

# 1 The theory of dynamic efficiency

## Introduction

The traditional Pareto criteria of allocative efficiency, which have predominated in economics up to this point, are tainted with a definite static character and therefore are inadequate to be applied as normative guidelines to the rich dynamics of real-life social institutions.<sup>1</sup> Consequently, it is necessary to replace the traditional standards of efficiency with an alternative criterion, one which will fill the serious gaps in the traditional Pareto approach and be easily applicable to the realm of social institutions. We will call this alternative standard the ‘criterion of dynamic efficiency’.

This paper comprises three distinct sections. In the first, we will review the process by which the concept of Pareto efficiency emerged. This standard was modelled on the principle of energy efficiency, which arose in nineteenth century physics and mechanics. The above explains why the traditional criterion of Pareto efficiency, which has become the pivot of all welfare economics and much of the economic analysis of law, is heavily restricted by comparative statics, and thus cannot be easily applied to the rich dynamics of institutions.

In the second section, we will present the alternative notion of *dynamic efficiency*, which followed naturally from the theory of market processes driven by the creative and coordinating potential of entrepreneurship. Although the standard of dynamic efficiency has not yet entered the mainstream of our discipline, various authors have contributed to the field. Leading economists such as Mises, Hayek and Schumpeter, along with other more recent theorists like Rothbard, Kirzner, North (with his concept of ‘adaptive efficiency’) and even Leibenstein (with his notion of ‘x-efficiency’), have proposed or developed alternative criteria which have coincided to a varying extent with our idea of dynamic efficiency. In this section, we will study and compare the different contributions these authors have made in this area.

The third and final section of this article embodies what we see as one of its most significant and promising contributions: an analysis of the close relationship we believe exists between the proposed criterion of dynamic efficiency and the framework of ethical principles which prevails in every society. A major, auspicious field of research thus opening up for future

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economists consists of the systematic application of the standard of dynamic efficiency to each of society's institutions (legal, moral and economic) and the subsequent evaluation of each according to a standard other than the traditional Pareto criterion. Furthermore, our analysis will allow us to identify the ethical principles which make dynamic efficiency possible and, as a result, permit the progress and coordinated advancement of society and civilization. We thereby intend to establish a direct relationship between economics and ethics and in this way to foster a highly productive relationship between the two thus mutually strengthened disciplines.

### **The evolution of the standard of static efficiency: a critical analysis**

#### ***Historical background***

The term 'efficiency' derives etymologically from the Latin word *efficiens*, which in turn originates from the Latin verb *ex facio*, which means 'to obtain something from'.<sup>2</sup> The application to economics of this view of efficiency as the ability 'to obtain something from' predates the Roman world and can even be traced back to ancient Greece, where the term 'economics' (*οικονομία*) was first used to refer to the efficient management of the family home or estate. In *Economics*, 380 years before Christ, Xenophon attributes to Socrates the assertion that economics is 'a branch of knowledge' of a sort 'by which men can increase estates', that an estate is 'identical with the total of one's property' and that property is 'that which is useful for supplying a livelihood'.<sup>3</sup> Xenophon himself, upon presenting such a modern and subjectivist definition of economics, goes on to explain in the subsequent dialogues that there are two different ways to increase one's estate, and these are ultimately equivalent to two different aspects of efficiency.

One aspect coincides with that of 'static efficiency' and consists of the sound management of the available (or 'given') resources, to prevent them from being wasted. According to Xenophon, the primary way to achieve this efficient management is by keeping the home in good *order*,<sup>4</sup> as well as by carefully supervising the handling of one's goods, monitoring and caring for them as well as possible. Xenophon sums up the set of abilities necessary for an efficient management of 'given' resources with the wise answer offered to the great Barbarian king who

had happened on a good horse, and wanted to fatten him as speedily as possible. So he asked one who was reputed clever with horses what is the quickest way of fattening a horse. 'The master's eye,' replied the man. I think we may apply the answer generally, Socrates, and say that the master's eye in the main does the good and worthy work.<sup>5</sup>

Nevertheless, along with this aspect of efficiency, which we have described as 'static', Xenophon introduces a complementary 'dynamic' facet, which

consists of the attempt to increase one's estate through entrepreneurial action and by doing business with it. What is involved is the effort to increase one's goods by way of entrepreneurial creativity; that is, by trade and speculation, more than the effort to avoid wasting the resources already in one's power. Xenophon provides two examples of specific activities to illustrate this task based on entrepreneurial activity. One example entails the purchase of poorly tended or barren land with a view to improving it and later selling it at a much higher price.<sup>6</sup> Another example of dynamic efficiency, which makes it possible to increase one's estate and gather new resources, is found in the activity of those merchants who buy wheat where it is abundant, and therefore inexpensive, and transport and sell it at a much higher price in places where drought or poor crops have led to a shortage and hunger.<sup>7</sup>

This tradition of clearly distinguishing between two distinct facets of efficiency, the static and the dynamic, survived even until the Middle Ages. For example, Saint Bernardine of Siena felt that the income of merchants and craftsmen was justified on the basis of their *industry* and *pericula*: by the sound, diligent management of their (given) resources; that is, by assiduous behaviour typically oriented toward preventing waste (static efficiency); and by the acceptance of the risks and dangers (*pericula*) which arise from any entrepreneurial speculation (dynamic efficiency).<sup>8</sup>

### ***The influence of mechanical physics***

Nevertheless, despite these hopeful beginnings, with the arrival of the modern age the concept of economic efficiency gradually narrowed and diminished, until it came to denote merely the static aspect; in other words, diligent action aimed at preventing the waste of 'given' resources. The effect which the emergence and development of mechanical physics ultimately exerted on the evolution of economic thought, especially from the nineteenth century onward, had a decisive influence on this reductionist trend, which noticeably impoverished the concept of efficiency as Xenophon had formulated it, with its two distinct facets.

In fact, with the arrival of the modern age, physics replaced astronomy as 'science par excellence' and was ultimately built upon the idea of 'energy', an abstract concept all physicists discuss and debate about, even if they do not manage to completely agree on the precise essence of energy in the absence of empirical evidence of its effects in the form of force or movement.<sup>9</sup> Along these lines, the 'law of conservation of energy' came to play a key role in the development of physics, and we should not ignore its essentially static nature ('energy is neither created nor destroyed, only transformed'). Later the second law of thermodynamics stated that in all physical processes some energy is wasted, for instance in the form of heat which dissipates, and therefore physical systems are not reversible. Both laws were integral to the great evolution of physics throughout the nineteenth century and explain why most scientists think of physical phenomena almost exclusively in terms

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of ‘energy’. Moreover, the main practical application of physics emerged in the development of mechanical engineering, which was built entirely on the (static) concept of energy efficiency, defined by engineers as the ‘minimization of energy waste’. The steam engine, which became the classic capital good in the Industrial Revolution, provides an excellent example. The steam engine transforms heat into movement and the lifting of weights, the goal of all good mechanical engineers being maximum (static) efficiency, or maximum movement with minimum energy consumption or waste.

This reductionist idea of (static) efficiency came to dominate in colloquial language as well. Hence, the definition *Webster’s Dictionary* supplies for ‘efficient’ rests on the notion of minimizing waste: ‘Marked by ability to choose and use the most effective and *least wasteful means* of doing a task or accomplishing a purpose’.<sup>10</sup> In Spanish, the concept of efficiency is closely related to the capacity for achieving a specific outcome or yield. The *Diccionario de la Lengua Española* defines the term *rendimiento* (‘yield’) as ‘the ratio between the product or result obtained and the means used’<sup>11</sup> (both of which are assumed to be given or known).

Perhaps at this time it is most important to highlight the negative influence which the static conception of energy efficiency has exerted on the development of economics. Hans Mayer<sup>12</sup> and Philip Mirowski have pointed out that neoclassical economics developed as a copy of nineteenth-century mechanical physics: using the same formal method, yet replacing the concept of energy with that of utility and applying the same principles of conservation, maximization of the result and minimization of waste.<sup>13</sup> The leading author most representative of this trend, and the one to best illustrate this influence of physics on economic thought, is Leon Walras. In his paper ‘Economics and Mechanics’, published in 1909, he claims that in his *Elements of Pure Economics* he uses mathematical formulas identical to those of mathematical physics, and he stresses the parallel between the concepts of force and *rareté* (which he regards as vectors), and between those of energy and utility (which he regards as scalar quantities).<sup>14</sup>

In short, the influence of mechanical physics eradicated the creative, speculative dimension which belonged to the idea of economic efficiency from its very origins, and all that remained was the reductionist, static aspect, which focuses exclusively on minimizing the waste of (known or given) economic resources. By way of example, let us recall the definition of ‘efficient allocation’ which *The New Palgrave Dictionary of Economics* provides and which it credits to Stanley Reiter: ‘going as far as possible in the satisfaction of wants within resource and technological constraints’.<sup>15</sup> (Note the assumption that resources and technology are given.) It is both revealing and discouraging to find that the entry devoted to economic efficiency by what is undoubtedly the leading dictionary in our discipline includes absolutely no mention of the dynamic aspect of this concept. This omission is particularly illustrative and disheartening in light of the fact that neither resources nor technology are ‘given’ in real life, but can vary and actually do

vary continually as a result of entrepreneurial creativity. Moreover, the true changing nature of these factors clearly indicates the existence of an entire, time-honoured dimension of efficiency (the dynamic dimension, which, as we have seen, can be traced back as far as Xenophon) that can only be forgotten at a high cost to the economic analysis of reality.

