Innovative Choice as an Exit Crisis Strategy

Mario Amendola* and Jean-Luc Gaffard†

1. Introduction

Everybody agrees that exiting the crisis requires an innovative choice both at micro and macro level. However, one does not start from the scratch. The future does not determine univocally the present. The short term determines what the long term will be. One cannot imagine stimulating innovative choices as if the crisis had never existed, and simply going back to the previously carried out recipes that have some responsibility in the outbreak of the crisis.

The on-going crisis can be viewed as a black swan – as a temporary deviation or a friction along an equilibrium path – with the consequence of leaving unchanged the basic principles of modern economics. After the episode of the financial crisis as well as before it, the same good policy recipes should prevail. They consist, on the one hand, in reducing the distortionary presence of the government in the economy, which can be done by reducing its size, by balancing the budgets, and by fighting inflation, and, on the other hand, in promoting structural reforms aimed at the smooth working of markets, assured by deregulations and flexibility, with particular reference to the labour market.

By contrast, the same event, which is actually a great contraction (Rogoff 2011), can also be viewed as a moment of an out-of-equilibrium path. This change of perspective shifts the focus from the (immediate) financial causes of the crisis to its real causes, that is, to the sequence of imbalances over time that are at the core of any innovation process. Coordination issues come to the fore and the current policy consensus should fall apart.

An economy travelling on an equilibrium path (be it a steady state or not) is fully adjusted. Rational expectations prevent the agents of this economy from making errors that would be ‘fossilised’ in the capital equipment or in the human capital. This is the reason why given properties of ‘technical’ functions (production and utility functions) and given initial conditions, including the information structure, are sufficient for determining the trajectories followed by this economy. On the contrary, an economy that is not fully adjusted travels on an out-of-equilibrium path whose evolution depends not only on ‘fundamentals’, but also on complex interaction mechanisms aimed at rendering this path viable. Day discerns “two fundamentally distinct characterisations of economic dynamics, both descendant of classical and neo-classical economics: one of adapted equilibrium dynamics and one of adaptive evolutionary dynamics” (1993, p. 21). Adapted equilibrium dynamics deals with fully adjusted economies, whose behaviour has just been mentioned. It is mainly concerned with random shocks, the amplitude of which must be small (Lucas 1980). The property of an adaptive, evolutionary approach, on the other hand, is to focus “on the characterisation of the way economies work out of equilibrium” and to explicitly represent “their capacity to change structure, i.e., to evolve

* University of Roma La Sapienza
† IUF, OFCE and SKEMA Business School
or self organise” (Day ibid.): a capacity to co-ordinate the structural processes of change involved.

Stressing the working of growth co-ordination mechanisms – which may differ from case to case – rather than the (given) character of ‘fundamentals’ has paramount analytical implications. First of all, there is no longer a unique attractor that would be defined with respect to the properties of technological change and/or other fundamentals. Oscillations no longer appear as deviations from a fixed trend determined beforehand by fundamentals alone. They are, rather, one way in which an out-of-equilibrium growth process can get realised. The nature of the initial shock comes to matter definitely less than the co-ordination problems arising as a consequence of this shock.

While the modern consensus maintains that the long term must prevail over the short term, that the supply conditions are more important that the demand conditions, focusing on co-ordination mechanisms implies to recognize that the short term actually determines what the long term will be, that supply conditions and demand conditions interact with each other.

Co-ordination problems emerge as a consequence of the imperfection of knowledge coupled with the irreversibility of production and investment decisions. Co-ordination mechanisms determine then constraints and information that will be relevant to the decision-making processes, and hence affect the properties of the evolution path of the economy. In particular, co-ordination is the process through which the actions of the agents can be made consistent. This process, when well managed, leads to an order. As pointed out by Metcalfe, “order implies regularity and regularity arises from the co-ordination of diverse behaviours” (Metcalf 2001 p. 572). Full employment is one of the main characteristics of this order. It is only when co-ordination mechanisms allow the economy, although disturbed by a qualitative change, to follow a quasi regular path, that full employment can be re-established.

