Government Startup Grants, Signaling, and Corporate Governance

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Abstract

Government startup grants offer both financial assistance and an authoritative stamp of approval for early-stage ventures. Leveraging a novel instrumental variable based on government fiscal-year timing, we provide causal evidence that such grants serve as a strong quality signal that influences investor confidence and long-term corporate outcomes. Startups that receive grants due to favorable timing exhibit significantly higher indicators of success in the long run – for example, they attract more follow-on funding and are more likely to achieve successful exits such as IPOs – compared to otherwise similar firms that narrowly miss out on funding. The analysis suggests that the intangible benefits of a public grant, notably the validation and credibility it confers, can substantially outweigh the grant's direct monetary value. This external endorsement appears to bolster investor trust, encourage improvements in governance (such as attracting experienced board members or advisors), and empower managerial decision-making, thereby catalyzing growth. Overall, our findings highlight that government startup grants function as credible signals of quality that shape the trajectories of new ventures, with IPOs emerging as one possible outcome of the improved investor perception and governance fostered by the grant.

1. Introduction

Public startup grant programs have become a widespread policy tool to foster innovation and entrepreneurship. From the U.S. Small Business Innovation Research (SBIR) program to numerous international initiatives, governments collectively invest billions of dollars in grants to early-stage ventures. One rationale behind these subsidies is to alleviate the information asymmetries that plague startup financing. Early-stage ventures typically lack established track records, making it difficult for outsiders to assess their quality. In theory, a competitive government grant can function as a positive signal or certification: by passing a rigorous public selection process, a startup may convey its credibility and potential to the market (Spence, 1973). Empirical evidence highlights various credible signals in startup contexts – founder credentials, patents, reputable investors, innovation awards – that influence investor behavior and startup valuation (Gulati & Higgins, 2003; Stuart et al., 1999). Government grants, awarded through expert evaluation and merit-based selection, inherently possess similar signaling attributes. On the other hand, a grant can be viewed simply as financial aid for struggling firms and might even carry a stigma, potentially dampening market perceptions by indicating weakness. Additionally, scholars have noted potential unintended effects such as "crowding out," where public grants could reduce startups' incentives to seek private funding or displace private R&D spending. Studies like Wallsten (2000) raised concerns about such crowding-out, while meta-analyses by Dimos & Pugh (2016) find mixed outcomes: sometimes public grants stimulate additional private R&D investment, but in other cases they substitute for private financing. In short, the literature reports mixed conclusions on whether government funding primarily provides a positive certification or merely a subsidy with possible drawbacks.

Governance as a Signaling Channel. Beyond their financial impact, government startup grants may also influence the corporate governance trajectory of recipient firms. Because a grant comes with an official endorsement of the startup's quality, it can alter how key stakeholders interact with and within the venture. First, consider investor confidence and ownership structure: a grant award sends a positive signal to outside investors, who may interpret it as certification of the venture's potential (Connelly et al., 2011). This can increase investors' willingness to provide capital on favorable terms (Islam, Fremeth, & Marcus, 2018). In many cases, attracting prominent investors goes hand-in-hand with governance changes – for example, new investors (such as venture capitalists) often take board seats or demand greater transparency and oversight. Thus, by drawing in more and higher-quality investors, grants can indirectly lead to strengthened oversight and more formal governance structures in the startup.

Second, a public grant can affect board composition and managerial oversight. Firms receiving grants might adjust their governance structures to align with the credibility gained from the award or to meet any increased reporting requirements tied to public funding. In practice, this could mean bringing in experienced independent directors or advisors to the board, implementing more rigorous financial controls, or improving disclosure practices. The prestige of a government grant may make it easier for startups to attract high-caliber board members or industry experts who can provide guidance and enhance oversight. These governance enhancements can improve strategic decision-making and ensure that the company is well-prepared for subsequent growth stages.

Third, government funding can shape managerial behavior and strategic decision-making. By alleviating financial constraints, a grant allows founders and managers to pursue longer-term projects and invest in innovation that might otherwise be too risky or resource-intensive. This infusion of resources and validation might encourage managers to take calculated risks, widen their innovation scope, or escalate growth plans, knowing they have a cushion of support. At the same time, managers may feel pressure to justify the confidence shown by the grant, which can incentivize more disciplined execution and goal-setting. Some studies even caution that while grant recipients attract investors more readily, they might face strategic trade-offs or growth constraints if the funding comes with certain conditions or expectations (Stevenson, Kier, & Taylor, 2020). In sum, receiving a competitive grant could set in motion various governance-related changes – from ownership and board structure to managerial incentives – that collectively contribute to a startup's long-term success.

Against this backdrop, we ask whether and how government startup grants causally improve startup outcomes. In particular, does receiving a public grant ultimately increase a venture's long-run success (for instance, achieving an IPO or other successful exit), and through what mechanisms might this occur? Evaluating this question is challenging due to issues of endogeneity and selection. Grant-awarding agencies do not randomly pick startups; they tend to fund ventures that appear promising or meet certain criteria. Likewise, investors may choose to invest in grant recipients not because of the grant's informational content, but because the same inherent qualities that won the grant also attract investment. The result is a classic identification problem: any correlation between grants and future success could reflect underlying startup quality rather than a causal effect of the grant. Simply comparing outcomes of firms that received grants to those that did not can be misleading: high-quality startups self-select into applying, and agencies select the most promising proposals. Thus, observed success among grant recipients may reflect inherent quality differences rather than the grant's impact. This concern has led to mixed findings in the literature. Some studies document positive effects of public funding (e.g., Myers & Lanahan, 2022), while others find no effect after accounting for selection (Wang et al., 2017; Zhao & Ziedonis, 2020). A growing body of work has examined whether and how public R&D subsidies translate into improved startup outcomes, highlighting both the promise and ambiguity of the "grant-as-signal" hypothesis. Early evidence from the SBIR program was encouraging: Lerner (1999) found that SBIR grant awardees grew significantly faster than similar non-awardees over a decade and were far more likely to attract venture capital. This superior performance was most pronounced in regions with abundant venture capital, suggesting that the certification effect of a grant mattered most where investors were present to respond to the signal. Such findings gave rise to the view that government awards can help certify firm quality to outside financiers. Subsequent studies using more rigorous designs paint a complex picture. A common approach is a regression discontinuity design (RDD) exploiting proposal ranking cutoffs. For example, Bronzini and Iachini (2014) use an RDD in an Italian R&D grant program where only projects above a score threshold were funded. Comparing firms just above versus just below the cutoff yielded no significant average increase in R&D spending overall (though small firms did increase R&D, unlike larger firms). Similarly, several European grant studies have used RDD designs (e.g., Einiö, 2014). More recently, Howell (2017) leveraged a quasi-experimental design with ranked applicants in a U.S. Department of Energy program to isolate early-stage grant effects. She finds that receiving a grant roughly doubles a startup's probability of subsequently obtaining venture capital and leads to large increases in patenting and revenue, especially for capital-constrained firms. However, Howell's analysis attributes these benefits chiefly to the infusion of capital enabling technology prototyping, rather than to any pure informational update for investors – the data showed little evidence that the award itself changed investor perceptions of quality. Thus, the literature offers mixed conclusions: some studies argue that public grants serve as a positive quality signal that helps startups secure external financing, while others emphasize the role of direct funding support over certification. This debate, and the open question of whether grants effectively signal quality beyond their financial subsidy, motivates our study.

