

FINANCE AND MACROECONOMICS: THE PREPONDERANCE OF THE FINANCIAL CYCLE

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The representation of macroeconomics, ostensibly rooted in microeconomic fundamentals, is that of a representative agent, equipped with perfect information, rationally anticipating the fundamental value of assets in a perfectly competitive market. In this model finance is efficient and as a corollary money is neutral. This set of assumptions makes it logically impossible to have an endogenous systemic crisis, which involves instead a generalized flaw in market coordination.

An alternative foundation involves grounding macroeconomics in the mimetic competition that makes money the primary institution of the economy. In this model, coordination through finance is not based on fundamental values, but on liquidity. But the liquidity of the markets is itself the polarizing effect of a mimetic process. It is established by a market convention that is inherently unstable.

As a result, the financial systems organized by markets propagate shocks according to a momentous logic produced by the interaction of indebtedness and the movement of asset prices. Its macroeconomic expression is the financial cycle. In this dynamic, the opacity of the system fuels the financial vulnerabilities that remain hidden in the euphoric phase and are revealed by the endogenous crisis in the financial cycle.

The financial cycle has a considerable macroeconomic impact, through the financial accelerator, on the factors of production and the effective demand. Depending on the extent of the indebtedness and then the deleveraging within the cycle, a multiplicity of equilibria are possible.

Keywords: financial cycle, systemic crisis, liquidity, momentum.

Societies and therefore economies evolve and change over time. Finance is the brain of an economy, as it incorporates a representation of time. Two theoretical conceptions of time come face to face, expressing two irreconcilable streams of thought about economic time. One view is pure market economics, which postulates that time is homogeneous. As a result, money is neutral and finance efficient. The link to macroeconomics lies in Modigliani Miller's theorem (1958): choices about savings and investment are independent of the financial structures. The other view is money economics (Keynes, *General Theory*, Book IV, 1959). The future is affected by uncertainty, such that the pivot of behaviour over time is liquidity, which places money at the heart of macroeconomics. The difference in nature between the causal time from the past and the subjective time of the future leads to finance being driven by *momentum*, generating the financial cycle. The interaction between the financial cycle and macroeconomics depends crucially on financial structures.

In the first section we will address the question of the foundations, proceeding from the assumption of efficiency to the financial cycle. The second section will focus on the links between the financial cycle and macroeconomics. Finally, we will conclude on the possibility of a new growth regime based on the transformation of finance, emphasizing resilience for taking account of the long term.

1. Finance: From the Assumption of Efficiency to the Financial Cycle

Asset markets are about the future. These are markets that convey exchanges of promises and commitments that are usually contractual. The future is the time of expectations, and thus of beliefs about the future. Financial markets are therefore an organization through which individual beliefs about the future interact to give rise to a collective belief. Through the mediation of the financial markets, beliefs about the future influence the current actions of market participants.

This representation of time is based on the heterogeneity of the objective time of past economic actions and relations and the inherently subjective time of beliefs about the future. This observation is opposed to the edifice of the so-called fundamental value model,

which postulates a homogeneous time, since it asserts that the future prices of financial assets are defined by their fundamental values, which are pre-existing. This is nothing more than a generalization of the general equilibrium of perfect competition to an unlimited future where the behaviour of a single representative agent reigns supreme. The future is only known, of course, as a probability, but that doesn't change anything. What is essential is that economic agents are assumed to be capable of identifying all the possible future states, to which they apply objective probabilities, which are themselves supposed to be known to all. It is assumed that the expectations, bound up with this extraordinary knowledge about the future, are rational and that finance, which merely records the impact of these behaviours and expresses them in market prices, is efficient.

It has long been known that finance does not behave this way, and that systemic crises along the lines of the so-called subprime crisis not only are rare, but logically cannot occur at all under the assumption of pre-existing fundamental values and common knowledge, since a systemic crisis is a widespread failure of coordination by the markets. If economics were a paradigmatic science as its zealots claim, the paradigm of efficiency would fall foul of Karl Popper's principle of falsification. But that's not what takes place; the efficiency paradigm is posited as a dogma, and the phenomena to be analysed, which are obviously foreign to it, are treated as "frictions", making it possible to preserve the central hypothesis.

In any case I do not consider that the problems we must face in order to understand finance are "frictions". But the argumentation challenging this position goes much deeper. The efficiency of finance is merely an avatar of the general equilibrium of perfect competition, and it is based on the theory of utility value. The corollary of this theory is the neutrality of money. The assumption of efficient finance cannot hold without the neutrality of money. I thought that in this paper I would not have to return to the criticism of this theory because I had the opportunity to discuss it extensively (*La monnaie entre dettes et souveraineté* [*Money between Debt and Sovereignty*, Chapters 1 and 2]). But Joseph Stiglitz's recent critique, "Where Modern Macroeconomics Went Wrong", gives me an occasion to do so.

1.1. From the hypothesis of mimetic competition to the power of money

Stiglitz stresses the failure of the attempt to reconcile microeconomics based on utility value theory and macroeconomics, proposed in the well-known dynamic stochastic general equilibrium (DSGE) models. The essential characteristic of the utility value that supports the existence of the general equilibrium is the independence of the agents' behaviours, which implies perfect knowledge of the characteristics of the goods and of the desires of each subject with respect to the goods, guaranteeing that individuals have a complete choice. Stiglitz shows that this cannot be the case because all individuals are dependent on a public good in the formation of their choices, i.e. *information*. It is expensive, asymmetrical and therefore generates power relations between individuals. If inefficiency exists, it is structural and produces multiple macroeconomic equilibria.

While fully accepting these results, I belong to a school of thought that draws on a foundation of the incompleteness of individual desires, which consequently implies the need for searching information. This is the hypothesis of mimetic competition. In considering two individuals, the origin of desire for an object is found in a model provided by the desire of the other. But the other is also a rival, because they are in the same search. That is why the convergence of the mirror game is endogenous; it is a creation of the mimetic interaction (A. Orlan, *The Empire of Value*, 135). The advantage of this hypothesis is that it makes innovation the engine of the market economy, because it endogenizes scarcity, making it an instrument of power. Utility is constantly redefined by social interaction to produce differentiation.

But how can a system of exchanges be coordinated to make a whole? In the context of utility value, it is the secretary of the Walrassian market, formalized as a fixed point thanks to the hypothesis of the convexity of choice. In the context of mimetic competition, it is a crucial institution that is the basis for the coordination of exchanges: *money*. It is what is desired by all, and consequently its possession gives power over any object of desire. It follows that market coordination is not an equilibrium, it is the finality of payments. Payment is the means by which society gives recognition to economic actors for what they brought it through their activities. The payments system is therefore the institution that realizes value. It is a pure social relationship. It is not a substance pre-existing exchanges and called "utility".

