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# Entrepreneurs or Entrepreneurial State?

## Perspectives on Innovation Policy

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# Zusammenfassung

Das Policy Paper untersucht die Rolle des Staates in der Innovationspolitik, insbesondere vor dem Hintergrund von Mariana Mazzucatos Konzept des „Entrepreneurial State“. Mazzucato fordert eine stärker steuernde Rolle des Staates, der nicht nur Marktversagen behebt, sondern aktiv Märkte schafft und gestaltet. Sie schlägt ein missionsorientiertes Innovationsmodell vor, das staatliche Ressourcen gezielt zur Lösung gesellschaftlicher Herausforderungen einsetzt. Das Papier setzt sich kritisch mit der praktischen Umsetzbarkeit dieses Ansatzes auseinander. Es betont die Wissensprobleme, Anreizkonflikte und politischen Verzögerungen, die staatliches Handeln strukturell begrenzen. Zudem weist es auf die Gefahr hin, dass übermäßige staatliche Steuerung Innovation hemmen und Fehlanreize setzen kann. Statt einer dominanten Rolle des Staates plädiert er für eine komplementäre Zusammenarbeit zwischen öffentlichem und privatem Sektor, bei der staatliches Engagement vor allem auf Grundlagenforschung und Infrastruktur fokussiert bleibt. Innovationspolitik sollte nicht durch staatliche Zielvorgaben eingeengt werden, sondern durch einen institutionellen Rahmen, der dezentrale Ideenfindung und Wettbewerb ermöglicht.

# Abstract

This policy paper explores the role of the state in innovation policy, with a particular focus on Mariana Mazzucato’s concept of the “Entrepreneurial State.” Mazzucato advocates for a proactive and directive state that not only corrects market failures, but actively creates and shapes markets through mission-oriented innovation strategies. Her approach seeks to direct public resources toward addressing major societal challenges. The paper critically assesses the feasibility of this framework, highlighting fundamental issues such as knowledge limitations, incentive misalignments, and bureaucratic inertia that constrain effective state intervention. A warning against excessive government steering is formulated, since such a steering could hinder innovation and foster distorted incentives. Instead of relying primarily on state-led initiatives, the paper advocates a balanced innovation strategy that combines public and private strengths. The state should focus on supporting basic research and providing infrastructure, while allowing firms and entrepreneurs to define innovation pathways. Innovation policy, the paper argues, should enable decentralized experimentation and competition, rather than being confined by top-down directives.

# Entrepreneurs or Entrepreneurial State?

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## 1 Introduction

Innovation does not happen in a vacuum. The innovative capacities of organizations and cultures are shaped by the environment they are located in. Shaping the environment therefore implies shaping the opportunities for innovation, while some initiatives might be more conducive to that end than others. The call for the state has been loud whenever markets fail to produce the desired results. Implicitly, the engagement of the state, be it in the form of regulation or outright action, has been seen as *the* path to follow, especially after the 2008 financial crisis was interpreted as highlighting the limited self-regulation of markets.

Especially over the last decade, Marianna Mazzucato (2011, 2016) and her ideas gained traction, calling for a more heavily involved and steering state which in her rhetoric has become famous as the *Entrepreneurial State*. Her proposals stretch beyond fixing market failures as proposed by neoclassical economics, and instead promote a state which creates and shapes markets directly. Innovation and technological progress are receiving substantial attention in our times, related particularly to the challenges of climate change (Shahar, 2015) and inequality (Stiglitz, 2015). Simultaneously, the debates on the necessary involvement by the state are not led unequivocally, with proponents on either side – as has always been the case in the history of political economy. Some are ambitious to stretch the capabilities of the state to guide markets and step in where they fail, while others rather pay attention to the limits of the state and highlight the incentive structures as major hindrances of large-scale state engagement in innovation.

In the UK and across Europe, Mazzucato's ideas are often welcomed by policymakers across factions and countries, with formative power for key decisions such as the EU's *Fit for 55* agenda. While her claims seem practical at first sight, they give rise to some contradictions and difficulties in their

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practical implementation. Even though Mazzucato aims to provide feasible solutions to improve the innovation process, she neglects that her proposed interventions are likely to give rise to new and possibly more dire negative consequences that inhibit the innovation process instead. It is therefore highly questionable that her mission-driven innovation framework will contribute to more innovation, while it may simultaneously be doubted that it is as radically different from currently pursued innovation strategies as she claims it to be. Contrary to Mazzucato's claim, relying mainly on the state to foster innovative activity is unlikely to solve the present or future challenges as it demands too much, and even not yet existing, knowledge to select projects and steer funding or other resources. Instead, policymakers, bureaucrats, or executives must observe which agent possesses informational and action potential and how to leverage these potentials accordingly. A solution that builds on the advantages of governmental and private initiative while recognizing their respective shortcomings, especially regarding incentive conflicts, can promote the desired levels of innovation.

