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Abstract: This paper integrates findings from several different case studies on Mission-Oriented Innovation Policies (MOIPs) and makes use of existing literature to briefly describe three other missions: The War on Cancer, homeownership in the United States, and the Swedish Million Program. Together with the analyses in the contributions in the volume *Moonshots and the New Industrial Policy: Questioning the Mission Economy*, seven takeaways regarding mission-oriented innovation policies are developed and described: 1) wicked problems cannot be solved through missions, 2) politicians and government agencies are not exempt from self-interest, 3) MOIPs are subject to rent seeking and mission capture, 4) policymakers lack information to design MOIPs, 5) MOIPs distort competition, 6) government support programs distort incentives and result in moral hazard, and 7) MOIPs ignore opportunity costs. These seven takeaways are illustrated using the cases described in this essay and in other contributions in the above-mentioned volume.

Keywords: Mission-oriented policies, Innovation policy, New industrial policy, Moonshots, Rent seeking, Public choice

JEL Codes: H50, L26, L52, O31, O38, P16

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This essay is forthcoming in the collective volume *Moonshots and the New Industrial Policy: Questioning the Mission Economy*, edited by the three of us. Cham: Springer, 2024.

Introduction

Large-scale government programs and interventionist industrial policies specifically tailored to mobilize innovation to address well-defined societal objectives—so-called mission-oriented innovation policies (MOIPs)—are currently being implemented in many Western countries with little prior critical inquiry. There is also a shortage of academic studies devoted to how and why MOIPs may fail.

The volume *Moonshots and the New Industrial Policy: Questioning the Mission Economy: Questioning the Mission Economy* contains three detailed accounts of failed MOIPs: The U.S. efforts to end homelessness (Lucas and Boudreaux 2024), foreign aid and nation-building (Waldron and Coyne 2024), and the Brazilian government’s effort to create a domestic shipbuilding industry (Alves 2024). It also includes an analysis of the empirical evidence invoked to justify missions (Yerger 2024a, 2024b), a review of evaluations of 49 other MOIPs (Batbaatar et al. 2024), and an exploration of government agencies implementing MOIPs and how they evaluate their effectiveness (Björnemalm et al. 2024).

In this essay, we explore what we consider to be the most essential aspects of three historical cases of failed or overrated MOIPs and combine insights from these cases with insights from other essays in the volume *Moonshots and the New Industrial Policy: Questioning the Mission Economy*. This results in seven takeaways.

The next section contains short descriptions of three MOIPs that did not meet expectations or for which the consensus interpretation can be questioned. Next, the takeaways are described in further detail, and for each one, some illustrative examples are provided. The concluding section summarizes the seven takeaways and vents our concern for the current trend towards increased use of MOIPs around the world.

Learning from Historical Missions

Beyond the examples described in *Moonshots and the New Industrial Policy*, there are other cases of failed or overrated MOIPs throughout history, which have resulted in economic downturns or the impeding of important development activities. Three such cases are covered below, starting with the War on Cancer, followed by the program to boost homeownership in the United States, and finally the Swedish program to build one million new housing units in ten years. At the end of each mission description, there is a table (*Tables 1–3*) in which these MOIPs are tied to the criteria for a MOIP as defined by the OECD (2021). *Tables 1–3* demonstrate that all three cases fulfill the criteria for definition as a mission. The cases were chosen partly as they fulfill the criteria stipulated by the OECD. Beyond this definition, we would argue that these cases are of a more general interest for public policy as they concern important historical events.

The War on Cancer was inspired by the moonshot and interestingly, President Biden has put in place a “Cancer Moonshot” with the goal of curing cancer through moonshot policies. Insights into the workings of the War on Cancer may therefore give valuable insights into the function of MOIPs.

Homeownership in the United States is clearly related to the financial crisis in the United States, which in some regards paved the way for more MOIPs and the renaissance of interventionist industrial policies. If MOIPs related to homeownership had a role in fueling the housing bubble and subsequent crash of 2008–2009, such mechanisms are important to document and uncover.

Last, the Million Program in Sweden is interesting as it has been described by Mazzucato and Sweden’s Innovation Agency Vinnova as a success story. This interpretation has been questioned by many scholars historically and therefore this example deserves to be further scrutinized.

We acknowledge that these three cases are not failures in all regards, and we do not aim to draw general conclusions based upon only these cases. Rather, our goal is to explore them to both inform policymakers and make use of these cases along with the empirical material in *Moonshots and the New Industrial Policy* to develop a set of takeaways regarding challenges in implementing MOIPs.

Nixon’s War on Cancer

The War on Cancer (WoC) was launched by President Nixon in the United States and contains many valuable lessons, particularly bearing in mind that President Biden used the 60th anniversary of President Kennedy’s historical moon landing speech to reignite “the Cancer Moonshot.”¹ As *Table 1* shows, the WoC fulfils the OECD criteria for a MOIP.

