

Expectations-based Processes- An Interventionist Account of Economic Practice

(Putting the direct practice of Economics on the agenda of Philosophy of Economics)

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Abstract

The paper starts distinguishing between two kinds of economic practice: *theoretical practice* (TP) (model and theory building) and *direct economic practice* (DEP) (the practical operation upon real economies). Most of the epistemological and philosophical considerations have been directed to the first type of practice, one of whose main goals is the discovery of particular sorts of economic laws, mechanisms and other regularities which throw light on relevant economic patterns. We do not deny that in some restricted domains these kinds of regularities may be found. Rather, we claim that (in many domains) the realm of economics is best understood as consisting of *processes* whose regular structure (if they have it at all) is not guaranteed beforehand but may be crucially influenced and successfully enforced by what we call DEP.

We claim that (a) some economic processes are a particular type of social processes that will be referred to as Expectations-Based Processes (EBP); (b) in those cases in which EBP exhibit a regular behavior, they depend on agents' expectations and, crucially, we argue, on *interventions* upon them.

Characteristically, an EBP shows a connection between the information that individuals receive from the relevant economic context, the expectations they form, and the activities they perform. More importantly, authorities' interventions may change agents' expectations

(and therefore, their decisions), contributing to shape EBP and helping to produce the patterns that lead to some targeted economic phenomena.

The features of an EBP show that they are not shielded from external influences and they do not run autonomously once triggered; on the contrary, they are processes that require continuous prodding on the part of policy makers to keep them running in the intended way. So they cannot be conceived neither as *mechanisms* nor as economic machines.

JEL B49

Keywords: socioeconomic processes, mechanisms, intervention, economic practice, expectations, philosophy of economics.

I. Introduction

Economics is an ambiguous term: it refers both to the economic processes (real markets and real economies) and to their representations (theories and models). Some economists are mainly (or only) oriented towards what we call “direct economic practice” (in short DEP) – which consists on the application of theoretical tools upon concrete socioeconomic systems in order to address economic processes –, while others are oriented towards the theoretical practice (in short TP) or model-building. Most of the methodological and philosophical accounts of economics refer to the theoretical practice. This paper, instead, focuses on the DEP: the way in which, given the knowledge provided by theories and models, economists (or authorities with economic responsibilities) involved in key government positions contribute to influence and transform real economic processes.

These two practices are closely related, but they and their products are very different and should be carefully distinguished. Unfortunately, the current philosophical analysis of economics has focused only on the *theoretical* practice and paid little or no attention on the DEP. This one-sided (biased) interest has led to a mistaken view of economic processes. Although nowadays there is widespread scepticism about the existence of universal laws, the belief that there are some autonomous (but restricted) economic regularities that some way are in place and keep running by themselves once triggered persists. This belief is fed by the fact that usually mainstream economic representations (models) assume all the special conditions needed for the rise of convenient regularities. These ex – ante produced regularities are then attributed to the targets of those representations (the concrete economies out there). This may be the case of some mechanistic accounts of economics. The idea that there are stable self-regulating economic mechanisms is probably true

regarding the particular worlds depicted by many *theoretical* practices, but looking at real economies what we see is unstable processes that demand continuous external assistance to reach their intended targets. We do not deny that there may be regularities after all (perhaps in very restricted and volatile domains), but we argue that at least in the type of processes we examine in this paper these are *administered* (or *human-made*) regularities.

Though when applied to the social realm the mechanistic approach takes for granted the validity of conditions that usually are not present in the intended social targets, and consequently rarely (if ever) are useful for elucidating the DEP, some of their conceptual tools nevertheless help to clarify the specific nature of the kind of economic processes examined in this paper. In the remaining sections we take some ideas from current mechanistic literature and put them to work on the domain of DEP. More precisely, we incorporate the processual (Glennan, 2002b), individualistic (Hedström & Swedberg, 1998b; Hedström and Ylikoski, 2010) and dualistic (Machamer, Darden and Craver, 2000. In short MDC) accounts of mechanisms in order to examine a particular type of economic processes whose regularities depend on agents' expectations. They will be referred to as Expectations-Based Processes (EBP). Finally, we hope to show that in spite of their merits there are limitations for these accounts to approach real economic processes, showing that they fail to pay due attention to the crucial role of external interventions upon them.