Co-ordination failures affect productivity, investment and employment, all typically endogenous variables in the growth process. The viability of irregular growth paths becomes the crucial analytical problem and the appropriate target for any policy intervention. Policy interventions - aimed at regulating existing dynamic mechanisms, or at supplementing them with compensating mechanisms - are required to interact dynamically so as to correct distortions that may result from an initial shock, thus re-establishing the internal consistency of the economy and rendering a smooth evolution of it viable. The required mix of interventions, on the other hand, should not be implemented once and for all. It must be modified along the way closely following and adapting to a process that, being affected by a variety of perturbations, takes on shape and direction along the way.

The paper is structured as follows. Section 2 explains the reason why any innovation process should be analysed by means of an Agent-based Computational Modelling. Section 3 proposes the architecture of an out-of-equilibrium model that focuses on the time dimension of production processes. Section 4 identifies some co-ordination issues associated to any innovative choice, and it evokes, in which way, economic policy should be orientated. Section 5 takes advantage of the preliminary results obtained with the model, and gives an interpretation both of the origins and the way to exit from the ongoing economic crisis. Section 6 concludes with consideration about the problem of time.

2. Towards an Agent based Computational Economics
Innovation or structural change, whatever its origin (the introduction of a new product, the entering a new market, the irruption of new countries and new firms in the international trade, a change in the distribution of income), by definition means the breaking of a given equilibrium. It implies the disruption of a given productive structure, and of the established way in which it operates, and the construction of a new and different one.

Let us consider the case of a strong technological change. Economic gains of technology (the source of growth) can only be obtained through a process that makes it possible (or not) to transform changes in technology into changes in productivity. As a matter of fact technical changes that potentially allow for substantial increases in productivity may actually result in a waste of productive resources, if their absorption causes shocks and fluctuations that cripple the performance of the economy.

Since productivity gains reflect effective changes in productive structures, what actually matters are the viability conditions of the process of structural change. This depends not so much on the intrinsic characteristics of given technologies as on the co-ordination of economic activity, both at a micro and macro level on which, as we shall see, the success of innovation depends.

Co-ordination problems arise in the first place in the production process itself, due to the distortion of productive capacity that, as we shall see, follows innovation, and concern the dynamics of both the physical and the human capital involved. These problems, on the other hand, are not confined to the production process but extend to the whole economic system. New goods imply new types of production processes and new activities that, in turn, call for new forms of interaction among the existing agents and institutions, or even the appearance of new actors and institutions (Metcalf 2001). Co-ordination problems arise therefore not only at the innovating firms’ level but also in relation with the environment. As a matter of fact most innovations are the result of new forms of co-ordination among several firms and institutions rather than of the independent actions of single dominant innovating firms. Thus the construction and the effective operation of the productive capacity that will make it possible to actually take advantage of the returns of the new technology requires to understand “how the innovating firms acquire, accumulate and develop knowledge other than scientific and technical knowledge which is material to innovation, (namely) knowledge about the specific characteristics of customers and markets, which in turn has wider connections to knowledge about economic, social and regulatory changes” (Metcalf 2000, pp. 148–9). This is actually achieved “by means of several firms (or other institutions) contributing various technical, marketing or production resources, and co-ordinating the deployment of those resources in the innovating process” (ibid.). In other words, it requires solving a wide gamut of internal and external co-ordination problems.

Solving these problems, and the way they are dealt with, determines not only the viability of the process involved but also its outcome. Different outcomes may in fact be associated with a given technological advance, depending on viability conditions, that is, on the effective development of the process that will make it possible to transform this advance into actual returns in terms of productivity gains.

In this light technology no longer appears as the precondition of the process of innovation but as the result of the latter, interpreted as a (essentially economic) co-ordination process (Amendola and Gaffard 1998). As a consequence the essential role of the market is to help making this process possible, rather than simply provide the
presumed incentives to the adoption of given technologies. To re-establish the co-
ordination that assures the viability of a systemic structural change is a much more
complex task, though. Interaction among heterogeneous agents is much more important
than individual incentives.

Computational study of economic processes as dynamic systems of interacting agents or
Agent based Computational Economics is the framework that allows a better treatment
of the co-ordination problems concerning the plurality of entities involved in out-of-
equilibrium growth paths. In this framework, “‘agent’ refers broadly to an encapsulated
collection of data and methods representing an entity residing in a computationally
constructed world. Individual biological life forms, social groupings, institutions, and
physical entities can all be represented as agents” (LeBaron and Tesfatsion (2008 p.
246). Among these entities, we intend to focus in particular on production processes of
different ages and belonging to different technologies in the perspective of describing
what happens along the way following a technological shock or any other shock that
creates or aggravates a distortion in the structure of these production processes. The
important thing with this kind of approach is that it “seeks to model the process by
which one among many possible futures is selected, rather than imposing constraints on
the model that ensure only a single equilibrium outcome” (Mehrling 2006 p. 77).

