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## Article

# Baumol's theory of entrepreneurial allocation: A systematic review and research agenda

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## Baumol's theory of entrepreneurial allocation: A systematic review and research agenda

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### ABSTRACT

Baumol's theory of entrepreneurial allocation has been widely utilized and cited by management and entrepreneurship scholars over the last three decades. Despite the increasing popularity, there is no systematic review of prior studies to integrate the literature, highlight the missing links, and provide avenues for future research. In this vein, we reviewed and contently analyzed 76 articles published from 2001 to 2018. In our systematic review, we (1) classified the articles in five main categories, (2) discussed studies within each category, (3) proposed a revised version of entrepreneurial allocation theory, and (4) outlined the research gaps and future research opportunities. Our review shows that beyond Baumol's focus on the institutional factors, individual factors such as intention, talent, and perception together with entrepreneurial actions for dealing with institutional arrangements can also explain the allocation of entrepreneurial efforts, under-examined in prior studies. This opens novel avenues for future studies to further extend this promising research stream.

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## 1. Introduction

Entrepreneurship is one of the key mechanisms for economic development (Schumpeter, 1934). Understanding how and why these two phenomena are connected is important for designing effective policies (Acs, Braunerhjelm, & Karlsson, 2017). Baumol's (1990) seminal article is one of the widely accepted theoretical frameworks explaining this relationship (Boettke & Piano, 2016). Baumol theorized entrepreneurial behavior as the response to the incentives presented by the institutional framework, and discussed why entrepreneurship leads to development in some countries, but not in others (Sautet, 2013).

The theoretical and policy implications of Baumol's framework (1990) have led to extensive studies over the last three decades. It has been cited by scholars in over 5000 manuscripts, as presented by the Google Scholar search engine. This extensive body of literature is susceptible to research fragmentation, which not only can prevent us from obtaining a decent picture of what has been done so far, but also makes it difficult to identify research gaps and future research opportunities. Adopting a Systematic Literature Review

(SLR) approach, we highlight missing links in the extant literature, for instance in conceptualization, level of analysis, mechanisms underlying entrepreneurship allocation, as well as its connection with the economic performance, and methodological issues. In this paper, we first present an overview of Baumol's theory, then explain the process by which the articles were selected and analyzed. The reviewed articles are then classified, and discussed, leading to a decent understanding of the existing knowledge. We finally posit the research gaps in the literature and future research agenda.

## 2. A brief overview of Baumol's theoretical framework

Similar to Schumpeter (1934), Baumol (1990) argues that entrepreneurship is essentially about the re-combination of resources. However, he goes beyond Schumpeter and posits that these activities may not be necessarily innovative (as he calls, productive), but can be unproductive, or even destructive. Baumol (1990: 897) conceptualizes entrepreneurs as "persons who are ingenious and creative in finding ways to augment their own wealth, power, and prestige", and may choose self-interested paths, leading to activities that may not end in social production or economic progress (Murphy, Shleifer, & Vishny, 1991). He argues that the allocation of resources and talents to the different paths of productive, unproductive, and destructive entrepreneurship determines the economic performance. As such, there must be proper

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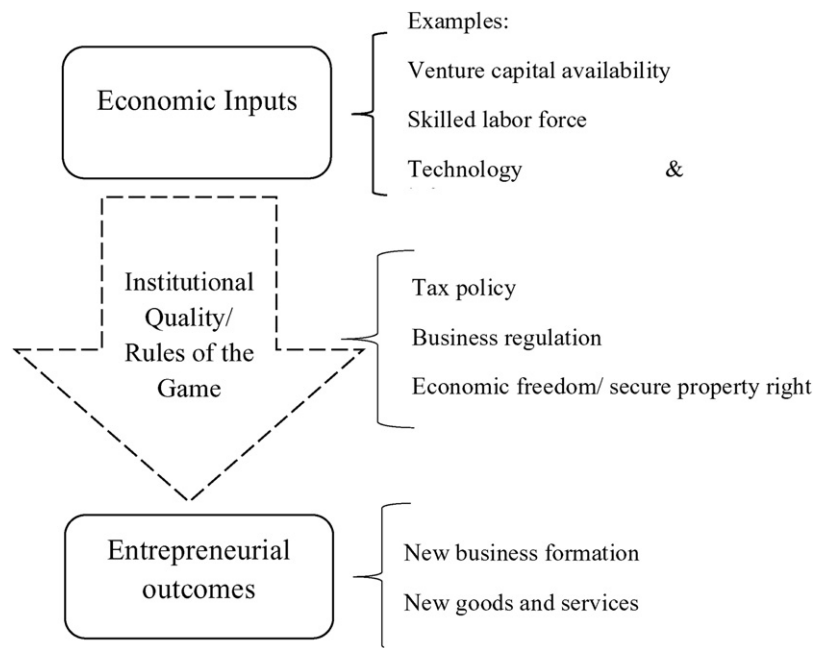


