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## What Is an Effective Signal in Crowdfunding? Evidence from Expert Researchers and a Meta-Study

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# What Is an Effective Signal in Crowdfunding? Evidence from Expert Researchers and a Meta-Study

## Abstract

What is an effective signal in crowd funding? We asked this question to 83 expert researchers who have published the top-notch articles in this field. They stated that, in theory, strong signals include past crowdfunding success, business experience, patent ownership, and the equity share offered. Examining 145 articles published in leading business and economics journals, we find that the empirical evidence from a meta-analysis does not accord with this perception among expert researchers. Signals that expert researchers consider to be theoretically less strong are more often statistically significant predictors of crowdfunding success and have neither larger nor smaller standardized effect sizes than strong signals. A meta-regression suggests that domain-specific signals play the most important role in crowdfunding. The findings of our literature review provide important insights for investors, platform managers, and the academic review process.

JEL-Codes: G210, D820.

Keywords: signaling, crowdfunding, crowdfinancing, peer-to-peer lending, crowdlending, meta-study.

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## 1. Introduction

What is an effective signal? While this question has been answered theoretically by Spence (1973) and others, there is surprisingly little empirical clarity on this question. Researchers hardly distinguish between generally valid and domain-specific signals. In this article, we examine the crowdfunding literature and summarize the lessons that the entrepreneurial finance community has learned over the past two decades. Most articles in the field of crowdfunding investigate factors that explain funding success. Researchers have studied a large number of explanatory variables often related to the borrower's or entrepreneur's background and experience, the characteristics and structure of the investment offer, and the way the campaign is presented online. Despite the growing literature and over 1,000 explanatory variables studied, research findings remain fragmented. In particular, there is little consensus on which signals are most effective for achieving crowdfunding success.

While certain signals seem intuitive and generally important to researchers in finance and entrepreneurship, their actual effectiveness may not be supported by the majority of empirical research. This raises the question: *Is the expert researchers' perception of what constitutes an effective signal consistent with empirical findings from the crowdfunding literature?* To address this research question, we follow a mixed-methods research design. First, we systematically examine which explanatory variables have been proposed in top-notch articles. Second, we survey the leading scholars in the field of crowdfunding regarding what they believe are in theory effective signals. Third, we analyze the effect size of these variables and whether and how often they have been significant predictors of funding success. Finally, we examine whether the perceptions of leading scholars are consistent with the empirical findings.

We asked 326 authors of top-notch crowdfunding articles to rank the most frequently studied signals according to their perceived effectiveness. Out of the 83 participants, 18 ranked *Entrepreneur's Past Crowdfunding Success* as the most efficient signal, with an average rank of 3.61. Other highly ranked signals with more than 10% of the participants ranking the signal first are *Entrepreneur's Business Experience* (19.28% votes for first rank, average rank of 3.86), *Patent Ownership* (18.07% votes for first rank, average rank of 4.04), and *Equity Share Offered by the Entrepreneur* (12.05% votes for first rank, average rank of 4.68). According to expert researchers, these four variables constitute the strongest and most effective signals. Other variables are mostly classified as not being a signal in the spirit of Spence (1973). More than one-third of the survey participants indicated that *Technology Sector Affiliation*, *Planned Campaign Duration*, *Firm Location in a Metropolitan Area*, and *Entrepreneur's Gender* are

not effective signals. All remaining variables that were neither ranked high nor classified as non-signals are considered regular effective signals by expert researchers.

Based on the survey results, we investigate whether experts' perceptions of what constitutes an effective signal are consistent with the empirical findings. Based on their evaluation, we identify two classifications (i.e., strong and regular effective signals) and compare the average effect sizes, the share of positive coefficients, and the share of statistically significant coefficients from published articles. If experts' perceptions align with the empirical evidence, strong signals should exhibit larger effect sizes, a higher proportion of positive coefficients, and a greater share of significant coefficients. Our results provide robust evidence that strong signals do not have significantly larger effect sizes than regular signals. The share of positive coefficients does not differ significantly between regular signals and strong signals. Regarding the statistical significance of coefficients, we find regular signals are more often statistically significant than strong signals. These results individually and jointly indicate that expert researchers' perceptions about effective signals do not comport with empirical crowdfunding research from the last two decades.

Our findings contribute to several strands of research. First, we extend the literature on how knowledge about a new research field disseminates within the academic community. Thomas Kuhn in 1962 famously argued that scientific progress occurs not through a linear accumulation of knowledge but through a series of paradigm shifts, where existing scientific frameworks are replaced by new ones in response to anomalies that the old paradigms cannot explain (Kuhn, 1962). A complementary perspective on how knowledge and ideas gain prominence in academia is offered by the *Matthew Effect* (Merton, 1968). The *Matthew Effect*—introduced by Robert K. Merton in 1968 and named after the biblical gospel of St. Matthew—describes the phenomenon in research where recognition is disproportionately awarded to well-known scholars. This phenomenon helps to explain how established ideas and prominent researchers gain further visibility and influence, often at the expense of less recognized but equally valuable contributions. This can lead to a concentration of attention on prevailing paradigms and theories, reinforcing them while overlooking emerging but less recognized evidence.

Second, we contribute to the crowdfunding literature. Even articles that were published in the leading journals in the field differ widely in the explanatory and control variables they specify. Omitting important explanatory variables that are almost always to some degree correlated with the variable of interest leads to biased estimates for the variable of interest. Which variables warrant consideration should not be based on ad hoc recommendations by

reviewers or editors but should be based on a rigorous literature review. If important variables have been omitted from an empirical model, the policy recommendations that researchers derive from their analyses to inform legislators, platform managers, borrowers and entrepreneurs, as well as investors are therefore inevitably wrong. Our meta-analysis provides researchers and journal reviewers with a theoretically and empirically informed list of ten variables that scholars should always consider when studying crowdfunding.

We structure the remainder of this article as follows. We begin by describing crowdfunding and its various forms. We then discuss signaling theory in the context of crowdfunding and theoretically motivate our research question. Next, we outline our data collection procedure and describe the survey and meta-study design. After introducing the empirical approach, we use to investigate our research question, we present descriptive statistics, which summarize the crowdfunding literature and outline our sample. We then present the results of three empirical tests to answer our research question and complement them with the results of a meta-regression. We discuss the results in detail and derive recommendations for research and practice. The last section presents our concluding remarks.

## **2. Crowdfunding**

Crowdfunding represents a paradigm shift in the way individuals and organizations can raise capital for their projects (Belleflamme et al., 2013). Thanks to the emergence of online platforms, retail investors can now invest in high-risk and potentially high-return projects or firms that would otherwise have been reserved for professional business angels or venture capitalists. As a result of digitalization, different categories of crowdfunding and various types of crowdfunding platforms have emerged over the last two decades. The four most important crowdfunding categories are donation-based crowdfunding, reward- and pre-purchase crowdfunding, debt crowdfunding, and equity crowdfunding (Bradford, 2012). Neither donation-based nor reward- and pre-purchase crowdfunding promises backers a financial return, nor do they involve traditional financial securities. In debt and equity crowdfunding, which can be summarized under the term *investment crowdfunding* (Schwartz, 2023), investors have a stake in the future cash flows of the borrower or firm. However, they differ in the risk and nature of the anticipated cash flows.

*Donation-, reward-based, and pre-purchase* crowdfunding do not constitute investment crowdfunding from a legal perspective, because the backers are donors or consumers that provide money without expecting financial compensation or ownership claims. Instead, backers receive a gimmick, early access to a product, or public recognition on product websites

(Belleflamme et al., 2015; Hornuf et al., 2022b; Lehner, 2014; Rossi et al., 2021). In contrast, debt and equity crowdfunding legally fall into the category of investment crowdfunding because they offer investors the potential for financial returns through interest payments or equity stakes. Nevertheless, pre-purchase crowdfunding is at least functionally a type of prepayment or reverse trade credit, where the entrepreneur has the development and production costs financed by a crowd of buyers. From an economic point of view, pre-purchase crowdfunding could thus also be seen as investment crowdfunding, where the financing of the product development is done by the crowd of buyers, who receive the product as a return for their risky investment.

*Debt crowdfunding*, also known as peer-to-peer lending,<sup>1</sup> loan-based crowdfunding,<sup>2</sup> crowdlending,<sup>3</sup> or marketplace lending,<sup>4</sup> enables individuals or firms to borrow money from a crowd of lenders. Debt crowdfunding platforms often broker annuity loans, which means that repayments are made at regular intervals starting immediately after the investment. By the end of the investment period, lenders obtain their original principal investment back (Belleflamme et al., 2015). Although loans have a higher priority than equity in the event of default (Attaoui & Poncet, 2013; Schwartz, 1989), they are often not secured in debt crowdfunding (Coakley & Huang, 2023; Kgoroadira et al., 2019) and are therefore only marginally safer than equity, because most debtors in crowdfunding do not have any collateral (Schwienbacher & Larralde, 2012). On many debt crowdfunding platforms, *individuals* take out personal loans, home loans, and student loans.<sup>5</sup> Other debt crowdfunding platforms enable *firms* to secure capital, especially when the risk or transaction costs associated with a project exceed the potential returns for traditional financial intermediaries such as banks (Lehner, 2014).

To obtain capital, borrowers apply for a loan through the debt crowdfunding platform by providing details about their financial situation, financial needs, and the purpose of the loan. This information is presented to potential lenders on the platform, who review proposals and choose to lend money based on the loan's risk rating (Cumming & Hornuf, 2022), interest rate, and purpose (Gao et al., 2023). The platform acts as an intermediary, offers a standard contract,

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<sup>1</sup> S. Chen et al. (2020), Chen et al. (2022), Caldieraro et al. (2018), Ding et al. (2019), Dorfleitner et al. (2016), Dorfleitner et al. (2021), Duarte et al. (2012), and Michels (2012) use the term "peer-to-peer lending."

<sup>2</sup> Mamonov and Malaga (2018), Prokop and Wang (2022) Schwienbacher (2016), and Schwienbacher (2019) use the term "loan-based crowdfunding."

<sup>3</sup> Adhami et al. (2023), Maier (2016), Ribeiro-Navarrete et al. (2021), Singh et al. (2022), and Slimane and Rousseau (2020) use the term "crowdlending."

<sup>4</sup> Chava et al. (2021), Cumming and Hornuf (2022), Cumming et al. (2022a), and Vallee and Zeng (2019) use the term "marketplace lending."

<sup>5</sup> See <https://www.lendingclub.com/resource-center/personal-loan/common-types-of-loans-and-benefits-of-each> (last accessed on September 9, 2024).



manages transactions, and keeps records. As one of the first major platforms for debt crowdfunding, Prosper was founded in the US in 2005, and has since brokered capital to more than 1.7 million customers with over \$25 billion borrowed.<sup>6</sup> LendingClub was founded two years later in 2007 and developed into one of the most significant companies in debt crowdfunding, with a loan volume of over \$70 billion as of October 2022 (Sifrain, 2023). However, with its acquisition of Radius Bank in 2020, LendingClub shut down its peer-to-peer lending operations and changed its business model to digital marketplace lending.<sup>7</sup> Other popular debt crowdfunding platforms are Upstart, GoFundMe, Funding Circle, and Indiegogo.

*Equity crowdfunding* allows entrepreneurs to raise capital by selling small shares of equity to a crowd of investors via online platforms (Mollick, 2014). Equity crowdfunding is particularly attractive for firms that are in need of capital but are not yet large enough to attract investors such as business angels, venture capital, or banks (Bradford, 2012; Di Pietro & Tenca, 2024; Klöhn & Hornuf, 2012). The process is similar to debt crowdfunding, except that repayment is often delayed and only occurs after several years (Hornuf et al., 2018) or when a corporate event such as a merger or acquisition occurs (Signori & Vismara, 2016). While firms in most countries issue common stock, firms in some countries offer non-voting shares (Cumming et al., 2019) or mimic common equity shares for regulatory reasons (Hornuf et al., 2018). In rare cases, the shares can also be traded on online billboards or regulated secondary markets (Lukkarinen & Schwienbacher, 2023).

The UK is a pioneer in using existing regulations to support equity crowdfunding (Estrin et al., 2024) and has a highly developed equity crowdfunding ecosystem with a wide range of large platforms (Coakley et al., 2024). One of the earliest equity crowdfunding platforms is Crowdcube, which was founded in 2011. Together with Seedrs, which was founded shortly after in 2012, Crowdcube is one of the largest equity crowdfunding platforms in terms of investors and the amounts raised (Ziegler et al., 2021). Crowdcube enables entrepreneurs and private ventures to sell shares to a crowd of investors for small amounts of capital starting from £10.<sup>8</sup> Leading equity crowdfunding platforms such as Companisto and Seedmatch were launched in Germany in the early 2010s. In France, WiSEED completed its first campaign in 2009 (Schwienbacher, 2019), while Mamacrowd and CrowdFundMe, founded in 2016 and

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<sup>6</sup> For details, see <https://www.prosper.com/about> (last accessed on May 9, 2024).

<sup>7</sup> See <https://www.nasdaq.com/articles/lendingclub-is-ending-its-p2p-lending-platform-now-what-2020-10-08> (last accessed on September 9, 2024).

<sup>8</sup> For further details, see <https://www.crowdcube.com/explore/how-it-works> (last accessed on May 9, 2024).

2018, are the largest equity crowdfunding platforms in Italy.<sup>9</sup> Although the US has always been a leader in donation- and reward-based crowdfunding and debt crowdfunding, equity crowdfunding was established late because it took until October 30, 2015, for the Securities and Exchange Commission to adopt the final rules of the Jumpstart Our Business Startups Act Title III, which legally regulates equity crowdfunding in the country. The rules ultimately came into force on May 16, 2016, when platforms elsewhere had already been in operation for half a decade (Bradford, 2018; Estrin et al., 2024). Nowadays, the most prominent US equity crowdfunding platforms are Republic, StartEngine, and WeFunder, and the US has now overtaken the European market in terms of volume. While in 2023 the transaction volume was about 187 million USD in the European Union, it was already 341 million USD in the US during the same period (Statista, 2024).<sup>10</sup>

Debt and equity crowdfunding are very similar in many ways. There are typically many investors and only one counterparty that collects the money. In both cases, individuals *invest* their money and expect a financial return.<sup>11</sup> But there are also differences between the two forms of investment crowdfunding. Although the return is associated with risks in both cases, with debt crowdfunding repayment begins immediately, whereas with equity crowdfunding investors only get their money back and receive a return after months or years, making it a bit riskier (Hornuf et al., 2018). While in debt crowdfunding individuals and firms can act as borrowers, in equity crowdfunding it is almost exclusively firms that offer their shares on a platform. This may result in differences in the effective signals that can be sent to potential investors.

### 3. Literature and Research Questions

As with many economic transactions, crowdfunding involves a more-informed party, usually a borrower or an entrepreneur, who wants to transact with a less-informed party, usually an investor. Thus, information is distributed asymmetrically, which can lead to inefficient

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<sup>9</sup> For an overview of contemporary crowdfunding platforms by country, see <https://crowdinform.com/crowdfunding-platforms> (last accessed on September 9, 2024).

<sup>10</sup> For a comprehensive overview of equity crowdfunding across countries and platforms, see Estrin et al. (2024).

<sup>11</sup> Typically, the borrower or entrepreneur sets a funding target that must be reached over a certain period of time in order to successfully raise the required capital (Hornuf et al., 2022b). For crowdfunding platforms applying an “all-or-nothing” approach (e.g., Crowdcube, Companisto, Seedmatch), this means that the venture only receives the raised money if the predetermined target funding amount is reached (Cumming et al., 2020). If the funding target is not met, the platform sends the money back to the investors from an escrow account. This commonly applied approach among crowdfunding platforms is supposed to protect investors and to motivate entrepreneurs to set a reasonable and realistic funding target (Belleflamme et al., 2015).

exchange and potentially market failure (Akerlof, 1970; Stiglitz & Weiss, 1981). Because crowdfunding takes place online, the degree of information asymmetry between investors and entrepreneurs may be domain-specific.

First, crowdfunding platforms collect extensive information that could reduce transaction costs for investors (Hornuf et al., 2022b). Crowdfunding platforms often provide comprehensive financial and non-financial information about capital seekers (Cumming & Hornuf, 2022). Additionally, these platforms often enable direct communication between investors and entrepreneurs to clarify and validate or request additional information. However, direct interactions are rare and investors mainly rely on information passively provided online (Hornuf et al., 2022a). The information provided may not always be reliable and may be less credible than audited financial statements or inside information obtained through board membership (Cumming et al., 2023).

To ensure trust between parties and to protect investors, crowdfunding platforms verify and validate the information borrowers and entrepreneurs provide. However, the depth of the verification process differs between crowdfunding platforms. Debt crowdfunding platforms conduct more rigorous checks to assess creditworthiness and minimize the risk of default. For example, Prosper, Upstart, and Indiegogo verify the identity and income of each borrower before a loan application goes online.<sup>12</sup> In equity crowdfunding, the checks are often more basic and focus on the existence of a legal entity, while leaving much of the evaluation to the investors. For example, StartEngine and Republic do not verify the adequacy, accuracy, or completeness of the provided information.<sup>13</sup> In contrast, Republic Europe, previously known as Seedrs, states that they “check all information and claims included in a company’s pitch before [they] allow the campaign to open to investors.”<sup>14</sup> In debt and equity crowdfunding, platforms screen investors in compliance with anti-money-laundering regulations. However, pre-purchase crowdfunding research indicates that entrepreneurs can manipulate social proof by buying Facebook likes (Wessel et al., 2015) or may commit fraud by promising investors a product but misappropriating the funds for personal use (Cumming et al., 2023). In equity crowdfunding, entrepreneurs and investors may manipulate the appearance of demand by making and

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<sup>12</sup> See for Prosper: <https://help.prosper.com/hc/en-us/articles/208500566-How-does-Prosper-work-to-prevent-borrower-fraud>, see for Upstart: <https://upstarthelp.upstart.com/108535-what-documentation-do-i-have-to-provide-to-verify-my-income>, see for Indiegogo: <https://learn.indiegogo.com/trust/> (all last accessed on September 20, 2024).

<sup>13</sup> See for Republic: <https://republic.com/> and <https://republic.com/risks>, and for StartEngine: <https://www.startengine.com/> (all last accessed on September 20, 2024).

<sup>14</sup> See <https://europe.republic.com/insights/due-diligence-the-seedrs-standard> (last accessed on September 19, 2024).

subsequently withdrawing investments during the cooling-off period, creating a misleading sense of interest to drive investments (Meoli & Vismara, 2021). Ponzi schemes have also been used to commit fraud by misusing the invested funds in equity crowdfunding (Baucus & Mitteness, 2016) and are particularly common in crypto assets (Hornuf et al., 2024). Thus, reduced search costs through broad and easily accessible information via the internet alone does not serve as the silver bullet to resolve information asymmetries.

Second, crowdfunding is aimed at a variety of potential investors with heterogeneous financial knowledge and investment experience. The crowd comprises angel-like investors, otherwise financially experienced investors, investors with personal relationships to the borrower or entrepreneur, and non-professional regular crowd investors (Goethner et al., 2021; Hornuf et al., 2022b). Not all of them—particularly regular crowd investors—possess the knowledge to assess the borrower's or venture's economic viability or an entrepreneur's ability. Especially when investors suffer from information cascades and engage in herd behavior (Vismara, 2018), insufficient knowledge about an investment leads to an undifferentiated assessment of an investment (Ahlers et al., 2015; Cumming et al., 2021b). Moreover, even if a retail investor does have the knowledge and sophistication to evaluate an investment, it would often not make sense to spend time on due diligence for an investment that may have little return in absolute terms (Ahlers et al., 2015). In sum, enabling online-financing of start-ups via crowdfunding platforms does not resolve the information asymmetry between investors and entrepreneurs, which may discourage investors' intention to fund a campaign (e.g., Courtney et al., 2017; Cumming et al., 2021b; Vismara, 2019). The existence of information asymmetry underlines the importance of effective instruments to reduce selection and agency problems and enable financing.

To reduce information asymmetry, borrowers or entrepreneurs can communicate their quality through effective signals (Ross, 1973; Spence, 1973). According to *signaling theory*, effective signals need to be observable to the receiver, the expectations evoked by the signal must be confirmed through experience, and the signals need to be costly because otherwise low-quality senders would easily be able to imitate these signals (Bergh et al., 2014; Spence, 1973). The fact that effective signals must be costly distinguishes them from the mere communication of information and generates a separating equilibrium where investors can distinguish between good and bad firms.

Scholars have extensively used signaling theory to explain funding success in the context of crowdfunding (e.g., Ahlers et al., 2015; Anglin et al., 2018; Anglin et al., 2020; Block et al., 2018; Bogdani et al., 2022; Calic et al., 2023; Cappa et al., 2021; Courtney et al., 2017;

Dorfleitner et al., 2021; Johan & Zhang, 2020; Kleinert, 2024; Kleinert et al., 2020; Moss et al., 2015; Vismara, 2016; Wang et al., 2019; Wesemann & Wincent, 2021). Existing research has identified several signals affecting crowdfunding success, such as entrepreneurs' crowdfunding experience (e.g., Ahlers et al., 2015; Block et al., 2018; Buttice et al., 2017; Colombo et al., 2015; Mollick, 2014; Vismara, 2016), patent ownership (e.g., Ahlers et al., 2015), and the equity share offered (e.g., Ahlers et al., 2015).

Recent research discusses whether signals must be actively sent or merely passively available to the recipients to generate a separating equilibrium (e.g., Bafera & Kleinert, 2023; Colombo, 2021). Some signals remain hidden from the investor, making it imperative for the sender to pass them on to the receiver if these signals provide credible information about the quality of a borrower or entrepreneur. For example, job applicants may actively signal their capabilities to an employer by obtaining prestigious and costly degrees or showcasing other achievements (Spence, 1973). When transferred to the business context, companies may also benefit from signaling their superior quality to investors. Because the quality of a firm is not easily verifiable, founders use the disclosure of financial statements (Zhang & Wiersema, 2009), equity share retention (Baldenius & Meng, 2010; Rossi et al., 2021), and founder lock ups (Busenitz et al., 2005) to signal the firms' quality to potential investors. In contrast, the mere age of a company might passively serve as a signal of stability.

While both passively present and actively sent signals can influence an investor's decision, the effectiveness of signals in theory depends on the related costs and the accuracy by which they generate a separating equilibrium. Because signaling theory suggests that the value of a signal is directly related to the costs to realize and send the signal (Connelly et al., 2011), less costly signals should have less impact when determining the quality of an investment (Bhattacharya & Krishnan, 1999). Because the cost of a signal is not always directly observable and varies by domain, it is difficult for investors to theoretically derive the value and effectiveness of a signal. When it comes to crowdfunding research, it is difficult to distinguish between signals and mere disclosure of information based on purely theoretical considerations. For example, the minimum funding amount set by an entrepreneur could constitute a signal to potential investors. The minimum funding amount is observable because it is a fundamental component of any crowdfunding campaign and is disclosed to all potential investors on the campaign website. The minimum funding amount is costly because setting a target funding amount involves costs in terms of commitment and accountability. If the target is set too high and is subsequently not reached, the campaign may fail to receive funding in the end. The costliness of the minimum funding amount can also be proven by experience because investors

learn over time whether setting a higher minimum funding amount is related to subsequent firm success. The minimum funding amount might also send a signal about the entrepreneur's confidence in the project and financial needs. Setting a higher minimum funding amount can signal that the entrepreneur is confident about the potential of the project, which may serve as an indicator of the inherent quality of the project. However, the minimum funding amount is not always at the entrepreneur's discretion. Platforms like StartEngine (\$10,000) and Indiegogo (\$500) automatically and uniformly set the minimum funding amount. In these cases, the empirical variable *target funding amount* no longer represents a credible signal, but merely disclosure of information.

In a similar vein, the duration set for reaching the funding goal can serve as a signal of venture quality. By keeping the campaign short, the founder signals confidence in reaching the funding goal within a short period of time and a willingness to take the risk of not receiving any capital if enough investors cannot be found. However, the funding period is also not necessarily set by the entrepreneur but frequently by the crowdfunding platform. Republic Europe sets the campaign duration by default to 30 days, while StartEngine defines a default campaign duration of 21 days. Indiegogo and Kickstarter also influence the campaign duration and set a maximum of 60 campaign days. In these cases, the funding period does not constitute an effective signal in the spirit of Spence (1973). However, some signals are less ambiguous and not domain-specific. For example, if the founder bears the financial costs of obtaining a patent and monitors it regularly, this could be an effective signal to potential investors that the founder is of high quality (Rossi et al., 2021).

Whether a signal constitutes an effective signal or not depends on the published information itself and the signaling environment (Colombo, 2021; Connelly et al., 2011). To assess the effectiveness of the most studied signals from crowdfunding research, we survey the authors of the articles in our sample regarding whether they consider empirically specified variables to be *in theory* effective signals that are observable, costly to the sender, and can be proven by experience. To make it clear that our focus is not on the effect of simple information disclosure, we have highlighted and defined what constitutes an effective signal by asking: “Based on your expertise, which signals are *in theory* most effective, i.e. are observable, costly especially to low-quality senders, and expectations evoked by the signal can be confirmed through experience?” Authors publishing in preeminent crowdfunding journals possess considerable expertise in the field. The aim of the survey was to identify whether the theoretical perception of signal strength by expert researchers corresponds to the empirical findings in the literature. Therefore, we pose the following research question:

**RQ:** *Is the expert researchers' perception of what constitutes an effective signal consistent with empirical findings from the crowdfunding literature?*

## **4. Data and Method**

### **4.1. Data**

To answer our research question, we collected survey data on *expert researchers' perceptions about the effectiveness of frequently examined signals* and manually compiled archival data on *the empirical findings from high-impact crowdfunding articles* published in high-quality journals. We contacted all authors of the articles in our sample via email and asked them to rank the most frequently used determinants of crowdfunding success in empirical research in terms of theoretical effectiveness via an online survey. We identified these determinants in advance through a systematic literature review with a final sample of 145 articles from business and economics journals. We asked survey participants to provide an overall ranking of 14 explanatory variables, each of which had appeared in at least 20 articles from the literature review and which we presented to respondents in random order. While some of these explanatory variables, for example *Entrepreneur's Past Crowdfunding Success* or *Patent Ownership*, constitute variables of interest to the authors of the article and may convey valuable information to potential investors, others, such as *Entrepreneur's Gender* seem to be often merely used as control variables. Given that certain variables arguably do not meet the criteria of a credible signal, we included an option in the survey for respondents to select "This is not a signal."

