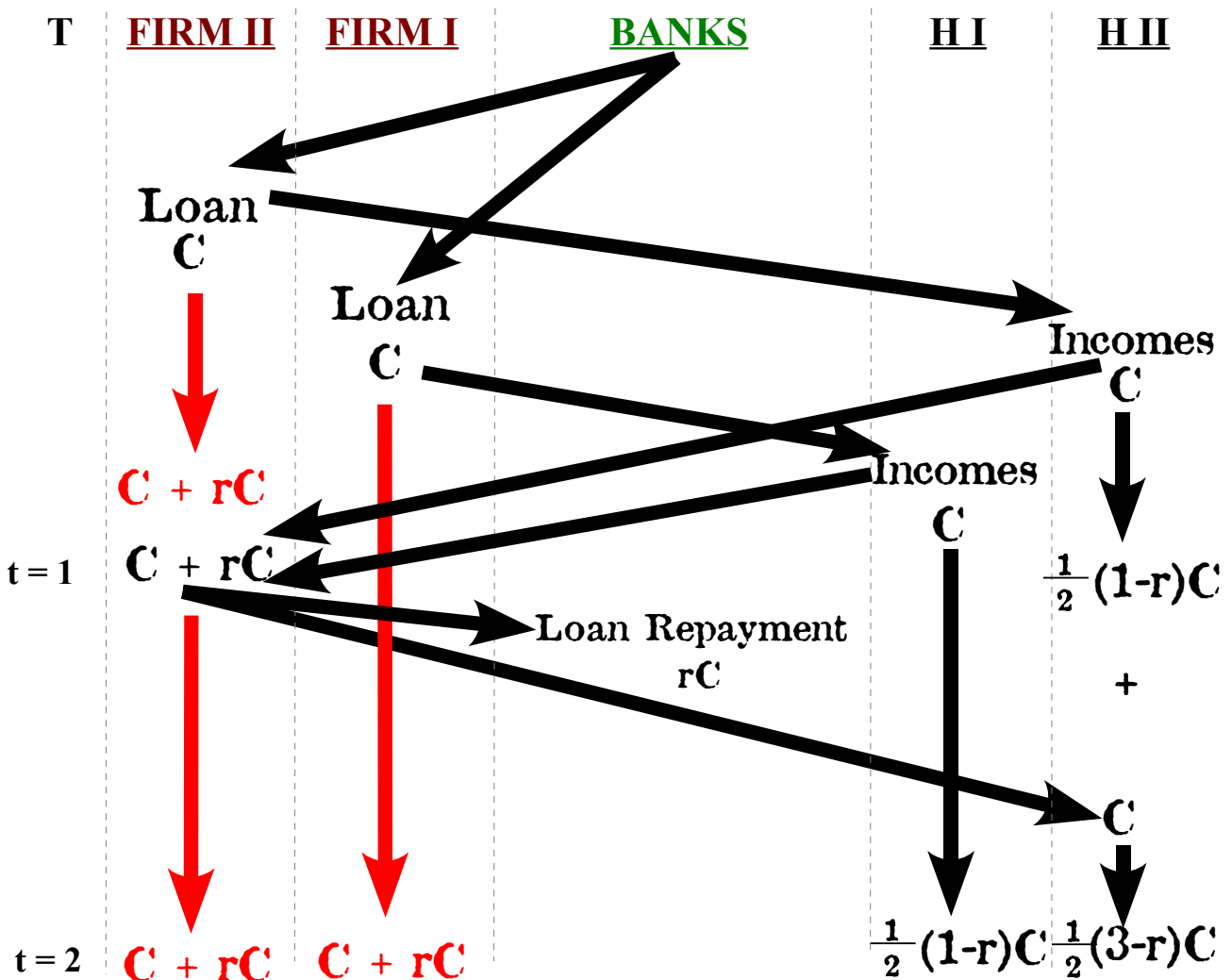**C:** (Financial) Credit (Black); Costs (Red)
r: Loan repayment rate
n: Fraction of time insufficient to generate significant new incomes.

Multi-stage consumption, where both firms are supplying the customer. should not be confused with multi-stage production, where Firm II supplies Firm I.

In multi-stage consumption, household incomes are spent on goods made by Firm II - up to the point that it liquidates its cost - with only the remainder being available for liquidating the costs of Firm I. This is possible because Firm II's output has come to market before Firm I's - by a fraction of time that is insufficient to generate any new incomes. It is evident from Figure 4 that the remaining income is not sufficient to liquidate the costs of Firm I's output.

It is possible to imagine a situation where Firm II's output comes much earlier - so early that it can complete two production cycles in the time that Firm I manages one.

