

RESEARCH ARTICLE

Integrating the exploration-exploitation dilemma and bad institutions to the Austrian theory of destructive entrepreneurship: a new perspective

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Abstract

Contemporary Austrian theory has expanded widely on the relationship between entrepreneurship and the structure of production, yet it has never touched on the existence of an exploration-exploitation dilemma within organizations. The objective of the article is to show that the integration of the exploration-exploitation dilemma into the Austrian theory adds new fruitful elements to the function of the destructive entrepreneur, as presented by the Austrian economists of the firm. By showing how an organization's complexity can motivate destructive entrepreneurship on competition, it firstly explains how their analytical tools, which were limited in this area to the infra-organizational field, can also be applied to the catallactic field; it secondly enriches the traditional Austrian vision of the relation between institutions and entrepreneurship, in highlighting a reverse causal relationship, that has not yet been pointed by Austrian literature on entrepreneurship, between bad institutions and the destructive entrepreneur.

Keywords: Austrian theory; bad institutions; entrepreneurship

1. Introduction

For Austrian authors, heirs to the subjectivist tradition of Carl Menger (1871, 1883), the main obstacle to the coordination of economic activities lies in the mutual ignorance of the actors. Due to the idiosyncrasies and the dynamics of agents' preferences, each individual is surrounded by a zone of seizeable opportunities (the sphere of information) greater than he can perceive (the area of knowledge). This inevitable gap between information and knowledge (Hayek, 1937, 1945) expresses the actors' zone of ignorance. The figure of the entrepreneur thus finds a privileged place because its role is precisely that of reducing the zone of ignorance of agents. The theme of the entrepreneur was already present among the authors of the first generation (Mataja, 1884; Menger, 1871; von Wieser, 1914, 1926). However, Kirzner's and Rothbard's analyses, based on von Mises' views (1952, 1966) have more directly inspired the work of the contemporary Austrian school on the subject.

According to Kirzner (1973, 1979, 1985, 1997a, 1997b), the entrepreneur, in mobilizing specific, non-transferable (tacit) qualities of alertness, discovers hitherto ignored exchange opportunities, and signals them to other individuals; the 'pure profit' rewards him for having improved their well-being; for Rothbard (1962, 1985, 1991, 1995), entrepreneurship is grounded in productive organizations because it requires property rights on capital. Like markets, firms are open-ended universes within which the discovery of opportunities is always possible. In line with Rothbard's work, Klein (1999, 2008, 2010), Foss and Klein (2002, 2010a and 2010b, 2012, 2015), Foss and Foss (2002), Foss *et al.* (2007a, 2007b, 2008), Salerno (2008), McCaffrey (2014) consider the determinants and characteristics of entrepreneurship within firms. For them, the tasks of economic calculation,

implementation and exploitation of opportunities as production plans necessarily complement exploration-discovery of new types of markets, and of new assets (or of new attributes of current assets) if entrepreneurial profit is to be made.

Management literature also considers, yet on very different bases, that the success of firms is both conditioned by their ability to explore alternatives (strategic flexibility) and their capacity to exploit current production plans (operational efficiency). But the development of one works to the detriment of the other, resulting in reciprocal exclusion (Levinthal and March, 1993; March, 1991). This ‘exploration-exploitation dilemma’¹ can be explained in at least two ways, one strategic, the other cognitive: (1) exploration, of a random nature, produces ‘failure traps’ which would lead to prolonging the research effort; those past losses would then be compensated by future gains; exploitation, of a more mechanical nature, conversely produces ‘success traps’, confirming the wisdom of choosing this strategy. Once chosen, exploration and exploitation are therefore self-reinforcing. Path dependence develops on each side; (2) the skills and routines respectively associated to these two tasks are specific and divergent. Their cohabitation is thus impossible. Since then, a very large amount of literature has, with mixed results, developed on how to best reconcile, or balance, the functions of exploration and exploitation through organizations qualified as ambidextrous (Birkinshaw and Gibson, 2004; Raisch and Birkinshaw, 2008; Raisch, *et al.*, 2009).

The Austrian theory of entrepreneurial organization has never mentioned a possible exploration-exploitation dilemma connected to its own view of production and capital structure. von Mises (1966, *The Influence of the Past Upon Action*, 502–510) did note that the implementation of technological innovation could be hampered by the current structure of production: ‘the degree of convertibility of the supply of capital goods available affects all decisions concerning production and consumption. (...) The smaller the degree of convertibility, the more realization of technological improvement is delayed’ (von Mises, 1966: 510). But his successors did not try any further to determine under what technical and organizational conditions the newly discovered opportunities could be implemented within the firm as production plans. Although on the basis of Rothbard’s work (1962, 1991), Austrian economists of the firm (Foss, 1999; Foss and Klein, 2012; Klein, 1996, 2010; Salerno, 2008) have explained limitations to the size of the organization by referring to the problems of economic calculation², they do not identify any obstacle specific to the complexity of the firm which would prevent it from reorganizing its production structure around new assets (or new uses of current assets), whose marginal rate of return would rise consequent to entrepreneurial discoveries.

Here, we will integrate the exploration-exploitation dilemma to the Austrian analysis of entrepreneurial organization, as this brings new elements that broaden the Austrian theory of the destructive entrepreneur; this integration finds considerable consequences weighing on the way in which the Austrians view the relationship between institutions and entrepreneurship. Whereas they have long considered that it is the institutions that influence entrepreneurship, our analysis, developed here, shows the existence of a reverse relationship: that destructive entrepreneurship may favour the formation of bad institutions.