Fig. 1. Baumol's theoretical framework, adopted from Sobel (2008).

conditions for allocating resources to productive activities versus unproductive/destructive activities. Baumol (1990) suggests the institutional framework as the main channeling mechanism of entrepreneurial efforts, as summarized by Sobel (2008) in Fig. 1.

### 3. Method

Following Cronin, Ryan, and Coughlan (2008), our systematic review consists of three steps: searching the literature, analyzing and synthesizing the literature, and writing the review. The following steps were taken to complete the first stage and select articles:

*Locating the targeted studies:* we searched Scopus as the largest database with the most comprehensive collection of journals to find articles published from 2001 to 2018.<sup>1</sup> However, we also searched other well-known databases, such as Web of Science, ProQuest, and Science Direct. In the end, we combined the results obtained from these databases to mitigate non-covering bias. The initial search provided us with 430 articles. This inventory included papers with “entrepreneurship, productive, unproductive, destructive, and Baumol” in their titles, abstracts, and/or keywords.

*Inclusion criteria:* criterion sampling (Patton, 1990) was used to create the final list of the articles in two steps. In the first step, we used the three criteria of language, relevance, and type of research, and hence excluded non-English articles, non-entrepreneurial outcomes (outside the scope of entrepreneurship), book chapters, proceedings, and annual reports. This step led to an inventory of 260 articles. Then, we refined the article pool by delving more into the articles and removing descriptive articles that provided historical description of the field, as well as those articles that gave Baumol's theory a minor role to complete their main discussion. Yet, we did include the articles in which Baumol's theory was combined with other approaches. Eventually, we reached a

collection of 76 articles. The following chart presents the frequency of included articles. As shown in Fig. 2, more than two thirds of the articles were published from 2010 to 2018, indicating an increasing attention to Baumol's theory during this time.

In the second stage of the SLR, content analysis was performed to condense the sampled articles into fewer categories and identify key research themes and trends in the literature (Elo & Kyngäs, 2008). At first, the authors read the articles in two rounds to immerse in the data and obtain an overall picture. Then in organizing stage, every individual author described all aspects of the articles through open coding, using a codebook (see appendix 1). Relying on the coding sheets, each author independently categorized the articles. After discussing different categories and areas of disagreement, the five main following categories were developed: (a) role of institutions, (b) role of individual factors, (c) entrepreneurial action and institutional change, (d) entrepreneurial allocation influencing economic performance, and (e) beyond Baumol's typology (see appendix 2).<sup>2</sup>

To draw a better picture of the current literature, we analyzed the articles on the basis of four questions: What methods are used to conduct the research? From which country/countries data are collected? Which type of entrepreneurial allocation is addressed? And what conceptualization of entrepreneurship is used? Table 1 shows an overview of the research based on these dimensions.

Concerning entrepreneurship typology, almost all the studies were dedicated to productive entrepreneurship and its comparison with unproductive entrepreneurship. Only a small number of studies investigated unproductive or destructive entrepreneurship alone or in comparison with each other. As shown in Table 2, Baumol's three typologies are largely conceptualized by using two main indicators: the outcome of the activity and the entrepreneur's action.

<sup>1</sup> Of course, since we are still in 2018, our actual timeframe is until 31 August 2018.

<sup>2</sup> We could not classify six articles into any of these categories, and hence we put them under another separate set entitled “non-categorized”.