Figure 4b: Multi-Stage Consumption (II)

| T | FIRM II | FIRM I | BANKS | H I | H II |

Loan C

Loan C

C + rC

t = 1   C + rC

Incomes C

Incomes C

$\frac{1}{2}(1-r)C$

+

Loan Repayment rC

C

t = 2   C + rC   C + rC

$\frac{1}{2}(1-r)C$ $\frac{1}{2}(3-r)C$

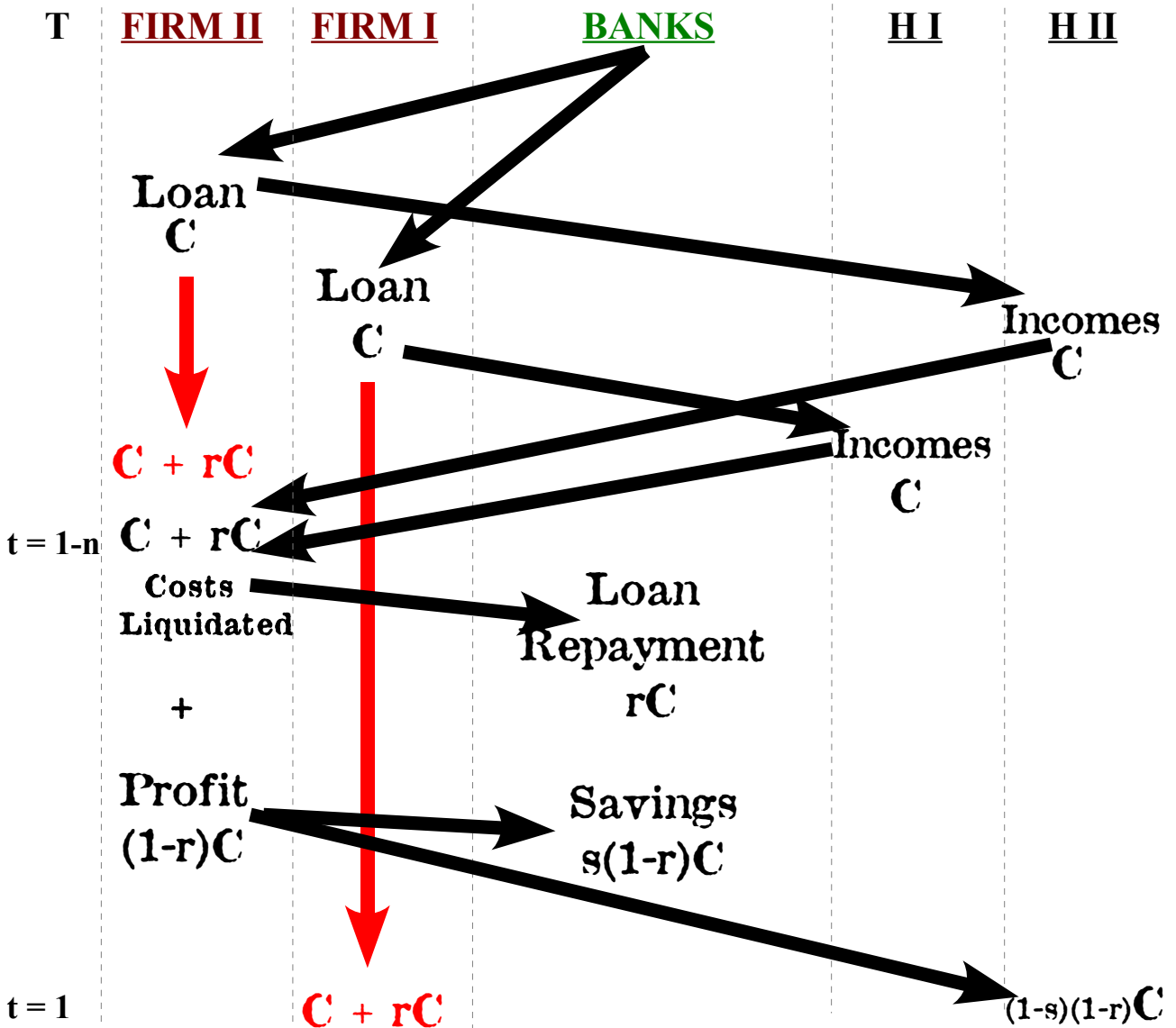INDEX:

C: (Financial) Credit (Black); Costs (Red)
r: Loan repayment rate
n: Fraction of time insufficient to generate significant new incomes.

An extremely important point should now be evident: *if any income disbursed in the course of the production process is used to liquidate costs prior to the completion of the production process, then that credit can only return as an income alongside the generation of new costs - and the gap therefore remains.* In the example above, a portion of the incomes earned by Households I is used to liquidate the costs of Firm II in time period t = 1, and as a result, the situation in time period t = 2, is an even larger gap, (equal to 3rC in the example given above, since total costs are 2C + 2rC, and total incomes available for expenditure are 2C - rC).

So far, we have assumed that only part of the income of the households is spent in time period t=1. However, it is also plausible that the entire income is spent on the goods that arrive on the market first, by pushing up their prices. The implication of this is that Firm 2 generates revenue in excess of its costs - i.e. it generates a profit. These profits may be held in the bank for subsequent investment by the firm, saved by the recipients or spent by the recipients on goods made by Firm I.