¹Exploitation refers to: ‘refinement, choice, production, efficiency, selection, implementation and execution’; exploration is linked to ‘search, variation, risk-taking, experimentation, play, flexibility, discovery, and innovation’ (March, 1991: 71). Authors described the same conflict in the following terms: static efficiency versus dynamic efficiency (Ghemewatt and Ricart Costa, 1993), alignment versus adaptability (Birkinshaw and Gibson, 2004), evolution versus revolution (Tushman and O’Reilly, 1996), creation value versus loss prevention (Williamson, 1991), control versus flexibility (Volberda, 1996), or more simply, new knowledge versus old knowledge (Vassolo *et al.*, 2004; Vermeulen and Barkema, 2001).

²According to this literature, the development of internal exchanges based on administered transfer prices requires points of comparison with market prices for being able to calculate their relative advantages. The optimal size of the firm is reached when the gain of internal exchanges becomes equal to the cost of the difficulty of comparing administered transfer prices to market-based transfer prices. From this perspective, the fewer external markets exist for assessing the gains and costs of these internal exchanges, the more difficult this comparison is, which explains why no firm could rationally replace all the markets. ‘In other words, no firm can become so large that it is both the unique producer and user of an intermediate product, for then no market-based transfer prices will be available, and the firm will be unable to calculate divisional profit and loss and therefore unable to allocate resources correctly between divisions’ (Klein, 1999: 28).

After we have presented the way in which Austrian theory links the destructive entrepreneurship to productive organization, we will show that the complexity of capital structure puts constraints on any implementation of entrepreneurial discoveries in the firm, and thus determines an exploration-exploitation dilemma, reinterpreted in Austrian terms. This approach of the dilemma through complexity adds a new argument to the function of the destructive entrepreneur, as defined by modern Austrian theory. We will then explain how this addition highlights a reverse causal relationship, which never had been pointed out by its literature, between bad institutions and the destructive entrepreneur. The last section concludes.

2. The destructive entrepreneur

The theme of the destructive entrepreneur was explicitly introduced by Baumol (1990, 1993). He designated respectively the productive, the unproductive and the destructive entrepreneur as those who directly or indirectly increase the net collective product, simply redistribute it, or decrease it. But economists (Coyne *et al.*, 2010; Foss and Foss, 2002), reinterpreted the subject, in using the Austrian theory of entrepreneurial organization and capital³. Foss and Foss (2002) are particularly interested in cases, such as for example in the ‘open corporations’ (Fama and Jansen, 1983) where a principal (the ‘capitalist-entrepreneur’) chooses to exploit his comparative advantages in terms of ‘judgment’, by delegating to an agent (the ‘proxy-entrepreneur’ or the ‘junior partner’ in the sense of von Mises, 1966) the right to explore, discover and exploit in its place new profit opportunities. This relationship is organized within the framework of incomplete contracts. Their incompleteness is not suffered by the principal because of the prohibitive costs of drafting more complete contracts, as envisaged by the agency theory (Fama, 1980; Jensen, 1986; Jensen and Meckling, 1976)⁴, but strategically chosen because of the need for the principal, in a dynamic universe of ignorance, to leave to the agent the necessary latitude to explore and possibly discover new opportunities to the greatest benefit of the partners (and the firm as a whole); what Foss and Foss (2002: 103) define as the ‘joint monetary surplus’. In the Austrian open-ended universe, a complete contract could not be defined as optimal because it is not possible to know in advance a new asset or new attributes of an asset (otherwise, this means they are already discovered, a contradiction in terms). It is therefore important, in terms of incentives, for the principal to leave a certain vagueness in the drafting of contracts on the agent’s activity, so as to allow him to discover and exploit unknown profit opportunities. From this perspective, ‘when capture increases surplus, he [the agent] is engaging in productive entrepreneurship’ (Foss and Foss, 2002: 103).

But the coin has its flip side. The productive entrepreneur can turn into a destructive entrepreneur. In fact, the incompleteness of contracts gives the agent the possibility of diverting economic rights for his own benefit, that is to say, of taking control over the attributes of the assets, to the detriment not only of the principal, but of the joint monetary surplus. ‘When an individual captures economic rights (i.e., takes control over attributes) that reduces joint monetary surplus he is engaging in destructive

³Let us point out that this Austrian theory of the destructive entrepreneur does not refer to the Schumpeterian process of creative destruction. Schumpeter (1934, 1942) explains that the necessary consequence of entrepreneurial innovation, as a form of negative externalities, is the destruction of a certain number of existing activities in the whole economy. But this destruction is in a way a condition of economic prosperity, and therefore constitutes progress. Certainly, for the heirs to the Austrian subjectivist tradition, the implementation of an entrepreneurial discovery inevitably renders obsolete some current plans (Kirzner 1973; Rothbard, 1962; von Mises, 1966). But in Foss and Foss theory (2002), the destructive entrepreneur negatively affects the social surplus. For an analysis of the controversial relationship between Austrian theory and Schumpeter, see, in particular, Aimar (2009); Gick (2002); Kirzner (1999).