1.2. The pivot of the financial markets is not the fundamental value, but liquidity

Efficient finance in the context of a perfect competitive equilibrium removes uncertainty. Indeed, it is minimal since the prices of assets are assumed to incorporate an objective risk. There can be no hidden risk accumulating on the balance sheets. There is equivalence between all the means of financing the acquisition of assets, and thus indifference to the structure of the balance sheets, since all risks are valued accurately. Therefore, while we acknowledge frictions in order to submit to empirical reality, they are not necessary theoretically. It is incomprehensible why there can be credit rationing that has a great influence on the real economy. It follows that these frictions do not make it possible to move from a financial logic directed by exogenous fundamental value to the functioning of financial markets controlled by money. The key concept that guides behaviour on the financial markets is not fundamental value, but *liquidity*.

Liquidity is ambiguous because it is self-fulfilling, i.e. the creation of the desire for it. The motive that arouses one's desire is confidence in the institution of money. Under conditions of uncertainty, it constitutes both protection for everyone in a crisis situation and a desire for appropriation that is not subject to a condition of saturation, because the logic that operates in the financial markets is making money with money. As a result, the financial market does not operate at all like ordinary markets. In the latter, the two sides of the market have opposing interests with regard to prices, which guarantees a supply curve that rises with prices and a demand curve that falls. In the financial markets, on the contrary, any actor can be a seller or a buyer any time, which alternates euphoria and panic, whereby the demand curve rises with prices. A peculiarity of self-fulfilling processes is that they generate these kinds of dynamics, which as will be seen later, follow one another and form a financial cycle. These phase changes make financial markets inherently unstable, as was noted by Hyman Minsky, the best interpreter of Keynes's thinking on the role of finance.

There is total opposition between these conceptions. The hypothesis that the fundamental value is the pivot of the financial markets assumes that it is known before the markets open, which amounts to denying uncertainty. On the contrary, while the future does not exist prior to individual beliefs, the question of the organization of the financial markets consists of knowing how the disparities of individual beliefs

about the future bounce back onto the present in defining a convention reflected in the market price.

1.3. The issue of efficiency vis-à-vis counterfactual time

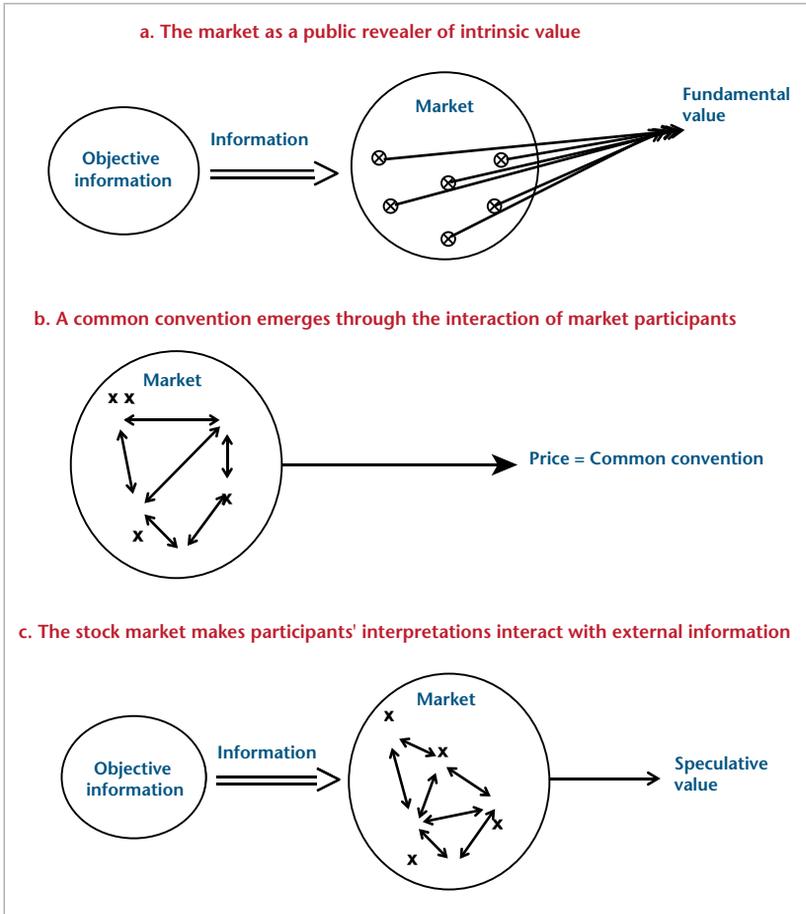
In a financial relationship, the influence of the future on the present cannot be objective. An objective dependence is necessarily causal. It respects the arrow of time, that is, cause precedes consequence. The influence of the future on the present, by which my beliefs about the future affect my decisions today by interacting with the beliefs of others on the financial market, reflects time that is subjective, and therefore counterfactual. It is why economic time is necessarily heterogeneous. Through the mediation of the financial markets, it combines objective relations resulting from the observation of the way the economy has changed in the past with subjective beliefs about the future. In these circumstances, what is the meaning of the information efficiency of the financial markets?

Let's consider the stock market, which determines the value of companies, hence the most central measure of a capitalist economy. Following Walter (2003), we arrive at three alternative propositions for a valuation based on the hypothesis about the counterfactual influence of the future on the present (Schema 1).

In schema 1a, the value of the companies is assumed to be "objective", completely external to the stock market, which acts as a public revealer that has no influence on the intrinsic value itself. Market participants act independently of each other. However, having the same information transmitted by the companies is not enough. They must also have the same interpretation to transform this information into a single value, deemed "objective". Everything takes place as if there were only one representative agent in the market. The rational representative agent in this academic model possesses clairvoyance, intelligence and absolute prescience about the future.

In this representation of the way the market functions, speculation, that is to say, the incentive to discover the right information, does not exist. Indeed, no one at any moment, nor for any period of time however small, can make the least profit by obtaining information before others or by interpreting it better than others. This leads to the paradox of information efficiency identified by Grossman and Stiglitz (1980). Unless the information is a windfall from the sky, an efficient market, as defined above, cannot function. If the information is so inex-

Schema 1. The valuation of companies on the stock market



pensive to acquire, no one will look for it if they can't make a profit. It follows that the market price no longer contains any exogenous information! This is the *self-fulfilling* hypothesis illustrated in Schema 1b. It is as rational as the previous one (Orlean, 1999). But it escapes criticism because it is produced inside the market. This means that everyone believes in the judgment about the price of the market as a whole, that is to say, the community of all the participants. The “truth” of the price comes from self-validation. This means that each person's opinion of everyone's opinion converges on a common assessment. The belief is true because it is self-validated.