The reductionist conception of static efficiency also had a great impact on business organization from the beginning of the twentieth century, when Taylorism emerged. In fact, Frederick W. Taylor, in his famous book, *The Principles of Scientific Management* (1911), advocates the establishment in all industries of a 'productive efficiency' department to pursue the following aims: first, to supervise workers; second, to measure the time spent on a job; and, third, to avoid any kind of waste.<sup>16</sup> This reductionist concept of static efficiency actually turned into a sort of idol which seemed to command the sacrifice of everything, and this static-efficiency obsession (which might best be described as 'worship') spread even to the realm of political ideology.

The Fabian socialists Sydney and Beatrice Webb provide a compelling example of this phenomenon. This married couple were shocked by the 'waste' they observed in the capitalist system and founded the London School of Economics in an effort to champion the reform of the economic system. The object of such reform would be to eliminate waste and make the system 'efficient'. The Webbs later made no secret of their warm admiration for the 'efficiency' they believed they observed in Soviet Russia, to the point that Beatrice even declared, 'I fell in love with Soviet Communism.' Another noted author to be lured by the static conception of economic efficiency was John Maynard Keynes himself, who, in his introduction to the 1936 German edition of his *General Theory* expressly states that his economic-policy proposals 'are more easily adapted to the conditions of a totalitarian state'. Keynes also unreservedly praised the book *Soviet Communism*, which the Webbs had published in 1933.<sup>17</sup>

### ***'Welfare economics' and the static concept of efficiency***

The development described above peaked in the 1920s and 1930s, when the static concept of economic efficiency became the focal point for a whole new discipline which came to be known as 'welfare economics',<sup>18</sup> and which grew from a series of alternative approaches. According to the Pigouvian analysis, an economic system would reach maximum efficiency when the marginal utility of all factors is equalized, something which would require the redistribution of income until each actor derived the same marginal utility from his last monetary unit. Pigou thus upholds the tradition of strict utilitarianism initiated by Jeremy Bentham and later continued by the naive marginalists (Sax, Sidgwick, etc.). It is obvious that Pigou's approach involves interpersonal comparisons of utility and metascientific value judgements, and hence it was soon generally replaced with the alternative Paretian approach.

From a Paretian perspective, an economic system is in a *state* of efficiency if no one can be made better off without making someone else worse off. This view, although still essentially static, seemed to circumvent the need for interpersonal comparisons of utility and paved the way for those welfare economists (Lerner and others) who formulated the so-called ‘first theorem of welfare economics’, according to which a system of perfect competition attains allocative efficiency in the Paretian sense. The next step was to identify a number of ‘market failures’ which supposedly generated inefficiencies (in the static sense of the word) by distancing the economic system from the model of ‘perfect competition’. (Initially monopolies and externalities were dealt with, followed by more sophisticated sources of static inefficiency, such as asymmetric information, moral hazard and incomplete markets.) At the same time, and as an alternative, the Kaldor–Hicks approach was presented, including the analytical principle of ‘potential compensation’: situation II is considered more efficient than situation I if those who benefit can compensate those who lose (Kaldor); or if those who are made worse off by situation II cannot prevent the change by ‘bribing’ those who stand to gain from it (Hicks).<sup>19</sup>

Theorists subsequently formulated the ‘second fundamental theorem of welfare economics’, which stated that Pareto efficiency is compatible with various initial resource allocations. This theorem requires the belief that criteria of efficiency and fairness can be considered in isolation and that they can be combined in different proportions. Bergson and Samuelson, on their part, introduced the ‘social-welfare function’, which, although it again lapses into interpersonal comparisons of utility, would enable us to eliminate the indeterminacy of the point of maximum efficiency among all which are Pareto efficient and make up the production possibility curve. However, Arrow later demonstrated the impossibility of obtaining a social-welfare function which satisfies certain reasonable conditions of consistency (‘third fundamental theorem of welfare economics’). The economist Amartya K. Sen, another winner of the Nobel Prize, demonstrated along the same lines that it is impossible to conceive of a social-welfare function which meets both the criteria for Pareto optimality and the traditional standards of liberalism, basically because individual ordinal-utility rankings cannot be aggregated, and thus the social-welfare function cannot possibly fulfil all individual preferences.<sup>20</sup>

### ***Criticism of welfare economics and the concept of static efficiency***

For obvious reasons, we cannot elaborate on all existing criticisms against the different standards of static efficiency that have appeared in the area of welfare economics. These approaches have already been critically analysed in a wealth of literature which we are unable to reproduce here. Nevertheless, we will summarize the most common objections, mainly to contrast them with the one we consider by far the most significant, and which up to now has been almost entirely disregarded.

First, the different criteria of static efficiency established in the context of welfare economics involve the more or less covert introduction of value judgements devoid of scientific objectivity. As we have indicated above, this is clear of Pigou's approach and the social-welfare function, since, in order to have any operative content, both require interpersonal comparisons of utility, which are scientifically unacceptable according to the general consensus among economists since Lionel Robbins. Furthermore, it is not altogether clear that comparisons of utility can be made even by the same individual in relation to himself if they correspond to different points in time and to the contexts of different actions. In such a case, even when the same person is involved, he would often be attempting to compare diverse and heterogeneous dimensions which are scarcely comparable with one other. Moreover, not even the Paretian approach, despite the appearances, could be considered completely neutral with respect to interpersonal comparisons and value judgements: an envious person, for example, might actually feel worse in the event of a Paretian improvement (if someone were to gain without 'appearing' to worsen anyone else's situation, except, of course, that of the envious person).

Second, the assorted approaches of welfare economics contain a serious flaw: they imply that individual utility rankings and the different possibilities that open up for each actor are 'given', that is, known and unchanging. To put it another way, it is assumed that these rankings and possibilities always reflect 'utility functions', which are also presumed constant and known. This assumption is especially restrictive and objectionable in the case of Pigou, whose normative proposal of income redistribution not only involves interpersonal comparisons of utility, but its practical implementation would entail a radical change in the corresponding 'utility functions' and also profoundly impact the process of entrepreneurial coordination, a much more significant effect still, as we shall see.

Third, the notion of technical efficiency, borrowed from mechanical physics, continues to strongly influence static-efficiency criteria. This is so despite the many efforts of highly distinguished economists (Robbins, Lipsey, Alchian and Allen, etc.) to differentiate technical or technological efficiency from economic efficiency once and for all.<sup>21</sup> It has been contended that while technical or technological efficiency would consist of minimizing inputs in physical terms (such as tons of coal, barrels of oil, etc.) to produce a certain outcome, economic efficiency would consist of the same; that is, the minimization of inputs, yet in terms of cost (i.e. units of input multiplied by market price) instead of in physical terms. Nevertheless, if one assumes, as is assumed with all of the static-efficiency criteria mentioned, that technology and market prices are 'given', in other words, that they are known and constant, then plainly the *modus operandi* of economic efficiency (the static version) and that of technical efficiency would be identical: both would amount to maximization via a mere mathematical operation subject to known restrictions. We can conclude, then, that within the context of welfare economics, a striking similarity in form exists between the concept of

technical efficiency and the static notion of economic efficiency. To put it another way: *the static conception of economics reduces the principle of economic efficiency to a simple technical issue of maximization*, which in any case could be resolved with a mere computer into which someone would enter the data always presumed known in the models of static efficiency.<sup>22</sup>

Nevertheless, regardless of the importance of the above critical assessments, they fall short of what we see as the *essential criticism* to be levelled against the different efficiency standards propounded within welfare economics: that these standards focus solely on one of the two aspects of economic efficiency, namely the static aspect, which entails the presumption both that resources are given and constant, and that the fundamental economic challenge is to avoid wasting them. Furthermore, *when, for example, a company, social institution or entire economic system is to be judged, such criteria completely ignore its Dynamic Efficiency, understood as its capacity to foster entrepreneurial creativity as well as coordination; in other words, the entrepreneurial capacity to seek, discover, and overcome different social maladjustments.*

In fact, we believe our most important goal should not be to move the system toward the production possibilities frontier (while deeming the corresponding curve ‘given’), but rather to systematically apply the criterion of dynamic efficiency, which focuses on the capacity of the system to continually ‘shift’ the production possibilities curve to the right. Thus the importance of overcoming the traditional static criteria of economic efficiency with a more complete, alternative standard which takes into account the dynamic dimension of every economic system. In the next section, we will discuss our dynamic-efficiency criterion in greater detail.

