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D'Elia, Enrico

Gruppo Federico Caffè, Ministry of Economy and Finance, National Institute of Statistics

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**THE NEW EUROPEAN INDUSTRIAL STRATEGY
AFTER THE GREAT FINANCIAL CRISIS AND THE COVID CRISIS
ORIENTED TO THE NEW CITIZENS NEEDS AND THE TERRITORY**

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Good theories for better models and policies

Enrico D'Elia (MEF, ISTAT and Gruppo Federico Caffè)

ABSTRACT

Despite the very strong shocks of the last 15 years, the same paradigm continued to inspire economic policies, which envisages: a single long-term path of development, substantially insensitive to short-term policies; and an economic system composed of almost homogeneous representative agents that react to stimuli in an almost linear way. Policies based on these models can only support, if not amplify, the spontaneous trend of the market and tend to waste huge public resources with inefficient incentive systems. For a sustainable and lasting recovery, it is necessary to adopt a new interpretative paradigm and use different models. The ultra-expansionary monetary policy and the suspension of the Stability and Growth Pact are heading in the right direction, but they are not enough.

Lisbon, 9:40 am on All Saints' Day in 1755

New York, October 29, 1929

Wuhan, an unknown bad day in 2019

The conservatism of institutions*

Policy makers use mainstream theories and models to elaborate and justify their choices. If these are wrong, they provide incorrect policy indications too, even if the reverse is not necessarily true. Although the economic paradigm is arguably only a bit of policymaking process, even when “vested interests prevail over ideas, nevertheless the economist must be attentive to ideas,” as Federico Caffè pointed out in 1985.

In the space of two decades, we have gone through the worst recession of the century (deeper than the 1929 crisis), with a sequel on sovereign debts a few years later, and a pandemic crisis that is still ongoing and that has few precedents in the past centuries. Yet institutions continue to use the same interpretative models and conceptual schemes to design economic policies and evaluate their effects. Federico Caffè, in the mid-eighties, claimed the poverty of the economic debate of the time, which concerned macroeconomic imbalances regarding inflation and foreign accounts, comparing it with the theoretical “fury” after the crisis of 1929. Today he would probably be much more critical and would recall the “epistemological immaturity” of economics, which seems to systematically ignore the consolidated developments of other sciences.¹

One would expect that the shocks we have suffered would have provoked a cultural reaction, more than some reflection on economic theory and policy, comparable to that aroused by the crisis of 1929 or, further back in time, by the Lisbon earthquake of 1755. Notably, after the 1929 recession, the Keynesian paradigm flourished and the Lisbon earthquake was enough to undermine the optimism of the Enlightenment’s philosophers and the *laissez faire* approach theorized a few years earlier by the Marquis of Gournay in France. After the earthquake, few people continued to think they really were living in the best of all possible worlds (possibly ruled by the “invisible hand” as hypothesized by Adam Smith a few years later). Not surprisingly, the rebirth of Lisbon was then entrusted to the strongly interventionist policies of the Marquis of Pombal. He revolutionized Portuguese urban planning; started an unprecedented dialogue with the social partners of the time (the “guilds”);

* The paper reports only the author’s views, which do not involve the affiliation institutions by any way.

¹ About Federico Caffè’s thought, see the collection of writings edited by Amari (2014).

strengthened the public school and established the *Companhia para a Agricultura das Vinhas do Alto Douro*, anticipating the *Tennessee Valley Authority* of Roosevelt by almost a couple of centuries. All those policies were much more radical than the QI of the ECB, the NGEU and SURE funds and the suspension of the fiscal rules foreseen by the SGP and the rules against state aids contained in the TFEU.

Instead, to cope with the economic crisis triggered by the Covid 19 pandemic, economic policy interventions continued to be based on obsolete theoretical tools, often half a century old. This conservatism can only be partially explained by the changed power relations between social groups (capital and labour, in the more traditional view) and between nations and supranational entities (such as the giants of the web). As Keynes said, it is likely that current policy makers are still “slaves of some defunct economist” (or “some academic scribbler of a few years back”)² or at least need a shared rhetoric to justify their decisions. In particular, I will focus on the consequences of two cornerstones that permeate mainstream economic theory and policy and are closely related to each other:

- the idea that the economy, without perturbations, proceeds along a stable and substantially predetermined long-term development path; and
- the idea that the reactions of economic agents are essentially continuous, homogeneous and determined solely by individual conditions and preferences.

