International Journal of Political Economy, vol. 40, no. 1, Spring 2011, pp. 48–68.

ISSN 0891–1916/2011 $9.50 + 0.00.
DOI 10.2753/IJP0891-1916400102

ANDREA FUMAGALLI AND STEFANO LUCARELLI

A Financialized Monetary Economy of Production

***Abstract**: The monetary theory of production offers a systemic approach to describe systemic crises, but, faced with contemporary capitalism, it needs to be modified. In accordance with the Schumpeterian perspective, we adopt a framework that points to both the monetary nature of and qualitative changes in the capitalist system. The low level of wages, and the consequent underconsumption, is not the unique cause of the 2007–9 crisis. Not only has financialization changed the behavior of consumer-savers, but investment has also changed. The overfinanced leverage that was an important characteristic of the crisis may be better understood historically with the emergence of the 1990s' technological paradigm. The crisis stems mainly from overinvestment in new technologies. Particularly during the 1990s, the emerging industrial technology favored its own sort of financing. The financialization of the monetary economy of production can be better explained if we understand the shift to a new technological paradigm as a general outlook on the productive problems faced by firms, whereby the relevance of the so-called immaterial production takes on greater importance. To describe this dynamic, we present two different analytical forms of the monetary economy of production: the first one represents the new economy scenario, and the second one represents the financialized monetary circuit during the real estate bubble.*

***Keywords:** crisis, finance-led growth regime, financialization, intangible assets, monetary theory of production*

Andrea Fumagalli is an associate professor of political economy, University of Pavia, Pavia, Italy. Stefano Lucarelli is an assistant professor of political economy, University of Bergamo, Bergamo, Italy. The authors are particularly grateful to Hervé Baron, Alessandro Caiani, Orsola Costantini, Stefano Figuera, Christian Marazzi, Marco Orlandi, Marco Passarella, Mario Seccareccia, Remì Stellian, and the two anonymous referees for stimulating suggestions.

In a short 1933 article titled "A Monetary Theory of Production," his contribution to the Festschrift für Arthur Spiethoff, J.M. Keynes argued that "the main reason why the problem of crises is unsolved, or at any rate why this theory is so unsatisfactory, is to be found in the lack of what might be termed a monetary theory of production." He then explained what "a monetary theory of production" is:

> The distinction which is normally made between a barter economy and a monetary economy depends upon the employment of money as a convenient means of effecting ex-changes—as an instrument of great convenience, but transitory and neutral in its effect. . . . Money, that is to say, is employed, but it is treated as being in some sense neutral. That, however, is not the distinction which I have in mind when I say that we lack "a Monetary Theory of Production." An economy, which uses money but uses it merely as a neutral link between transactions in real things and real assets and does not allow it to enter motives or decisions, might be called—for want of a better name—a real-exchange economy. The theory which I desiderate would deal, in contradistinction to this, with an economy in which money plays a part of its own and affects motives and decisions and is, in short, one of the operative factors in the situation, so that the course of events cannot be predicted, either in the long period or in the short, without a knowledge of the behavior of money between the first state and the last. (Keynes 1933/1978: 408–11)

Among the economic theories that serve as a description of economic reality to formulate analytical rules concerning its functioning, an important role is played by the so-called theory of the monetary circuit. The monetary circuit, as a social macroeconomic analysis, considers the modern economy as a monetary production economy, and therefore it involves a completely different mechanism from that of a barter economy. A monetary economy entails that all exchanges are settled using money, which immediately raises the problem of how money is created and introduced into the system. In modern economies, money is created by the interaction between the banking and enterprise sectors, and it is then made available for the latter through the granting of bank credit. Because only those who have money can enter the market, the decisions made by banks regarding to whom to grant credit and how much credit to grant become crucial elements in the discussion over the various stages of the economic process.

The capital advanced by industrial capitalists amounts to the only money needed to pay workers' wages. Through their hierarchical access to credit, firms determine the amounts of consumer goods and investment goods in such an economy.[1] After production has occurred, the price of consumer goods is fixed. Given the equilibrium value of the profit rate prevailing in the entire economic system, it can then be used to derive the price of investment goods compatible with profit uniformity. After prices are fixed, the distribution of income is clearly also fixed.[2] Creating money thus contributes to the determination of the quantity produced as well as the distribution of national income. The result is that money is never neutral to "the social group being admitted to bank credit, money is, at the economic level, a source of profits and, at the social level, a source of power" (Graziani 2003: 26).

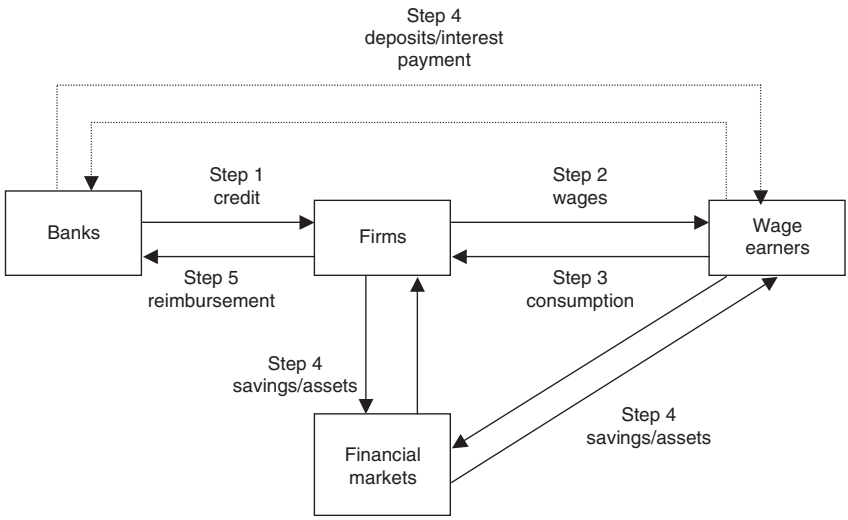

Figure 1. **The Traditional Framework of a Monetary Economy of Production**

The systemic approach to any economic activity in a monetary circuit approach can be illustrated as in Figure 1.

The traditional version of the monetary circuit scheme comprises three classes (bankers, capitalists, and workers) and two sectors (producing consumption and investment goods). Capitalist production is described as a process characterized by sequential phases, the first one being the creation of money by banks. Credit money enters the economic process on the basis of entrepreneurial demand (Step 1). When firms increase the flow of investment, they demand a new amount of money. The credit money demanded from the banking sector may be satisfied through ex novo money creation. The amount of money used to fund productive activity and pay wages (Step 2) is endogenous because it varies according to the changes in the investment plans of business enterprises. But banks are not passive players in the circuit: The supply of credit is not automatic. It depends on the selection and rationing criteria in force in the banking sector.[3]

Firms set the amount of both the consumption and investment goods to be produced. Production plans chosen by entrepreneurs can be affected by both the availability of liquid assets to fund new investments and the expectations concerning the placement of products on the market aimed at the valorization of production. Thus it would seem that the only actual constraint for productive activity to take place is given by monetary conditions established by the banking sector. Wage earners allocate their income for either consumption or saving (Step 4).