## **The economic concept of dynamic efficiency**

### ***Dynamic efficiency and entrepreneurship***

The standard of dynamic efficiency is inextricably linked with the concept of entrepreneurship, and, in fact, a full understanding of the economic notion of dynamic efficiency requires a prior, if brief, review of the principle and basic attributes of entrepreneurship, understood as the main driving force behind the creativity and coordination which spontaneously arise in the market.

The word ‘entrepreneurship’ derives etymologically from the Latin term *inprehendo*, which means ‘to discover’, ‘to see’, ‘to realize’ something. In this sense, we may define entrepreneurship as *the typically human ability to recognize opportunities for profit which appear in the environment and to act accordingly to take advantage of them.* Entrepreneurship therefore involves a special *alertness*. *Webster’s New World Dictionary and Thesaurus* defines ‘alert’ as ‘watchful; vigilant’.<sup>23</sup> Also fully applicable to the idea of entrepreneurship is the verb *to speculate*, which originates etymologically from Latin as well, in this case from the word *specula*, which referred to the towers from

which lookouts could gaze into the distance and detect anything that approached.<sup>24</sup>

The most important features of the above concept of entrepreneurship with respect to the dynamic-efficiency criterion that interests us are as follows:

1. Entrepreneurship always generates new information; that is, every entrepreneurial act involves the discovery of new information which the actor did not previously possess (a profit opportunity that had gone unnoticed before). This information which entrepreneurs constantly create when they act is subjective, practical (in the sense that it is only created through entrepreneurial action in its corresponding contexts), diffuse (since some portion of it exists in the mind of every human being) and tacit (very difficult to articulate).
2. By its very nature entrepreneurship is fundamentally creative, which means that any social maladjustment is embodied in a profit opportunity which remains latent until entrepreneurs discover it. For example, if B finds resource R of little use, yet A has a strong need for it, clearly a social maladjustment exists and gives rise to an opportunity for profit: entrepreneur C must only recognize this maladjustment to buy the resource from B at a low price and sell it to A at a high one, thus obtaining a 'pure entrepreneurial profit'. In this way, when an entrepreneur perceives a profit opportunity that has not yet been heeded, in his mind he *creates* information which did not exist before and which, upon the completion of the entrepreneurial act, results in a pure entrepreneurial profit.
3. Entrepreneurship transmits information. If entrepreneur C inexpensively buys resource R from B, who has plenty and makes poor use of it, and then C sells the resource at a high price to A, who needs it urgently, C *transmits* to A and B the information that resource R is available and should be saved. He also communicates to the entire market, in consecutive waves, that someone is willing to pay a good market price for R (market prices constitute very strong signs in that they convey a large amount of information at a very low cost).
4. Entrepreneurship exerts a coordinating effect. In consequence of the entrepreneurial act we have been describing, A and B learn to govern and coordinate their behaviour in terms of the other's needs: in fact, once the social maladjustment has been discovered and eliminated, B saves resource R, which he took no advantage of before, in order to hand it over to A, who needs it urgently.
5. Entrepreneurship is competitive. The word 'competition' derives from the Latin term *cum petitio*, which denotes the concurrence of multiple requests for the same thing, which must be allotted to an owner. Entrepreneurship is competitive in the precise sense that once a certain entrepreneur has discovered or created an opportunity for profit, that same

opportunity, with its specific coordinates of time and place, cannot be created, discovered or seized by another entrepreneur. This makes the entrepreneurial process one of rivalry, one of pure competition in which entrepreneurs vie with each other to be the first to discover and take advantage of the opportunities for profit which are created in the environment. *Webster's Revised Unabridged Dictionary* provides this definition for the verb 'to compete': 'to contend emulously; to seek or strive for the same thing, position, or reward for which another is striving; to contend in rivalry, as for a prize or in business; as tradesmen compete with one another'.<sup>25</sup> The above notion of competition patently has nothing in common with the so-called 'model of perfect competition', in which multiple suppliers perform the same actions and sell the same good at the same price; that is, a model in which, paradoxically, no one can be viewed as competing.

6. Lastly, the entrepreneurial process never stops nor ends. Though one might think that the social process driven by entrepreneurship could reach a state of equilibrium – in other words, that it could stop or end once entrepreneurs had discovered and seized all of the profit opportunities which embody social maladjustments (and, in fact, most members of our profession regard such a 'final state of rest' as the only object of study worthy of research) – there is no question that the entrepreneurial process of coordination is unbroken and never-ending. The truth is that as the entrepreneurial act coordinates, it creates new information which in turn *modifies within the market the involved actors' general perception of ends and means. New maladjustments ensue, and entrepreneurs begin to discover and resolve them, and in doing so produce coordination in an ongoing process of creativity and ever-expanding knowledge and resources. A constantly increasing population sustains the process, which tends to be as coordinated as humanly possible in each set of historical circumstances* (coordinated social 'Big Bang').

Now that we have described the fundamental characteristics of the entrepreneurial process, we are in a position to better grasp the economic concept of dynamic efficiency as well as the positions of the assorted authors who, in the history of economic thought, have approached the topic.

### ***The economic concept of dynamic efficiency: creativity and coordination***

From a dynamic standpoint, an individual, a company, an institution or an entire economic system will be more efficient the more it fuels entrepreneurial creativity and coordination as we have explained them.

From this dynamic perspective, the truly important goal is not so much to prevent the waste of certain means considered known and 'given' (the prime objective from the viewpoint of static efficiency) as to continually discover and create new ends and means, and thus to foster coordination while

accepting that in any entrepreneurial process new maladjustments will always appear and *hence a certain amount of waste is inevitable and inherent in any market economy.*

Consequently, we can affirm that the dynamic aspect of efficiency is the most important. Even though an economic system may not have achieved a point on the production possibilities frontier, all of its agents may profit if entrepreneurial creativity constantly shifts the curve outward and hence improves everyone's possibilities with a continuous, creative flow of new ends and means which, prior to their entrepreneurial discovery, had yet even to be envisioned.

It is also true, and highly significant, that the dynamic aspect of economic efficiency incorporates the static aspect: *for the same entrepreneurial force which propels dynamic efficiency through the creation and discovery of new profit opportunities is precisely the one which achieves the highest degree of static efficiency humanly possible at each moment by coordinating pre-existing maladjustments.* (Nevertheless, given the endless flow of new maladjustments, Pareto optimality can never conceivably be reached in a real market economy, as we have stated, and the possibility that existing resources may be wasted cannot be totally eliminated.)

Next we will comment on the contributions of various authors who, from one perspective or another, have approached the above concept of dynamic efficiency. It is not surprising that many of these authors have been heavily influenced by the Austrian economic tradition which, if known for anything, is known precisely for the emphasis it places on the dynamic conception of the market and on the leading role of entrepreneurship in market processes. For a more extensive treatment of these views, we refer the reader to the principal works of Mises and Hayek on the conception of the market as a dynamic process driven by entrepreneurship (Mises) and on the notion of competition as a process of discovery (Hayek).<sup>26</sup>

### ***Israel M. Kirzner and the idea of dynamic efficiency***

Kirzner is the great contemporary scholar who, following in the footsteps of Mises and Hayek, has developed *in extenso* the analysis of entrepreneurship. He is also one of the most remarkable theorists to study the economic concept of dynamic efficiency, which he defines as the 'ability to encourage entrepreneurial alertness to valuable knowledge the very existence of which has not previously been suspected'. Kirzner sees the entrepreneurial act as extraordinarily coordinating and views social coordination not in a static or Paretian sense, but in a dynamic sense; that is, as a 'process during which market participants become aware of mutually beneficial opportunities for trade and, in grasping these opportunities, move to correct the earlier errors'.<sup>27</sup>

In addition, Kirzner has been careful to point out that his dynamic-efficiency criterion, which is based on creativity and entrepreneurial coordination, is free of all value judgement and therefore totally *wertfrei*: anyone who wishes

to promote coordination must encourage and foster free entrepreneurship; in contrast, anyone who prefers social maladjustments and conflicts must place all sorts of obstacles in the way of entrepreneurship.<sup>28</sup> Economic theory alone cannot label ends good or bad, although it undoubtedly helps people to more fully grasp the ethical choices they face and to more easily adopt a consistent moral position.

