
The Circulation of Bank Capital and the General Rate of Interest

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Daniel E. Saros¹

Abstract

Marxian economists have long asserted the impossibility of discovering an economic law at work in capitalist economies that determines a natural rate of interest. Without contradicting Marx's claim that it is competition in the money capital market that determines the interest rate, it is possible to identify the general rate of interest with greater precision. To make this argument, this article investigates the connection between two interlocking circuits of finance capital.

JEL classification: B51; E11

Keywords

bank capital, finance capital, general rate of interest, interest-bearing capital, market rate of interest

In the first volume of *Capital*, Marx explains how commodities become capital, but it is in volume 3 that he investigates the process by which capital becomes a commodity. Money capitalists seeking profitable outlets for their idle capital transform it into a commodity that has the ability to increase in value once it is consumed. It is not immediately clear what determines the magnitude of the interest paid to the money capitalist in exchange for the money capital that is made available to the productive capitalist.

Marx's solution to this problem is that it is competition in the market for money capital that determines the rate of interest. It is for this reason that Suzanne De Brunhoff agrees, in her classic book about Marxian monetary theory, that we can speak of a "monetary theory of the rate of interest in *Capital*" (1976: 88). Duncan Foley has also emphasized Marx's argument that "there is no general scientific principle that determines the level of the interest rate in relation to the profit rate" (1986: 113). More recently, Eckhard Hein (2009) has echoed these claims that there is no natural rate of interest as a center of gravity for actual rates of interest. "Instead, the rate of interest is given by concrete historical, institutional, and political factors which reflect the relative powers of money capital and industrial capital" (Hein 2009: 22). This article offers a

¹Valparaiso University, Valparaiso, IN, USA

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Corresponding Author:

Daniel E. Saros, Department of Economics, Valparaiso University, College of Arts & Sciences, 1400 Chapel Drive, Valparaiso, IN 46383, USA.

Email: Dan.Saros@valpo.edu

different perspective on this question, building upon Marx's initial work on the subject as well as the work of Theodore Lianos (1987), who has offered a sophisticated analysis of the determination of the rate of interest and the role of bank capital from a Marxian perspective.

The article is divided into four sections. In the first section, Marx's theory of interest rate determination and Lianos's interpretation of Marx's theory are briefly summarized. The relationship between Lianos's approach and the analysis here is clearly stated. In the second section, the circulation of interest-bearing capital is linked to the circulation of bank capital in a way that demonstrates how these two interlocking circuits are connected yet distinct. The analysis creates an accounting framework that is used in the third section to illustrate how capitalist competition between the productive industrial sector and the unproductive banking sector of a capitalist economy leads to the formation of a general rate of interest. The analysis is argued to be consistent with Marx's analyses of capitalist competition and interest rate determination. The final section concludes.

I. Marx's Theory of Interest Rate Determination and Lianos's Interpretation

According to Marx, it is not possible to identify the interest rate on the basis of the law of value because it will be determined competitively in the money capital market as money capitalists and industrial capitalists compete with one another for the mass of surplus value that has been produced in the industrial sector. In volume 3 of *Capital*, for example, Marx explains how the market for money capital differs from the market for labor-power. In the case of the money capital market,

competition does not determine divergences from the law, for there *is* no law of distribution other than that dictated by competition; . . . there is no "natural" rate of interest. What is called the natural rate of interest simply means the rate established by free competition. (Marx 1991: 478)

Nevertheless, Lianos (1987) emphasizes that the "accidental" and "purely empirical" determination of the rate of interest does not imply a random determination. Instead, it means that the law of value is not involved in the determination of the rate of interest (Lianos 1987: 40). The factors that influence its level, however, may be analyzed.

Lianos has explored the variety of factors that Marx identifies as determinants of the supply and demand for money capital. The determinants of the demand for money capital include the level of production, the need for liquidity, the need for speculative funds, and the rate of interest. The supply of money capital, on the other hand, depends on the level of production and the rate of interest. As Lianos explains, the current level of each of these factors depends on the phase of the business cycle. In his basic model, Lianos accounts for only a limited number of these factors. Specifically, as the level of production rises over the course of the business cycle, the demand for money capital rises. Because he assumes a fixed supply of money capital, the divergence between demand and supply causes the interest rate to rise during an economic expansion. Similarly, the interest rate falls during the recession phase of the business cycle when the demand for money capital dips below the supply.