Of the 326 authors we contacted, 83 participated in the survey from March 25 to April 25, 2024, resulting in a good response rate of about 25%. Based on the survey ranking and the votes for "This is not a signal," we classified the variables into three distinct groups. We consider as "strong signals" those explanatory variables that are ranked highest, have received first-rank votes from at least 10% of the survey participants, and had an average voting better than rank five. These explanatory variables include *Entrepreneur's Past Crowdfunding Success*, *Entrepreneur's Business Experience*, *Patent Ownership*, and *Equity Share Offered by the Entrepreneur*. Moreover, we assigned all variables to the "non-signals" category if more than one-third of the survey participants voted for this option instead of ranking the variable on a scale from one to 14. The remaining variables, which had an average ranking above five but fewer than one-third of the respondents selecting "This is not a signal," are classified as "regular signals." Table 1 provides a detailed summary of the survey results, including the percentage

of votes for each rank across the individual variables. The three explanatory variables that are ranked as least credible signals by the survey participants are *Entrepreneur's Gender*, *Firm Located in a Metropolitan Area*, and *Planned Campaign Duration*.

[Insert **Table 1** and **Table 2** about here]

Table 2 presents the absolute number of votes by survey participants for the option “This is not a signal” for each explanatory variable. Based on these results, four variables are classified into the non-signal group: *Entrepreneurs' Gender*, *Firm Located in a Metropolitan Area*, *Planned Campaign Duration*, and *Technology Sector Affiliation*. The remaining six variables are classified as “regular signals,” including *Target Funding Amount*, *Interest Rate Offered by Entrepreneur*, *Crowdfunding Platform's Staff Pick Designation*, *Presence of Campaign Video on Crowdfunding Website*, *Top-Management-Team Size*, and *Campaign Description Length on Crowdfunding Website*. These regular signals were not dismissed by the respondents as non-signals but were also not ranked as highly as the strong signals. Table 3 shows the final classification of the individual explanatory variables into the three signal categories based on the average rank and the absolute number of “This is not a signal” votes.

[Insert **Table 3** about here]

In the next step, we have validated our signal classification by testing the average rank across the three groups using ANOVA and Tukey's pairwise comparison. The aim is to explore whether our group classification of strong, regular, and non-signals is internally valid. The ANOVA (Panel A) and Tukey's pairwise comparison (Panel B) results in Table 4 show that the average rank of the variables in the individual groups is different across the three groups ( $p < 0.01$ ). Tukey's pairwise comparison indicates that the average rank of the variables considered strong signals is significantly different from those considered regular or non-signals. Similarly, the average rank of variables classified as regular signals is significantly higher than those considered non-signals. These results lend robust support to the internal validity of our classification.

[Insert **Table 4** about here]



The survey data provides information about the researchers' perceptions of which signals are most effective based on theoretical considerations and allows us to classify the groups of strong and regular signals. However, to answer our research question, we need to complement the survey data with empirical evidence. Therefore, we revisit the empirical findings from the literature, consolidate them through a meta-analysis, and compare the empirical evidence against the expert researchers' perceptions. We limit our analysis to the determinants of crowdfunding success that were previously analyzed in the literature. Although we could have taken other theoretically conceivable signals into account as well, these would not have been part of our meta-analysis because they did not appear in any of the articles. Our systematic literature review and meta-analysis follows the guidelines for Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) using a modified template of Liberati et al. (2009). Figure 1 illustrates the selection process via a flow chart. Our sample for the empirical analysis is based on a rigorous multi-step process that involves (1) searching, (2) screening, (3) including, and (4) excluding respective articles.

[Insert **Figure 1** about here]

We collected articles studying the success of crowdfunding campaigns from April 2023 to May 2023. Because we were interested in the findings of the most rigorous and widely observed articles in the field, we decided to search for relevant articles in the *Financial Times* Top 50 (FT50) journals. First, we used the keywords “equity crowdfunding,” “investment crowdfunding,” “investment-based crowdfunding,” “securities crowdfunding,” “securities-based crowdfunding,” “crowdlending,” and “peer-to-peer lending” to identify relevant articles. The search yielded 272 potentially relevant articles. Second, we complemented the articles from the FT50 journals by systematically searching the reference list of each article and four other relevant journals in the field of crowdfunding research (*Journal of Banking & Finance*, *Journal of Business Venturing Insights*, *Journal of Corporate Finance*, and *Small Business Economics*), which resulted in another 131 potentially relevant articles. Finally, and to minimize the risk of overlooking important articles from non-FT50 journals, we also screened the first 50 search results on Google Scholar for all seven keywords, resulting in another 331 potentially relevant articles. Removing duplicates leaves us with an initial sample of 668 potentially relevant

articles.<sup>15</sup> After manually screening all articles, we excluded 510 articles for being irrelevant because crowdfunding was not the focus of the research, the articles did not use an empirical approach to investigate crowdfunding (e.g., literature reviews, theoretical frameworks, normative research), or the articles used empirical approaches other than standard regression analysis (e.g., machine learning, qualitative fuzzy set comparison analysis). After reviewing the full texts of the remaining 158 articles, we excluded an additional 13 articles due to specific contexts (e.g., seasoned equity crowdfunding offerings, sustainable crowdfunding, or donation-based crowdfunding ( $n = 7$ )) or missing data after unsuccessful attempts to contact the authors ( $n = 6$ ).

Our final sample for the meta-analysis consists of 145 articles published between 2011 and 2023. A total of 87 articles were published in FT50 journals, 38 came from the four abovementioned journals, and the remaining 20 were broadly distributed across different journals.<sup>16</sup> For the empirical testing to answer our research question, we use a smaller and more homogenous sub-sample that only includes variables examined in at least 20 published articles from our sample.<sup>17</sup> To increase the comparability of the coefficient estimates, we only include probit, logit, and ordinary least square (OLS) models and those from regressions using a dependent variable taking a venture-centric instead of a funder-centric perspective (i.e., funding success instead of individual funding decisions). The final sample used in examining our research question consists of 82 articles, all including at least one of the 14 most frequently examined variables.<sup>18</sup>

## 4.2. Variables

The explanatory variables included in the final sample fall into three different categories: entrepreneurial, firm, and campaign characteristics. Campaign characteristics account for the largest share of explanatory variables and concern the features of the crowdfunding campaign itself. While the high share of campaign characteristics as explanatory variables indicates that

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<sup>15</sup> We defined articles as potentially relevant if they deal with crowdfunding and were published in a journal, as a conference paper, in a working paper series, by a government authority, or by a non-governmental organization.

<sup>16</sup> For an overview of the most popular journals in crowdfunding research, we refer the reader to Online Appendix A. While the included articles are broadly distributed across 49 different journals, some journals stand out as particularly popular. As such, we find *Small Business Economics* ( $n = 22$ ) and *Entrepreneurship Theory and Practice* ( $n = 20$ ) to stand out, followed by the *Journal of Corporate Finance* ( $n = 11$ ) and the *Journal of Business Venturing* ( $n = 10$ ).

<sup>17</sup> We limited our survey to these commonly used explanatory variables because otherwise the expert researchers would have had to evaluate over a thousand potential signals.

<sup>18</sup> For an overview of all included articles and those which are considered for empirical testing, we refer the reader to Online Appendix B.

these variables are essential in determining crowdfunding success, empirical models often also include explanatory variables about the underlying characteristics of the entrepreneur and the firm.

The empirical literature places considerable attention on campaign-specific information, including not only financial information such as *Target Funding Amount*, *Interest Rate Offered by Entrepreneur*, and *Equity Share Offered by Entrepreneur*, but also the way in which a project is presented on the crowdfunding website (e.g., description length and tone of project video). *Equity Share Offered by Entrepreneur* is the percentage of equity offered by the entrepreneur (e.g., Cumming et al., 2021a; Kleinert et al., 2020; Rossi et al., 2023; Shafi, 2021; Signori & Vismara, 2018). *Target Funding Amount* is the amount requested by the entrepreneur (e.g., Kollenda, 2022; Lu et al., 2022; Rossi et al., 2023; Signori & Vismara, 2018). *Interest Rate Offered by Entrepreneur* is measured as the annual interest rate offered by the entrepreneur or borrower (e.g., Hu et al., 2023; Huang et al., 2021; Kgoroadira et al., 2019; Kollenda, 2022). *Crowdfunding Platform's Staff Pick Designation* is a variable indicating whether the project is promoted by the crowdfunding platform as a “staff pick” (Anglin et al., 2018; Patel et al., 2021; Seigner et al., 2022; Skirnevskiy et al., 2017) or “project we love” (Franzoni & Tenca, 2023; Tauscher et al., 2021; Wessel et al., 2021).

The effort an entrepreneur makes to present the project sufficiently and compellingly may also influence the project's success. For example, including a video can contribute to crowdfunding success because it can be understood by potential investors as a sign of quality and convey to the crowd a sense of the entrepreneur's dedication or engagement with the project. Hence, crowdfunding research frequently includes *Presence of Campaign Video on Crowdfunding Website* as an indicator variable (e.g., Anglin et al., 2018; Bollaert et al., 2020; Dorfleitner et al., 2021; Johan & Zhang, 2020). The word count of the description of the project on the crowdfunding website can also serve as an indicator of entrepreneurs' or borrowers' effort and is therefore often examined. *Campaign Description Length on Crowdfunding Website* is measured as the word count of the project description on the crowdfunding website (e.g., Anglin et al., 2018; Bollaert et al., 2020; Dorfleitner et al., 2021; Dorfleitner et al., 2016). *Planned Campaign Duration* is measured as the planned project duration in days (e.g., Anglin et al., 2018; Franzoni & Tenca, 2023; Jiang et al., 2021; Jiang et al., 2019; Lukkarinen & Schwienbacher, 2023; Skirnevskiy et al., 2017). The duration during which a project can be funded is an important determinant of crowdfunding success, because longer visibility to potential investors is directly linked to the likelihood of gaining more backers (Chan & Parhankangas, 2017; Mollick, 2014).

Regarding entrepreneur characteristics, the *Entrepreneur's Past Crowdfunding Success*, *Entrepreneur's Business Experience*, and *Entrepreneur's Gender* are among the 14 most frequently examined variables. *Entrepreneur's Past Crowdfunding Success* is a variable measuring whether the entrepreneur or the firm has successfully raised money through crowdfunding before (e.g., Estrin et al., 2022; Kleinert, 2024; Kleinert et al., 2020; Oo et al., 2019; Shafi, 2021). *Entrepreneur's Business Experience* is measured by the years the venture has been in business (e.g., Ahlers et al., 2015; Chen, 2023; Cumming et al., 2021a; Johan & Zhang, 2020). *Entrepreneur's Gender* is an indicator variable measuring whether the (lead) entrepreneur is female (e.g., Chen, 2023; Piva & Rossi-Lamastra, 2018; Quigley & Patel, 2022; Seigner et al., 2022). Research often explores the impact of *Entrepreneur's Gender* because female founders have been shown to be perceived differently by investors than their male peers (Josefy et al., 2017).

Among the most relevant firm characteristics, the variable *Top-Management-Team Size* is often used as a proxy for social capital and measured as the number of people in the top management team of a firm (e.g., Bollaert et al., 2020; Cumming et al., 2021a; Johan & Zhang, 2020; Kleinert, 2024; Piva & Rossi-Lamastra, 2018). Researchers frequently identify the top management through the section labeled “team” on the crowdfunding website or the LinkedIn page of the entrepreneurs. In addition to social capital, intellectual capital is frequently considered in models estimating crowdfunding success. *Patent Ownership* is used to approximate the intellectual capital and serves as an indicator whether a venture holds or has applied for patents (e.g., Ahlers et al., 2015; Cumming et al., 2021a; Kleinert et al., 2020; Piva & Rossi-Lamastra, 2018; Rossi et al., 2023). The binary indicator variable *Technology Sector Affiliation* accounts for firms' sector background and indicates whether a firm operates primarily within the technology sector, including technology, internet, IT, and telecommunications industries (e.g., Barbi & Mattioli, 2019; Kleinert, 2024; Kleinert et al., 2020; Piva & Rossi-Lamastra, 2018; Shafi, 2021). *Firm Located in a Metropolitan Area* is a dummy variable indicating whether a firm's headquarters is located in a metropolitan area such as London (e.g., Estrin et al., 2022; Nguyen et al., 2019; Rossi et al., 2023; Shafi, 2021; Vismara, 2016), the largest UK cities (e.g., Ahlers et al., 2015; Barbi & Mattioli, 2019; Cumming et al., 2021a; Ralcheva & Roosenboom, 2020), and other popular locations such as Los Angeles or New York City (Jiang et al., 2019). This variable is frequently included in research models because projects that are located in more entrepreneurial regions, which are familiar with the concept of crowdfunding, might attract more investors (Li et al., 2017).

### 4.3. Method

To investigate whether the empirical findings of crowdfunding research are reflected in the expert researchers' perceptions of what constitutes an effective signal, we use the expert survey data to classify strong and regular effective signals (as detailed in Section 4.1). *Strong signals* are those ranked highly by the expert researchers in the survey, whereas *regular signals* did not receive high rankings but are still considered effective signals. Based on this classification, we use empirical findings from crowdfunding articles to examine whether the expert researchers' perceptions differ from the empirical evidence. Our empirical approach involves three distinct tests based on the effect sizes (Test 1), the share of positive coefficients (Test 2), and the share of significant coefficients (Test 3).

First, if a signal is effective based on theoretical considerations, it should have a stronger impact on funding success, which should empirically be reflected in a larger statistical effect size. Test 1 therefore examines whether signals classified as strong by expert researchers have larger effect sizes than regular signals in the empirical articles. If the expert researchers' perception accords with the empirical evidence, the average effect size of strong signals should be larger than for regular signals. In contrast, if regular signals have a similar or even larger average effect than strong signals, this would indicate that researchers' perceptions are incorrect and not supported by empirical evidence from existing research.

To statistically assess whether the effect sizes differ between the groups of strong and regular signals, we use a non-parametric two-sample Wilcoxon (1945) rank sum test. The regression coefficients for this analysis were manually extracted from the identified articles. Because the empirical models vary across the articles, we standardize the coefficients. First, we follow Nieminen (2022) and converted the reported OLS regression coefficients into standardized  $\beta$ -coefficients by multiplying the unstandardized coefficient by the standard deviation (SD) of the explanatory variable and dividing it by the SD of the dependent variable. Second, following Lipsey and Wilson (2001) and Borenstein et al. (2021), we converted probit or logit regression coefficients into *Cohen's d* by dividing the coefficient by  $\frac{\sqrt{3}}{\pi}$ . Subsequently, we multiplied the coefficient by the SD of the explanatory variable to make it equivalent to a standardized regression coefficient. Finally, we formulate the following  $H_0$  (median value of standardized regression coefficients =  $\mu$ ):

$$H_0: \quad \mu \text{ Strong Signal} = \mu \text{ Regular Signal}$$

Second, an effective signal deemed as strong by expert researchers should not only have a larger effect size but should also be more often associated with a positive impact on funding success. Thus, in Test 2, we examine the share of positive coefficients. If scholars' perceptions reflect the empirical evidence, the effective signals they rank highly should more often positively correlate with campaign success than the signals considered regular. This expectation arises from the nature of the determinants examined in crowdfunding research because most signals in theory positively influence crowdfunding success.<sup>19</sup> Signals frequently examined such as past crowdfunding success (e.g., Ahlers et al., 2015; Block et al., 2018; Buttice et al., 2017; Colombo et al., 2015) or a crowdfunding platform's staff pick designation for a campaign (e.g., Anglin et al., 2018; Cascino et al., 2019; Cumming et al., 2023; Franzoni & Tenca, 2023) are typically considered determinants increasing the likelihood of funding success. Given the predominantly positive association between funding success and examined signals, a positive impact would suggest that the signal conveys valuable information and affects funding outcomes in the desired direction. Consequently, if the share of positive coefficients for regular signals is similar to or higher than that of strong signals, this would suggest a discrepancy between expert researcher perceptions and the empirical evidence. We empirically examine this proposition using a Fisher's exact test to examine whether we can reject the following  $H_0$  in which  $\rho_{positive}$  is the proportion of positive regression coefficients for each group of variables:

$$H_0: \quad \rho_{positive} \text{ Strong Signal} = \rho_{positive} \text{ Regular Signal}$$

Third, effective signals should not only affect the effect size and direction of the empirical relationship but also the significance of the estimates; that is, the effect exists in the statistical population. Consequently, if the expert researchers' perceptions are reflected in the empirical literature, strong signals should exhibit a higher proportion of significant coefficients compared to regular signals. This expectation is based on the idea that in a meta-study, signals with greater theoretical relevance and general impact should more often produce results that are statistically significant. The impact of these signals should exist in the overall statistical population, making it more likely to result in statistically significant estimates. For example,

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<sup>19</sup> The 14 explanatory variables under investigation include two variables for which a negative impact on the funding success is theoretically expected. First, offering a higher equity share to the investors should send a negative signal and therefore affect the funding outcome negatively (Stiglitz & Weiss, 1981). Second, setting a longer campaign duration signals pessimism about the project and thus should also be negatively associated with funding outcomes. We consider these two exemptions and rescale the coefficients from the empirical literature by multiplying them by negative-one.

*Patent Ownership* is in theory a generally valid indicator of innovation potential and legal protection, which lowers investor uncertainty and increases confidence in future returns. As a result, *Patent Ownership* is expected to yield significant results more frequently and to suffer less often from statistical type II errors (false negatives). Additionally, theoretically strong signals should have more pronounced effects (Test 1), which in turn must affect the statistical significance in empirical research. When a signal has a stronger influence on crowdfunding success, it is less likely to be canceled out by noise, which increases the likelihood of significant coefficients. In contrast, regular signals, while still relevant, may exhibit weaker or more context-dependent effects, resulting in fewer significant estimates. Therefore, in Test 3 we use the statistical significance of explanatory variables in published articles to explore whether scholars' perceptions of what constitutes a strong signal in crowdfunding aligns with the empirical findings. We use a Fisher's exact test to compare the proportion of significant regression coefficients (i.e.,  $\rho_{\text{significant}}$ ) between strong and regular signals. We formulate the following  $H_0$ :

$$H_0: \quad \rho_{\text{significant}} \text{ Strong Signal} = \rho_{\text{significant}} \text{ Regular Signal}$$

## 5. Results

### 5.1. Descriptive Statistics

Before conducting the proposed tests, this section provides a descriptive overview of the articles in our sample. Figure 2 visualizes the development of the number of articles investigating success factors predicting crowdfunding success from 2011 to 2023 (Panel A). Following the publication of the first articles, a continuous increase in research output can be observed in subsequent years. The upward trend reflects growing academic interest, parallel to the development of crowdfunding as an established financing mechanism. From 2020 onwards, we observe a more pronounced jump in the number of publications. This increase is likely the result of the larger number of self-employed and an increase in financing via the internet because of the COVID-19 pandemic (Cumming et al., 2022b). The steady growth of research on crowdfunding also indicates that empirical data is becoming increasingly available, allowing for a more robust analysis of the factors that influence the success of crowdfunding.

[Insert **Figure 2** about here]

With regard to the types of crowdfunding (Panel B of Figure 2), the early articles from 2011 to 2015 mainly dealt with the phenomenon of peer-to-peer lending, probably because the data was often made public and easily accessible by the platforms. While peer-to-peer lending ( $n = 49$ ) has played a significant role in crowdfunding research over the years up to the present day, the share of equity crowdfunding ( $n = 74$ ) has steadily increased since 2014 and has covered the majority of crowdfunding research in recent years. Somewhat less prominent were publications referring to investment ( $n = 5$ ), investment-based ( $n = 2$ ), and securities-based crowdfunding ( $n = 3$ ), while crowdlending ( $n = 12$ ) gained prominence, especially during the height of the COVID-19 pandemic from 2019 to 2022.

When examining the factors that are crucial for funding success, research on crowdfunding uses different indicators to approximate the dependent variable. At the same time, researchers have studied various campaign and entrepreneurial characteristics as well as social, cultural, and economic conditions as factors determining funding success. Figure 3 presents an overview of the most frequently used dependent (Panel A) and explanatory (Panel B) variables. The vast majority of articles measure funding success using a binary variable indicating that the campaign reached the funding goal ( $n = 90$ ). An alternative and frequently used indicator of funding success is the amount of money raised. The funding amounts raised were often measured in log form ( $n = 32$ ), but also in absolute values ( $n = 13$ ). A related measure is the percentage funded, which indicates the extent to which the funding goal has been reached ( $n = 15$ ). Other researchers do not consider financial values but the number of investments or investors secured by a campaign in absolute numbers ( $n = 16$ ) or again in log form ( $n = 13$ ). The time until the funding target was reached is another common measure of funding success in the literature ( $n = 9$ ).

[Insert **Figure 3** about here]

Regarding the explanatory variables, our analysis finds previous research examining the influence of 1,003 variables determining the success of a crowdfunding campaign.<sup>20</sup> Many of them (461) are covered in no more than one article, but others appear repeatedly. Panel B of Figure 3 shows the most frequently used explanatory variables. Because *Target Funding Amount* is included in an overwhelming majority of articles in log form ( $n = 113$ ) or absolute values ( $n = 56$ ), there seems to be a consensus that in theory it should influence the chances of

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<sup>20</sup> Among the 1,003 variables, we have already merged variables with different names but the same content; for example, the minimum funding *goal* and the minimum funding *target* are considered one variable.



funding success. Likewise, a high proportion of articles contain information on *Entrepreneur's Gender* ( $n = 72$ ) and *Planned Campaign Duration* (absolute values ( $n = 57$ ), log form ( $n = 26$ )). Other campaign characteristics (*Interest Rate Offered by Entrepreneur* and *Equity Share Offered by Entrepreneur*, *Presence of Campaign Video on Crowdfunding Website*, and *Campaign Description Length on Crowdfunding Website*), firm characteristics (*Patent Ownership*, *Technology Sector Affiliation*, *Firm Located in a Metropolitan Area*, and *Top-Management-Team Size*), and entrepreneur characteristics (*Entrepreneur's Past Crowdfunding Success*, *Entrepreneur's Business Experience*) also appear frequently in empirical models.

Because the literature uses binary (e.g., fully funded) and categorical dependent variables (e.g., funding amount, number of investments), empirical articles require different statistical models. Whereas researchers explore the binary funding success measure using probit ( $n = 34$ ) or logit ( $n = 57$ ) models, they use OLS regressions when it comes to categorical dependent variables ( $n = 102$ ). Less often, researchers use Poisson models ( $n = 6$ ), Tobit regression models ( $n = 8$ ), and negative binomial models ( $n = 10$ ).

Table 5 Panel A shows the average effect sizes of the individual signals and Panel B for the groups of strong and regular effective signals, and non-signals. We report how often researchers examine an individual signal or a group of signals, what the mean effect size is, and how often the signal or a group of signals has a positive and statistically significant effect. The evidence shows that the impact of strong effective signals on crowdfunding success is on average positive. However, heterogeneous effects can be observed within this group, ranging from notable positive effects of *Patent Ownership* (0.1819) and *Entrepreneur's Past Crowdfunding Success* (0.1543) to considerable negative effects of *Equity Share Offered by the Entrepreneur* (-0.2939). In addition, we find that within the groups of regular effective signals (from *Campaign Description Length on Crowdfunding Website* (0.4594) to *Target Funding Amount* (-0.4124)) and non-signals (from *Entrepreneur's Gender* (0.1298) to *Planned Campaign Duration* (-0.2093)), there are similar or even more heterogeneous effects. Moreover, some signals are rather consistently positive. *Entrepreneur's Past Crowdfunding Success* had a positive impact in 13 of 15 articles. Interestingly, the positive effect direction and the statistical significance are highly consistent in the group of regular signals. Here, *Crowdfunding Platform's Staff Pick Designation* has a positive effect in 22 of 23 cases, with all observed coefficients being significant. *Presence of Campaign Video on Crowdfunding Website* (23 out of 24 coefficients are positive), *Top-Management-Team Size* (9 out of 11 coefficients are positive), and *Campaign Description Length on Crowdfunding Website* (43 out of 49 coefficients are positive) also stand out.

[Insert **Table 5** about here]

Figure 4 shows the mean and median effect sizes of the individual signals in a bar graph. The individual bars are colored based on the signal's classification as strong (in maroon), regular (in navy), and non-signal (in gray). The figures show that the mean and median effect sizes of signals classified in theory as regular by expert researchers are consistently positive, with the exception of *Target Funding Amount*. For both the mean and the median, a regular signal has the largest effect size: respectively *Campaign Description Length on Crowdfunding Website* and *Crowdfunding Platform's Staff Pick Designation*. In case of the mean, *Equity Share Offered by Entrepreneur*, which has been classified as a strong signal by the expert researchers, has the second-largest effect size. The negative sign of the signal is theoretically expected. However, for the median, the second-largest effect size is again a variable that has only been classified as a regular signal by the expert researchers: *Presence of Campaign Video on Crowdfunding Website*. In line with the theoretical expectations of expert researchers, signals from the non-signal group have a significantly smaller or even negative effect size.

[Insert **Figure 4** about here]

## 5.2. Empirical Testing

### *Main Results*

We examine our research question using three independent tests. Based on the empirical findings from high-quality articles, we analyze the effect size (Test 1), the share of positive coefficients (Test 2), and the share of significant coefficients (Test 3). We assess whether the assumptions for a parametric two-tailed t-test are met. Because the Shapiro and Wilk (1965) test indicates a violation of the normality assumption for each group ( $p < 0.001$ ), we use the non-parametric Wilcoxon (1945) rank sum test. To allow for a fair comparison among signals, we use the inverse coefficient sign of *Planned Campaign Duration* and *Equity Share Offered by Entrepreneur*, because a shorter campaign duration and a lower equity share offered should theoretically have a positive effect on financing success.