Kirzner's idea of dynamic efficiency is also unaffected by the other criticisms we have outlined against the different static-efficiency standards prevalent until now. Finally, Kirzner indicates that, from an analytical standpoint, the dynamic aspect of efficiency is a particularly useful tool for producing comparative analyses of different institutions and legislative possibilities. Indeed, the dynamic-efficiency analysis makes it possible to perform an evaluation which leads to a much clearer and in many cases much different position than the one which usually follows from a mere static-efficiency analysis.<sup>29</sup>

***Murray N. Rothbard and the myth of static efficiency: Roy E. Cordato's attempt at summation***

Rothbard has also made valuable contributions to the field of dynamic-efficiency analysis. This author has stressed that the 'static-efficiency' ideal, to which the theorists of welfare economics attach primary importance in their studies, is no more than a *myth*, since its operative management requires a given framework of ends and means which can never come to exist, much less be known, in the constantly changing social environment of the real world. Furthermore, Rothbard is perhaps the author who has most plainly revealed the connection between the dynamic conception of economic efficiency and the sphere of ethics. Considering the lack of knowledge of the ends, means and utility functions that truly exist in society, Rothbard finds it imperative to first establish an appropriate ethical framework which stimulates dynamic efficiency. This framework comprises the set of rules which govern property rights and permit voluntary trade in which the different economic agents invariably demonstrate their true preferences. Rothbard maintains that *ethical principles* alone can act as a standard of efficiency by which to make decisions.<sup>30</sup>

Roy E. Cordato has published an interesting book in which, from the perspective of welfare economics, he examines the main contributions of Austrian economists in general, and of Mises, Rothbard, Hayek and Kirzner in particular. Cordato arrives at the conclusion that, rather than the achievement of 'optimum' results (the objective of static efficiency), the chief goal in the market should be the predominance of a suitable institutional framework which furthers entrepreneurial discovery and coordination. Economic policy must be directed toward identifying and removing the artificial obstacles which interfere with voluntary trade and the entrepreneurial process.<sup>31</sup> Cordato's attempt is especially valuable in that through it he aims

to throw open the windows on welfare economics, now stale and long rooted in purely static assumptions, and thus to open it up to the subjectivist, dynamic view of the market, a view which until now has developed almost exclusively under the leadership of Austrian theorists.

***Joseph Alois Schumpeter and the 'process of creative destruction'***

Joseph Alois Schumpeter is perhaps one of the most widely known authors to apply a distinctive conception of the dynamic angle to the analysis of economic efficiency. Schumpeter initiated his program of research in this area as early as 1911, when he published the first German edition of *The Theory of Economic Development*.<sup>32</sup> In this book, Schumpeter, following a traditional Austrian line of research, writes of the entrepreneur as innovator, one who imagines and discovers new goods, combinations of goods and sources of supply, and who introduces technological innovations while constantly creating new markets and expanding the existing ones. Thirty years later, in 1942, Schumpeter continued in the same line of research in his book *Capitalism, Socialism and Democracy*, particularly in chapters 7 and 8. This last chapter is even entitled 'The Process of Creative Destruction', and in it the author describes the process of economic development which triggered the evolution of capitalism and thus gave rise to the tension inherent in the two dimensions of efficiency, the dynamic and the static. Schumpeter is very critical of the traditional static-efficiency principle employed in neoclassical economics and concludes that 'perfect competition is not only impossible but inferior and has no title to being set up as a model of ideal efficiency'.<sup>33</sup>

Our primary criticism of Schumpeter is that he continues to hold that the basic point of reference in economic analysis should be the equilibrium model, since he considers that the economic world would usually be in a state of routine flow if it were not for entrepreneurs. Hence, Schumpeter sees the entrepreneur as a solely distorting or unbalancing factor. In other words, he focuses on only one of the facets of the entrepreneurial process, that which he refers to with the now stock expression 'the process of creative destruction'. Schumpeter overlooks the fact that, as we have set out in the preceding sections, economic analysis should concentrate on the dynamic entrepreneurial process rather than on the model of equilibrium. For at the same time that the real market process driven by entrepreneurship possesses a capacity for 'creative destruction' (the only feature Schumpeter mentions), it also has an essentially coordinating capacity which tends to drive the social process toward a state of equilibrium, though this state never arrives because new maladjustments continually emerge as it approaches. Schumpeter regards the entrepreneurial process as a sort of explosive force which, due to entrepreneurial creativity, distorts the pre-existing order, yet he fails to realize that *the same force which provokes creative destruction tends to coordinate the system and therefore make the social 'Big Bang' as harmonious as possible in all historical circumstances*. In contrast with the outlook of

Schumpeter, who sees the entrepreneur as a wholly unbalancing factor, our dynamic approach begins with a view of entrepreneurship as both a creative and coordinating driving force which continuously urges the market and civilization forward.

### *Harvey Leibenstein's concept of x-efficiency*

Harvey Leibenstein first introduced the concept of x-efficiency in his article 'Allocative Efficiency vs. X-Efficiency', published in 1966.<sup>34</sup> In this paper, Leibenstein conceives x-inefficiency as the degree of inefficiency which arises in the market because many of the contracts which govern entrepreneurial relationships are incomplete, above all because they fail to properly specify the tasks each person must complete. Leibenstein also identifies as sources of inefficiency the psychological pressure the different economic agents face and the burden of the habits, inertia and routines which confine to an indefinite state of inefficiency many tasks that could yield improved results.

We should note that Leibenstein's concept of x-efficiency is rather ambiguous, or at least was in its initial formulations. It seems as if Leibenstein had intuited an important idea (that there exists a type of inefficiency which goes unnoticed in equilibrium models), yet he is unable to articulate it with total clarity. Ten years later, in an article ironically entitled 'The Existence of X-Efficiency',<sup>35</sup> Stigler (1976) responded to Leibenstein that in any case, the amount of ignorance and inertia existent in the market will always be optimum, since the effort to overcome them will cease right when the marginal cost derived from them begins to exceed the expected marginal revenue. Later, Kirzner offered support to Leibenstein with the argument that there would always be at least one important source of x-inefficiency, namely the genuine entrepreneurial error which arises precisely when one fails to recognize a profit opportunity in the market. Such an opportunity then remains in a latent state for other entrepreneurs to discover and seize.<sup>36</sup>

To put it another way, Kirzner makes the basic point that when we admit that, by definition, x-inefficiency does not exist in a context of equilibrium and perfect information (such was Stigler's patently irrelevant argument), the only way to preserve the concept of x-efficiency in an analytical and operative sense is to equate it with the concept of dynamic efficiency presented here, an idea which Leibenstein himself seems to have ultimately accepted. Ironically, the father of x-efficiency has been obliged to admit that his originally hazy concept can only retain its (high) degree of relevance if we eliminate its vagueness and ambiguity and identify it with the concept of dynamic efficiency as defined in this paper.<sup>37</sup>

### *Douglas C. North and his concept of 'adaptive efficiency'*

A Nobel Laureate in Economics, Douglas C. North has criticized the merely allocative, Paretian concept of efficiency prevalent among neoclassical

economists, and he proposes the alternative idea of *adaptive efficiency*, which he defines as ‘the willingness of a society to acquire knowledge and learning, to induce innovation, to undertake risks and creative activity of all sorts, as well as to resolve problems and bottlenecks of the society through time’.<sup>38</sup>

As is evident, North includes in this definition a number of attributes which fully agree with those we have already analysed in connection with dynamic efficiency: the acquisition of knowledge, creativity, innovation, etc. Moreover, and perhaps more characteristic of North, the author focuses particularly on the *institutional framework* of guidelines which further different societies’ creativity and ability to adapt, and he speaks of Europe and the United States as historical models of flexibility and adaptive capacity.

Our chief criticism of Douglas C. North is that he neglects to expressly mention entrepreneurship as the vital force behind all market processes. That is to say, North concentrates almost solely on the ability of societies in general to *adapt* to the ‘external’ changes and shocks which affect them and which are supposedly always of external origin, and it is precisely this viewpoint that leads North to suggest the term ‘*adaptive efficiency*’. Thus North’s approach is much more reactive than proactive. In fact, North does not appear to realize that the entrepreneurial drive which characterizes dynamic efficiency and its coordinating capacity is precisely that which simultaneously provokes the (endogenous rather than external) changes and shocks that trigger the problems to which different societies must adapt.