According to Lianos, Marx considers the supply of money capital to be endogenous in volume 3 of *Capital*. That is, the supply of money capital changes in response to the needs of the system (1987: 44). It is surprising then that Lianos treats the supply of loan capital as fixed in his basic model as the level of production changes. Of course, if the supply of money capital completely accommodated the demand for it, then no changes in the interest rate would ever occur. Marx

argues that in the case of credit (e.g., bills of exchange) the quantity demanded is generally supplied. This accommodating feature of credit causes it to have no effect on the rate of interest because divergences between demand and supply generally do not occur. In contrast, Lianos asserts that the supply of loan capital, which is in the money form, is generally given in the short run and thus it does not perfectly accommodate the demand for it (1987: 45). As a result, the cyclical variations in the rate of interest are made possible by the different behavior of loan capital and credit over the course of the business cycle (1987: 45).

The divergences between the demand and supply of loan capital only occur during the expansionary and recessionary phases of the business cycle within Lianos's framework. Therefore, if "normal" business conditions are assumed such that production is neither expanding nor contracting and the supply of loan capital is assumed to equal the demand for it, then demand will have no reason to deviate from its current level and the interest rate will not change. In this article, although cyclical fluctuations are ignored, the one factor that is allowed to influence the rate of interest is capital's search for the highest rate of profit. This search is assumed to influence the supply of loan capital as capital migrates between the financial and industrial sectors, and the interest rate then adjusts until the loan capital market has cleared. Although this result should not be regarded as an equilibrium interest rate, it is worthwhile to ask which interest rate will emerge under such idealized conditions. Because this question ignores business cycle fluctuations, it is being asked at a very high level of abstraction. The result will, therefore, lack the concreteness of Lianos's (and Marx's) analysis, but the answer will provide insight into the center of gravity around which the market rate of interest fluctuates for the reasons Lianos (and Marx) identify. It is this rate of interest that may be called the general rate of interest, and it may be regarded as a special case in which supply and demand are in perfect balance in Lianos's more general model and a uniform rate of profit prevails in the financial and industrial sectors. Before the general rate of interest can be specified with greater precision, however, the connection between two interlocking circuits of finance capital must be explored.

2. Two Interlocking Circuits of Finance Capital: Interest-Bearing Capital and Bank Capital

In volume 3 of *Capital*, Marx identifies the form of circulation of interest-bearing capital as $M - M - C - M' - M'$. In this particular instance, M' is to be interpreted as $M + \Delta M$ where ΔM represents interest (1991: 461). This interest is nothing more than a special title for that part of the profit which the actually functioning capitalist has to pay to the capital's owner, instead of pocketing it himself (Marx 1991: 460). Of course, the productive capital generates the entire average profit, but because it is the circulation of interest-bearing capital that is the subject of discussion, ΔM only reflects the interest that returns to the lender. The interest-bearing capitalist (or loan capitalist) may renew this process indefinitely so long as conditions remain normal enough for the capitalist process of reproduction to repeat itself without interruption.

The banking capitalist, however, is in a noticeably different situation than the simple loan capitalist.¹ The banking capitalist possesses a capital value much like the loan capitalist but also has the capacity to raise additional capital from a large class of possessors of money capital. These money capitalists vary greatly in the quantities of capital they possess and in their level of consciousness as they participate indirectly in the capitalist production process. Much of this capital originates in the circulation process of industrial capital as idle money capital finds its way into the banks. Small savers also possess idle money balances that they wish to deposit with

¹Following Marx's method, any use of the term "capitalist" in this context refers to the personification of an economic category, namely capital.

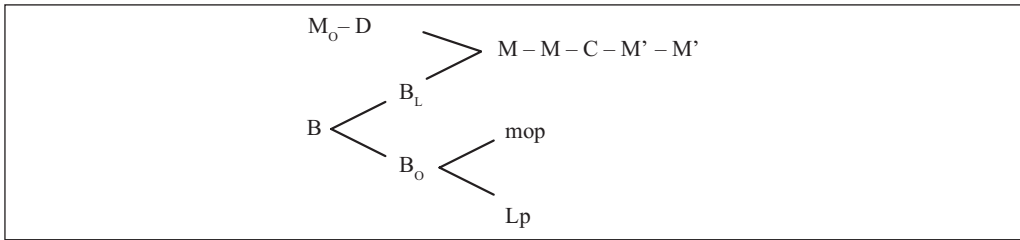


Figure 1. The Circulation of Bank Capital

the banking capitalist for small gains or greater security. In any event, the banking capitalist has at his command a quantity of capital that greatly exceeds the bank capital he possesses outright.²

These two forms of capital, bank capital and loan capital or interest-bearing capital, may be classified under the general heading of finance capital to indicate their common role in the extension of money capital to the productive capitalist even though neither form of capital is directly involved in the production of surplus value. The designation as finance capital distinguishes it clearly from industrial capital, which is involved directly in the production of surplus value. Bank capital and loan capital are related in yet another way. In particular, their circulation processes are interconnected as the form of circulation of bank capital shown in Figure 1 demonstrates.