The paper proceeds as follows: Section 2 provides a brief overview of the relevance of innovation, while section 3 explains Mazzucato's framework. Section 4 offers a critique of the practical implementation of Mazzucato's framework. Section 5 offers some alternatives for policymakers, while section 6 concludes.

## 2 Innovation and the need for innovation policy

Innovation is not a countable good or service, but rather an attribution that concerns the improvement of goods, services, processes, or governance structures in a broad sense. Following Schumpeter (1939), innovations are new combinations of already present factors – which then diffuse into society and are perceived as sufficiently novel to be called and attributed as innovations. Whether something constitutes an innovation is therefore determined by i) its degree of novelty, ii) the quantitative relevance of the novelty (how many products or processes are affected), and iii) the qualitative relevance of the novelty (in what way it is different or novel) (Hauschildt et al., 2023). The process of innovation is therefore influenced by people on three levels: first, by envisioning a novelty; second, by creating a novelty; and third, by adapting a novelty. Sometimes the same actor might be involved in more than one level (e.g., by both envisioning and creating a novelty, such as Steve Jobs in the production of the iPhone or iPod), but this is not necessarily so. Apart from innovation leaders, however, most actors find themselves either in the creation or adaptation Level, i.e., by refining or using innovations. The type of innovation considered in this paper is technological innovation (that is mostly dominated by profit or present value calculations), while for primarily societal innovations other drivers (such as social norms and traditions) may be more important.

These considerations highlight that innovation possesses a subjective character and that it must be proxied by other variables because it is not directly observable. Innovation is either studied on firm- or on the country-level and therefore different variables are used. The most common are patent applications or patent grants (e.g., Dosi et al., 2007, Mazzoleni & Nelson, 1998), although most scholars recognize the imperfections of that metric. Other variables include dummies measuring either i) whether the firm invests into R&D or novel products or processes, or ii) whether the firm has published any new product or process over a certain horizon. Alternative variables are the extent of R&D investments or new items, or a mix thereof. Given that innovation does not happen in a vacuum, but rather in a human context, a systems logic applies. Kline and Rosenberg (2010) showed that innovation is not a linear process and that feedback relations within the context play a significant role.

Innovation has long been accepted as a driver of economic growth. Modern economic growth per capita is predominantly driven by increased total factor productivity, not by accumulation of resources (Broadberry et al., 2015). Mokyr (2016) further emphasizes that countries which exhibit more openness to novelties and new ideas develop earlier. Therefore, innovation is tends to create new ideas that influence society. This can be done for example via the financial system (Morck & Yeung, 2001), reforming taxation (Stantcheva & Akcigit, 2020), or focusing on sociological characteristics of society as a whole (Hall & Soskice, 2001).

Brunnermeier (2021) further discusses the relevance of innovation considering current challenges as it can speed up ongoing necessary developments. Innovation occurs under all circumstances but how it develops depends critically on the context: in settings where experimentation is encouraged, innovators will act differently than in static or more rigid ones; especially once external circumstances are altered. He describes how the COVID-19 pandemic has spurred innovation and pushed previously slacking transitions in unanticipated ways (e.g., teleworking). At the same time innovation always includes an unforeseeable element that may defy all predictions (e.g., the "donut effect" in urbanization describing the hollowing out of central business districts due to working from home and high-skilled individuals moving to the suburbs (Bloom & Ramani, 2021)). By promoting innovation effectively, the probabilities rise that the grand challenges of our times can be addressed in a timely manner. Innovation hereby constitutes the alternative to degrowth (Kallis, 2011) when facing the widely discussed environmental problems in the future.

Despite their importance, fewer innovations are created than would be "optimal" in the language of welfare economics. This was first popularized by Arrow (1962) who describes how entrepreneurs invest less in innovative endeavors because they cannot appropriate all gains. Some aspects of innovations and ideas therefore fall under a public-goods characterization, as these aspects are neither excludable nor rivalrous in use, while often also exhibiting Knightian uncertainty. Once an idea has been shared publicly, it can be used by everyone having access to it and this does also not prevent others from doing so. As these ideas create positive externalities, a larger number of them is desirable than privately provided. Thus, externalities and uncertainty as part of the innovation process can decrease investments in innovations below the optimal level for society.