Hence, North and Schumpeter work from totally opposite perspectives. While Schumpeter focuses exclusively on the aspect of entrepreneurial creativity and its destructive power (the process of ‘creative destruction’), North concentrates on the other aspect; that is, the adaptive or coordinating capacity of entrepreneurship, and *he overlooks the simultaneously creative facet it invariably possesses. In this sense, we may consider that our theory of dynamic efficiency fuelled by entrepreneurship appropriately combines the creative and coordinating dimensions which Schumpeter and North have studied separately and partially, in a reductionist manner, each excluding important elements.*

### ***Dynamic efficiency and Ronald H. Coase’s transaction costs theory***

It now seems fitting to make a few remarks about the possible relationship between the concept of dynamic efficiency and Ronald H. Coase’s transaction costs theory, which has gained considerable influence in many areas of economic analysis, especially in the study of law and institutions.<sup>39</sup>

Perhaps the essential difference between the two approaches is the one Israel Kirzner has noted. According to Kirzner, the main obstacle to dynamic efficiency is not posed by transaction costs, but by what he calls ‘pure or genuine entrepreneurial error’, which appears in the market in the absence of sufficient entrepreneurial alertness.<sup>40</sup> To put it another way, even if we could imagine a hypothetical nirvana<sup>41</sup> or ‘ideal world with zero

transaction costs', such a system would fail to achieve the ideal of dynamic efficiency if, due to pure or genuine entrepreneurial errors, multiple opportunities for profit remained undiscovered or were not created or seized. Ultimately, despite the appearances, the transaction costs approach has many of the deficiencies we covered with respect to the static dimension of efficiency. Specifically, a comparative institutional analysis based on the different transaction costs of each institution implies the assumption that these costs are given and known, and that it is even possible to redesign an institution to modify the transaction costs in any particular situation. Nonetheless, the entire structure of transaction costs that is chosen as a frame of reference in the analysis can change radically and without warning if an act of pure entrepreneurial creativity leads to the discovery of new alternatives, production possibilities and, in general, new solutions which entrepreneurs had completely overlooked up to that point.

Consequently, as we shall see in detail, the initial distribution of property rights can never be irrelevant from the perspective of dynamic efficiency, rooted as it is in creativity and entrepreneurial coordination (not even in the extreme case of a complete lack of transaction costs, as the Coase theorem erroneously implies). In fact, the distribution of property rights, within the ethical framework which makes dynamic efficiency possible and which we will analyse later, is precisely what determines, in each specific time and place, who will be motivated by the particular incentives necessary to awaken entrepreneurial activity, with its dual aspects of creativity and coordination. In other words, from the standpoint of dynamic efficiency based on entrepreneurship, Coase's theorem, regardless of how it is interpreted, is scientifically invalid, since not even in a hypothetical, institutional scenario with no transaction costs will the distribution of property rights be irrelevant when dynamic efficiency is the goal.<sup>42</sup>

### ***The concept of dynamic efficiency in economics textbooks***

The dynamic aspect of economic efficiency has been virtually ignored by most writers of economics textbooks. Once again, this reveals the fixation with comparative statics and equilibrium prevalent thus far among economists and exposes the resultant urgent need for a paradigm shift to bring in the dynamic analysis of markets, along with the concept of dynamic efficiency.

From a sample of twenty economics manuals chosen among the best known in English, Spanish, French, German and Italian, only four included explicit mentions of dynamic efficiency. Furthermore, most of these honourable exceptions provided only a very limited discussion of the concept and failed to consistently incorporate the discussion into an overall analysis to permit the evaluation in terms of dynamic efficiency of the different institutions and alternatives covered by each textbook. An overview of the most striking approaches to dynamic efficiency follows.<sup>43</sup>

Although Gwartney and Stroup's textbook *Economics: Private and Public Choice*<sup>44</sup> does not explicitly include the term 'dynamic efficiency', it does explain that the world is in a permanent state of change as a consequence of entrepreneurial creativity and the process of competition among entrepreneurs. According to the authors, this constant change obliges economists to reassess traditional notions of static efficiency.

Dolan and Lindsay<sup>45</sup> provide a much more explicit analysis of dynamic efficiency, especially with respect to the distinctions between static efficiency and dynamic efficiency, which they define as 'a measure of the rate at which the production possibility frontier shifts outward over time'. In contrast, they describe static efficiency as 'a measure of how close an economy comes to its production possibility frontier'. Moreover, Dolan and Lindsay refer to Schumpeter's pioneering contributions in the area of dynamic efficiency, and they consider innovation and technological discoveries the main forces behind it, though they do not neglect to mention the creative power of entrepreneurship, nor that the recognition of it has been a fundamental contribution of Austrian theorists. In fact, the authors of this manual go so far as to estimate the possible losses to the American economy in static efficiency from the Second World War to today, and they deem this figure equal to an average of 2.5 per cent of the US gross domestic product. In addition, the authors state their belief that these losses have been more than amply compensated for by the gains in dynamic efficiency which over the same period have resulted from the creativity and coordinating force of American entrepreneurship.

In 1998, Wolfgang Kasper and Manfred E. Streit published an important manual on the economic analysis of institutions. In this book, the authors define dynamic efficiency as 'an inherent quality to adapt, respond or develop new knowledge'.<sup>46</sup> As we see, in this book Kasper and Streit come very close to the theory of dynamic efficiency we have presented. Furthermore, these authors join Demsetz in criticizing the 'nirvana approach', which is typical of the neo-classical methodology and revolves around comparisons of reality with the utopia of static efficiency. Kasper and Streit conclude that many supposed 'market failures' cannot be considered as such from a dynamic standpoint, since they either foster creativity and the introduction of new technology (as would be the case of 'monopolies') or constitute the most basic characteristic of real markets (as is the case with 'asymmetric information', uninsurable moral hazard inherent in each entrepreneurial act, etc.). Therefore, according to these authors, the analyst must compare actual institutions not with ideal, unattainable models (as welfare-economics theorists have done up to now), but with alternative institutions which are feasible and promote creativity and the coordinating power of entrepreneurship. Hence, Kasper and Streit supplement Demsetz's intuitions with Hayek's theory on the emergence and creation of the knowledge which entrepreneurs continually discover in market processes.

Along the same lines, O'Driscoll and Rizzo explain in their book *The Economics of Time and Ignorance* that it is inappropriate to criticize the real market process, as neoclassical economists often do, for falling short of the

production possibility curve; that is, because supposed market ‘failures’ prevent it from being statically efficient. According to these authors, such criticism implies that we can come to know information which emerges only from the real market process and which, if we knew it a priori, would render the process unnecessary and redundant. In other words, no one can be acquainted with the production possibility curve because it is not given, but is always being disrupted and shifted to the right by entrepreneurial creativity. To find fault with the market because it fails to reach a limit which no one has knowledge of and which varies continually not only constitutes a serious methodological error, but can also lead to the absurd justification of interventionist economic policies which ultimately hinder the real market process, when this very process is the driving force behind the perpetual quantitative and qualitative increase in the possibilities of the production frontier.<sup>47</sup>

Finally, we would not wish to conclude this review of the manuals that have covered, even if superficially, the notion of dynamic efficiency, without mentioning the curious case of the textbook by Wonnacott and Wonnacott, who insist on defining ‘dynamic efficiency’ in strictly ‘static’ terms; that is, as the ‘optimal’ rate of technological change. The reference rate used to determine whether or not an economic system is approaching the ‘optimal’ rate is left unspecified. These authors contend that it is the model of perfect competition which stimulates dynamic efficiency, to the extent that it obliges companies to rapidly implement new technologies. They also point out that a certain amount of debate exists over whether competition or monopoly is the system which most encourages the creation and discovery of new technologies. In any case, Wonnacott and Wonnacott’s handling of dynamic efficiency is not only entirely dependent upon their static view of the economy, but also quite confusing (and disconcerting). It appears as if the authors inserted the corresponding paragraph in the textbook to cover a topic considered important, yet they neglected to support it with any dynamic analysis of the real market processes that are driven by entrepreneurship.<sup>48</sup>

In conclusion to this brief overview of the scientific literature most widely used in teaching, we can affirm that, despite the isolated exceptions cited above, economists are still very far from generally accepting the principle of dynamic efficiency, and from beginning to systematically implement it and consider its ramifications. When they do, and no study in applied economics excludes the aspect of dynamic efficiency, its analysis will eventually filter into the textbooks and become essential, standard material in all economics manuals, to be used by students worldwide.