Figure 5: Profits

INDEX:

C: (Financial) Credit (Black); Costs (Red)
r: Loan repayment rate
s: Savings rate.
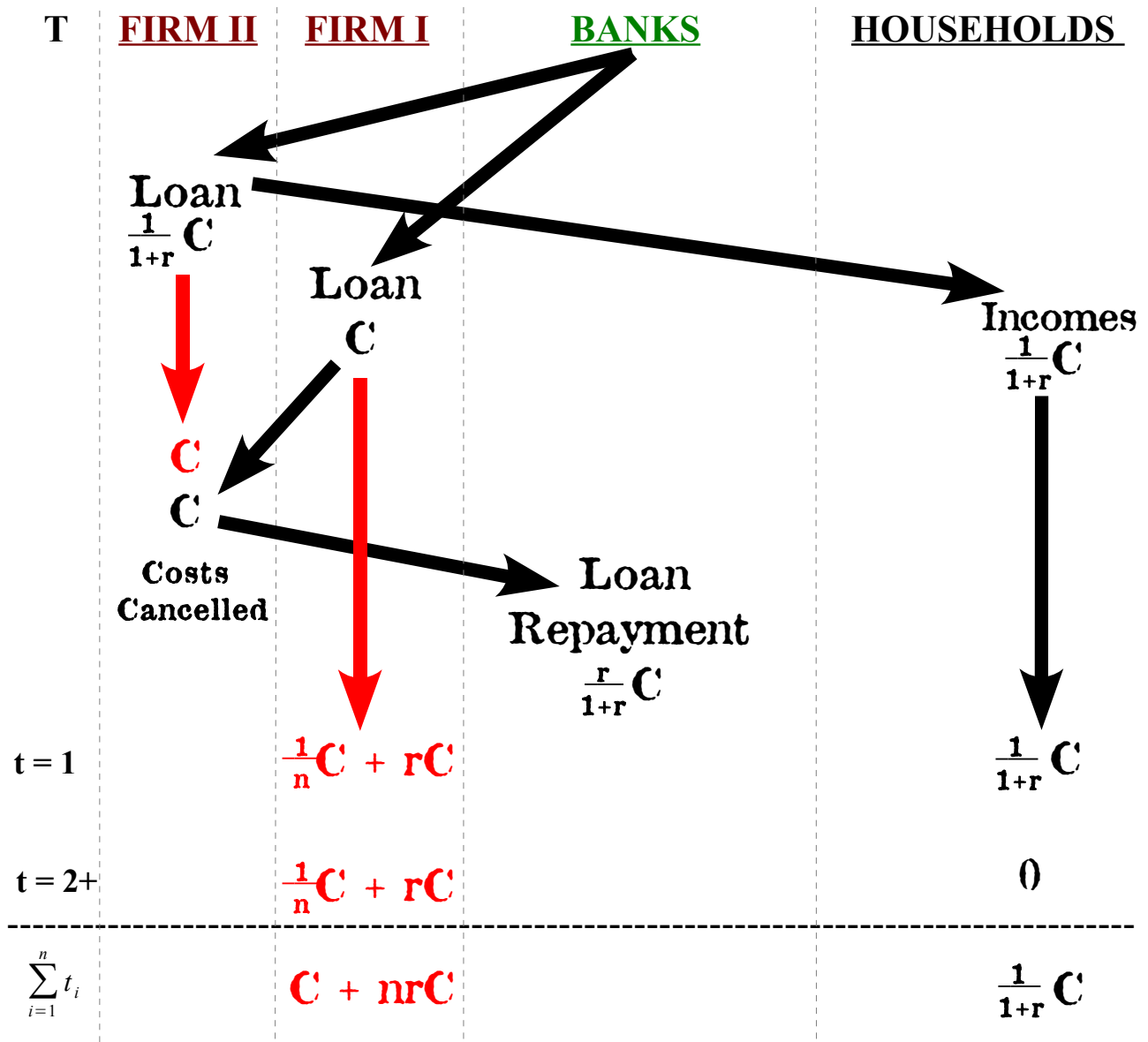**n:** Fraction of time insufficient to generate significant new incomes.

In this case, we observe that if any of the profits are saved, (by the firm or by the household recipients) the gap between costs and expenditure will be even greater than in the case of multi-stage consumption, (see Figure 4a). Of course, a typical economy will be characterized by both - i.e. profits as well as multi-stage consumption.

Machinery - an Exacerbating and Complicating Factor.

      With multi-stage production involving machinery, a longer time period is required to fully appreciate the gap. This is because the costs of capital goods are paid off in increments over - i.e. depreciation. For the sake of simplicity, we will assume that Firm I is fully automated, and it purchases its equipment from Firm II which, as before, has only labour and repayment costs.

Figure 6: Machinery

T	FIRM II	FIRM I	BANKS	HOUSEHOLDS
	Loan $\frac{1}{1+r}C$	Loan C		Incomes $\frac{1}{1+r}C$
	C			
	C		Loan Repayment $\frac{r}{1+r}C$	
	Costs Cancelled			
$t = 1$		$\frac{1}{n}C + rC$		$\frac{1}{1+r}C$
$t = 2+$		$\frac{1}{n}C + rC$		0
$\sum_{i=1}^{n} t_i$		$C + nrC$		$\frac{1}{1+r}C$

INDEX:

C: (Financial) Credit (Black); Costs (Red)
r: Loan repayment rate
n: Duration of capital.

Points to note:

i) Only Firm 2 has labour costs, hence there is only one households column.

ii) The capital cost is recovered over n time periods - therefore at any given time period, total capital costs are 1/n C.

iii) The income disbursed is available from the outset: thus, in the first time period, (i.e. t = 1), it is entirely possible that incomes exceed costs. However, no more income is added in subsequent time periods (since the production of machinery is complete), but the costs keep being generated - until the capital cost is fully met. Thus, by the time that the cost of capital is meant to be recovered, there will be a gap, namely C + nrC - 1/(1+r)C.

iv) nr can never exceed one - since loan repayments cease once the entire loan is repaid.