Schema 1c shows that it is possible analytically to combine the first two schemes when the market participants take external information into account. The opinions of the participants on exogenous information are diverse, and their transformation into a common opinion is the fruit of the intersubjectivity that comes from the effort of interpretation through the market.

There is one additional difficulty for the proposition that the formation of the market price reflects the fundamental value, which has been noted by Edouard Challe (2005): the fundamental “value” (*FV*) is supposed to result from a particular trade-off equation because it equalizes the return to equity with itself! This is written:

$$(FV) (1 + \text{risk-free interest rate} + \text{equity risk premium}) = \text{rational anticipation of future dividends} + \text{expected capital gains}.$$

But the equity risk premium is just as unknown as the *FV*. It follows that the trade-off equation with two unknowns is undetermined. There are an infinity of evaluation models that are compatible with the trade-off equation according to one's interpretation of the equity risk premium. This, and hence the discounted rate of expected future dividends, is a belief held by market participants about the beliefs of others. So models 1b and 1c have operational significance. *The financial markets create the value of assets, they do not merely reveal a pre-established value.* It follows that beliefs about the future (counterfactual time) have a major influence on the trajectory of the real economy (objective time).

The fundamental value is therefore a statistical artefact of the trajectory of past market prices. While the market convention changes as a result of a change in the self-fulfilling perception of liquidity that will change the future market price, there is no certainty that the fundamental value might not change as well – but less or more than the instantaneous value of the market? This depends on the self-fulfilling interactions of the actors with respect to the interpretation of the change in liquidity. In a downward move of the market, there may be balancing speculation in anticipation of a turnaround in the market price. But there can be unbalancing anticipation by continuing downward pressure. It depends on the interactive judgment of the market participants. Interpretation is what matters in a non-stationary world. The strength of collective interpretation, when it is established in a convention, is that of a symbol. It is a powerful cohesive force, giving a sense of belonging to a community, as shown by Emile Durkheim who

sought the source of the cohesive force of the sacred. In converging to a convention of evaluation, a financial community becomes aware of itself as an institution.

1.4. The liquidity of financial markets, the interdependence of the participants and the multiplicity of equilibria

The logic of asset price formation is all the more influenced by inter-subjectivity (Schema 1b) than the interpretation of exogenous information becomes more uncertain, because the diversity of private opinions, resulting from the participants' own interpretations, becomes broad. Due to this heterogeneity in viewpoints, the participants doubt their interpretation; they become more sensitive to the opinion of others. Mimetism becomes a preponderant force in the market. Self-referencing brings out a market convention that becomes so increasingly detached from exogenous price factors that these become increasingly subject to extreme variations.

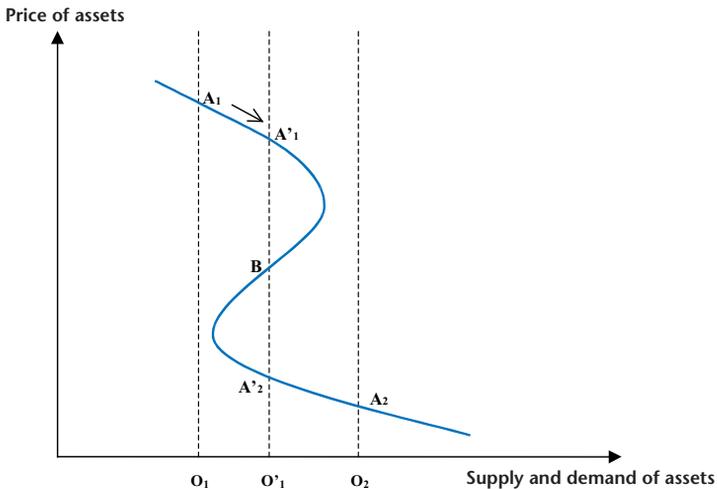
The opinion of others is preponderant because any financial market is subject to the empire of liquidity. But the liquidity of a financial market reflects by its very nature an interdependence of opinion. When a common agreement is established, in the sense of a belief shared on the opinion of others, the information flows that criss-cross the daily market exert a weak influence on the price. Since the sharing between buyers and sellers is only slightly affected, the market makers can act to counterbalance the endemic imbalances and continually establish an equilibrium price with small variations in the current price. The participants are then convinced that the market is liquid, because they can buy or sell at any time without pulling the market price in their direction.

This is no longer the case when the perception of balance sheet risks is triggered by changes that affect debt conditions or information that casts doubt on the convention theretofore taken for granted. The erosion of the convention creates divergences in opinion, which are reflected in the emergence of market volatility and possibly skewness. The calling into question of belief comes from a large-scale shock or from a series of shocks whose interpretation casts doubt on the established convention. The waning of the convention comes from the diversity of interpretations about the meaning of the shocks. When the unity of the belief is broken, without another one being firmly established, the diversity of opinion criss-crosses the market, resulting in

ephemeral market prices, as the interpretation of the shocks fails to converge on a stable common meaning (Chart 1).

Movements among different categories of opinion can lead to an aggregate demand function that increases with price over a range of its variations (Gennotte and Leland, 1990). In Chart 1, the agreement A_1 is a high valuation. The shift $A_1 \rightarrow A'_1$ indicates a continuous decline in price coming from pressure on the supply in the market. This produces a conflict of opinion about the meaning of this movement, leading to two possible equilibria A'_1 , A'_2 , leading to an increase in market volatility. If the force driving the supply intensifies, the market suffers a crash, which leads it to the low equilibrium A_2 .

Chart 1. Multiple equilibria on the financial markets



Source : auteur.

It follows that asset markets subject to the logic of *momentum* contain multiple equilibria. The main question is to understand how the possibility of multiple equilibria is transmitted from finance to the macroeconomy.

1.5. The logic of *momentum* and the financial cycle: the hypothesis of financial instability

Counterfactual time pertains to all asset classes that give rise to financial transactions, since it is inherent in the uncertainty of the future. It follows that perfect knowledge of the risk included in debt

contracts, which is essential for establishing the neutrality of the financial structure with regard to investment choices, does not hold. Debt-financed investment is not equivalent to equity-financed investment. Balance sheet risks depend on the structure of financing and influence the trajectories of capital accumulation.