Creating change and innovation critically hinges on the ability to i) communicate the need to change, ii) instill motivation to change in the relevant actors, iii) provide the necessary resources, and iv) guide implementation. Mere recognition of looming problems is therefore necessary yet not sufficient. In history, a sense of urgency was best – and most often – spurred by disasters and catastrophes happening. Recognizing needs early on is only partially a substitute for an immediate motivation, while having the necessary resources and plans for implementation at hand is critical for success.

Together, underinvestment in innovation (resource- and incentive-based issues) and the presence of urgency provide the most prominent cases for innovation policy as a tool to encourage investment and subsequently boost innovation. Lane (2020) documents a recent upsurge in industrial and innovation policies in developed countries which are mainly used to stimulate sectors in which countries have a comparative advantage. Although during the early 21st century innovation policy was not popular, in the most recent decade it has experienced a revival. Among its most popular proponents is Mariana Mazzucato, the scholar at the center of this paper, whose vision of an *Entrepreneurial State* (Mazzucato, 2011) has become very influential among policymakers around the world.

## Mazzucato's approach to solving the innovation problem

3

The fundamental aim of Mazzucato is to rethink and reconceptualize economics and capitalism, a goal which arose out of the failures leading to the 2008 financial crisis. Her main ideas include the following: i) a more active role of the state which goes beyond (neoclassical) market fixing, ii) a refocusing towards real (non-financial) economic activity, iii) a mission-led innovation framework which ought to be assessed on a more dynamic basis than currently done, iv) a discomfort with (left-alone or deregulated) free markets; and v) an awareness of how our current problems could evolve into even greater (social) challenges should they not be tackled.

The Entrepreneurial State is an abstract concept – with many negative connotations as it is often used colloquially. One often thinks about public or state-led enterprises, monopolies, utilities, or railways – which many countries have made bad experiences with. It is therefore easy to proclaim that the state is not a good entrepreneur or tradesperson, as bureaucrats today exactly miss the necessary incentives to be profit-oriented or

risk-bearing (Downs, 1965). A prime counterexample Mazzucato gives is of the German public development bank *Kreditanstalt für Wiederaufbau* (KfW) which she praises as being essential for innovation in the German economy (Mazzucato, 2018, p. 808). In this sense, her arguments shine in a different light: the state chooses the mission and allocates a certain budget. Then all those who want to subscribe to that mission can qualify for funding, and the best projects (given the same or similar benchmarks which the private financing would use) are allocated funds. Upon completion, those funds must be paid back, and one is one step closer to the mission. This is meant to happen especially in areas that either are not served (e.g., for historical or business reasons) or cannot be served (e.g., social returns) by private sources of financing. The argument by Jones and Summers (2022) that social returns to innovation are largely underestimated because various second-order effects (e.g., health, productivity) are not captured in the return calculations supports this initiative of increased state involvement.

Mazzucato claims to have understood the challenges of our times and proposes solutions which build on a qualitatively different state involvement (Mazzucato, 2011). Overall, the state should adopt the ROAR framework (ROAR: rebalancing, organization, assessment, risk-and-reward-sharing) in which it steers the direction of innovation, where state institutions are organized in ways to assume efficient risk-bearing, where new dynamic indicators for cost-benefit analysis are designed, and where the state shares both rewards and risks (Mazzucato et al. 2020). The framework implies that the state is actively involved in the rebalancing of private and public interest, and thereby taking part in all stage of the innovation process. First, by identifying which goals are relevant; second, by organizing how innovation is procurer; and third, by assessing which initiatives are promising (or were successful) and based upon this evaluation deciding how to be compensated how to be compensated for the risk it assumed in the process. In this view, current state involvement does not stretch far enough, as it only addresses market failures and assumes a static environment, so that markets are assumed to be not inherently changing (Mazzucato, 2016). She readily accepts, however, that also the state is not perfect, definitively not perfectly informed and must deal with missing information (Mazzucato, 2013). Instead, the state should focus on selecting missions – which are the pressing (social) problems in society – and finance them.

Her main goal is to create and shape markets (Mazzucato, 2018), not so much to work in and fix existing markets. The only sector for which she emphasizes fixing market failures is basic research, due to the high prevalence of its social returns and thus constituting a genuine public good. For the rest, missions should be aimed at, which must be i) bold and socially relevant, ii) have a clear direction and be time-bound, iii) concentrate on ambitious but realistic research and innovation, iv) be cross-disciplinary and sectoral, and v) involve multiple, bottom-up solutions. Missions arise from grand challenges and transform them into an attainable goal. The mission, however, as her plastic-free oceans example shows, does not aim at fixing the outcomes or paths pursued, contrary to current innovation policy. This last point is an emphasis of her again and again, namely that the concrete innovations or specific actions are not dictated by the state, only that the mission and thereby targets are.