## **The relationship between ethics and dynamic efficiency**

### ***Introduction***

We mentioned in the second section that the ‘second fundamental theorem of welfare economics,’ developed within the static framework of neoclassical

theory, depicts efficiency and ethics as two distinct dimensions which may be combined in different ways.<sup>49</sup> In fact, from the perspective of welfare economics, multiple Pareto optimums exist (represented by each and every point on the production possibility curve), and every one of these points could correspond to a unique ethical model of income redistribution. Thus, for example, in the Bergson–Samuelson view, a hypothetical ‘social-welfare function’ would potentially embody the socially acceptable model of redistribution and would lead us to the ‘optimum optimum’ at the point of intersection between the social-welfare function and the production possibility curve. This type of analysis has convinced many thinkers of the theory’s supposed vagueness as a tool for evaluating an economic system, since they consider such an evaluation ultimately dependent on value judgements which lie outside the scope of economic theory.

This entire mainstream paradigm is disrupted completely if we introduce the dynamic conception of economic efficiency: for, as we shall see, not all ethical systems of income redistribution are compatible with dynamic efficiency understood as entrepreneurial creativity and coordination. Thus the economics theorist encounters a fascinating field of research that centres precisely on determining which principles of social ethics or distributive justice drive and are compatible with the market processes that characterize dynamic efficiency.

### *Ethics as a necessary and sufficient condition for dynamic efficiency*

Most of the stances on distributive justice and social ethics which up to now have predominated and have formed the ‘ethical foundation’ of important political and social movements (of a ‘socialist’ or social democratic nature) are rooted in the static conception of economic efficiency. The established paradigm of neoclassical economic theory rests on the idea that information is objective and given (either in certain or probabilistic terms), and thus that it is possible to make cost–benefit analyses based on it and, as we have indicated, that the issues of utility maximization have absolutely no connection with moral considerations, and hence the two can be combined in different proportions. Furthermore, the dominant static viewpoint led almost inexorably to the conclusion that resources are in a sense given and known, and therefore the economic problem of their distribution was deemed separate and distinct from the issue of their production. Granted, if resources are given it is vitally important to inquire into the best way to allocate among different people both the available means of production and the final result of the different production processes.

This whole approach collapses like a stack of cards in light of the new dynamic conception of market processes, which hinges on the theory of entrepreneurship and on the notion of dynamic efficiency we have been examining. From this perspective, every person possesses an innate creative capacity that enables him to perceive and discover the profit opportunities

which arise in his environment, and to act accordingly to take advantage of them. Therefore, entrepreneurship consists of the typically human ability to perpetually create and discover new ends and means. From this point of view, resources are never given, but, instead, both ends and means are continually devised *ex novo* by entrepreneurs, who always wish to reach new objectives that they *discover* to be of value. At the same time, this creative power of entrepreneurship combines, as we have seen, with its capacity for coordination. Therefore, if ends, means and resources are not ‘given’, but are continually created from nothing as a result of the entrepreneurial action of humans, clearly the fundamental ethical question ceases to be how to fairly distribute ‘what exists’, and becomes how, in view of human nature, to best foster entrepreneurial coordination and creativity.

Consequently, in the field of social ethics, we arrive at the fundamental conclusion that the conception of human beings as creative, coordinating actors involves the axiomatic acceptance of the principle that *each person has the right to appropriate the results of his entrepreneurial creativity*. That is, the private appropriation of the fruits of entrepreneurial creation and discovery is a tenet of natural law, because if an actor were not able to claim what he or she creates or discovers, his or her capacity to detect profit opportunities would become blocked, and his or her incentive to act would disappear. Moreover, the above principle is universal in that it can be applied to all people at all possible times and in all conceivable places.

The precept we have just set out, which provides the ethical basis for all market economies, offers other decided, characteristic advantages. First, it possesses a strong, intuitive and universal attraction: it seems obvious that if someone creates something from nothing, he has the right to appropriate it, since in doing so he does no harm to anyone.<sup>50</sup> (Before he invented his creation, it did not exist, and thus its invention harms no one, and it benefits at least the creative actor, when it does not also benefit many other people.) Second, the above is a universally sound ethical principle which is closely related to the traditional precept of Roman law regarding homesteading or the original appropriation of resources that belong to no one (*occupatio rei nullius*). In addition, it offers a solution to the paradox represented by ‘Locke’s proviso’, which places the following limit on original appropriation: a sufficient ‘number’ of resources must be left for other people. The principle we defend, which rests on creativity, renders ‘Locke’s proviso’ unnecessary: no product of human creativity exists prior to its entrepreneurial discovery or creation, and therefore its appropriation cannot hurt anyone. Hence, Locke’s condition makes sense only in a static environment in which it is presumed that resources already exist (and thus are ‘given’), that they do not change and that they must be distributed among a predetermined number of people.

If we conceive the economy as a dynamic, entrepreneurial process, the ethical principle which must govern social interactions rests on the view that the fairest society is the one which most energetically promotes the

entrepreneurial creativity of all of its members. To achieve this goal, it is imperative that a society provide each member with the a priori guarantee that he will be permitted to appropriate the results of his entrepreneurial creativity and that no one will expropriate these results, either partially or totally, much less the public authorities.

We must conclude that the aforementioned basic principle of social ethics, one which hinges on the private ownership of all that is entrepreneurially created and discovered, and thus on the voluntary exchange of all goods and services, is both the necessary and the sufficient condition for dynamic efficiency. This principle is a necessary condition, because to impede the private ownership of the fruits of each human action is to remove the most powerful incentive to create and discover profit opportunities as well as the fundamental source of creativity and coordination that propels the system's dynamic efficiency (i.e. the rightward movement of the corresponding production possibility curve). However, the ethics of private property constitute not only the necessary condition for dynamic efficiency, but also the sufficient condition. Given the vital drive which characterizes all human beings, an environment of freedom in which they are not coerced and in which their private property is respected constitutes a sufficient condition for the development of the entrepreneurial process of creativity and coordination which marks dynamic efficiency.

To hinder free human action to any degree by impairing people's right to own what they entrepreneurially create is not only dynamically inefficient, since it obstructs their creativity and coordinating capacity, but also fundamentally immoral, since such coercion prevents the actor from developing that which is by nature most essential in himself, i.e. his innate ability to create and conceive new ends and means and to act accordingly in an attempt to achieve his objectives. To the extent that state coercion impedes entrepreneurial human action, people's creative capacity will be limited, and the information or knowledge necessary to coordinate society will not emerge or be discovered. Thus socialism and the economic interventionism of the state in general are not only dynamically inefficient but also ethically reprehensible.<sup>51</sup>

It is precisely for the above reasons that not only is socialism an intellectual error, since it stops people from generating the information needed by the regulatory agency to coordinate society via coercive commands, but also, as we have indicated, it conflicts with human nature and is ethically unacceptable. In other words, the analysis up to this point exposes the socialist, interventionist system as immoral, because it is built upon the use of force to prevent each person from claiming the product of his own entrepreneurial creativity. Thus we see not only that socialism is theoretically impossible and dynamically *inefficient*, but that at the same time it is an essentially *immoral* social system, since it contradicts the most intimate aspect of human nature by keeping people from acting freely and appropriating the results of their own entrepreneurial creativity, and thus from realizing their potential.<sup>52</sup>

Hence, according to our analysis, nothing is more (dynamically) efficient than Justice (in its proper sense). If we perceive the market as a dynamic process, then dynamic efficiency, understood as coordination and creativity, emerges from the behaviour of human beings who follow certain moral laws (regarding the respect for life, private property and the fulfilment of contracts). In this way, the exercise of human action subject to these ethical principles gives rise to a dynamically efficient social process such as we have been describing. It is now easy to see why, *from a dynamic standpoint, efficiency is not compatible with different models of equity or justice (as the second fundamental theorem of welfare economics erroneously stated), but instead arises exclusively from one (that based on the respect for private property and entrepreneurship)*. Therefore, the contradiction between efficiency and justice is false. What is just cannot be inefficient, and what is efficient cannot be unjust. A dynamic analysis reveals that justice and efficiency are but two sides of the same coin, which also *confirms the consistent, integrated order that exists in the social realm*. Consequently, our study of dynamic efficiency allows us to discover which ethical principles make this type of efficiency possible. Even more significant and ambitious, however, is that our study permits an objective and scientifically uniform handling of all social problems.<sup>53</sup>

### ***Dynamic efficiency and the principles of personal morality***

Up to this point, we have looked at social ethics and discussed the key principles which provide the framework that makes dynamic efficiency possible. Outside that sphere we find the most intimate principles of personal morality. The influence of such principles on dynamic efficiency has rarely been studied, and in any case they are considered part of a realm that is separate and distinct from that of social ethics. Nevertheless, we believe this separation to be completely unjustified. In fact, a number of ethical and moral principles are of great importance to the dynamic efficiency of social processes, and with respect to these standards the following paradox arises: the failure to meet them on a personal level entails a staggering cost in terms of dynamic efficiency; however, the attempt to impose them on people via the coercive force of the public authorities also generates severe inefficiency from the dynamic standpoint. Hence, certain social institutions carry major significance in transmitting and encouraging the observance of these personal moral principles which, by their very nature, cannot be imposed by force but are nevertheless of vital importance to the dynamic efficiency of society. Through religion and the family, for example, people internalize these principles and thus learn to uphold them habitually and to transmit them to the next generation.<sup>54</sup> The principles which relate to sexual morality, the creation and indefinite preservation of the family institution, faithfulness between spouses and the care of children, the control of atavistic urges and, specifically, the overcoming and restraint of unhealthy envy, etc. are all of

crucial importance to the successful working of the social process of creativity and coordination, and to its fostering dynamic efficiency in society as well as possible.