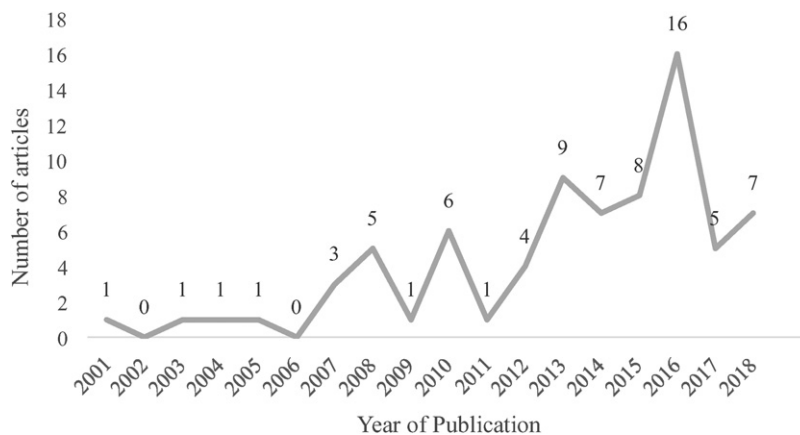


Fig. 2. Frequency of articles in terms of the year of publication.

Table 1  
Context, method, and level of analysis in reviewed articles.

Research method	Quantitative	Regression analysis Mathematical modeling Experimental investigation Case study
	Qualitative	Historical analysis Grounded Theory Ethnography
Context	Single country	Brazil, Bulgaria, China, Germany, Greece, India, Italy, Kosovo, Russia, Spain, Sudan, USA
	Cross-country	<i>Homogenous</i> : African countries, Transition economies, Post-communist, Developing, Un-developed, Post-socialist, Post-conflict countries <i>Comparative</i> : High income vs. low income countries, Developed vs. undeveloped countries, Developed vs. post-transition, Transition economies vs. central and eastern Europe, GEM members, OECD members
Level of analysis	Macro	Country/region
	Meso	Industry
	Micro	Individual/business

Table 2  
Conceptualization of entrepreneurship types in the reviewed articles.

	Productive	Unproductive	Destructive
Activity outcomes	Value creation Positive sum return Individual & social return	Value appropriation/redistribution Zero sum return Individual interest	Value destruction Negative sum return
Entrepreneur's action	Production Opportunity discovery & exploitation New combination of factors High-growth entrepreneurship Formal activity Market entrepreneurship	Engagement in political process Rent seeking Lobbying Informal activity Political entrepreneurship	Illegal/criminal/underground activity Corruption

In a few studies (Coyne & Leeson, 2004; Coyne, Sobel, & Dove, 2010; Sobel, 2008), unproductive and destructive entrepreneurship are classified under one category and there is no clear distinction between them. Baumol himself does not present a clear distinction between unproductive and destructive activities (Desai, 2016). To operationalize the three types of entrepreneurship, different criteria are used in different studies. Productive entrepreneurship, for instance, is measured based on the GEM's TEA Index (Crnogaj & Hojnik, 2016), rate of startup or business ownership (Kreft & Sobel, 2005), self-employment (Fritsch, Bublitz, Sorgner, & Wyrwich, 2014), number of SMEs (Gohmann, Hobbs, & McCrickard, 2008), value added per business (Ostapenko, 2015), or Schumpeter's typology of entrepreneurial activity (Collins, McMullen, & Reutzel, 2016). Overall, there is no widely accepted approach for conceptualizing and measuring Baumol's typology (Borazan, Arneric, & Coric, 2016).

## 4. Review and discussion of the five categories

### 4.1. Role of institutions

This category includes the largest number of the papers and focuses on the influence of institutional factors on entrepreneurship allocation investigated through empirical testing (Sobel, 2008), explanatory analysis (Coyne, Michaluk, & Reese, 2016), or mathematical modeling (Desai, Acs, & Weitzel, 2014) in a wide range of contexts, using both cross-country and single-country data. Nearly, half of the papers analyze the impact of formal institutions (or "rules of the game", as named by Baumol) such as trade policies (Holmes & Schmitz, 2001), economic freedom (Gohmann et al., 2008), credit constraints (Bianchi, 2010), entrepreneurship education (Levie & Autio, 2008), and labor market (Brixiova, 2010, 2013) on allocating entrepreneurship to productive paths. For