Other worlds are possible

The first hypothesis probably derives from a too literal interpretation of Say's law, according to which every level of the potential productive capacity finds (more precisely: generates) a solvent demand capable of absorbing it. Given that production capacity essentially depends on factors considered to be almost exogenous, such as demography and technology, it can be deduced that only the perturbations of these two drivers can significantly and permanently change the course of economic events. In this logic, economic and industrial policies can only favour the growth of the population and innovation in businesses. To accelerate the adaptation of demand to supply, the same policies must ensure maximum flexibility of prices and wages. Everything else has only short-term effects, which are counterbalanced and cancelled out and in the long run.

² The quote comes exactly from the very last page of the main text of Keynes (1936).

The belief that long-term trends are scarcely affected by short-term fluctuations leads to linearize traditional econometric models, computable general equilibrium models (CGE) and dynamic stochastic general equilibrium models (DSGE) around a deterministic trend, driven by demographic and technological drivers, established a priori and independent of the policies under examination. Recently, even the Italian Parliamentary Budget Office criticized the misuse of these models for the evaluation of structural policies,³ but they are still widely used within the Recovery and Resilience National Plan.⁴ In the CGEs and DSGEs, cyclical events leave no trace on the distant future. In particular hysteresis phenomena (such as the permanent and irreversible effects of unemployment on human capital), network effects and path dependency in adopting new technologies (e.g.: the difficulty of skipping some stages of development, passing, for example, directly from vinyl disks to cloud music without having previously developed a network infrastructure for accessing the web) are usually ignored. Nevertheless, if the hysteresis and timing in the adoption of new technologies are relevant, then even the long-term developments of the economy are not uniquely determined and therefore it makes no sense to take them as a reference in forecasting and simulation exercises. Furthermore, temporary shocks, to the extent that they cause hysteresis and delay or anticipate the introduction of new technologies, end up having a permanent impact on the future. Therefore, a more solid methodological approach should take into consideration the case for multiple equilibria, some of which are even unstable, associated to different sequences of initial temporary shocks.⁵ By the way, the existence of a single and stable economic equilibrium requires, strictly speaking, compliance with the conditions indicated in the theorem of Sonnenschein, Mantel and Debreu, which are so restrictive that theorem deserved the nickname “Anything goes”.⁶ This is particularly true for models with expectations, which cannot invoke consistency between model expectations and forecasts and even less the transversality condition that excludes destabilizing speculative bubbles. The persistent consequences of the bubble burst by the end of 2007 should warn against adopting similar “technical hypotheses” within the models used for the design and evaluation of economic policies.

It is as pernicious as the latter practice the design of fiscal rules based on the discrepancy between the real trend of the economy and its hypothetical long-term trend that, if it exists, is subject to large uncertainty. For example, linking the maximum size of the budget deficit to the value of the output gap (i.e. the difference between actual and potential GDP) implicitly means pursuing increasingly restrictive policies to the extent that fiscal austerity depresses not only the level of ongoing GDP, but

³ See, in particular, the Appendix 1.1 of PBO (2015). For a wide-ranging critique of these models, see Stiglitz (2011).

⁴ See par. 1.7 of the Italian draft Plan, January 2021, 12, edition.

⁵ Recent contributions on this issue include Blanchard (2018).

⁶ For a discussion of the theorem, also from a historical perspective, see Rizvi (2006).

also the long-term estimates that inevitably also depend on the present economic performance. This triggers a vicious circle between restrictive policies, sluggish growth, downward biased estimation of potential output and thus large estimated output gap, conducive of even more restrictive fiscal policy.⁷ This narrative well represents the narrative of the Italian economy in recent decades, which was routed along one of the most unfavourable among the infinite long-term equilibria that were possible ex ante. The output gap principle and the related policies have been questioned only recently even by the ECB,⁸ although they are still cast in the European Treaties. Yet any scientist faced with so many repetitions of the same experiment and so many consecutive failures would have considered of changing his theory, following the Popperian (but also Bayesian) approach of revising the conjectures that do not pass the empirical refutation.

What does the representative agent represent?