In Figure 1, B represents the bank capital advanced at the beginning of the circulation process of bank capital. A division of the bank capital into two parts follows. B_0 represents the operating capital of the bank and is further subdivided into variable and constant capital components. The bank capitalist must purchase labor-power (L_p) at its value, which is readily found on the labor market. This unproductive labor-power is necessary to carry out basic banking operations, including loan processing, record keeping, customer assistance, etc. Means of production (mop) are also necessary and so an advance of constant capital is necessary to purchase all of the material requirements of the bank, including office supplies, computers, electricity, etc. For simplicity, it can be assumed that all constant capital is circulating capital. That is, it is assumed that none of the bank capital is fixed as would be the case with the purchase of a banking facility, for example.

The second component of the bank capital (B_L) is the banking capitalist's contribution to his own loan operations. This component of bank capital is thus transformed into interest-bearing capital. Generally, the banking capitalist must possess sufficient operating capital before he can transform his bank capital into loan capital without the assistance of another financial intermediary. A banking capitalist who refused to advance a sufficient quantity of capital for operating purposes would in that case become a simple loan capitalist and would cease to be a banking capitalist altogether.

Before the bank loan capital (B_L) is handed over to a productive capitalist to assist in the purchase of the elements of the production process, it is first combined with cash deposits received from the large class of owners of idle money (M_0) in search of a profitable and secure outlet for its cash. These idle cash holdings from many different sources are passed from their owners and are consolidated in the hands of the banking capitalist, becoming deposit capital (D). Once all of this cash is combined, it is transformed into interest-bearing capital through a process that the

²“As a provider of credit, the bank works with all the capital at its disposal; its own and that of others” (Hilferding 1981: 172).

banks refer to as *asset transformation*. That is, liabilities possessing one set of characteristics are sold and the proceeds are used to buy assets with a different set of characteristics (Mishkin 2010: 229). The resulting loan capital (M) then participates in the process of circulation of interest-bearing capital that Marx identifies.

Whereas the circulation of interest-bearing capital may be understood without reference to the circulation of bank capital, an understanding of the circulation of bank capital requires the prior elaboration of the circulation of interest-bearing capital. That is, the circulation of bank capital is derived from the circulation of interest-bearing capital and can only be understood in connection with it. Merchants' capital and interest-bearing capital are themselves derivative forms even though, historically, the two forms appear before the modern primary form of capital (Marx 1990: 267). That is, they are both derived directly from the circulation process of productive capital. Interest-bearing capital is thus derived from productive capital just as bank capital is derived from interest-bearing capital. In this manner, the forms of capital advanced appear further and further removed from the source of surplus value (i.e., labor-power), and yet their importance grows enormously as capitalist development proceeds.

Upon its return to the bank capitalist, the loan capital has changed considerably. As with the industrial capitalist, the change is purely quantitative in nature rather than qualitative. The loan capital possessed the form of money when passed to the borrower, and it returns in the form of money when repaid. The quantitative increase in the interest-bearing capital reflects entirely the interest paid to the banking capitalist for the service of the capital that was alienated as a commodity. Ignoring for the moment that the banking capitalist generally withholds a portion of her cash in the form of reserves, the initial loan capital amounts to $M = B_L + D$. Upon its return, the loan capital has increased to $B_L + D + \Delta M$. This expression represents the repayment of principal with interest.

Without the quantitative increase in the quantity of loan capital from the beginning of its circulation to the end, the form of circulation of bank capital makes the banking capitalist appear entirely irrational as a capitalist. For one thing, a portion of the capital she advances apparently ends its circulation process almost immediately after it has begun. The circulation of bank operating capital is restricted because the labor-power and means of production it is used to purchase are not consumed with the intention or result of producing valuable commodities, no matter how essential they may be to other bank processes. As a result, this capital appears to be lost the moment it is advanced. For this process to be consistent with the mentality of the banking capitalist and thus rational within the context of the capitalist mode of production, the operating capital of the bank must return with the repayment of the loan. Because it cannot return in the form of principal, having never been loaned, it can only return in the form of interest if it is to return at all. Without such a return, not only would the sum of bank capital and deposit capital fail to expand, it would actually lose value as the quantity that returns with the repayment of the loan ($B_L + D$) is strictly below the quantity initially advanced ($B + D$).