example in a model proposed by Sanders and Weitzel (2013), it is suggested that property rights or credit availability determine the choice of productive entrepreneurship versus employment or raiding. However some recent studies have shifted their focus on informal institutions such as corruption (Berdiev & Saunoris, 2018; Wiseman, 2016) and have found that countries with higher level of corruption experience lower level of productive entrepreneurship. Boudreaux, Nikolaev and Holcombe (2018) in a different study show that corruption, not only in the macro level of economy but also in the micro level of industry, encourages entrepreneurs to allocate resources toward industries in which profitable but destructive activities are more prevalent, such as construction industry. A few number of interesting studies analyze the simultaneous but separate influence of formal and informal institutions. For example Mathias, Lux, Russell Crook, Autry, and Zaretski (2015) carried out a cross-country analysis to investigate the influence of private ownership and cooperative activities on unproductive entrepreneurship and found that these two institutional arrangements lead to a reduction in informal entrepreneurship. Of course, we need more research on the mutual relationship between formal and informal institutions, specifically their complementary or substitutive relationships. Some research have taken an explanatory historical approach (inspired by Baumol's adherence to historicism) to study how institutional inefficiencies such as institutional uncertainty in Romania (Coyne & Leeson, 2004) or institutional inertia in post-socialist countries (Kshetri, 2009) lead to an increase in the prevalence of unproductive/destructive entrepreneurship. Pittaki (2018) provided a historical analysis of the influence of tax regime functioning on entrepreneurship allocation in Greece. The continuous change in the tax legislation, the arbitrary functions of tax authorities, and the corrupted relations between taxpayers and authorities represent an unfair and illegitimate tax regime leading entrepreneurs to unproductive paths. Overall the studies in this category, overwhelmingly confirm the influence of institutional factors on choosing productive versus unproductive/destructive paths.

#### 4.2. Role of individual factors

Assuming that entrepreneurs are a homogeneous population with predetermined goals, Baumol (1990) believes that the institutional framework in general are the only determining factor that influence entrepreneurship allocation. However, some recent studies contend that entrepreneurs are heterogeneous in some capabilities, preferences, and goals that affect their choices and decisions (Stenholm, Acs, & Wuebker, 2013). In this category, the researchers' concentration shifts from the role of institutions and macro level factors to individual variables such as talents, psychological characteristics, or perceptions especially through experimental investigation. For example, Weitzel, Urbig, Desai, Sanders, and Acs (2010), distinguished between creative and business talent and found that entrepreneurs with stronger creative talent overlook their own returns and hence are more prone to pursue productive options, while entrepreneurs with stronger business talent possess more selfish preferences and thus are more willing to choose unproductive options. Collins et al. (2016) investigated the influence of entrepreneurs' perception of institutions on the decision to choose between productive and unproductive behaviors. They confirmed that the perception of prevalent distributive justice reduces the perception of prevalent corruption and increases productive entrepreneurship. Hmieleski and Lerner (2016) found that psychological characteristics (egotism, psychiatric disorders, and Machiavellianism) had a strong negative (positive) relationship with productive (unproductive) entrepreneurship. Overall, the findings of the studies in this category reveal that the allocation of entrepreneurship is not merely

influenced by institutional factors, but even in a context with efficient (inefficient) institutions, the entrepreneur's characteristics can lead them to unproductive/destructive (productive) paths.

#### 4.3. Entrepreneurial action and institutional change

Baumol (1990), however, has been criticized for considering institutions as exogenous (Kalantaridis, 2014), and ignoring feedbacks from entrepreneurs to institutional forces (Douhan & Henrekson, 2010). Under such circumstances, there will be no place for institutional change, especially as a result of entrepreneurial action (Kalantaridis, 2014). But a recent research stream, with an especial focus on conceptual frameworks or comparative case studies, suggests that entrepreneurs are not passive actors who are controlled by institutions, but they can influence institutions or even attempt to change them as well. For instance, Henrekson and Sanandaji (2011) propose three mechanisms through which entrepreneurs respond to institutional forces: compliance with the existing institutional structure (abiding), rejection of the institutional structure (evading), or trying to change institutions (alerting). Bureau (2014) clarifies institutional changes through introducing the concept of *entrepreneurial piracy*. He argues that entrepreneurs are able to change rules of the game within the current institutional arrangement and transform their seemingly destructive activities into productive ones. Interestingly, some research have revealed that institutional gaps provide entrepreneurial opportunities and alert profit-seeking entrepreneurs under the titles of *evasive entrepreneurship* (Elt & Henrekson, 2016) or *indirectly productive entrepreneurship* (Padilla & Cachanosky, 2016) devise innovative initiatives to exploit these opportunities and mitigate the destructive influence of institutional inefficiencies. These findings confirm that entrepreneurs are not always trying to mitigate the effect of inefficient institutions on their action, but sometimes they also exploit these inefficiencies as profitable opportunities to fill the institutional gaps.