The idea that economic agents change their behavior without discontinuity is joined with the belief that the nature “non facit saltus”, popularised by Leibniz, but based on the authoritative precedents of Zeno and the Pythagorean School. A couple of centuries of chemistry, physics and biology have disproved this conjecture as regards matter, energy and probably also time and space.⁹ Sometimes the continuity conjecture applied to economics produces misleading theoretical consequences and policy indications, which are comparable to the wrong predictions of classical physics about the spectrum of radiations emitted by overheating a body. In fact, according to the classic theory, a body would produce an increasing quantity of very high frequency waves (including deadly ultraviolet and X-rays for a temperature that is high enough), but this is contrary to the empirical evidence (otherwise all the bakers and housekeepers would be killed). Contrarily, quantum mechanics, just rejecting the continuity of matter and energy, correctly foresees that it takes infinite energy for the body emits ultraviolet and X-rays (so that bakers are on the safe side).

The overall result of the action of many agents is continuous and linear if each of them behaves in a linear way. Thus, assuming continuity and linearity backs up neglecting the variability of individual positions and reactions studying the relationships among economic aggregates. If, on the other hand,

⁷ For an effective survey of the debate, see Tooze (2019). For a formal discussion, see Heimberger and Kapeller (2017).

⁸ For example by Lagarde (2020).

⁹ For a non-technical discussion of these issues, although scientifically rigorous and complemented by interesting epistemological considerations, see Rovelli (2016).

one admits that each economic agent behaves discontinuously in the face of a shock, it is more difficult to limit oneself to considering aggregate behaviour as the sum of independent and homogeneous actions. Finally, non-linearity and heterogeneity of behaviours prevent neglecting the interactions between agents, whose effect on the aggregate can be much more relevant than simple individual decisions and inclinations. For example, the irregular motion of the pollen grains, which so surprised Robert Brown at the beginning of the nineteenth century, cannot be explained by the mobility of the individual grains, but only by the collisions (interaction) with the molecules of the fluid in which they are immersed. Yet almost all the models used by institutions take for granted that phenomena such as entry into the labour market, unemployment and retirement essentially depend on individual choices, rather than on network and environmental effects. This view is comparable to that of those who, until the early twentieth century, continued to think that Brown's pollen grains took random walks by their own means.

All these results of natural sciences, which now date back to at least a century ago, seem to have left indifferent most of the economists operating in the institutions. They in fact continue to use models with representative agents (possibly grouped into a few categories), which do not interact with each other and maintain an extremely linear and predictable conduct even in the face of exceptional situations.¹⁰ Indeed few economists have applied the concept of complexity (which involves the prevalence of interactions over individual choices)¹¹ to economic problems and other scholars, while remaining within the mainstream theory, have studied the effects of discontinuities in the behaviour of firms, consumers, etc. At present, the main concession of economists operating in institutions to the concept of heterogeneity of economic agents is the use of micro-simulation models to study the redistributive effects of fiscal, social security and labour policies. However, these models also embody a predetermined trend of economic activity in the long term.

The simplification introduced by the hypothesis of representative agents who do not interact with each other has far from trivial consequences on economic policies.¹² For example, an analysis of the labour market that disregard interaction inevitably leads to policies (called “active”) that encourage individuals to work, as if urging Brown's pollen grains is enough to make them deviate from their random paths. The same approach leads to neglect the second-round effects of policies, linked to the different reaction of losers and winners within each category. For example, an incentive to invest reserved only to particular types of companies can lead non eligible companies to postpone their plans

¹⁰ For an articulate critique of the representative agent paradigm, see Hartley (2002).

¹¹ On the relationships between models with representative agents and complexity theory, see Farmer et al. (2012).

¹² See Fagiolo and Roventini (2017).

(arguably waiting on more favourable legislation), such as to cancel or reverse the expected effects of the provision. The same hypothesis leads to underestimate the multiplicative effects of incentives reserved only for some families that activate effects of imitation by the others (“keep up with the Joneses”) or are rejected fearing of a stigma effect (as in the case of poverty subsidies). Many pension reforms have yielded very different results from those expected (for example, a much lower number of retirements) precisely because the official models did not consider the impact on social relations and the strong heterogeneity of individual positions. Also recently, these and other systematic distortions of the reference models have led to an erroneous estimate and an inefficient allocation of funds destined for subsidies and social security benefits.