We assume that signals classified as strong by expert researchers have a greater impact and thus a significantly higher effect size than regular signals. However, the results in Panel A of Table 6 show that the rank sum for strong signals is not significantly higher than for regular signals. Contrary to the experts' assessment, regular signals therefore tend to have a similar median standardized coefficient estimate as strong signals. These findings of Test 1 suggest

that, in terms of effect size, expert researchers' perceptions of what constitutes an effective signal are not supported by the empirical research.

[Insert **Table 6** about here]

In Test 2, we compare the share of positive regression coefficients between strong and regular signals using Fisher's exact test. Again, we use the inverse coefficient sign of *Planned Campaign Duration* and *Equity Share Offered by Entrepreneur*. The results in Table 6 Panel B show no significant difference in the share of positive effects between the two groups. Regular signals are only slightly less often positive, with approximately 62% (131 out of 210) of regular signal coefficients being positive, compared to 68% (42 out of 62) for strong signals. However, this difference is not statistically significant ( $p = 0.458$ ). When examining the share of *significantly positive* coefficients instead of only positive ones, the results even turn in favor of the regular signals. Regular signals are now significantly more often significantly positive, with a  $p$ -value of the Fisher's exact test of  $p < 0.01$ . The share of significantly positive coefficients is about 55% for regular signals and only about 27% for strong signals, which again indicates that scholars' perception of what constitutes a strong signal in crowdfunding does not align with the empirical research results.

In Test 3, we examine whether the share of significant regression coefficients is higher among strong effective signals than regular effective signals. Our findings in Panel C of Table 6 indicate that regular signals have a significantly higher share of significant regression coefficients than strong signals ( $p < 0.01$ ). While the proportion of significant coefficients is about 80% (166 out of 208) among regular signals, only 35% of the coefficients for strong signals are significant (22 out of 62). Regular signals therefore seem to play a more important role explaining the success of crowdfunding campaigns than expert researchers assume. Put differently, the fact that signals that are considered strong by expert researchers are less often statistically significant suggests that they may not be generally valid across the statistical population. Thus, theoretically strong signals, such as patents, might only be relevant in specific sectors or contexts (e.g., highly technical ventures), but are less important in others (e.g., more creative projects). For example, Rossi et al. (2021) find that patents have no significant impact on entrepreneur-led platforms but do have a significant impact on investor-led platforms.

The results of our empirical tests show considerable lack of alignment between expert researchers' perceptions of effective signals and the actual empirical evidence from crowdfunding research. Test 1 indicates that strong signals have no larger median standardized

coefficient estimates than regular signals. Test 2 further corroborates this finding by documenting that strong signals are only slightly more often associated with positive outcomes than regular signals; however, regular signals are more often significantly positive than strong signals. Test 3 indicates that regular signals exhibit a higher share of significant coefficients than expected by expert researchers. Thus, regular signals provide more consistent and robust predictions of crowdfunding success across different studies. Where expert researchers do excel is in classifying signals that are in fact non-signals or merely weak signals in empirical research.

### *Robustness Checks*

So far, we have considered all articles that contain the search terms defined in Section 4.1. However, some of these articles examined crowdfunding platforms that did not conduct debt or equity crowdfunding in a legal sense. Although there are good reasons why pre-purchase crowdfunding could be functionally considered investment crowdfunding, we carry out a robustness check and exclude all articles studying pre-purchase crowdfunding platforms from our sample. This adjustment reduces our sample from 82 to 51 articles. Appendix C shows the results.

For two of the three tests, our results remain qualitatively and quantitatively the same. For Test 1, we again find that strong signals do not have significantly larger effect sizes than regular signals (Panel A of Appendix C). For Test 3, we find that coefficients of regular signals are more often statistically significant (67 of 89; 75%) than coefficients of strong signals (20 of 56; 36%), which is also consistent with our previous results. Regarding Test 2, we again find that the share of positive coefficients is higher for strong signals (38 out of 56; 68%) than for regular signals (44 out of 91; 48%). However, in contrast to our previous findings, the difference is now statistically significant (Panel B of Appendix C). This result is not entirely surprising, because excluding articles studying pre-purchase crowdfunding platforms leads to the exclusion of *Crowdfunding Platform's Staff Pick Designation*, which is the most impactful and positive explanatory variable from the group of regular signals.<sup>21</sup> However, when considering the *significantly positive* coefficients, the difference between the two groups is no longer statistically significant. In sum, the robustness checks confirm our main findings, indicating

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<sup>21</sup> This outcome can also be attributed to the disproportionate reduction in the number of observations for the two groups. The total number of observations decreased from 272 to 147, with the group of regular signals decreasing significantly from 210 to 91 observations, while the group of strong signals decreased only slightly from 62 to 56 observations.

that expert researchers' perceptions are not reflected in the empirical crowdfunding research. Excluding pre-purchase crowdfunding articles does not materially alter our results.

### 5.3. Meta-Regression

#### *Main Results*

To explain the differences in effect size between signals classified by expert researchers as strong, regular, or non-signals, we use a meta-regression model. We specify the following meta-regression:

$$\begin{aligned}
 \text{Effect Size}_{i,j} = & \beta_0 + \beta_1 \text{Entrepreneur's Past Crowdfunding Success}_{i,j} \\
 & + \beta_2 \text{Entrepreneur's Business Experience}_{i,j} + \beta_3 \text{Patent Ownership}_{i,j} \\
 & + \beta_4 \text{Equity Share Offered by Entrepreneur}_{i,j} \\
 & + \beta_5 \text{Interest Rate Offered by Entrepreneur}_{i,j} \\
 & + \beta_6 \text{Crowdfunding Platform's Staff Pick Designation}_{i,j} \\
 & + \beta_7 \text{Presence of Campaign Video on Crowdfunding Website}_{i,j} \\
 & + \beta_8 \text{Top-Team-Management Size}_{i,j} \\
 & + \beta_9 \text{Campaign Description Length on Crowdfunding Website}_{i,j} \\
 & + \beta_{10} \text{Technology Sector Affiliation}_{i,j} + \beta_{11} \text{Planned Campaign Duration}_{i,j} \\
 & + \beta_{12} \text{Firm Located in a Metropolitan Area}_{i,j} + \beta_{13} \text{Entrepreneur's Gender}_{i,j} \\
 & + \beta_{14} \text{Observations}_j + \beta_{15} \text{Impact Factor}_j + \beta_{16} \text{Number of Authors}_j \\
 & + \beta_{17} \text{Year}_j + \beta_8 \text{Method}_j + \beta_9 \text{Dependent Variable}_j + \varepsilon_{i,j}
 \end{aligned} \tag{1}$$

in which the dependent variable *Effect Size* is the standardized coefficient estimate reported for observation  $i$  in article  $j$ . Our main variables of interest are the indicator variables representing each signal from the different groups of strong, regular, and non-signals. For strong signals, the indicator variables are *Entrepreneur's Past Crowdfunding Success*, *Entrepreneur's Business Experience*, *Patent Ownership*, and *Equity Share Offered by Entrepreneur*. The regular signals are the variables *Interest Rate Offered by Entrepreneur*, *Crowdfunding Platform's Staff Pick Designation*, *Presence of Campaign Video on Crowdfunding Website*, *Top-Management-Team Size*, and *Campaign Description Length on Crowdfunding Website*. We also include indicator variables for those signals that were considered non-signals by the expert researchers. These are *Technology Sector Affiliation*, *Planned Campaign Duration*, *Firm Located in a Metropolitan Area*, and *Entrepreneur's Gender*. All indicator variables are equal to one if they capture the effect size of the respective signal and zero otherwise. Again, we use the inverse coefficient sign of *Planned Campaign Duration* and *Equity Share Offered by Entrepreneur* to

allow for a fair comparison. The variable *Target Funding Amount* serves as the baseline category.

We also control for other factors potentially influencing the estimated effect size. *Observations* is a continuous variable accounting for the sample size in the respective empirical analysis. *Impact Factor* is the impact factor of the journal in which the article is published as of 2024. *Number of Authors* captures the effect of the number of authors that have written the respective article. *Year* is the publication year of the respective article and accounts for the potential time effect. We include *Method* and *Dependent Variable* as vectors of dummy variables capturing the effects of the different methods (i.e., logit, probit, and OLS regression) as well as of the distinct dependent variables (i.e., fully funded, funding amount, percentage funded, time to funding). We include  $\varepsilon$  as the error term.

[Insert **Table 7** about here]

Table 7 presents the results of the meta-regression and Wald tests between the coefficient estimates of the respective variables within the individual groups of strong, regular, and non-signals. In line with the descriptive statistics in Figure 4, we find that signals classified as regular by expert researchers have the strongest influence on funding success. *Crowdfunding Platform's Staff Pick Designation* has the largest impact on funding success, with a statistically significant point estimate of 0.49. In second and third place are again *Campaign Description Length on Crowdfunding Website* and *Presence of Campaign Video on Crowdfunding Website* with an effect size of 0.45 and 0.44. Both variables are highly significant. All three variables have a clear connection to crowdfunding and show that domain-specific signals play the most important role.

Consistent with theoretical expectations of expert researchers, *Equity Share Offered by Entrepreneur*, *Patent Ownership*, and *Entrepreneur's Past Crowdfunding Success* all have a statistically significant impact on crowdfunding success, suggesting that agnostic signals that have nothing to do with crowdfunding in principle also have an impact on crowdfunding success. However, while all five variables from the group of regular signals are highly statistically significant, we find some less significant or even non-significant signals in the groups of strong and non-signals. From the group of strong signals, *Entrepreneur's Business Experience* is only slightly significant ( $p < 0.1$ ) and has a comparatively small point estimate. From the group classified as non-signals, *Entrepreneur's Gender* and *Planned Campaign Duration* predict crowdfunding success, although expert researchers do not perceive them as

signals. Regarding *Technology Sector Affiliation* and *Firm Located in a Metropolitan Area*, experts rightly classify these as signals that are not credible.

To investigate whether the differences between the effects of the distinct signals within the groups of strong, regular, and non-signals are statistically significant, we conduct Wald tests. The results in columns (2)–(5) of Table 7 indicate that there is some significant variation in the group of regular and non-signals, while we cannot find significant differences in the effect sizes of strong signals. The effect size of *Interest Rate Offered by Entrepreneur* is indeed significantly smaller than the coefficient of *Crowdfunding Platforms' Staff Pick Designation* and *Campaign Description Length on Crowdfunding Website*, and barely significantly smaller than the effect of *Presence of Campaign Video on Crowdfunding Website*. This confirms our earlier finding that domain-specific signals are indeed the most influential within the group of regular signals.

In summary, the results of the meta-regression illustrate the different influences on the success of crowdfunding by various signals classified by experts as strong, regular, and non-signals. Contrary to the expert researchers' assessment, the all three of the most influential variables are deemed regular signals. Crowdfunding-specific factors which are easily observable on the crowdfunding website such as *Crowdfunding Platform's Staff Pick Designation*, *Campaign Description Length on Crowdfunding Website*, and *Presence of Campaign Video on Crowdfunding Website* have the greatest impact. In line with the expert researchers' survey ranking, *Equity Share Offered by Entrepreneur*, *Patent Ownership*, and *Entrepreneur's Past Crowdfunding Success* are also relevant success factors. This result underlines the importance and benefit of a proven track record for entrepreneurs, intellectual property rights, and careful consideration of how much equity to offer. The weakly significant point estimate on *Entrepreneur's Business Experience* suggests that not all theoretically strong signals are equally empirically relevant.

### *Robustness Checks*

To investigate how robust our meta-regression results are, we again exclude articles studying pre-purchase crowdfunding platforms. Appendix D shows the results. While the smaller sample size leads to fewer significant point estimates, the general pattern of our main findings prevails. We find that the two crowdfunding-specific signals, *Campaign Description Length on Crowdfunding Website* and *Presence of Campaign Video on Crowdfunding Website*, continue to exhibit the largest and most significant impacts on effect sizes, underpinning their importance for crowdfunding success. Out of the group of strong signals, no variable has a

statistically significant point estimate. *Entrepreneur's Gender* is the only significant variable from the group of non-signals. In sum, despite the smaller sample size, our results remain qualitatively and quantitatively very similar.

## **6. Discussion and Conclusion**

### **6.1. Implications for Signaling Theory**

Our results suggest that expert researchers' perceptions of what theoretically constitutes a strong and effective signal are not consistent with empirical findings. Although expert researchers are very good at identifying non-signals, they have difficulty distinguishing theoretically strong and regular signals. Our results seem to indicate that expert researchers underestimate crowdfunding domain-specific signals and overestimate general signals. A possible explanation for this result is *curse of knowledge* (Camerer et al., 1989), which refers to phenomenon that expert researchers may overlook or dismiss certain signals due to their long-standing expertise in particular research areas, a preference related to their own research results, or a lack of domain-specific theoretical considerations. Consequently, signals that they consider to be theoretically strong do not always translate into larger effect sizes, more positive coefficients, or higher statistical significance in quality empirical research. Regular signals that were on average ranked lower by expert researchers based on theoretical considerations are more valid indicators of crowdfunding success.

This finding is consistent with Thomas Kuhn's (1962) theory on the accumulation and dissemination of scientific knowledge, which argues that science does not progress in a linear or cumulative fashion, but rather through periods of stability (normal science) punctuated by paradigm shifts. During these paradigm shifts, established theories and beliefs are re-evaluated in light of new evidence. In the context of our study, the expert researchers' views of what constitutes a strong effective signal may represent a form of normal science, where assumptions of what constitutes an effective signal are built from theoretical frameworks or past experiences. However, our empirical findings hint at a possible paradigm shift in how signals are understood in crowdfunding research. Our research thus contributes to theoretical advancements by questioning and refining the signaling theory in crowdfunding.

An alternative explanation for the lack of alignment between expert researchers' perceptions and empirical evidence is the *Matthew Effect* (Merton, 1968) and the availability heuristic (Tversky & Kahneman, 1973). Applied to our context, the results of our survey could reflect the fact that expert researchers value certain signals not because of their empirical robustness but because of their greater visibility or salience. For example, signals and findings



from the early crowdfunding articles are likely more widely cited and therefore considered stronger signals by expert researchers. If signals are repeatedly examined by influential researchers, they are more likely to be accepted as common knowledge, irrespective of their empirical strength and robustness. Furthermore, because attention is a limited resource, expert researchers in our sample may limit their reading of research articles to more well-known senior researchers rather than less well-known junior ones. Articles and findings from well-known senior researchers are thus read more often and are better remembered, which can lead to signals that are less frequently read about and cited (but which are equally or even more important) being theoretically and empirically overshadowed.

## **6.2. Implications for Crowdfunding Research**

During the publication process, conference participants, reviewers, and sometimes editors suggest including additional explanatory variables. By examining 145 articles on crowdfunding published in top-ranking business and economics journals between 2011 and 2023, we identified 1,003 variables that researchers specified in their models to determine the success of crowdfunding campaigns. It turns out that only 14 of these variables were specified particularly frequently. Of these, only 10 were significant predictors in our meta-regression (in descending effect size order): *Crowdfunding Platform's Staff Pick Designation*, *Campaign Description Length on Crowdfunding Website*, *Presence of Campaign Video on Crowdfunding Website*, *Equity Share Offered by Entrepreneur*, *Patent Ownership*, *Entrepreneur's Gender*, *Top-Management-Team Size*, *Entrepreneur's Past Crowdfunding Success*, *Interest Rate Offered by Entrepreneur*, and *Planned Campaign Duration*. We believe that future research should take all these ten predictors into account.

Is crowdfunding fully explored now by expert researchers? Have we witnessed the end of crowdfunding research with this study? By no means! In fact, our research shows that the opposite is true. Overall, our meta-regression model has a reasonable fit with an  $R^2$  of 17.68%, indicating that, while the included variables explain a significant portion of the variance in effect sizes across articles, a substantial amount of variance remains unaccounted for. The Wald chi-squared test for the model is significant, reinforcing the validity of the differences observed in the impacts of various signals. However, regarding heterogeneity, we find  $\text{Tau}^2$  (0.1069) to be moderately high, suggesting that there is some variance between the empirical findings of the articles included in our sample that is not explained by the factors included in the empirical models (e.g., study design, sample size). Hence, other unobserved factors could significantly influence the effectiveness of strong and regular signals in crowdfunding. It remains unclear

whether these unobserved factors consist of many smaller factors, which does not seem unusual in social reality, or whether some large effects have been overlooked in some empirical research.

That some large effects have been overlooked is not entirely implausible. Early research relied primarily on variables that were easily observable, such as funding goal and funding target, and publicly available via large platforms. Some of the variance in effect sizes may be due to the variation in types of crowdfunding platforms used as data sources in the empirical studies. Because the evidence from the literature is mainly based on large and popular platforms (e.g., Crowdcube and Prosper) from the US or UK, the type or size of distinct platforms could be one such unobserved factor. There are considerable differences between these well-known platforms and smaller ones that rarely serve as data sources for research articles. Signals might work differently in a sub-population of a small niche crowdfunding platform from a specific ecosystem. Also, little is known about the factors that precede a crowdfunding campaign. Where has the borrower or entrepreneur been rejected before requesting funding? How did he or she negotiate specific campaign details or contracts with the platform? Finally, in our meta-study we have not yet investigated how the signals affect post-campaign success: are the signals proven by experience? All these questions provide fertile ground for future research.

### **6.3. Implications for Crowdfunding Platforms and Entrepreneurs**

Our findings point toward a complex and domain-specific signaling landscape in crowdfunding, in which the perceived weaker or regular signals *de facto* have a greater influence than theoretically expected. Our findings also have practical implications. Just like expert researchers, actual investors may interpret signals differently, for example, based on their personal experience, risk tolerance, and investment objectives. For this reason, platforms and companies should identify which signals are relevant to the crowd. Our research also provides insights into optimizing campaign strategies and exploiting the full potential of all types of signals. The empirical findings from 82 distinguished articles reveal that not only *Entrepreneur's Past Crowdfunding Success*, *Entrepreneur's Business Experience*, *Patent Ownership*, and *Equity Share Offered by Entrepreneur* (signals perceived as strong by expert researchers) but also those considered as regular signals such as *Campaign Description Length on Crowdfunding Website*, *Crowdfunding Platform's Staff Pick Designation*, and *Presence of Campaign Video on Crowdfunding Website* actually play an important role. To optimize funding outcomes and refine campaign strategies, entrepreneurs should focus on the signals that

matter. Our findings suggest that enhancing the visibility and clarity of regular signals on the campaign website is important for improving funding success.

Our research also suggests that what researchers consider to be a strong signal may not resonate with the crowd. Crowd investors could in practice consider signals that have not yet been examined by expert researchers and do not appear plausible to them. Academic policy advice, even in the form of state-of-the-art experiments and other more causal techniques, could be of limited help in identifying important unobserved signals. What is potentially needed are exploratory approaches, which may require new or mixed methods. In order to learn something new about how investors make their decisions, researches might need to ask questions they haven't already asked. Unstructured data and machine learning techniques could help, if the data is indeed relevant for funding success and has not been used before. Platforms should make such data easily accessible for investors and research.

#### **6.4. Limitations and Future Research**

Our findings are most likely domain-specific. Future research should investigate whether there are similar mismatches in the perceptions of expert researchers and empirical results in other forms of entrepreneurial finance such as business angel funding, traditional venture capital, or initial coin offerings. The signals that are most important in our study may not be particularly relevant in these forms of entrepreneurial finance because they do not primarily take place on the internet or the financing is not brokered via platforms.

We also did not investigate potential interaction effects of signals. Some signals might be complementary; for example, a *Crowdfunding Platform's Staff Pick Designation* and *Presence of Campaign Video on Crowdfunding Website* could both be strong signals for a serious campaign that are mutually reinforcing. In contrast, if the entrepreneur has business experience and the firm already holds numerous successful patents, investors might ask why he or she does not take the more professional route via a reputable venture capital fund. In this case, several signals could influence each other negatively.

The impact of signals might also vary significantly across different countries, crowdfunding platforms, sectors, or types of crowdfunding projects (e.g., creative projects vs. technological projects). Future research could, for example, extend our sample to include donation-based crowdfunding and explain differences across numerous platforms, project types, and countries. Although our sample is relatively large, it lacks the variance and statistical power to perform such an analysis.

## 6.5. Conclusion

Based on a survey of leading crowdfunding researchers and a meta-analysis, this article explores whether the empirical evidence of crowdfunding research is reflected in expert researchers' perceptions of what constitutes an effective signal in this literature. We find that effective signals that are *not* ranked among the top 5 most effective signals by expert researchers have a more pronounced impact on funding success in terms of effect size and statistical significance than signals that are categorized as strong. These regular signals have a more general effect in our sample, which is very likely also reflected in the statistical population of crowdfunding campaigns. At the same time, the most relevant signals are all very crowdfunding-specific and may not have external validity beyond crowdfunding. Our findings indicate that the perception of scholars regarding which signals are most effective does not accord with empirical crowdfunding research. We conclude that researchers overestimate the empirical relevance of signals which they consider as most effective and that new research approaches might yield valuable insights for signaling theory, scholars, and crowdfunding practitioners alike.

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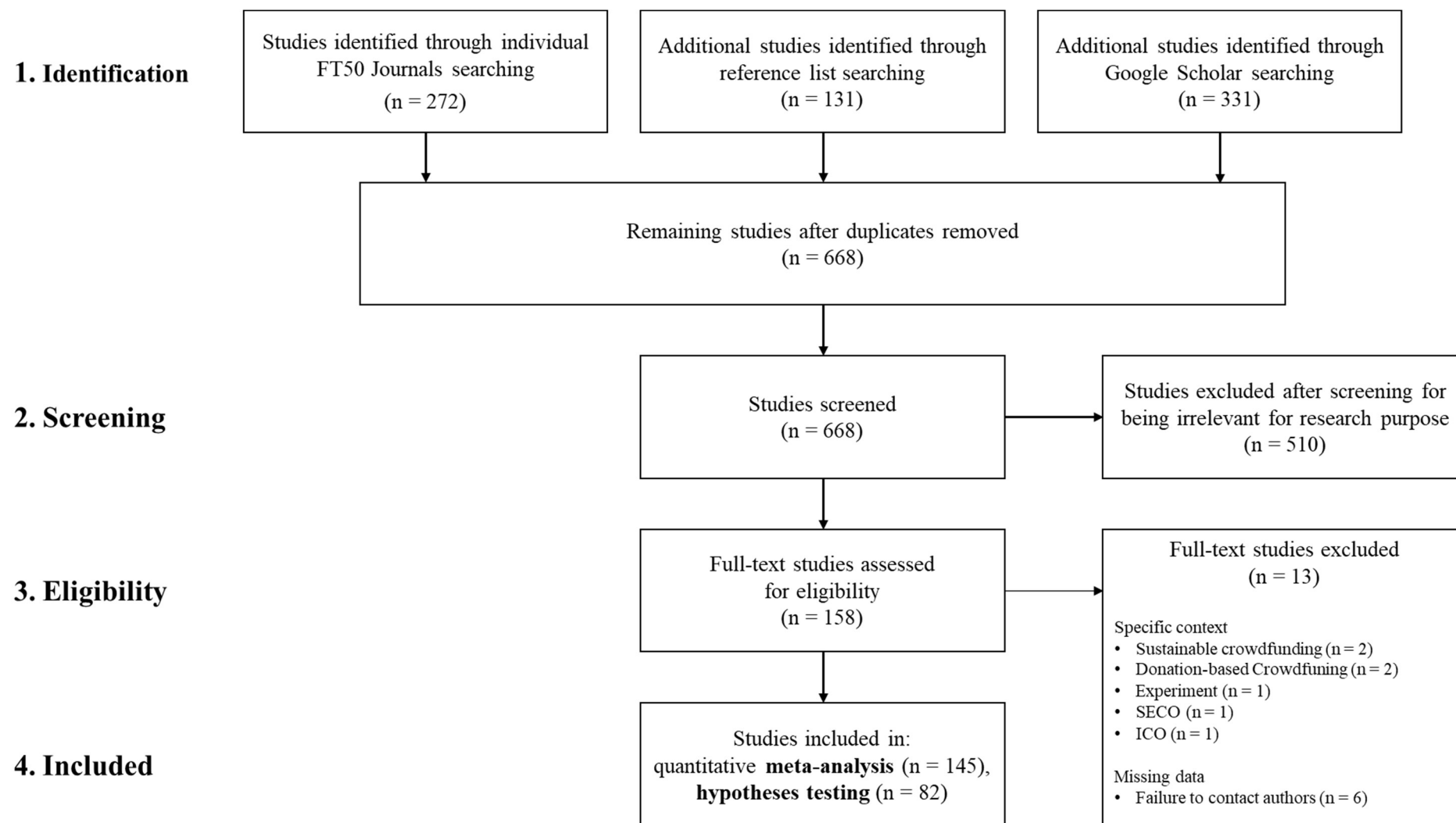
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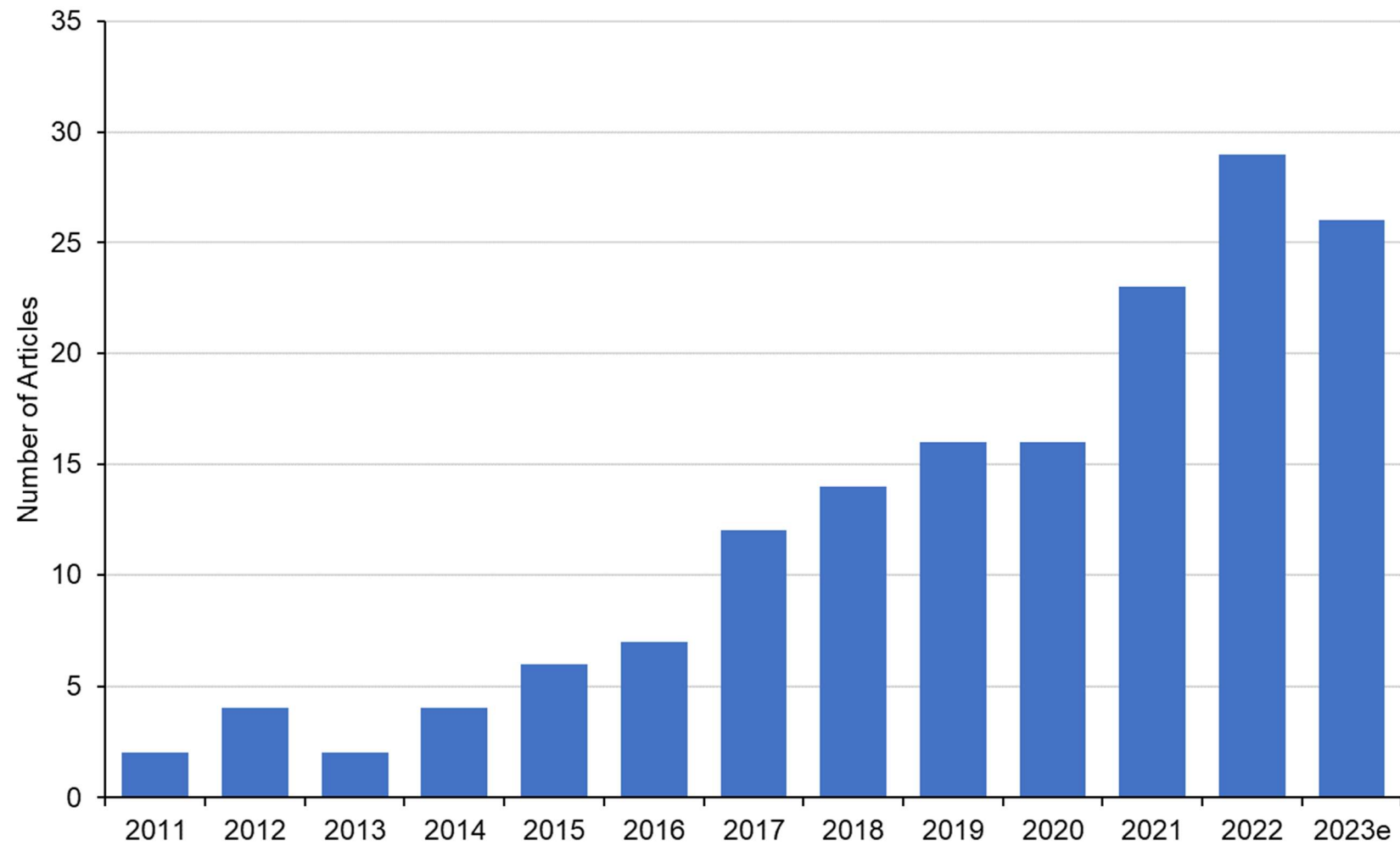
## Figures and Tables