#### 4.4. Entrepreneurial allocation influencing economic performance

Studies under this category investigate the influence of entrepreneurship allocation on economic performance especially through mathematical modeling based on economic growth index. According to a model proposed by Mehlum, Moene and Torvik (2003), countries with a higher level of productive (unproductive) entrepreneurship experience higher (lower) income and higher (lower) levels of long-term growth rates. Brou and Ruta (2013) modeled the influence of rent-seeking on economic growth. Based on their findings, rent-seeking behaviors deteriorate innovation through reducing R&D activities or changing the number of active companies. Recent studies have tried to develop a more sophisticated model of the relationship between entrepreneurship allocation and economic performance. Considering the complementary link between productive and unproductive entrepreneurship, Antony, Klarl, and Lehmann (2017) developed an internal growth model. Under poor institutional conditions, higher levels of rent-seeking activities lead to low quality growth, while a stronger institutional framework leads to high quality growth, but at lower levels. In order to better measure the influence of entrepreneurship on economic performance, Borozan et al. (2016) proposed the construct of *Net Entrepreneurial Productivity* (NEP) which encompasses all the three types of entrepreneurship. As he reported, more productive entrepreneurship is associated with higher levels of NEP and national per capita income.

Some exploratory studies have provided an analysis of the effect of entrepreneurship allocation on economic performance. Sautet (2013) explains why productive entrepreneurship in less-developed countries does not contribute to economic

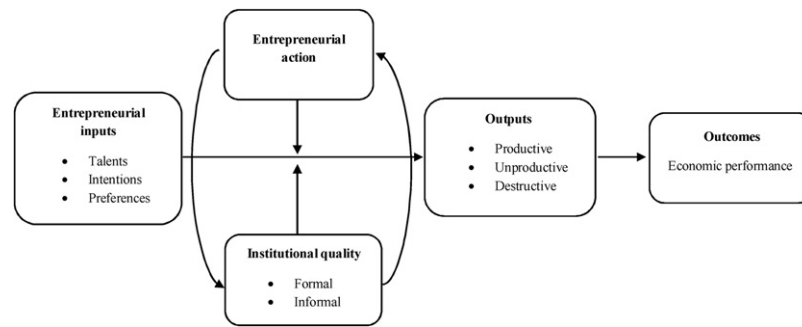


Fig. 3. A revised version of Baumol's allocation theory.

growth. Drawing a demarcation between local and systematic entrepreneurship, he argues that local entrepreneurship with a limited scope cannot lead to economic growth, while systematic entrepreneurship with a scope beyond the local boundaries can realize economic growth. The choice between these two types of entrepreneurship depends on institutional quality. Indeed institutional quality can moderate the effect of entrepreneurship allocation on economic performance. As Wiseman and Young (2013) and Gohmann, Hobbs, and McCrickard (2016) confirm, higher levels of economic freedom enhanced the influence of productive entrepreneurship on income growth in the United States. Bosma, Sanders, & Stam (2018) also have found that institutional factors such as the regulation of credit or labor market through stimulating productive entrepreneurship positively influenced GDP per capita growth.

#### 4.5. Beyond Baumol's typology

Baumol (1990) describes productive entrepreneurship as a wealth creation process. He believes that unproductive or destructive entrepreneurship is an entrepreneur's endeavor to pursue his/her own interests through participation in political processes such as rent seeking or lobbying. Accordingly, market entrepreneurship is considered to be productive, while political entrepreneurship is considered unproductive or destructive (Kshetri, 2009; Thomas & Leeson, 2012). Nevertheless, a small number of recent studies have argued that there is no rigid boundary between Baumol's typology. Douhan and Henrekson (2010), for example, posit that an entrepreneur's attempt to influence inefficient institutions as *second-best productive response* can also enhance welfare, an activity that is seemingly unproductive or destructive. Two articles specifically focus on clarifying the concept of social productive entrepreneurship. Acs, Boardman, and McNeely (2013) suggest that the simultaneous creation of economic and social values is an indicator of productive social business. Andersson and Ford (2015) propose a multi-dimensional framework for assessing the nature of productive social entrepreneurship. Accordingly, short-term and long-term outcomes at both micro (business) and macro (social) levels have positive and negative consequences. However further research is needed to clarify the conceptualization of Baumol's entrepreneurship typology.