The history of capitalism is punctuated by financial crises. The great historian Charles Kindleberger (1996) has shown that crises are critical moments, endogenous to the more general dynamic of financial cycles. This dynamic describes cycles that are on a larger scale with a longer periodicity than business cycles. Their logic is bound up with the interaction of changes in the indebtedness of private actors and the price of assets. This dynamic is a *momentum*, in the sense that it is self-reinforcing, because it does not involve an expected return on pre-established and known fundamental values. It was systematized by Hyman Minsky (1982).

The financial cycle can be described in five sequential phases: boom; euphoria; climax and crisis; ebb and the onset of pessimism; debt deflation and the restructuring of balance sheets. The boom phase generates behaviours that weaken the financial system, while the worsening of credit conditions is hidden from the actors, because the euphoria of the asset markets blurs the quality of price information. Fragility creeps in when borrowers, who perceive opportunities for capital gains on assets, resort to using increasing debt to maximize them.

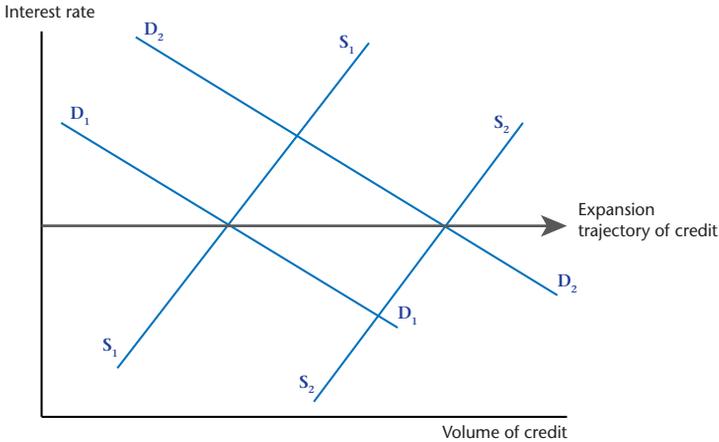
For their part, lenders may be subject to the illusion of apparent solidity in a phase of steadily rising asset prices. They expect that the value of the assets that constitute the collateral for their loans will appreciate, thus guaranteeing their debts. In this situation, competition drives them to approach potential borrowers because the collateral is both a source of wealth for the borrower and insurance for the lender.

There is therefore a reciprocal feedback loop without mean reversion when the anticipation of the rise in asset prices is the primary determinant of credit expansion, because the simultaneous increase in both supply and demand for credit prevents the interest rate from rising when demand for credit increases. The cost of credit cannot therefore regulate the demand for credit by slowing its growth (Chart 2).

When credit applicants are motivated by the anticipation of increasing their wealth through the appreciation of assets, the shift to the right of the demand function is reflected in the supply curve in the same direction. Indeed, credit providers have the same optimistic

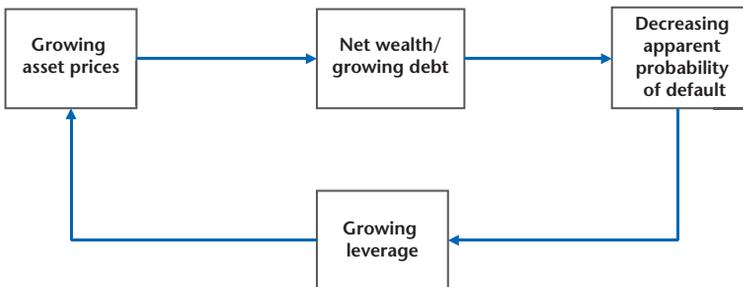
perception of the asset market. They therefore think that the collateral for their loans will increase in value faster than the amount of their loans (a decreasing loan-to-value ratio in the euphoric phase) and hence that the probability of a default on loans, based on the principle of Value-at-Risk as perceived by the banks, will decrease.

Chart 2. Interdependence of supply and demand for credit



D_1, D_2 and S_1, S_2 : demand and supply of credit for an asset price P_1
 D_2, D_2 and S_2, S_2 : demand and supply of credit for an asset price $P_2 > P_1$.
 Source: Author.

Schema 2. The infernal circle of runaway euphoria



Since the balance sheet weaknesses that accumulate do not appear in the market indicators, the supply of credit increases with demand and the interest rate remains stable or even falls as indebtedness accelerates by crushing risk premiums. This phenomenon was seen in the large-scale real estate speculation from 2003 to 2006, as credit spreads

declined while the expansion of credit accelerated. This dynamic means that, when speculators have entered the bubble, they have an interest in staying there, and the price momentum attracts new players. The result is a runaway spiral of euphoria (Schema 2).

1.6. The dangers of balance sheet deflation

The downturn in the financial cycle is dominated by the deflation of the balance sheet. The behaviour driving the contraction of the private sector in this phase is the need for deleveraging (Fisher, 1933). But nothing is more difficult to achieve than an orderly reduction in debt leverage (Koo, 2003).

In the case of financial markets organized by liquidity, it has been shown that valuation agreements are institutions which, when they erode and eventually collapse under the effect of the resurgence of mimetic rivalry, cause enormous financial disturbances that spread through mimetic contagion. In these situations, credit constraints differentiated according to the categories of agents play a determining role in the duration and intensity of the financial crises – because the debt has a strong impact on the behaviour of the individual agents.

Systemic crises pose problems for the resilience of financial structures, problems not known to representative agent models, based on the exogeneity of fundamental values. Studying resilience requires developing what are called stock-flow consistent models (Battiston *et al.*), that is, models based on the interdependence of balance sheets and flow accounts between agents.

In a downturn in a market subject to an asset price bubble, the debt-to-market value ratio of assets increases sharply because the value of assets crashes, while the value of debt has not yet fallen. The financial situation of businesses and households deteriorates despite efforts to improve the balance sheet structure. The constrained rise in the weight of indebtedness in a recessionary phase is the crucial characteristic of financial deflation. There is clearly a “coordination failure”.

Indeed, it is rational for each borrower to try to avoid bankruptcy, and so to seek to deleverage as quickly as possible. However, following a financial crisis that has reversed the cycle, many borrowers are in the same situation, meaning that the combination of their actions causes a decrease in economic activity, and hence in the income of those seeking to deleverage, which as a corollary no longer have the where-

withal to do it. The financial situation worsens as debt weighs heavier on income, due to the depressive effect of the thwarted deleveraging.