For the closure of the monetary circuit to occur, firms have to be able to pay off not just the loan granted to them at the beginning of the production process by the banks but also the interest accrued over the same period. In this traditional framework, financial markets are logically relevant at the end of the economic process.

Financial operators play the role of recuperating the liquidity not collected through the sale of goods: When wage earners receive their monetary income and choose to divide it between consumption and saving, they may decide to use part of their savings to purchase assets in the financial market (Step 4). In other words, "'final' finance to repay firms' total initial financing of production comes both from sales in the consumption goods market and from new securities issues in the financial market" (Bellofiore and Seccareccia 1999: 755). After goods and shares have been sold, firms repay the banks (Step 5, i.e., closure of the circuit). This traditional framework of a monetary economy of production is a good description of the so-called Fordist regime of accumulation (Aglietta 1979), in which firms' decisions relating to both the level of production and employment are essentially determined by the expected level of aggregate demand (Realfonzo 2006).

The New Monetary Economy of Production: A Brief Critical Survey

By the late 1960s, as Aglietta (1979) argued, the growth of productivity decelerated and the Fordist labor process, based on the extraction of ever greater amounts of surplus value through the intensification of labor, was reaching its limits. Consequently, real wages could not continue to grow, and the institutional conditions for the Fordist growth model (i.e., high productivity increases potential, stable capital/labor compromise, and limited international openness) were radically modified.

The structural changes that occurred in the past thirty years have substantially modified the interaction between banks, firms, wage earners, and financial markets. As we argue elsewhere (Fumagalli and Lucarelli 2010) the primary changes within the new capitalism mainly concern two spheres: the dominant technological paradigm (especially the role played by the knowledge/power relation in the development of the division of labor within it) and the importance of finance.[4] Boyer introduces the concept of "finance-led growth" to describe the potentially new accumulation regime that combines "labor market flexibility, price stability, developing high-tech sectors, as well as booming stock market and credit to sustain the rapid growth of consumption" (2000: 116).

Financialization dramatically changed the capitalist economy and represented a systemic transformation of production and finance. Accumulation—the operation in which wealth is reinvested by increasing the total quantity of capital—has become increasingly subordinate to finance. Especially in the U.S. economic system, the structure and operation of financial markets, particularly regarding credit availability, deeply changed.

Modern financial systems contain many amplifiers that multiply the impact of both losses and gains: (1) the use of derivatives to create exposures to assets without actually having to own them; (2) the application of fair-value accounting, which requires many institutions to mark the value of assets to current market prices; (3) counterparty risk, the effect of a given institution getting into trouble

vis-à-vis those it deals with; and (4) excessive leverage. As stated in the *Economist* in May 2008, many banks and other financial institutions loaded up on debt to increase their returns on equity when the asset process was rising. Financial institutions were exposed to product leverage via instruments that needed only a slight deterioration in the value of underlying assets for losses to escalate rapidly. The *Economist* article also stressed the fact that financial operators overindulged in liquidity leverage, using structured investment vehicles (SIVs) or relying too much on wholesale markets to exploit the difference between borrowing cheap short-term money and investing in higher-yielding long-term assets (*Economist* 2008: 4). In finance-led capitalism, where monetary policy is driven by financial markets and motives, the role of banks is modified; and, consequently, the traditional monetary circuit framework has to change.

The 2007–9 financial crisis stimulated new interesting perspectives within the framework of the monetary theory of production. Using a monetary circuit approach, Seccareccia (forthcoming) represents a first attempt to highlight some of the important transformations in the strategic role played by the banks during the financialization era ("money manager capitalism," in Hyman Minsky's words). He particularly affirmed that "the dynamics of credit creation has been sustained not by business indebtedness but by household indebtedness" and "the traditional link between firms and banks has been largely severed . . . and it is the dynamics of the bank/financial markets axis . . . which has taken center stage" (Seccareccia forthcoming). Rochon and Rossi (2010) wrote that the rise of finance-led capitalism resulted in profound changes in the way domestic economies operate. In particular, as Pilkington (2009) argued, many financial services supplied by commercial banks today do not fit into the categories of monetary and financial intermediation as defined by the theory of money emissions. Circuitist literature has to consider the theoretical distinction between banks and nonbanking financial institutions (insurance companies, venture capital firms, securitization firms, mutual funds, etc.).[5] Stellian (2010) focused on American home equity extraction, which undergirded consumption over the past decade. This argument is closely related to Forges Davanzati and Tortorella's (2010) suggestion that the crisis ultimately depends on neoliberal policy prescription, particularly labor market deregulation that stimulates workers' indebtedness.

Following Seccareccia's suggestions, Passarella (2011) feels that the principal novelty of new capitalism is the creation of credit money increasingly sustained by household debt. He proposed that, within a money manager capitalism–monetary circuit, the following sequence led to the 2007–9 economic and financial crisis:

> (1) households tried to keep a given "desired" level of consumption, despite the decrease in the wage bill and resorted to bank loans (based on their stock of assets); (2) nonfinancial firms used their extra profits (arising from the decrease in the wage level, despite a constant flow of consumption) to purchase financial assets (either equities or bank bonds in our simplified model); (3) the inflow of new capital made financial markets grow, but, at the macroeconomic level,

> firms' share of buyback reduced the "soundness" of the business sector because it increased the leverage ratio on investments; (4) at the same time, the increase in the price of (financial) assets led the central bank to increase the target rate of interest (to "cool" the asset price level); and finally (5) in the medium run, the reduction in households' stock of assets and the increase in the bank interest rate affected consumption and investment, giving rise to the crisis. (Passarella 2011: 14–15)

The previous contributions highlight the important transformations in the role played by the banking sector in the economy. They also put at the center of financial capitalism both the reduction in the profitability of firms' investment in the production process and the workers' debt. But there is still work to do to describe the new role played by the bank–financial markets interactions. In his guide to the anticipated real estate collapse, Hudson (2006) represented the new way of American financing in a schematic overview very close to the logic of the circuitists and clearly described the so-called FIRE (Finance, Insurance, and Real Estate) sector:

> These industries are so symbiotic that the Commerce Department reports their earnings as a composite. (Banks require mortgage holders to insure their properties even as the banks reach out to absorb insurance companies. Meanwhile, real estate companies are organizing themselves as stock companies in the form of real estate investment trusts, or REITs—which in turn are underwritten by investment bankers.) The main product of these industries is credit. The FIRE sector pumps credit into the economy even as it withdraws interest and other charges. The FIRE sector has two significant advantages over the production/consumption and government sectors. The first is that interest wealth grows exponentially. . . . The FIRE sector's other advantage is that interest payments can quickly be recycled into more debt. The more interest paid, the more banks lend. And those new loans in turn can further drive up demand for real estate—thereby allowing homeowners to take out even more loans in anticipation of future capital gains. Some call this perpetual-motion machine a "post-industrial economy," but it might more accurately be called a rentier economy. . . . The miracle of compound interest will allow every one of us to be a rentier, feasting on interest, dividends, and capital gains. (Hudson 2006: 43–44)

The FIRE sector is composed of a traditional banking part and a new financial part. Funds originate in the banking part of the FIRE sector and either circulate in the real economy or return to the FIRE sector as financial investments or in payment of debt service and financial fees. But when and why did this role of FIRE commence?