#### 4.6. Non-categorized articles

In our review, six articles were not classified under any of the mentioned categories, but presented interesting insights, different from the dominant streams discussed in the five main reviewed categories. Thomas and Leeson (2012) based on a historical analysis of the German brewery industry, found that innovation-based productive entrepreneurship threatens some people's monopoly rents,

which motivated them to retrieve their rents via unproductive activities. It may be concluded that productive entrepreneurship does not always lead to positive economic performance, the idea stated by Baumol and confirmed by the research in the fourth category. Williams and Kadir (2016) examined how a company's future performance is affected by entrepreneurship allocation. Based on their results, unregistered companies (informal activity) experience higher sales, employment, and productivity than the registered ones. Of course we need more research to better understand the relation between entrepreneurship allocation and economic performance, specifically at different levels of analysis (economy, industry, or business). Desai (2016) builds on destructive entrepreneurship implications to design an effective counterinsurgency program in a conflict environment. Two recent papers have explored organized crimes as a form of destructive entrepreneurship. Champeyrache (2018) have explained how the wealth and power achieved through legal businesses make it possible for Mafiosi entrepreneurs to control legal markets that stabilize destructive entrepreneurship in the economy and, as Operti (2018) have analyzed, lower the payoff of productive entrepreneurship.

### 5. A proposed revision of Baumol's framework

Baumol's theory of entrepreneurship allocation has two implicit assumptions about entrepreneurs: first, entrepreneurs are a homogeneous group of people with predetermined goals, and second, under the influence of institutions, entrepreneurs decide to pursue productive, unproductive, or destructive paths. Yet, recent research challenge these assumptions such that institutions cannot direct entrepreneurs autonomously, but individual factors such as talents, intentions, or perceptions also play important roles under given institutional conditions (Hmieleski & Lerner, 2016). Moreover, although Baumol (1990) considers institutions to be exogenous that does not receive any feedback from entrepreneurs, some recent research highlights entrepreneurs' responses to the institutional forces, particularly in inefficient institutional contexts (Smallbone & Welter, 2012). Accordingly, we reframed Baumol's theoretical framework to better depict these neglected, yet important, components, as presented in Fig. 3. The key premise of the new framework is that individual factors can impact the direction of entrepreneurial efforts, regardless of the institutional context, on the one hand and, entrepreneurs are not only influenced by but also have an influence on institutional arrangements through entrepreneurial action. Indeed, accepting the assumption of the heterogeneity of entrepreneurs and considering institutions as endogenous, it can be concluded that not only does the institutional quality affect the allocation of entrepreneurship, but also individual factors and actions also play a role in directing entrepreneurs toward productive, unproductive, or destructive paths.

## 6. Discussion and future research opportunities

To draw a better picture of the research gaps, inspired by the categories and the four questions that were examined earlier, we present future research opportunities under five titles as follows:

### *Conceptualization*

**First**, although, participation in political processes is often considered to be unproductive or destructive (Campbell, Mitchell, & Rogers, 2013; Collins et al., 2016), political entrepreneurship can be productive when it is aimed at changing harmful institutions (Henrekson & Sanandaji, 2011). Future research can focus on the concept of productive political entrepreneurship and how it acts to deal with institutional gaps. **Second**, the majority of the reviewed studies focus on productive or unproductive entrepreneurship and there are few articles on destructive entrepreneurship (Desai, 2016; Operti, 2018). Future research can investigate this concept, including its differences with unproductive entrepreneurship, the factors affecting it, and its consequences. Moreover, we will achieve a deeper insight if we make a distinction between creating a company to support illegal activities (Kshetri, 2009) and pursuing a destructive route due to institutional inefficiencies (Desai et al., 2014).

### *Level of analysis*

**First**, differences in talents (Weitzel et al., 2010), intentions (Urbig, Weitzel, Rosenkranz, & Witteloostuijn, 2012), or perceptions (Collins et al., 2016) are the possible factors leading entrepreneurs to different paths, regardless of institutional quality. Hence, it is essential to conduct more studies at the individual level to examine the impact of entrepreneur's characteristics on entrepreneurship allocation. It is also necessary to consider demographic variables, especially gender, in future studies. Future research can compare institutional and individual factors that affect entrepreneurial allocation by women versus men. **Second**, most of the research focusing on the relation between entrepreneurship allocation and outcomes have mainly adopted a macro level analysis (Brou & Ruta, 2013; Gohmann et al., 2016), and a very small number of the reviewed studies have been conducted at the level of industry. Therefore, future research can also investigate what institutional factors in a particular industry can prompt entrepreneurs to choose between the different paths.