3. The architecture of an out-of-equilibrium model

To throw light on viability conditions we have to give a closer look at innovation,
interpreted as an out-of-equilibrium process whose backbone is represented by a
restructuring of productive capacity over time. To this purpose we need in the first place
an adequate theory of production, since the way we look at production is the watershed
between the equilibrium theory and an out-of-equilibrium analytical approach. The
analysis of states of the economy, and of their changes, carried out with reference to
equilibrium configurations, relies on an ex post view of production and technology: in
the sense that we are dealing with already analytically defined productive options,
characterised by a given productive capacity that enters as an argument any functional
representation of the production process. When this is so, it is possible to abstract from
the phase of construction of the underlying productive capacity, and concentrate on its
‘utilization’ moment.

In the analysis of a process of innovation, instead, we want to stress the fact that a ‘new’
productive structure does not immediately come about after a modification of it is
contemplated, but the economy must actually go through the phase of ‘construction’ of a
different productive capacity before this happens. We need therefore a representation of
the process of production that exhibits explicitly this phase and its coming necessarily
before the phase of utilization: that is, to sketch it out in real, irreversible time.

The Neo-Austrian model (Hicks 1970, 1973) is suited to the task. It defines the
production process as a scheme for transforming a sequence of primary inputs into a
sequence of final output going first through a phase of construction of a given productive
capacity and later through the phase of its utilisation: a fully vertically integrated
process characterised by the intertemporal complementarity of its moments and phases,
each one strictly necessary for the others to exist..

Within this framework, each production process has a life cycle. Each given behaviour of
the economy is sustained by a productive capacity characterised by a given age
structure of the production processes. An equilibrium state or path is sustained by a
particular age structure, that is, by a constant age distribution of production processes.
This means that the ‘horizontal dimension’ of productive capacity – namely, the array of production processes at different moments of their lifetime, coexisting at a given moment – must be consistent with its ‘vertical dimension’ – that is, the time pattern of production associated with this age structure. When this is so, that is, when the phases of construction and utilization of productive capacity are harmonized at each given moment of time and over time, no market disequilibria arise. Investment and consumption, and supply and demand of final output are also harmonized.

A qualitative change - as opposed to a mere quantitative growth perfectly compatible with the equilibrium state just defined – implies a change in the way of functioning of the economy, that is, a structural modification which, according to the above definition, is characterized in the first place by a change in the age structure of productive capacity with respect to its previous equilibrium configuration. As we have just seen, investment and consumption, and supply and demand, are then no longer harmonized over time. In this context, productivity depends on the successive investment decisions that determine the age structure of productive capacity at each moment of the on-going process of innovation, rather than reflecting the nature of technology or the delays in the adjustment of production or employment. But while the rate of accumulation determines the growth rate of productivity, it depends in turn from the latter: and this interaction results in a complex dynamics sketching out the evolution of the economy.

An analytical framework based upon this representation of production (Hicks 1973) and a sequential articulation of the decision process (Amendola and Gaffard 1988, 1998), provides a solution to the problem of generating out-of-equilibrium dynamics and of characterising economic evolution itself using disequilibrium theory. It is a theory of the economic process that brings into light both the intertemporal complementarity of production processes and the intertemporal co-ordination of the decision processes directly or indirectly related to production. As such, it makes it possible to show “all the phenomena and problems that hinge upon the incessant creation of new and novel capital equipment” (Schumpeter 1954, p. 280n). The interaction between short and long period is at the heart of this creation, and it can be captured by sketching out both an intra and an inter period sequence, where the one depends on, and at the same time determines, the other (Amendola and Gaffard 1998, pp.126-8).

The effective link between short and long period in such a sequential model are the economic magnitudes that at each given moment represent the existing constraints, but are themselves the result of what has been happening along the sequence of periods that has led to the present state of the economy. Within this sequential context, output, prices and wages determination mechanisms carry over and most likely amplify the imbalances in the structure of productive capacity (first of all the one between construction and utilisation), which result from the original breaking up of the functioning of the economy due to the attempt to carry out a qualitative change. This stirs an out-of-equilibrium process that causes fluctuations in output and prices, and hence in available financial resources and in investment, which make productive activity less and less consistent over time and hence undermines the viability of the path followed by the economy; so that the viability of this path becomes the crucial analytical problem.