Our thesis is that the vital roots of the bubble that burst in 2007 are to be found in the euphoria of the 1990s. The crisis stems from the overinvestment in new information technologies and communication as well as the exhaustion of the profit opportunities offered by new technologies. The financialization of the monetary economy of production is explainable if we understand the shift to a new technological paradigm as a general outlook on the productive problems faced by firms, in which the relevance of the "immaterial" production increases. To describe this

dynamic, we need to develop two different frameworks of a monetary economy of production: the first one represents the new economy scenario, and the second one represents the (financialized) monetary circuit during the real estate bubble.

Toward a Financialized Monetary Economy of Production

Linking the subprime crisis with the dot-com crisis, from the point of view of a monetary production economy, requires the adoption of what we call a "Schumpeterian perspective." A monetary economy of production should be designed taking into account the technological dynamics that characterize it. Each technological paradigm shift can be accompanied by speculative pressures that have significant consequences for the way business enterprises finance their own productive activity.

Following a Schumpeterian perspective, each new industrial technology favors its own sort of financing: Joint-stock companies abounded when business needed to finance the railways in the nineteenth century:

> As regards financing, we must distinguish the task of creating the conditions of profitableness of the enterprise from the task of providing the money for construction. . . . Previous profits or domestic savings being inadequate, railroad construction was, therefore, mainly financed by credit creation. From the standpoint of the United States, foreign buying of American railroad bonds amounted to this—even if the bonds were paid for out of, say, English savings—as did European credit extended in anticipation of bond issue or simply as overdraft. . . . Domestic credit creation was even more freely resorted to. We do not know its amount, but we can, in most cases, trace it in one or more of the following forms: direct lending by banks to companies against their notes or on bonds to be sold later to the public. . . and financing speculation—there is a significant coincidence between the increase of railroad stock prices and of deposit in 1852. (Schumpeter 1989: 215–18)

In much the same way, the Internet revolution spilled over into the rest of the business sector and finance. The synergy between financial instruments and technological innovations is the factor explaining the rapid expansion of the so-called new economy in the early 1990s. In the second half of the 1990s, the idea of a digitalized society, with liberating effects on the world of work and life, became a convention.[6] Whether true or false, there is no doubt that this convention advanced the real transformation processes in the world (Orléan 1999). The new technological paradigm, as a general *outlook* on the productive problems faced by firms, implies a new way of financing investment activity, a new form of money regulation, and a new form of capitalistic valorization.

The dynamism of the U.S. economy during the 1990s in the areas of information and communication technologies (ICT) and biotechnology is complementary to the spread of new types of financial markets specializing in the commodification of intellectual property rights (IPR). In 1984 the National Association of Security Dealers regulation introduced the possibility of evaluating the intangibles (consisting mainly of IPR) as an asset on the balance sheet of enterprises. This regulation permitted

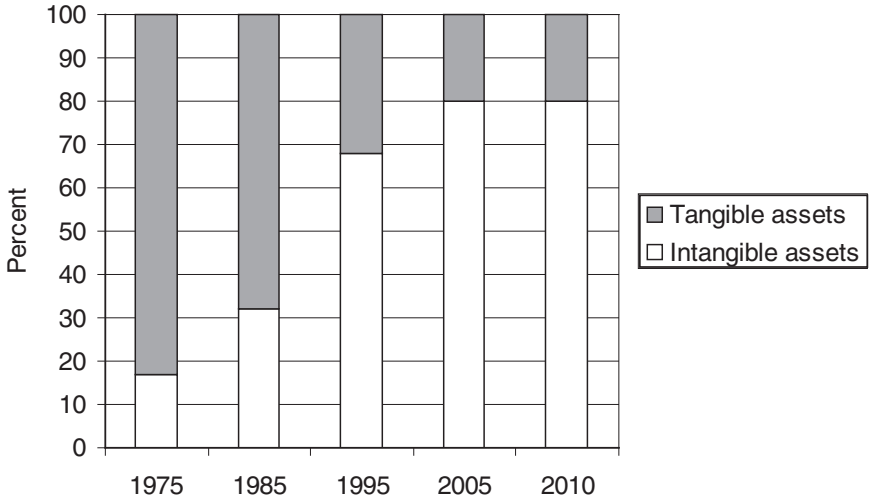

Figure 2. **Share of Intangible and Tangible Assets of S&P 500 Market Value**

Source: http://www.oceantomo.com/media/newsreleases/Intangible-Asset-Market-Value-Study/.

Note: Intangible book value is calculated by subtracting the tangible book value from the market capitalization of a given company or index. In practice, companies report tangible book value per share, number of shares outstanding, and market capitalization. Therefore, intangible book value can be calculated by subtracting the market capitalization from the tangible book value per share multiplied by the number of shares outstanding.

the promotion of such firms (in deficit but holding a stock of IPR) no longer on the over-the-counter market, but on the NASDAQ. Finally, the law on pension funds was modified so as to authorize them to invest part of their holdings in risky securities and stocks. "In this way, part of the enormous liquidities concentrated in the pension funds expanding rapidly during this period allowed the financial markets to promote hundreds of new firms which were in deficit but deemed 'high potential' in view of their intangible assets" (Orsi and Coriat 2003: 3). The complementarity between financial markets and IPR was at the heart of the new economy: the formation of a new intellectual property law regime coexisting and coevolving together with the introduction on the market of nonprofitable firms whose assets were composed of IPR. This institutional complementarity permitted the launching of special kinds of companies following unprecedented business models. Not only was the new economy an opportunity for these new innovative firms, but it also produced pervasive effects on traditional sectors of the economy. At the same time, it favored a process of accumulation that was based mainly on the globalization of financial markets, tapped by the investors both for financing economic activity and for stimulating investment via the increased financialization of productive activities.

As shown in Figure 2, within the past quarter of a century, the market value

of the S&P 500 companies has deviated greatly from their book value. This "value gap" indicates that physical and financial accountable assets reflected on a company's balance sheet now comprises less than 20 percent of the true value of the average firm. A significant portion of this intangible value is represented by patented technology.

But, as Orsi and Coriat have asked, "How do we determine the 'value' of a firm whose assets are composed of a patent on a gene? Or, in the case of firms on the Internet, one that has a 'virtual' number of customers?" (2003: 5). The value of a corporation's patents is a unique, forward-looking indicator of corporate value. What is important to stress is that patent value is reflected in stock price and can be used to create investment and, starting in the 1990s, to get financing by the banking system to improve the technological position thanks to mergers and acquisitions strategy (*Economist* 2004). The most innovative companies—companies with the strongest patent portfolios—outperform their peers as a result of the U.S. federal government's granting exclusionary rights on the production of the patented product or service, their proprietary market position, their related economies of scale, premium pricing associated with unique features, and their lower cost due to protected methods of manufacturing.

Figure 2 shows how patents, or more generally, IPR, became exploitable as the U.S. economy matured in its progression from a manufacturing foundation to an innovation base, in other words, to a cognitive capitalism paradigm. Starting in the 1990s, the U.S. economy became dominated by innovation value creation. This is substantiated by a 2005 report by economists Kevin Hassett and Robert Shapiro, who have estimated the value of U.S. intellectual property at about $5.0–5.5 trillion, which is more than the gross domestic product (GDP) of most countries (Shapiro and Hassett 2005).