For the economy she envisions a drastically shrinking finance sector which she criticizes as only extracting value (e.g., by stock buybacks) (Mazzucato, 2018). Her argument is that markets left alone and largely deregulated are not the solution. She returns to Adam Smith and advances a labor theory of value, imagining a society free of rent, and attempting to create a new "objective" formulation of value (contrary to subjective value theory as in neoclassical theory), targeting the state to be leading in the financing of innovation and to support on all levels of the innovation chain (Mazzucato & Semieniuk, 2017). Mazzucato aspires that the state should be recognized and praised for the effort it undertakes to stimulate innovation (Mazzucato, 2014) by reassessing the efforts and contributions made by each sector. In her assessment, private firms often receive more praise than they deserve, and vice versa for the state – which only receives blame whenever investments fail. Her narrative for increased reward-sharing can be depicted as being analogous to the argument made by others

to combat tax evasion: have everyone pay their fair share, by recognizing what they too received from others. By providing resources (by acting e.g., as a guarantor, or investor), rational economic reasoning suggests that agents maximally use the risk capacity provided by the state (Varian, 1992), thereby creating higher regulatory costs on the side of the state to prevent such actions. Hence, assuming risk may create further risk that the state must either be compensated for in terms of a risk premium or exert pressure in terms monitoring. The state assumes risk and creates risk when investing into new and novel projects and should thus be a recipient as well.

Mazzucato is market-critical – without expressing this in the most extreme form. While referring to markets as clearly imperfect, her vision is not that of a controlling and centrally planning state which envisions all programs and solutions ex ante (Mazzucato et al., 2020). Her approach is nevertheless systemic, thinking more in aggregates than in individual actors, especially regarding her taking of the "National Systems of Innovation" approach. This also influences her view of the state. She sees it as a removed, either benevolent or impartial authority (again a system) which is (technocratically) devoted to fulfilling certain tasks, but neither claims an interest in these processes nor suffers from conflicting incentives. She further supports her claim of the importance of state missions by the evidence of state-based technological innovation which companies have taken up later. Thereby she proposes a largely synergetic and stimulating though partly parasitic relationship between markets and the state.

From this initial analysis, the following points can be summarized: Mazzucato is on one hand not a proponent of the centrally planning state, but clearly aims at a systemic change. On the other hand, she envisions a radically different way of organizing the state. What remains is the question about the concrete scope she expects the state to have once her proposal is put into place: is it a framework in which the state dictates a problem and then builds a set of support mechanisms to support that mission – or is it rather going to look like a tightly controlling, steering and evaluating state which elevates bureaucracy to eventually stifling innovation by imposing similar inefficiencies often faced in the public sector which she now attributes to the private sector.

## A Critique of Practical Implementation



A fundamental question revolves around the fact whether governments can know about the challenges faced in the economy. Mazzucato (2011) believes that markets are not efficient in recognizing innovation opportunities that are relevant for society but not necessarily individually profitable, hence the state has an advantage (as it is not constrained by a profit motive) to recognize and push these causes by setting up missions. This is what Mazzucato (2016) assumes, while Hayek's knowledge problem (Hayek, 1945) fundamentally questions such an approach regarding the availability of information. If challenges and missions rely strongly on implicit or relational knowledge (i.e., knowledge that is only formed by interaction of individual actors), even a government in possession of all scientific knowledge cannot have a full understanding of all the challenges faced in the economy. However, even if one follows Mazzucato's premise that the state is superior at identifying missions, this does not answer the question why the state would be more effective by intervening to complete the mission, instead of creating an institutional environment where private actors would recognize these missions themselves.

Top-down recognition and intervention is often the primary measure demanded, given the challenges arising from market failure (as bottom-up measures arguably fail under the current circumstances), while polycentric management of problems can be much more fruitful, especially when accepting the individual responsibilities and capabilities of actors (Ostrom & Ostrom, 1971) or instead of asking how the state could shape an institutional environment where firms are better able to pursue these missions (instead of deciding and funding them). Though Mazzucato aims to shape markets were none exist so far, it does not necessarily follow that policymakers are able to do this by picking such markets ex ante and intervening to foster them (Wennberg & Sandström, 2022). As

bureaucrats and policymakers are not inside the engine room or a laboratory, and not even comparable to the board of directors of a single company, they must deal with imperfect and limited information, which is of secondary or even tertiary nature – thus detached from the actual circumstances. Furthermore, they very often receive information delayed, and political decisions involve even longer timespans. Therefore, additionally to the risk of inadequate or unnecessary policies due to false or incomplete information a risk exists that once changes are legislated, they have become obsolete already, e.g., because of only temporal market failure.