II. Looking behind regularities: Mechanisms and Nomological Machines

In the last decade the mechanistic movement has played a crucial role in the contemporary philosophy of science, supporting the idea that a vast variety of phenomena in the world are the result of the operation of mechanisms (Glennan, 2008). Thinking in terms of mechanisms is attractive because it dodges the use of the controversial notion of *laws*, whose main characteristics— non-temporality, universality, etc. — usually do not manifest in reality.

Different accounts have defined what a mechanism is (MDC, 2000; Glennan, 2002b; Woodward, 2002; Hedström and Swedberg, 1998b; Bunge, 2004; Darden, 2006; Bechtel and Abrahamsen, 2005; etc.) Despite some differences in content, all of these contributions share the view that “mechanism” is a central notion for understanding scientific practice. There are however some differences about how to characterize both mechanisms and the nature of their components. We are not going to examine these differences here. Instead, we will focus on three views of mechanisms that point out to essential features that are present in the kind of economic processes we deal with in this paper.

On the one hand, mechanisms are thought of as *processes* in a concrete system (Bunge, 2004; MDC, 2000). Notwithstanding, not any process is considered a mechanism.

Mechanisms are a *particular type of processes* characterized by a *stable* behavior. It is precisely this stability which allows separating processes that are mechanisms from those that are just sequences of events. Elaborating on this point Glennan (2002b) distinguishes between

- a) Fragile processes (sequences that have particular (occasional) configurations)
- b) Robust processes (sequences whose configurations are stable)

The successive stages that constitute sequences may or may not be connected to each other in a stable way. For instance, as Glennan (2002b) has pointed out, the succession of events that led to his first meeting with his wife was rather unique. These kinds of processes are what he calls “fragile.” Fragile sequences are not regular; even small changes in the precedent conditions could result in unanticipated events. The process that starts with the hitting of a ball and ends with a broken window after impacting many intermediate obstacles is not a stable set of elements. It does not exhibit the kind of behavior that we designate as regular. Only robust sequences have a fixed (stable) structure and may therefore be considered mechanisms¹.

On the other hand, different views about what are the components of mechanisms have been proposed. Though many authors assume a monist position according to which mechanisms are composed of entities interacting in a stable way (e.g., Glennan, 2002b), other philosophers like MDC (2000) propose a non-reducible *dualist* account that depicts mechanisms as conformed by entities and *activities*. We will adopt this view, because activities perform a crucial role in our account of economic processes. In this sense, one important contribution which clarifies the particular nature of activities in the social realm comes from Hedström and Swedberg (1998b). They say that in the context of social sciences *individuals* are those particular kinds of entities that perform activities. In their words, a mechanism “is not built upon mere associations between variables but always refers directly to causes and consequences of individual action oriented to the behavior of others (p. 24)”. The kinds of activities involved in a social mechanism are intimately connected to human action.

The concept of mechanism has been deemed crucial for social sciences because, apparently, it serves explanatory purposes quite well². More relevant to our argument, mechanisms seem to allow *interventions* on reality with the aim of achieving particular purposes. Arguably, interventions are made possible because mechanisms involve *stable* or *invariant* relations between their parts, and because such a stability is the source of regular behaviours. So, it is thought that restricted regular conjunctions of events of the human type could be obtained in this way, and triggering the appropriate mechanisms guarantees regularities at the level of events. Hence, it is argued, they could be a key instrument for *implementing* successful social and economic policies.

A particular version of the mechanistic approach is Cartwright's defense of the thesis that nomological machines are what underpin the emergence of regularities (though probably Cartwright herself will refuse to be included in this movement). According to her approach "laws, to the extent that we need them, arise because of, and are true only in, *nomological machines*: setups, usually made by us but sometimes found in nature, that combine a simple/stable structure and sufficient shielding from outside influences so as to give rise to regular behavior" (Hofer, ch. 1, p. 5).