**Figure 1** PRISMA Flow Diagram of Article Selection for Meta-Analysis Based on Liberati et al. (2009)



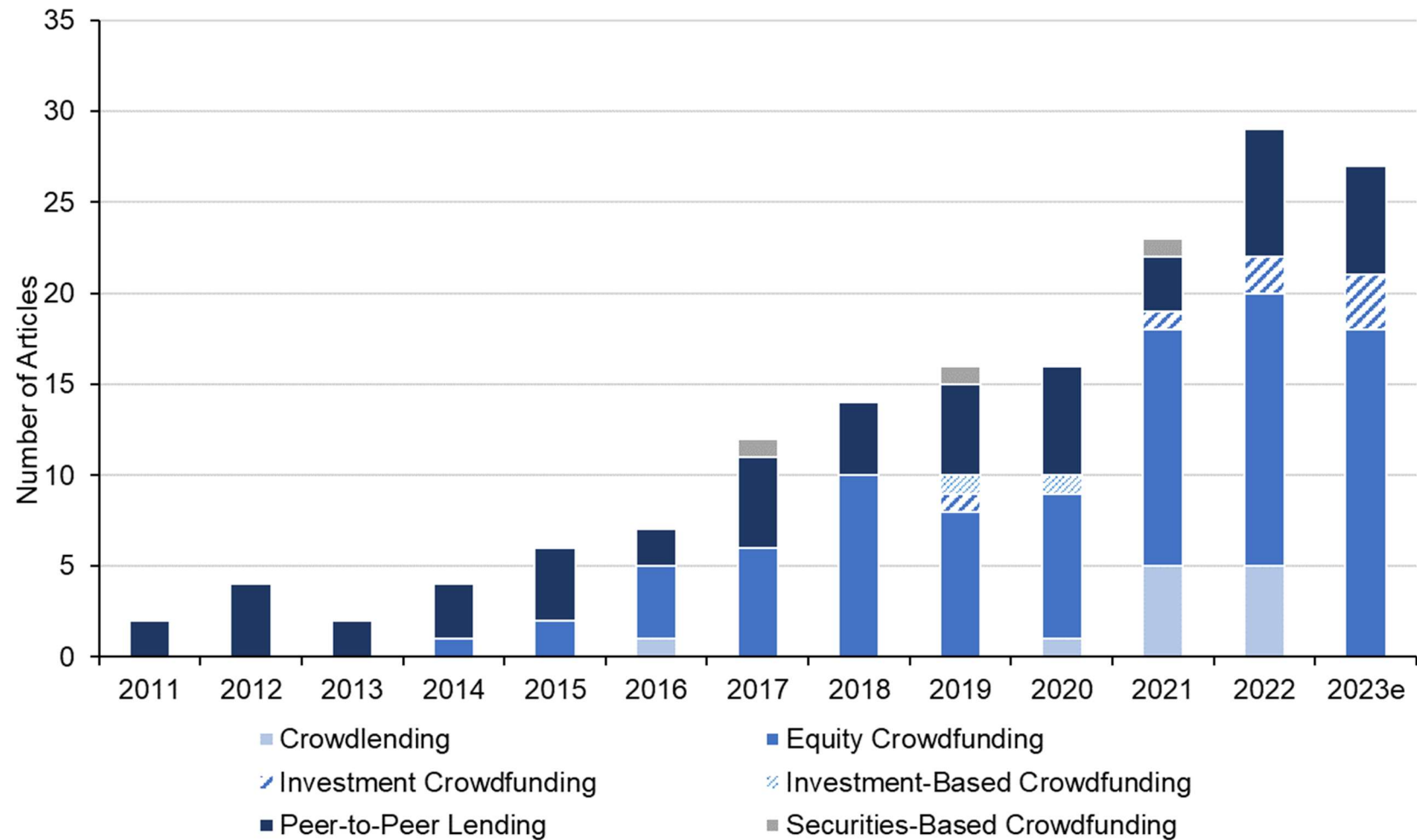
**Figure 2      Overview of the Number of Articles by Year, Crowdfunding-Type, and Crowdfunding Platform**

**Panel A: Number of Articles by Year**





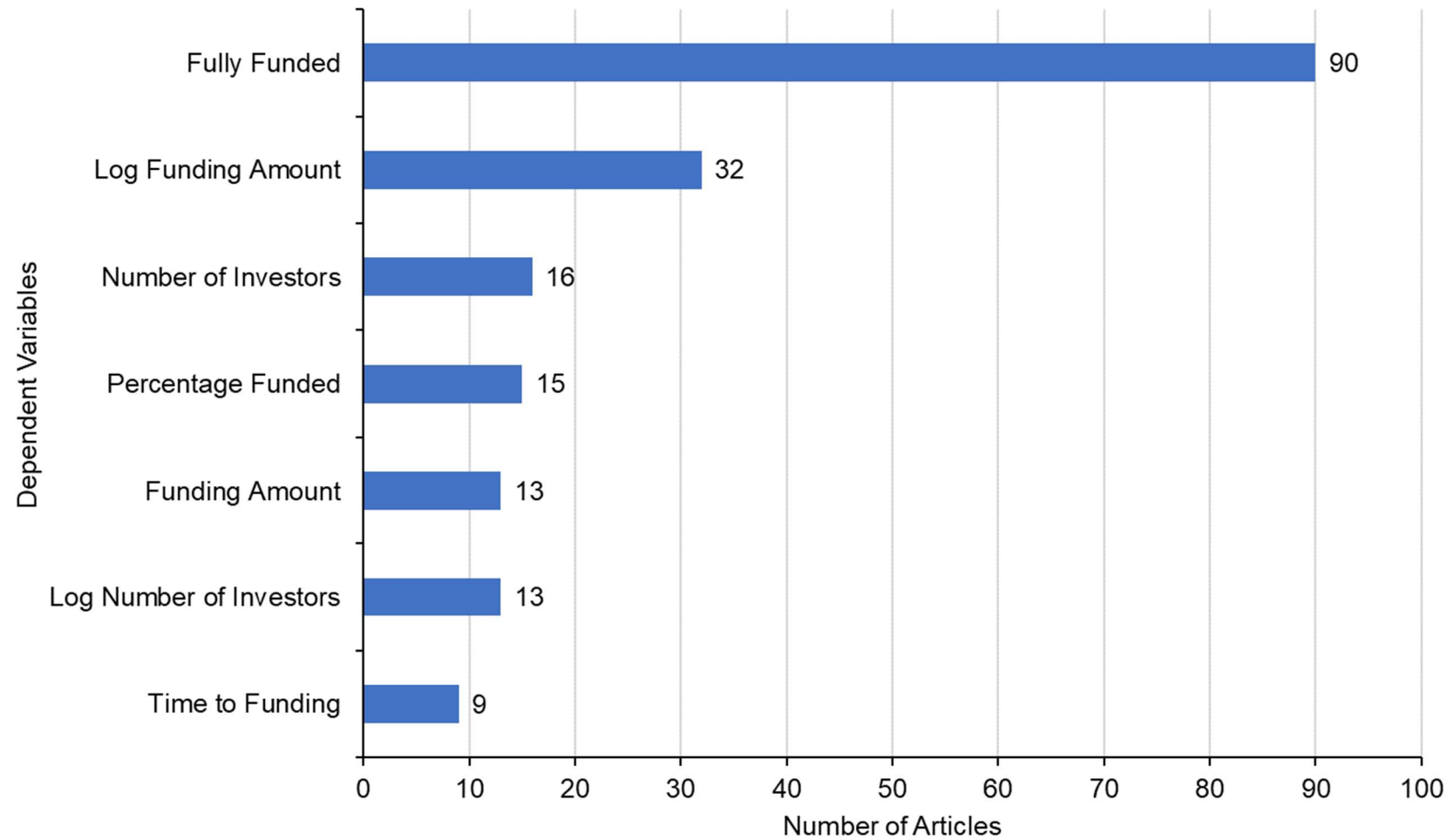
**Panel B: Number of Articles by Year and Crowdfunding-Type**



*Note:* Figure 2 gives an overview of the distribution of crowdfunding articles in our sample across the sample period (Panel A) and crowdfunding types (Panel B). Because the systematic literature review was conducted from April to May 2023, the number of articles reported for 2023 is based on a linear estimation using the number of articles published until May 2023, divided by the number of days and multiplied by the number of days in a year.

**Figure 3      Overview of Most Frequently Used Variables**

**Panel A: Dependent Variables**



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**Panel B: Explanatory Variables**

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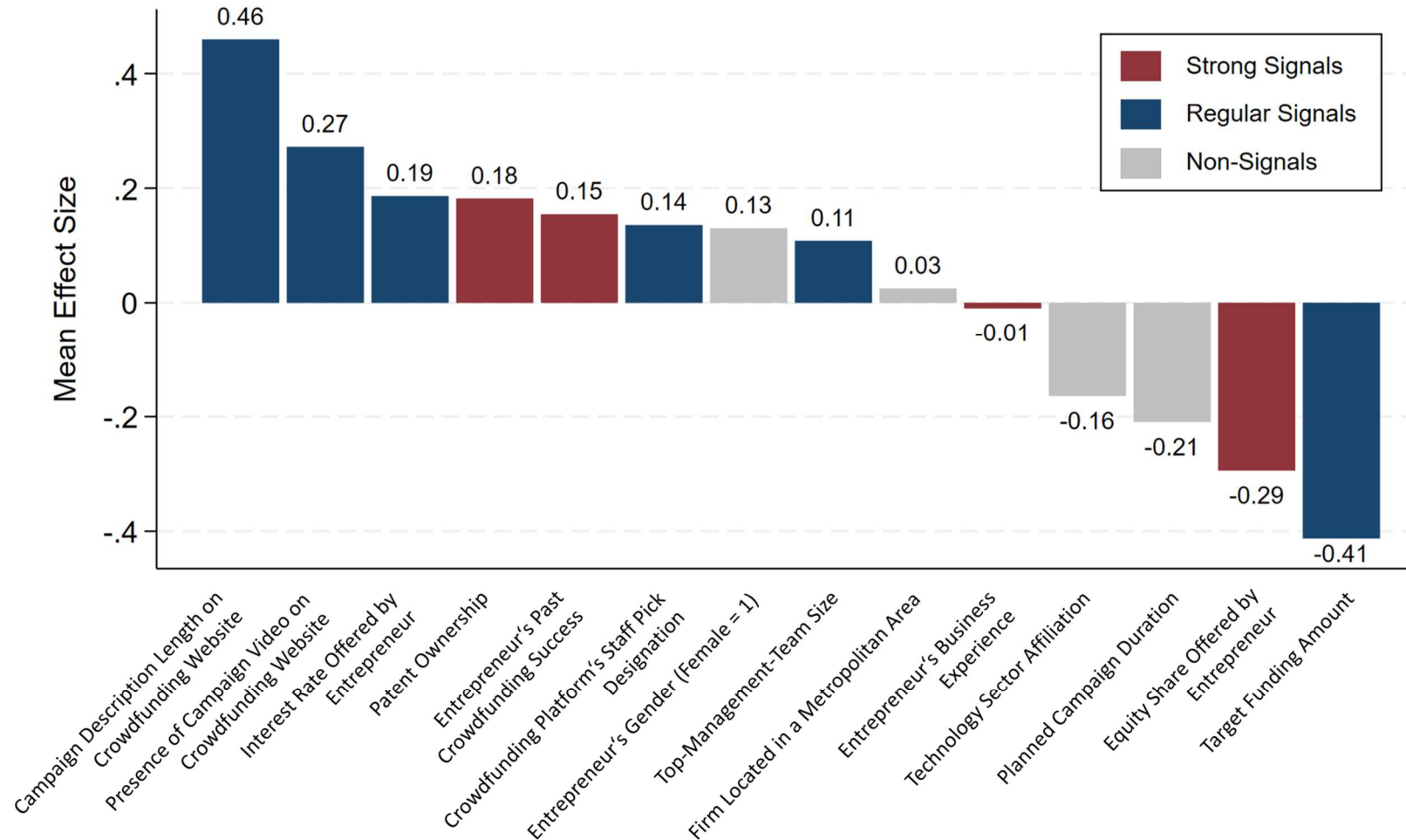
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*Note:* Figure 3 shows the most frequently used dependent variables to approximate funding success (Panel A) and explanatory variables influencing crowdfunding success (Panel B) from the articles in our sample.

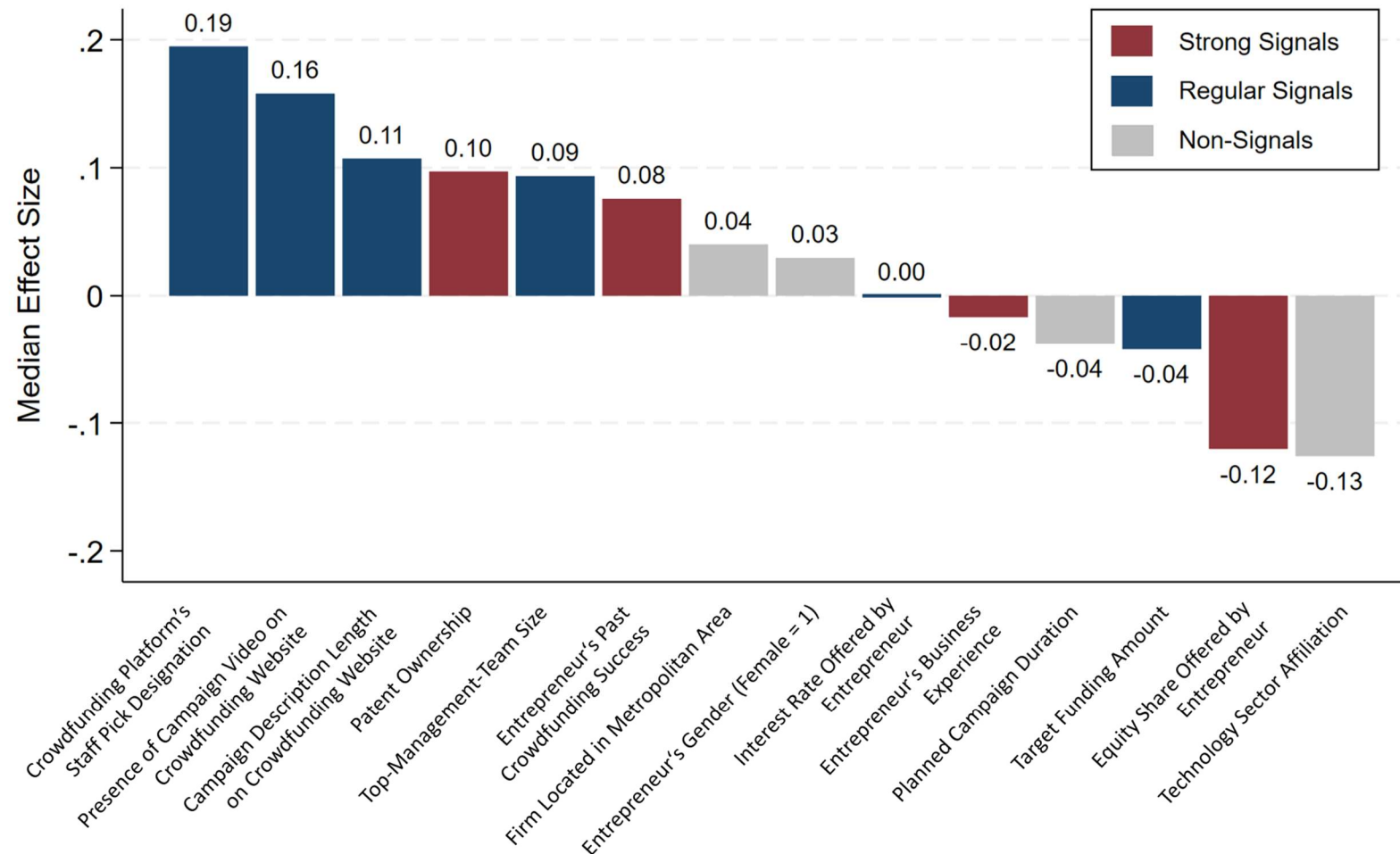
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**Figure 4**      **Distribution of Effect Sizes**

**Panel A: Mean Effect Sizes**



## Panel B: Median Effect Sizes



*Note:* Figure 4 shows the average (Panel A) and the median (Panel B) effect sizes of the 14 most frequently examined explanatory variables in our sample of 145 crowdfunding articles in the sample period from 2011 to 2023. The explanatory variables are classified into groups of strong signals (in maroon), regular signals (in navy), and non-signals (in gray) based on a survey conducted among expert researchers ( $n = 83$ ), who are the authors of the articles in our sample.

**Table 1**      **Ranking of the Most Frequently Examined Signals by Experts**

Rank	Signal	N	Average Rank	Share of Votes for the Respective Rank (in Percent)													
				1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1.	<i>Entrepreneur's Past Crowdfunding Success</i>	83	3.61	21.69	14.46	21.69	7.23	7.23	6.02	4.82	1.20	0.00	3.61	0.00	1.20	1.20	0.00
2.	<i>Entrepreneur's Business Experience</i>	83	3.86	19.28	25.30	9.64	12.05	4.82	3.61	4.82	2.41	3.61	2.41	2.41	2.41	0.00	0.00
3.	<i>Patent Ownership</i>	83	4.04	18.07	21.69	10.84	12.05	10.84	4.82	4.82	3.61	2.41	2.41	2.41	2.41	0.00	0.00
4.	<i>Equity Share Offered by Entrepreneur</i>	83	4.68	12.05	10.84	8.43	16.87	8.43	15.66	4.82	6.02	4.82	0.00	2.41	1.20	0.00	0.00
5.	<i>Target Funding Amount</i>	83	5.51	7.23	7.23	8.43	9.64	8.43	6.02	3.61	6.02	4.82	2.41	3.61	1.20	1.20	1.20
6.	<i>Interest Rate Offered by Entrepreneur</i>	83	5.71	6.02	7.23	12.05	8.43	8.43	7.23	13.25	9.64	6.02	3.61	1.20	2.41	0.00	1.20
7.	<i>Crowdfunding Platform's Staff Pick Designation</i>	83	6.52	9.64	3.61	6.02	8.43	9.64	3.61	3.61	4.82	6.02	3.61	1.20	9.64	2.41	2.41
8.	<i>Presence of Campaign Video on Crowdfunding Website</i>	83	6.59	3.61	2.41	6.02	8.43	10.84	10.84	9.64	7.23	3.61	8.43	3.61	1.20	2.41	1.20
9.	<i>Top-Management-Team Size</i>	83	8.19	0.00	0.00	3.61	1.20	10.84	7.23	12.05	4.82	9.64	4.82	8.43	8.43	3.61	0.00
10.	<i>Technology Sector Affiliation</i>	83	8.26	0.00	0.00	4.82	4.82	2.41	4.82	2.41	14.46	3.61	10.84	10.84	2.41	2.41	0.00
11.	<i>Campaign Description Length on Crowdfunding Website</i>	83	8.52	1.20	3.61	2.41	1.20	6.02	7.23	6.02	7.23	8.43	4.82	9.64	8.43	7.23	1.20
12.	<i>Planned Campaign Duration</i>	83	8.67	1.20	2.41	2.41	3.61	2.41	1.20	6.02	3.61	9.64	10.84	1.20	2.41	6.02	4.82
13.	<i>Firm Located in a Metropolitan Area</i>	83	9.42	0.00	0.00	1.20	3.61	0.00	6.02	4.82	4.82	4.82	10.84	10.84	4.82	6.02	2.41
14.	<i>Entrepreneur's Gender</i>	83	9.61	0.00	1.20	1.20	0.00	3.61	2.41	1.20	4.82	7.23	2.41	6.02	2.41	4.82	6.02

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*Note:* Table 1 shows the survey results for the 14 most frequently examined explanatory variables for crowdfunding success in our sample of 145 articles in the sample period from 2011 to 2023. The survey was conducted on a survey conducted among expert researchers ( $n = 83$ ), who are the authors of the articles in our sample. The survey results are broken down by the percentage votes for each rank (from 1 to 14) for each explanatory variable.

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**Table 2**      **Survey Votes for “This is not a signal” by Signal**

<b>Rank</b>	<b>Signal</b>	<b>N</b>	<b>Absolute Number of Votes for “This is not a signal”</b>
1.	<i>Entrepreneur's Past Crowdfunding Success</i>	83	8
2.	<i>Entrepreneur's Business Experience</i>	83	6
3.	<i>Patent Ownership</i>	83	3
4.	<i>Equity Share Offered by Entrepreneur</i>	83	7
5.	<i>Target Funding Amount</i>	83	24
6.	<i>Interest Rate Offered by Entrepreneur</i>	83	11
7.	<i>Crowdfunding Platform's Staff Pick Designation</i>	83	21
8.	<i>Presence of Campaign Video on Crowdfunding Website</i>	83	17
9.	<i>Top-Management-Team Size</i>	83	21
10.	<i>Technology Sector Affiliation</i>	83	30
11.	<i>Campaign Description Length on Crowdfunding Website</i>	83	21
12.	<i>Planned Campaign Duration</i>	83	35
13.	<i>Firm Located in a Metropolitan Area</i>	83	33
14.	<i>Entrepreneur's Gender</i>	83	47

*Note:* Table 2 shows the number of votes for the “This is not a signal” option in the survey conducted among expert researchers (n = 83), who are the authors of the articles in our sample.



**Table 3      Survey-Based Group Classification of Signals**

<b>Group</b>	<b>Signal</b>	<b>Average Rank</b>	<b>Absolute Number of Votes for “This is not a signal”</b>
(1) Strong Signals	<i>Entrepreneur’s Past Crowdfunding Success</i>	3.61	8
	<i>Entrepreneur’s Business Experience</i>	3.86	6
	<i>Patent Ownership</i>	4.04	3
	<i>Equity Share Offered by Entrepreneur</i>	4.68	7
(2) Regular Signals	<i>Target Funding Amount</i>	5.51	24
	<i>Interest Rate Offered by Entrepreneur</i>	5.71	11
	<i>Crowdfunding Platform’s Staff Pick Designation</i>	6.52	21
	<i>Presence of Campaign Video on Crowdfunding Website</i>	6.59	17
	<i>Top-Management-Team Size</i>	8.19	21
	<i>Campaign Description Length on Crowdfunding Website</i>	8.52	21
(3) No Signals	<i>Technology Sector Affiliation</i>	8.26	30
	<i>Planned Campaign Duration</i>	8.67	35
	<i>Firm Located in a Metropolitan Area</i>	9.42	33
	<i>Entrepreneur’s Gender</i>	9.61	47

*Note:* Table 3 shows the survey-based group classification of signals in crowdfunding in (1) strong, (2) regular, and (3) non-signals. We base our classification on the share of votes for the first rank, the average ranking, and the share of votes for the “This is not a signal” option. We classify a signal as strong signal if it has received at least 10% first-rank votes and an average ranking between one and five. We classify a signal as a non-signal if the share of votes for the “This is not a signal” option exceeds 33%. The remaining signals with an average ranking greater than five and less than 33% of votes for “This is not a signal” are classified as regular signals.

**Table 4      Testing the Survey-Based Group Classification of Signals**

<b>Panel A: ANOVA of Average Rank Between Survey-Based Signal Groups</b>					
Source	Partial SS	DF	MS	F-statistic	<i>p</i> -value
Model	49.21	2	24.60	27.92	0.0000
Group	49.21	2	24.60	27.92	0.0000
Residual	9.69	11	0.88		
Total	58.90	13	4.53		
Observations (n)	14				
Adj. R <sup>2</sup>	0.8055				

<b>Panel B: Tukey's Pairwise Comparison of Average Rank Between Survey-Based Signal Groups</b>				
Comparison	Diff.	Std. Err.	95% Confidence Interval (CI)	
			CI lower	CI upper
Strong vs. Regular Signals	2.79	0.61	1.1542	4.4275
Strong vs. Non-Signals	4.94	0.66	3.1496	6.7353
Regular vs. Non-Signals	2.15	0.61	0.5149	3.7882

*Note:* Table 4 shows the ANOVA (Panel A) and Tukey's Pairwise Comparison (Panel B) results for testing the survey-based group classification of signals in crowdfunding in (1) strong, (2) regular, and (3) non-signals. The results indicate that the average rank is significantly different between the three groups. Hence, our survey-based classification of the signals is reasonable.