⁴This incompleteness of the contract leaves room for either agents’ opportunism (Williamson, 1985a and 1985b, 1991), or to ‘honest disagreements’ between the parties, when differences of appreciation rise up (Alchian and Woodward, 1987, 1988). It can even bring about responsibility shirking, all the more developed in the case of monitoring teams or of multiple directorships (Andres *et al.*, 2013; Cashman *et al.*, 2012; Fich and Shivdasani, 2006). These cases are among many examples that swell agency costs arising from the delegation of tasks within centralised systems of coordination (Alchian and Demsetz, 1972; Coase, 1937).

entrepreneurship' (*ibid.*, p. 2). The agent (the proxy-entrepreneur manager) increases his own well-being to the detriment of the interests of the principal (the capitalist) and the overall value of the firm: '... with increased discretion over multi-attribute assets, Y (X) will discover more new ways of controlling attributes, which increases his own benefit, but reduces expected joint surplus' (Foss and Foss, 2002: 11).

Faced with this opportunism resulting from this managerial discretion, the principal has to choose the best contractual combination, allowing him to maximize his expected income. How can he do it? Following the approach of Foss and Foss (2002), inspired by Knight (1921) and Rothbard (1962), the principal has the ability to form a judgment, namely an *ex ante* representation (a subjective anticipation) of the gains and costs resulting from the future behaviour of the agent. According to this 'appraisal', the principal will choose the optimal level of incompleteness of the contracts. That is to say, that which corresponds to the higher difference of his income between the expected total gain of the productive entrepreneurship and the expected total cost resulting from the parallel exercise of destructive entrepreneurship by the agent. The efficient organization does not therefore consist of searching out ever more complete contracts likely to eliminate opportunities for exercising destructive entrepreneurship since these contracts would limit, in a world of ignorance, the agent's capacity of discovering new opportunities and therefore limit the development of a creative entrepreneurship. To impose on the agent his choices in contractual matters, the principal has to get the ultimate right of ownership over the assets, itself causally attached, following Rothbard's approach, to the figure of the capitalist (and not to the proxy-entrepreneur-agent): 'our idea of ownership as the principal's instrument for implementing his preferred degree of contractual incompleteness is akin to Holmström's (1999) point that ownership is important in the context of the theory of the firm, not because it diminishes exposure to hold-up *per se*, but rather because it allows the owner/manager to impose his preferred incentive systems, rules and regulations on employees'. (...) 'Principals may still constrain agents' opportunities for entrepreneurial discovery in various ways, for example, by deciding on which equipment an agent can work with and how, etc' (Foss and Foss, 2002: 121).

In developing their destructive entrepreneur theory, Foss and Foss never refer to any sort of exploration-exploitation dilemma, as understood by the mutual exclusion of the two strategies (Levinthal and March, 1993; March, 1991). If ever a proxy-entrepreneur did not implement within the structure of production any discoveries profitable to the organization, or even in the whole economy, it is not because of the constraints of path dependences linked to exploitation. It is only the result of opportunism permitted by a principal's ignorance about the characteristics of his firm.

However, the Austrian theory of capital, which forms the basis of Foss and Foss' theory, allows us to understand that the complexity of the production structure can explain the emergence of an exploration-exploitation dilemma in a specifically Austrian way. Using this theory, we propose to show here that the objective of maximization of the 'joint monetary surplus' within a particular organization could lead to a minimization of the social surplus (understood in the catalactic sense of the term). According to Foss and Foss' analysis, the destructive entrepreneur negatively affects social surplus only because his action reduces his organization's 'joint monetary surplus'. We will show here that the impossibility of implementing discoveries in too complex a production structure could lead him to rationally prevent their implementation by competing firms and thus reduce the opportunities for improving the social surplus. This particular 'socially destructive-entrepreneur' (agent) did not work against the interests of the shareholder (principal), but conversely in their favour by maximizing the 'joint monetary surplus'. But this collusion of interests between principal and agent to protect the overall value of their organization would operate to the detriment of the social surplus⁵.

⁵Note that Lucas and Fuller (2017) question the value of the terms of the productive or destructive entrepreneur when used independently from the institutional setup. To the extent that surrounding institutions determine exploitable opportunities, an entrepreneur using, for example, public funds to make a profit might destroy net worth at the catalactic level if the private gain of his or her action is less than the social opportunity cost of building up those public funds; conversely, an entrepreneur who is apparently destructive because he seeks to evade price regulations or operate on the black market might actually improve the allocation of resources and thus promote social surplus, compared to a situation where he did not act.

3. The constraints of capital structure: the problem of complexity

For Austrians, the exploitation of opportunities discovered by entrepreneurs (or by proxy-entrepreneurs) allows economic progress at the catalactic level by reducing ignorance (the gap between information and knowledge). By orienting activities around assets with the highest marginal rates of return, it ensures better (more 'economical') management of scarce resources by organizations; at firm level, the new opportunity is defined as the means of making additional profits. Do these two definitions always coincide? Do firms always find it attractive to restructure their activities according to changes in marginal returns of productive factors? In other words, is investment (the implementation of the opportunities discovered) always oriented in favour of the assets with the highest relative marginal rates of return? Or does it depend on a larger set defined by current production conditions and the constraints of technological complementarity which determine not only the marginal return on assets, but also the level of aggregate profits?⁶ The answer to this question is given by the Austrian theory of the heterogeneity of capital (Kirzner, 1966; Lachmann, 1956; von Mises, 1966).

Austrian economists used the theory of capital heterogeneity and production structure to promote a successful entrepreneurial approach to the firm (Foss *et al.*, 2007a, 2007b, 2019; Klein, 2008, 2010; Sautet, 2000). But they did not draw any conclusions from it about limits to the implementation of entrepreneurial discoveries of new markets, new assets or new attributes of assets. Yet, as we will show, these limits exist due to increasing rigidities in production structure, following growth in the firm's complexity.