It should be pointed out that if all the income received in time t=1 is spent then, we have profits in the first time period, followed by a run of losses in subsequent time periods which, barring any further infusion of credit, will exceed the initial profit.

If the incomes disbursed in t=1 are spent on goods by other firms, (say a Firm III), we have the same situation as in Figure 4b - namely that these credits can no longer reappear as income, except alongside equivalent costs.

Interest and Cost-Plus: As if the Gap Wasn't Big Enough.

So far, we have not considered interest and other bank charges, nor have we addressed the typical pricing policy adopted by firms - namely that of adding a profit charge to the cost of any good - what is typically denoted as 'cost-plus' pricing. Incorporating both of these into our analysis generates a larger gap:

Figure 7: Interest and Profit Margin
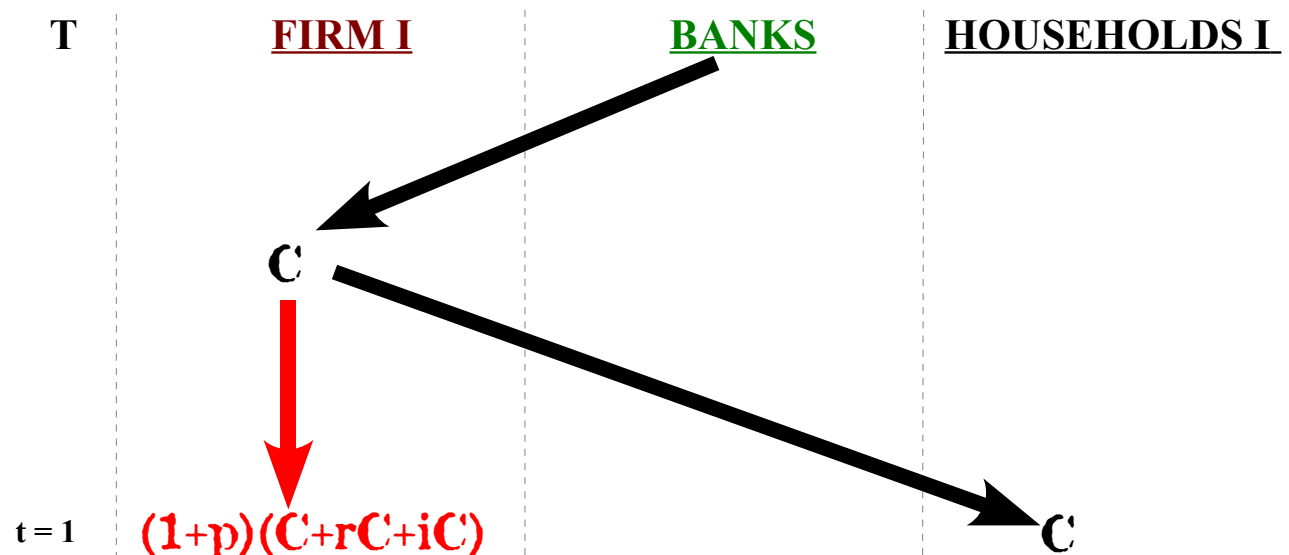
INDEX:

C: (Financial) Credit (Black); Costs (Red)
**r:** Loan repayment rate. **i:** Rate of Interest. **p:** Rate of Profit

It is evident that the gap will depend on how high the rate of interest (i) and the rate of profit (p) are, as well as the rate of loan repayment (r): it should be equally evident that if any one of these numbers is positive (i.e. greater than zero) a gap between total prices and total spending will arise, even if all income is spent. Profits and interest may be subsequently spent of course and help liquidate costs in later time periods, but they first have to be earned through the sale of products.

The fact that profits are added as a percentage mark-up on costs, (ex: 25%), and both interest and repayment of loans are part of cost, serves as an example of a more general principle: the gaps are cumulative. Another example of this is provided below.

The Growing Gap.

To clearly observe the cumulative nature of the gap, let us consider the case of multi-stage production (Figure 3a) combined with saving, (Figure 2), as shown below:

### Figure 8a: Multi-Stage Production and Saving.
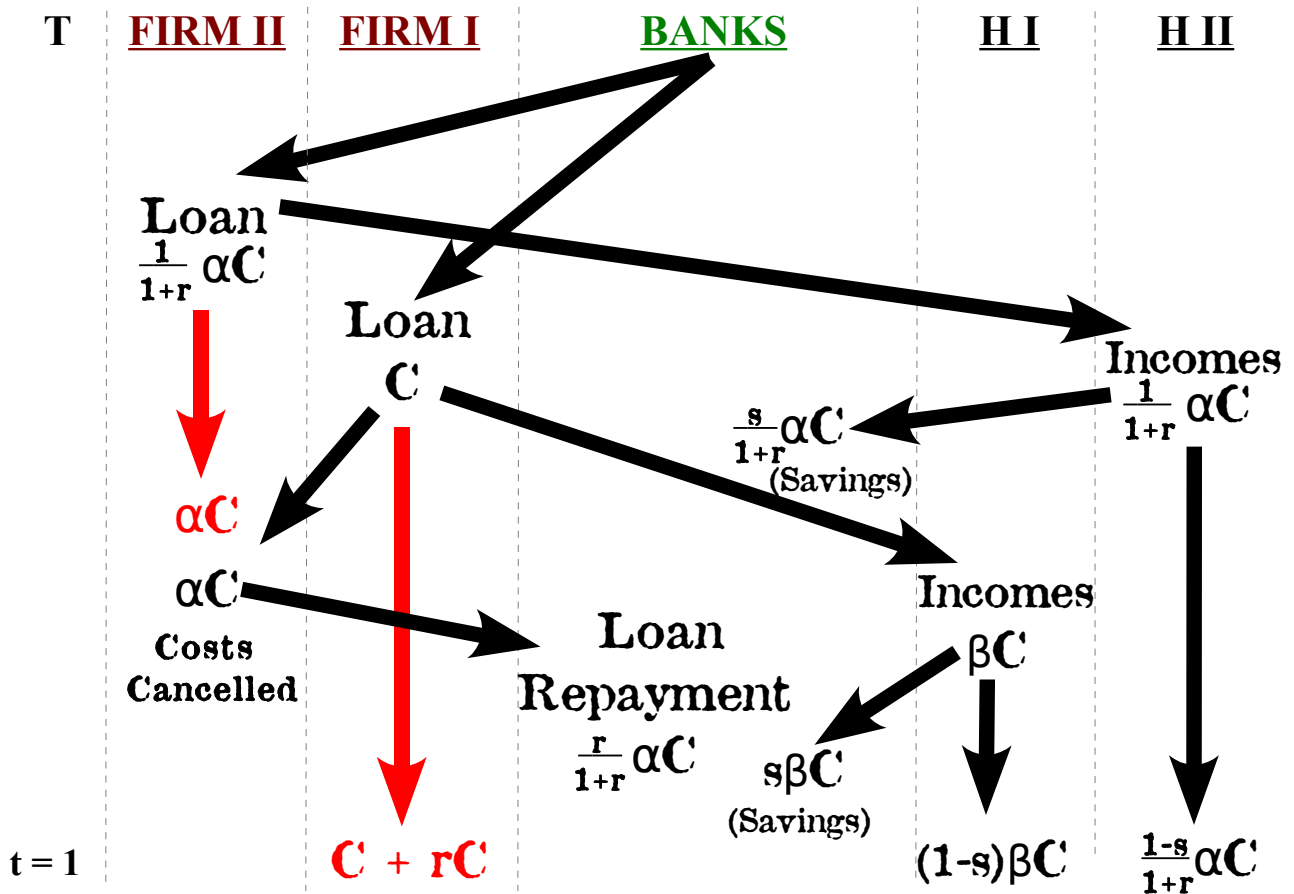
INDEX:

C: (Financial) Credit (Black); Costs (Red)
r: Loan repayment rate
s: Savings rate.

Given that α + β =1, it stands to reason that the sum of household spending at t=1, namely (1-s)/(1+r)αC + (1-s)βC is less than C. However, the typical reader will probably prefer to see this in numerical rather than algebraic terms:

Figure 8b: Multi-Stage Production and Saving - Numerical Example.
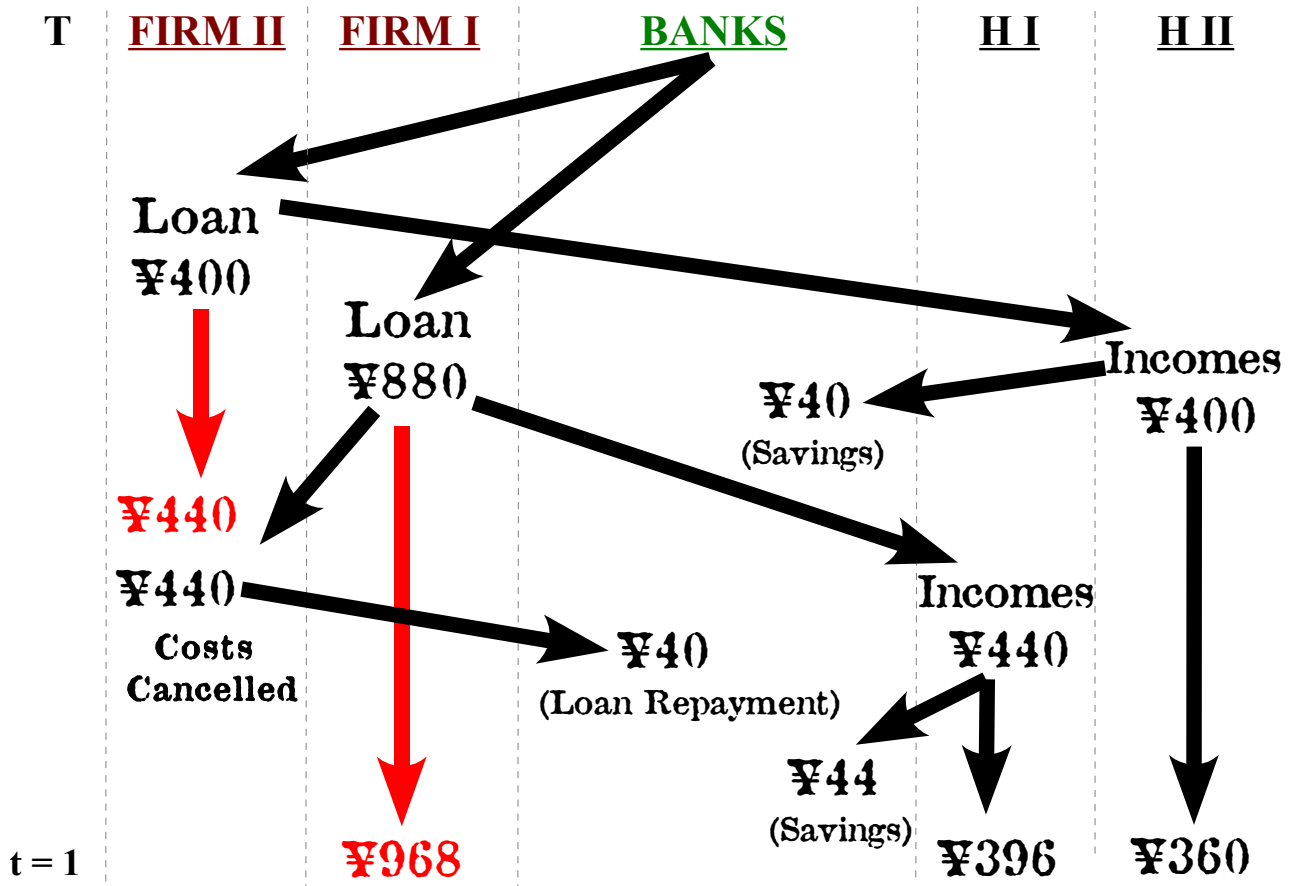
In the example above, C is ¥880, α and β are each 0.5, r (rate of repayment) is ten percent as is s, (the savings rate). As we can, the total cost of the products created by Firm I are ¥968, but the total expenditure is only ¥756 (i.e. ¥396 + ¥360), leaving a gap of ¥212 in the form of unsold products - about 21.9% of the total cost. By way of comparison, in Figure 3b, the gap was ¥128 - 13.2% of total cost.

It should be borne in mind that this is a gap that arose from merely savings and multi-stage production: adding machinery, multi-stage consumption, interest, profits, etc.. would result in an even larger gap - thereby generating even greater pressure for additional debt and exports.

Conclusion: The Law That Failed.

'It is worth while to remark, that a product is no sooner created, than it from that instant, affords a market for other products to the full extent of its own value. When the producer has put the finishing hand to his product, he is most anxious to sell it immediately, lest its value should vanish in his hands. Nor is he less anxious to dispose of the money he may get for it; for the value of money is also perishable. But the only way of getting rid of money is in the purchase of some product or other. Thus, the mere circumstances of the creation of one product immediately opens a vent for other products.'

- Jean-Baptiste Say[2]

Karl Marx ridiculed Say's Law as 'pitiful claptrap' and 'childish babble'[3], and it should now be clear that it fully deserves such derision. Against milder critics, J. B. Say defended his position with the following assertion:

'I had said, 'As each of us can only purchase the productions of others with his own production, - as the value we can buy is equal to the value we can produce, the more men can produce, the more they will purchase.' Thence follows the other conclusion, which you refuse to admit: 'that if certain goods remain unsold, it is because other goods are not produced; and that it is production alone which opens markets to produce.'[4]

Economist that he was, J. B. Say was thinking in terms of comparative statics, thus assuming that a disequilibrium in one market implied an equal and opposite disequilibrium in another. What was needed was a dynamic understanding of the economy - and it was provided a century later, by Major Douglas, who made the necessary correction:

'...it must be borne in mind that *the existing economic system distributes goods and services through the same agency which induces goods and services*, i.e., payment for work in progress. In other words, if production stops, distribution stops, and, as a consequence, a clear incentive exists to produce useless or superfluous articles, in order that useful commodities already existing may be distributed.'[5]

The full implication of this, was succinctly expressed by Julius Evola;

'...mankind has finally arrived at a point where the relationship between need and machine (or work) has been totally reversed: it is no longer need that requires mechanical work, but mechanical work (or production) that generates new needs.'[6]

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2 J. B. Say, quoted in G. Routh, *The Origin of Economic Ideas*, page 140.
3 Source: D. Harvey, *The Limits to Capital*, page 76.
4 *The Origin of Economic Ideas,* op. cit, page 146.
5 C. H. Douglas, *Economic Democracy*, page 69; italics in the original.
6 J. Evola, *Revolt Against The Modern World*, page 335.

The Italian philosopher went on to note:

'In a regime of superproduction, in order for all the products to be sold it is necessary that the needs of single individuals, far from being reduced, be maintained and even multiplied so that consumption may increase and the mechanism kept running in order to avoid the fatal congestion that would bring about one of the following two consequences: either war, understood as the means for a violent affirmation by a greater economic and productive power that claims not to have "enough space," or unemployment (industrial shutdowns as a response to the crisis on the job market and in consumerism) with its ensuing crises and social tensions precipitating the insurrection of the Fourth Estate.