As a matter of fact, the short to medium experience affects the growth rate of the economy. Mainly, the amount and the direction of capital formation are bound to be affected by the business cycle, whether through investment in new productive capacity or through the scrapping of old productive capacity. Once an economy strays from a
steady state for any reason (i.e. a change in technology, a change in the distribution of income, or a change in market conditions that generate unexpected consequences), it cannot find its way back to any equilibrium growth path. Irreversibility of investment decisions and imperfect knowledge about market conditions explain why this is so. Therefore, it is no longer relevant to separate growth and fluctuations.

Summing up. We maintain that the economic gains of technology can only be obtained through a process that makes it possible (or not) to transform changes in technology into changes in productivity. This is in the nature of an out-of-equilibrium process, as it implies the disruption of a given productive structure, and of the established way in which it operates, and the construction of a new and different one. This process takes necessarily the form of fluctuations, which reflect the appearance of problems of co-ordination, and hence of market disequilibria, as the result of the original shock. In fact the reactions to these disequilibria stimulate a process of adjustment sketched out by sequentially interacting disequilibria, which will amplify the original deformation of the structure of productive capacity, and hence the width of the fluctuations, that often result in a threat to the viability of the economy. The success, or the failure, of the qualitative change undertaken depends on the possibility of re-establishing the disrupted co-ordination of economic activity, thus smoothing the fluctuations that affect the process through which changes in technology are transformed into increases in productivity.

This casts doubts on the relevance of the concept of potential growth rate, defined as the rate at which an economy can grow without inflationary pressures, and reckoned to depend on the potential productivity growth. Out of equilibrium, the dynamics of productivity is driven not only by long run, exogenous forces of technological progress and invention. It also reflects the process of transformation of the productive structure and the ability of agents and institutions to organize and to carry out this process within the prevailing constraints.

4. Coordination issues and economic policy

In this context, we have stressed, the nature of the initial shock matters definitely less than the co-ordination problems arising as a consequence of this shock and of the way these are dealt with.

In the modern theory of the firm the co-ordination mechanism is a strategic game based on a system of incentives leading to the right choice. These reflect costs and productivity conditions that are determined exogenously by technology (or by R&D expenses, given a mechanical relation between these expenses and the reductions in unit costs of production). Technology, together with preferences (the 'fundamentals'), actually determines the pay-off of profit maximizing agents (the firms) in a given information context. Incentives are nothing but the expected results from the introduction of a new technology. They reflect both the intrinsic characteristics of technology, and the institutional rules, which determine the distribution patterns leading, or less, to the right choices.

Out of equilibrium, incentives are much more difficult to determine, though. Co-ordination issues cannot be dealt with ex ante, as with the strategic game approach. For one thing, as we have seen, while it may be possible to define ex ante the inputs of innovative activities the same is not possible for its outputs.
This makes it difficult to have a plain scheme of incentives. Since productivity gains reflect effective changes in productive structures rather than given properties of technology, entrepreneurs should not in principle make strategic choices based on incentives identified with given pay off that incorporate in an essential way technological properties. They should rather take into account the viability conditions of the process of structural change involved.

Viability conditions, let us again stress it, must be distinguished from optimality conditions, that is, the conditions required for an optimal choice in an equilibrium context. The viability of the process that allows actually capturing the productivity gains potentially contained in the new technologies depends on re-establishing a co-ordination over time of supply and demand factors: over time because a thorough process is made up of steps that sequentially sketch out its evolution. It depends therefore on conditions that will take meaning and shape in the course of the process itself, while optimality conditions only refer to intrinsic properties of supply and demand, that is, of given costs and preferences.

The fluctuations that characterise the out-of-equilibrium evolution of the economy, in other words, are not so much due to technology or changes in preferences but reflect the co-ordination problems arising in a process of structural change. To reduce the amplitude of these fluctuations, which might represent a threat to the viability of the change undertaken, policy interventions must therefore deal essentially with these problems.