The firm, designated as a structure of production plans (Foss and Klein, 2012; Hayek, 1941; Kirzner, 1966; Lachmann, 1956; Rothbard, 1962), mobilizes heterogeneous and complementary resources around a profit objective. Any notion of structure cannot be separated from a notion of complexity, which is defined as the number and degree of combinations of resources used within the organization. The size of the firm can then be defined by the number of opportunities discovered and exploited within. These determine the amount of resources employed in the firm's current activity, and their degree of complementarity. The exploration-exploitation dilemma can thus be reformulated as follows: to what extent and under what conditions is there room for the implementation of new discoveries within a current structure of plans, conceived as the exploitation of already discovered opportunities?

Any implementation of a new opportunity (resulting from the discovery of new types of markets, new assets or new attributes to currently used assets) necessarily modifies the relations of complementarity between the factors, due to the change of their marginal returns, thus recomposing the whole production structure⁷. There will be an inevitable opportunity cost of the partial reallocation of factors, as a consequence of abandoning the exploitation of some current production plans in favour of new ones. The more the factors relating to the exploited opportunities are specific and indivisible, the higher this opportunity cost will be. ('The more the accumulation of capital goods proceeds, the

⁶Hayek (1967) already noted with prescience a possible opposition within the firm between strategies leading to raising the level of aggregate profits or that of marginal profit: 'The interest of a management striving for control of more resources will be to maximize aggregate profits of the corporation, not profits per unit of capital invested. It is the latter, however, which should be maximized if the best use of the resources is to be secured' (Hayek, 1967: 308). Klein (1999) rightly notes that 'the efficient scale of production is determined by outside investment opportunities, not simply the marginal returns from producing a single output. (...) if the firm is earning positive net returns at its current level of output, instead of increasing output until marginal net returns fall to zero, the firm could simply take those returns and employ them elsewhere, either to set up a new firm in the same industry or to diversify into a new industry' (Klein, 1999: 32). Klein's argument in no way contradicts Hayek's, but complements it. Firms' investments are always directed towards assets with higher marginal rates of return, even when not within the firm itself.

⁷These changes obviously invite the competing firms in the sector to react. In order to reduce or neutralise the comparative advantages of an enterprise that had implemented a discovery, they will seek to change their own production structures. But they are obviously constrained in their changes by their own organization's specifics in assets, knowledge, capability, and above all by their degree of complexity. 'Williamson is no Austrian, but he is sympathetic to Austrian themes (particularly the Hayekian understanding of tacit knowledge and market competition). His concept of asset specificity enhances and extends the Austrian theory of capital' (Klein, 2010: 157).

greater becomes the problem of convertibility', von Mises, 1966: 502). To this must be added the direct cost of using single intermediate goods which necessarily accompany the exploitation of newly discovered opportunities (Klein, 1999). The proportion of specific assets (Williamson, 1975, 1985a, 1985b, 1986⁸) relative to non-specific assets is therefore increased within the production structure as new opportunities are implemented. The use of these increasingly specific assets is a condition of the quality of coordination between these factors (see Lachmann, 1956; Milgrom and Roberts, 1995). Relations of complementarity increase within the network of specific and non-specific resources; the organization undergoes an increasing integration of the capital structure.

The implementation of a discovery within the organization will only be effective if its gains are greater than the total costs (direct costs and opportunity costs) of the subsequent restructuring, or in other words, if it increases aggregate profits. Strategic management literature has often questioned the way in which trade-off applies to taking a firm in new directions, for example by imagining their impact on immaterial assets such as brand names (Porter, 1996), characterised by sunk costs. The entrepreneur is obviously in charge of anticipating consequences of these changes; his lack of prescience may thus threaten the very survival of the organization. But the problem here goes beyond any failure of entrepreneurial alertness; the possibilities for profitable reconfiguration of the productive structure shrink, as levels of complexity rise. The ability to combat this factorial rigidity using qualities of alertness will be more and more challenged, however talented the entrepreneur. 'Whatever the various capitalists and entrepreneurs may do, they can never make mobile and transferable inconvertible capital goods' (von Mises, 1966: 515). Yet it must be understood that this problem of inconvertibility is not basically a result of any assets' inner nature, but of complexity in the structure of production, which makes their reallocation costlier and costlier. Therefore, each time production structure complexity increases, a higher gain resulting from the implementation of the new opportunity is needed to compensate for the raise in direct and opportunity costs that result from the restructuring of current plans. When this gain is no longer sufficient for compensating the whole of these costs, the firm then falls into an 'exploitation trap' (Sirèn *et al.*, 2012), understood as an inability to implement entrepreneurial discovery in its own production structure without seeing its aggregated profits fall. This situation would last as long as the net profits issued from current exploitation are higher than the net profits issued from implementing entrepreneurial discoveries. Seen from this angle, the existence of this trap would therefore not be due to insufficient organizational combinations, or to limitations of learning capabilities (Cohen and Levinthal, 1990; Deeds *et al.*, 2000; Jansen *et al.*, 2006, 2009) or from any failure of entrepreneurial alertness, but more basically to the growing complexity of the production structure.