Table 1. Criteria for a Mission-Oriented Policy specified by the OECD (2021) applied to the War on Cancer in the United States.

Mission criteria	War on Cancer
Involves actors from different fields and sectors	Involved academia, pharmaceutical firms, government departments
Addresses a grand challenge or a wicked problem	Cure cancer
A defined deadline that is medium- or long-term and clear measurable milestones	Cure cancer by the United States’ bicentennial in 1976
Involves an element of risk	Involves extensive research and development, with elements of uncertainty and risk of failure

The launch of Nixon’s WoC is full of references to the moonshot. The WoC had been preceded by extensive campaigns, notably featuring Sidney Farber, former President of the American Cancer Society, asserting “[w]e are so close to a cure for cancer. We lack only the will and the kind of money and comprehensive planning that went into putting a man on the moon” (Coleman 2013, p. 32). Today, it is widely regarded as a failure (e.g., Faguet 2005).

There are many reasons why high expectations to find a cure for cancer were not met. At the onset of the WoC, there were already disagreements regarding what strategies to pursue. Cancer biologists and other scholars were asking for research that targeted cancer prevention while the

¹ White House (2022).

President and policymakers used the term “cure” instead and continued to frame the efforts as a “war”, i.e., a battle that is either won or lost.

On the 40th anniversary of the National Cancer Act in 2011, the NCI’s director, Dr. Harold Varmus, rejected the fundamental philosophy of the WoC by saying “cancer is a complex group of diseases arising from fundamental aspects of our biology.” Similar observations were made as early as 1975 by a senior official at the Department of Health, Education and Welfare, Charles Edwards (MD), who wrote that the cancer program was based on:

[t]he politically attractive, but scientifically dubious premise that a dread and enigmatic disease can, like the surface of the moon, be conquered if we will simply spend enough money to get the job done. (Schmeck 1975, p. 61)

The trend towards combating disease rather than looking for causes has persisted. In the time period 2000–2010, the National Cancer Institute’s (NCI) budget increased from USD 4 billion to USD 5 billion, but the share devoted to prevention declined from eleven to seven percent during these years.

Many scholars were skeptical of this massive political campaign against cancer, especially as little was known at the time about the microbiology of cancer. Sol Spiegelman, Director of the Institute of Cancer Research at Columbia, favored more focus on prevention than on fighting disease: “An all-out effort at this time [to find a cure for cancer] would be like trying to land a man on the moon without knowing Newton’s laws of gravity” (Coleman 2013, p. e33). It has also been argued that a large share of the WoC budget was captured by those researchers and interest groups who primarily looked for viral causes of cancer (Coleman 2013; Surh 2021).

Epstein (1990) summarizes the failure of Nixon’s War on Cancer. He also highlights the idea that more focus on prevention and identification of the underlying causes of cancer would have been a more viable approach. Instead, government, industry, and a small circle of scientists combined to stymie efforts to introduce preventive measures, such as strict pollution control standards. In 1992, 68 established scientists gave a press conference, releasing a statement on the WoC where they noted that it had not managed to stop growth in either cancer rates or cancer deaths.

The WoC and the National Cancer Act of 1971 were not failures in all regards. These efforts set the direction for some substantial advances in basic cancer research and treatment. Knowledge in molecular biology and genetics related to cancer has grown exponentially over the past decades, but according to many scholars, improvements for patients have not occurred at a similar pace (Surh 2021).

In hindsight, many scholars still regard the WoC as a failure and attribute this failure to a disregard for prevention, a belittling of screening, and an over-reliance on inefficacious, nonspecific cancer drugs (Faguet 2014). Not everything can be solved simply by spreading more government funds over praiseworthy missions.

Boosting homeownership in the United States

The financial crisis of 2008–2009 is often interpreted as an example of how untamed market forces and unregulated speculation may threaten economic and financial stability. There is certainly some truth to that interpretation, yet several scholars have also emphasized the role of

state involvement and the formulation of socially desirable goals by policymakers as well as the creation of public-private partnerships or semi-public entities such as Fannie Mae and Freddie Mac as factors behind the crisis. Thompson (2012) writes:

Analysing the financial crisis primarily in terms of neo-liberalism and free-market fundamentalism ignores the part played by the state–finance constellation around Fannie Mae and Freddie Mac in the crisis. (p. 415)

In line with numerous other scholars, McDonald (2012, p. xiii) places a large share of the blame for the financial crisis not only on Fannie Mae and Freddie Mac, but also on efforts by politicians to use the financial sector to accomplish various political and social goals:

Above all, it was the distortion of the banking sector to achieve political ends that ultimately caused the crisis. Politicians, with their unthinking political stances, must, perhaps for the first time, take the lion’s share of the responsibility.