This is why the process of restructuring the balance sheets is long and fraught with difficulty, especially since the deterioration of borrowers' balance sheets has repercussions on the lenders. Given an unchanged economic policy, this leads to an increase in the cost of credit and a rationing in its volume, which makes it all the more difficult to refinance debts and puts an immediate liquidity constraint on the indebted agents. Since the aggregated demand for one period determines the income for that period that is spent in the following period, the nominal growth rate declines as deleveraging outweighs efforts to relaunch private sector spending (Leijonhufvud, 2008).

Can economic policy halt or shorten the depressive phase of deleveraging? What is called unconventional monetary policy can lower and flatten the entire interest rate curve in order to encourage spending by the economic actors whose balance sheets are the least vulnerable. But the danger of re-instigating financial instability calls for a more comprehensive understanding of monetary policy, and hence research to include macro-prudential concerns.

Fiscal policy is more effective because it allows the state, as borrower of last resort, to spend in ways that offset the downturn in private spending. However, this offset requires vigilance when it takes the form of debt-financed spending, as outstanding private bank debt is replaced by outstanding public bond debt. While counter-cyclical fiscal policy has most often been designed while leaving aside any concerns about the financial cycle, the impact of such policies on financial stability will differ significantly depending on whether the policy bears on current expenditure or capital expenditure and whether it takes the form of debt or equity. The complementarity of public and private investment, as well as public approaches that allow private actors to extend their time horizons to avoid being trapped by the *momentum*, are very important issues for research.

2. Financial Cycle and Macroeconomics

The cross-interactions between the financial cycle and the economy escape the economic theory of efficient markets, since balance sheets and the way they change play the primary role. It is the dynamics of

stocks that dominate the macroeconomy in the historical time of the financial cycle (16 to 20 years).

A synthesis of the views of the Bank for International Settlements (BIS), which has studied the financial cycle for 25 years, on the links between the financial cycle and the macroeconomy provides a useful framework (Borio, 2012). According to the theoretical hypothesis of momentum, which is inherent in finance and bathed in uncertainty, economic fluctuations are amplified by financial dynamics, which thus impart a pro-cyclical character to macroeconomic dynamics.

The interaction between the financial cycle and the macroeconomy stems from the five characteristics highlighted by the analysis of financial cycles. First, the financial cycle is described in terms of the joint dynamics of private credit and asset prices where real estate plays the preponderant role. Second, the financial cycle structures economic temporality in the medium term. The long term is the historical sequence of financial cycles. Third, the peaks of the financial cycle are closely associated with financial crises. Fourth, if one is able to measure the feedback loop between credit and asset prices in real time, the accumulation of weaknesses within the financial structures can be detected well in advance of the outbreak of the crisis. Fifth, the amplitude and duration of the financial cycle depend on the system of economic regulations.

These characteristics raise the problem of the interaction between the financial cycle and the macroeconomy. The first problem is the tragedy of the horizons. The decision-making horizons of those involved in finance and economic policy-making are not adjusted to the horizon of the financial cycle. On the contrary, the rise of systemic risk dramatically reduces the decision-making horizon by imposing the dictatorship of liquidity, for stocks dominate the macroeconomic dynamics, with all their balance sheet risks. The financial cycle determines fluctuations in the natural interest rate, as suggested by Wicksell. The natural medium-term rate varies with balance sheet imbalances, as stock imbalances have effects on flows (new credit / GDP) over long time periods in both phases of the financial cycle. This is behind the appearance of multiple medium-term growth equilibria.

With these channels of interactions in mind between financial and real phenomena, let's examine a few theoretical approaches to macroeconomics that are compatible with the financial cycle.

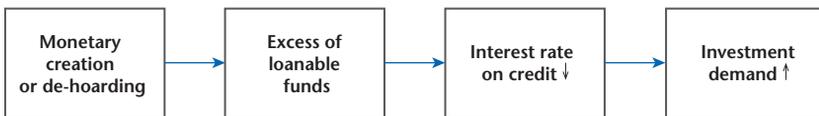
2.1. Wicksell (1907) and the financial accelerator

This theory, in which credit plays the leading role, ruptures with the metaphorical capital market based on so-called “strong” efficiency, which determines the equilibrium price between savings and investment. The symmetry between a savings supply function and an investment demand function does not exist. The investment behaviour of companies is decisive. It depends on the ratio between the expected rate of return on investment (marginal rate of return on capital) and the cost of capital, which is related to credit conditions. It is, in fact, credit that allows companies to carry out their projects by freeing themselves from having to make prior savings.

Wicksell thus defines a neutral interest rate for which the cost of capital is equal to the anticipated marginal rate of risk-adjusted capital. At this rate, aggregate supply and demand are progressing together, without any pressure on the savings-investment equilibrium due to an excess or insufficiency of loanable funds. But the movement of the real interest rate on credit above or below the neutral rate does not necessarily produce re-equilibrating forces. Waves of rising and falling capital and credit assets then generate long-term financial cycles.

The Wicksellian disequilibrium, generated by the effect of the creation of internal money on the accumulation of capital, can be represented by Schema 3.

Schema 3. Wicksellian disequilibrium: inside money creation and capital accumulation



Credit allows companies to realize their investments through savings forced by inflation. This savings results from the swelling of corporate profits with the rise of the mark-up. It is a function that rises with inflation. Moreover, inflation lowers the real interest rate, reducing the cost of capital and stimulating investment, which is also a function that rises with inflation. The equilibrium inflation rate is the one that meets the expectations of company performance.

In a monetary economy, the current conditions of demand influence the structural conditions of production. There is therefore no definable normal rate. The anticipated marginal return on investment is an uncertain, essentially unstable variable. This conclusion brought together Hayek and Keynes. The indifference of monetary policy to financial dynamics, whether its key interest rate is inert or follows a Taylor rule, fuels the financial cycle. Variations in the return on capital lead to variations in accumulation, which are amplified by the elasticity of the credit supply. They are reflected in deformations in the relative prices of assets.