Not only is the increasing role of intangible assets a property of the big corporations on the S&P 500 index, but it is pervasive in the economy as a whole and cannot be explained exclusively by patents and IPR. Figure 3 shows that intangible assets (measured by the gap between total and tangible assets) started to increase exponentially, especially after 1990, during the net economy boom. After a period of stagnation in the early 2000s, the process restarted until the beginning of the present economic–financial crisis. In this second period, patents and IPR played a role but one that was different from that of the 1990s. They are accompanied by an increasing share of asset value due to the brand strategy. Over the past decade brand value reached its maximum level, especially during the years of crisis (Interbrand 2010). In December 2010, the share of intangible assets was about 58.9 percent of the total, after reaching a peak in the fourth quarter of 2007 (60.1 percent), compared with 39 percent in 1980. This dynamic is the result of investment activity in the U.S. economy from 1990 to 2010. Figure 3 shows the increasing role played by investment in ICT equipment.

The structure of private investment (as a share of GDP) shows that, between 1992 and 2000, it increased gradually before falling between 2002 and 2003 and

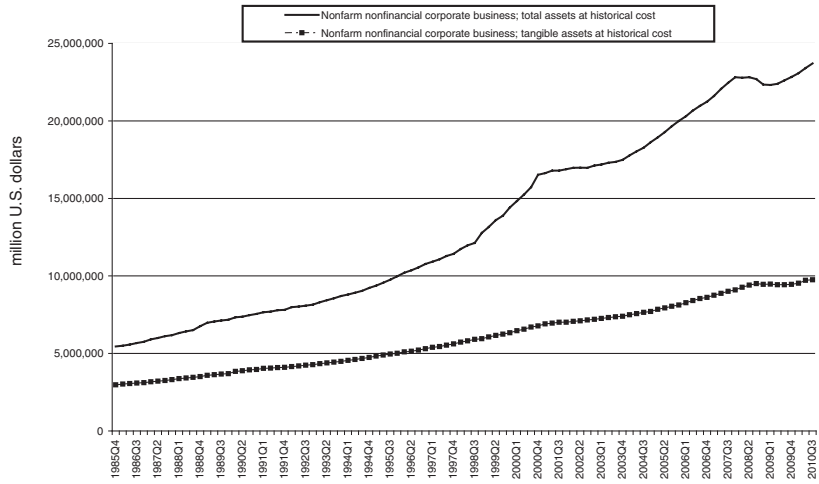

Figure 3. **Total and Tangible Assets in the Nonfarm, Nonfinancial Business Corporations, 1980–2010**

Source: Federal Reserve Board.

then rose again until 2007, before the financial crisis (Paulré 2008: 198). During the first decade of the new millennium, investment flows were more unstable. Until the first quarter of 2007, the level of gross investment remained more or less at the same level as previously, with a pro-cyclical pattern. What is astonishing is the sharp decline in U.S. investment after 2007, the height of the crisis. In the past two decades, the gap between net investment and inventories, on the one hand, and gross investment, on the other, constantly increased, at least until the financial crisis. From 1980 to 2005, the level of inventory was usually positive but near the zero level. This would mean that the increasing gap between gross and net investment is due in part to U.S. foreign investment and to investment in intangibles (brands, patents, etc.).

Foreign investment by U.S. corporations became particularly active after 2003, especially after China's accession to the World Trade Organization. But the increase in foreign investment is not sufficient to explain the relatively higher performance of gross investment in the presence of the contemporary sharp decline of physical investment and inventories. Our hypothesis is that the main reason for these changes lies in the increasing share of intangible investment, as the data displayed in Figures 2 and 3 corroborate.

The ICT revolution was financed largely by private equity funds, especially from venture capital. Venture capitalism can be considered a fundamental step toward the creation of a knowledge market (Antonelli and Teubal 2008: 167). During the 1990s the goal of new company founders and of venture capitalists was principally the new knowledge-intensive firm listing on a dedicated stock market and its

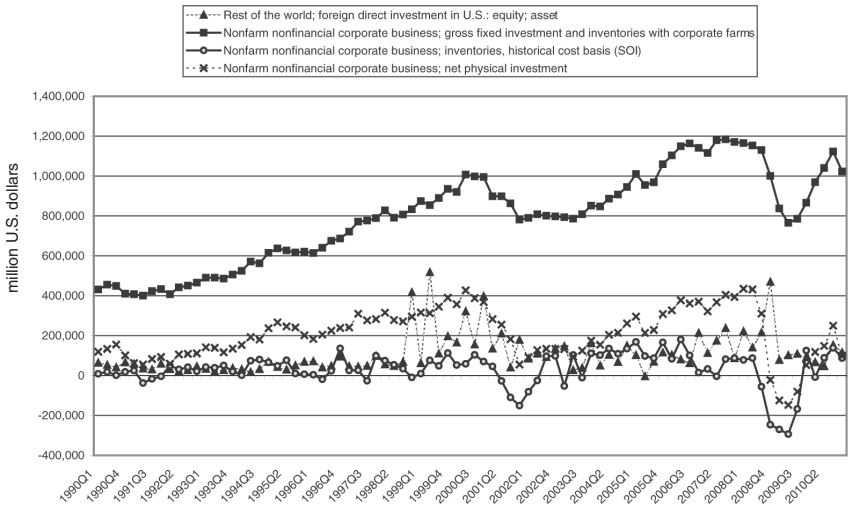

Figure 4. **Gross and Physical Investment, Investment Abroad, and Inventories in the U.S. Economy, 1990–2010**

Source: Federal Reserve Board.

eventual acquisition by another company. Venture capital funds generated a shift from intermediate to market financing that redistributed risk taking from banks to institutional investors. As Aglietta (2008) pointed out, there was also a dramatic change in the norm of profitability: Market value accounting replaced reproduction cost accounting as the yardstick of corporate performance.

> Combined with the long ascending wave in the stock market, the imperative of shareholder value gave rise to a much higher required rate of return than in the heyday of post-war growth. Most business strategies—downsizing, spin-offs and the like, but also external growth via mergers and acquisitions and share buybacks—were driven by the lucrative adjustment of corporate executives to the principle of shareholder value. (Aglietta 2008: 69)

The evolution of new commitments to venture capital funds in the United States (Figure 5) is the proof of the relevance—especially during the 1990s—of this kind of funding in innovative investments. The decrease in the period 2000–2009 reflects the contraction of venture capital that began after the burst of the technology bubble in 2000.