Nomological machines differ from mechanisms in many ways. For instance, mechanisms are described by Cartwright as *parts* of NM, and are made of capacities, not of causal relations. Besides, Cartwright emphasizes the *constructive* nature of NM, something that is not at the center of the mechanistic approach. However, these differences are not relevant for our argument because in both views what allow interventions through economic policies is *counting with before-hand knowledge* of regularities which are *invariant* under certain conditions. In the case of NM it is crucial that these conditions should be identified ex – ante, by theoretical means, and be there working on reality before any intervention upon the economy is implemented. Otherwise we are not entitled to use assumed regularities as a basis for implementing economic policies.

Even if we concede that action is usually preceded by some sort of (theoretical) knowledge, we shall argue that the assumption that mechanisms or nomological-based regularities exist, that they work in an autonomous way, and that they depend on us only by the fact that we have to provide the needed triggering factor (and then, as it is commonly said, we may go fishing) is wrong. DEP is set aside within this framework and its importance becomes unintelligible. In our view, contrary to the mainstream philosophy of economics' approach, most of the regularities that exist in concrete systems are the product of continuous interventions upon peoples' expectations, social institutions, etc.

III. Economic processes: the case of the *KE*

To illustrate our claim we examine with some detail a particularly relevant case of economic process: the so-called *Keynes Effect* (in short KE). A specification of its structure, the way in which its elements relate to each other and an account of how the process generates its results will also be provided. Some observations about the role played in the argument by this illustration will be in order. First, the authors of the present paper have different points of view about which of the many available (and competing) economic theories is the "correct" one. But fortunately, we do not need to make up our mind about this issue. Our contribution is a philosophical reflection concerning what else besides theoretical economic knowledge is needed for regular economic patterns to obtain. We choose KE because the role of both agents' expectations and external political interventions

are clearly visible in it, but any other economic regularity could have been chosen for the present purpose as well. Further, it should be pointed out that we are not claiming to offer a *general* characterization of what an economic process is or is made of. However we believe that our account could also be relevant for illuminating many other economic processes and the sort of practice that helps to generate economic regularities.

The idea involved in the notion of a mechanism is that once triggered (i.e. the initial stage is activated), and assuming no interferences in its development, the process continues in a firm and stable way; in order to reach the *final stage* only one intervention is required. Apparently, KE satisfies this condition:

$$+\Delta M \rightarrow \rightarrow -\Delta i \rightarrow \rightarrow +\Delta I \rightarrow \rightarrow +\Delta N / +\Delta Y \quad (\text{K})$$

where the expressions $+\Delta X$ and $(-\Delta X)$ mean, respectively, a positive (negative) change in a variable X. Returning to the KE, we can assert that when the money supply (M) is increased by monetary authorities, a decrease in the interest rate (i) will take place (stage I). This change will stimulate investment (I) (stage II) and consequently employment (N) and production (Y) (stage III). We call K the “typical connection”, because it is the connection which normally prevails.

As will be shown, the connection between the variables is established by the crucial participation of a human agency at two different levels. In order to get a more detailed explanation of this point, we separate the analysis into four stages. The first stage (from M to i) is set off by an expansive monetary policy – specifically, an increase in money supply. Acknowledging that an increase in the amount of money has taken place, people tend to demand more bonds¹, which increase their price and reduce the interest rate. To understand the second stage (from i to I) we assume that when a firm is to invest, it may use proper funds or even solicit a loan. In the latter case, the cost of the loan depends on the interest rate. More importantly, firms invest according to their expectations of selling their commodities in the future. Thus, it is often said that firms invest according to their estimation of the marginal efficiency of capital: “the rate of discount which would make the present value of the series of annuities given by the returns expected from the capital asset during its life just equal its supply price” (Keynes, 1936, p.121). The signal that the interest rate is lower has a positive impact on firms’ investment projects, which become cheaper, promising greater benefits. In the final stage (from I to N-Q) it is necessary to introduce Keynes’ distinction between primary employment in the investment industries (N2) and total employment (N). Thus, let us suppose that there is an increase in investment that brings about an increase in employment in the investment industries (N2). Through the Kahn’ multiplier, the increase in N2 will mean a higher increase in N³.