When an individual fails to observe moral principles, this lack of compliance ultimately and invariably results in some appalling human cost which affects not only the person who triggers it but also a large group of third parties who have a direct or indirect connection with him. In fact, such behaviour can even come to block much of the dynamic efficiency of an entire social system. Much more serious is the spread of immoral behaviours through the systematic processes of moral corruption which can eventually and completely paralyse the healthy, efficient social process. Therefore, the study, from the perspective of the economic theory of dynamic efficiency, of the role of personal moral principles and the different social institutions which make possible and encourage their fulfilment and preservation in society opens up an extremely significant field of research for scholars, one we hope will exert a decisive influence in the future.

For an illustration of the possibility and value of examining personal moral principles in terms of dynamic efficiency, let us consider the behaviour spouses should, with consistent effort, aspire to and maintain, to keep their marriages going and preserve the institution of the family, for their own benefit and especially for that of their children. For example, if a family man begins to give way to a more or less frivolous desire for an attractive, young companion over all else, he could very likely end up divorcing his wife, precisely when she is getting older and the children are nearly grown. If such behaviour becomes widespread, then before women decide to marry and start a family they may very well begin to reflect on the high risk that their husbands may abandon them just as they are wrapping up a period of long years spent raising children, and precisely at a time when their age and abilities put them at a disadvantage in the labour market. As a result, not only will a larger number of marriages and families be broken up but, even more significantly, the rate at which new marriages and families are started will decline, and women will tend to prolong their single life to ensure their professional careers and independent means of support, all of which will lead to a dramatic drop in the birth rate. In the absence of migratory trends to ease the decrease in the birth rate and the consequent aging of the population, the social process of entrepreneurial creativity and coordination which fuels dynamic efficiency will suffer. Both the progress of civilization and economic and social development require a constantly expanding population capable of sustaining, among a continually increasing number of people, the steady growth in the volume of social knowledge which entrepreneurial creativity generates. Ultimately, dynamic efficiency depends on people's creativity and capacity for coordination, and, other things being equal, it will tend to increase as the number of human beings increases, which can only happen within a certain framework of moral laws to govern family relationships.

It is easy to see that in the context of family relationships the principles of personal morality take on crucial importance to dynamic efficiency. Nevertheless, it is also true and only apparently paradoxical that the state must not use coercive force to impose such principles in a manner similar to that in which it defends, for example, the legal regulations of criminal law. The latter mainly prohibit certain behaviours which involve the criminal use of violence or deception against other people; that is, physical violence or the threat of it, or the criminal achievement of some end via deceit or fraud. In contrast, the coercive imposition of personal moral principles would cripple dynamic efficiency: personal family relationships, for example, belong to the most private sphere of human life, and it is practically impossible for an outsider to obtain all of the information necessary to make well-informed judgements about them, much less to resolve conceivable problems when the involved parties lack sufficient desire or willingness to solve them. The promotion of the entire framework of personal moral principles, insofar as they can be imposed by force, to the rank of legal regulations would only give rise to a closed, inquisitorial society that would deprive the population of nearly all of the individual freedoms which comprise the foundation of entrepreneurship, the only possible inducement to dynamic efficiency in the whole social process.

The above considerations reveal the importance of alternative, non-coercive methods of social guidance which expose people to the most intimate and personal moral precepts and encourage their internalization and observance. Religious feelings and principles, which are acquired at an early age within the family, play an indispensable role in this regard (together with the social pressure exerted by other members of the family and community). Religious precepts provide direction under which to act, they help people control their most atavistic impulses and they serve as a guide in the selection of those people with whom we decide to build an intimate relationship or even a family and the rest of our lives. Other things being equal, the firmer and more enduring a person's moral principles appear, the greater the esteem that person should inspire.<sup>55</sup>

### ***The evolution of ethical principles: institutions essential to dynamic efficiency***

Elsewhere we have defined the concept of 'institution' as 'any generalized pattern of conduct or behavior',<sup>56</sup> and in this sense it is easy to deduce from the analysis thus far that the social process of creation and coordination of which dynamic efficiency consists must be guided; that is, it must be subject to ethics and law or, in other words, to a series of moral principles and legal rules.

In fact, as we have seen, the basic entrepreneurial act consists of buying at a low price and selling at a high one, and thus grasping a profit opportunity and coordinating the initially maladjusted behaviour of social agents. This

act would be thwarted or would fail to take place if all participating parties did not guarantee the fulfilment of their commitments; or, for example, if some circumstance rendered the contract void, or if any of the contracting parties consented due to fraud or deception, at the time either of payment or of the delivery of the good, of the quality promised. For this reason, basic legal principles, such as the respect for life, peacefully acquired ownership, the fulfilment of contracts and, in general, compliance with the *legal regulations which have evolved through custom and which comprise civil and criminal law provides the basic institutional structure or prerequisite for dynamic efficiency*. The same can be said of the personal moral principles we discussed in the last section, of the natural right to own private property and of the implications of this right, all of which compose the foundation of basic social ethics which is entirely responsible for sustaining dynamic efficiency.

Although these principles have emerged through an evolutionary process, they form part of human nature. To put it another way, human nature manifests itself through a process of evolution, and, with the benefit of hindsight and the use of reason, man is then able to refine the principles which arise from his errors in logic and contradictions, to strengthen these principles, and through careful study to apply them to the new areas and challenges that develop in society. Therefore, any scientific analysis of the dynamic aspect of social efficiency must begin with the acknowledgement that such a study can never be conducted in an institutional vacuum; that is, that the theoretical analysis of dynamic efficiency is inseparable from the study of the institutional framework in which entrepreneurial behaviours take place. As a result, we should be particularly critical of the existing economic theory of nirvana developed by neoclassical welfare economists, the majority of whom insist on judging real market processes in a complete institutional vacuum; in other words, with a total disregard for real-life human interactions.

Hence, a vast field of research is opening up for specialists in applied economics and involves the examination and re-evaluation of each and every social institution (economic, juridical, moral, ethical and even linguistic) with a view to analysing the capacity of each to trigger dynamic efficiency and the role each plays in the encouragement of it. Elsewhere we have explained that the theorist who embarks on this task must be particularly thorough and prudent, above all because he attempts to analyse highly complex, real-life features of society which have evolved over time, are accompanied by a huge volume of experience and information, compose human nature and are not often easily understood via the conceptual tools of the analyst.<sup>57</sup>

In the next and last section of this chapter, we will provide some examples of practical applications to illustrate, or at least sketch, the direction in which we believe the economic analysis of social institutions may evolve in the future if the dynamic concept of economic efficiency we have presented is consistently applied.