The notion of specific assets explains the nature of contractual arrangements and the boundaries of the firm in many organizational theories; yet its relation to the complexity constraint remains uniquely Austrian. This constraint is not inconsistent with the subjective paradigm that characterizes Austrian capital theory. Clearly, the discovery of the attributes of capital comes from the entrepreneurial mind (Alvarez and Barney, 2007; Foss *et al.*, 2008; von Mises, 1966). The uses of the same factor can thus be different depending on the entrepreneur who mobilizes them and their direction depends on the entrepreneur's particular plans. But the properties (the possible uses) belong to the asset under consideration and exist independently of the knowledge one has of it. Similarly, the combination of the attributes of capital can be designated as subjective in the sense that it is discovered by an entrepreneurial mind. This does not mean that the way in which these attributes are combined with each other does not obey objective laws, articulated around the notions of complementarity and substitutability. For an Austrian who pushed the subjectivist paradigm to its limits, any increase in the size of the firm generates ever greater complementarity between assets, less and less substitutability and therefore

⁸Williamson is no Austrian, but he is sympathetic to Austrian themes (particularly the Hayekian understanding of tacit knowledge and market competition). His concept of asset specificity enhances and extends the Austrian theory of capital' (Klein, 2010: 157). We can also find these analytical similarities to the Austrians in the theories of dynamics capabilities (Teece, 2007, 2010; Teece and Pisano, 1994; Teece *et al.*, 1997) and in resources-based theory (Barney, 1991, 2001).

greater rigidity in the plans undertaken (Lachmann, 1947, 1956). In this perspective, every additional discovery implemented objectively limits a little more the possible recompositions of the attributes discovered and put to use together by the entrepreneurs or proxy-entrepreneurs.

The argument reconnects de facto Austrian theory with the literature from March (1991), but by making a major, unique contribution to it. In fact, the exploration-exploitation dilemma re-examined thanks to Austrian capital theory is now raised in new terms. It is not a question of reconciling, equilibrating the two tasks – as the theorists of ambidextrous firms try to do, in favouring a compromise between the two, by the discovery of new organizational forms – but of knowing: on the one hand, what level of complexity of the firm prevents the cohabitation of exploration and exploitation; on the other hand, how too complex/rigid firms can resist or survive faced with competition when this level of complexity is reached.

We understood that implementing the organization of new discoveries imply an increasing complexity of the production structure. That itself means a widening of the network of complementary relations between assets and consequently, fewer and fewer possibilities of substitution. When substitutability of the factors in use dominate their specificity, that is to say, when the current plans mobilize resources which, despite their relative specificity, remain re-allocatable at a relatively low cost to exploit new opportunities, then the plan structure can be transformed. The organization allows the implementation of newly discovered assets (or newly discovered attributes of assets) that increase their marginal productivity because their exploitation does not imply such a degree of decomposition of the relationships between the resources involved that it results in a decline in aggregate profits. Exploration (understood as the discovery of implementable opportunities) and exploitation thus remain compatible; conversely, when ‘current’ plans mobilize resources whose specificity dominates their substitutability, relations of complementarity between certain factors can no longer be modified without leading to a decrease in aggregate profit. The exploration-exploitation dilemma – reset in Austrian terms – then emerges.

We have thus answered the first part of the question expressed above: what level of complexity of the firm prevents the coexistence of the dimensions of exploration and exploitation? Answer: when the complementarity of factors ends up dominating their substitutability. The second question now has to be answered: faced with competition from less complex firms able to implement the discovered opportunities, the survival of these overly rigid organizations is under threat. How can they react rationally?

Some organizational designs are precisely intended to slow down the process of increasing the complexity of firms as their size increases. For example, the well-known shift from the Unitary firm to the Multidivisional firm (Chandler, 1977) is believed to promote greater strategic flexibility by allowing the integration of new market segments and the diversification of activities. The decentralization of the hierarchy and the separation of functions alleviate the management of factors by segmenting their architecture. But the various autonomous divisions are themselves organized in unitary form, which only pushes the problem to a lower level, simply delaying its occurrence. More fundamentally, organizational design precisely finds its limits in technical organization of production. Divisions inevitably have to share common resources, which again poses problems of coordination/cooperation and the choice of factor allocation favouring certain activities, at the expense of others. These two elements combined make it possible to understand why, according to many studies (see Weir, 1996), there is no better profitability of these firms *M* relative to firms *U*. These constraints resulting from production structure complexities can also explain the limited efficiency of the various ambidexterity designs developed over the last twenty years (see Wilden *et al.*, 2018).

Is it then enough for firms to accumulate monetary reserves in order to outsource part of their activity or R&D through patent buybacks? But these practices, common enough in bigger groups, do not provide an answer. We might note, firstly, the cost of constituting these reserves (direct cost and opportunity cost) and secondly, that the ‘agent’ cannot know in advance how big these monetary reserves should be, since before he has discovered them he is unable to appreciate how many new opportunities there will be and how much they will make. But the fundamental point is that externalization will not change the fact that it may be technically impossible to implement into current firm

activity new assets or new uses of assets without seeing a decline in aggregate profits if restructuring leads to excessively high direct and/or opportunity costs. Likewise, if subsidiaries' product innovations start competing with the goods produced by the parent company, there is no guarantee that the profits derived from their exploitation will be higher than the lost profits resulting from the decrease of the base customer of the parent company. This loss will be the all the higher, the bigger the parent company's market area.