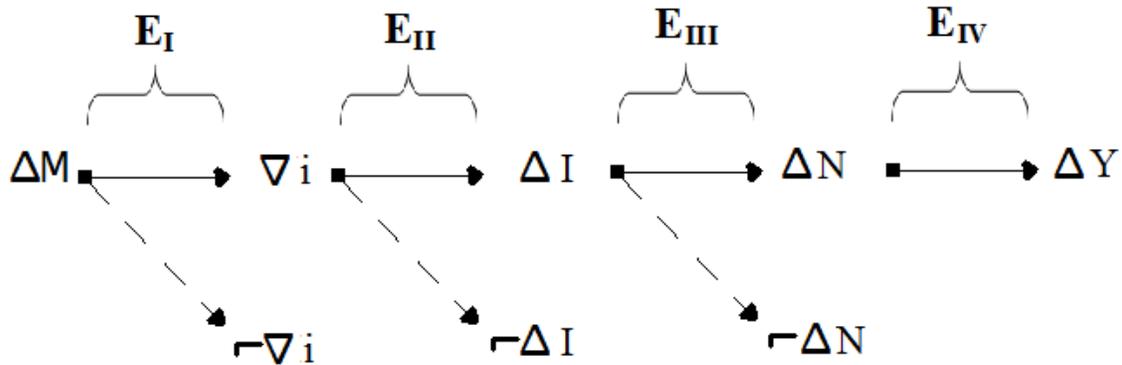
¹ The standard model assumes that peoples’ wealth is composed by bonds and money.

Deviations from the typical road

The KE process described above is not isolated, but is part of a broader picture provided by the General Theory, which consists of a set of interrelated sub-process. Therefore, KE prevails as long as a *ceteris paribus* clause – including all the remaining relevant factors – is met. Hence, the normal prevalence of KE means that changes in those factors are not significant enough to prevent that the sequence of events - described by KE – is accomplished. However, these changes may sometimes be significant. As a consequence, agents modify their course of action, which alters the normal behaviour of KE. In Keynes' words:

We have now introduced money into our causal nexus for the first time, and we are able to catch a first glimpse of the way in which changes in the quantity of money work their way into the economic system. If, however, we are tempted to assert that money is the drink which stimulates the system to activity, we must remind ourselves that there may be several slips between the cup and the lip. For whilst an increase in the quantity of money may be expected, cet. par., to reduce the rate of interest, this will not happen if the liquidity -preferences of the public are increasing more than the quantity of money; and whilst a decline in the rate of interest may be expected, cet. par., to increase the volume of investment, this will not happen if the schedule of the marginal efficiency of capital is falling more rapidly than the rate of interest; and whilst an increase in the volume of investment may be expected, cet. par., to increase employment, this may not happen if the propensity to consume is falling off. Finally, if employment increases, prices will rise in a degree partly governed by the shapes of the physical supply functions, and partly by the liability of the wage-unit to rise in terms of money. And when output has increased and prices have risen, the effect of this on liquidity-preference will be to increase the quantity of money necessary to maintain a given rate of interest (Keynes, 1936, p. 155).

This situation may be represented through the following schema:



where the horizontal arrows denote the KE process, and where the diagonal arrows (dotted lines) denote possible exceptions which impede KE to continue its process until the final state. In what follows, we explain the deviations of the KE-process through its respective stages, specifying the conditions in which it is possible to take alternative sides from the standard process. It is argued that these deviations have their origin in the information obtained from the context, which significantly influences agents' expectations.

First deviation: no change in interest rate

According to Keynes' statement, let us suppose that despite the application of an expansionary political economy, the liquidity-preference of the public grows more than the quantity of money. If so, then the monetary policy will have no impact on the interest rate, as people are not going to use that surplus of money to buy goods or bonds. An interesting example of this is the "liquidity trap"; let us assume that the interest rate is quite low. In this case, agents are waiting for an increase in the interest rate. This is equivalent to saying that they are expecting a decrease in the price of bonds. Therefore, they will not end up buying bonds. Instead, they will prefer to keep their surplus of money (precautionary motive). Hence, an increase in money supply will not bring about significant consequences in the interest rate. It seems that people's reactions are sensitive to two relevant kinds of signals: those coming from an increase in money supply and those coming from the context (different values of interest rates bring about different people's reactions).