**Table 5**      **Descriptive Statistics**

<b>Panel A: Descriptive Statistics by Signal</b>				
Variables	N	Mean Effect Size	# Positive	# Significant
<b>Strong Signals</b>				
<i>Entrepreneur's Past Crowdfunding Success</i>	15	0.1543	13	8
<i>Entrepreneur's Business Experience</i>	23	-0.0096	9	6
<i>Patent Ownership</i>	12	0.1819	8	2
<i>Equity Share Offered by Entrepreneur</i>	12	-0.2939	0	6
<b>Regular Signals</b>				
<i>Target Funding Amount</i>	88	-0.4124	26	64
<i>Interest Rate Offered by Entrepreneur</i>	15	0.1860	8	12
<i>Crowdfunding Platform's Staff Pick Designation</i>	23	0.1354	22	23
<i>Presence of Campaign Video on Crowdfunding Website</i>	24	0.2720	23	20
<i>Top-Management-Team Size</i>	11	0.1082	9	7
<i>Campaign Description Length on Crowdfunding Website</i>	49	0.4594	43	40
<b>Non-Signals</b>				
<i>Technology Sector Affiliation</i>	7	-0.1639	2	3
<i>Planned Campaign Duration</i>	52	-0.2093	11	35
<i>Firm Located in a Metropolitan Area</i>	10	0.0251	8	3
<i>Entrepreneur's Gender</i>	39	0.1298	23	22
<b>Panel B: Descriptive Statistics by Signal-Group</b>				
Group	N	Mean Effect Size	# Positive	# Significant
Strong Signals	62	0.0121	30	22
Regular Signals	210	-0.0008	131	166
Non-Signals	108	-0.0622	44	63

*Note:* Table 5 shows the descriptive statistics of the mean effect size, the number of positive coefficients, and the number of significant coefficients aggregated on signal level (Panel A) and signal-group level (Panel B). Because some articles use different dependent variables (e.g., funding amount and number of investments) and run more than one regression, the number of observations per signal may exceed the number of articles included in the analysis.

**Table 6 Wilcoxon Rank Sum Test and Fisher's Exact Test Results for Answering the Research Question**

<b>Panel A: Test 1 Using Wilcoxon Rank Sum Test for the Effect Size</b>			
Group	Observations (n)	Rank sum	Expected
Strong Signals	62	8,655	8,463
Regular Signals	210	28,473	28,665
z	-0.353		
p-value	0.7243		
<b>Panel B: Test 2 Using Fisher's Exact Test for the Share of Positive Coefficients</b>			
Group	Observations (n)	# Non-positive $\beta$	# Positive $\beta$
Strong Signal	62	20	42
Regular Signal	210	79	131
Total	272	99	173
Fisher's Exact Test p-value	0.458		
<b>Panel C: Test 3 Using Fisher's Exact Test for the Share of Significant Coefficients</b>			
Group	Observations (n)	# Non-significant $\beta$	# Significant $\beta$
Strong Signal	62	40	22
Regular Signal	208	42	166
Total	270	82	188
Fisher's Exact Test p-value	0.0000***		

*Note:* Table 6 shows the results of three statistical tests utilized to compare strong and regular signals in the context of crowdfunding. Panel A presents the testing results of the Wilcoxon Rank Sum Test for Test 1 to compare the distribution of the effect sizes between the two groups. Panel B presents the testing results of the Fisher's Exact Test for Test 2 to compare the share of positive coefficients between regular and strong signals. Panel C presents the testing results of the Fisher's Exact Test for Test 3 to compare the share of significant coefficients between the two groups of strong and regular signals. Based on the three tests, we answer our research question: *Is the expert researchers' perception of what constitutes an effective signal consistent with empirical findings from the crowdfunding literature?* \*, \*\*, and \*\*\* represent significance levels of 10%, 5%, and 1%, respectively. To allow for a fair comparison among signals, we have rescaled the coefficient sign of *Planned Campaign Duration* and *Equity Share Offered by Entrepreneur* inversely because a shorter campaign duration and a lower equity share offered should theoretically have a positive effect on financing success.

**Table 7      Meta-Regression Results**

Variables	Meta-Regression	Wald Tests for Differences in Coefficient Estimates			
		<i>Past Crowdfunding Success</i>	<i>Business Experience</i>	<i>Patent Ownership</i>	
Strong Signals					
<i>Entrepreneur's Past Crowdfunding Success</i>	0.29 *** (2.89)				
<i>Entrepreneur's Business Experience</i>	0.16 * (1.81)	0.13 (0.2755)			
<i>Patent Ownership</i>	0.33 *** (2.83)	-0.04 (0.7770)	-0.17 (0.1962)		
<i>Equity Share Offered by Entrepreneur</i>	0.37 *** (3.02)	-0.08 (0.5933)	-0.21 (0.1267)	-0.04 (0.8085)	
Regular Signals		<i>Interest Rate Offered</i>	<i>Staff Pick Designation</i>	<i>Campaign Video</i>	<i>TMT Size</i>
<i>Target Funding Amount</i>	Reference Group				
<i>Interest Rate Offered by Entrepreneur</i>	0.25 *** (2.59)				
<i>Crowdfunding Platform's Staff Pick Designation</i>	0.49 *** (6.06)	-0.24 ** (0.0418)			
<i>Presence of Campaign Video on Crowdfunding Website</i>	0.44 *** (5.51)	-0.19 (0.1096)	0.05 (0.6113)		
<i>Top-Management-Team Size</i>	0.32 *** (2.66)	-0.07 (0.6605)	0.17 (0.2060)	0.12 (0.3657)	
<i>Campaign Description Length on Crowdfunding Website</i>	0.45 *** (7.17)	-0.20 * (0.0623)	0.04 (0.6202)	-0.01 (0.9265)	-0.13 (0.3022)
Non-Signals		<i>Technology Sector</i>	<i>Campaign Duration</i>	<i>Metropolitan Area</i>	

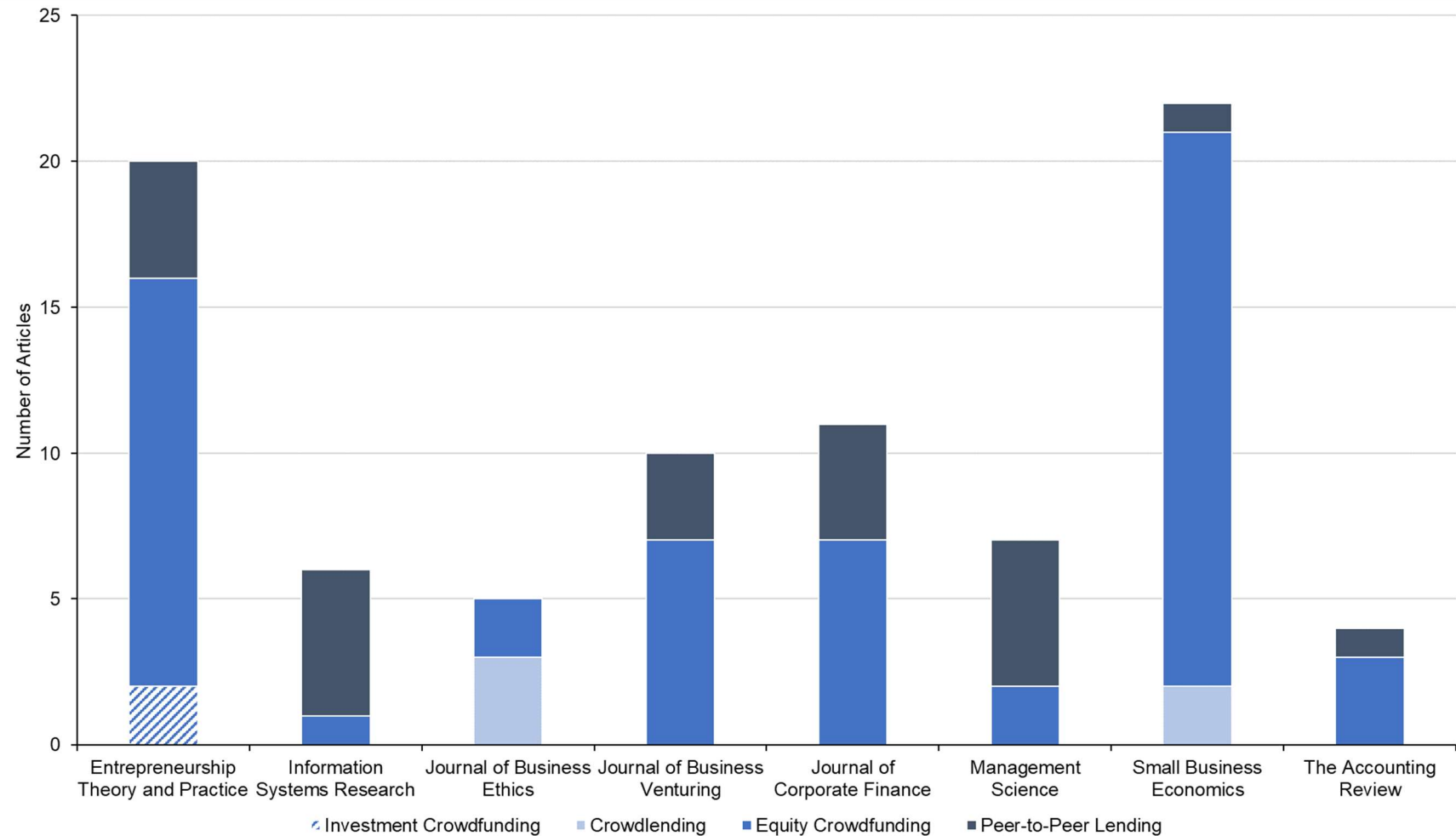
<i>Technology Sector Affiliation</i>	0.03 (0.23)			
<i>Planned Campaign Duration</i>	0.22 *** (3.46)	-0.19 (0.2347)		
<i>Firm Located in a Metropolitan Area</i>	0.22 * (1.84)	-0.19 (0.3126)	0.00 (0.9957)	
<i>Entrepreneur's Gender</i> (Female = 1)	0.33 *** (4.85)	-0.30 * (0.0577)	-0.11 (0.1252)	-0.11 (0.3598)
<i>Observations</i>	-0.00 (-1.51)			
<i>Impact Factor</i>	0.01 * (1.89)			
<i># Authors</i>	0.01 (0.46)			
<i>Year</i>	0.01 (1.40)			
N	372			
R <sup>2</sup> (%)	17.68			
Wald chi-squared	102.88			
<i>p</i> -value	0.0000			
<i>Method FE</i>	Included			
<i>Dependent Variable FE</i>	Included			
<i>Constant</i>	Included			
Tau <sup>2</sup>	0.1069			

*Note:* Table 7 shows the meta-regression results including the most frequently examined explanatory variables for the crowdfunding success in column (1). The dependent variable is the standardized effect size. We control for other factors potentially influencing the estimated effect size by including *Observations*, *Impact Factor*, *# Authors*, and *Year*, as well as *Method* and *Dependent Variable fixed effects* (FE) to capture the effects of the different methods (i.e., logit, probit, and OLS regression) and distinct dependent variables (i.e., fully funded, funding amount, percentage funded, time to funding). Columns (2)–(5) present the results of Wald tests to investigate whether the differences between the effects of the distinct signals within the groups of strong, regular, and non-signals are statistically significant. \*, \*\*, and \*\*\* represent significance levels of 10%, 5%, and 1%, respectively. The t-statistics from the random effects meta-regression model are presented in parentheses. For the Wald tests, we present the *p*-values from the chi-squared test in parentheses. All effect sizes and standard errors used to estimate the meta-regression are winsorized at the 5% level. The signal *Target Funding Amount* serves as baseline category. To allow for a fair comparison among signals, we have rescaled the coefficient sign of *Planned Campaign Duration* and *Equity Share Offered by Entrepreneur* inversely because a shorter campaign duration and a lower equity share offered should theoretically have a positive effect on financing success.

# Online Appendix

## Online Appendix

### Appendix A Overview of the Most Popular Journals in Crowdfunding Research





## Appendix B Overview of Articles Included in Our Sample

#	Author(s) (Year)	Title	Journal	Impact Factor	Empirical Testing Sample
1	Ahlers et al. (2015)	Signaling in equity crowdfunding	Entrepreneurship Theory and Practice	10.5	Yes
2	Allison et al. (2015)	Crowdfunding in a prosocial microlending environment: Examining the role of intrinsic versus extrinsic cues	Entrepreneurship Theory and Practice	10.5	Yes
3	Allison et al. (2017)	Persuasion in crowdfunding: An elaboration likelihood model of crowdfunding performance	Journal of Business Venturing	8.7	Yes
4	Anglin et al. (2018)	The power of positivity? The influence of positive psychological capital language on crowdfunding performance	Journal of Business Venturing	8.7	Yes
5	Anglin et al. (2020)	Third-party signals in crowdfunded microfinance: The role of microfinance institutions	Entrepreneurship Theory and Practice	10.5	Yes
6	Anglin et al. (2022)	Venturing for others, subject to role expectations? A role congruity theory approach to social venture crowd funding	Entrepreneurship Theory and Practice	10.5	Yes
7	Bapna and Ganco (2021)	Gender gaps in equity crowdfunding: Evidence from a randomized field experiment	Management Science	5.4	No
8	Barasinska and Schäfer (2014)	Is crowdfunding different? Evidence on the relation between gender and funding success from a German peer-to-peer lending platform	German Economic Review	1.1	No
9	Barbi et al. (2023)	Community-level social capital and investment decisions in equity crowdfunding	Small Business Economics	6.4	Yes
10	Barbi and Mattioli (2019)	Human capital, investor trust, and equity crowdfunding	Research in International Business and Finance	6.5	Yes
11	Block et al. (2018)	Which updates during an equity crowdfunding campaign increase crowd participation?	Small Business Economics	6.4	No
12	Bogdani et al. (2022)	The role of assurance in equity crowdfunding	The Accounting Review	4.1	Yes
13	Bollaert et al. (2020)	The narcissism of crowdfunding entrepreneurs	Small Business Economics	6.4	Yes
14	Bürger and Kleinert (2021)	Crowdfunding cultural and commercial entrepreneurs: An empirical study on motivation in distinct backer communities	Small Business Economics	6.4	No

15	Burtch et al. (2013)	An empirical examination of the antecedents and consequences of contribution patterns in crowd-funded markets	Information Systems Research	4.9	No
16	Burtch et al. (2016)	Secret admirers: An empirical examination of information hiding and contribution dynamics in online crowdfunding	Information Systems Research	4.9	No
17	Butticè et al. (2017)	Serial crowdfunding, social capital, and project success	Entrepreneurship Theory and Practice	10.5	Yes
18	Butticè and Useche (2022)	Crowdfunding to overcome the immigrant entrepreneurs' liability of outsidership: The role of internal social capital	Small Business Economics	6.4	No
19	Caldieraro et al. (2018)	Strategic information transmission in peer-to-peer lending markets	Journal of Marketing	12.9	Yes
20	Calic et al. (2023)	The dark side of Machiavellian rhetoric: Signaling in reward-based crowdfunding performance	Journal of Business Ethics	6.1	No
21	Cappa et al. (2021)	"Pledge" me your ears! The role of narratives and narrator experience in explaining crowdfunding success	Small Business Economics	6.4	Yes
22	Cascino et al. (2019)	Does consumer protection enhance disclosure credibility in reward crowdfunding?	Journal of Accounting Research	4.4	Yes
23	Cason and Zubrickas (2019)	Donation-based crowdfunding with refund bonuses	European Economic Review	2.8	No
24	Chan et al. (2020)	Bellwether and the herd? Unpacking the u-shaped relationship between prior funding and subsequent contributions in reward-based crowdfunding	Journal of Business Venturing	8.7	No
25	Chan and Parhankangas (2017)	Crowdfunding innovative ideas: How incremental and radical innovativeness influence funding outcomes	Entrepreneurship Theory and Practice	10.5	No
26	S. Chen et al. (2020)	How do lenders evaluate borrowers in peer-to-peer lending in china?	International Review of Economics & Finance	4.5	Yes
27	Chen (2023)	Crowdfunding: Different types of legitimacy	Small Business Economics	6.4	No
28	Chen et al. (2022)	Naïve or sophisticated? Information disclosure and investment decisions in peer to peer lending	Journal of Corporate Finance	6.1	Yes
29	X. Chen et al. (2020)	Gender gap in peer-to-peer lending: Evidence from china	Journal of Banking & Finance	3.7	Yes

30	Cholakova and Clarysse (2015)	Does the possibility to make equity investments in crowdfunding projects crowd out reward-based investments?	Entrepreneurship Theory and Practice	10.5	No
31	Chung et al. (2021)	Exploring embeddedness, centrality, and social influence on backer behavior: The role of backer networks in crowdfunding	Journal of the Academy of Marketing Science	18.2	No
32	Colombo et al. (2015)	Internal social capital and the attraction of early contributions in crowdfunding	Entrepreneurship Theory and Practice	10.5	Yes
33	Courtney et al. (2017)	Resolving information asymmetry: Signaling, endorsement, and crowdfunding success	Entrepreneurship Theory and Practice	10.5	Yes
34	Cumming et al. (2023)	Disentangling crowdfunding from fraudfunding	Journal of Business Ethics	6.1	Yes
35	Cumming and Hornuf (2022)	Marketplace lending of small- and medium-sized enterprises	Strategic Entrepreneurship Journal	6.3	Yes
36	Cumming et al. (2021a)	Does equity crowdfunding democratize entrepreneurial finance?	Small Business Economics	6.4	Yes
37	de Andrés et al. (2022)	The role of funding portals as signaling offering quality in investment crowdfunding	Finance Research Letters	10.4	Yes
38	Deng et al. (2023)	Actions speak louder than words: Imputing users' reputation from transaction history	Production and Operations Management	5.0	No
39	Ding et al. (2019)	Is there an effective reputation mechanism in peer-to-peer lending? Evidence from china	Finance Research Letters	10.4	Yes
40	Donovan (2021)	Financial reporting and entrepreneurial finance: Evidence from equity crowdfunding	Management Science	5.4	Yes
41	Dorfleitner et al. (2016)	Description-text related soft information in peer-to-peer lending – Evidence from two leading european platforms	Journal of Banking & Finance	3.7	No
42	Dorfleitner et al. (2021)	From credit risk to social impact: On the funding determinants in interest-free peer-to-peer lending	Journal of Business Ethics	6.1	Yes
43	Duan et al. (2020)	Entrepreneurs' facial trustworthiness, gender, and crowdfunding success	Journal of Corporate Finance	6.1	Yes
44	Duarte et al. (2012)	Trust and credit: The role of appearance in peer-to-peer lending	Review of Financial Studies	8.2	No
45	Estrin et al. (2022)	Soft and hard information in equity crowdfunding: Network effects in the digitalization of entrepreneurial finance	Small Business Economics	6.4	Yes

46	Fan et al. (2020)	The small predicts large effect in crowdfunding	Journal of Consumer Research	8.6	Yes
47	Feng et al. (2015)	Lenders and borrowers' strategies in online peer-to-peer lending market: An empirical analysis of ppdai.com	Journal of Electronic Commerce Research	3.9	Yes
48	Figueroa-Armijos and Berns (2022)	Vulnerable populations and individual social responsibility in prosocial crowdfunding: Does the framing matter for female and rural entrepreneurs?	Journal of Business Ethics	6.1	Yes
49	Franzoni and Tenca (2023)	How crowdfunders are influenced by entrepreneurial passion: A dual information-processing perspective	Entrepreneurship Theory and Practice	10.5	Yes
50	Freedman and Jin (2017)	The information value of online social networks: Lessons from peer-to-peer lending	International Journal of Industrial Organization	1.5	No
51	Gafni et al. (2020)	Gender dynamics in crowdfunding (Kickstarter): Evidence on entrepreneurs, backers, and taste-based discrimination	Review of Finance	4.4	No
52	Gafni et al. (2021)	Business or basic needs? The impact of loan purpose on social crowdfunding platforms	Journal of Business Ethics	6.1	No
53	Gafni et al. (2019)	Are the life and death of an early-stage venture indeed in the power of the tongue? Lessons from online crowdfunding pitches	Strategic Entrepreneurship Journal	6.3	Yes
54	Galak et al. (2011)	Microfinance decision making: A field study of prosocial lending	Journal of Marketing Research	6.1	No
55	Gavurova et al. (2018)	Determinants of successful loan application on peer-to-peer lending market	Economics & Sociology		No
56	Giudici et al. (2018)	Reward-based crowdfunding of entrepreneurial projects: The effect of local altruism and localized social capital on proponents' success	Small Business Economics	6.4	No
57	Goethner et al. (2021)	Crowdinvesting in entrepreneurial projects: Disentangling patterns of investor behavior	Small Business Economics	6.4	No
58	Gong et al. (2022)	Securities-based crowdfunding by startups: Does auditor attestation matter?	The Accounting Review	4.1	Yes
59	Gong et al. (2021)	On the use of probabilistic uncertain rewards on crowdfunding platforms: The case of the lottery	Information Systems Research	4.9	Yes

60	Guarana et al. (2022)	Owls, larks, or investment sharks? The role of circadian process in early-stage investment decisions	Journal of Business Venturing	8.7	No
61	Guenther et al. (2018)	Is the crowd sensitive to distance? How investment decisions differ by investor type	Small Business Economics	6.4	Yes
62	Hasan et al. (2022)	Social capital, trusting, and trustworthiness: Evidence from peer-to-peer lending	Journal of Financial and Quantitative Analysis	3.9	Yes
63	Herd et al. (2022)	Do backer affiliations help or hurt crowdfunding success?	Journal of Marketing	12.9	No
64	Hervé et al. (2019)	Determinants of individual investment decisions in investment-based crowdfunding	Journal of Business Finance & Accounting	2.9	Yes
65	Herzenstein et al. (2011)	Tell me a good story and I may lend you money: The role of narratives in peer-to-peer lending decisions	Journal of Marketing Research	6.1	No
66	Hildebrand et al. (2017)	Adverse incentives in crowdfunding	Management Science	5.4	No
67	Hörisch and Tenner (2020)	How environmental and social orientations influence the funding success of investment-based crowdfunding: The mediating role of the number of funders and the average funding amount	Technological Forecasting and Social Change	12.0	Yes
68	Hornuf et al. (2022a)	The relevance of investor rights in crowdfunding	Journal of Corporate Finance	6.1	No
69	Hornuf and Schwienbacher (2018)	Market mechanisms and funding dynamics in equity crowdfunding	Journal of Corporate Finance	6.1	No
70	Horvat and Papamarkou (2017)	Gender differences in equity crowdfunding	Proceedings of the AAAI Conference on Human Computation and Crowdsourcing		Yes
71	Hu et al. (2023)	Numerological heuristics and credit risk in peer-to-peer lending	Information Systems Research	4.9	Yes
72	Huang et al. (2021)	What does peer-to-peer lending evidence say about the risk-taking channel of monetary policy?	Journal of Corporate Finance	6.1	Yes
73	Jiang et al. (2020)	When online lending meets real estate: Examining investment decisions in lending-based real estate crowdfunding	Information Systems Research	4.9	No
74	Jiang et al. (2021)	How rewarding are your rewards? A value-based view of crowdfunding rewards and crowdfunding performance	Entrepreneurship Theory and Practice	10.5	Yes

75	Jiang et al. (2023)	The more enthusiastic, the better? Unveiling a negative pathway from entrepreneurs' displayed enthusiasm to funders' funding intentions	Entrepreneurship Theory and Practice	10.5	Yes
76	Jiang et al. (2019)	Can joy buy you money? The impact of the strength, duration, and phases of an entrepreneur's peak displayed joy on funding performance	Academy of Management Journal	10.5	Yes
77	Johan and Zhang (2020)	Quality revealing versus overstating in equity crowdfunding	Journal of Corporate Finance	6.1	Yes
78	Johnson et al. (2018)	A woman's place is in the... startup! Crowdfunder judgments, implicit bias, and the stereotype content model	Journal of Business Venturing	8.7	Yes
79	Kgoroeadira et al. (2019)	Small business online loan crowdfunding: Who gets funded and what determines the rate of interest?	Small Business Economics	6.4	No
80	Kleinert (2024)	The promise of new ventures' growth ambitions in early-stage funding: On the crossroads between cheap talk and credible signals	Entrepreneurship Theory and Practice	10.5	Yes
81	Kleinert and Volkmann (2019)	Equity crowdfunding and the role of investor discussion boards	Venture Capital	2.4	No
82	Kleinert et al. (2020)	Third-party signals in equity crowdfunding: The role of prior financing	Small Business Economics	6.4	Yes
83	Knyazeva and Ivanov (2017)	Soft and hard information and signal extraction in securities crowdfunding	2nd Emerging Trends in Entrepreneurial Finance Conference		Yes
84	Kollenda (2022)	Financial returns or social impact? What motivates impact investors' lending to firms in low-income countries	Journal of Banking & Finance	3.7	Yes
85	Leung and Sharkey (2014)	Out of sight, out of mind? Evidence of perceptual factors in the multiple-category discount	Organization Science	4.1	No
86	Li et al. (2023)	Does a past category's success influence existing entrepreneurial fundraising? A legitimacy spillover perspective	Entrepreneurship Theory and Practice	10.5	Yes
87	Li and Martin (2019)	Capital formation and financial intermediation: The role of entrepreneur reputation formation	Journal of Corporate Finance	6.1	Yes
88	Liao et al. (2020)	User interface and firsthand experience in retail investing	Review of Financial Studies	8.2	Yes