Homeownership and government housing policies had been part of the political agenda for several decades. Homeownership had been growing for decades, from 43.6 percent in 1940 to 65.6 percent in 1980, partly as a function of various subsidized loan programs funded by such agencies as the Federal Housing Administration and the Veterans Administration. It declined slightly in the 1980s and upon taking office, President Clinton lifted the long tradition among policymakers to support homeownership to a higher level as he initiated a National Homeownership Strategy. The approach is consistent with Mazzucato’s (2021, p. 6) recommendations to set targets that are not only ambitious “but also inspirational, able to catalyse innovation across multiple sectors and actors in the economy.” As *Table 2* shows, the National Homeownership Strategy also fulfils the OECD criteria for a MOIP.

Table 2. Criteria for a Mission-Oriented Policy specified by the OECD (2021) applied to homeownership in the United States.

Mission criteria	Homeownership in the United States
Involves actors from different fields and sectors	56 actors in diverse sectors such as finance, government, construction and housing
Addresses a grand challenge or a wicked problem	Increase homeownership especially among minorities in the United States
A defined deadline that is medium- or long-term and clear measurable milestones	Clinton: Accomplish 67.5 percent homeownership by the year 2000 Bush: Increase the number of minority homeowners by 5.5 million families by 2010
Involves an element of risk	Financial risks related to lending money to the subprime segment of the market

The Clinton Administration formulated a socially desirable goal to increase homeownership and 56 actors across all sectors of society signed an agreement to become “Partners in the American Dream.”² These included the American Bankers Association, the Federal National Mortgage Association, Fannie Mae, Freddie Mac and the U.S. Department of Housing and

² U.S. Department of Housing and Urban Development (1995).

Urban Affairs. President Clinton also formulated a measurable goal for this strategy: by the year 2000, homeownership would reach a level of 67.5 percent (MacDonald 2012). The goal to increase homeownership was framed as a mission that resonated with American ideals related to family, ownership, and the American dream. The Bush administration continued to support the homeownership agenda, asserting that it “is in our national interest that more people own their own home. ... if you own your own home, you have a vital stake in the future of our country” (White House 2003). Hence, the support for the homeownership agenda and related activities was strong in both the Republican and the Democratic Party.

The political objective to increase homeownership implied that the two government-sponsored entities (GSEs)—Fannie Mae and Freddie Mac—were used to provide cheaper credits to minorities. Most importantly, this was achieved by guaranteeing the timely payment of principal and interest on mortgage-backed securities they issued. This guarantee made such securities more attractive to investors because it reduced credit risk and helped maintain liquidity in the secondary mortgage market.³

Wallison and Calomiris (2009) argued that these GSEs had an important role in the financial crisis as they faced dual objectives that conflicted with each other. On the one hand, the government had assigned Fannie and Freddie to increase homeownership, especially in minority groups, which in turn meant taking on more risk. On the other hand, simultaneous demands for profitability put the GSEs in a position where they had to exploit government subsidies to increase profits. In doing so, while simultaneously expanding loans in the subprime segments of the market, they were taking on risks so significant that the stability of the entire financial system was jeopardized.

Thompson (2012, p. 416) summarizes the homeownership mission as follows:

That a state-encouraged subprime boom happened in the U.S. rather than anywhere else is neither a coincidence nor a simple function of deregulated American financial markets. It was a historically rooted political phenomenon. Subprime lending, subprime securitisation and the under-regulation of, and latitude given to, Fannie Mae and Freddie Mac served a particular set of political purposes.

Homeownership increased in the United States from 64 percent in 1995 to 69 percent in 2005. In the wake of the financial crisis, homeownership reverted to the level of the mid-1990s (U.S. Census Bureau 2016). In effect, the mission not only failed to increase homeownership, it also contributed to one of the deepest recessions in modern history.

This U.S. homeownership mission clearly underlines the fact that good intentions are never a sufficient condition for achieving social progress and enhanced social welfare. On the contrary, it can give rise to unintended and dire negative consequences.

The Swedish Million Program

In the 1960s, the Swedish government implemented a large program to end the housing shortage that had plagued the country for decades. As early as 1963, the economist Assar Lindbeck had argued that Sweden’s persistent housing shortage was a consequence of rent control (Bentzel

³ For a detailed account of Fannie Mae and Freddie Mac’s undertakings in the process culminating in the 2008 financial crisis, the reader is referred to McDonald (2012).

et al. 1963). As it proved politically difficult to end rent control, the Million Program was launched. This was as an attempt to address Sweden’s housing shortage through a centrally planned mission to build one million housing units in the ten-year period 1965–1974 by completing 100,000 units per year. The enormous size of the mission becomes obvious if one considers that the Swedish population was a mere 7.5 million when the mission was announced. As *Table 3* shows, the Million Program fulfils the OECD criteria for a MOIP.

Table 3. Criteria for a Mission-Oriented Policy specified by the OECD (2021) applied to the Swedish Million Program for housing.