Second deviation: no change in investment

At this stage we must assume that the increase in money supply has successfully reduced the level of interest. Nevertheless, let us suppose that the marginal efficiency of capital is falling more rapidly than the rate of interest (Keynes, 1936). If so, firms will be reluctant to invest. We analyze this case through two examples. In the first one, let us suppose that there are no good expectations about future sells. *Ceteris paribus*, there is a decrease in the marginal efficiency of capital. If this decrease is superior to the decrease in i , then though

credits may be cheaper, this signal will not impact on the amount of investment. This is due to low expectations in future sells, which has an important effect on the expected profitability of projects. In the second example, let us suppose that agents disagree about the future behavior of the interest rate. If most of them think that it will go down for a while, then they will not invest, because new entrepreneurs will be able to benefit from even lower interest rates, increasing their profitability.

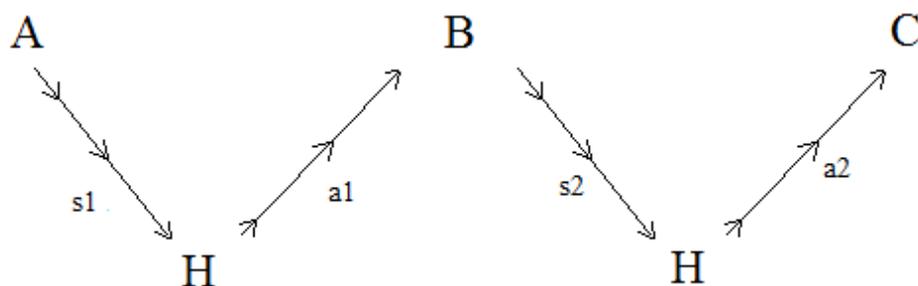
Third deviation: no change in total employment

The expectations formed in this step not only depend on the information that N_2 has increased but also on the estimation that the consumer sector has about the marginal propensity to consume. Specifically, total employment will increase as long as this sector does not expect a drop in the marginal propensity to consume. In this sense, let us assume that the marginal propensity to consume decreases – for instance, as a result of propaganda in time of war in favor of restricting individual consumption. In such a case, firms producing consumer goods will receive on one hand, a signal of higher employment in the investment industries (an increase in N_2), but on the other hand, an imminent reduction in consumption, which could negatively affect their expectation of future sells. Consequently, they could find no incentive to hire additional workers.

IV. The underlying structure of Expectations-Based Processes

As said above, our characterization of economic processes takes into account some contributions made by mechanistic literature, particularly its dualistic and processual approach. Let's assume for the moment that the concept of mechanisms can be aptly applied to social and economic phenomena, a supposition that will be critically appraised later.

Social processes involve, at the very least, two kinds of *entities*: that which transmits information (for instance, the actual state of economic variables or the changes they show), and the *human* entity (economic agents), who receives and interprets the information sent by the transmitter entity. More importantly, agents perform *activities*, which are the agents' reactions to the information they receive. Such reactions usually bring about changes in other economic variables. Thus, the basic ontology in social processes has three main components: economic entities, agents, and activities. The process that links together all these pieces is outlined in the following chart:



which means that the actual state (or a change in state) of an entity A – conceived as a starting condition – provides information (s1) for agents (H), who receive it, interpret it, and consequently react, developing an activity (a1), which generates a change in the state of another entity, B. This result functions as new information (s2) for agents (not necessarily the same agents who generate the latter activity), who receive it, interpret it and consequently react, developing a new activity (a2), which modifies the state of the entity C. This change in C would represent the final stage of the process.

The KE process fits fairly well into this schema. A simplified representation of the underlying structure of the first stage of K is this:

$$+\Delta M \rightarrow \rightarrow H \rightarrow \rightarrow -\Delta i$$

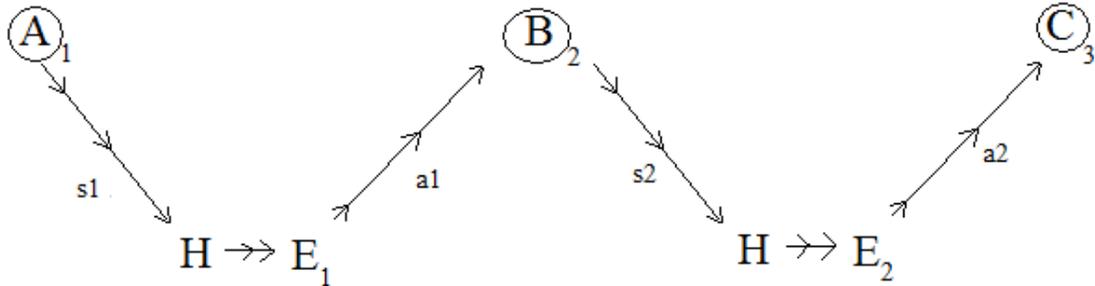
Here, we identify three main components of the process: *changes in economic variables* (in this case an increase in money supply), *individuals* (who receive this information), and the *activities* they perform (which contribute by generating a change in another economic variable: the interest rate). Individuals are *active* in two different senses: first, they receive signals from changes in variables and interpret them; second, based on the information received, they react, adopting some decisions of economic relevance. The arrows drawn at both sides of H represent this complex nature of human action in a social process. To simplify the exposition we will take information as given and will design, as an activity, the reactions (decisions) made under its influence.

However, the situation is a little bit more complex. The significance or meaning that individuals attach to changes in economic variables depends on the specific *contexts* in which they take place. The information that carries with it an increase in money supply is different under full employment than in conditions in which unemployment is high. The same change in a variable (say a reduction of 1% in the interest rate) sends a different message to individuals in different contexts. This is why fiscal policies are ineffective under full employment but successful when unemployment goes up. Thus, the notion of context must be understood in the broadest sense; it means an economic background X where a change in some economic variable Y is generated. Such a background is relevant for the interpretation that agents assign to changes in Y. In other words, the information

that individuals receive comes from the *joint action* of X and Y (or, better, from changes in Y once context X has been taken into account).

Other crucial components of economic processes are the *expectations* that individuals form about future changes in some relevant economic variables. They are formed under the guide of the information received⁴. Expectations and activities are strongly related to each other: once individuals form their expectations they make decisions on this basis. Thus, we can say that *activities* developed by economic agents are triggered by expectations.

Taking all this into account, we express the EBP in the following picture:



where A, B, and C represent economic variables, and the circles which enclose each variable represent the context in which each variable takes place (these contexts have been itemized in order to clarify changes in variables that may occur in different contexts). A certain change in (A) in context 1 sends a signal (s₁) to the individual (H). Using this information he forms expectations (E₁) which play a crucial role in determining the activity (a₁). In turn, (a₁) contributes to an alteration of (B), and so on.

Given the discomfort that the academic audience feels regarding laws, the processual approach advanced in this paper seems to be an appealing notion that promises to be useful for understanding applied scientific practice, especially in social and economic contexts. Agents’ expectations have a decisive role in EBP. On one hand, expectations are the key targets that should be intervened on so as to insure the stability of the process. The present analysis also sheds light on the particular kind of interventions that allow stable EBP to emerge. Once the process is triggered the relevant points of intervention are the arrangement of expectations the analysis reveals. To the extent that some specific arrangement of expectations leading from a change in an economic variable to a change in another variable is known, the pertinent interventions will be addressed to guarantee a background of information that promotes the arrangement of those expectations.

Two different kinds of knowledge sustain this sort of intervention. Firstly, *theoretical* knowledge is needed in order to know which economic variables have to be manipulated.

Nonetheless, *practical* knowledge is also needed in order to operate on expectations, so that agents' activities are performed in the desired and expected way. Let us take the example of KE: nobody expects that the final goal (an increase in employment) could be achieved spontaneously. Instead, such a goal is conceived of as a result of a set of interventions at each stage of the mechanism. In this juncture, we should recall the difference between knowing "what" and knowing "how". In politics, not only do you need to know *what* to do, but also *how* to do it. The necessary skills for an adequate intervention combine both types of knowledge. For instance, it is recognized that in order to increase investment both the interest rate has to be lowered and entrepreneurs' uncertainty about the future ought to be dissipated. Reducing the interest rate is a step that can be done in a rather direct way. However, dissipating the uncertainty is somehow more difficult to achieve, because it depends on a complex set of expectations. In particular, it presupposes a kind of knowledge that, properly speaking, is not a scientific knowledge. On the contrary, it requires knowing *how to* manage peoples' expectations.