In this paper, we employ a new strategy to estimate the causal impact of winning a government startup grant on subsequent startup success, while also shedding light on the mechanisms at work. Specifically, we leverage a unique institutional feature – the timing of grant applications relative to government fiscal-year funding cycles – as an instrumental variable (IV) for grant receipt. In many grant programs, funding decisions are influenced by fiscal-year budgeting constraints. We show that otherwise similar startups can have different chances of receiving a grant depending on the luck of their application timing around the fiscal year cutoff. Applications submitted early in the fiscal year (when budgets are flush) are more likely to be approved than those submitted later, all else equal. This creates a source of plausibly exogenous variation in funding outcomes that is unrelated to a startup's intrinsic quality. Using this timing-induced randomness as an instrument, we compare startups of comparable quality where some received a grant due to fortuitous timing while others narrowly missed out due to budget timing quirks. The IV approach allows us to estimate the grant's impact on outcomes while mitigating selection bias, and the richness of our data lets us probe the channels through which grants operate. In particular, we attempt to disentangle how much of the grant's effect comes from its certification (signaling) value versus its direct financial assistance.

Our analysis yields several key findings. First, receiving a government startup grant has a significant positive causal effect on a startup's ability to achieve a successful exit. The estimated effects are economically large. Startups that obtained a grant (due to favorable timing) have substantially higher rates of IPOs compared to their otherwise similar peers who missed funding. This suggests that beyond the immediate infusion of funds, the grant provides an endorsement that materially boosts a venture's trajectory. We also find that this benefit is particularly pronounced for startups led by female entrepreneurs, indicating that external validation from a grant may be especially valuable in contexts where entrepreneurs face biases or credibility gaps. The grant's signaling effect appears to stimulate early interest and involvement from investors and other stakeholders, while the financial support allows the startup to develop its product, recruit key team members, and reach additional important milestones (prototypes, customer traction) that further improve its prospects down the line. In short, the public grant both signals quality and provides resources, and these forces work in tandem to enhance long-run success.

Our contributions are threefold. First, we propose an identification strategy that exploits fiscal-year application timing as an instrument for grant receipt. This addresses selection endogeneity in grant awards and adds a practical tool for causal evaluation of startup policies; it also fits the broader strategic view of resource allocation and signaling in grant contests (e.g., Mugerman et al., 2025). Second, we provide evidence that government startup grants can meaningfully improve startup outcomes through multiple channels: they act as endorsements that alleviate information frictions between entrepreneurs and capital providers, while also supplying capital to advance the venture. These results suggest that a government award serves as a positive indicator of a startup's potential (while of course not being the only factor). Finally, our findings carry important implications for policymakers and the startup ecosystem. For policymakers, the results highlight that well-designed grant programs can have multiplier effects: a dollar of public funding can "crowd in" additional private investment by improving information and confidence in the venture's quality. This underscores the value of merit-based grant competitions as a means not only to directly finance innovation but also to boost the perceived quality of projects in the market. For investors and entrepreneurs, the evidence confirms the informative content of competitive grants – a government award should be viewed as a positive signal of firm quality. Overall, by illustrating the combined signaling and support power of grants, our study shows that public funding can complement private financing in the startup ecosystem rather than merely substitute for it.

2. Data

Our dataset comprises Israeli start-ups that applied for grants from the Israel Innovation Authority between 2002 and 2020. These records are merged with additional data from IVC covering start-up activity and exit events. The screening process, detailed in Appendix B, yields a final sample of 11,138 applications, of which 6,083 were approved for funding and 5,055 were rejected.

[Table 1]

Panel A of Table 1 reports the annual distribution of applications. The number of submissions remains relatively stable throughout the sample period, except for a notable increase in 2020, likely attributable to the economic uncertainty and downturn induced by the COVID-19 pandemic. On average, 55% of applications received funding, with annual approval rates ranging from 38% to 75%.

Panel B of Table 1 presents application counts and grant approval rates by industry. Industries are grouped into five broad categories, following the classification used by the Innovation

Authority (with confidentiality constraints on more granular reporting). The largest sector—"Cleantech, Life Sciences, and Semiconductors"—accounts for 5,242 applications (47% of the sample), followed by "IT & Enterprise Software and Internet" with 2,239 applications (20%). The remaining applications fall into the categories of Miscellaneous Technology (16%), Communications (13%), and Agritech (4%).

[Table 2]

Table 2 presents descriptive statistics of firms' characteristics, application details, and IPO occurrences for the full sample of 11,138 applications, as well as comparisons between granted and non-granted applications. On average, 14.6 percent of applications are submitted in January, with a higher rate among granted firms (16.7 percent) compared to non-granted firms (12 percent). The average evaluation score, assigned by the Innovation Authority's review committee, is 3.42 on a scale from 1 (low) to 5 (high). Although there is no formal "passing" score, granted firms receive significantly higher scores, averaging 0.7 points above non-granted firms.