In the 1990s, the financing of takeovers (to acquire the income, assets, and competencies of others) via share exchange offers grew in importance. In this accumulation system, various forms of remuneration tied to business yield developed—not only stock options for managers but also the retirement or investment funds held mostly by wage laborers. In the 1990s, the ICT sectors—in which production of goods by means of knowledge was able to create more value added per employee,

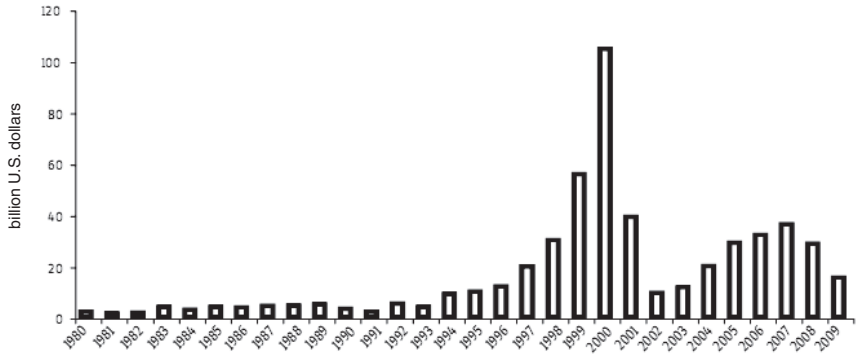

Figure 5. **Capital Commitments to U.S. Venture Capital, 1980–2009**

Source: National Venture Capital Association, 2010, http://growthandjustice.typepad.com/files/nvca_2010_yearbook.pdf, p. 20.

and in which the financial activities had been most excessive, dragging the rest of the economy to the speculative bubble—were the areas where the appropriation of wealth by managers and workers was greater. The cost of high-tech managers and workers, when considering stock options as wage costs, accounted for 73 percent of pretax profits (in June 2000, compared with 20 percent of the same costs for the 325 largest listed companies [Plender 2003]). These forms of remuneration made financial market liquidity grow but, in the absence of an adequate redistribution rule, this also depressed wages, leading to systemic instability.

A (financialized) monetary circuit framework in the new economy scenario is depicted in Figure 6. Credit money enters the economic process due to entrepreneurial demand (Step 1). Firms also use private equity funds (especially venture capital funds) to increase the flow of investment. In a frothy financial market (and under a loose monetary policy), such a strategy leads to an increase in common stock, allowing capital gains to accumulate (Step 2) to pay off the debts previously accrued from the banking system (Step 5 a) and possibly to amass profits to be returned or to be used as self-funding. The amount of money used to fund productive activity and pay wages (Step 3a) derives from both traditional credit money and financial returns, that is, a sort of financialized money. Wage earners allocate their income for either consumption or saving (Step 4a and b). Consumption and the demand regime are directly affected by financialization. To avoid a crisis of effective demand, wage deregulation (and the privatization of the welfare state) is compensated for by the wealth effect reflected in the overall financial returns (Step 4c). The capital gains of financial markets function as a kind of multiplier for the real economy just as the deficit spending did during Fordism and the Keynesian era. If control of financial activities is distributed in a perverse way, unlike the redistributive effects of the welfare state, the result is an increase in income polarization.

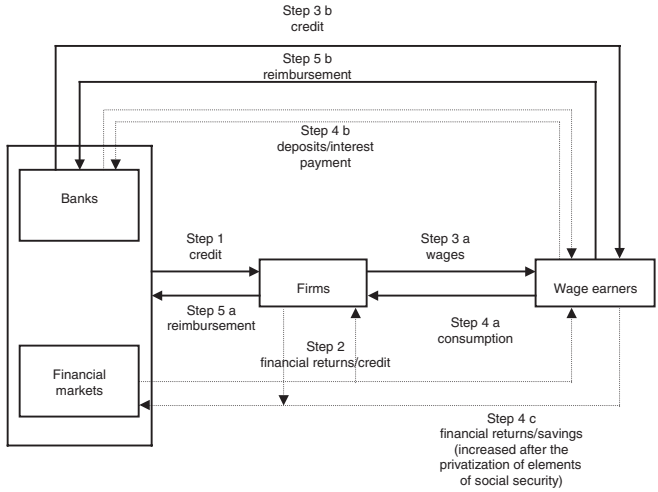

Figure 6. **Framework of a Financialized Monetary Economy of Production (New Economy)**

The stability condition of the economic system depends on the propensity to invest and on the wealth effect, both produced by capital gains allocation. But when financial gains misrepresent the real effects of investment on productivity, financial bubbles can emerge. If the wealth effects generated by capital gains fail to be spread, the increased access to credit is used to sustain consumption (Step 3b) and guarantee, even if temporarily, the closure of the circuit. Necessarily, the final result is an ever-growing debt affecting more and more families that leads to an increase in the risk of debt insolvency.

On Financialized Money

Since the crisis of Fordism and the fall of the Bretton Woods system, money has increased its power of control. Throughout the 1980s, the general increase in economic uncertainty, which began with the adoption of flexible exchange rate regimes, the downward rigidity of interest rates, and the reduction of the referential time horizon (with activities becoming increasingly short term), has facilitated the rise of financial products (so-called derivatives, such as options and futures) aimed at insuring economic agents against risk and predating the deadlines for trading and thus predetermining the value of the exchange itself. Such operations permit obtaining liquidity ("cash") from financial debt and credit operations pertaining mainly to government bonds or the foreign exchange market. Hence, it is possible to meet the increasingly inescapable need of modern post-Fordist economies, which is to promote the realization of monetary exchange for some market activity and thereby insure against the risk of insolvency.

Since the 1990s, with the development of the "Internet convention," financial markets have started to play a key role in creating virtual money, by now completely subjected to the evolution of conventional and trust mechanisms that are created within the financial markets themselves. Monetary policy is more and more dependent on the dynamics of financial markets, with its first goal being to support the creation of positive capital gains as engines of economic growth in an otherwise low inflation environment. The institutional channel for money creation is less and less important. The public creation of money through deficit spending on social programs is strongly reduced. Public sector deficits play a subordinate role in the dynamics of stock exchange prices in an increasingly pro-cyclical perspective. Hence, after the credit channel (identified in Figures 1 and 6 above), the public sector channel, and the balance-of-payments channels (not analyzed in Figures 1 and 6, to simplify our earlier analysis), we now have a fourth channel of money creation: the financial market channel of money creation.

> Shares are not themselves money. Their liquidity is only partial in the sense that they are not accepted as universal instruments of exchange. Nevertheless, their sphere of circulation is already extremely vast—not only as reserve assets but also as means of exchange for certain types of transactions. We see this when one company acquires another with the help of its own shares, or even better when a manager accepts payment in stock options. For this reason, we can consider shares as constituting an embryonic form of currency even if they still cannot be used to purchase consumer goods. The question of whether this form will achieve maturity, whether it will become currency in the full sense of the term, is, in a certain sense, the challenge of our analysis because such a turn of events would constitute a radical change in the principle of sovereignty. (Orléan 1999: 242, translated in Marazzi 2008: 62)

The increasing financial liquidity actually means a *displacement* of money creation from the central bank to the financial markets. The money supply grew in response to the increase in demand from investors, both business enterprises and households, and in the United States, the Federal Reserve (the Fed) *monetized* this demand for liquidity (Marazzi 2008: 63). One should not, however, conclude that the financial markets create their own specific currency different from that created by the central bank. Rather, to create money and ensure the circulation of values, the central bank necessarily accommodates the movements of financial markets.