Mission criteria	The Million Program in Sweden
Involves actors from different fields and sectors	Involved the state and several large enterprises such as Riksbyggen and SIAB
Addresses a grand challenge or a wicked problem	Eliminate Sweden’s housing shortage
A defined deadline that is medium- or long-term and clear measurable milestones	Build one million housing units in 1965–1974 by completing 100,000 units per year
Involves an element of risk	Large ten-year plan involving considerable economic and political uncertainty

In a publication by Vinnova, Sweden’s Innovation Agency, this “Million Program” is described by Dan Hill, Mariana Mazzucato and co-authors as a success:

Running from 1965, the Million Programme (*Miljonprogrammet* in Swedish) public housing programme set a “mission” of building one million affordable new dwellings within a decade. The mission was broadly successful, with 1,006,000 dwellings being built by 1974. “Affordable” was defined in understandable terms, relating to the wage packets of average workers. *Miljonprogrammet* produced a rich diversity of dwellings, with the majority being small houses despite the popular allusion with larger housing blocks typical of the age. (Hill 2022, p. 54)

In the same report, the authors make comparisons between this Million Program and the Apollo program, and the Million Program is described in a positive way, with parallels not only to the Apollo but also to D-Day:

Not every country has “a Vinnova”, however. And Sweden has a very particular history. Everyday life here is imbued with living memories of the Million Programme and Vision Zero—missions *avant la lettre*, perhaps—as well as its many decades of progressive and equitable societal action. As this book explains, that has directly informed the possible “plays”. (p. 14, this passage written by Mazzucato)

Yet *Miljonprogrammet*’s results arguably deserve to be seen in the same light as Apollo. The public policy terrain of housing policy is just as complex as that of space travel. (pp. 54–55)

In this, it is already making clear that this mission-oriented innovation is a process to be performed, or a culture to create. A mission, whether Apollo, D-Day, or *Miljonprogrammet*, implies a journey as much as a destination, and this initial stage is not far past “Base Camp One” in that journey. (p. 187)

The Million Program was plagued with several difficulties. While some of these issues such as “poor-quality construction and insufficient focus on community-building and participation” are acknowledged in Hill (2022, p. 55), there were several other challenges related to the Million

Program. Apartments were mass produced with little regard for quality and with a functionalist Le Corbusier-inspired style that many found unattractive. In the early 1970s, about 20,000 apartments were vacant despite the housing shortage at that time. Later, many apartment buildings were levelled to the ground again—with the support of public money (Jörnmark 2007). Furthermore, many apartments in the remote countryside were filled up with immigrants during the refugee crisis in the 2010s. These apartments were completed only years before the population in those towns began to decline due to dwindling employment opportunities and acceleration of the movement of people and jobs to the larger cities and metropolitan areas. Unsurprisingly, the massive influx of non-European immigrants to these towns has fueled social problems and ethnic conflicts on an unmanageable scale.

It did not take long before crime and social unrest increased in the Million Program suburbs. Three years before the completion of the program, economist Assar Lindbeck (1972, pp. 75–76) had already pointed to this risk:

What has also perhaps not been adequately recognized is that some of the shortcomings of today's housing market have effects far into the future. This is, of course, particularly true of the effects on housing production. If, during periods of rent control, there has been a strong divergence in the direction of investment from consumer preferences, then the rent-controlled housing market has in fact made a huge misinvestment. Personally, I believe that this is the case, in the sense that households would have preferred a much stronger focus on single-family houses, with land contact for the residents, if household preferences had been allowed to determine the direction of production in the same way as happens in commodity areas with equilibrium pricing. In that case, our country would have had a living environment that most people considered far more “human” than the one that exists today.

Sune Lindström, professor of city planning at Chalmers University of Technology, wrote in 1977 that the Million Program was a “newly built slum, of a never seen proportion. A slum that by its very existence makes future planning and housing politics an inaccessible swamp” (Lindström 1977, p. 203). Unfortunately, Lindbeck’s and Lindström’s prophecies turned out to be accurate, and the outcome is far from the rosy picture depicted in Hill (2022). In a 2015 report concerning organized crime in Sweden, the Swedish Police (2015, p. 8) underscored the connection between crime and the Million Program: “The vast majority of the audited areas were built between 1965 and 1975 as part of what came to be known as the Million Program.”

Learning from Mission Failure—Seven Takeaways

While the mission-oriented approach to innovation policy has gained significant popularity in recent years, particularly among policymakers, some academics have started to critically examine these ideas (e.g., Wennberg and Sandström 2022), leading to the identification of several challenges. The case studies in *Moonshots and the New Industrial Policy: Questioning the Mission Economy* together with the additional missions reviewed above, shed new light on the risks associated with implementing mission-oriented innovation policies. Below, we synthesize these risks with theoretical arguments and empirical observations into seven takeaways that together call into question the usefulness of MOIPs.

1. Wicked problems cannot be solved through missions

A common trait of many of the MOIPs discussed in *Moonshots and the New Industrial Policy* is that they in some way or another try to solve a “wicked” problem, i.e., problems that are complex, systemic, and span several policy areas (Nelson 1977). This is no coincidence and in line with the idea behind launching MOIPs. As is well illustrated among all examples in the volume, it is also inherently difficult to “solve” these often important but complex problems in any profound way through grand politically-initiated projects – despite good intentions and, occasionally, abundant public spending.