Granted firms receive, on average, 51.2 percent of the requested budget, as captured by the Approved_Budget variable. Age is measured as an indicator equal to 1 if the firm's age exceeds the sample median at the time of application, and 0 otherwise; 42 percent of firms are classified as young. Size is measured as the natural logarithm of the total budget requested in the application. This variable serves as a proxy for firm size at the time of submission, as other firm-level measures (e.g., number of employees) are only available as of the data retrieval date. Granted firms exhibit significantly larger requested budgets (mean = 14.90) than non-granted firms (mean = 14.52). Moreover, 26.7 percent of applications come from firms at the early funding stage (i.e., seed or R&D); non-granted firms are more concentrated in this category (29.6 percent vs. 24.3 percent). IPO events occur in 3.5 percent of cases, more often among granted firms (4.0 percent) than non-granted firms (2.8 percent). Additionally, 12.8 percent of firms are led by CEOs holding a PhD, while 4.3 percent have female CEOs. Interestingly, non-granted firms show a slightly higher share of female CEOs (4.9 percent vs. 3.7 percent), whereas granted firms display a marginally higher share of PhD-level CEOs (13.4 percent vs. 12 percent). The vast majority of firms (92.6 percent) are registered in Israel, with no notable differences across groups. Appendix A provides detailed variable definitions.

3. Empirical Design

Our baseline specification estimates the effect of grant receipt on the likelihood of an IPO. We focus on IPOs because they represent a salient outcome for startups: regulators view IPOs as evidence of program success—signaling that firms have scaled, attracted broad investor demand, and complied with stringent governance and disclosure rules—while researchers regard them as a natural endpoint of entrepreneurial success that reshapes financing, governance, and innovation (Bernstein, 2015; Chemmanur et al., 2010; Chemmanur et al., 2014). Unlike intermediate outcomes such as revenues or survival, IPOs provide a transparent, standardized benchmark of long-run impact.[1]

Baseline model:

Eq.1

$$IPO_i = \alpha_1 + \beta_1 Granted_i + \chi_i + \delta_i + \lambda_i + \varepsilon_i$$

IPO equals 1 if firm i subsequently completes an IPO and 0 otherwise; Granted indicates grant receipt; χ_i represents the set of firm and CEO-level controls (age, funding stage, CEO profile, local affiliation, and their interactions with industry); δ_i and λ_i denote industry and year fixed effects; where ε_i is the error term , and standard errors are clustered at the industry level. If grant receipt correlates with unobserved firm quality (embedded in the error term), β_1 may be biased.

Identifying the causal impact of government startup grants on firms' outcomes is challenging due to inherent selection bias: stronger startups are both more likely to receive grants and more likely to succeed regardless of external support. This introduces bias in estimating the true effect of grants and underscores the need for a credible identification strategy.

Prior studies have employed a regression discontinuity design (RDD) around evaluation scores to address endogeneity. In our context, however, this approach is less appropriate. Figure 1 presents the distribution of evaluation scores for both granted and non-granted applications, as assigned by the Innovation Authority. Scores range from 1 to 5, yet—as confirmed by the Innovation Authority—there is no formal "passing" grade. Instead, grant decisions also depend on several additional subjective and unobserved factors beyond the score. Consistent with this, Figure 1 shows substantial overlap between the distributions of granted and non-granted

[1] This interpretation also aligns with the perspective expressed by senior executives at the Israel Innovation Authority, who emphasized in discussions that IPOs are viewed as clear evidence of program success.

applications across the entire score range, indicating that approvals are not determined by a sharp cutoff. This absence of a clear discontinuity undermines the credibility of an RDD strategy, since its validity relies on assignment being strictly determined by a score threshold.

[Figure 1]

To address this issue, we develop an instrumental variable (IV) approach that exploits exogenous variation in grant approvals driven by fiscal-year dynamics. Specifically, we use the month of application as an instrument: applications submitted at the beginning of the budget year (i.e., January) are significantly more likely to be approved, yet the month of application is plausibly unrelated to firm outcomes, satisfying the exclusion restriction for a valid instrument. Figure 2 shows that approval rates are highest in January (around 63%) and then gradually decline until September, when they reach their lowest point. A slight uptick is observed in the final quarter, particularly in November and December. This seasonal pattern reflects budget-cycle dynamics: early in the year, when funds are abundant, the committee is more "generous"; by mid-year, it conserves resources; and toward year-end, it disburses remaining funds before the budget cycle closes.

[Figure 2]

In the first stage, we instrument the binary grant receipt indicator (Granted) with a January application indicator (January_Application), exploiting fiscal-year timing as a source of random variation in funding. Formally:

Eq. 2

$$Granted_i = \alpha_2 + \beta_2 January\_Application + \chi_i + \delta_i + \lambda_i + \varepsilon$$

where χ_i represents the set of firm- and CEO-level controls (age, funding stage, CEO profile, local affiliation, and their interactions with industry), and δ_i and λ_i denote industry and year fixed effects.

In the second stage, we examine the causal effect of grant receipt on IPO likelihood. Specifically, we regress an indicator for whether a firm subsequently conducted an IPO (IPO) on the fitted values of grant receipt from the first stage:

Eq. 3

$$IPO_i = \alpha_3 + \beta_3 \widehat{Granted_\iota} + \chi_i + \delta_i + \lambda_i + \varepsilon$$

IPO equals 1 if firm i experienced an IPO after grant approval and 0 otherwise. $\widehat{Granted_\iota}$ denotes the predicted probability of receiving a grant from the first stage. As in the first stage, we control for firm- and CEO-level characteristics (χ_i), and include industry and year fixed effects (δ_i and λ_i).

The identifying assumption is that, conditional on controls and fixed effects, the exact timing of a startup's grant application within the fiscal year is random with respect to its ex-ante quality and eventual outcomes. This assumption is supported by institutional factors: application timing is often dictated by external project developments (e.g., obtaining a regulatory approval) rather than by a startup's inherent quality. Moreover, startups are typically unaware of the budget cycle dynamics, meaning they do not strategically time submissions around fiscal year boundaries. Thus, January_Application provides a plausibly exogenous shock to the likelihood of funding. Figure 2 confirms the first-stage relationship: the percentage of applications approved is highest in January and declines later in the year, indicating that January_Application is a strong predictor of Granted. The first-stage F-statistics, reported in Table 3, range from about 14.7 to 19.7 (depending on specification), comfortably exceeding the conventional threshold of 10 for strong instruments. This mitigates concerns about weak identification.