The simple return of the operating capital of the bank with the payment of interest is not sufficient to render the entire process rational from the standpoint of the banking capitalist. If the interest paid is equivalent to the operating capital advanced, then the entire process leaves the bank capitalist with a capital value equal to $B + D$. In that case, the banking capitalist is in the same position as the industrial capitalist whose capital fails to expand throughout its entire circulation. As Marx explains, such activity would be absurd and empty without the expansion of the capital value. It makes far more sense for the capitalist, in that situation, to follow the way of the miser whose plan is simpler and safer because the value is not exposed to the dangers of circulation (Marx 1990: 248). Therefore, for this process to support the banking capitalist in his drive to reap bank profits, the interest paid must not only be sufficient to compensate the capitalist for the operating capital advanced, it must actually exceed that amount to return a positive profit.

The loan interest received or gross bank profit, ΔM , must therefore equal $B_0 + \Delta B$ where ΔB represents the net bank profit and is greater than zero.³

Finally, just as all capital is expected to return the average profit, bank capital forms no exception to the general rule. Hence, the net bank profit tends to equal the average profit calculated on the basis of the bank capital advanced. Given the capital of the bank, the net bank profit will be that amount which is necessary for the bank to earn the average profit. Competition alone ensures that the more parasitic forms of capital tend to receive the average rate of profit, as the next section explains.

3. The Formation of the General Rate of Interest

Once the form of the circulation of bank capital is fully identified, it is possible to arrive at the expression for the general rate of interest. If the simplest conditions are assumed such that no operating capital is required or advanced, then the entire bank capital becomes loan capital. Furthermore, if the quantities of bank capital and deposit capital are both fixed and the bank capitalist is not subject to any pressure, whether internal or external, to maintain a fraction of his deposits in the form of reserves, then the entire capital, $B + D$, is available as an interest-bearing loan to industrial capitalists and constitutes the supply of loan capital.

In this particular case, the quantity of interest paid for the loan, ΔM , is equivalent to the increase in the bank capital, ΔB . The reason, of course, is the absence of any operating capital advanced under these simple conditions. Assuming that B and D are constant magnitudes and that the loan period is 1 year with a simple annual rate of interest, then the interest rate may be expressed in the usual fashion as a percentage of the total loan capital as shown in equation (1).⁴

$$i = \frac{\Delta M}{M} = \frac{\Delta B}{B + D} \quad (1)$$

Dividing both numerator and denominator by the quantity of bank capital, we arrive at a further result as shown in equation (2).

$$i = \frac{\Delta M}{M} = \frac{\Delta B}{B + D} = \frac{\frac{\Delta B}{B}}{1 + \frac{D}{B}} \quad (2)$$

To develop a theory that explains the determination of the general rate of interest, it must be recalled that capitalist competition leads to the formation of a general annual rate of profit in the productive capitalist sector. Because the equalization of the profit rate extends to the financial sector, the annual rate of interest must have a tendency to generate for bank capitalists the general annual rate of profit. It is this general rate of interest that ensures the equality between bank capital and industrial capital despite the constant fluctuations that force a deviation between the general rate of interest and the market rate of interest.

The banking sector is no different from other sectors in that capital is only invested there if it can obtain the average rate of profit. As a result, it might be argued that the equalization of the

³According to Resnick and Wolff (1987: 219-220), subsumed class revenues received by a financial enterprise in the form of dividends and interest from industrial enterprises are redistributed to bank tellers, clerks, loan officers, accountants, guards, and others who perform unproductive labor within the financial enterprise.

⁴It is assumed that no withdrawals occur during the loan period. If withdrawals do occur, then the banking capitalist will lack sufficient reserves to pay depositors.

profit rate is the most important form of competition with respect to the establishment of the rate of interest. Furthermore, capital's search for the highest rate of profit is independent of business cycle fluctuations, so even under so-called "normal" conditions, its equalizing power may be argued to apply. Rudolf Hilferding, for example, argued that capitalist competition leads to a rapid equalization of the profit rate across the financial and industrial sectors. When comparing the profit rate of the financial sector to that of the industrial sector, Hilferding argued the following:

If it is lower, capital will be withdrawn from the banking business, while if it is higher new banks will be established. Since bank capital is in the form of money, or to a great extent can easily be converted into money at any time, the equalization of profit can be achieved very quickly. (Hilferding 1981: 180)

Hilferding, therefore, offers a reason to justify the focus on competition for the highest profit rate across these two spheres of capitalist activity.