Lucas and Boudreaux’s (2024) analyze the United States’ efforts to end homelessness provides a good illustration of how difficult it can be to address wicked problems:

But despite a clear mission, good intentions, bipartisan political support, evidence-based innovations, major funding increases, thorough stakeholder engagement, and unequivocal state leadership, the results during this period were underwhelming at best. A more-than-doubling of federal expenditures and the widespread diffusion of evidence-based practices saw a mere nine percent reduction in total homelessness; in fact, the downward trend stalled early, with no single year-over-year decline in homelessness since 2016. Not one of the four objectives initially outlined in 2010 were met, and each one was eventually delayed, revised, or dramatically curtailed.

In a similar way, other social problems described in this essay and throughout the volume *Moonshots and the New Industrial Policy*, such as homeownership in minority groups in the United States (Lucas and Boudreaux 2024) or foreign aid (Waldron and Coyne 2024), are complex and wicked by nature and hard to solve in any meaningful way.

Richard Nelson, the doyen of evolutionary and innovation economics, contends that grand societal challenges and the wicked problems of today cannot be effectively addressed through a mission-oriented approach because these challenges (Nelson 2011, p. 1697)

are all very different than the challenges faced and met by Manhattan and Apollo. These programs were aimed to develop a particular technological capability, and the achievement of their technological objective signaled the end of the program.

This conclusion is repeated in another piece, written together with two co-authors, arguing that mission-oriented policies “are not the right models for new programs aimed at the challenges we now face” (Foray et al. 2012, p. 1697).

Mazzucato (2021, p. 108) refers to Nelson’s conclusion—wicked problems cannot be solved through MOIPs as they are much more complex and systemic by nature—and states that “Nelson was right”. Instead, she argues that wicked problems require another form of missions which are much more systemic and span the entire economy. To reform and restructure several different, interdependent sectors and policy areas across society is clearly a sizable challenge, and it is difficult to see how Mazzucato or other advocates of MOIPs can counter Nelson’s stance. Our conclusion stands: Wicked problems cannot be solved through missions.

2. Politicians and government agencies are not exempt from self-interest

The findings in *Moonshots and the New Industrial Policy*—as well as in other case descriptions of failed missions—show that self-interested behavior among government actors is often a part

of the story and may be one important factor to bear in mind when exploring the reasons why MOIPs fail to achieve their mission. Lucas and Boudreaux (2024) suggest, in their study about homelessness, that actors may twist and bend the arguments and evidence for a specific policy in order to safeguard their own private interest.

Within the field of public choice, self-interested action is an essential idea used to analyze outcome and behavior of policymakers, and several contributions in *Moonshots and the New Industrial Policy* make use of this notion, notably Holcombe (2024) and Björnemalm et al. (2024). For example, the latter show how government agencies implementing innovation policy act in their own interest and regularly describe their own operations in an overly positive way, ignoring less positive evaluations. It has also been shown that these government agencies systematically rely on external evaluations that tend to be positive without having evidence for such assessments (Collin et al. 2022). Such behavior can be explained by the assumption that both elected politicians and government officials are governed by some degree of self-interest.

Politicians also benefit from MOIPs as inaugurations of large programs and projects are likely to result in positive publicity. President Nixon benefited from positive publicity upon launching the War on Cancer in 1971 and by referring extensively to the moonshot. Five decades later, President Biden repeated Nixon's effort and rhetoric when initiating his Cancer Moonshot. When Biden's Cancer Moonshot is implemented, the President appears to be taking decisive action against something people fear and dread.⁴ As a politician, Biden is likely to benefit from such an initiative where a strong negative outcome can ostensibly be avoided, and he will most likely receive positive publicity and gain in popularity.

Mazzucato (2021, p. 34) explicitly refutes public choice theory and states that:

No empirical evidence was advanced to support this idea. It was just assumed that social, constitutional and ethical concerns never motivated bureaucrats and politicians. And it was assumed that the public and private sectors were competitors and one side or the other could be a loser.

While it is certainly plausible that both politicians and government officials are not *only* driven by pure economic motives as actors in the market, it would be naïve to assume that policymakers are completely exempt from self-interested behavior. On this issue, Muldoon and Yonai (2023, p. 3) conclude that the literature on MOIPs

[c]onjures an image of disinterested and competent technocrats who make decisions based on knowledge, with their sole motivation being the common good. In addition, because these technocrats are nonpartisan and not self-interested, their motivation will be in the long-term good.