Yet, we cannot neglect the practical importance of technological progress if we want to take into account the dynamics of complex firms. Seen in the terms of our analysis, innovation could be described as the element that allows the tissue of possible substitution of complementary factors used in production structures to grow. The structure could thus be rearranged to integrate entrepreneurial discoveries which would not otherwise be implemented. This reasoning joins another view, already proposed by Hayami and Ruttan (1970, 1971) and Ruttan (1984), in the sector of agricultural development. They estimated and compared various functions of rice production in some South East Asian economies (South Korea, Japan, Taiwan, etc) and saw that the dynamic of factorial combinations issued from innovations had determined gaps in productivity between countries of the region. The innovation that we refer to in our argument is not motivated by a scarcity of any assets (Hayami's and Ruttan's cultivatable land surfaces), but by the reduction of profitable possibilities of factorial re-composition following increased organizational complexity. From this point of view, it is possible to see, in the complexity and rigidity of the structure of production, a microeconomic factor stimulating technological progress. Without them, the very large, complex groups would systematically have to wait for rates of return from current plans to fall enough to make it profitable to incorporate discoveries into the production structure.

Yet the analysis should not stop here. If complexity is an element that requires innovation to take up more weight in the firm and move it towards more exploration, it will also activate two counter forces: on the one hand, the results of R&D to remove these blockages linked to complexity will be random by nature. The Austrian notion of entrepreneurial surprise (Kirzner, 1973, 1979, 1997a), opposes the idea of being able to plan a technological discovery meant to prise open the constraints of complexity. How can we forecast which innovation might increase asset substitutability in a current structure of production? On the other hand, the type of technological progress needed to reduce factorial rigidities will partly come from forces outside the control of a particular firm: scientific progress, human capital, but also actions by public authorities (Ruttan, 1982). Because their effects spread throughout the whole economy, the big groups will not be the only ones to capture their advantages; firms in competition with them that have not reached a similar level of complexity will also benefit at least partially. In the end, if organizational design therefore (1) does not prove to provide suitable or sustainable solutions, and (2) that the effects of technological progress are not always sure to offer the big, over complex, over rigid groups enough comparable advantages to be profitably restructured, what can these firms then do to survive competition? One answer to this question would be to promote contractual structures that allow them to directly or indirectly block the implementation of these discoveries by potential competitors. Thus, a whole range of well-known activities (foreclosure, sleeping patents, formal influences on business partners, or even tax structures favourable to big businesses as compared to the little ones, etc.) would then be understood as a means of directly or indirectly preventing competing firms from exploiting new opportunities and implementing discoveries into the ecosystem; this would increase established firms'⁹ joint monetary surplus but decrease social surplus.

⁹Note that within Austrian theory itself, we find the idea that freedom of contracting is not sufficient to ground market efficiency (Hayek, 1944, 1960, 1967). Thus 'that freedom of contract, like most freedoms of this kind, does not mean that any contract must be permitted or be made enforceable, but merely that the permissibility or enforceability of a contract is to be decided by the general rules of law and that no authority has power to allow or disallow a contract on the basis of its specific contents' (Hayek, 1967: 306). Contracts have to respect the spirit of competition, conceived not only as the freedom for everyone to access the existing territory of opportunities, but also that of finding, without artificial constraints, the means to exploit them once discovered.

But how can these firms, whose productive organization has become too rigid, succeed in imposing contractual structures favourable to their corporate interests? Quite simply by influencing, through lobbying, the institutional structure that governs competition rules and the sphere of authorized industrial practices. The previous point allowed us to connect in an original way the exploitation-exploration dilemma to the Austrian analysis of the entrepreneurial organization. The next point will allow us to redefine the Austrian relationship between the institutions and entrepreneurship again in an original way, and which bears much fruit.

4. The destructive entrepreneur and bad institutions: a reverse causality

The Austrians (Hayek, 1968; Kirzner, 1979, 1985) realised very early on the importance of the right institutional framework for good entrepreneurship: ‘The central question then looms even more significantly than ever: what institutional frameworks are best suited to tap the reservoir of entrepreneurial alertness which is certainly present in potentially inexhaustible supply – among the members of society?’ (Kirzner, 1985: 25). Economic interventionism modifies the structure of entrepreneurship compared to that of a market economy, as it favours a different set of opportunities of monetary gains. In this way, entrepreneurial gain in an administered economy can come from the discovery of opportunities for rent-seeking, protection or ‘corruption’ (see Kirzner, 1985: 145) by the public authorities rather than discoveries of improvement of the consumers’ lot.

Much Austrian literature has since appeared on this subject (Kirzner, 1992, 1997a, 1997b; Holcombe, 1998; Boettke and Coyne, 2003, 2007; Coyne and Leeson, 2004; Harper, 2003; Sautet, 2005). It joins points of view opened by other authors such as Baumol (1990, 1993), Dallago (1997, 2000). Asking what determines the nature of the allocation of entrepreneurial input, they explain the dominance of the destructive entrepreneur over the productive entrepreneur by bad institutions. Entrepreneurs rationally orient their efforts towards activities which allow maximum profit, without relation to social well-being (Baumol, 1990; 1993; Bowen and De Clercq, 2008; Minniti, 2008; Murphy *et al.*, 1991; Sauka, 2008; Sauka and Welter, 2007). However, it is the institutions which, by defining the structure of earnings of entrepreneurial activity, determine the convergence of corporate profit with social value. The destructive entrepreneur would thus take advantage of the loopholes in the politico-institutional system for dissociating his own interest from that of the community in general.