We estimate two-stage least squares (2SLS) models, where the second stage links the instrumented grant receipt to various startup outcomes. Our primary outcome of interest is the IPO dummy, as defined earlier. Additionally, we examine intermediate outcomes such as follow-on venture capital funding and acquisition, to capture other dimensions of startup success and growth. By comparing OLS and IV estimates, we can infer the extent to which selection bias may affect naive estimates and whether the true causal effects are larger or smaller once corrected.

One important consideration is the exclusion restriction: for the IV estimates to be valid, January_Application should affect outcomes only through its impact on grant receipt, not via any other channel. We provide several pieces of evidence supporting the exclusion restriction. First, we show that January applicants and later applicants are statistically similar in observable characteristics (after controlling for industry and year), suggesting no systematic quality differences correlated with application month. Second, our specifications include fixed effects and controls that soak up any potential seasonal effects or time trends unrelated to grant funding. Third, we conduct falsification tests: for instance, we check whether January_Application predicts outcomes in the subset of firms that did not receive grants (it does not), which increases confidence that the instrument's effect on outcomes operates through grant receipt.

4. Results

4.1 Baseline Specification

We begin by estimating the baseline specification in Equation (1), which relates the receipt of a government grant to the probability of going public through an IPO. Table 3 reports the results. The coefficient on *Granted* is consistently positive and statistically significant, ranging from 0.0088 to 0.0093. In economic terms, this implies that receiving a grant increases the likelihood of going public by roughly one percentage point. Given that the unconditional IPO probability in our sample is 3.5%, this effect represents an increase by 25% relative to the baseline rate. While informative, these estimates may be biased if grant allocation is correlated with unobserved firm quality, as discussed in Section 3.

[Table 3]

4.2 Causal Evidence from Fiscal Year Timing

To address potential endogeneity in grant allocation, we implement the 2SLS instrumental variables (IV) strategy outlined in Equations (2) and (3), using a January application indicator as an instrument for *Granted*. The intuition, as discussed in Section 3, is that applications submitted at the start of the fiscal year benefit from budget-cycle dynamics that raise approval likelihood, while timing is plausibly orthogonal to firm quality and ultimate IPO outcomes.

Table 4 presents the first-stage results. Across all specifications, the coefficient on *January Application* is about 0.05 and highly statistically significant at the 1% level. Economically, this implies that firms applying in January are roughly 5 percentage points more likely to receive a grant compared to firms applying in other months, consistent with the descriptive evidence reported in Figure 2. The corresponding first-stage F-statistics, ranges between 14.7 and 19.7, comfortably exceed the conventional rule-of-thumb threshold of 10, confirming instrument strength and mitigating concerns about weak identification.

[Table 4]

Table 5 reports the second stage estimates from Equation (3), where IPO likelihood is regressed on the fitted values of grant receipt from the first stage. The IV coefficient on $\widehat{Granted}$ is positive and statistically significant across all specifications. The magnitudes suggest that receiving a grant causally increases the probability of going public by between 30 to 37 percentage points, an economically substantial effect.

[Table 5]

While the OLS results in Section 5.1 suggested a strong positive association between grants and IPOs, the IV estimates confirm that this relationship is causal rather than simply reflecting selection on unobserved firm quality.

4.3 Mechanism: Signalling or Funding Channel

We next examine whether the IPO effect documented above arises because winning a grant provides a signal of quality to outside investors or because the subsidy itself relaxes financing constraints and facilitates firm growth. To disentangle these channels, we first examine whether our instrument—January application timing—predicts the *amount of approved budget* conditional on receiving a grant.

Table 6 reports these results. Across specifications with year and industry fixed effects, the coefficient on January Application is close to zero and statistically insignificant. This indicates that the budget-cycle mechanism influences the probability of grant receipt but not the size of grants once approved. In other words, the instrument shifts the extensive margin of winning a grant, rather than the intensive margin of the award amount. Observable firm attributes, by contrast, matter for allocation: later-stage startups and firms led by PhD CEOs are awarded larger budgets, whereas female-led startups systematically receive smaller allocations.

[Table 6]

Next, we test whether the magnitude of funding affects IPO outcomes. Table 7 reports regressions of IPO probability on the ratio of the approved to the requested budget (Approved_Budget). The coefficient on Approved_Budget is negative and statistically significant, but its economic magnitude is negligible, suggesting that larger approved budgets do not meaningfully affect the likelihood of an IPO.

[Table 7]

Taken together, the evidence supports a signalling interpretation: government grants operate less as financial transfers and more as certifications of quality that alleviate information frictions in capital markets.

4.4 Government Grants and Female Leadership

We next examine whether the effect of government grants on IPO outcomes varies with the gender of the CEO. Table 8 reports estimates from specifications that include an interaction between the grant indicator and a dummy for female CEOs. Across all models, the interaction term Granted × Female CEO is positive and statistically significant at the 5% level, with coefficients around 0.1. This magnitude is economically meaningful: relative to the baseline IPO probability of about 3.5% (Table 2), the presence of a female CEO nearly triples the effect of receiving a grant on the likelihood of going public.

[Table 8]

The main effect of being female-led is itself positive but not statistically significant, indicating that the higher IPO probability is not simply driven by gender alone but rather by the combination of female leadership and government support. This suggests that grants may function as a particularly strong signal of quality for female-led startups, helping them overcome potential credibility or bias-related barriers in capital markets.

Among the controls, firm age continues to load positively and significantly in most specifications, consistent with more mature startups being more likely to reach the IPO stage. Other CEO attributes (PhD training, local origin) show weaker or inconsistent effects once the interaction is included, indicating that the female leadership channel is uniquely amplified by government support.