The same authors maintain that research on MOIPs depicts the government as “a dynamic, thoughtful body that makes decisions based on relevant information” (p. 3). MOIPs are therefore likely to be appreciated by policymakers as they are portrayed as visionary, altruistic

⁴ By using the universal tendency to loss aversion among the population and by strongly emphasizing a potentially very bad outcome if no political action is taken, politicians can create what Schnellenbach (2024) denotes a “loss frame”. This makes the general public more willing to accept grand political projects and spending. Exploiting this kind of bias makes the stated objectives of missions normatively appealing, and politicians may eschew the need to weigh in the efficiency of the proposed measures. This method of argumentation has, according to Schnellenbach (2024), been used to implement numerous other missions, including DARPA and the original Apollo project.

and competent actors at the steering wheel of society. The contributions in *Moonshots and the New Industrial Policy* clearly show that this is a view of the actors involved in MOIPs that is too naïve and rigid.

3. MOIPs are subject to rent seeking and mission capture

Above, we stressed that many government actors, like other actors in the economy, are not omniscient altruists but may be less informed and partly driven by self-interest. Besides politicians and government agencies pursuing their own agendas, there are other interest groups which exert pressure on the political sector to receive (financial) benefits—a phenomenon often referred to as rent seeking. Hence, powerful and concentrated interest groups, such as large corporations, labor unions, and industry associations, may leverage their relational and financial resources—often combined with asymmetric knowledge—to influence policies. As a result, they may shape regulations, compensation schemes, and tax structures to their advantage—an idea elaborated by Holcombe (2024).

Several of the failed missions covered throughout *Moonshots and the New Industrial Policy* and in this essay can be understood through the lens of rent seeking and regulatory capture. Alves (2024) shows how attempts to revive Brazil’s shipbuilding industry were influenced by labor unions in such a way that large supportive measures were directed towards domestic suppliers, which were not competitive in the global marketplace. Waldron and Coyne (2024) also stressed that foreign aid made many economic areas highly politicized in the receiving country, substantially increasing the scope for and extent of rent seeking. The description of the U.S. financial crisis in 2008–2009 highlights how powerful interest groups were able to exert influence on policymakers. In particular, Fannie Mae and Freddie Mac were extremely effective in their lobbying efforts. In hindsight, the combination of access to government funding and de facto guarantees, strong political connections and shareholder demands on growth and profits made it very difficult to stop Fannie and Freddie from blowing a credit bubble. The War on Cancer is another case in point illustrating how interest groups captured the agenda. The quest for a cure, related patents and monopoly profits gained the upper hand vis-à-vis an alternative approach focusing more on prevention. Prevention would arguably have resulted in a stronger emphasis on research concerning the toxicity of various chemical substances and their effects on humans, something that would have threatened vested interest groups.

The rent seeking argument has been applied to the study of MOIPs by several other scholars as well (e.g., Muldoon and Yonai 2023). OECD (2021) uses the term “mission capture” to highlight the risk that MOIPs become captured by vested interests. As MOIPs are formulated in interaction with established stakeholders, they are also likely to exert disproportionate amounts of influence. It has been argued that missions tend to favor vested interests rather than supporting new entrants or institutional entrepreneurs (Bergkvist et al. 2022), because it is difficult to bar incumbent actors and already existing infrastructures from dominating the implementation of the mission (Begemann and Klerkx 2022). Economists such as Bloom et al. (2019, p. 179) also emphasize this point, asserting that missions “may be more likely to favor sectors or firms that engage in lobbying and regulatory capture, rather than the most socially beneficial.”

All these examples are in line with public choice scholars such as James Buchanan and Gordon Tullock (1965) who assume that actors in the policymaking process behave as economic agents, aiming to maximize their own utility. But this conclusion should not surprise many—why would the design of MOIPs be an exception to the pattern described by the public choice scholars?

4. MOIPs distort competition

MOIPs emphasize the importance of collaboration, both between businesses and between the public and private sectors. It has been argued that the state should set “a direction that can foster and catalyze new collaborations across multiple sectors” (Mazzucato 2021, p. 53).

Certainly, innovation is in many regards a collective effort. This fact is acknowledged and further developed by the Collaborative Innovation Bloc (CIB) perspective (e.g., Elert and Henrekson 2022), which is inspired by Schumpeter’s assertion that the entrepreneurial function “may be and is often filled cooperatively” (1989 [1949], p. 261). Many key contributions to the literature on innovation and entrepreneurship explicitly or implicitly acknowledge these collaborative elements (e.g., McCloskey and Klamer 1995; Garud and Karnøe 2003; Sarasvathy 2008). Innovative entrepreneurship is therefore largely about attracting and mobilizing resources towards novel directions.

Still, the fact that innovation is largely a collaborative effort does not imply that there are no elements of competition. Other scholars have put more emphasis on the competitive elements of capitalism that result in innovation. Baumol (2005), for instance, depicts mature capitalism as a form of oligopolistic competition where fairly few firms try to outsmart each other through innovation, thereby fueling a process of renewal. Even entrepreneurs who mobilize resources towards collaboration compete with alternative usage of such resources.