A further issue is whether the same innovators or high-skilled people would be willing to work for the state. Mazzucato refers to the fact that certain talents are not present within the state and would have to be created. Usually there is a reason why certain talents move rather to the private sector, and most times this is because the public sector cannot guarantee comparable resources or incentives as the private sector does. According to her, however, structural or system-inherent structures that influence talent attraction are negligible. Following her reasoning, the state can attract the same talents as long as the state's influence in the economy rivals that of private companies. Her main argument is that there is a need for a tangible vision for the public sector that is attractive for people with expert knowledge and would be fostered by creating trust in the role of the state in the economy (Mazzucato, 2011). However, she does not specify how this vision and trust are to be shaped. She largely neglects that there are incentive structures (e.g., profit vs. vote or office maximization, different conceptualizations of risk) which fundamentally distinguish the private and public sector and therefore allocate talents to different enterprises. It is hard to see how this rebalancing is meant to take place, because Mazzucato rarely defines clear steps. Within her ROAR framework, she does not clarify how exactly the assessment, the risk-reward-sharing, the directionality, and organizational order should look like, or which exact steps need to be taken along the way. Especially regarding the risk-reward sharing, it is unclear in how far the state should even participate. One may argue that the task of the state is to capture and enable social returns – and not to constrain private entrepreneurship through levying taxes beyond the corporate income tax or introducing limits on redistributing profits as advocated by Mazzucato (2018).

The failure of assessment can even go as far as pursuing unproductive goals. Certain goals seem desirable – or necessary – which only offer delayed benefits or where costs necessarily surpass the benefits (even in the relevant future). Especially regarding innovation in general and the Green Transition in particular, such conclusions may be reached. This presents an additional problem as non-immediate benefits are unattractive for voters, necessitating new decision rules because one cannot rely on present values alone now. Calling for the state instead of private facilitation is no solution that is ready to solve all problems. This call hinges on the assumption that the state will not distort any market mechanisms, but correct only the failures current present (e.g., externalities), implying that interventions are economically costless and help restore efficiency. This costlessness, however, is just fictional (Coase, 1960). The presence of social costs does not mean the state can abate them without introducing new inefficiencies or distorted incentives. State engagement, both market-fixing and market-shaping, creates own incentive structures, without mentioning administrative costs and path dependencies, and can therefore present society with a different set of social costs. Others argue Mazzucato's approach could instead create an overbearing state and promote incentives that are not present within the market (Murtinu, Foss, & Klein, 2022). Market structure and pricing mechanisms may therefore change upon introducing the ROAR framework and increasing state intervention in innovation, hence leading to unforeseen consequences and possibly novel issues in procuring innovation.

Though the state does not force firms to participate in the mission and provides resources to foster incentives to innovate in areas where firms would otherwise regard it as unprofitable, it remains questionable i) how the Entrepreneurial State influences the opportunity costs of investing in innovation, and ii) what makes state financing superior to private financing if the state wants to be compensated in excess of ordinary corporate taxes. From her analysis it is unclear why firms

should rely on state funding when the government could instead by occupied by shaping a regulatory and institutional environment that helps firms see more opportunities for innovation in sectors that were originally seen as unprofitable (Grafström, 2022). Given that the availability of state financing biases innovation in a certain direction, it reduces incentives to think about applications beyond the intended purpose and leaves firms to mainly exploit the resources the state provides without thinking about additional projects that would not receive funding.

Another point Mazzucato leaves out of consideration concerns the financing and cost-benefit distribution of innovations. First, she only considers innovation and their consequences on the aggregate and neglects that there are also losers to innovation. Second, her approach to rely primarily on government funding may create new distorted incentives. The state shapes markets but likewise takes the risk otherwise born by private investors. If state engagement is too high, other actors either make their investments conditional on state support despite their long purse, then new incentives for inefficient risk-taking and moral hazard may be created; or investment in innovation is crowded out entirely as private actors become increasingly unwilling to shoulder any risk given a usually generous state financing innovation. Though the state assumes risk, it may simultaneously create new risk by providing funding or guarantees which subsequently has to be mediated by additional monitoring or regulation that may in turn raise the costs for both the state and the innovator to use resources efficiently. Whether she wants state financing to complement or substitute private financing remains unclear given her critique of the financial sector (Mazzucato, 2018), as she also talks about public venture capital, which would inevitably involve more steering. Mazzucato wants the state to lead the financing of innovation and to support on all levels of the innovation chain (Mazzucato & Semieniuk, 2017). She describes an increasing retreat of private sources from investment which runs counter to the narrative that venture capital and private equity are growing. While it may be true that more mature companies are increasingly involved in distributing profits, this need not mean this money is not reinvested elsewhere into the economy. Although one may argue that supplementing private sources is necessary, especially when they are restrictive for early-stage companies (e.g., in countries with a high share of bank financing), substituting for them should not be the aim to prevent ongoing support for implicit though inefficient winners (sunk cost fallacy). Providing a lot of financing in markets which do not yet exist or are not covered by private institutions is a proposal that could readily be taken up. Mazzucato wants this to happen in a decentralized manner, without a single institution providing grants all over the place and wants the state to assume a portfolio approach as well.