4.5 Robustness Tests

To assess the reliability of our IV results, we conduct a series of robustness checks. As an alternative to using January-only applications as the instrument, we expand the definition to include all first-quarter applications. The results remain consistent with the baseline estimates, reinforcing the validity of our identification strategy and suggesting that the findings are not sensitive to the narrower instrument definition. We further estimate the model using an IV-Probit specification instead of the baseline 2SLS framework. This approach addresses concerns about the linear probability assumption. The results remain stable in magnitude and significance, providing additional reassurance that our conclusions are not driven by functional form assumptions.

5. Conclusion

This study examines whether receiving a government startup grant improves a venture's subsequent success and through which mechanisms. Using an identification strategy based on the timing of grant applications within fiscal-year budget cycles, we provide causal evidence that obtaining a grant significantly increases a startup's attractiveness to investors and its likelihood of achieving a successful exit, including an IPO. Our results indicate that the indirect, non-monetary benefits of a grant – notably the external validation and credibility it confers – are substantial relative to the grant's financial value. In other words, beyond the infusion of capital, a grant serves as a strong vote of confidence in the startup's quality. Startups appear to leverage this endorsement to gain momentum: for instance, by attracting further investment and resources on more favorable terms, and by initiating governance improvements to support their growth. We also find that the value of this external validation is particularly high for startups led by female entrepreneurs, underscoring how an authoritative endorsement can help overcome biases and credibility challenges in the marketplace. Notably, because our primary outcome of interest (the IPO) is a late-stage event, the positive impact of grants likely reflects multiple reinforcing channels over time: the initial credibility boost to outside stakeholders, internal strategic and governance adjustments, as well as the tangible progress enabled by the grant funding itself.

Overall, our evidence suggests that well-designed government startup grants do not merely subsidize startups but also catalyze their growth through a combination of informational and financial effects. By complementing private capital with public endorsement and support, grants can stimulate further investment and development in young firms. The positive signal from a grant award may extend beyond investors, potentially helping startups attract early customers, talented employees, experienced board members, or strategic partners by signaling viability and legitimacy. In turn, this broadening of engagement can lead startups to adopt stronger governance practices and more professional management to meet the expectations set by the grant's prestige. Future research could build on our findings by exploring heterogeneity across sectors or regions, and by examining in more detail the micro-mechanisms through which grants influence startup trajectories. For example, investigating how grants affect founder decisions, employee motivation, or partnership opportunities would enhance our understanding of the full range of grant impacts. Additionally, examining the effects of government grants in emerging economies or in areas with nascent venture capital markets could reveal how context shapes the balance between the informational and subsidy roles of public funding. Finally, our timing-based IV approach could be applied to other policy contexts where resources are unevenly allocated over time. For instance, consider the variability in U.S. federal R&D funding: during certain budget cycles, abrupt cuts or surges in funding could create quasi-exogenous "shocks" to project support. Leveraging such variation – say, by instrumenting grant receipt with whether a project fell just before or during a funding downturn – could help isolate the causal effect of research subsidies on innovation outcomes like publications or patents. This highlights the broader applicability of our fiscal-year timing identification: whenever policy-driven budget dynamics create random "winners" and "losers," one can leverage that variation to evaluate the true impact of public support.

In summary, our study highlights that public grants can have lasting, multifaceted benefits for startups, operating both as a source of capital and as a valuable signal of quality that influences corporate governance and long-term success within the entrepreneurial ecosystem. By recognizing the signaling power of grants, policymakers and investors can better harness these programs to nurture high-potential ventures and improve the overall efficiency of capital allocation in early-stage markets.

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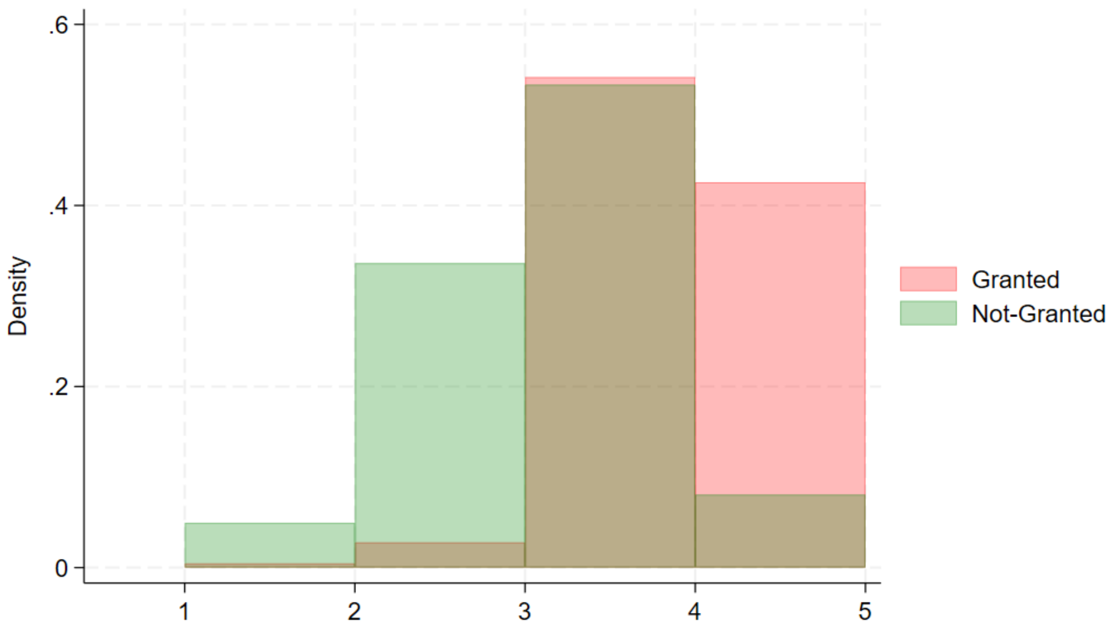
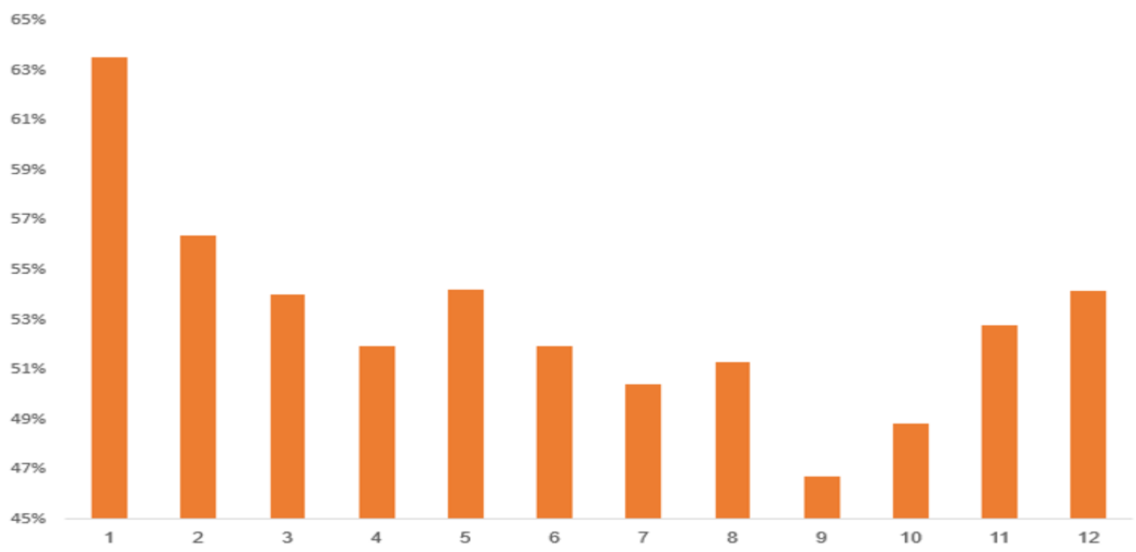
Figure 1: Distribution of Scores Given by the Innovation Authority Committee for Granted and Non-granted Firms