When one regards innovation and entrepreneurship in the modern economy as both a process of competition and collaboration, it becomes clear that MOIPs can thwart competition and raise barriers to entry. Yerger (2024a) discusses how, for example, collaboration between the public sector and incumbents may obstruct free entry and induce “expert failure” (Koppl 2018) through a lack of rivalry.

In other settings, there may also be different alternative paths to accomplish a certain mission. The War on Cancer described above, for example, illustrates how preventing cancer would have been one approach but that policymakers instead prioritized the quest for a cure. The aforementioned Million Program provides another illustration of how other more welfare-enhancing solutions to a problem are crowded out by the mission. Policymakers could have tried to end Sweden’s housing shortage by removing the primary cause—rent control—but instead opted for a centralized large-scale effort that benefited both state-owned companies and private construction companies. Similar scenarios can be discussed regarding the reduction of CO₂ emissions, to name one topical example. Would nuclear power, wind power, solar cells or hydroelectric be the most efficient way forward and what balance between these alternatives is ideal?

There are certainly many historical examples of how groundbreaking innovations have been developed in close collaboration between companies and customers. Consider, for example,

Ericsson's close partnership with Sweden's telecommunications monopoly—the government agency Televerket—and the development of both electronic switches in the 1970s and the first generations of mobile telephony in the late 1970s and 1980s. However, assuming that innovation only involves collaboration would be an oversimplification. For example, consider once again the historical case of telecommunications in Sweden. The same collaboration that was described above as critical for development of new technology became a threat to free and fair competition in the 1980s. The government monopoly was now barring innovative competitors from entering the market, partly by building strong connections to dominant companies such as Ericsson. In such a setting, MOIPs reduce competition and the innovative activity that it fuels (Eriksson et al. 2019).

5. Policymakers lack information to design MOIPs

If MOIPs present an inherent risk of distorting competition between technologies and companies, it is critical to further investigate how MOIPs are designed. The examples given in *Moonshots and the New Industrial Policy* suggest that policymakers often lack the required information to design MOIPs in an effective and efficient way. In the 1970s, cancer research was still relatively underdeveloped by today's standards, making it virtually impossible to design a mission against the disease in 1971 when President Nixon signed the National Cancer Act. Lucas and Boudreaux (2024) is another case in point where politicians continued to spend money on a mission to eradicate homelessness that in the end turned out to be a complete failure, underlining that “many obstacles to success are only observable ex post.” Even people with “well-meaning” interests have limited knowledge, something that, once again, underscores the notion that good intentions are not enough to succeed in solving a grand challenge.

In line with this argument, Waldron and Coyne (2024) is a good illustration of the “knowledge problem” associated with political control in general and state-guided missions in particular. With Mazzucato's principles in action, the authors show how difficult it is to succeed with foreign-aid missions without sufficient information and feedback loops, a condition that induces unintended consequences. At worst, these may even do more harm than good.

André Alves' (2024) study of the Brazilian government's mission to create a flourishing domestic shipbuilding industry provides another illustrative example and concludes that the associated policies were not in harmony with the industrial and economic landscape of the country:

The misalignment between policy intent and the real possibilities of market creation that considers the concrete availability of technological and organizational capabilities at any given time results in policy ambiguity that hinders the successful implementation of missions.

These arguments are not new. When Nelson revisited his 1977 book in 2011, he emphasized that a key argument in his book was still valid, namely the lack of knowledge to make sound decisions was “not so much political, as a consequence of the fact that, given existing knowledge, there were no clear paths to a solution” (p. 685).

6. Government support distorts incentives and creates moral hazard

Once missions are put in place, they usually contain substantial amounts of resources that the government makes available, either via inexpensive loans, R&D grants, various subsidies or

other even more protectionist measures. The availability of these resources is likely to affect the behavior of businesses in the long run. Many (large) companies may systematically exploit such government resources and become less prudent in their investment decisions—a scenario often referred to as moral hazard. Moral hazard may arise when an actor has incentives to increase its risk exposure because large part of the cost of that risk is born by someone else.

Moonshots and the New Industrial Policy illustrates the problems with distortions in incentives in several ways. Waldron and Coyne (2024) show how public funds may distort the incentives concerning nation building due to foreign aid programs. The authors emphasize how these programs result in several odd incentives and related behaviors:

[C]onsider how influxes of foreign aid can incentivize wealth-destroying behavior, as individuals recognize profit earning opportunities from lobbying for additional aid and shift resources into the political realm. Instead of focusing on the productive creation of economic wealth, individuals and firms choose to compete for political favors, diverting resources better used elsewhere and rewarding corruption for those in positions of power over how foreign assistance is spent.

The behavior of the government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac in the U.S. financial crisis is, in the same manner, a clear example of moral hazard. While being directed through policies to increase lending to minority groups while at the same time delivering profits to shareholders, Fannie and Freddie delivered on those two objectives by taking on so much risk that the stability of the entire financial system was threatened. In hindsight, it is clear that they did so because the risks were born by taxpayers.