89	Lin et al. (2013)	Judging borrowers by the company they keep: Friendship networks and information asymmetry in online peer-to-peer lending	Management Science	5.4	No
90	Lin and Pursiainen (2021)	The round number heuristic and entrepreneur crowdfunding performance	Journal of Corporate Finance	6.1	Yes
91	Lin and Viswanathan (2016)	Home bias in online investments: An empirical study of an online crowdfunding market	Management Science	5.4	No
92	Liu et al. (2015)	Friendships in online peer-to-peer lending	MIS Quarterly	8.5	No
93	Lu et al. (2022)	Information asymmetry among investors and strategic bidding in peer-to-peer lending	Information Systems Research	4.9	Yes
94	Lukkarinen et al. (2016)	Success drivers of online equity crowdfunding campaigns	Decision Support Systems	7.0	Yes
95	Lukkarinen and Schwienbacher (2023)	Secondary market listings in equity crowdfunding: The missing link?	Research Policy	9.5	Yes
96	Mach et al. (2014)	Peer-to-peer lending to small businesses	FEDS Working Paper No. 2014-10		No
97	Madsen and McMullin (2020)	Economic consequences of risk disclosures: Evidence from crowdfunding	The Accounting Review	4.1	Yes
98	Mahmood et al. (2019)	What's in a logo? The impact of complex visual cues in equity crowdfunding	Journal of Business Venturing	8.7	Yes
99	Maier (2016)	Supply and demand on crowdlending platforms: Connecting small and medium-sized enterprise borrowers and consumer investors	Journal of Retailing and Consumer Services	10.4	Yes
100	Mamonov and Malaga (2018)	Success factors in title iii equity crowdfunding in the United States	Electronic Commerce Research and Applications	6.0	No
101	Mendoza et al. (2023)	Investment crowdfunding has little faith in sustainability! At least for the moment	Venture Capital	2.4	Yes
102	Michels (2012)	Do unverifiable disclosures matter? Evidence from peer-to-peer lending	The Accounting Review	4.1	No
103	Mollick (2014)	The dynamics of crowdfunding: An exploratory study	Journal of Business Venturing	8.7	No
104	Nguyen et al. (2019)	Invest or regret? An empirical investigation into funding dynamics during the final days of equity crowdfunding campaigns	Journal of Corporate Finance	6.1	No

105	Nielsen and Binder (2021)	I am what I pledge: The importance of value alignment for mobilizing backers in reward-based crowdfunding	Entrepreneurship Theory and Practice	10.5	No
106	Nitani et al. (2019)	On equity crowdfunding: Investor rationality and success factors	Venture Capital	2.4	No
107	Nowak et al. (2018)	Small business borrowing and peer-to-peer lending: Evidence from lending club	Contemporary Economic Policy	1.5	Yes
108	Oo et al. (2019)	User entrepreneurs' multiple identities and crowdfunding performance: Effects through product innovativeness, perceived passion, and need similarity	Journal of Business Venturing	8.7	No
109	Oo et al. (2023)	Actions in words: How entrepreneurs use diversified and changing speech acts to achieve funding success	Journal of Business Venturing	8.7	Yes
110	Parhankangas and Renko (2017)	Linguistic style and crowdfunding success among social and commercial entrepreneurs	Journal of Business Venturing	8.7	Yes
111	Patel et al. (2021)	Logic is (somewhat) overrated: Image-based versus concept-based rhetoric in crowdfunding narratives	Entrepreneurship Theory and Practice	10.5	Yes
112	Petit and Wirtz (2022)	Experts in the crowd and their influence on herding in reward-based crowdfunding of cultural projects	Small Business Economics	6.4	No
113	Piva and Rossi-Lamastra (2018)	Human capital signals and entrepreneurs' success in equity crowdfunding	Small Business Economics	6.4	Yes
114	Prokop and Wang (2022)	Is there a gender gap in equity-based crowdfunding?	Small Business Economics	6.4	Yes
115	Quigley and Patel (2022)	Reexamining the gender gap in microlending funding decisions: The role of borrower culture	Small Business Economics	6.4	Yes
116	Ralcheva and Roosenboom (2020)	Forecasting success in equity crowdfunding	Small Business Economics	6.4	Yes
117	Rossi et al. (2023)	Unsuccessful equity crowdfunding offerings and the persistence in equity fundraising of family business start-ups	Entrepreneurship Theory and Practice	10.5	No
118	Saiedi et al. (2022)	Distrust in banks and fintech participation: The case of peer-to-peer lending	Entrepreneurship Theory and Practice	10.5	No
119	Seigner et al. (2022)	Who can claim innovation and benefit from it? Gender and expectancy violations in rewardbased crowdfunding	Strategic Entrepreneurship Journal	6.3	Yes



120	Shafi (2021)	Investors' evaluation criteria in equity crowdfunding	Small Business Economics	6.4	Yes
121	Shafi and Mohammadi (2020)	Too gloomy to invest: Weather-induced mood and crowdfunding	Journal of Corporate Finance	6.1	No
122	Signori and Vismara (2018)	Does success bring success? The post-offering lives of equity-crowdfunded firms	Journal of Corporate Finance	6.1	No
123	Singh et al. (2022)	Overcoming bias against funding of female-led entrepreneurial initiatives: The democratizing influence of online crowdlending platforms	Service Business	5.9	Yes
124	Skirnevskiy et al. (2017)	The influence of internal social capital on serial creators' success in crowdfunding	Entrepreneurship Theory and Practice	10.5	Yes
125	Slimane and Rousseau (2020)	Crowdlending campaigns for renewable energy: Success factors	Journal of Cleaner Production	11.1	Yes
126	Smirnova et al. (2021)	Pleasing the crowd: The determinants of securities crowdfunding success	Review of Behavioral Finance	2.0	Yes
127	Stroube (2022)	Economic consequences and the motive to discriminate	Administrative Science Quarterly	10.4	No
128	Taeuscher et al. (2021)	Gaining legitimacy by being different: Optimal distinctiveness in crowdfunding platforms	Academy of Management Journal	10.5	Yes
129	Tao et al. (2017)	Who can get money? Evidence from the Chinese peer-to-peer lending platform	Information Systems Frontiers	5.9	Yes
130	Troise et al. (2020)	Investigating the impact of multidimensional social capital on equity crowdfunding performance	International Journal of Information Management	21.0	Yes
131	Vismara (2016)	Equity retention and social network theory in equity crowdfunding	Small Business Economics	6.4	Yes
132	Vismara (2018)	Information cascades among investors in equity crowdfunding	Entrepreneurship Theory and Practice	10.5	Yes
133	Vismara (2019)	Sustainability in equity crowdfunding	Technological Forecasting and Social Change	12.0	No
134	Vulkan et al. (2016)	Equity crowdfunding: A new phenomena	Journal of Business Venturing Insights	8.8	Yes
135	Wang et al. (2019)	The evolution of equity crowdfunding: Insights from co-investments of angels and the crowd	Research Policy	9.5	No
136	Wang et al. (2023)	Does digitalization sufficiently empower female entrepreneurs? Evidence from their online gender identities and crowdfunding performance	Small Business Economics	6.4	Yes

137	Wei et al. (2022)	Machine learning for creativity: Using similarity networks to design better crowdfunding projects	Journal of Marketing	12.9	Yes
138	Wei and Lin (2017)	Market mechanisms in online peer-to-peer lending	Management Science	5.4	No
139	Wesemann and Wincent (2021)	A whole new world: Counterintuitive crowdfunding insights for female founders	Journal of Business Venturing Insights	8.8	Yes
140	Wessel et al. (2021)	Sustainability of rewards-based crowdfunding: A quasi-experimental analysis of funding targets and backer satisfaction	Journal of Management Information Systems	7.6	Yes
141	Xu and Chau (2018)	Cheap talk? The impact of lender-borrower communication on peer-to-peer lending outcomes	Journal of Management Information Systems	7.6	No
142	Yum et al. (2012)	From the wisdom of crowds to my own judgment in microfinance through online peer-to-peer lending platforms	Electronic Commerce Research and Applications	6.0	No
143	Zhang and Liu (2012)	Rational herding in microloan markets	Management Science	5.4	No
144	Zhang et al. (2023)	To exploit or explore? The impact of crowdfunding project descriptions and backers' power states on funding decisions	Journal of the Academy of Marketing Science	18.2	Yes
145	Zunino et al. (2022)	How do investors evaluate past entrepreneurial failure? Unpacking failure due to lack of skill versus bad luck	Academy of Management Journal	10.5	No

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## Appendix C Robustness Checks Using Sample without Pre-Purchase Crowdfunding

**Panel A:** Test 1 Using Wilcoxon Rank Sum Test for the Effect Size

Group	Observations (n)	Rank sum	Expected
Strong Signals	56	4,555	4,144
Regular Signals	91	6,323	6,734
<i>z</i>	-1.639		
<i>p</i> -value	0.1017		

**Panel B:** Test 2 Using Fisher's Exact Test for the Share of Positive Coefficients

Group	Observations (n)	# Non-positive $\beta$	# Positive $\beta$
Strong Signal	56	18	38
Regular Signal	91	47	44
Total	147	65	82
Fisher's Exact Test <i>p</i> -value	0.026**		

**Panel C:** Test 3 Using Fisher's Exact Test for the Share of Significant Coefficients

Group	Observations (n)	# Non-significant $\beta$	# Significant $\beta$
Strong Signal	56	36	20
Regular Signal	89	22	67
Total	145	58	87
Fisher's Exact Test <i>p</i> -value	0.0000***		

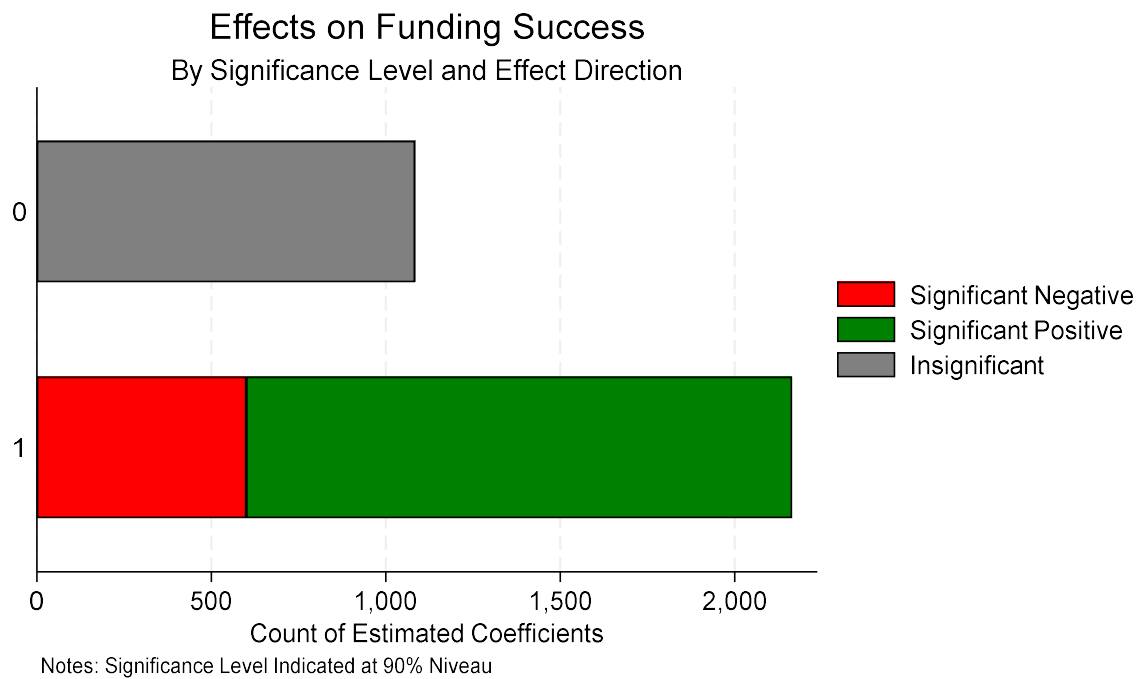
*Note:* Appendix C shows the robustness check results of three statistical tests utilized to compare strong and regular signals in the context of crowdfunding when excluding all pre-purchase crowdfunding articles from the sample. Panel A presents the testing results of the Wilcoxon Rank Sum Test for Test 1 to compare the distribution of the effect sizes between the two groups. Panel B presents the testing results of the Fisher's Exact Test for Test 2 to compare the share of positive coefficients between regular and strong signals. Panel C presents the testing results of the Fisher's Exact Test for Test 3 to compare the share of significant coefficients between the two groups of strong and regular signals. \*, \*\*, and \*\*\* represent significance levels of 10%, 5%, and 1%, respectively. To allow for a fair comparison among signals, we have rescaled the coefficient sign of *Planned Campaign Duration* and *Equity Share Offered by Entrepreneur* inversely because a shorter campaign duration and a lower equity share offered should theoretically have a positive effect on financing success.

## Appendix D Robustness Check Results for the Meta-Regression Using Sample without Pre-Purchase Crowdfunding

Variables	Meta-Regression	Wald Tests for Differences in Coefficient Estimates		
	Effect Size	Past Crowdfunding Success	Business Experience	Patent Ownership
<b>Strong Signals</b>				
<i>Entrepreneur's Past Crowdfunding Success</i>	0.15 (1.37)			
<i>Entrepreneur's Business Experience</i>	-0.00 (-0.05)	0.15 (0.1851)		
<i>Patent Ownership</i>	0.14 (1.27)	0.01 (0.9225)	-0.14 (0.2218)	
<i>Equity Share Offered by Entrepreneur</i>	0.18 (1.58)	-0.03 (0.8721)	-0.18 (0.1315)	-0.04 (0.7933)
<b>Regular Signals</b>				
		<i>Interest Rate Offered</i>	<i>Campaign Video</i>	<i>TMT Size</i>
<i>Target Funding Amount</i>	Reference Group			
<i>Interest Rate Offered by Entrepreneur</i>	0.09 (0.95)			
<i>Presence of Campaign Video on Crowdfunding Website</i>	0.95 *** (3.25)	-0.86 *** (0.0039)		
<i>Top-Management-Team Size</i>	0.10 (0.74)	-0.01 (0.9414)	0.85 *** (0.0074)	
<i>Campaign Description Length on Crowdfunding Website</i>	0.30 *** (3.74)	0.21 ** (0.0333)	0.65 ** (0.0273)	-0.20 (0.1471)
<b>Non-Signals</b>				
		<i>Technology Sector</i>	<i>Campaign Duration</i>	<i>Metropolitan Area</i>
<i>Technology Sector Affiliation</i>	-0.14			

	(-1.00)			
<i>Planned Campaign Duration</i>	0.01 (0.07)	-0.15 (0.3392)		
<i>Firm Located in a Metropolitan Area</i>	0.05 (0.41)	-0.19 (0.2633)	-0.04 (0.7556)	
<i>Entrepreneur's Gender</i> (Female = 1)	0.17 ** (2.33)	-0.31 ** (0.0310)	-0.16 * (0.0970)	-0.12 (0.3288)
<i>Observations</i>	-0.00 ** (-2.19)			
<i>Impact Factor</i>	0.01 (0.90)			
<i># Authors</i>	-0.01 (-0.24)			
<i>Year</i>	0.00 (0.12)			
<hr/>				
N	196			
R <sup>2</sup> (%)	13.75			
Wald chi-squared	52.97			
<i>p</i> -value	0.0006			
<i>Method FE</i>	Included			
<i>Dependent Variable FE</i>	Included			
<i>Constant</i>	Included			
Tau <sup>2</sup>	0.07572			

*Note:* Appendix D shows the robustness check results for the meta-regression including the most frequently examined explanatory variables for the crowdfunding success when excluding all pre-purchase crowdfunding articles from the sample. The dependent variable is the standardized effect size. We control for other factors potentially influencing the estimated effect size by including *Observations*, *Impact Factor*, *# Authors*, and *Year*, as well as *Method* and *Dependent Variable fixed effects* (FE) to capture the effects of the different methods (i.e., logit, probit, and OLS regression) and distinct dependent variables (i.e., fully funded, funding amount, percentage funded, time to funding). Columns (2)–(5) present the results of Wald tests to investigate whether the differences between the effects of the distinct signals within the groups of strong, regular, and non-signals are statistically significant. \*, \*\*, and \*\*\* represent significance levels of 10%, 5%, and 1%, respectively. The t-statistics from the random effects meta-regression model are presented in parentheses. For the Wald tests, we present the *p*-values from the chi-squared test in parentheses. All effect sizes and standard errors used to estimate the meta-regression are winsorized at the 5% level. The signal *Target Funding Amount* serves as baseline category. To allow for a fair comparison among signals, we have rescaled the coefficient sign of *Planned Campaign Duration* and *Equity Share Offered by Entrepreneur* inversely because a shorter campaign duration and a lower equity share offered should theoretically have a positive effect on financing success.

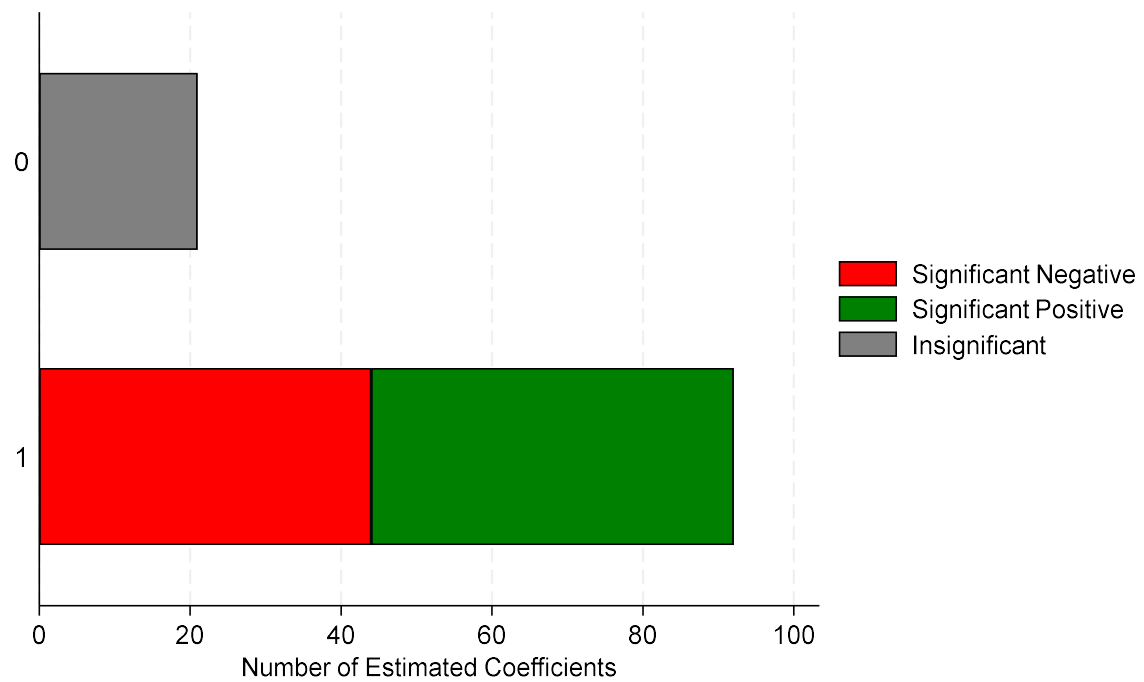


**Figure 5      Overview of All Estimated Coefficients by Significance Level and Effect Direction**

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**Panel A: Coefficient Estimates of Log Target Funding Amount (n = 113)**

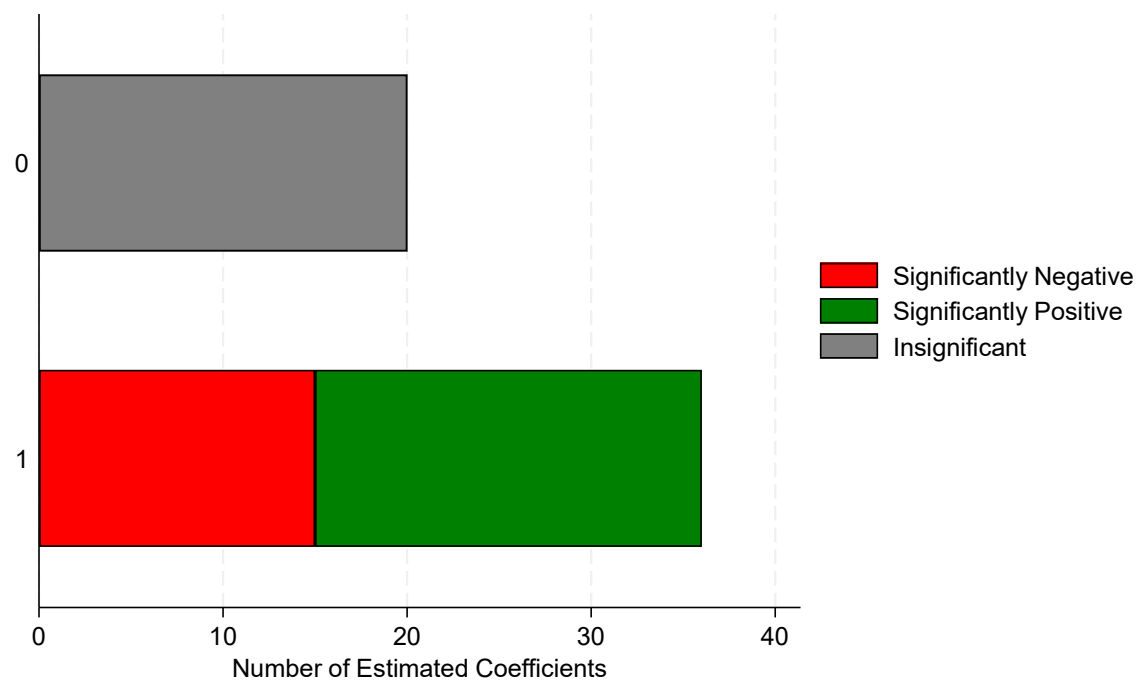
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**Panel B: Coefficient Estimates of Target Funding Amount (n = 56)**

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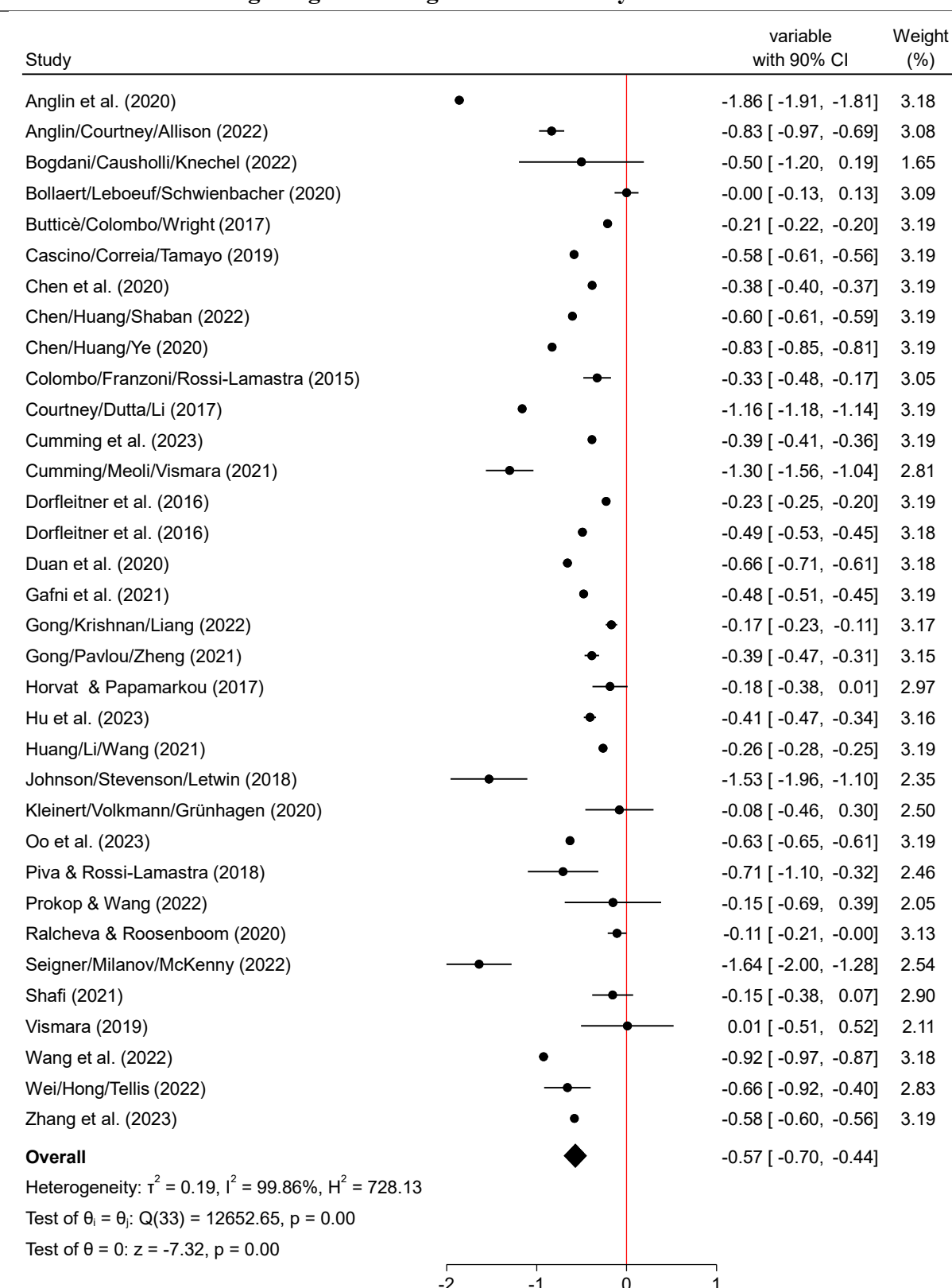


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**Figure 6 Overview of Effects of Target Funding Amount on Funding Success by Significance Level and Effect Direction**