All these authors insist on the importance of institutions for the emergence and development of the destructive entrepreneur¹⁰. Yet they never suggest a reverse causal relationship: namely that the starting point would be the destructive entrepreneur, and the point of arrival, the degradation of institutions. Austrians like Coyne *et al.* (2010), Armentano (1990), McAffie and Vakkur (2005) have pointed out that the Sherman Act was the result of the demand of private groups for reducing competition – an example of what is now called ‘crony capitalism’ (Kahn and Formosa, 2002; Davis, 2003; Vaugirard, 2005; Khatri *et al.*, 2005; Munger and Villareal-Diaz (2018/2019). But beyond noting the advantage for

¹⁰Classifications may differ among the authors concerned with the relationship between institutions and entrepreneurship (seen in its destructive or creative form). For Coyne *et al.* (2010), ‘nonproductive, unproductive and destructive entrepreneurs’ belong to a single category, opposed to ‘productive entrepreneurs. The distinction between the two is understood in terms of the net impact on economic growth, itself determined by the sum of trade-off and innovation. Regarding the forms of the destructive or non-productive entrepreneur, most authors (Baumol, 1990, 1993; Coyne *et al.*, 2010; Dallago, 1997) consider them the same elements, ranging from tax evasion to illegal activities (drugs, racketeering, etc) through corruption: ‘Non-productive entrepreneurship takes different forms of activities which include rent seeking through litigation and take-overs, and tax evasion and avoidance. It also includes illegal and shadow activities such as drug pushing, racketeering, blackmailing and corruption’ (Baumol, 1990). All the authors see path dependence, defending the idea of cumulating or self-reinforcing entrepreneurial processes, whether they are productive or destructive. However, we may note that if some authors (Grossman and Minseong, 1995; Nunn, 2007) see in rent-seeking the worst form of non-productive entrepreneur, contributing the most to the decrease of the collective surplus, by wasting real resources even it does not destroy them, others (Murphy *et al.*, 1991) conversely see it as a non-entrepreneurial character. Faced with this difference, some have questioned the capacity of the concept to distinguish a destructive entrepreneur from a productive entrepreneur (see Desai *et al.*, 2010; Garba and Tsauni, 2016; Lucas and Fuller, 2017).

current firms in reducing competition, these authors do not explain the conditions under which they will find it more profitable to allocate their scarce resources towards institutional lobbying than explore opportunities and implement entrepreneurial discoveries in their activities. They do not connect the issue to the constraints of corporate governance, heterogeneous structure of capital, or to the Austrian idea of ignorance. Thus, the quality of the institutional apparatus is never considered by all these authors and theories as a variable, correlated with the existence of these big organizations, whose complexity would no longer enable them to implement catallactically fruitful entrepreneurial discoveries in their activities, because they reduced their own 'joint monetary surplus'. We therefore do not find an analysis of how these 'big' organizations would then rationally seek to influence the public authority in such a way as to modify/design competition law (structure of contracts and permissible practices) and thereby prevent as much as possible more flexible firms from exploiting their discoveries.

Foss, Klein and McCaffrey did note that 'entrepreneurship can influence the institutional setup in addition to being influenced by it' (Foss *et al.*, 2019: 31). But they never applied their own theory of the destructive entrepreneur to institutions. This is actually logical, as they limit their analysis to the relationship between principal (capitalist-owner) and agent (managers or proxy-entrepreneurs) within the firm. As their conclusions did not concern the market, destructive entrepreneurship could not have any consequences on the institutions that frame its activities.

Of the many theories that have attempted to endogenize institutions, only a few have seen the entrepreneur as a causal factor. Public choice theory (Buchanan, 1987; Buchanan *et al.*, 1980; Buchanan and Tullock, 1962) sees the action of the political entrepreneur¹¹ as having a negative effect on the institution. Their actions (whether destructive or wasting), grant advantageous conditions and protections to groups that may harm the public interest, in exchange for earnings, prestige and electoral support that contribute to them staying in power. The political entrepreneur thus hinders political capacity to favour the maximization of the social surplus (Dilorenzo, 1987; Lopez and Leighton, 2012); in a parallel way, the neo-institutional theory of the firm (Dimaggio, 1988; Einsenstadt, 1980; Li *et al.*, 2006; Garud *et al.*, 2007; Hardy and Maguire, 2008), introduced the figure of the institutional entrepreneur; he is able to influence the surrounding institutions, using his own resources, as needed by particular or organizational interests.

But these two types of theories find the same limits for the same reasons. According to Public Choice, the political entrepreneur (point of departure) offers his services to a group of private organizations (point of arrival), to escape the prisoner dilemma, which prevents them from uniting to defend their corporate interests (Jones, 1978; Wagner, 1966). There is no reference to capital structure, nor to the degree of the firms' complexity, which would rationally bring a private entrepreneur to ask for a political entrepreneur's support to ensure the survival of his over-rigidified organization by preventing his more supple competitors from implementing their discoveries in their production structures.