If companies can access resources via grant applications instead of by delivering valuable goods and services to customers on a competitive market, they will devote progressively more time and effort towards unproductive activities such as applying for grants and subsidies. In effect, they become “subsidy entrepreneurs” (Gustafsson et al. 2020), i.e., businesses that systematically exploit various grants and subsidies awarded by the government. Using a sample of small and medium-sized firms, Gustafsson et al. (2020) showed that those that systematically apply for and obtain grants from the government tend to both pay higher wages and, simultaneously, experience lower productivity. They spend their time and efforts applying for money, meaning that productivity is lower, but they are still able to pay high wages. Firms receiving “free money” for various high-risk technological endeavors become immune to risks and start to engage in wasteful projects and “pet” projects, losing significant amounts of money pursuing technological trajectories with scant long-term potential.

Other examples of distorted incentives and technological efforts which bore no fruit, besides those depicted in *Moonshots and the New Industrial Policy*, include ethanol from corn cobs in the United States, ethanol from cellulose in Sweden, and methane from tree branches (Sandström and Alm 2022). Without large grants from government agencies and the European Union, these efforts would not have been made and resources could have been saved.

All the cases depicted above show that incentives matter and may result in problems in the real world. Ignoring these difficulties turns explicit missions intended to solve grand challenges into nothing more than pipe dreams.

7. MOIPs ignore opportunity costs

The results reviewed so far in this essay show that MOIPs are generally implemented and evaluated with little concern regarding opportunity costs. Yerger (2024b) argues that the Global Positioning System (GPS), e.g., cannot be evaluated without taking the opportunity costs into account but central planners (often) do not have the ability to assess these costs. The literature review by Batbaatar et al. (2024) showed that of the 33 percent of MOIPs that were assessed by researchers as successful, none of them reached that conclusion after having looked at actual costs or discussing any alternative usage of the resources.

The Million Program for housing in Sweden serves as an example of this problem. The goal to build one million dwellings was reached. Yet the shortage of housing was still a problem because of strict rent control and the fact that many of the Million Program projects were executed without paying much attention to consumer preferences. Needless to say, the capital and effort that went into the Million Program could have been better utilized for other purposes.

Kantor and Whalley's (2023) study of the moon landing project is one of the first studies into the actual effects of MOIPs that seeks to compare this initiative with alternative forms of government spending. As they find that effects are not greater from the moonshot than for other government expenses, the results call into question a considerable share of the anecdotal evidence used to justify MOIPs. These findings are in line with the observations made by Batbaatar et al. (2024) regarding current implementation of MOIPs. Most MOIPs or assessments of their effects do not take opportunity costs into consideration. As a result, they convey an overly positive impression of their effects. This is not a coincidence; a disregard of costs and lack of attention to the resources used seems to be a prevalent approach in the literature on MOIPs. Mazzucato (2021, p. 122) is crystal clear regarding this aspect:

[The mission] [...] can be evaluated by asking a single question: "Did we achieve it or not?" This is how to determine the success or failure of a mission and measure progress along the way.

If policies are assessed merely by looking at the benefits without discussing costs, it would be strange if those policies would not be considered beneficial. To measure success only in terms of whether the goal was realized means that the opportunity cost, including the actual monetary expense, would be ignored. Given that this is the approach to costs and expense, the whole idea of MOIPs must be considered thoughtless—no matter how urgent and benevolent the missions to be achieved may be.

Concluding Remarks

In this essay we have synthesized theoretical arguments and empirical observations into seven takeaways that question the usefulness of mission-oriented policies (MOIPs):

- 1) Wicked problems cannot be solved through missions.
- 2) Politicians and government agencies are not exempt from self-interest.
- 3) MOIPs are subject to rent seeking and mission capture.
- 4) MOIPs distort competition.
- 5) Policymakers lack information to design MOIPs.
- 6) Government support distorts incentives and creates moral hazard.
- 7) MOIPs ignore opportunity costs.

The seven takeaways summarize our findings explaining why MOIPs may result in disappointing outcomes. While several of these observations have been made in each of the contributions we refer to and elsewhere in the literature on missions, innovation policy and political economy, this essay provides illuminating illustrations and summarizes these insights in the form of seven takeaways. These takeaways are grounded in various social science theories and are illustrated with different cases of failed missions.

A couple of implications emerge. First, given the evidence reviewed, and considering the many criticisms of MOIPs, it is a matter of grave concern to observe how MOIPs are being implemented around the world to address environmental challenges and health issues such as cancer. Bear in mind, that some of these areas have already been subject to failed missions historically.

Second, our analysis implies that MOIPs should be assessed and evaluated properly by taking opportunity costs into consideration. Evaluations need to look at both costs and benefits. So far, such studies are virtually non-existent.

Finally, we see a need for further articulations of alternative approaches to accomplish development and renewal of our economies. The third part of *Moonshots and the New Industrial Policy* is explicitly concerned with how this can be done.

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