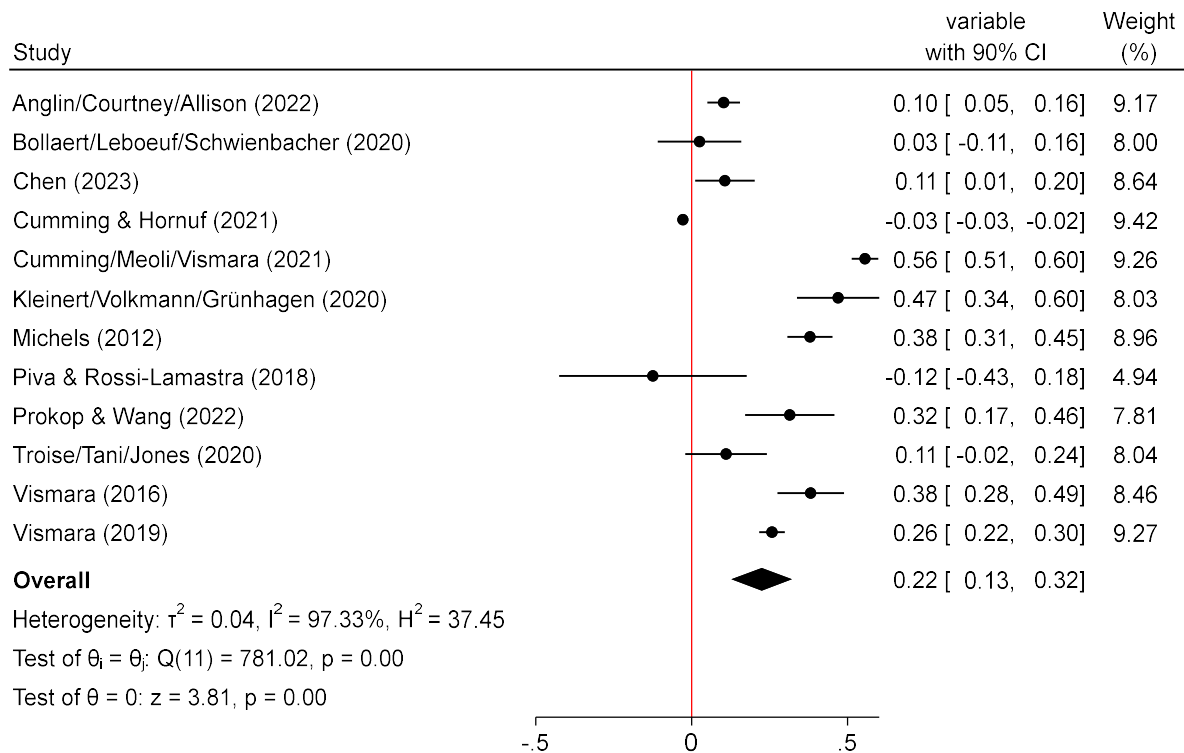
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### Panel A: Effects of Log Target Funding Amount on Fully Funded

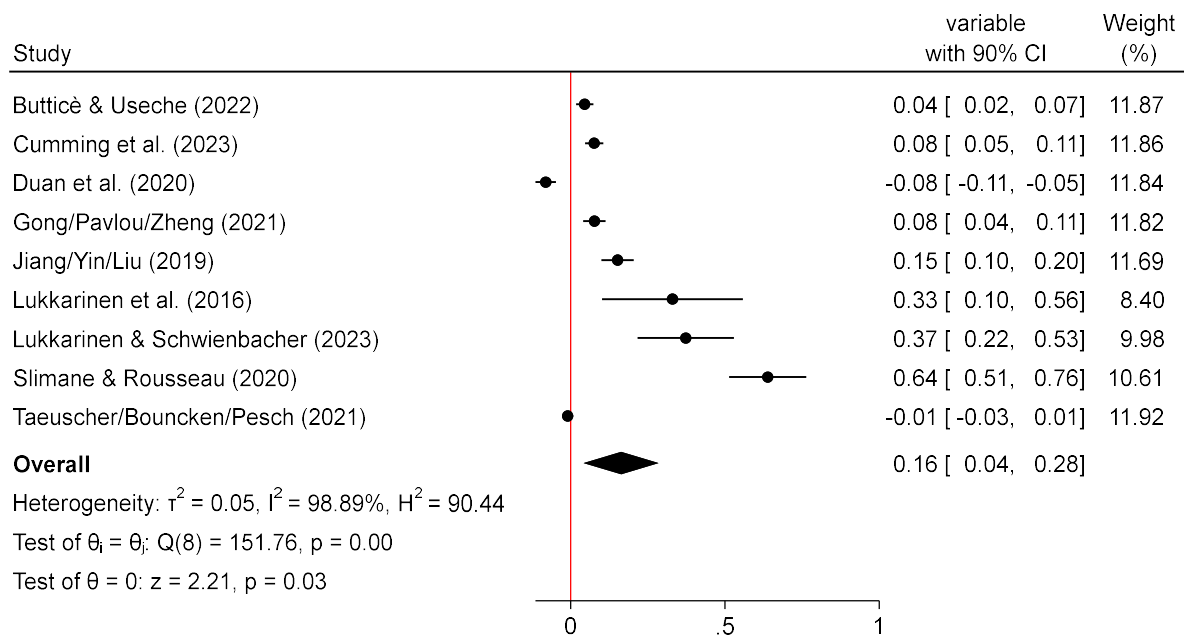


### Panel B: Effects of Log Target Funding Amount on the Number of Investments

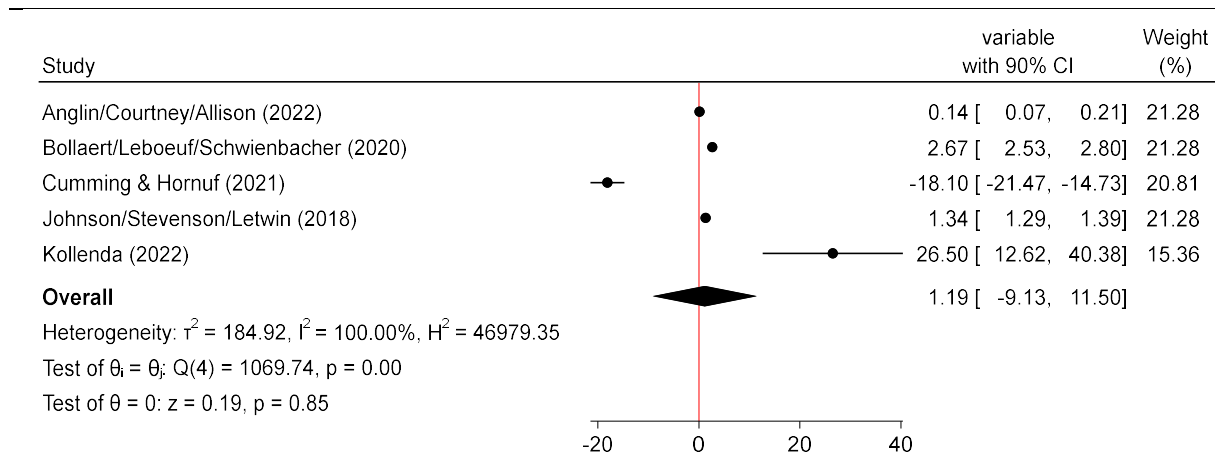




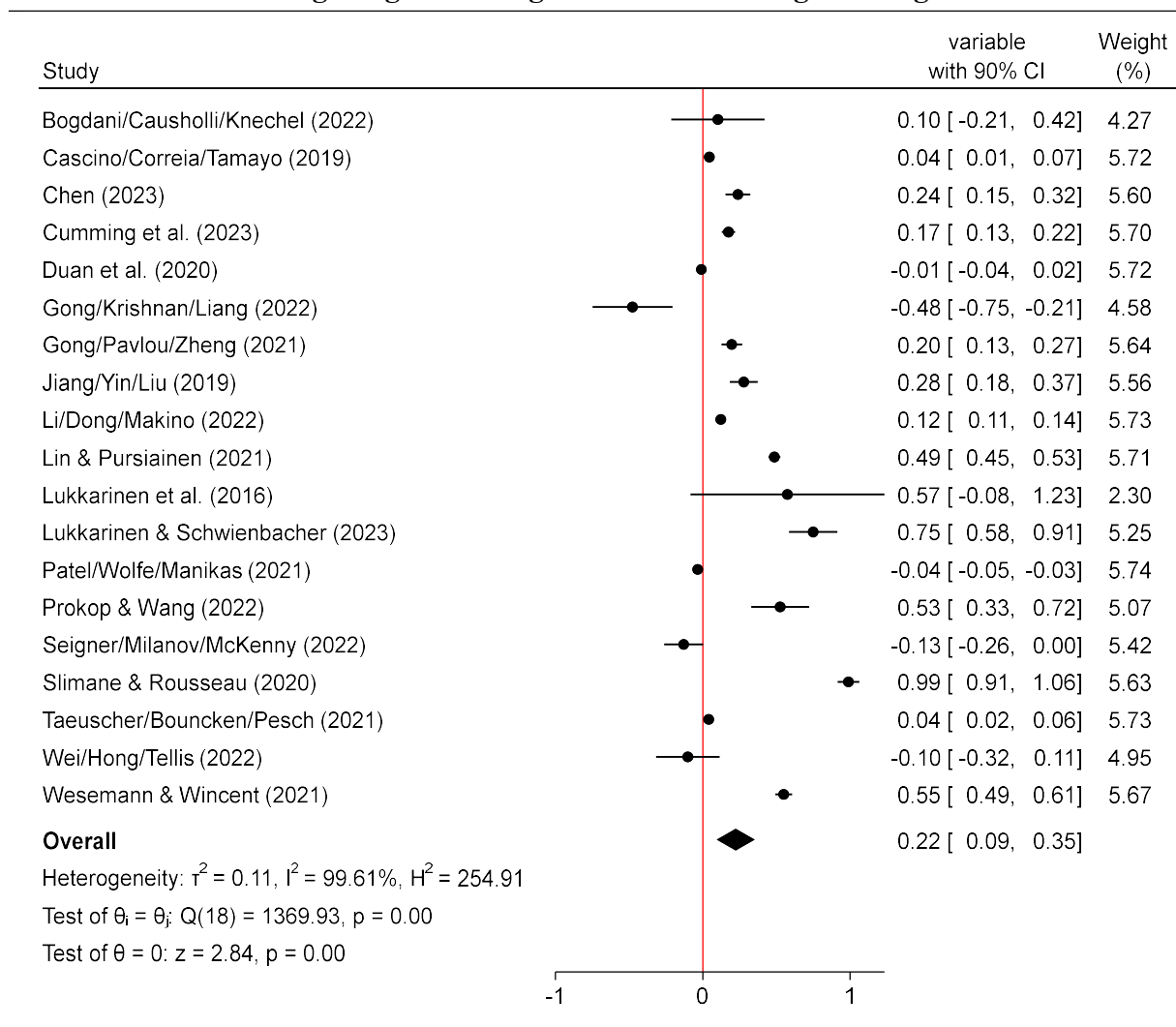
### Panel C: Effects of Log Target Funding Amount on the Log Number of Investments



### Panel D: Effects of Log Target Funding Amount on the Funding Amount

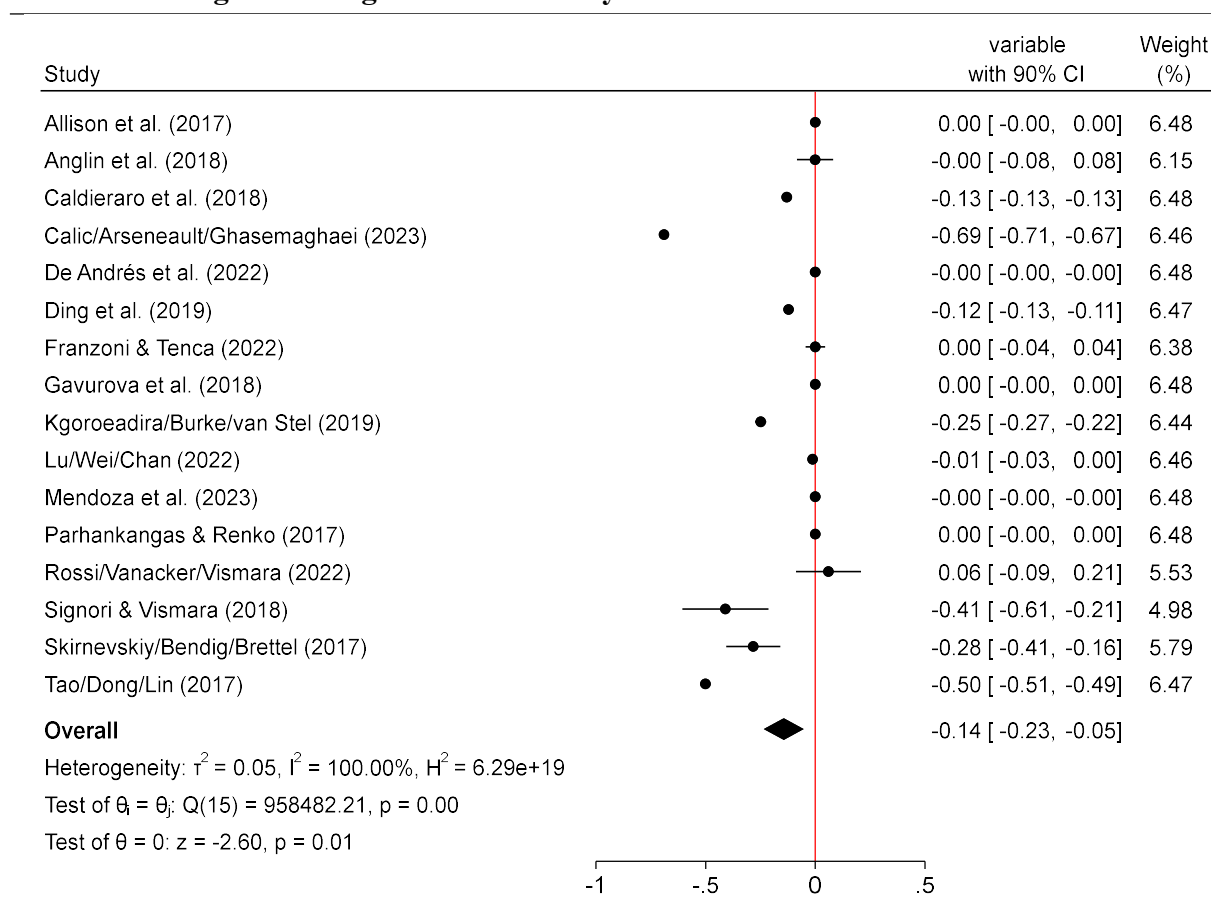


**Panel E: Effects of Log Target Funding Amount on the Log Funding Amount**

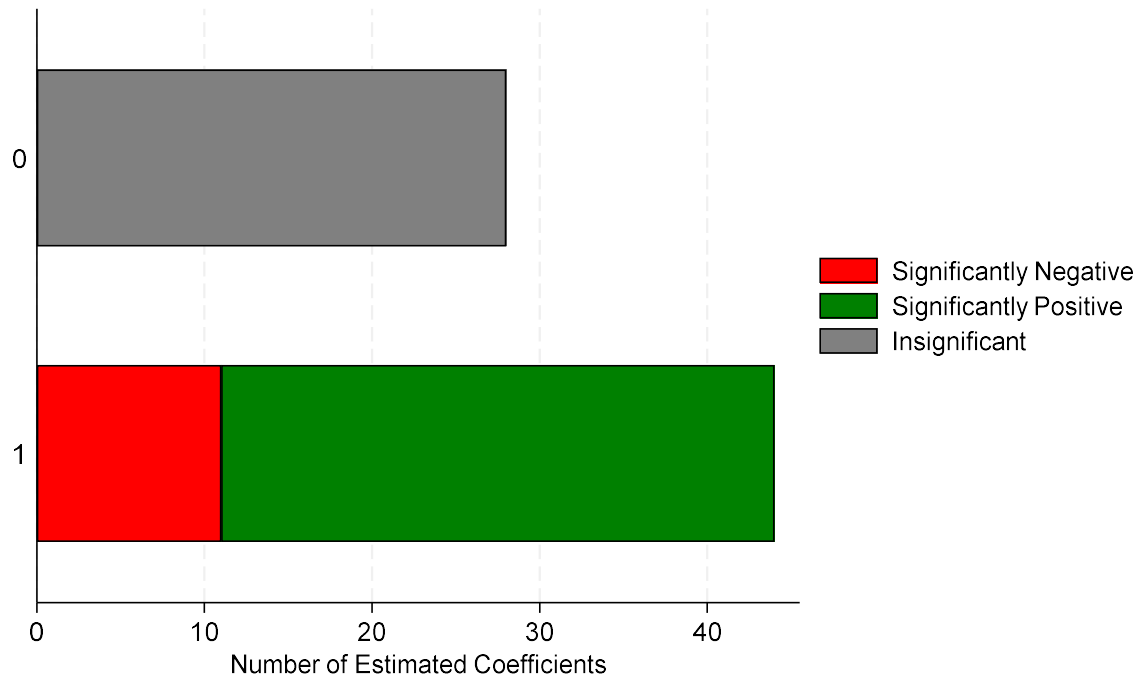


**Figure 7 Forest Plot of the Effects of Log Target Funding Amount on Funding Success**

## Effects of Target Funding Amount on Fully Funded

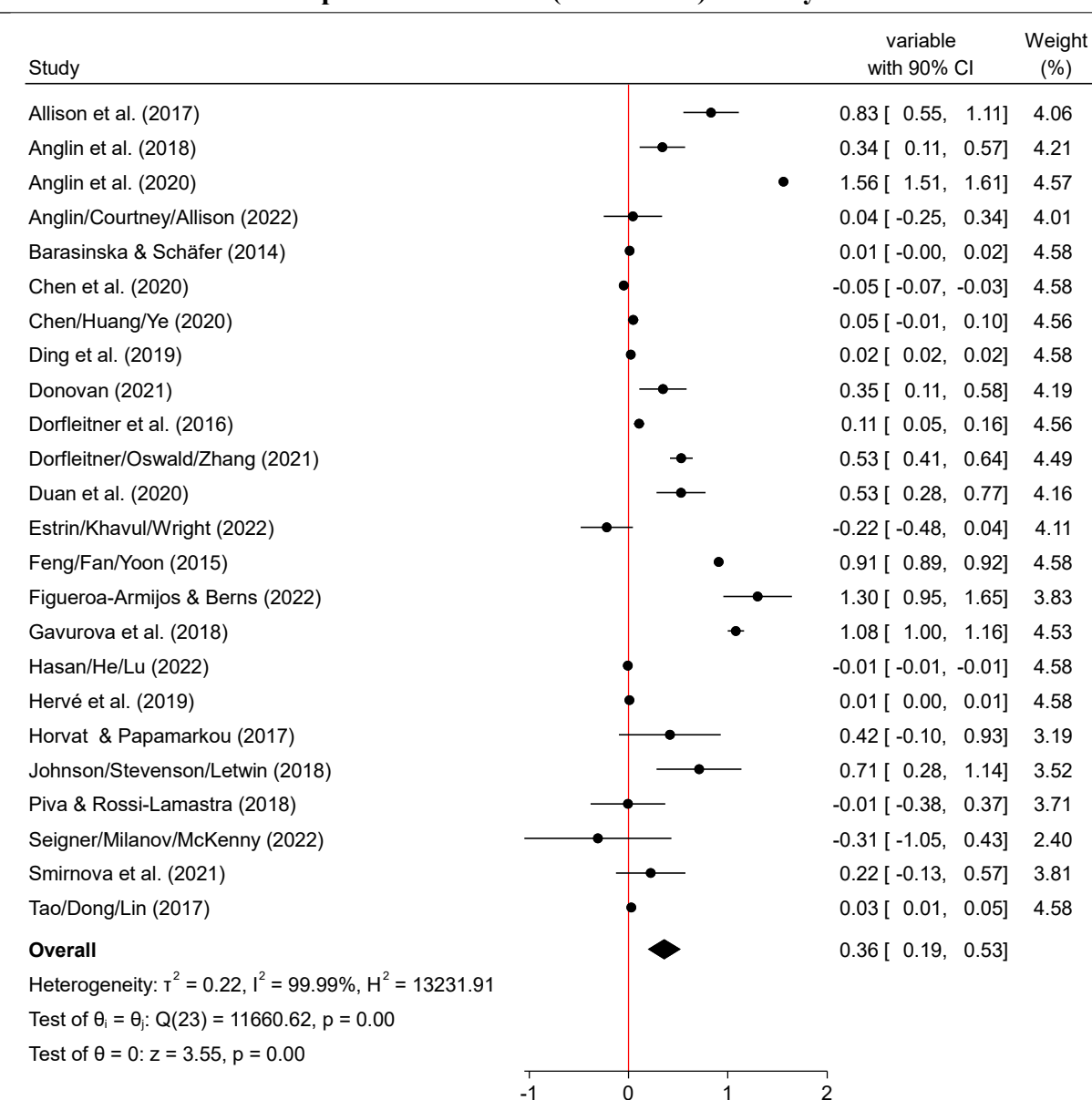


**Figure 8 Forest Plot of the Effects of Target Funding Amount on Funding Success**

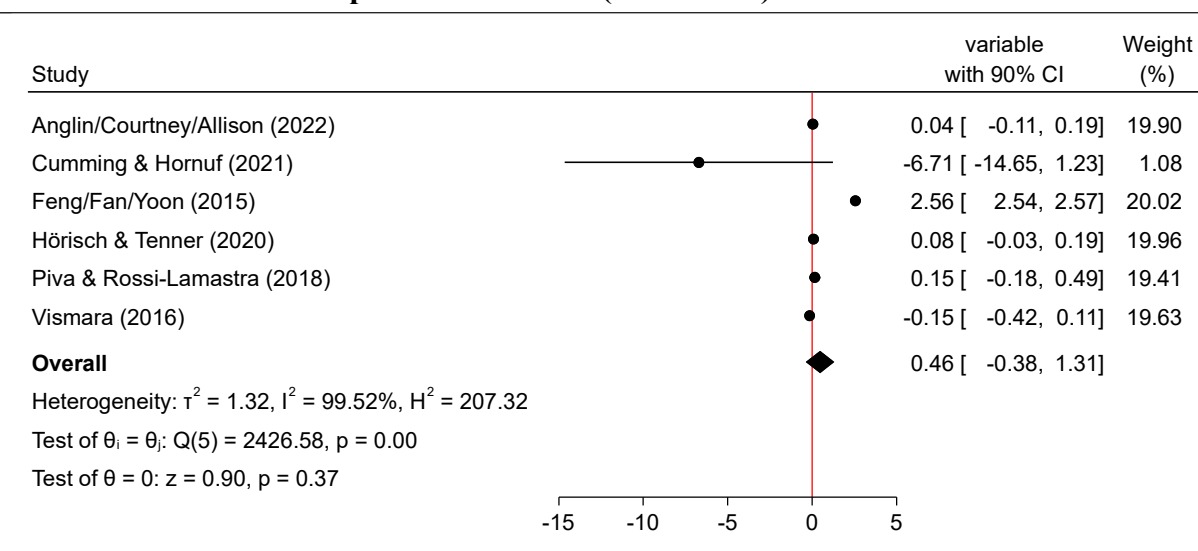


**Figure 9** Overview of Effects of Entrepreneur's Gender (Female = 1) on Funding Success by Significance Level and Effect Direction

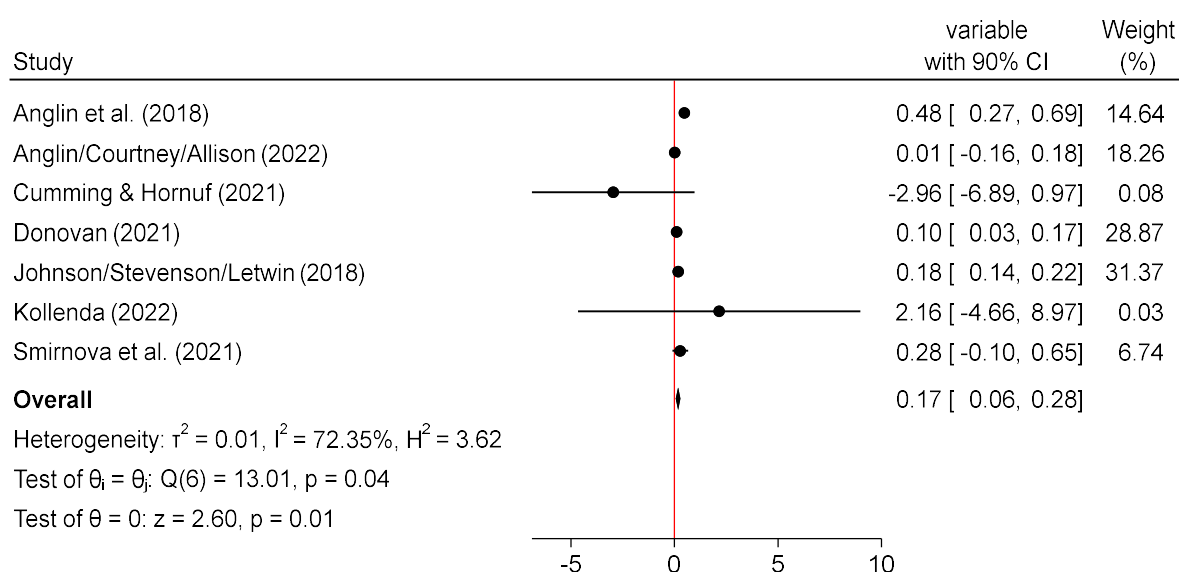
### Panel A: Effects of Entrepreneur's Gender (Female = 1) on Fully Funded