The last issue revolves around evaluation. What is the correct framework or time horizon to judge innovation policy? Lane (2020) and Juhasz et al. (2023) show that simple econometric analyses are not suited to evaluate industrial policies, but that newer generation of models are more suited for this purpose. Similarly, they show that rent-seeking and purpose-driven industrial policy are outcome-equivalent macroeconomically and therefore cannot be distinguished by looking at observed variables (as theory would require to spend more money on projects with higher costs and higher frictions). Another question revolves around the time horizon and scope of evaluation. One possible metric is setting an ex-ante timeline and ex-ante metrics to evaluate the success of certain innovations and policies. Such a framework requires, however, that evaluation criteria remain static over time and do not evolve. In many cases the evaluation metrics deviate from the direct measure (e.g., pollution reduction vs. installation of solar and wind panels) and the using of imperfect proxies for evaluation increases incentive incompatibilities. However, picking decision criteria only ad hoc or ex post is received skeptically due to its high level of ambiguity, as the criteria are set by a bureaucrat or policymaker. A possible remedy could be that each person who enacts a policy also must be held accountable for the consequences (when out of office) to solve the time inconsistency; or that evaluation is only carried out by independent agencies. The last problem lies in uncertain gestation periods. As in a dynamic framework the efficacy of policies relies on multiple other system components, it can be that a measure con-

tributes to improvement, but only becomes truly effective after the evaluation deadline because of other delayed complementary actions. Such possibility must be accounted for when designing policies and gauging the impact of certain policies.

## 5 Limits of Mazzucato's Framework

If certain actors want the state to play a major part in facilitating more innovation, it should provide better access to resources and a welcoming environment for innovators but leave open the ends for which innovation is pursued. In contrast to Mazzucato, where she assumes that funding is provided to serve certain missions, this alternative approach would imply that businesses or sectors select their missions themselves. Doing so requires shaping a simpler and more foreseeable regulatory environment in which innovators face stable expectations. If incentive structures allow people to innovate, for example when profits are largely appropriable, innovation can occur. Different factors influence how high the innovative capacity of firms and individuals is, from (corporate) culture over organization and individual preferences and the environment (e.g., competition, sector) an actor is situated in.

Principal-agent conflicts exist in the private sector as well as in the public sector. The private sector is therefore not free of incentive problems, especially when limited liability and asymmetric information are in place (e.g., "empire building" of managers or asset substitution). For example, calls for government support in innovation are usually highest where the cost of failure (or regulatory burden) is highest, and are less frequent where innovators are able to move more quickly, as shown by the different speed of AI adoption in the US and Europe (Coatenlem & Coste, 2024). The difference lies primarily in the control and liability mechanisms employed which are much stricter in private organizations. States are much slower to react to misled projects. As voters are restricted to elections to credibly voice their discontent and must otherwise rely on petitions or demonstrations to criticize actions taken by policymakers, internal control mechanisms decide whether a change occurs or not. In business, where owners or shareholders have more control and frequent performance reviews are held to assess performance and attribute liability, it is easier to reverse projects once they seem unprofitable. In government these internal control mechanisms are much weaker and only exercised following significant scandals or misbehavior.

Leaving the main tasks of idea-creation, procurement, and development of practical applications to the private sector promises higher returns than carrying out state-mandated prestige projects. The reason for this is that state-driven innovation often only supports a limited set of directions for innovation, while private innovation is more explorative, or at least more flexible to adjust targets if the aspired solutions do not seem to work (Wennberg & Sandström, 2022). Undoubtedly, there exist missions and projects where this is the case and initiators know (at least roughly) what to do (man on the moon). There are other challenges for which this is much less clear (climate change) and where much more experimentation is necessary. This gives rise to immediate back-testing, often not available for state-led endeavors. The role of the private sector therefore lies more in applied research and effort applying research to feasible outputs, whereas public investment should be geared more towards basic research (Gumpert et al., 2025) – at least if firms in those sectors have no immediate use for fundamental research. One can observe that private firms often borrow technology from state-led projects (Mazzucato, 2011). This hints at the social returns portrayed by Jones and Summers (2022) that prevent private firms from inventing certain features, but do not keep them from using those features once they are available.