### *Mechanisms and processes*

**First**, some evidence has suggested the negative effects of productive entrepreneurship (Thomas & Leeson, 2012) or the positive influence of rent-seeking (Twijnstra, 2015) on economic performance. As such, it seems worthwhile to conduct a deeper analysis of the effects of entrepreneurship allocation on the economic performance and the mechanisms underlying this relationship. **Second**, in addition to heterogeneity in the allocation of entrepreneurial efforts across institutional contexts, different types of entrepreneurial activities occur within a given context (Kalantaridis, 2014). Thus, we need to further analyze the reasons behind the occurrence of productive entrepreneurship in underperforming institutions or unproductive/destructive entrepreneurship within a developed institutional framework. It would be insightful to consider the role of entrepreneur's action in explaining such an ambiguity (Henrekson & Sanandaji, 2011). **Third**, although a number of recent studies have investigated the role of entrepreneurs in dealing with institutional constraints (Elt & Henrekson, 2016), the literature does not mention the mechanisms to explain this phenomenon. It might also be interesting to

find out the features of the institutional framework that provoke agents' reactions and the strategies employed by entrepreneurs (Sakhdari, Burgers, Yadollahi Farsi, & Rostamnezhad, 2017).

### *Institutional condition and factors influencing allocation*

**First**, the sole emphasis on formal institutions without considering informal institutions cannot provide a decent explanation of entrepreneurship allocation (Williams & Vorley, 2015). More importantly, the literature lacks insights into the simultaneous impacts of formal and informal institutions as complementary or substitutive mechanisms. **Second**, a small number of reviewed studies have investigated institutional asymmetry (nonalignment of formal and informal institutions) as a determinant factor for entrepreneurs to participate in informal activities (Williams & Vorley, 2017). Thus, future research can investigate how symmetry (versus asymmetry) plays a role in shaping productive, unproductive, or destructive entrepreneurship. **Third**, in countries with weak institutional structures, formal institutional voids (where markets lack the necessary institutions needed for transactions) may lead entrepreneurs to make unproductive or destructive choices (Fish, Parris, & Troilo, 2017). Investigating the effects of informal institutions and entrepreneur's action in filling the gap and paving the ground for productive entrepreneurship may also result in significant contributions. **Fourth**, although prior studies have been carried out in a wide range of contexts, we still need further research in neglected contexts such as factor-driven economies. How the specific institutional conditions of factor-driven countries, affect the distribution of different types of entrepreneurship? A comparative study of the resource-based countries with efficient institutions such as Norway versus countries with inefficient institutions such as Venezuela or Nigeria can improve our understanding of this phenomenon.

### *Research method considerations*

**First**, Quantitative methods cannot address some of the research issues mentioned earlier, such as the bidirectional interaction between entrepreneurs and institutions or the strategies employed by entrepreneurs to deal with institutional constraints. Hence, more qualitative research designs are needed to provide a deeper understanding of the phenomenon of entrepreneurship allocation. **Second**, given that there is no consensus on the conceptualization and operationalization of the three types of entrepreneurship, to further develop the literature, more consistency in conceptualizations and indicators is needed to measure these types.

## 7. Policy implications

Our research also has novel implications for policy-makers. First, in addition to institutional forces, individual factors also affect entrepreneurial allocation, and hence policies should not be solely focused on institutional structures. Second, entrepreneurs' attempts to influence institutional forces and their role in reforming or changing the institutions cannot be ignored. Such an entrepreneurial function can complement the government's role in designing and improving policies to encourage productive entrepreneurship (Elt & Henrekson, 2016). Third, there is no rigid distinction in Baumol's (1990) typology of entrepreneurship. All political entrepreneurial activities are not necessarily unproductive or destructive. When designing policy, it is of great importance for policy makers to find out whether unproductive or destructive paths are intentionally chosen by entrepreneurs or they are imposed by inappropriate institutional conditions.

In general, our systematic review of Baumol's (1990) theory of entrepreneurial allocation synthesizes the literature, and high-

lights the missing links. We hope that this integration of the prior fragmented research and the proposed research agenda will open novel avenues for scholars to further extend this promising stream of research.

### Declaration of interest

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### Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.iedeen.2018.09.001](https://doi.org/10.1016/j.iedeen.2018.09.001).

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