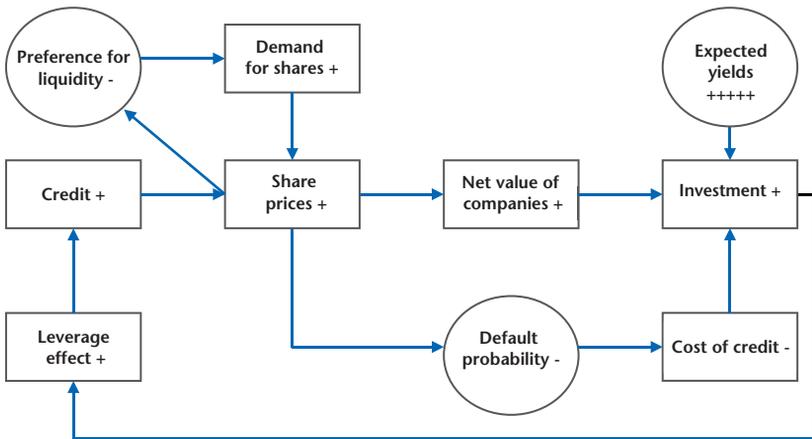
The pro-cyclical character of the capitalist credit-driven economy is formalized in the model of the financial accelerator (Bernanke, Gertler, Gilchrist, 1999). The financial accelerator has a Wicksellian inspiration, because credit plays a major role in it. It has a real sub-model and a financial sub-model. The main link between the two sub-models is investment. It influences the real economy through the channel of productivity and prices on the one hand, and through the income multiplier and aggregate demand on the other. This influence is complemented by wealth effects that affect household consumption. The financial sub-model is what explains how the determination of investment depends on financial variables that enhance the impact of demand prospects on investment – hence the name, the financial accelerator.

The principle of the financial accelerator is the broad channel of credit. In a Wicksellian economy, the supply of bank credit is elastic. Banks do not quantitatively ration credit. They thus do not influence the cycle by the narrow channel of credit, that is to say, by variations in the intensity of the quantitative rationing of their supply. This is the situation in finance today, where banks have multiple ways to finance their loans and multiple ways to transfer their risks.

The broad credit channel is the process by which credit stimulates investment by increasing the net worth of businesses through increases in the real price of equities. The increase in companies' net worth reduces the likelihood of default perceived on debt securities markets. This reinforces their incentive to increase credit leverage in order to invest in accordance with the rate of returns that they anticipate. There is therefore clearly an acceleration effect as long as the interdependence between credit and firms' net worth is mutually reinforcing (Schema 4).

In the phase of the euphoric boom, Wicksell's inflation can be countered by an increase in productivity brought by investment, which increases corporate profits and savings. In addition, the rise in the stock market, which boosts companies' net worth, is reinforced by the decline in the preference for liquidity in an optimistic market climate. This decline increases demand for equities and reduces demand for money or slows its growth relative to the other components of savings. This is because the joint rise in corporate net worth and household wealth changes the structure of savings. It is thus the shift in the structure of the balance sheets, for both productive investors and savers, which guides the financial accelerator to induce a cycle of real activity without any significant variation in inflation in the market for goods. It is as if inflation due to credit dynamics were displaced from goods and services to stock prices.

Schema 4. The financial accelerator



Several endogenous factors can cause the reversal of this process of expansion through credit and rising asset prices. In pure Wicksellian logic, it is the inflation required to bring about forced savings. In an economy with endogenous internal money, no market mechanism can lead it to a stable equilibrium. However, depending on the system for the regulation of the labour market, the growth in investment causes an increase in employment, which accelerates a rise in wages above the rise in the selling prices of goods. This increase in production costs then leads to lower margin rates. The deterioration in the operating accounts is reflected in stock prices. As firms' financial situation

becomes less favourable, investment turns around and causes the economy to slow down or even enter a recession. Moreover, it is enough for doubt to arise about corporate profitability for the stock market to be hit by a rise in the risk premiums on equities. This downturn in the stock market is reflected in the assessment of the likelihood that borrowers will default, thus raising the risk premiums on credit and exposing the excess of debt.

2.2. The macroeconomic impact of the financial cycle in the Keynesian tradition

The structure of the capital / labour relationship, its dependence on the monetary institution and its macroeconomic implications form the core of Keynes' general theory. According to Keynes, capitalism is a monetary economy of production that secretes power and subordination in its structuring relation: the wage relationship. The conditions of access to money in this relationship are unequal. It is the capitalists who have access to money to finance the acquisition of the means of production; the employees are those who have access to money by hiring out their capacity to work. What is called the employment contract does not exchange labour but rather the capacity to work in exchange for money. Individual employees are free to hire out their capacity to work to any enterprise owner – but they are subordinated to the hierarchical relationship in performing the contract.

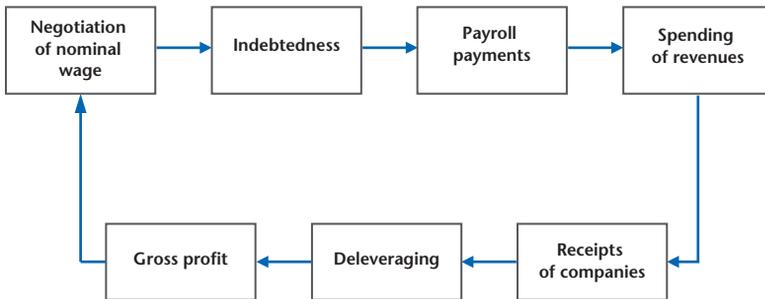
The demand of firms for the use of labour capacities at a given level of the monetary wage depends on the anticipation of their future sales (effective demand) and on their view of the rate of profit they hope for the accumulation of the capital they are seeking. But capital accumulates in many forms. Liquidity is the pivot of these opportunities. Assets not produced on the basis of the search for profit through speculation, the most important of which being real estate, changes in ownership (mergers and acquisitions) and share buybacks are essential components of the accumulation choices. Finally, there is productive investment for the creation of new value, which induces demand for new labour capacities. Finance, by determining the structure of asset returns, orients companies' strategies towards one or another form of capital accumulation.

The most faithful interpreter of Keynesian logic in macroeconomic modelling is Kalecki (2007, paperback). Savings and investment are not equilibrated by the real interest rate. The equalization of savings

and investment is an accounting identity that determines the aggregate amount of profit. The hierarchy of the wage relationship is reflected in the determination of overall expenditure: *companies earn what they spend; households spend what they earn.*

Company decisions are logically anterior to those of the other agents in the capital circuit (Schema 5).