She clarifies that she aims at creating a new narrative in which the role of the state in the economy is elevated: the less importance the state has, the less attractive it is for talents to work there, hinting at a self-fulfilling prophecy (Mazzucato, 2014). A related critique focuses on her disregarding the policymaking process. This leads her to propose unachievable aspirations of states which are not incentive-compatible with the relevant actors (Mingardi, 2015). Her call for a new narrative and heavier engagement seem to imply an automatic fix of these tendencies, but she does not describe the way in which this prevailing incentive structure ought to be fixed in the first place. Wennberg and

Sandström (2022) compile analytical and empirical examples why the Entrepreneurial State does not solve the most pertinent issues regarding innovation, given that the state holds on to the projects it chose to support for too long, and that ultimately the Entrepreneurial State still results in picking winners, a vie further supported by McCloskey and Mingardi (2020). They argue along historical lines that private enterprise, institutions, and changes in rhetoric were ultimately responsible for innovation and not political coercion.

The question remains whether more money is always better. Studies among others by Jones (2022) or Mazzucato (2013) seem to suggest that the only thing we need is more financial resources and everything would be feasible. Media portraits regarding innovation often hint at missing financial resources as the main cause why investment strategies fail. Even in the case of social returns, turning to the state for a public-private partnership should be desirable for both private and public actors in terms of the expected (private or social) returns. However, such initiatives should not be misused to appropriate subsidies that could have been spent more efficiently elsewhere, only because the state needs to distribute the budget it has available in some way or another. Here again information frictions and risk-aversion, even among policymakers come into play. But incentive conflicts and political agendas must be considered as well: if a balanced budget is equally important as economic growth or more investments, or if the payback period lies beyond your term, then agreement to ambitious projects is unlikely. Money matters, but it cannot be the only instrument. Economics has been understood (at least) since Robbins (1932) as the allocation of scarce resources. If anybody receives the money desired for all their purposes, there is no guarantee that this money would be spent on the most efficient projects. Not having liquidity as a constraining force permits waste and empire building, especially if no compulsory and credible checks are applied. Similarly, money becomes useless if productive forces are lacking to convert money into innovation. A study by Zofio et al. (2023) documents bottlenecks for European economies and how inefficiently high innovation inputs are wasted if the rest of the innovation system is underdeveloped. They show for example for Germany that innovation expenditures are already high, but the outputs extracted from those spendings do not mirror the inputs adequately. The optimal amount of money spent – including malinvestment and accounting for possible frictions or unintended consequences (e.g., inflation, refinancing by corrective taxes) – cannot be determined ex ante. It may only be possible to judge whether current initiatives are not enough or already too much to stimulate innovation. For each projects this judgment then must be repeated, without the possibility for a social calculation of optimal state investment in innovation.

Furthermore, central governments can provide funding because of their authority to tax. To avoid steering by the state, however, disbursement of funds must be linked to results and processes rather than blindly supporting purposes or projects chosen by state officials. To provide reliable judgment, competent and independent institutions are necessary to prevent incentive conflicts in awarding prizes and funding. A possible model follows public-private investment banks (e.g., EIB, KfW) which are (i) publicly financed, but ii) not strictly state-controlled, iii) operate in the private domain and can attract talent with private-sector incentives (performance), iv) comprise experts and are thus able to judge projects, v) follow a long-term investment approach necessary for innovation. Such investment banks are also recommended by Mazzucato (2016). It is important that those organizations have full discretion over disbursement of funds, operate only on applicational basis – and then evaluate the possible potential of certain innovative undertakings – but operate on a fixed budget based on i) investment history and ii) possible uncaptured social returns. This budget should also not be touched immediately if it is not completely spent each year to allow for business cycle.

## Conclusion

6

Taking a comparative institutional perspective when deciding how to solve societal challenges is crucial. Following Buchanan's (1975) advice not to blindly choose an alternative simply because the current course of action does not work perfectly, each side's advantages and disadvantages (including possible unintended consequences and externalities) must be carefully evaluated. Whenever

more government action in a certain area is suggested, advocates must provide evidence why the state is more capable and more efficient than the private sector in solving this problem. They must further explain how the initiative fits into the incentive structure of policymakers and bureaucrats to either dismantle how the organizational structure ought to be altered, or which developments must receive heightened attention to ensure no misappropriation takes place.