Aside from the issue of differential risk, for which a compensating premium may be required, the owner of capital is completely indifferent to the branch of industry or finance in which her capital is invested so long as the after-tax profit rate is the same. It is the ability of capital to achieve self-expansion that impresses the owner of capital. The context is only important insofar as it helps or hinders this process of self-expansion. The use to which capital is put matters little as a general rule.

The history of capitalist development provides support for the claim that differences in profit rates will encourage the movement of capital between the financial and industrial sectors. According to Duménil and Lévy (2002: 419), the financial sector should be subject to the same "gravitation process" as other industries in terms of the equalization of the profit rate. In a more recent analysis of the U.S. economy from 1952-2000, Duménil and Lévy (2004: 99) carefully demonstrate that "the values of the profit rates of the nonfinancial and financial sectors are similar" and that "the varying discrepancy between the two profit rates appears in line with the distribution of capital between the two sectors." That is, capital tends to gravitate towards the sector with the higher rate of profit.

The relatively recent trend towards "financialization," the complexities of which the present theoretical analysis does not even begin to touch, involves "a competitive calculus for capital" that Bryan et al. (2009: 471) point out goes well beyond Hilferding's analysis of finance capital. Nevertheless, Foster and Magdoff (2009: 52-56) argue that this massive shift in recent decades has stemmed from the difficulties of finding profitable outlets for capital in the "real" economy. They go so far as to argue that the U.S. economy has experienced a shift from M-C-M' to M-M' as financial profits have soared and manufacturing profits have plummeted as a percentage of U.S. domestic profits. In general, the Marxian literature supports the view that capital tends to migrate between the financial and industrial sectors in response to differential profit rates.

The dynamics of profit rate equalization across the industrial and financial sectors can be represented with the simple flow diagram in Figure 2. In the figure, the idle deposits of small savers are combined with the idle money capital of industrial capitalists who own their own capital. The financial sector transforms this deposit capital along with bank loan capital into interest-bearing capital in the loan market. The funds are loaned to indebted capitalists in the industrial sector. Assuming that an abundance of profit-making opportunities exist (i.e., normal conditions), all of the capital will be loaned, and it will realize the general rate of profit in the industrial sector. If the financial sector profit rate exceeds the general rate of profit, then capital will migrate from industry to finance and bank loan capital will rise (shown as additional loan capital in the figure), causing the market interest rate to fall towards the general rate of interest. On the other

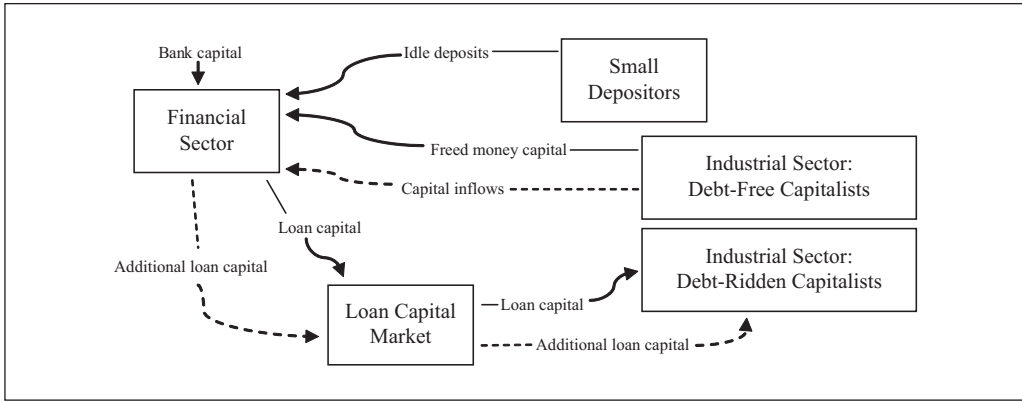


Figure 2. The Dynamics of Profit Rate Equalization under Normal Conditions

hand, if the financial sector profit rate is below the general rate of profit, then capital will flow out of finance and into industry (a reversal of the dotted arrows in the diagram). The amount of bank loan capital will contract and the market rate of interest will rise towards the general rate of interest.⁵

Combining the accounting framework developed in section 2 with the dynamics of profit rate equalization developed in this section, the general rate of interest can now be precisely stated. Given the general annual rate of profit, p , the general rate of interest, i_g , may now be written as in equation (3) subject to the simple assumptions identified above.