Toward the Big Crash

The 2007–9 crisis stems from overinvestment in new technologies. Thanks to easier access to credit, and to securitization of investment products (including mortgages), speculative attitudes pass from one asset to another and the economy jumps from one bubble to the next. Financial markets move in waves dominated by conventional behavior that is able to produce movements of public opinion through institutional financial operators.

The double taxation of profits during the 1990s led companies to borrow heavily to deduct their interest payments from pretax profits and then buy back their shares (buyback strategy) and to distribute stock options to managers and employees. Thanks to the mergers and acquisitions strategy between companies to keep up the speculative activity, the result was a great distortion in the price of securities in relation to their underlying economic value.[7]

After the 2000 crisis, investors began to switch from the equity market to the bond market and were especially fond of Freddie Mac and Fannie Mae bonds. The stock market was able to recover after the Internet convention crisis and to provide liquidity in support of speculative excesses, fueled in part by the increased debt of households in the United States and elsewhere in the Western world, to maintain the living standards of the previous decade. At the same time, Chinese surpluses started to "finance" the U.S. internal and external deficits.

In the two-year period following the March 2000 crisis (2001–2), the U.S. federal funds rate was cut from 6.5 percent in December 2000 to 1.0 percent by June 2003. In addition, fiscal policy changed: Congress passed the Jobs and Growth Tax Relief Reconciliation Act of 2003, which George W. Bush signed into law on May 28, 2003. The new law stated that qualified dividends would be taxed at the same rate as long-term capital gains, that is, 15 percent for most individual taxpayers (previously, the rate was 20 percent). Moreover, qualified dividends received by individuals in the 10 percent and 15 percent income tax brackets were taxed at 5 percent from 2003 to 2007 (previously, the rate was 10 percent).

The new institutional context pushed economic agents to the edge of the precipice by going into unreasonable debt to benefit from the discrepancy between their own capital yield and the interest rate. This incentive to accumulate debt meant that the wealth effect was articulated in different ways with respect to the high tide years of the new economy: real estate prices rose, and the Fed's monetary policy supported the buying power of American consumers. American households could thus obtain practically unlimited credit from the banking system using real estate with increasing value as collateral. The expected earnings rose to ever higher levels, sustained by a negative real interest rate. As Shiller affirmed in an interview in June 2005.

> Once stocks fell, real estate became the primary outlet for the speculative frenzy that the stock market had unleashed. Where else could plungers apply their newly acquired trading talents? The materialistic display of the big house also has become a salve to bruised egos of disappointed stock investors. These days, the only thing that comes close to real estate as a national obsession is poker.

Favored by low interest rates, financial innovations (new types of derivatives) and an increase in housing prices, the credit-debt relationship in the housing market developed with a positive impact on financial markets. When housing prices increase, great wealth is produced, thereby strongly favoring the position of both borrowers and lenders. In this period, the idea that credit creation may always be sustained by household indebtedness became a convention (the real-estate convention).

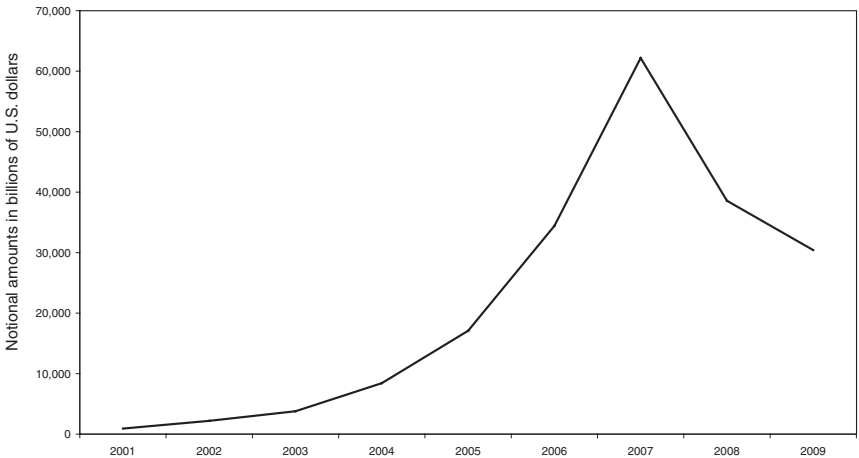

Figure 7. **Total Credit Default Swaps Outstanding**

Source: ISDA Market Survey.

The financial system has become a kind of four-layer cake: Highly leveraged banks finance highly leveraged investments, which invested in highly leveraged securities (as asset-based securities or collateralized debt obligations) to significantly increase households' degree of leverage (Onado 2009: 58).

The real estate convention lasted until September 2007, after the first shock in the mortgage market, when, on the one hand, housing prices ceased to rise, and, on the other hand, interest rates began to increase. As is well known, the combination of these two phenomena made it more difficult for banks to expand the market for home mortgages in the face of an increase in defaults on homeowners' mortgage payments. The results were the collapse of the securitization market and the inability to establish the value of the linked derivatives. Recent experience has confirmed that the instability of financial markets had an endogenous cause.

Credit default swaps (CDSs) are financial instruments used as a hedge and protection for debt holders, namely mortgage-backed security investors, from the risk of default.

> As its name suggests, the payoff on a credit default swap (CDS) depends on the default of a specific borrower, such as a corporation, or of a specific security, such as a bond. The value of these instruments is especially sensitive to the state of the overall economy. If the economy moves toward a recession, for example, the likelihood of defaults increases and the expected payoff on credit default swaps can rise quickly. (Squam Lake Working Group on Financial Regulation 2009: 2)

In other words, the risk–reward asymmetry works in the opposite way from stocks: "People buy them not because they expect an eventual default but because they expect the CDS to appreciate in case of adverse developments" (Soros 2009: 166). CDSs were invented only in 1997 by J.P. Morgan, but the market increased

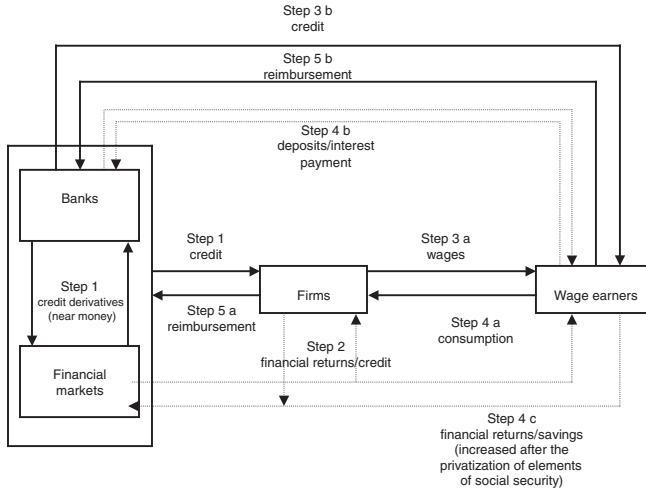

Figure 8. **A Framework of the Financialized Monetary Economy of Production (Real Estate Bubble)**

tremendously starting in 2003. The International Swaps and Derivatives Association estimates the total notional amount of outstanding CDS at around $62.2 trillion, making these contracts the most widely traded credit derivative product as of December 2007 (see Figure 7).