The widely recognisable expressions of co-ordination problems are the economic phenomena usually labelled as paradoxes or dilemmas: typically the productivity paradox, the dilemma between price (or wage) flexibility and rigidity, or the trade-off between inflation and unemployment. As we shall see, when a new and superior technology is introduced, coordination failures are responsible for a productivity slowdown and an increase in the rate of unemployment. They may also be responsible of inflation pressures and of a deficit in the current account balance.

Co-ordination over time concerns in the first place re-establishing a balanced structure of productive capacity, which will allow in turn to eliminate the resulting market imbalances, thus containing inflation and re-absorbing unemployment.

The availability of productive resources (the financial and the human resource) and the constraint that these may impose on production processes, together with the equilibrating (or disequilibrating) role performed by price and wage regimes, that determine the distribution patterns, are both essential elements of the required co-ordination mechanism.

Let us consider the simple case of the introduction of a new technology characterized by higher construction costs, as it is typically the case of the new information and communication technologies but also with clean technologies. This causes a distortion of productive capacity and the dissociation in time of inputs from output, and of costs from receipts, which puts a financial constraint on investment in capacity. The higher costs come earlier, and hence cannot be financed out of current production. The availability of financial resources at the right time is then essential to build a bridge over time between costs and revenues, so as to avoid the collapse of the on-going process of restructuring of productive capacity. If these resources are not available the necessary investment cannot be realized, which will further reduce final output and postpone (or even cast doubts on the effective obtainment of) the expected increases in productivity. What we
shall have in the meantime is less production and less labour demand. Unemployment, lower revenues and the subsequent fall in final demand will further reduce receipts and financial resources. Insufficient investments will paradoxically result in excess supply, excessive productive capacity and in the scrapping of production processes.

This trend is strengthened when the new technology requires a different gamut of skills. We shall have immediately the appearance of a human resource constraint, taking the form of a labour mismatch, which implies the co-existence of unemployment and unfilled vacancies (for lower and higher skills respectively). Once again this will result in lower investment and hence in a subsequent fall in revenues and final demand. Unemployment thus reveals the existence of co-ordination problems at the economy level. It cannot be reduced to a matching problem, to be solved thanks to appropriate changes in the regulations of the labour market.

What it calls for is the dynamic co-ordination between the accumulation of physical capital and that of human capital. In this light both the monetary policy and the structural reforms advocated by the prevailing policy consensus appear out of tune.

Unemployment and inflation are the unavoidable immediate outcome of a structural shock affecting the way of functioning of the economy. Unemployment, we have just seen, is the result of the temporary fall in productivity and, in many cases, of the mismatch between the demand and the supply of skills due to the introduction of new and different techniques. Inflation occurs, “because the goods in which the wages (...) will be spent (...) cannot be provided out of the product of the labour which is newly employed, for that is not yet ready” (Hicks 1990, p. 535). In dealing with inflation the central bank has a choice. It can try to curb inflation as soon as possible by resorting to a restrictive monetary policy, as it has been, and still is, customary practice in accordance with the policy consensus. In this case, the investment necessary to carry out the innovation process cannot be realized. We shall have less production and less labour demand. Unemployment, lower revenues and the subsequent fall in final demand will further reduce receipts and financial resources. The initial negative impact of the shock on output and employment will thus be exacerbated.

It can, alternatively, decide an accommodating monetary policy characterized by the acceptance of a transitory inflation in the aim of enhancing the growth process in the future. The inflation, in fact, is the result of a real shock implying a disequilibrium on the final commodities market rather than of a nominal shock. In this case, the expansionary monetary policy is the expression of the intent to pursue the objective of growth and employment rather than that of price stability. It is aimed at reducing the current disequilibrium between saving and investment (an investment reckoned insufficient) so as to also reduce the gap between supply and demand of final commodities. The observed inflation then does not reflect a time inconsistency of economic policy that private agents should take into account. It is, on the contrary, a temporally coherent choice, since to accept a certain amount of inflation to day makes it possible to fully re-absorb it tomorrow while also reducing unemployment. The availability of the required financial resources will in fact make it possible to keep a balanced structure of productive capacity thus re-establishing the co-ordination of economic activity.

In the same way, constraining systematically (by a fixed rule) budgetary deficits is based on the idea that deficits are the result of (discretionary) policy mistakes, and can never positively influence the evolution of the economy. However, we have seen that insufficiency of investment is the main obstacle to the process of restructuring of
productive capacity through which innovation takes place. The temporary fall of the final output has the consequence of increasing the public deficit in the first phase of the process of change, but this is the only way to re-absorb it once the process itself successfully carried out and the gains of innovation obtained.