Institutional models rarely take into consideration the threshold effect, although economic analysis has shown that operators, in making their decisions, carefully consider adjustment costs (from menu costs in determining prices, to research costs hiring new staff or buying durable and investment goods). If these costs are significant, as often happens, then some incentives, even if generous, do not give the expected results because the beneficiaries may need a very strong “push” to change their plans, especially if they concern the medium and long term and if they are far from the critical threshold that makes change convenient.¹³ On the other hand, the same incentives can be excessive for those subjects who are already close to their critical threshold. Most of the incentives are therefore destined to be dispersed among those who do not need them and those who do not react to them. A recent case is that of state cashback, which is too modest to encourage the use of electronic payment instruments among those who use them little (due to habit, level of income or “interaction” with their socio-economic environment) and is a waste of resources for those who already frequently use credit cards.¹⁴

Ironically, the granularity of individual behaviours was widely invoked from the 1970s onwards to reject economic theories that were not “microfounded”, that is justified by rational or quasi-rational individual behaviour.¹⁵ Within the institutions, therefore, widespread use is made of macroeconomic models that derive from the aggregation of individual reaction functions defined on the basis of principles such as rationality, foresight, coherence, sufficiently widespread information, etc., but which exclude the effect of the interaction between similar agents, also for practical reasons. This interpretative paradigm often leads to implausible estimates of the parameters that define the preferences and reactivity of individuals (substitution between work and leisure, implicit discount

¹³ On the theoretical foundations and the practice of threshold models, see Granovetter (1978). For a recent review of these models see Teräsvirta et al. (2010).

¹⁴ See D’Elia (2020).

¹⁵ About the birth of this paradigm, see Weintraub (1977).

rates, price elasticity, etc.) if the model must be consistent with observed aggregate data.¹⁶ Various corrections have been adopted to avoid these paradoxes (e.g. the hypothesis that many agents are not rational or informed), but the fact remains that microfounded models are based on the idea that macroeconomic phenomena are nothing more than the accounting result of summing individuals' outcomes. Unfortunately, the aggregate results do not depend solely on microeconomic behaviour. For instance, in a zero-sum game, which well represents most economic phenomena, the overall balance (being always zero) does not depend on how players are skilled and lucky. Applying the same approach in physics gives paradoxical results. For instance, the "standard model", which seems to explain everything we know so far about the behaviour of particles, has the "minor" shortcoming of not yet being able to fully account for a macroscopic phenomenon such as gravity (unless we resort to rather questionable conjectures). Policies based on the results of micro-founded models can only consist of individual incentives and structural reforms that affect the expectations and preferences of economic agents. This is as if policy makers try to change the shape of a drop of water by convincing the pollen grains immersed in it one by one.

Concluding remarks

The mainstream economic paradigm has the undoubted advantage of being widely shared also at the international level, of providing well-tested analysis tools and recipes (even if with questionable results) and above all it offers certainties on the long-term trend of the economy. Instead, it takes a lot of courage to venture on less known and solid terrains, characterized by multiple equilibria (and therefore by a strong dose of uncertainty on the results of policies) and heterogeneous agents that interact with each other (which would therefore require personalized policies instead of generalist measures). It needs much more than a "nudge" to convince policy makers and civil servants to change their Weltanschauung and intervention tools. The right opportunity could be just by the economic crisis that has carried on for years (another "great moderation" after the one that occurred in the eighties'?) and a global health emergency that is likely to last for years and could have permanent consequences on our way of living and producing. In 1755 an earthquake in Lisbon, which is now considered only the periphery of Europe, was enough to trigger a cultural revolution, rather than only a change of the economic theory. In 1929 the crisis touched the heart of the economy, producing the

¹⁶ For instance, Bayesian estimators are preferred to avoid this typical pitfall of DSGE models, see Smets and Wouters (2007).

Keynesian revolution. Today we have a virus that suddenly appeared in what was the periphery of the world until a few decades ago.