Notes: The figure shows the distribution of evaluation scores for granted (red) and non-granted (green) firms. The shaded area represents the region of overlap between the two distributions.

Figure 2: Month of Application and Percentage of Granted Firms



Notes: This figure reports the percentage of grant applications approved in each calendar month, highlighting variation across the fiscal year.

Table 1: Number of Applications and Granted Applications by Year and Industry

Panel A: Number of Applications and Granted Applications by Year

Year	Not granted		Granted		Total
	N	%	N	%	
2002	209	32%	449	68%	658
2003	124	33%	250	67%	374
2004	141	39%	221	61%	362
2005	125	38%	202	62%	327
2006	93	28%	234	72%	327
2007	79	25%	240	75%	319
2008	112	27%	297	73%	409
2009	156	30%	359	70%	515
2010	142	34%	275	66%	417
2011	127	29%	313	71%	440
2012	161	35%	297	65%	458
2013	178	34%	343	66%	521
2014	163	29%	397	71%	560
2015	177	38%	288	62%	465
2016	257	59%	180	41%	437
2017	579	60%	394	40%	973
2018	524	60%	344	40%	868
2019	588	62%	362	38%	950
2020	1,120	64%	638	36%	1,758
Total	5,055	45%	6,083	55%	11,138

Panel B: Number of Applications and Granted Applications by Industry

Industry	Not granted		Granted		Total	%
	N	%	N	%		
Cleantech + Life science + Semiconductors	2,251	43%	2,991	57%	5,242	47%
IT & Enterprise Software + Internet	1,173	52%	1,066	48%	2,239	20%
Miscellaneous Technology	783	44%	1,010	56%	1,793	16%
Communications	614	44%	795	56%	1,409	13%
Agritech	234	51%	221	49%	455	4%
Total	5,055		6,083		11,138	100%

Notes: This table reports the number and percentage of startup applications by year (Panel A) and by industry (Panel B), distinguishing between granted and non-granted firms.

Table 2: Descriptive Statistics

	Entire Sample		Not Granted		Granted		Difference	T-stat
Variable	N	Mean	N	Mean	N	Mean		
Janury_Application	11138	0.146	5055	0.120	6083	0.167	-0.0464***	(-6.93)
Score	7573	3.422	3734	3.063	3839	3.772	-0.710***	(-51.04)
Approved_Budget	10130	0.292	4359	0.000	5771	0.512	-0.512***	(-4.60)
Age	10679	0.420	4884	0.413	5795	0.426	-0.0132	(-1.38)
Size	10130	14.737	4359	14.524	5771	14.898	-0.374***	(-11.33)
Funding_Stage	11134	0.267	5052	0.296	6082	0.243	0.0538***	(6.4)
IPO	11138	0.035	5055	0.028	6083	0.040	-0.0118***	(-3.38)
CEO_profile_phd	11138	0.128	5055	0.120	6083	0.134	-0.0145**	(-2.28)
CEO_profile_femal	11138	0.043	5055	0.049	6083	0.037	0.0126***	(3.29)
Local	11131	0.926	5053	0.929	6078	0.923	0.00526	(1.05)

Notes: This table reports descriptive statistics for the full sample and separately for granted and non-granted firms. Variable definitions are provided in Appendix A. The last two columns report mean differences between granted and non-granted firms, with t-statistics in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 3: Government Grant and IPO – OLS

	Dependent Variable: IPO			
	(1)	(2)	(3)	(4)
Granted	0.00919**	0.00776**	0.00790**	0.00750**
	(0.00208)	(0.00195)	(0.00196)	(0.00190)
Age	-0.00127	-0.00630	0.0260***	0.0377***
	(0.00430)	(0.00562)	(0.00226)	(0.00137)
Funding_Stage		-0.00677	-0.00604	-0.0298***
		(0.00725)	(0.00685)	(0.000955)
CEO_profile_phd		0.0225*	0.0235*	0.144***
		(0.00970)	(0.00980)	(0.000570)
CEO_profile_female		0.0806	0.0809	-0.0265***
		(0.0498)	(0.0496)	(0.000755)
Size		0.00713**	0.00704**	0.0125***
		(0.00188)	(0.00200)	(0.00216)
Local			-0.0150	0.0117**
			(0.0184)	(0.00385)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Age*Industry	No	No	Yes	Yes
Funding_Stage*Industry	No	No	No	Yes
CEO_profile_phd*Industry	No	No	No	Yes
CEO_profile_fem*Industry	No	No	No	Yes
Size*Industry	No	No	No	Yes
Local*Industry	No	No	No	Yes
_cons	0.0495**	0.0432**	0.0521***	-0.00609
	(0.0148)	(0.0121)	(0.0145)	(0.0499)
N	10679	9706	9699	9699
adj. R^2	0.012	0.023	0.024	0.036

Notes: This table reports OLS estimates of the relationship between receiving a government grant and the likelihood of IPO (Equation 1). The dependent variable is an indicator for IPO completion. *Granted* is the main explanatory variable, indicating whether the start-up received a grant. Control variables include firm age, funding stage, CEO characteristics, and locality; all variables are defined in Appendix A. All specifications include industry and year fixed effects, with later columns progressively adding additional controls and interactions between firm characteristics and industry.

Robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Early Application and Being Granted - First Stage

	Dependent Variable: Granted			
	(1)	(2)	(3)	(4)
January_Application	0.0543**	0.0393**	0.0380***	0.0364**
	(0.0122)	(0.00894)	(0.00795)	(0.00811)
Age	-0.0337*	-0.0516**	-0.0642***	-0.0244***
	(0.0148)	(0.0124)	(0.00632)	(0.00342)
Funding_Stage		-0.0448**	-0.0454**	0.0647***
		(0.0138)	(0.0140)	(0.00136)
CEO_profile_phd		0.0400***	0.0398***	0.0210***
		(0.00698)	(0.00749)	(0.00297)
CEO_profile_female		-0.0226	-0.0218	0.0113
		(0.0379)	(0.0371)	(0.0101)
Local		-0.0216	-0.0207	-0.0656***
		(0.0203)	(0.0217)	(0.0103)
Size		0.0230***	0.0229***	0.0215***
		(0.00279)	(0.00267)	(0.00300)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Age*Industry	No	No	Yes	Yes
Funding_Stage*Industry	No	No	No	Yes
CEO_profile_phd*Industry	No	No	No	Yes
CEO_profile_fem*Industry	No	No	No	Yes
Local*Industry	No	No	No	Yes
Size*Industry	No	No	No	Yes
N	10679	9699	9699	9699
adj. R^2	0.093	0.107	0.107	0.108

Notes: This table reports first-stage OLS estimates from the instrumental variables (IV) specification (Equation 2), where the dependent variable is an indicator for whether the start-up received a grant (*Granted*). The main explanatory variable of interest is *January_Application*, an indicator equal to one if the application was submitted in January. Control variables include firm age, funding stage, CEO characteristics, and locality; all variables are defined in Appendix A. All specifications include industry and year fixed effects, and later columns progressively add additional controls and interactions between firm characteristics and industry. Robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 5: Government Grant and IPO Instrumental Variable Approach - 2SLS-IV

	Dependent Variable: IPO			
	(1)	(2)	(3)	(4)
$\widehat{Granted}$	0.300***	0.369***	0.373***	0.369***
	(0.0533)	(0.0509)	(0.0371)	(0.0403)
Age	0.00771	0.0115*	0.0489***	0.0458***
	(0.00704)	(0.00656)	(0.00376)	(0.00210)
Funding_Stage		0.0103**	0.0111**	-0.0535***
		(0.00462)	(0.00460)	(0.00281)
CEO_profile_phd		0.00875	0.00903	0.138***
		(0.0108)	(0.0106)	(0.000982)
CEO_profile_female		0.0894***	0.0888***	-0.0313***
		(0.0322)	(0.0326)	(0.00331)
Local		-0.00752	-0.00737	0.0348***
		(0.0206)	(0.0209)	(0.00728)
Size		-0.00157	-0.00158	0.00441
		(0.00295)	(0.00301)	(0.00346)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Age*Industry	No	No	Yes	Yes
Funding_Stage*Industry	No	No	No	Yes
CEO_profile_phd*Industry	No	No	No	Yes
CEO_profile_fem*Industry	No	No	No	Yes
Local*Industry	No	No	No	Yes
Size*Industry	No	No	No	Yes
N	10679	9699	9699	9699
First-Stage F-Statistic	19.74	19.36	22.88	20.21
First- Stage Adjusted R2	0.0928	0.107	0.107	0.108

Notes: This table reports the second-stage 2SLS-IV estimates (Equation 2). The dependent variable is an indicator for IPO completion. The main explanatory variable is the fitted value of *Granted* (i.e., the instrumented probability of receiving a grant, estimated from the first stage using *January_Application* as an instrument). Control variables include firm age, funding stage, CEO characteristics, and locality; all variables are defined in Appendix A. All specifications include industry and year fixed effects, and later columns progressively add control variables and interactions between firm characteristics and industry. Robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 6: Early Application and the Rate of Approved Budget

	Dependent Variable: Approved_Budget			
	(1)	(2)	(3)	(4)
January_Application	0.307	0.308	0.309	0.327
	(0.214)	(0.217)	(0.216)	(0.214)
Age	-0.159	-0.149	-0.0271*	0.00285
	(0.0816)	(0.0714)	(0.0111)	(0.00759)
Size	-0.281	-0.282	-0.282	-0.600**
	(0.179)	(0.178)	(0.178)	(0.208)
Funding_Stage		0.0575	0.0491	0.0322**
		(0.0589)	(0.0600)	(0.0110)
CEO_profile_phd		-0.176*	-0.185*	0.315**
		(0.0817)	(0.0799)	(0.106)
CEO_profile_female		-0.164**	-0.168**	0.119*
		(0.0565)	(0.0561)	(0.0494)
Local		0.0310	0.0361	0.240**
		(0.0322)	(0.0335)	(0.0762)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Age*Industry	No	No	Yes	Yes
Size*Industry	No	No	Yes	Yes
Funding_Stage*Industry	No	No	No	Yes
CEO_profile_phd*Industry	No	No	No	Yes
CEO_profile_fem*Industry	No	No	No	Yes
Local*Industry	No	No	No	Yes
N	9709	9699	9699	9699
adj. R^2	0.006	0.006	0.006	0.007

Notes: This table reports OLS estimates of the relationship between early application timing and the share of the requested budget that was approved by the Innovation Authority (*Approved_Budget*). The main explanatory variable of interest is *January_Application*, an indicator for applications submitted in January. Control variables include firm age, funding stage, CEO characteristics, and locality; Appendix A provides variable definitions. All specifications include industry and year fixed effects, with later columns progressively adding firm-level controls and their interactions with industry. Robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 7: Approved Budget and IPO - OLS