Re-establishing a balanced structure of productive capacity concerns not only the process of accumulation of physical capital, though, but also to co-ordinate this over time with the process of accumulation of human capital. The essence of the latter is the learning process, especially in the case of skill-biased technologies. Once again, the emphasis of the prevailing policy doctrine on structural reforms aimed at reducing labour protection and increasing wages flexibility appears misplaced.

On the one hand flexibility (as absence of employment protection) discourages long-term investment in human capital by employers since the worker may not remain in the firm. It also discourages investment in firm-specific skills by workers since these skills may not be a fair return for that investment in the absence of job security.

On the other hand – keeping in mind that the success of a process of restructuring of productive capacity depends mainly on being able to smooth the fluctuations and the strong and extreme changes associated with this restructuring – flexibility interpreted as quick prices and wages adjustment may feed redistributions of income that, by affecting the levels of demand and employment, will bring about over-reactions in one direction or the other that result in a stronger alternation of excesses of supply and demand, thus amplifying the distortion of productive capacity. Wage stickiness, on the contrary, prevents the fluctuations from becoming too strong so as to represent a threat to the viability of the economy. Thus, e.g., labour institutions that promote bargaining between workers and employers and hence produce slow adjustments in wages make it possible to maintain the purchasing power of the workers and simultaneously to favour the viability of innovation processes (Amendola and Gaffard 2006).

Briefly, the change from an equilibrium to an out-of-equilibrium perspective may imply a completely opposite policy outlook.

5. Lessons for the on-going crisis

Technological change is only one dimension of the process of development defined as “disturbance of equilibrium, which forever alters and displaces the equilibrium state previously existing” (Schumpeter 1934 p. 64). The on-going crisis is clearly a moment of such a process, and must be analysed in this perspective. Of course, financial behaviours have played an essential role in triggering the crisis. But, the roots of the crisis are real. Technological shocks and dramatic changes in the income distribution could have triggered huge distortions between investment and consumption. What happened to financial assets and indebtedness derived from these distortions.

The on-going crisis should invite us to point policy mistakes that have prevented world’s economies from fully adjusting to the unavoidable structural changes, associated with technical progress, with the extension of international trade and with greater inequality in the distribution of income, rather than to maintain that the same recipes that prevailed before the crisis should be applied again. As a matter of fact, capitalism is submitted to recurrent structural changes and its survival depends on the way co-ordination takes place. Private (market) or public (policy) co-ordination will be successful when helping the harmonisation between supply and demand at each moment of time and over time, that is, when smoothing adjustment processes. This co-
ordination consists in arbitrages between conflicting objectives, but also requires a harmonisation of interests, which ends in a fair distribution of income.

The US crisis may be interpreted as the consequence of the way a huge structural change has been managed. On the one hand, financial markets have allowed investments in new technologies to be easily financed. But too much money has been invested. And as stock prices rose, they began to feed on themselves and the bubble burst. On the other hand, the indebtedness of households belonging to poor and middle classes has compensated the increased income inequality that should have had a negative effect on final demand (and on the potential growth rate). This would have created inflationary pressures and would have lead the Federal Reserve to apply a tight monetary policy, if the gap between domestic supply and demand for final goods had not been filled up by imports from emerging countries. Fundamentally, imbalances in the structure of productive capacity have opened the way to cumulative disequilibria (both real and financial, domestic and foreign) that have resulted in a great contraction.

The EU crisis is a different story. Large European countries have experienced a lower growth rate that has ended in increasing budget deficits. This has been the result of a restrictive monetary policy that has prevented inflationary pressures, but also adequate investments in new technologies from being quite large. In other words, the transition to the new productive capacity that would have incorporated new technologies has not been completed. Nevertheless there were no strong imbalances between investment and consumption that would have rendered unviable this slow growth path. A huge problem arises during the 2000’s, when Germany adopts a strategy that has consisted in stimulating exports while domestic demand was constrained. This has resulted in a divorce between Germany and other European countries, that is, between a country with a current-account surplus and countries with deficits. A strong imbalance between investment and domestic consumption has arisen in Germany, which has required a high level of consumption in some other developed countries. Decreasing interest rates in the euro zone and available funds in particular from German banks have fuelled housing bubbles specifically in Spain and Ireland, where a symmetric distortion has arisen: domestic consumption was no longer in line with investment in new productive capacity.