As a fire starts another fire until an entire area goes up in flames, this is how the economy has affected the inner essence of modern man through the world that he himself has created. This present "civilization" starting from Western hotbeds, has extended the contagion to every land that was still healthy and has brought to all strata of society and all races the following "gifts": restlessness, dissatisfaction, resentment, the need to go further and faster, and the inability to possess one's life in simplicity, independence and balance.'[7]

That humanity has suffered untold anxiety, misery and harm simply because of this simple misconception is more than a little unflattering to our species. Nonetheless, it should serve as a lesson regarding the perils of relying on deductive reasoning disconnected from reality, rather than observation and induction - and of the dangerous folly of elevating speculations to the status of law.

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7   *ibid*, pages 335-336.

Appendix I: The A + B Theorem Revisited.

The analysis above enables us to provide a proof of the A plus B theorem. We begin by separating the costs of the firm, (Firm I), into three sets of payments:

i) A_1 : Payments to individuals (wages, salaries, bonuses, dividends, etc...)
ii) B_1 : Repayments of bank loans and other debts owed to financial institutions.
iii) F_1 : Payments to other firms, (Firm(s) II).[8]

Thus, total costs, (T_1) are:

$$T_1 = A_1 + B_1 + F_1$$

F_1 can be further divided into the payments to individuals (A_2), banks (B_2) and other firms (F_2) by Firm(s) II - thus:

$$F_1 = A_2 + B_2 + F_2$$

$$T_1 = A_1 + B_1 + A_2 + B_2 + F_2$$

Let f_1 equal the ratio of F_2 to F_1, (i.e. $f_1 = F_2/F_1$). It stands to reason that f_1 can never be greater than one, and will invariably be less, given that a firm will have other payments (be they to individuals, banks or both) among its costs. Therefore, F_2 must be less than F_1, (i.e. $F_2 < F_1$).

Of course, F_2 itself can be broken down into payments to individuals (A_3), banks (B_3), and other firms (F_3). In short:

$$F_2 = A_3 + B_3 + F_3$$

Let f_2 be the ratio of F_3 to F_2, it follows that like f_1, it is less than one. It also follows that F_3 is equal to $f_2 f_1 F_1$ - and, of course, less than F_2. In short, $F_3 < F_2 < F_1$. Thus total costs T_1 are:

$$T_1 = A_1 + B_1 + A_2 + B_2 + A_3 + B_3 + F_3$$

Given that F_3 can further be broken down, it follows that total costs may be written (with n as the final element of the series) as:

$$T_1 = A_1 + A_2...... + A_n + B_1 + B_2.... + B_n + F_n$$

By setting A as the sum of all the payments A_1 to A_n, (i.e. $A = \sum_{i=1}^{n} A_i$) and B as the sum of all the payments B_1 to B_n, (i.e. $B = \sum_{i=1}^{n} B_i$ we can rewrite total costs as:

$$T_1 = A + B + F_n$$

Because every subsequent iteration of F_n is a smaller proportion of F_1, it follows that as n tends to infinity (mathematically $n \to \infty$), F_n will tend to zero ($F_n \to 0$). Taking the limit, (in the same manner as in differential calculus), we see that total costs resolve to:

$$T_1 = A + B$$

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8   This category also covers all payments to banks other than loan repayments .

Since only A payments constitute incomes for individuals, it is evident that expenditure cannot be greater than A, unless there is an exogenous injection of money, (be it additional borrowing by firms, individuals, or governments. purchases by foreigners, or an infusion of debt-free money) to cover the gap between A + B and A.

Finally, it should be noted that so far, we have assumed that the payments to individuals (A_1, A_2, A_3, etc...) are all available to (partially) liquidate the costs of Firm I. In reality, these incomes may well be spent prior to the completion of Firm I's production cycle, (the situation depicted in Figures 4a, 4b and 5), or saved for the future, (the situation depicted in Figure 2). Therefore, the gap between total costs and total spending is likely to be considerably greater than the sum of B (re)payments.

Appendix II: Revolving Lines of Credit

Throughout this paper, we have assumed that financial credit enters an economy through instalment loans, with the borrowed money being repaid in increments over time. Nonetheless, the results of this analysis would remain valid for loans which are repaid in full at the end of their tenure, with the only difference being the gap between costs and purchasing power emerging in full at the end of the loan's tenure rather than incrementally earlier on.

However, another method of lending has different results: the provision of revolving lines of (financial) credit. A line of credit may be defined as a facility which enables a client to borrow up to a set amount from a bank or other financial institution. A revolving line of credit is one in which the facility is constantly renewed - i.e. the bank does not terminate the facility after full payment of the loan.