The evolution of CDSs seems to describe the principal novelty that, after the 2000 crisis, characterizes the financialized monetary economy of production, that is, a new channel of money creation in which financial markets are directly involved. This process occurs through the close link between banks and financial institutions, following the role played by the CDS, a real bridge between the traditional way of money creation via credit and the new creation of *near money,* via capital gains, on the CDS market (Step 1 in Figure 8).

As far as the other steps are concerned, in this framework, we do not present other novelties. The process of credit creation is sustained by increasing household debt; in other words, Steps 3b and 5b describe a more abundant flow than the same steps in Figure 6. The most important aspect to underline is that the direct role played by financial activities and derivatives in the money creation process poses some theoretical problems. In the previous scheme (Figure 6), in fact, capital gains acted as a redistributive mechanism—via the financial multiplier—and facilitated access to bank loans by developing strategies for technology acquisition and the financing of investment in innovative activities. For instance, venture capital was a strategy that disclosed the role of financial markets in direct involvement in investment activities. In the latter framework (Figure 8), financial markets are able to create near money with the effect of increasing the liquidity of the system in line with the growth of the real estate bubble.

Conclusion

The causes of the ongoing crisis are endogenous to the regime of accumulation that characterized especially American capitalism after the crisis of Fordism (Aglietta 2008). The new capitalism emerged after 1971 largely as a result of President Richard Nixon's decision to cancel unilaterally the direct convertibility of the U.S. dollar to gold, which essentially ended the Bretton Woods system of international financial exchange. It was accelerated by then-Fed chairman Paul Volcker's policy imposing monetary austerity (1979–86). In the new deflationary environment, markets became very flexible, and restructuring operations and cost-cutting programs were frequently introduced. Consequently, there ensued a lack of pressure on wages as a result of changes in the behavior of employees, who became more "docile."

Financial markets are now the beating heart of a restructured capitalism. Wage moderation helps corporate profitability and increases the value of financial stocks. Wage earners, especially in the 1990s (the era of the so-called new economy), have been increasingly pushed by governments, by trade unions, and by the media to entrust money to financial operators, both directly and indirectly. Pension funds, investment funds, insurance, and, in certain cases, part of the transfers to workers depend on financial returns. In the American growth model, especially during the past two decades, financial and real variables are deeply intertwined: Corporate profits as well as household consumption are increasingly governed by Wall Street. Supporting the financial performance became managers' imperative, and the hope of many households was to go more heavily into debt.

Interpreting the 2007 crisis as the result of a malfunctioning of financial markets is wrong: As André Orléan wrote, it is not because the financial rules were circumvented but because they were followed (Orléan 2009). Securitization can be interpreted as the last stage of a profound transformation of financial systems that began in the late 1970s, and it is connected with the shift of U.S. monetary policy in October 1979. The low level of wages, and the consequent underconsumption, is not the unique cause of the crisis. Financialization is not limited to changing the behavior of consumers–savers; the investments have also changed. This was particularly so during the 1990s, as the new industrial technology favored its own sort of financing.

This trend, mutatis mutandis, seems to reflect the same dynamics studied by Joseph Alois Schumpeter about railroadization in the nineteenth century in his *Business Cycles* (1989: 215–31). As affirmed by Antonelli (2009), the big crisis began when interest rates reported relative to their normal levels did not allow the survival of marginal activities. The overfinanced leverage may be better understood as having started after the 1990s technological paradigm. After the so-called Internet bubble burst, something remained (e.g., new large companies such as Microsoft and Apple). The stock market crash of 2000–2002 did not really stop American growth, and it was not interpreted as proof of financial fragility. The financial bubble was delayed and contained mainly by the Fed's monetary policy of low interest rates.

The monetary theory of production offers a systemic approach to avert systemic crises, but it needs to be modified. Faced with post-Fordist capitalism, scholars seek to address this challenge. In accordance with the Schumpeterian perspective, we propose an emphasis in the circuitist approach on both the monetary nature and the qualitative change of the capitalist system to explore the profound transformation of the antagonistic relationship between capital and labor related to the development of an economy founded on knowledge as its driving force.

Notes

1. See Graziani (1984), in which the author describes three classes (bankers, capitalists, and workers) and two sectors (consumption and investment goods). Lunghini and Bianchi (2004) interpret Graziani's scheme as a reproduction scheme, in which the condition of profit equalization determines the value of relative prices but leaves absolute prices and income distribution undetermined. Consequently, the monetary circuit scheme remains an open scheme.

2. Lunghini and Bianchi consider Graziani's (1984) scheme unsatisfactory because "the two conditions of profit equalization and given supplies are mutually inconsistent and one must be relaxed in order to provide an appropriate description of the working of the economic system and avoid logical and analytical faults. In a short-run perspective, when supplies are given, the condition of profit equalization must be dropped. . . . Profit equalization requires, even in the presence of given demands, free mobility of capital and output between sectors. In this perspective supplies cannot be given and prices will be determined by costs" (2004: 157). To be coherent, Graziani's scheme should be interpreted as an open-ended system.

3. Graziani (1984) does not consider this possibility, which is considered in many contributions by Italian circuitists (see Realfonzo 2006: 110–11).

4. In our previous work (Fumagalli and Lucarelli 2010), and in agreement with Vercellone (2003, 2007), Paulré (2008), and Marazzi (2010), we propose the notion of "cognitive capitalism" by taking account of the way in which the crisis of Fordism has corresponded to a superior level of "great crisis," entailing the profound transformation of the antagonistic relation of capital to labor related to the development of an economy founded on the driving role of knowledge. The thesis of financial capitalism is often opposed to the thesis of cognitive capitalism, but, as Paulré (2008) argued, financialization finds a development opportunity in the context of cognitive capitalism. To complete the analysis of the knowledge/power relation in the development of the division of labor, we need to consider the new form of production and financialization together. See also the essays collected in Fumagalli and Mezzadra (2010).

5. To perform the conceptual integration of the financialization of modern economies in monetary circuit theory, Pilkington proposes an extended version of the Godley-Lavoie stock/flow framework, including a financial sector defined as a broad accounting category that is constantly interacting with the other institutional sectors of the economic system.

6. Conventions are market trends originating within the investment community according to a logic of self-referential rationality (Orléan 1999). The irrationality that supported the 1990s financial boom gathered in itself the desire for an *anthropogenetic* model in which the productive power of diffused intellectuality was recognized outside the logic of exploitation. "Beyond information technology lies the knowledge economy, a concept which international agencies, such as OECD and World Bank, are only now beginning to take seriously. This, however, is merely part of a much wider development involving 'the production of humans by humans'" (Boyer 2004: xvi).

7. As stated in the *Economist* in February 2004, "After a long hibernation, company bosses

are beginning to rediscover their animal spirits. The $145 billion-worth of global mergers and acquisitions announced in January was the highest for any month since October 2000, and the figure for February seems likely to beat that."

References

Aglietta, M. 1979. *A Theory of Capitalist Regulation: The U.S. Experience.* London: Verso.

———. 2008. "Into a New Growth Regime." *New Left Review* 54 (November–December): 61–74.