In China, the excessively low level of income of the largest part of the population has made it necessary to carry out an export led growth strategy that resulted in a huge accumulation of savings. Given the huge investment driving the fast growth carried out, only increased exports of goods have allowed to absorb the resulting supply. If this pattern of growth is to be reversed, the growth of investment must fall well below that of GDP and consumption must be dramatically augmented. The economy should be able to rebalance from investment towards consumption, or, in our words, to re-establish a balance between the construction and the utilisation of production processes at the domestic level. This transition to greater reliance on internal consumption might be quite bumpy. And, anyway, it should be managed smoothly to be successful. It will be made all the more difficult that existing imbalances have been aggravated by the global crisis has aggravated when stabilising economic policy has consisted in a stimulation of investments, including public investments.

The global imbalances that result from the prevailing relations between advanced and emerging countries (mainly between the US and China), but also among advanced countries, take the form of national current-account surpluses and deficits offset by net capital inflows. According to the international intertemporal trade agreement, these
global imbalances should create no problems since surplus countries are foregoing goods and services today but expect, in return, to receive net goods and services tomorrow. This is what Corden (2011) call ‘the return journey’. In this scenario, borrowing is supposed to be aimed at financing sound investment, and to provide for the return journey. However, what has happened is that financial resources thus made available have actually been devoted to finance increased current consumption and unproductive investment (housing). As a consequence, a huge imbalance has appeared between consumption and sound investment, which is not sustainable. This is an example of the paradox of thrift. “Current-account surplus countries – notably China, Japan and Germany – where people feel virtuous because of their prudent saving for the future – should be told that it is investment, not saving, that raises future output. When current-account surplus countries rely upon other countries to do their investment for them, they are really outsourcing the difficult part of the story” (Corden 2011 p. 5). The problem to be stressed here, is not only concerned with the divorce between saving and (sound) investment, but also with the imbrications of successive disequilibria that push economies out of their stability corridor.

Focusing on the distortions between investment and consumption as the engine driving the evolution, and identifying them as one of the main causes that pushed economies out of their stability corridor, helps to better understand the intrinsic complexity of the situation. This also reveals how difficulty is to elaborate exit strategies for macroeconomic policies. Re-establishing a better co-ordination between investment and consumption will take time. Governments should be able both to smooth short-term fluctuations, and, in the same time, to favour a restructuring of the economy. It would then be a mistake to focus on fiscal consolidation and to ask to implement structural policies as if the only problem were to re-establish a balanced public budget and to prevent cyclical unemployment from turning structural. The old Keynesian recipes are not more suited to the required task. They must be complemented. The transition paths should take place in such a way to correct existing distortions, which means obtaining greater reliance on investment in some countries, on consumption in other ones. In both cases, this requires adjustments in the structure of the productive capacity and eventually in the distribution of income and wealth. Such changes take time and must be managed in a way that prevents the economy to experiment too strong fluctuations in the meantime. The real challenge is to articulate the short-term with the long-term issues, in fact to understand that active monetary and fiscal policies could be necessary for re-establishing the conditions for a steady growth. Structural policies should not be orientated towards more flexibility on the market, but, at the opposite, they should promote rigidities that permit smoothing the necessary adjustments. Indeed, “the crisis has also put to the test long-standing dogmas that blame labor-market rigidity for unemployment, because countries with more flexible wages, like the U.S., have fared worse than northern European economies, including Germany” (Stiglitz 2011).

6. Conclusion

It would be too simple (or naïve) to focus on expectations (right or wrong) as the main factor leading the recovery from the present crisis: as if the present were, univocally, determined by our perception of the future. We have in fact to recognize that the past constrains the present as well as the present constrains the future. Current as well as future values of economic magnitudes are not free variables. They are the expression of a path dependency. So we cannot abstract from the nature of current disequilibria and from what will happen along the way while these disequilibria are transmitted from one
period to the next. Nor we can abstract from the political dimension of the problem. Particularly, in the euro zone, conflicts of objectives and interests are increasing between the different nations, which makes it necessary to obtain political conditions that would allow carrying out the arbitrages involving more solidarity.

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