$$i_g = \frac{\Delta M}{M} = \frac{\Delta B}{B + D} = \frac{\frac{\Delta B}{B}}{1 + \frac{D}{B}} = \frac{p}{1 + \frac{D}{B}} \tag{3}$$

Equation (3) reveals a number of important insights. First, the general rate of interest is not directly observable given its close relationship to the general rate of profit. Furthermore, because the general rate of profit falls at higher levels of industrial development, we should expect the rate of interest to do the same, allowing for exceptions to the general rule (Marx 1991: 481-482). Marx further points out that “in any given country, the average rate of interest is constant over long periods, because the general rate of profit changes only in the long run The relative constancy of the profit rate is precisely reflected in this more or less constant character of the average or common rate of interest” (Marx 1991: 488). This result is thus basically consistent with Marx’s analysis of the subject. Ernest Mandel (1995: 13) also uses empirical evidence related to interest rates to defend his Marxist theory of long waves, arguing that “at least in their long-term trend, interest rates fluctuate parallel to the average rate of profit.” The relationship between the general rates of profit and interest is also consistent with Marx’s claim that although interest-bearing capital emerges historically prior to the advent of industrial capital, the form of its circulation may only be understood after the theory of surplus value production is fully developed.

Another key insight that may be gleaned from equation (3) is the conclusion that the general rate of interest is generally below the general rate of profit. The only instance in which this conclusion would not be reached is when bank deposits are zero. In that case, the general rate of

⁵One potential complication that has been omitted from this discussion of the adjustment mechanism is discussed later in this section.

interest equals the general rate of profit. This result is to be expected because without deposits to transform into loan capital, the interest received must be sufficient to generate the competitive rate of profit on bank capital. That amount of interest is nothing but the average profit itself. As Fred Moseley explains, “the maximum rate of interest is the rate of profit” (2002: 88). This example is trivial, however, because the bank capitalist generally has deposit capital at his disposal and so the deposit/bank capital ratio (D/B) is typically positive. As a result, the general rate of interest is merely a fraction of the general rate of profit in nearly all situations. Furthermore, the higher the deposit/bank capital ratio, the lower will be the general rate of interest. This conclusion is also to be expected because as this ratio grows, the quantity of interest that is necessary to ensure the banking capitalist the average rate of profit on a given amount of bank capital may be appropriated on the basis of a lower rate of interest.

The general rate of interest may be further modified to account for additional restrictions imposed on the bank capitalist. For example, to the extent that the bank capitalist is required to hold a given fraction, R , of her bank deposits as cash reserves, she will hold cash reserves in the amount of RD .⁶ This restriction reduces the lending opportunities available to the bank capitalist. Given the relatively simple assumptions already outlined above, the loan capital is now $B + (1 - R)D$, and this expression represents the excess reserves of the bank. Assuming the entire quantity of excess reserves is transformed into loan capital, the general rate of interest may now be written as in equation (4) below.

$$i_g = \frac{\Delta M}{M} = \frac{\Delta B}{B + (1 - R)D} = \frac{\frac{\Delta B}{B}}{1 + \frac{(1 - R)D}{B}} = \frac{p}{1 + \frac{(1 - R)D}{B}} \quad (4)$$

It is a straightforward matter that equation (3) represents nothing other than the special case of equation (4) in which $R = 0$ and thus no reserves are legally required. A direct result of this modification to the expression for the general rate of interest is that a positive required reserve ratio (i.e., $R > 0$) implies a higher general rate of interest. This conclusion is perfectly logical since the reduction in the quantity of loan capital implies that a higher rate of interest is necessary in order to make possible the realization of the general rate of profit on bank capital.⁷

Furthermore, as the reserve requirement, R , increases, the quantity of loan capital falls sending the general rate of interest even higher. The upper limit, of course, occurs when $R = 1$. In that case, the general rate of interest equals the general rate of profit. This result is identical to the earlier result which occurred when it was shown that if the bank capitalist acquires no deposits whatsoever then a rate of interest equal to the rate of profit is the only way to ensure the general rate of profit on bank capital. In this case, the bank capitalist is forced to operate *as if* he has acquired no deposits since they are of no use to him as loan capital and would even require outlays related to processing and security. It thus follows that when $0 \leq R \leq 1$, the result in statement (5) holds true.

$$\frac{p}{1 + \frac{D}{B}} \leq i_g \leq p \quad (5)$$

⁶As Hilferding notes, “only part of the deposited money is actually at the disposal of the bank, while another part must be kept as a reserve fund, but this reserve, which earns no interest, is very small compared with the total sum” (1981: 172). The payment of interest on reserves by the U.S. Federal Reserve since 2008 represents a sharp departure from past practice.