V. Going beyond mechanisms and Nomological Machines

If we are interested in the role of economic regularities and the conditions that help to generate them we have to put on the agenda issues that were out of the focus of traditional philosophical and methodological analysis of economics. Rather than hoping to discover self-enacting economic regularities, building and examining models and theories or using usual methodological devices we should pay more attention to the fact that economic regular patterns are the product of the activity of practical economists and other external interventions. However, the kind of interventions we are suggesting greatly differ from the usual approaches available in current mechanistic accounts, like the ones provided by Glenann, Woodward and MDC.

In a usual mechanistic account only a one-shot intervention is allowed, consisting of modifying certain aspects in the initial conditions; this works as a triggering factor of the mechanism, which continues its "processual road" until the so-called final condition is reached. EBP are less automatic and more demanding; they require that interventions take place not only upon their starting conditions (some economic variables), but also in context, providing an informational frame that prompts people to form those expectations which enable authorities to reach their goals. For example, an economic policy can be accompanied by some modifications in certain institutions and also a cluster of rhetorical devices, designed to generate a well calibrated context in the economic system, which is presumed to be able to affect agents' expectations, and consequently the activities they develop, in the desired way.

Thus, KE should not be considered a sort of automatic mechanism, but a process which (hopefully) can be conducted and *controlled* by the intervening authorities. Analyzing the EBP makes us understand that no amount of economic knowledge (even if it is “right”) is enough to control the behavior of some economic variables. It is also necessary to know how to handle people’s minds and reactions. The persistent intervention on expectations using institutional arrangements and extra-theoretical knowledge makes us sceptical about the usefulness of the mechanistic account for clarifying these sorts of economic processes. Analogously, as long as the very notion of NM requires that for working properly they should be shielded from external disturbances, it is clear that what makes the economic processes of the KE sort stable is not an underlying nomological machine (i.e., a fixed arrangement of parts) but a *continuous external intervention* able to guarantee some desired results.

According to these current approaches, the structural stability of the process is taken as granted (and known in advance thanks to theoretical practice) and interventors take advantage of this ex – ante knowledge to trigger the appropriate starting conditions (in this case to increase the money supply) to set the whole process running. In Cartwright’s nomological machine approach things are quite similar: a particular deterministic or probabilistic set-up should be guaranteed in advance for the regularity to emerge.

On the other hand, according to Cartwright, to intervene we need to have in advance not only one but two kinds of knowledge: theoretical knowledge (usually provided by models, which she conceives of as blue prints for laws) and knowledge about how to use this theoretical knowledge in practice. The contemplative ex – ante approach dominates the scene. The emphasis is put on knowledge and we have to gather both sorts of them before interventions could be seriously attempted. Otherwise we are not entitled to do it.

Our view on this point is quite different. We do not deny that a successful intervention relies on the possession of some knowledge, but we claim that even if we had it, it only informs about the *possibility* of altering in a desired way a factor B changing in a well determined form another factor A. More clearly, it informs us that it is feasible (but not at all sure in a probabilistic or deterministic way) that some changes in A could lead the economy (via agent’s reactions) to a subsequent stage B. Note that according to the assumed theory (model) not any move pays or is feasible or allowed. So, theoretical knowledge sets restrictions on the range of our interventions. But the crucial point is that this pre-existent knowledge, even if needed, is not sufficient. Practicing economists (those that take economic decisions, not those that build representations of the workings of the market economies) have to intervene at some point of the process (from the first stage, $+\Delta M$, to the final stage, $+\Delta I$), to obtain $+\Delta E$. And those creative interventions will, if successful, produce the desired regularities. These regularities are like the future: they do not exist beforehand out there waiting for us. We have to make them. And in the same way in which our dreams may crash against crude reality, so too our theoretical envisioned

regularities may not obtain after all. The pretense of knowing stable (invariant) knowledge in advance seems to us to be a particular case of the old pretense of having foreknowledge of the future.