The theory of the institutional entrepreneur is similarly lacking. Its literature has underlined the paradox of a disruptive entrepreneur acting within a general theoretical framework meant to determine his behaviour (Seo and Creed, 2002). While this theory initially led the theory to consider institutional entrepreneurship only in emerging fields, which are not subject to the influence of the surrounding institutions, the analysis has gradually been extended to mature fields (Greenwood and Suddaby, 2006; Sherer and Lee, 2002), in which contradictory logics of interest between different areas (multi-localizations, multi-activities) of a firm can trigger demands for institutional innovation capable of better coordinating its resources. But the authors concerned never link these contradictory logics to the existence of an exploration-exploitation dilemma. They never establish a relation between

¹¹'A political entrepreneur is someone who recognizes that a group of individuals share a desire for the provision of a collective good or common goal, and who believes there to be a profit to himself in undertaking the costs of providing an organization which will furnish such a goal' (Jones, 1978: 499). The term 'political entrepreneur' is Wagner's (1966) in a review of Olson (1965). The notion is found in Ruttan and Hayami (1984).

the rational exercise of a destructive entrepreneur and the degree of complexity/rigidity of the production structure.

Whether at the Public Choice, or the neo-institutionalist theory level, the microeconomic foundations of this destructive entrepreneurship thus remain undetermined. It is easy to understand why a firm would use political lobbying to capture rents. But this rationality is never theorised by a cost-benefit analysis, the terms of which would themselves be conditioned by the structural complexity of production, and the corresponding reduced possibilities of profitably implementing entrepreneurial discoveries. When the direct and indirect costs of implementing technological progress in a complex organization become too high, the costs of lobbying become relatively lower at each stage and encourage the exercise of destructive entrepreneurship on institutions to develop. The entry fixed costs of lobbying (constituting a network) may be high, but once accepted, their marginal costs are constant and even decreasing (each extension of the network reduces a new contact's 'purchase' costs). But in addition to this is the central fact, that as the level of the firm's complexity rises, the opportunity cost of lobbying decreases more and more, as the resources engaged will find less and less profit, if being reallocated in implementing entrepreneurial discoveries. We may thus theorise why and in which conditions firms might rationally accept to invest their resources in lobbying rather than explore and implement entrepreneurial discoveries in order to reduce their fragility and avoid the risk of bankruptcy in the face of the competition.

This dimension offers us a second axis of rapprochement between the view proposed in this article, and Ruttan and Hayami's theory developed to explain the roots of the success of the Asian Green Revolution characterised at the end of the 60s, by an enormous increase in agricultural productivity. Ruttan and Hayami, applying North's thesis (1968, 1989, 1990, 1991) to the economics of development, themselves note the institutions' wide influence in the innovative process. The notion of induced technological progress is echoed by the notion of induced institutional change (Hayami, 1975; Ruttan, 2011; Ruttan and Hayami, 1984). But the offer of an institutional change, favouring innovation and social surplus through benefiting better resource allocation at a macroeconomic level, does not appear spontaneously on demand. Powerful groups of interest, losing out when innovation appears, may block and hinder it (Hayami, 1988, 2007; Hayami and Godo, 2004; Ruttan, 1989). The costs of mobilising institutional change, modifiable in the long term by knowledge of the social sciences (Ruttan, 1984, 2011; Ruttan and Hayami, 1984), may thus turn out to be too high compared to their benefits.

We now see why a destructive entrepreneur, motivated by the complexity of its firm, might slow or prevent implementation of entrepreneurial discoveries in his competitors, by placing obstacles in the shape of laws favouring big organizations, to the detriment of the more supple ones. Using empirical data, Philippon (2019) argues that the biggest US firms defend their profits by lobbying against competition, resulting in a drop of national investment and innovation opportunities. These causes would be on the microeconomic scale but their consequences would be macroeconomic, as in Ruttan and Hayami.

5. Conclusion

Our analysis extends the field of the Austrian theory of the destructive entrepreneur by reintegrating into its scope the exploration-exploitation dilemma, reinterpreted in Austrian terms. In Foss and Foss' theory, the destructive entrepreneur destroys value to the detriment of the shareholder and it is only to the extent that he reduces the 'monetary joint surplus' that he produces a harmful effect on the social surplus. Our approach extends the proposed theory by showing that the destructive entrepreneur can also be understood as an effort to maximize the monetary joint surplus of firms that have become too complex and rigid to be restructured profitably. But this effort would here be made at the expense of the whole economy. This analysis raises big issues in the macroeconomic field because for Austrians it is implementing entrepreneurial discoveries that determine the ability of our market economies to overcome ignorance and thus ensure a 'tendency towards equilibrium' (Kirzner, 1973; von Mises, 1966). If these implementations are blocked by complex firms to ensure their survival, the efficiency of market mechanisms and of the 'Competition as a Discovery Procedure' (Hayek, 1968) is called into question.

The article also enriches to the Austrian theory of the relation between institutions and entrepreneur, by inverting the causal relationship between the two. While the Austrians traditionally see the institutional environment as either encouraging or discouraging ‘good’ entrepreneurship (in much the same way as Baumol, who sees the institutions as being one causal element of the nature of entrepreneurial behaviour), our argument defends the idea that the destructive entrepreneur would be one of the causes of degradation of the institutions devoted to competition. This reverse relation of causality, as yet unnoticed by Austrian literature, should encourage new reflexions for policies meant to improve the institutions.

Beyond the Austrian school, our vision could also be said to enrich the theories that see in the entrepreneur a cause of institutional changes, in offering them microeconomic bases for bad institutional entrepreneurship. The complexity of the productive organizations and the consecutive factorial rigidity would constitute a key element for understanding the degradation of the institutions. Adding this information to the whole of economics theory would thus contribute to lowering the long run mobilization costs of institutional change (Ruttan, 1984, 2011, Ruttan and Hayami, 1984) and thus to increasing the social surplus.

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