⁷It is also worth noting that if the quantity of bank capital equals the required reserves such that $B = RD$, then the general rate of interest equals $p/(D/B)$ so only bank deposits become loan capital.

These conclusions regarding the general rate of interest are similar to orthodox Keynesian representations of the effect of a change in the reserve requirement ratio on the rate of interest. The difference, of course, is that the common conclusion is reached on the basis of entirely different theories. In orthodox Keynesian theory, a higher reserve requirement reduces the money supply through a contraction of lending, which consequently creates a shortage in the money market and the sale of bonds. The Marxian theory developed here suggests that the higher reserve requirement causes the general rate of interest to rise above the market rate of interest. The consequence will be an outflow of bank capital from the banking sector and a contraction of lending. The subsequent rise in the market rate of interest will ensure a rate of profit on bank capital that is once again equal to the general rate of profit. As with capital migration across branches of production in the industrial sector, the same tendencies lead to the equalization of the rate of profit across the financial and industrial sectors of capitalist economies.

The simple case assumes that the quantity of deposits remains constant such that $\Delta D = 0$. This condition implies that no withdrawals occur during the loan period. Such withdrawals may be problematic for the bank capitalist if she lacks sufficient cash reserves to satisfy depositors. This possibility is, of course, central to the operation of capitalist banks and is a topic for future examination. It is further assumed that the quantity of bank capital remains constant prior to repayment of the loan such that $\Delta B = 0$. Hence, neither new bank capital nor new deposits are acquired during the loan period.

A final determinant of the general rate of interest that ought to be included is the quantity of bank operating capital required (B_O). Equation (6) identifies this relationship, drawing upon the fact that $\Delta M = B_O + \Delta B$.

$$i_g = \frac{\Delta M}{M} = \frac{B_O + \Delta B}{B_L + (1-R)D} = \frac{\frac{B_O}{B} + p}{\frac{B_L}{B} + \frac{(1-R)D}{B}} \quad (6)$$

From equation (6) it is apparent that the general rate of interest is directly related to the annual rate of profit, p , and the reserve requirement ratio, R , as before. In addition, given the fixed quantity of bank capital, an increase in the operating capital of the bank, B_O , necessarily reduces the quantity of bank capital that becomes loan capital, B_L . As a result, the general rate of interest rises to ensure the general rate of profit on bank capital for the twofold reason that less loan capital is created and a greater quantity of operating capital is required. It follows that if the wages paid to bank employees or the cost of office supplies and other material requirements increase on average throughout the banking sector, then the general rate of interest must rise. Similarly, if these operating costs decline on average, then the general rate of interest will also decline as a greater part of the bank capital becomes loan capital.

It is now possible to consider a complication that arises in the process of profit rate equalization across the industrial and financial sectors through capital migration. When an inflow of bank capital occurs in the case of the financial sector profit rate exceeding the industrial sector profit rate, the general rate of interest is affected as well as the market rate of interest. Specifically, the inflow of bank capital will cause the general rate of interest to rise. Recalling that $B = B_O + B_L$ and assuming that $B_L = \alpha B$ where α is a given fraction between 0 and 1, this result can be shown as in equation (7).

$$i_g = \frac{\frac{B_O}{B} + p}{\frac{B_L}{B} + \frac{(1-R)D}{B}} = \frac{\frac{B - B_L}{B} + p}{\frac{B_L}{B} + \frac{(1-R)D}{B}} = \frac{\frac{B - \alpha B}{B} + p}{\frac{\alpha B}{B} + \frac{(1-R)D}{B}} = \frac{1 - \alpha + p}{\alpha + \frac{(1-R)D}{B}} \quad (7)$$

Table 1. A Numerical Example of Profit Rate Equalization across Sectors*

Industrial Sector		Financial Sector	
Industrial Rate of Profit	25.00%	Financial Rate of Profit	25.00%
Non-borrowed Capital (\$)	305,000	Bank Operating Capital (\$)	5,000
Borrowed Capital (Loan Capital) (\$)	195,000	Bank Loan Capital (\$)	35,000
Total Productive Capital (\$)	500,000	Total Deposits (\$)	200,000
Total Profit (\$)	125,000	Reserve Requirement Ratio	20.00%
Total Interest Paid (\$)	15,000	Total Bank Capital (\$)	40,000
Total Annual Social Product (\$)	625,000	General Rate of Interest (Prime Rate)	≈7.69%
		Loan Interest Received or Gross Bank Profit (\$)	15,000
		Net Bank Profit (\$)	10,000
Aggregate Profits (\$)		135,000	
Total Social Capital (\$)		540,000	
General Rate of Profit (Gross)		25.00%	

*All terms are given except for the bold-faced terms, which were calculated using the given information and equation (6). Dollar amounts may be interpreted as being in millions of dollars to make the numbers somewhat more realistic.