Schema 5. The capital circuit in the monetary economy of production

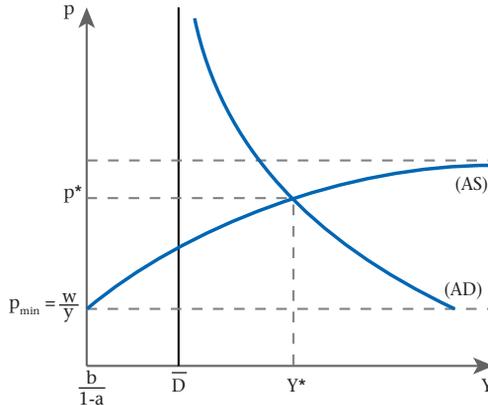


They do not depend on it causally. They depend on it counterfactually through the impact of demand expectations on the decision to invest, thereby influencing the demand for credit. Investment and therefore the level of production are independent of savings within a period of circuit. But aggregate profit depends on it. The investment stems from management's expectations about the marginal return on capital (long-term expectations). The level of economic activity, and therefore employment, depends on the anticipated demand for the different price levels of the product. With this perceived demand curve, called effective demand, companies determine the supply price that allows them to maximize their profit. The supply price is the result of the mark-up, which is characteristic of the maximization of company profit in an oligopolistic market environment.

In the equilibrium of the period shown in Chart 3, where the capital stock is given, the aggregate supply curve (AS) depends on the nominal wage and the business mark-up, and is influenced by productivity and the rate of use of production capacities. The aggregate demand curve (AD) depends on the propensity to consume, which is itself influenced by the wealth effects of the different categories of consumers; it also depends, above all, on the expectations of corporate

profitability that link the present period to the future, and therefore on the accumulation of capital. The general level of prices p^* and the level of activity Y^* result from the intersection of (AS) and (AD) (Chart 3).

Chart 3. Aggregate supply and demand in the Keynes-Kalecki model



p varies between p_{\min} and p_{\max} when the share of profits varies from 0 to 1- a .

$b/1-a$ is the breakeven point (net level of production for which the share of profits cancels out in overall net income).

(p^*, Y^*) is the equilibrium of the period for a given level of K .

Source: Author

The role of indebtedness is very important. Companies have a need for working capital that is provided to them by monetary creation. The investments desired by companies do not match with the savings desired by the other agents. That's why investment can be low in a world of abundant savings. This point needs emphasizing; in the monetary economy of production, there is no capital market determining an equilibrium interest rate. The overall investment resulting from business projects determines the global savings through the realization of profit. Monetary policy acts on the cost of credit, and therefore on investment at given expectations of profitability. It also affects households' propensity to consume through consumer credit. Fiscal policy acts directly on the exogenous component of aggregate demand.

In this process, the medium-term supply curve (AS) depends on short-term displacements. The trajectory of the economy is path-dependent. Thus recessive shocks on aggregate demand foster hysteresis factors on the supply curve. A low level of activity can become a medium-term equilibrium with permanent unemployment. The shocks

most likely to cause hysteresis effects are severe financial shocks that affect balance sheets during downturns in the financial cycle. A medium-term equilibrium with underemployment, metaphorically called “secular stagnation” when it concerns the medium-term equilibrium associated with the depressive phase of the financial cycle, may result.

2.3. A Fisher-Minsky-Koo model of secular stagnation

The first feature of this model, proposed by Eggertsson and Krugman (2012) from the Keynes-Kalecki perspective, is that it dispenses with the hypothesis of the representative agent. There are two types of agents: those who borrow and those who save, this distinction being structural. Borrowers face a debt limit that cannot exceed the discounted value of their anticipated future income. This debt limit is set by the market convention resulting from the common opinion of the community of investors-savers about the debt level of purportedly secure borrowers.

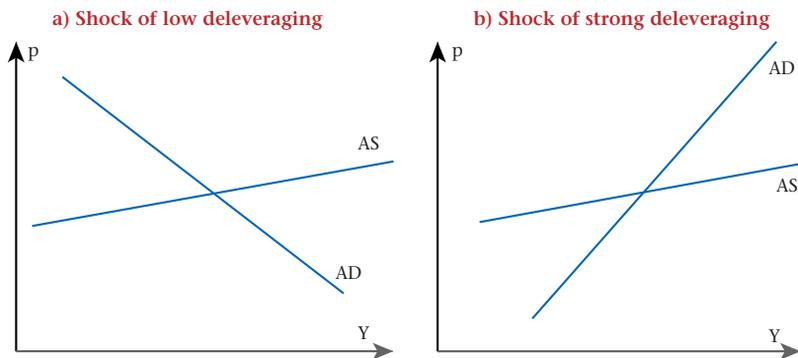
This view changes over time in accordance with Minsky's perspective. Rising asset prices lead to euphoria, which fosters a lax attitude on the part of the investor community towards borrowers' debt leverage. There is therefore a high debt limit during the expansionary phase of the financial cycle. The Minsky moment, that is to say, the outbreak of the financial crisis that reverses asset prices, quickly plunges the debt limit to a low level. This implication results from a tightening of collateral constraints as the saver community suddenly realizes that assets have been overvalued. Deleveraging ensues as debtors strive to reduce their debt to the low limit. It follows that the natural interest rate becomes endogenous to the trajectory of the deleveraging. This is self-sustaining Fisherian debt deflation.

When the downturn in the financial cycle produces a systemic crisis, the natural rate becomes negative because the deleveraging required is very substantial. The subsequent fall in output lowers the price level in such a way that real indebtedness increases rather than decreases. Borrowers consume less and savers do not have an incentive to consume more since the market interest rate is stuck at zero. The thwarted deleveraging is therefore reflected in a demand curve (AD) that increases as a function of price. The inversion of the AD slope generates a stable underemployment equilibrium if the slope of AD is higher than that of the AS curve. This is because the slope of AD

increases with the decrease in the weight of borrowers in the total output (Charts 4a and 4b). It is therefore the gap between the upper limit and the lower limit of the debt that makes possible the transition to a dual equilibrium.

As Richard Koo points out, it is the fall in investment that produces the sufficiently strong contraction in aggregate demand when the difference in real debt $D^{high} - D^{low}$ is large. This fall is due to the widening of the spread provoked by the financial crisis.

Chart 4. Macroeconomic equilibrium according to the amplitude of the deleveraging shock



Source: Author.

The financial crisis that leads debtors' constraints to move from a high limit to a low limit of indebtedness is an uncertain event that suddenly changes attitudes towards liquidity. It pushes the interest rate sharply lower on the liquid securities that savers are rushing to and explodes the spread incurred by borrowers for a given level of debt above the new low limit. The thwarted deleveraging ensues. The Minsky moment happens when the spread jumps and forces borrowers to change their strategy. The characteristics of a systemic crisis then emerge: the rational behaviour of each borrower informed by the increase in the spread causes the deterioration of the situation of everyone in line with the Fisherian scheme described in Chart 4.