Conclusions

Processes and *mechanisms* are different things. A process is a sequence of events $A \rightarrow B \rightarrow C$, in which the transition from one state to the next may not occur (even if nothing has interfered with the sequence). The EBP examined in this paper are processes in this sense. It is usually thought that an intervention through economic policy is allowed provided knowledge about regularities - which are invariant within a well determined domain - is available. These kinds of regularities are mechanisms. Apparently, if we could not prove that KE is a mechanism it could (and should) not be used for policy recommendations. What is puzzling about this claim is that it demands a sort of *ex - ante* knowledge that we usually do not have. Invariance seems to be a property of some very exceptional systems, most of them deliberately created. Facing economic decisions, most of the time we do not know in advance if a sequence of events is really invariant. And in most cases we suspect that they are more like the kind of open processes referred to as EBP in this paper. Expectations play a central role in EBP and this is why they are extremely sensitive to external influences. This is also the reason why their stability may fail.

Our view is completely different from the view of those who demand sure (invariant) knowledge before acting. We claim that as long as we face expectations-based processes in the real world, no knowledge of mechanisms (or, by the way, nomological machines) is required to put into practice economic policies (in the same way in which we do not need this kind of foreknowledge to take decisions in most of the daily events we face).

We certainly concede that some amount of theoretical knowledge is always available before acting and deciding (and even that to have “correct” theoretical knowledge is needed for successful action). Our point is rather that usually it is not enough to obtain the targeted results. However, this paucity of sufficient relevant knowledge is neither an impediment to take decisions nor to transform such decisions in something lacking seriousness or responsibility. What guarantees the success of what we DEP is skillful and continuous interventions on the processes based not on lawful knowledge (knowledge of invariant regularities), but on “how to make things work” knowledge. It is the practices invested in this sort of knowledge which succeed in making real what otherwise would be just possible results.

EBP, unlike mechanisms, demand intervention. In fact, intervention is not an option suggested by purely ideological reasons (even if it could be ideologically motivated in some occasions). Particularly, it should not be tied to *populist* governments. Ideological approaches to intervention lead to a misunderstanding of economic processes and economic

practice. We claim that intervention is a *necessity* founded in the very nature of the sort of processes designed here as EBP. They inform us that acting on a variable *A* makes it possible (but not sure) to reach a next step *B*. To get to *B* we *have to intervene* in the right way on agents' expectations. The process is open; it is intervention what steers its regularity. *A* would not lead regularly to *B* without intervention. So, regarding this kind of processes intervention is not an option: it must be enacted if some desired results are to be reached.

Summing up our argument:

Intervention, in the sense used in our paper, is not a political option, but an ontological necessity: as long as the relevant economic variables are involved in expectations-based processes rather than in mechanisms, stable (regular) relations among them cannot be taken for granted. Independently of what is the correct theory –a topic that economists themselves must solve– what can be said at a methodological level is that for getting a well determined result good theoretical information is not enough. Intervention on expectations is also needed. Economic processes have to be intervened upon in order to reach the desired regularity. The hope to reach the expected result is what calls for interventions, not just ideology or populist culture.

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¹ Stability is essential in every account of mechanisms. MDC states that mechanisms are “*entities and activities organized such that they are productive of regular changes from start or set-up to finish or termination conditions*” (p.3). Likewise, Glennan (2002, b) defines it (for a behavior) as “*a complex system that produces that behavior by the interaction of a number of parts, where the interactions between parts can be characterized by direct, invariant, change-relating generalizations*” (p. S344).

² See Reiss (2007?), however, for a criticism of this stance.

³ Kahn’s multiplier (also called employment multiplier) shows how much the total employment (N) increases when N₂ increases. What is more, the change in N is always superior – in absolute value – to N₂, because of the idea of the multiplier. In addition to this, there exists a direct association between employment multiplier and investment multiplier. In this juncture, if there is no reason to expect any material relevant difference in

the shapes of the aggregate supply functions for industry as a whole and for the investment industries respectively, Keynes deduces that both multipliers are equal.

⁴ More importantly, both kinds of signals appear to be quite important in the formation of expectations. For example, Lucas' thesis about the irrelevance of monetary policy, asserts that after receiving the signal of an increase in money supply, people may expect an increase in the general level of prices. Although the increase in money supply seems to be the only relevant signal, Lucas' model shows that the degree of effectiveness of such a policy depends on the historical background in which it takes place.