The simplified expression in equation (7) shows that an inflow of bank capital (B) will increase the general rate of interest.

As a result, as the market rate of interest falls, the general rate of interest rises, giving rise to three possibilities. The first possibility is the unlikely case that the two exactly coincide very quickly thus bringing further capital movements to an end. A second possibility is that the market rate of interest remains above the general rate of interest, thereby leading to additional inflows of capital and leading to a convergence of the two rates over time. A final possibility is that the rise in the general rate of interest overshoots the falling market rate of interest, thus causing capital outflows to occur. Convergence of the two rates may then occur over time with additional capital movements, or fluctuations may persist indefinitely until general conditions change.

Table 1 provides a numerical example of the static situation in which the rate of profit has equalized across the financial and industrial sectors. The given information and equation (6) are used to determine the general rate of interest. The reader should recall that borrowed capital in the industrial sector consists of the sum of bank loan capital and loans from deposits ($B_L + (1 - R)D$) and that the total interest paid consists of the sum of bank operating capital and net bank profit ($B_O + \Delta B$). A calculation of the general rate of profit is also included using the aggregate profits and the total social capital. This calculation of the (gross) general rate of profit may be precisely stated as in equation (8) where K refers to the total productive capital, and π refers to the total profit created in the industrial sector. Equation (8) also shows that whenever the rates of profit in the industrial and financial sectors are the same (equal to p), then the general rate of profit must also equal p.

$$\frac{\pi + \Delta B}{K + B} = \frac{pK + pB}{K + B} = \frac{p(K + B)}{K + B} = p \quad (8)$$

It should be strongly emphasized that, although the general rate of profit may be calculated in this manner, the calculation is not meant to obscure the fact that profit is created in the productive sector alone. Once the profit is created in the industrial sector, a portion is transferred to the

financial sector as interest, which is then double counted in this calculation. Incidentally, a portion of the total social capital is also double counted in this calculation. That is, bank loan capital is counted once as bank capital and again as industrial loan capital.

4. Conclusion

This simple demonstration has assumed that all excess reserves are loaned and that bank deposits remain constant throughout the period of the loan. Matters are never so simple for capitalist bankers and so the case of fluctuating bank deposits and the decision to hold excess reserves should be major topics for future examination. The payment of interest to depositors and the potential for banks to use large amounts of borrowed capital are other topics that should be carefully considered. The latter possibility is particularly important in the aftermath of the 2008 financial crisis. A more detailed analysis should also consider the extent to which central banks may influence the general rate of interest using instruments of monetary policy other than the reserve requirement ratio. Such an investigation inevitably raises questions about the relationship of this analysis to the bond market. All of these subjects should be carefully considered in the course of a future investigation.

This analysis provides a detailed accounting framework that has been combined with Marx's theory of profit rate equalization to explain how bank capital appropriates the average profit when granting interest-bearing loans. By assuming that capital's search for the highest profit rate leads to a balance of supply and demand in the money capital market, the analysis makes possible the determination of the general rate of interest. Although this analysis of bank capital is argued to be consistent with Marx's analyses of capitalist competition and interest rate determination, it is original in the sense that neither earlier Marxists nor Marx himself analyzed bank capital in this particular manner. Nevertheless, the general result is one that Marxists have long maintained, namely that the parasitic nature of finance capital is revealed in the fact that the total interest received in the banking sector represents a fraction of the aggregate profit appropriated in the industrial sector. Although it is not immediately apparent to the casual observer, interest income is thus derived from the capitalist exploitation of labor-power.

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Author Biography

Daniel E. Saros is an Associate Professor of Economics at Valparaiso University where he has been a member of the faculty since 2004. He graduated from Bowling Green State University in Ohio in 1999 and received his Ph.D. in Economics from the University of Notre Dame in 2004. His primary research interests include Marxian economics, labor history, and alternatives to capitalism. He lives with his wife Stacy in Valparaiso, Indiana.