Antonelli, C. 2009. "Appunti per una lettura schumpeteriana della crisi e implicazioni di politica economica" (Notes on a Schumpeterian Reading of the Crisis and Economic Policy Implications). Dipartimento di Economia "S. Cognetti de Martiis," Working Paper, no. 14.

Antonelli, C., and M. Teubal. 2008. "Knowledge-Intensive Property Rights and the Evolution of Venture Capitalism." *Journal of Institutional Economics* 4, no. 2: 163–82.

Bellofiore, R., and M. Seccareccia 1999. "Monetary Circuit." In *Encyclopedia of Political Economy,* ed. P.A. O'Hara, 753–56. London: Routledge.

Boyer, R. 2000. "Is a Finance-Led Growth Regime a Viable Alternative to Fordism? A Preliminary Analysis." *Economy and Society* 29, no. 1: 111–45.

———. 2004. *The Future of Economic Growth: As New Becomes Old.* Cheltenham, UK: Edward Elgar.

Economist. 2004. "A Special Report on Mergers and Acquisitions" (February 19). Available at www.economist.com/node/2442065, accessed February 1, 2011.

———. 2008. "A Special Report on the Future of Banking" (May 17–23).

Forges Davanzati, G., and G. Tortorella. 2010. "Low Wages, Private Indebtedness, and Crisis. A Monetary-Theory-of-Production Approach." *European Journal of Economic and Social Systems* 23, no. 1: 25–44.

Fumagalli, A., and S. Lucarelli. 2010. "Cognitive Capitalism as a Financial Economy of Production." In *Cognitive Capitalism and Its Reflections in South-Eastern Europe,* ed. V. Cvijanović, A. Fumagalli, and C. Vercellone, 9–40. Frankfurt am Main: Peter Lang.

Fumagalli, A., and S. Mezzadra, ed. 2010. *Crisis in the Global Economy: Financial Markets, Social Struggles, and New Political Scenarios.* Los Angeles: Semiotext(e).

Graziani, A. 1984. "Moneta senza crisi" (Money Without Crisis). *Studi Economici* 24: 3–37.

———. 2003. *The Monetary Theory of Production.* Cambridge: Cambridge University Press.

Hudson, M. 2006. "The Road to Serfdom: An Illustrated Guide to the Coming Real Estate Collapse." *Harper's Magazine* (May): 39–46.

Interbrand. 2010. "Best Global Brands 2010." Available at www.bestglobalbrands.com, accessed February 1, 2011.

Keynes, J.M. 1933/1978. "Contribution to a *Festschrift* for Professor A. Spiethoff." In *Collected Writings,* vol. 13, 408–11. London: Macmillan.

Lunghini, G., and C. Bianchi. 2004. "The Monetary Circuit and Income Distribution: Bankers as Landlords?" In *Money, Credit and the Role of the State: Essays in Honour of Augusto Graziani,* ed. R. Arena and N. Salvadori, 152–74. Hants, UK: Ashgate.

Marazzi, C. 2008. *Capital and Language: From the New Economy to the War Economy.* Los Angeles: Semiotext(e).

———. 2010. "The Violence of Financial Capitalism." In *Crisis in the Global Economy: Financial Markets, Social Struggles, and New Political Scenarios,* ed. A. Fumagalli and S. Mezzadra, 17–59. Los Angeles: Semiotext(e).

National Venture Capital Association. 2010. *Yearbook 2010.* Available at http://growthandjustice.typepad.com/files/nvca_2010_yearbook.pdf.
Onado, M. 2009. *I nodi al pettine. La crisi finanziaria e le regole non scritte* (Chickens Come Home to Roost. The Financial Crisis and the Unwritten Rules). Rome: Laterza.
Orléan, A. 1999. *Le pouvoir de la finance* (The Power of Finance). Paris: Odile Jacob.
———. 2009. *De l'euphorie à la panique: penser la crise* (From Euphoria to Panic: Reflecting on the Crisis). Paris: ENS rue d'Ulm.
Orsi, F., and B. Coriat. 2003. "Intellectual Property Rights, Financial Markets and Innovation. A Sustainable Configuration?" *Issues in Regulation Theory,* no. 45 (July): 1–5.
Passarella, M. 2011. "Systemic Financial Fragility and the Monetary Circuit: A Stock-Flow Consistent Approach." MPRA Paper, no. 28498. Munich Personal RePEc Archive. Available at http://mpra.ub.uni-muenchen.de/28498, accessed February 11, 2011.
Paulré, B. 2008. "Capitalisme cognitif et financialisation des économiès" (Cognitive Capitalism and the Financialization of the Economies). In *Les nouveaux horizons du capitalisme* (The New Horizons of Capitalism), ed. G. Colletis and B. Paulré, 173–209. Paris: Economica.
Pilkington, M. 2009. "The Financialization of Modern Economies in Monetary Circuit Theory." In *The Political Economy of Monetary Circuits: Tradition and Change in Post-Keynesian Economics,* ed. S. Rossi and J.F. Ponsot, 188–216. Basingstoke, UK: Palgrave Macmillan.
Plender, J. 2003. *From Going Off the Rails: Global Capital and the Crisis of Legitimacy.* Chichester, UK: John Wiley.
Realfonzo, R. 2006. "The Italian Circuitist Approach." In *A Handbook of Alternative Monetary Economics,* ed. P. Arestis and M. Sawyer, 105–20. Cheltenham, UK: Edward Elgar.
Rochon, L.-P., and S. Rossi. 2010. "The 2007–2009 Economic and Financial Crisis: An Analysis in Terms of Monetary Circuits." *European Journal of Economic and Social Systems* 23, no. 1: 7–23.
Schumpeter, J.A. 1989. *Business Cycle: A Theoretical, Historical and Statistical Analysis of the Capitalist Process.* Abridged ed. Philadelphia: Porcupine Press.
Seccareccia, M. forthcoming. "Financialization and the Transformation of Commercial Banking: Understanding the Recent Canadian Experience Before and During the International Financial Crisis." *Journal of Post Keynesian Economics*.
Shapiro, R., and K. Hassett. 2005. "The Economic Value of Intellectual Property." USA for Innovation (October). Available at www.sonecon.com/docs/studies/IntellectualPropertyReport-October2005.pdf, accessed September 7, 2008.
Shiller, R. 2005. "The Bubble's New Home." Interview by Jonathan R. Laing. *Barron's* (June 20). Available at http://online.barrons.com/article/SB111905372884363176.html#articleTabs=article/.
Soros, G. 2009. *The Crash of 2008 and What It Means.* New York: Public Affairs.
Squam Lake Working Group on Financial Regulation. 2009. "Credit Default Swaps, Clearing House, and Exchanges." Council of Foreign Relations, Working Paper (July).
Stellian, R. 2010. "Home Equity Extraction, Growth, and the Subprime Crisis Within the Theory of the Monetary Circuit." *European Journal of Economic and Social Systems* 23, no. 1: 45–62.
Vercellone, C., ed. 2003. *Sommes-nous sortis du capitalisme industrielle?* (Have We Left Industrial Capitalism?). Paris: La Dispute.
———. 2007. "From Formal Subsumption to General Intellect: Elements for a Marxist Reading of the Thesis of Cognitive Capitalism." *Historical Materialism* 15: 13–36.