The flow of credit in this situation is depicted by the following circuit:

Bank → Firm → Households → Firm → Bank

In line with the column approach, it may be shown as follows:

Figure 9: The Revolving Line of Credit.
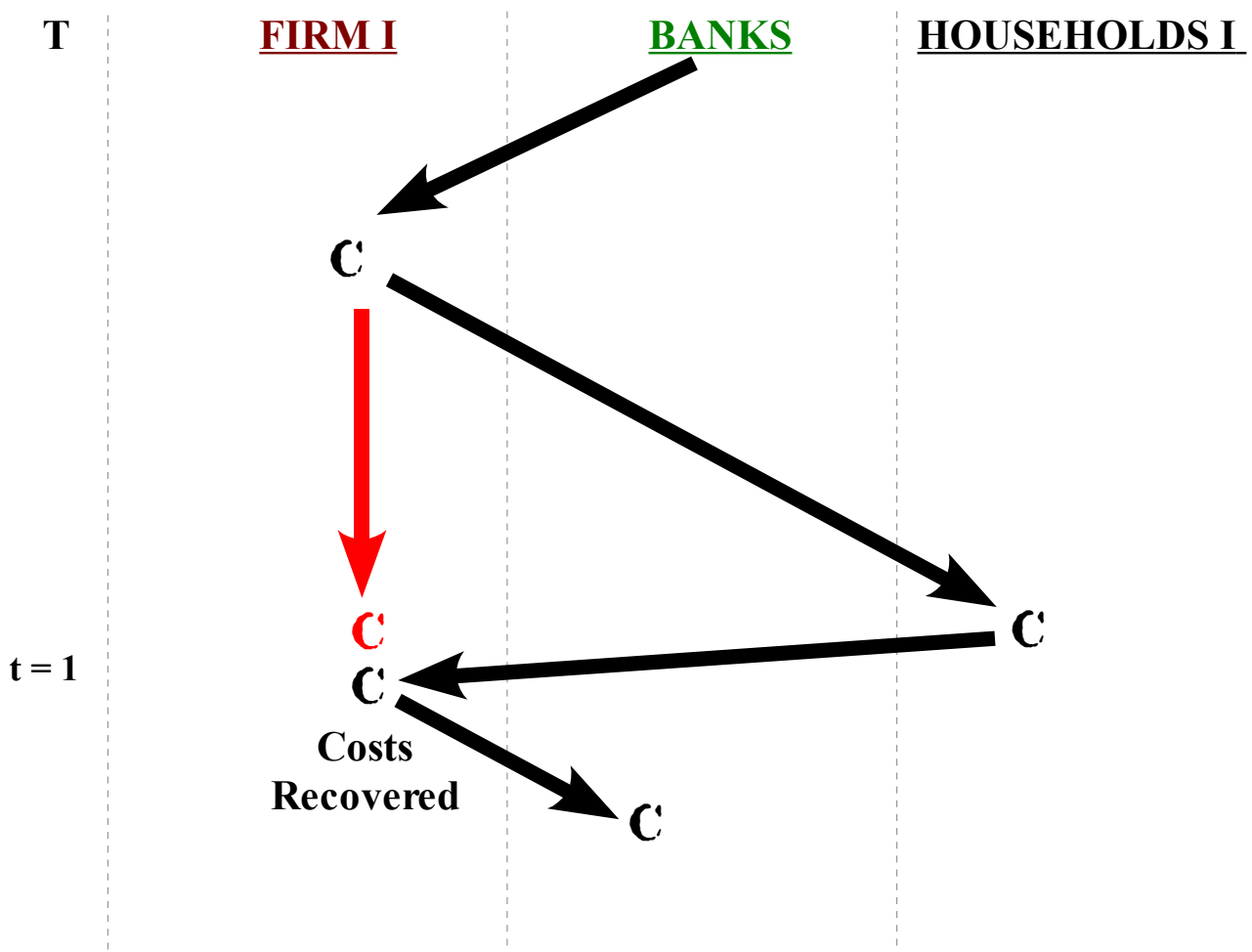
INDEX:

C: (Financial) Credit (Black); Costs (Red)

In this situation, there is no gap between costs and purchasing power generated by the repayment of debt - though of course, that still leaves the gaps generated by savings, interest, profits, etc... However, the firm's costs in this system are not liquidated but simply recovered from the public and then paid to the bank: in order for production to continue, the firm must again borrow from the bank - something that the revolving line of credit greatly facilitates of course. Nonetheless, this means that the control of production is entirely in the hands of the bank since it can terminate it at will by shutting down the revolving line of credit. As Major Douglas put it:

> 'From the producing side it is a good system, *although it leaves to the banker the decision as to whether the production is desirable production.*'[9]

In the system of instalment loans, some firms can obtain sufficient revenue from their customers to pay off their debts and function freely, while others either have to resort to new loans to cover costs or close down. With revolving lines of credit, no firm is free, (unless its revenue is double its costs) for the termination of the line of credit would leave it without the wherewithal to continue operations. Therefore, unless it makes exceptionally large profits (or receives substantial state subsidies), it is totally at the mercy of the bank.

Usually revolving lines of credit are provided for a fee[10], (which, if saved, contributes to the gap) and entail higher rates of interest than the typical loan[11]. Even if we disregard these, it remains the case that not only do they not eliminate every cause of the gap but the cause they do eliminate (the gap generated by loan repayment) is removed at the price of subjecting firms, and indeed, most of the economy, to the dictates of the bank. We should not be surprised if this form of finance grows over time, since it empowers the financiers whilst stabilizing their system.

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9 C. H. Douglas, *Credit Power and Democracy,* page 32; italics in the original.
10 Source: https://www.investopedia.com/terms/r/revolvingcredit.asp
11 Source: https://www.investopedia.com/ask/answers/110614/what-difference-between-loan-and-line-credit.asp