	Dependent Variable: IPO			
	(1)	(2)	(3)	(4)
Approved_Budget	-0.000190***	-0.000164***	-0.000160***	-0.000155**
	(0.0000279)	(0.0000266)	(0.0000293)	(0.0000357)
Age	-0.00451	-0.00605	0.0247***	0.0368***
	(0.00445)	(0.00572)	(0.00225)	(0.00147)
Funding_Stage		-0.00798	-0.00761	-0.0309***
		(0.00742)	(0.00730)	(0.00105)
CEO_profile_phd		0.0232*	0.0236*	0.149***
		(0.00997)	(0.0101)	(0.00112)
CEO_profile_female		0.0798	0.0794	-0.0231***
		(0.0501)	(0.0505)	(0.00115)
Local		-0.0178	-0.0172	0.0190***
		(0.0175)	(0.0174)	(0.00291)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Age*Industry	No	No	Yes	Yes
Funding_Stage*Industry	No	No	No	Yes
CEO_profile_phd*Industry	No	No	No	Yes
CEO_profile_fem*Industry	No	No	No	Yes
Local*Industry	No	No	No	Yes
N	9709	9699	9699	9699
adj. R^2	0.010	0.019	0.020	0.031

This table reports OLS estimates of the relationship between the approved share of the requested grant budget (*Approved_Budget*) and the probability of IPO. *Approved_Budget* is defined as the fraction of the requested budget that was approved by the Innovation Authority (in percent). The dependent variable is *IPO*, equal to 1 if the firm eventually goes public. All models include year and industry fixed effects; Columns (3)–(4) additionally interact firm-level controls with industry fixed effects. Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 8: IPO and Female CEO

	Dependent Variable: IPO			
	(1)	(2)	(3)	(4)
Granted*CEO_profile_female	0.0964**	0.105**	0.105**	0.106**
	(0.0275)	(0.0328)	(0.0325)	(0.0316)
Granted	0.00554**	0.00314***	0.00336***	0.00349***
	(0.00141)	(0.000587)	(0.000598)	(0.000560)
CEO_profile_female	0.0369	0.0298	0.0292	0.0288
	(0.0355)	(0.0279)	(0.0284)	(0.0284)
Age	-0.000846	-0.00623	0.0257***	0.0306***
	(0.00420)	(0.00584)	(0.00207)	(0.00401)
Funding_Stage		-0.00628	-0.00588	-0.0350***
		(0.00756)	(0.00742)	(0.00156)
CEO_profile_phd		0.0235*	0.0239*	0.155***
		(0.00959)	(0.00975)	(0.00461)
Local		-0.0155	-0.0150	0.00250
		(0.0180)	(0.0180)	(0.00748)
Size		0.00696**	0.00698**	0.0122***
		(0.00197)	(0.00199)	(0.00194)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Age*Industry	No	No	Yes	Yes
Funding_Stage*Industry	No	No	No	Yes
CEO_profile_phd*Industry	No	No	No	Yes
Local*Industry	No	No	No	Yes
Size*Industry	No	No	No	Yes
N	10679	9699	9699	9699
adj. R^2	0.022	0.027	0.028	0.033

*Notes: This table reports OLS estimates of the relationship between grant receipt and IPO probability with an interaction for CEO gender. The dependent variable is IPO, equal to 1 if the firm eventually goes public. Explanatory variables include Granted, CEO_profile_female, their interaction (Granted × CEO_profile_female), and firm-level controls. CEO_profile_female is an indicator equal to 1 if the firm's CEO is female, and 0 otherwise. The interaction term captures whether the effect of grant receipt differs for firms led by women. All models include year and industry fixed effects; Columns (3)–(4) additionally interact firm-level controls with industry fixed effects. Variable definitions are provided in Appendix A. Robust standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.*

Appendix A: Variable Definition

Variable	Definition
Granted	Indicator variable equal to 1 if the application was approved for a grant by the Innovation Authority, and 0 otherwise.
January_Application	Indicator variable equal to 1 if the application was submitted in the first month of a calendar year (i.e., in January), and zero otherwise.
Score	Evaluation score assigned by the Innovation Authority's committee, ranging from 1 (low) to 5 (high).
Approved_Budget	The share of the requested budget that was approved by the Innovation Authority, expressed as a percentage.
Age	The firm's age, measured as an indicator that receives 1 if the number of years since its founding and the time of application is above the median, and 0 otherwise.
Funding_Stage	Indicator variable equal to 1 if the application was submitted at an early funding stage (i.e., "Seed" or "R&D" stage), and 0 if submitted at a later stage (i.e., "Initial Revenue" or "Revenue Growth" stage).
IPO	Indicator variable equal to 1 if the firm experienced an initial public offering (IPO) during the sample period, and 0 otherwise
CEO_profile_Phd	Indicator variable equal to 1 if the CEO holds a PhD degree or carries the honorific title "Professor," and 0 otherwise.
CEO_profile_female	Indicator variable equal to 1 if the CEO is identified as female (e.g., based on the honorific "Ms."), and 0 otherwise.
Local	Indicator variable equal to 1 if the company is registered in Israel, and 0 if registered outside of Israel.
Size	The natural logarithm of the total monetary amount requested by the applicant in the funding application.

Appendix B: Screening Process

Table B1 summarizes the data cleaning and screening procedures applied to the raw datasets prior to analysis. Observations were excluded for various reasons, including missing identifiers (either IVC or corporate ID), duplicate entries, unresolved grant status (typically for recent applications not yet evaluated), inconsistencies in timing (e.g., exit events preceding application dates), and missing industry classification. We also excluded applications submitted after 2020, in line with the analysis period defined in the main text. The number of excluded observations by category is presented below.

Table B1: Summary of Excluded Observations

Reason for Exclusion	Observations Removed
Missing IVC identifier	14,656
Duplicate approvals (budget extensions)	6,926
Unknown grant status (pending review)	2,949
Duplicate records	24
Missing corporate ID	8,849
Exit occurred before application date	992
Missing industry classification	22,426
Applications submitted after 2020	1,520