When the economy is settled into the low equilibrium, one can account for the famous Keynesian paradoxes of thrift, toil and flexibility. Keynes's "paradox of saving" says that if everyone tries to save, there will be less aggregate savings. The "paradox of toil" says that if everyone tries to work more there will be less aggregate work. The

“paradox of flexibility” says that increased price and wage flexibility can make it harder for borrowers to deleverage instead of increasing demand, since borrowers are more constrained and savers expect the fall in prices to continue (Fisher effect).

These paradoxes concern in particular the pitfalls encountered by fiscal policy in the low equilibrium of thwarted deleveraging. It is generally agreed that under normal circumstances, where nominal interest rates are positive, a policy of reducing taxes on labour is expansionary. This is not the case when nominal rates are null or negative. Tax cuts become recessive if they are designed to lower the marginal costs of labour or capital, because these tax cuts increase the real interest rate through the price reductions that they lead to, with the central bank being unable to offset this. This is Eggertsson's paradox: “The main goal of a policy, when base rates are zero, should not be to increase aggregate supply by changing the incentives. Instead, the goal should be to increase aggregate demand, in other words, the overall level of spending in the economy.”

Budgetary policy is indeed the main tool for trying to pull the economy out of the low equilibrium. It is also necessary to consider its use in a context of a low pressure equilibrium. If there are significant deleveraging constraints, it means that a number of private actors, which is high enough to induce a macroeconomic effect, have a limited or no capacity for new borrowing. The importance of public investment, that is a borrower of last resort capable of extending horizons, cannot be underestimated. The additional liquidity, coupled with an increase in the stock of public assets in the economy, allows an expansion of private demand by relaxing the debt burden of these agents, as the increase in the stock of government securities raises the collateral on private loans. There is therefore a “crowding in” of private expenditure, that is to say, a multiplier effect.

2.4. Growth and stagnation: the dual equilibrium in the face of the intergenerational problem

Overlapping generations models (OLG models) have a double virtue. On the one hand, they require a public asset accepted by all to transfer the savings between generations, and on the other hand, by structure they get rid of the representative agent.

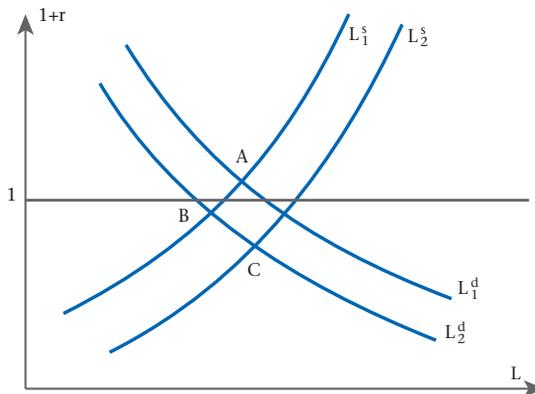
In a three-generation model, indebtedness is essential to the functioning of the economy. Generation 1 borrows from 2, which

saves for retirement. Generation 3 consumes all its income and sells all its assets. Young people are subject to a debt limit, which is linked to repayment constraints when they reach middle age. The size of each generation and thus population growth are taken into account. The equilibrium between the supply and demand for loans determines the “natural” interest rate in each period (G. Eggertsson, N. Mehrotra and J. Robbins, 2017).

This equilibrium rate falls as population growth slows, with the tightening of young people's debt limit and with the decline in the relative price of capital goods. The point is to study the effects of this last process associated with the financial cycle (variation $D^{high} - D^{low}$) in the OLG model. The same configuration can be revealed: a negative real interest rate running up against the zero nominal rate barrier under the assumption of flexible prices in a model with endowments.

The greater constraint on youth indebtedness shifts the credit demand curve downward and lowers the equilibrium interest rate from point A to point B in Chart 5. If the tightening of the debt limit constraint is strong enough, the equilibrium rate can become negative. In the next period the young have become middle-aged savers. They must save more for their future retirement in order to offset the decline in income from the previous period because of the restriction on indebtedness. This is why the credit supply curve moves to the right and the equilibrium interest rate drops further from B to C. The natural rate becomes permanently negative.

Chart 5. Impact on the natural interest rate of credit constraint tightening on young people



Source: Author.

The medium-term equilibrium will be “full employment” or “stagnation”, depending on the extent to which the debt constraint has tightened, because of the change in the slope of the aggregate demand curve in a model with the production and accumulation of capital.

3. Conclusion

Taking the financial cycle seriously in macroeconomic research on finance is an urgent priority. This approach is meeting fierce resistance, because it rejects a dogma, that of a unique fundamental equilibrium guided by the efficiency of finance. We have seen that what is at stake is the conception of homogeneous time in economics and of the representative economic agent.

Finance operates under the monetary constraint, which it seeks to circumvent and overcome by creating new forms of money. It involves a diversity of actors, goals and horizons in complex systems. The complementarity of flows in exchange networks is here just as essential as substitutability. What is needed is a theory of the viability of interdependent networks. The central concept is not efficiency, but resilience. This representation of finance must be concerned above all with finding the most appropriate modelling of systemic risk (Battiston *et al.*, 2012).

Such modelling will make it possible to define and measure the indicators of financial vulnerability and their power for contagion, which can be used to develop macroprudential policies that are integrated into monetary policy. It is only by developing such policies that central banks will be able to argue that they are taking into account the stability of finance as a system.

Another characteristic of resilient systems is the presence of “nodes”, that is to say, actors who, through their aims and strategies, respect the self-referentiality of the financial markets. They are the long-term investors, those able to break out of the tragedy of horizons. In-depth studies on what constitutes long-term finance are essential to the effort to promote sustainable growth. This requires the complementarity of public and private investment for new collective challenges with citizen support.

What are the criteria for long-term investment? This is an area of research that should be a priority. The horizon for covering the financial cycle is 15 to 20 years. This allows an integrated management of

assets and liabilities that incorporates the investor's social commitments. But how can financial value be created that takes into account the sustainability of growth? Environmental, social and governance (ESG) criteria must be taken into account in the financial evaluation, which is still a relatively untouched area of research.

Behind this question lies the fundamental problem of the accounting and design of the firm. As long as the firm is considered the property of its shareholders, the definition of capital will necessarily be narrow. But a macroeconomy of sustainable growth requires a broad conception of capital as social wealth, along with corporate social responsibility that translates into accounting terms and involves stakeholder governance.

This new era of economic research will certainly demand social change.

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