### Several practical applications

We will now touch upon several specific areas which we believe could be enriched by the systematic application of the dynamic-efficiency approach we have proposed in this chapter. As is logical, we will not attempt here to perform an analysis, much less a thorough one. Our only goal is to suggest a few provisional ideas on some lines of research which appear quite promising and remain available for the future efforts of those scholars who ultimately determine that the study of the dynamic conception of economic efficiency can be productive and compelling:

1. We must mention *taxation theory*. We have already observed the vital role that (pure) entrepreneurial profits (and losses) play in terms of guiding the creative and coordinating action of entrepreneurs. In fact, such profits are the primary sign that directs and drives the market process which leads to dynamic efficiency. The distortion of entrepreneurial profits due to fiscal causes can seriously effect the entire process of dynamic efficiency (i.e. creativity and coordination), and thus generate a high cost in the shape of a reduction in dynamic efficiency. This cost would be additional to the one theorists refer to as ‘excess burden’, which, from the perspective of the economic analysis of equilibrium, corresponds to the loss of static efficiency, the only loss accounted for up to now by optimal tax theory.<sup>58</sup> Consequently, the ideal goal would be to avoid taxing pure entrepreneurial profits, in order to foster dynamic efficiency. It is important to recognize that this economic-policy goal presents significant practical problems which stem from the fact that under nearly all true circumstances pure entrepreneurial profits are inseparable from other sources of income (labour, capital, land, etc.). Nevertheless, these difficulties should challenge those analysts and researchers who wish to promote dynamic efficiency, and encourage them to search for new tax procedures and to develop fiscal reforms that minimize the negative impact on pure entrepreneurial profits and thus on entrepreneurial creativity and coordination.<sup>59</sup>
2. The *theory of regulation and interventionism* (i.e. the economic analysis of institutional coercion) could also be enriched by the systematic application of the dynamic approach. The objective here would be to examine all acts of regulation and economic intervention so that, as they take the shape of restrictions on the free exercise of entrepreneurship, their possible effects can be studied in terms of dynamic inefficiency. Moreover, the diagnosis of the inefficiency problems caused by economic interventionism should make it possible to devise reforms which can be more or less gradually implemented with the purpose of removing the existing obstacles to creativity and coordination, and of thus fostering the dynamic efficiency of the system.
3. The dynamic-efficiency approach suggests a completely different angle from which to view *antitrust legislation*. From the perspective of dynamic

market processes driven by entrepreneurship, and in the absence of institutional hindrances to free human action in any entrepreneurial environment, the process of rivalry between entrepreneurs often culminates in the temporary dominance of only a few producers (or even just one) in the market at a particular time and place. Far from indicating a (supposed) 'market failure', this occurrence would constitute one of the most typical manifestations of the success of these entrepreneurs at satisfying better than anyone else the desires of consumers (i.e. at discovering and conceiving new products of increasing quality and placing them on the market at decreasing prices). Thus, restrictive legislation designed to 'defend' competition could generate high costs in terms of dynamic efficiency, to the extent that potential entrepreneurs take for granted that, should they be successful (at introducing a certain innovation, or launching a product, or capturing the market), the public authorities may requisition or even partially or totally expropriate the results of their creativity. The cases of Microsoft and others are topical and currently in everyone's mind, so it is not necessary to go into detail about them. An observation similar to the above can be made concerning many other practices, such as price agreements among suppliers, market sharing, the joint sale of goods, exclusive-distribution agreements, etc. Even though these may be seen as restrictive measures from the standpoint of static efficiency, which until now has permeated antitrust legislation, they may make all the sense in the world from the perspective of dynamic efficiency, which plays a central role in real market processes.<sup>60</sup>

4. The *economic theory of development* is another sphere in which the application of the theory of dynamic efficiency is of great importance. Here the primary objective of economic policy would be to consider which possible reforms could remove obstacles and boost entrepreneurship in developing countries. Let us not forget that the entrepreneur is undoubtedly the leading figure in any process of economic development. For this reason, one cannot help being surprised at the sheer volume of pages which have been written in vain on the economic theory of underdevelopment because the authors have completely overlooked the key player in economic growth processes (the entrepreneur) and have made no mention of the role entrepreneurship plays in both its creative and coordinating facets. In this sense, neoclassical academics of the theory of growth and underdevelopment are to a great extent responsible, by omission and commission, for the failure of many economic policies in developing countries to include the necessary measures to protect, foster and encourage indigenous as well as foreign entrepreneurs who decide to stake their assets upon those countries which most need investments, as their inhabitants live near subsistence level.
5. The adoption of the dynamic-efficiency view could also enrich *macro-economics* in general and *monetary theory* in particular. We have known from the time of Carl Menger that money evolved through custom and

that its development was stimulated by the entrepreneurial ingenuity of those few who first realized that they could attain their goals more conveniently by demanding in return for their goods and services a medium of exchange easily tradable in the market. As this pattern of behaviour became generalized and habitual, money emerged as a generally accepted medium of exchange. In fact, money would be unnecessary in a hypothetical, static and perfectly efficient model of equilibrium, because such an unreal scenario would involve no future uncertainty, and thus no one would need to maintain any cash balances at all. However, real life is unpredictable, in great part precisely due to entrepreneurial creativity, which results in the constant generation of new information and in the modification of all market parameters, and thus it is essential that people maintain liquid balances to cope with an ever-changing and uncertain future. Hence, money has its origins in the uncertainty entrepreneurial creativity produces, and, at the same time, it makes it possible for humans to exercise their creative and coordinating entrepreneurship, since it permits them to face a consistently uncertain future with an open set of alternatives. From this standpoint, it is important that monetary institutions not hamper the processes of entrepreneurial coordination and thereby make the goal of dynamic efficiency difficult to reach. For example, if the creation of money in the form of credit expansion permits the initial financing of investment projects at a rate out of all proportion to that of the real increase in society's voluntary saving, then a severe inter-temporal discoordination or maladjustment will arise between the behaviour of investors and consumers. This maladjustment will first manifest itself in a speculative investment bubble financed through an over-issue of fiduciary media which will ultimately result in a disproportionate rise in the prices of capital goods. This expansionary process will sooner or later reverse in the form of an economic recession which will reveal the entrepreneurial errors committed and the need to convert and restructure the investment processes initiated in error.<sup>61</sup> Thus, an interesting field of research is now opening up to scholars and involves the evaluation of the current monetary and credit institutions in light of the concept of dynamic efficiency presented here. In time, these scholars will design a series of reforms which will foster entrepreneurial creativity and also further inter-temporal coordination, thus impeding the artificial maladjustments which up to now have recurrently attacked market economies since the development of the modern fractional-reserve banking system in the early nineteenth century.

6. Lastly, perhaps more than any other sphere of economics *the economic analysis of law, legal regulations and social institutions*, which up to this point has rested exclusively on the traditional postulates of the economic analysis of equilibrium, needs to be completely reworked in light of the new intuitions and contributions which only the dynamic conception of efficiency can offer. This new perspective will make it possible to evaluate

the different legal regulations and social institutions in a totally new manner, i.e. in terms of their capacity to drive entrepreneurial creativity and coordination. The dynamic approach will dramatically enrich the economic analysis of contract law, of civil liability, of patent, copyright and trademark law, of the family, etc., and in general it will exert the same effect on any other economic analysis of the laws and institutions closest to the actual social environment which is always fundamentally dynamic by its very nature.

As is logical, the above examples and illustrations do not come even close to exhausting the possible applications of the dynamic conception of economic efficiency, an approach which, as we have indicated, can and should be applied in all areas of economics, both theoretical and applied. It is our fervent hope that these illustrations act as an incentive for young scholars and researchers in our discipline, and that, as a result of their effort, they see their contributions enriched and crowned with success.

## **Conclusions**

We have arrived at the following main conclusions in this paper:

1. Dynamic efficiency may be described as the capacity of an economic system to stimulate entrepreneurial creativity and coordination.
2. Nevertheless, the dynamic aspect of efficiency has been almost completely overlooked up to now by the majority of professional economists, who have focused almost exclusively on the merely allocative or static dimension of economic efficiency.
3. However, dynamic efficiency is the most important aspect of the economic concept of efficiency, especially in the real world, where equilibrium can never be reached and the ideal of allocative or static efficiency is by definition unattainable.
4. Many behaviours and institutions which appear to be inefficient by short-term allocative or static criteria are actually able to vigorously stimulate dynamic efficiency. This idea opens up an interesting field to scholars and researchers and challenges them to analyse the possible trade-offs between the two dimensions of efficiency and to design reform proposals which tend to promote entrepreneurial creativity and coordination.
5. Dynamic efficiency is far from compatible with different models of ethical behaviour and instead emerges from only one of them: the one that most respects private property, specifically the appropriation of the results of entrepreneurial creativity. In this way, ethics and the dynamic concept of efficiency appear as two sides of the same coin. Moreover, we have put forward the original argument that the basic principles of personal morality which have prevailed throughout the evolution of mankind also tend to foster dynamic efficiency. Hence, our dynamic view of economic

analysis permits a uniform, scientific handling of all social problems, and in this context the dimensions of efficiency and justice are not separate at all, but self-explanatory and mutually strengthening.

6. In conclusion, we believe that no economic-efficiency analysis should exclude the dynamic aspect. In other words, in all applied-economics studies, the analyst should always consider, from the perspective of dynamic efficiency, the possible effects of the practice, institution or reform proposals in question. In this way, dynamic efficiency will become a key factor to be considered in every economics study, and this change will not only open up a vast and hopefully very productive field of research to the future scholars in our discipline, but we also feel sure that it will lead to a much more fruitful and dynamically efficient development of our discipline in the service of humanity.