Each action potentially causes unintended consequences and often these are a backside of the same medal. The alternative remains often to choose another medal – not to simply repaint the backside of the current medal. Fixing inefficiencies without creating new ones inherent in the taken decision is rare. Especially the point that government intervention in innovation causes new path dependencies are possibly creates even more risk when recipients of state financing are induced to fully exploit the resources they are given. Judging which consequences or trade-offs are more conducive to the desired end is what is demanded of the public, policymakers, and scholars deliberating how to foster innovation. Mazzucato's attempt to reform innovation policy so far disregards these trade-offs, as according to her the ROAR framework corrects the current pitfalls of the innovation system without creating new ones. Alongside the doubts that the state can realistically offer the same incentives and work environment as the private sector or offer better financing arrangements, policymakers face severe knowledge problems that cannot be solved by amassing more scientific knowledge. In the end Mazzucato's suggestions must therefore be assessed as bearing the risk to hinder innovation or potentially steer it in worse directions than it would otherwise flow.

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Mazzucato is not a proponent
of the centrally planning state,
but clearly aims at a system change.
She envisions a radically different way
of organizing the state.

In the end Mazzucato's suggestions
must be assessed as bearing the risk
to hinder innovation or
potentially steer it in worse directions
than it would otherwise flow.

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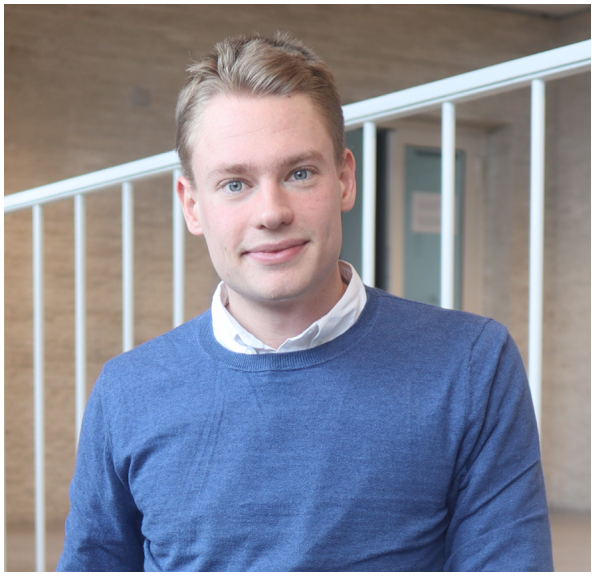

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**Unsere Vision**

Das Ludwig-Erhard-Forum wird von der Überzeugung getragen, dass wir heute in der besten aller historischen Welten leben. In der Tradition der Sozialen Marktwirtschaft wollen wir uns durch das Zusammendenken von Wirtschaft und Gesellschaft der besten aller möglichen Welten weiter annähern. Vor diesem Hintergrund verstehen wir die Soziale Marktwirtschaft als ein offenes Konzept, dessen historisches Erbe an Grundsätzen, theoretischen Einsichten und Empirie der steten Übersetzung in die Kontexte der Gegenwart bedarf.

Durch die Weiterentwicklung der offenen Sozialen Marktwirtschaft wollen wir nicht zuletzt Debattenräume in der demokratischen Mitte öffnen und so zur Suche nach der „irenischen Formel“ beitragen. Dieses Streben nach Frieden und Versöhnung stellt die Soziale Marktwirtschaft als funktionsfähige und menschenwürdige Ordnung seit ihren Anfängen der steten Gefahr von Vermachtung und Polarisierung in Wirtschaft und Gesellschaft entgegen.

**Unsere Mission**

Die Soziale Marktwirtschaft benötigt das Vertrauen der Menschen. Besonders in fragilen Zeiten muss sie immer dringlicher erklärt und vermittelt werden. Vor diesem Hintergrund versteht sich das Ludwig-Erhard-Forum als kritischer Impulsgeber und Mittler an der Schnittstelle zwischen Wissenschaft, Politik, Wirtschaft und Zivilgesellschaft. Wir wollen all diejenigen in Dialoge verwickeln, die Ideen entwickeln oder vermitteln, indem wir die politökonomischen Herausforderungen unserer Zeit wissenschaftlich analysieren, provokant diskutieren und optimistisch kommunizieren.

Unser Ziel ist es, eine neuartige ordnungsökonomische Stimme zu entwickeln. Dabei ist es unser Anliegen als Forum, all denjenigen eine Plattform zu bieten, die die ordoliberale Tradition der Sozialen Marktwirtschaft ernst nehmen und gemeinsam mit uns über ihre zeitgemäße Weiterentwicklung debattieren wollen. Unsere Forschungs- und Arbeitsergebnisse sind unabhängig, transparent und stellen sich dem allgemeinen Wettbewerb der Ideen. Sie beruhen auf einem breiten Austausch mit nationalen und internationalen Wissenschaftlern aus den Sozial- und Geisteswissenschaften sowie nicht-wissenschaftlichen Kooperationspartnern.

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