The first lesson learned during this emergency is that the market, left to itself, cannot solve trivial problems such as the production and distribution of very low-tech goods such as face masks, gowns, alcohol and, in Germany, even toilet paper, for not to mention the provision of health services. On the other hand, private logistics and pharmacological research have given excellent evidence of efficiency, especially if generously subsidized by the states. On the other hand, the public administration, despite many uncertainties and delays, has managed to provide essential and non-essential services (from health and education to ordinary administrative activity), adopting innovative work organization models and demonstrating flexibility that is often greater than that of the private sector. All this should suggest to abandon interpretative paradigms, models and policies that consider a priori the private sector to be more efficient than public intervention or vice versa. A pragmatic vision (with its sequel of theories, models and policies) should instead take into account the complementarity and synergy between these two sectors of the economy. On the pure theoretical ground, this requires first of all a treatment of public spending and investments within the models (especially CGE and DSGE) that does not foresee a null or even counterproductive effect of government expenditure in the long term. Otherwise, the planning and evaluation of public interventions will continue to follow a strictly accounting logic (as also complained by some recent critical interventions on the “lack of the economy” and vision in the PNRR¹⁷).

Another lesson, which indeed we should have learned already after the Great Recession of 2007, is that the models used within institutions should reconsider the links between money and inflation. For example, it would be worth noting that only a minimal part of liquidity now circulates within the “real” world of production, consumption and investment. The rest follows paths that, although they can affect the real economy too, have a high degree of autonomy, as evidenced by the modest fluctuations in stock exchanges in the face of a health catastrophe that has few precedents in recent history. In physics, something equivalent to this phenomenon was experimented at least a century ago in the study of the photoelectric effect, which demonstrated how flooding a metal with light produces no or modest effects, while it is enough a single photon associated with the right frequency to generate a significant electric current. If the paradigms and models used by the institutions continue to neglect this aspect, monetary and fiscal policy will remain hostage to obsolete and counterproductive guidelines (and Pavlovian reflexes). This does not mean encouraging unproductive

¹⁷ See also Monacelli (2021).

public spending financed by the issuance of unlimited money (as MMT seems to suggest),¹⁸ but designing fiscal and monetary policies that are pragmatic (such as those implemented in the US) and less timid than the current ones.

We should also draw some consequences from the glaring cracks visible in the economic paradigm based on representative agents, which however pre-existed the pandemic by many years. For decades, the state reduced interventions on aggregate demand, focusing on incentives for businesses (to invest and hire) and people (to train and work for as long as possible). The results were generally much below the expectations, configuring a waste of public resources perhaps larger than that reported for the traditional stimulus to aggregate demand. Just think of the cost of active labour policies, compared to the modest results obtained even by the most efficient administrations. Unfortunately, the extreme heterogeneity of the recipients of the incentives and their discontinuous behaviour made most of the resources absorbed by two categories of beneficiaries:

- those who would have spontaneously taken the action prompted by the incentives even in the absence of the latter, because they had already exceeded a critical threshold beyond which it was necessary to do so (comparable to the energy levels corresponding to the different orbits of the electrons around the atomic nucleus); and
- those who respond poorly to incentives because they are still too far from their respective reaction thresholds.

Unfortunately, these critical thresholds are very difficult to observe and are highly heterogeneous among individuals, so it is hard to design effective incentive systems. What can be done is to push recipients to “reveal” their condition before collecting the benefits, without however recurring to very complicated and invasive tests (which also risk costing at least as much as the waste associated with traditional incentives). For example, auctions could be envisaged in which participants offer co-financing and results to be achieved (properly guaranteed) in exchange for incentives. Presumably, those already close to the reaction threshold will make modest offers per each euro of incentives and therefore collect fewer public resources, which will nevertheless be sufficient to stimulate the desired actions. Instead, candidates still far from their critical thresholds will not even participate in the auction, but with only a minor loss in overall achievements. Basically it is the same technique used in all nuclear power plants, where very reactive materials such as plutonium are bombed with neutrons rather than inert metals like lead. In this way, the available funds (and energy) is allocated in such a way as to obtain the maximum aggregate result with the minimum cost for the community.

¹⁸ For a recent survey of this approach, with specific reference to the European fiscal policy, see Ehnts (2016).

This would also avoid embarrassing clock days, heavy bureaucratic procedures and perhaps even several episodes of corruption.

Finally, as a civil servant who deals with economics within institutions, let me ask academic economists to develop interpretative paradigms (and models) that overcome the distortions of the current ones but that, at the same time, offer policy makers precise indications and above all the “language” they need to defend more courageous and effective policies.

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