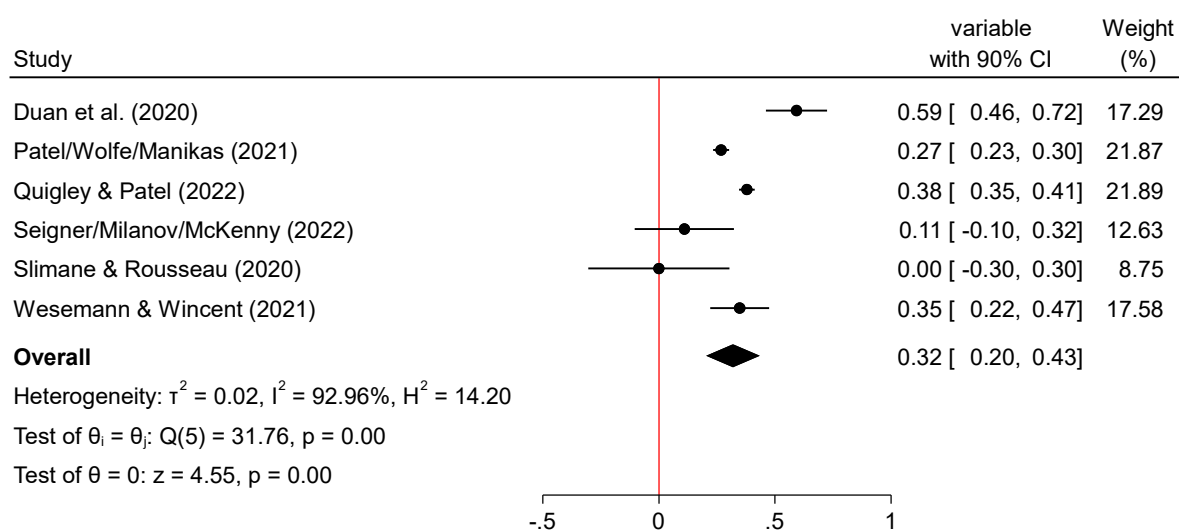
### Panel B: Effects of Entrepreneur's Gender (Female = 1) on the Number of Investments



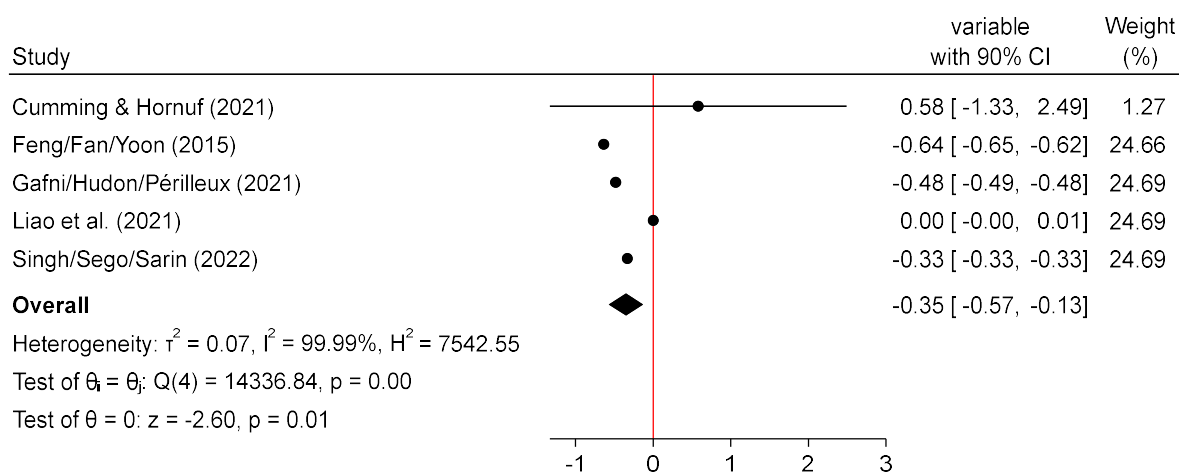
### Panel C: Effects of Entrepreneur's Gender (Female = 1) on the Funding Amount



### Panel D: Effects of Entrepreneur's Gender (Female = 1) on the Log Funding Amount



### Panel E: Effects of Entrepreneur's Gender (Female = 1) on the Time to Funding

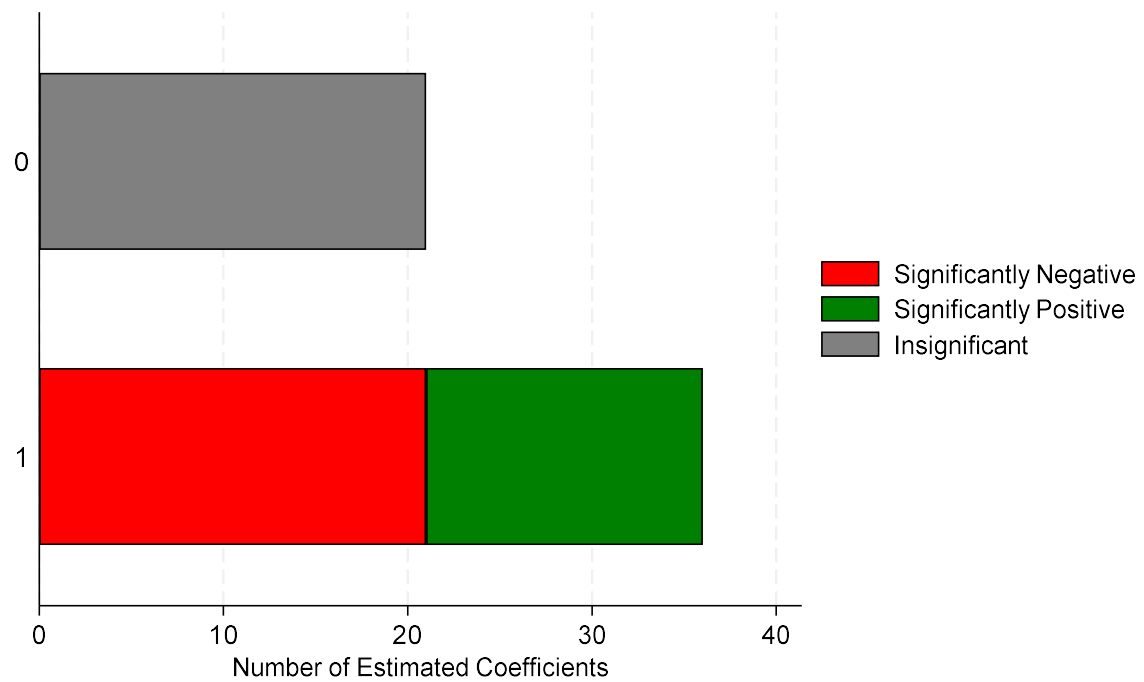


**Figure 10     Forest Plot of the Effects of Entrepreneur's Gender (Female = 1) on Funding Success**

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**Panel A: Coefficient Estimates of Planned Campaign Duration (n = 57)**

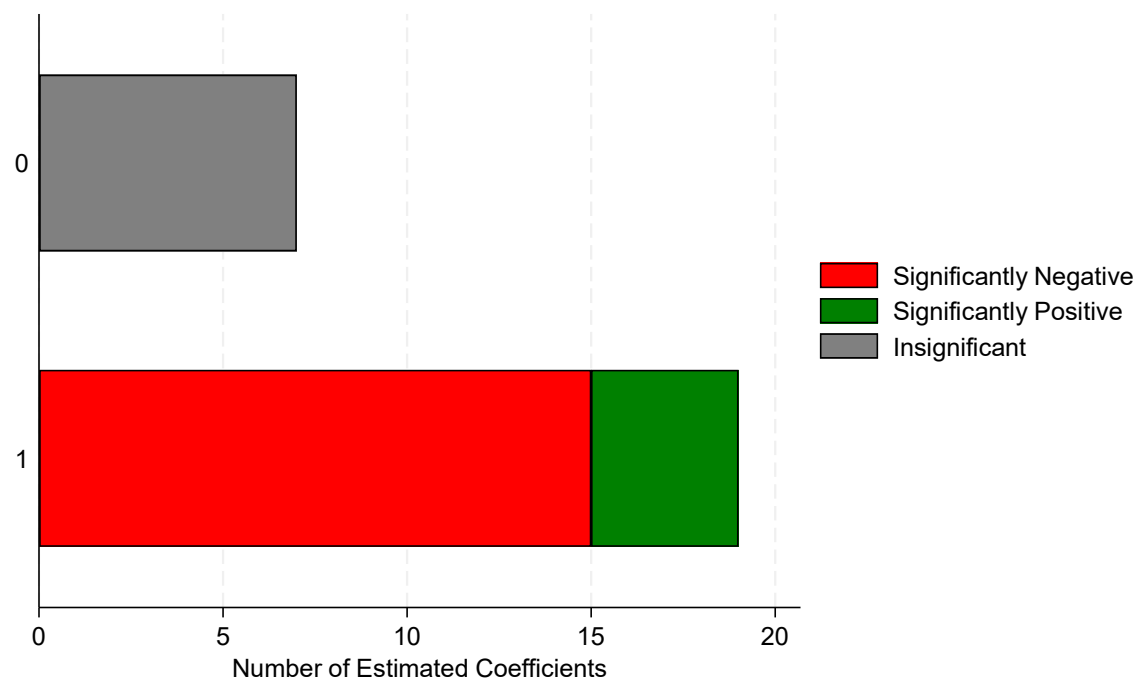
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**Panel B: Coefficient Estimates of Log Planned Campaign Duration (n = 26)**

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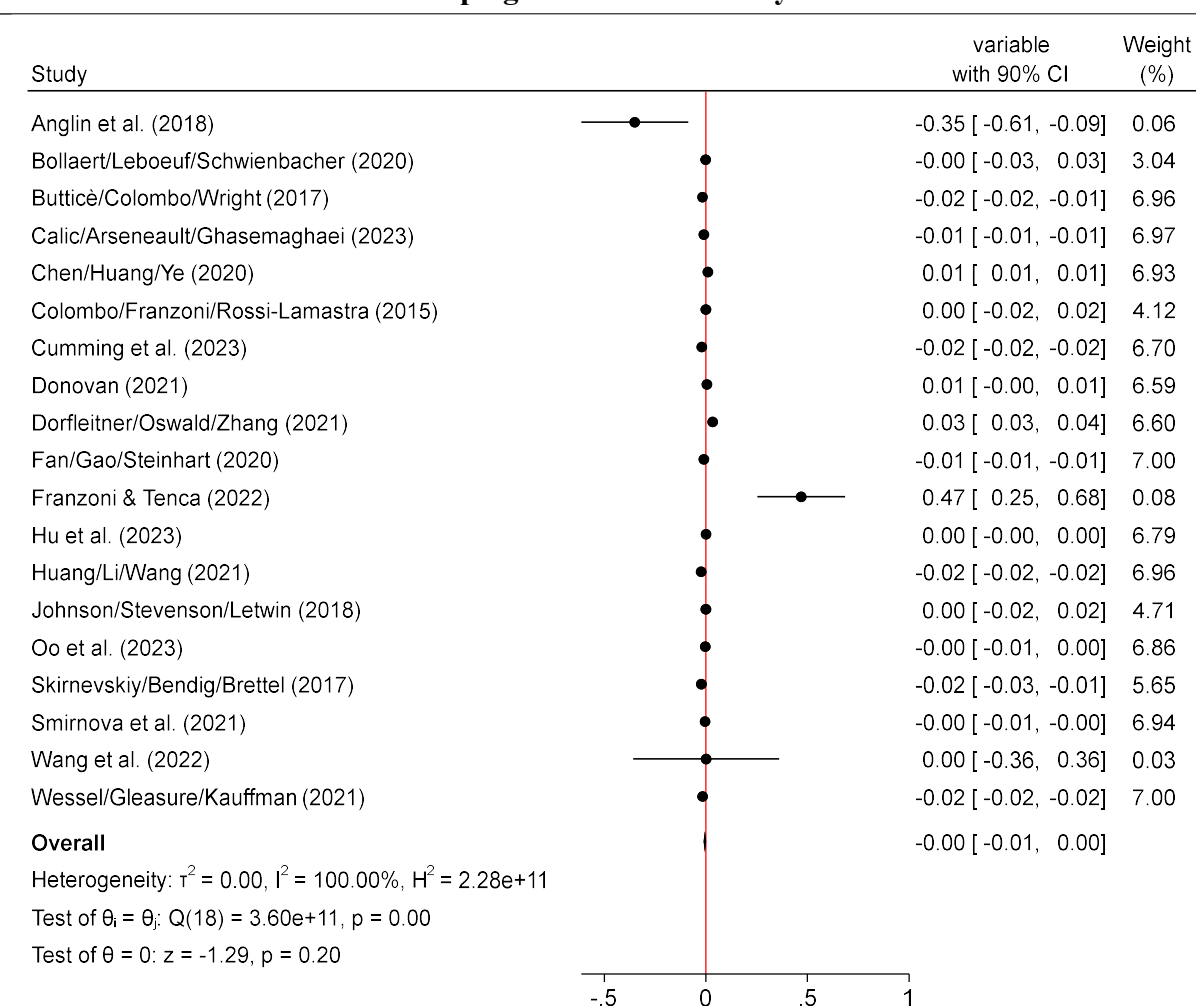
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**Figure 11      Overview of Effects of Planned Campaign Duration on Funding Success by Significance Level and Effect Direction**

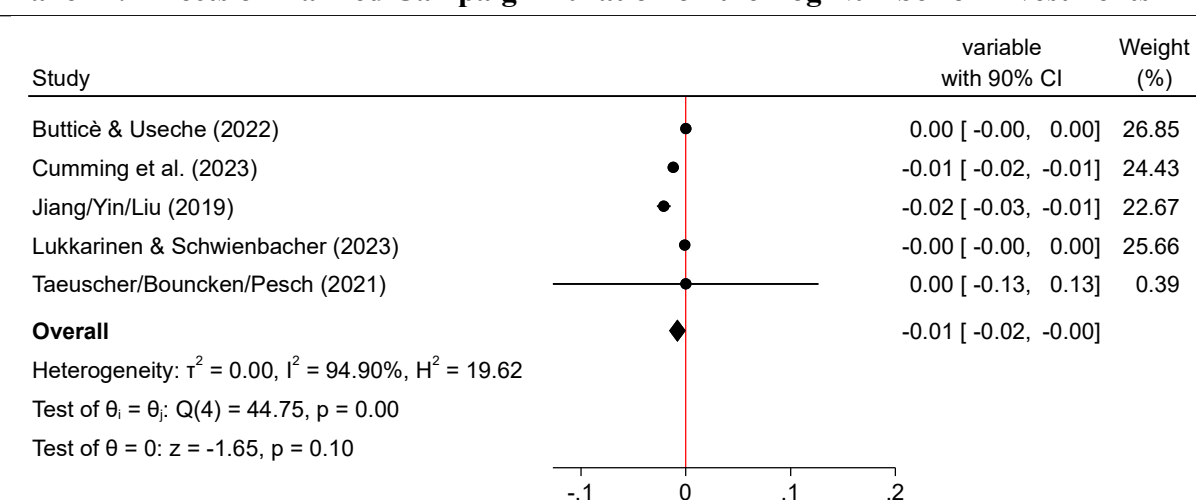
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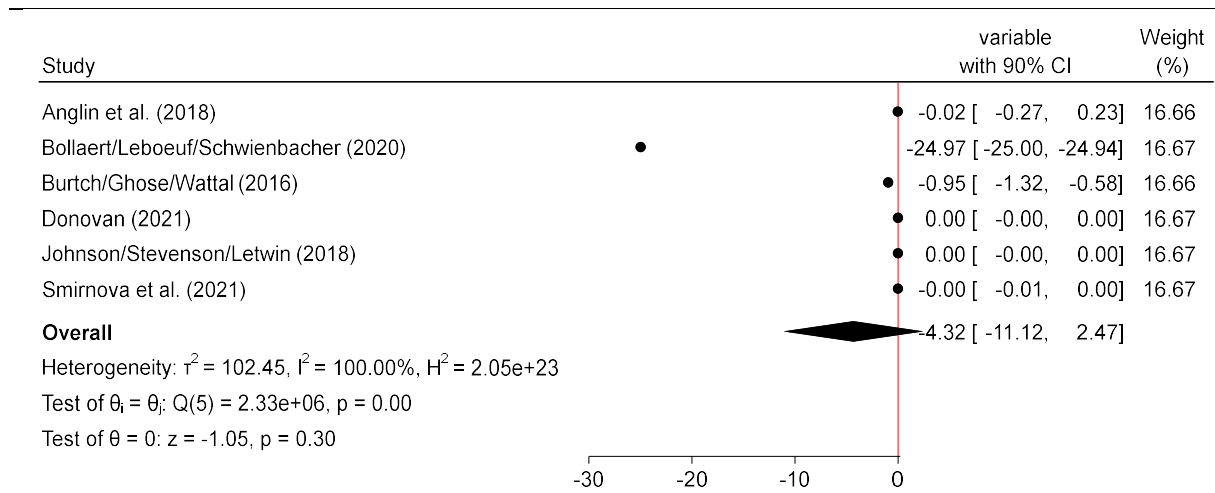
### Panel A: Effects of Planned Campaign Duration on Fully Funded



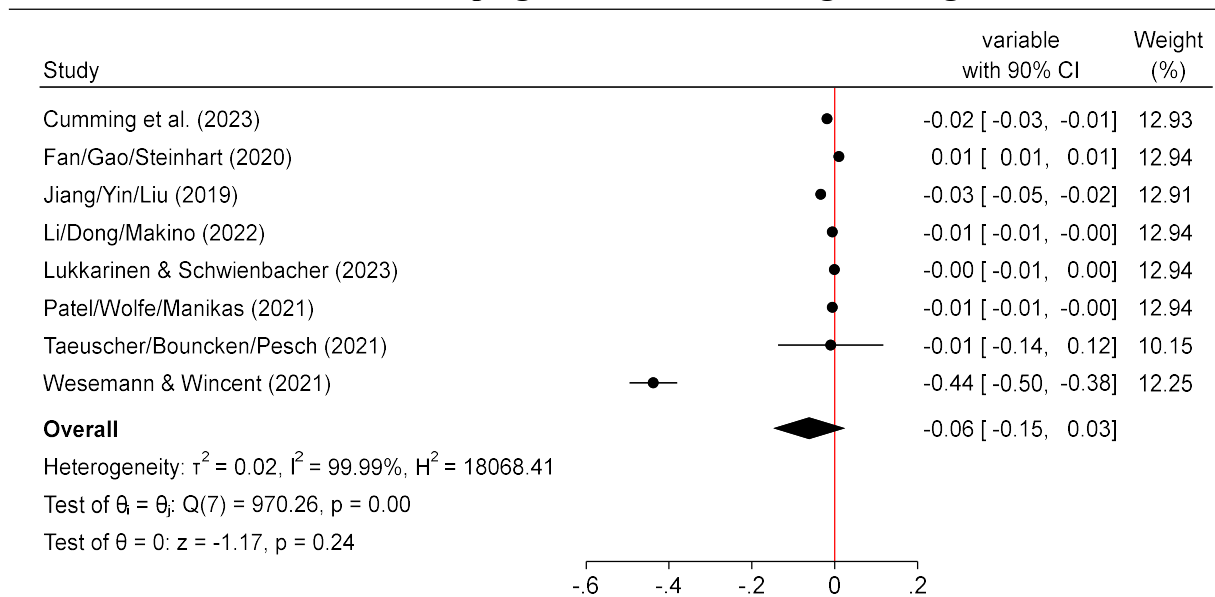
### Panel B: Effects of Planned Campaign Duration on the Log Number of Investments



### Panel C: Effects of Planned Campaign Duration on the Funding Amount

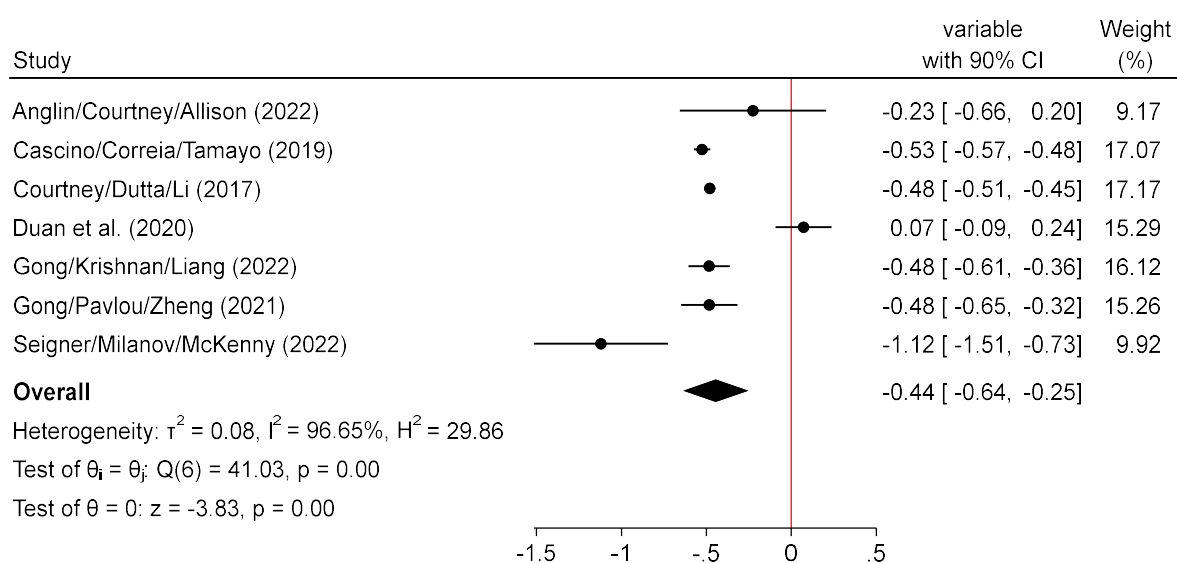


#### Panel D: Effects of Planned Campaign Duration on the Log Funding Amount

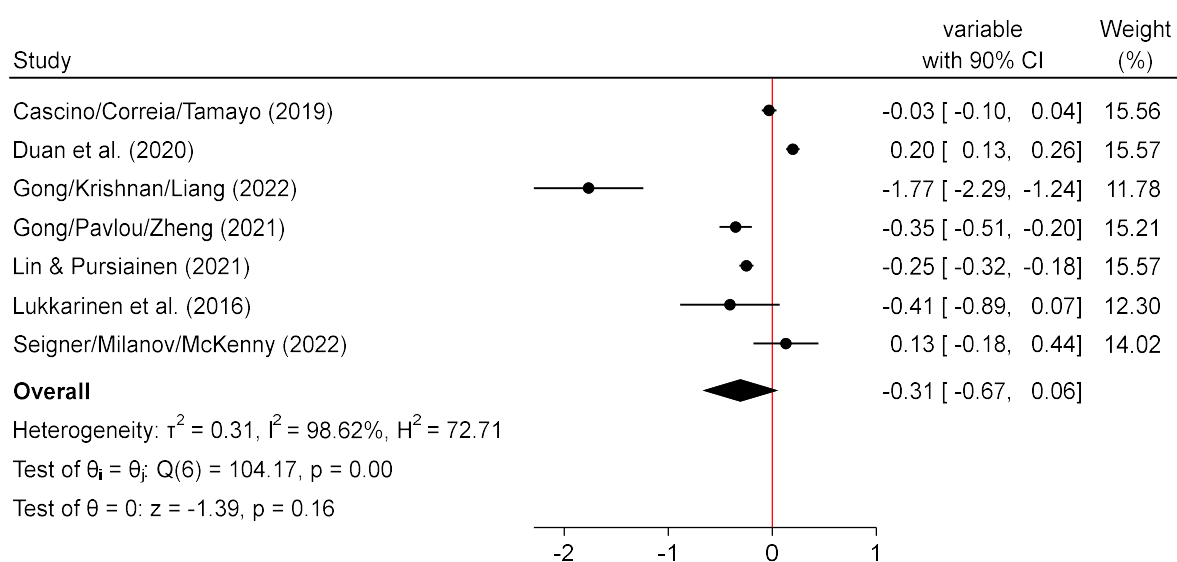


**Figure 12 Forest Plot of the Effects of Planned Campaign Duration on Funding Success**

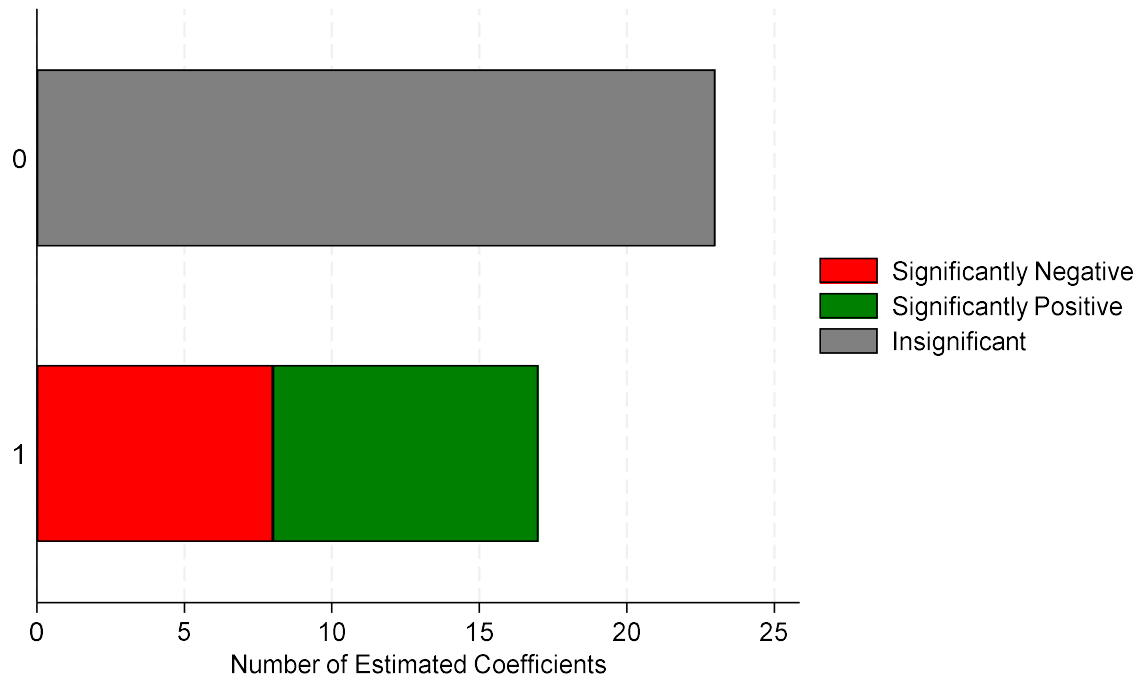
### Panel A: Effects of Log Planned Campaign Duration on Fully Funded



### Panel B: Effects of Log Planned Campaign Duration on the Log Funding Amount

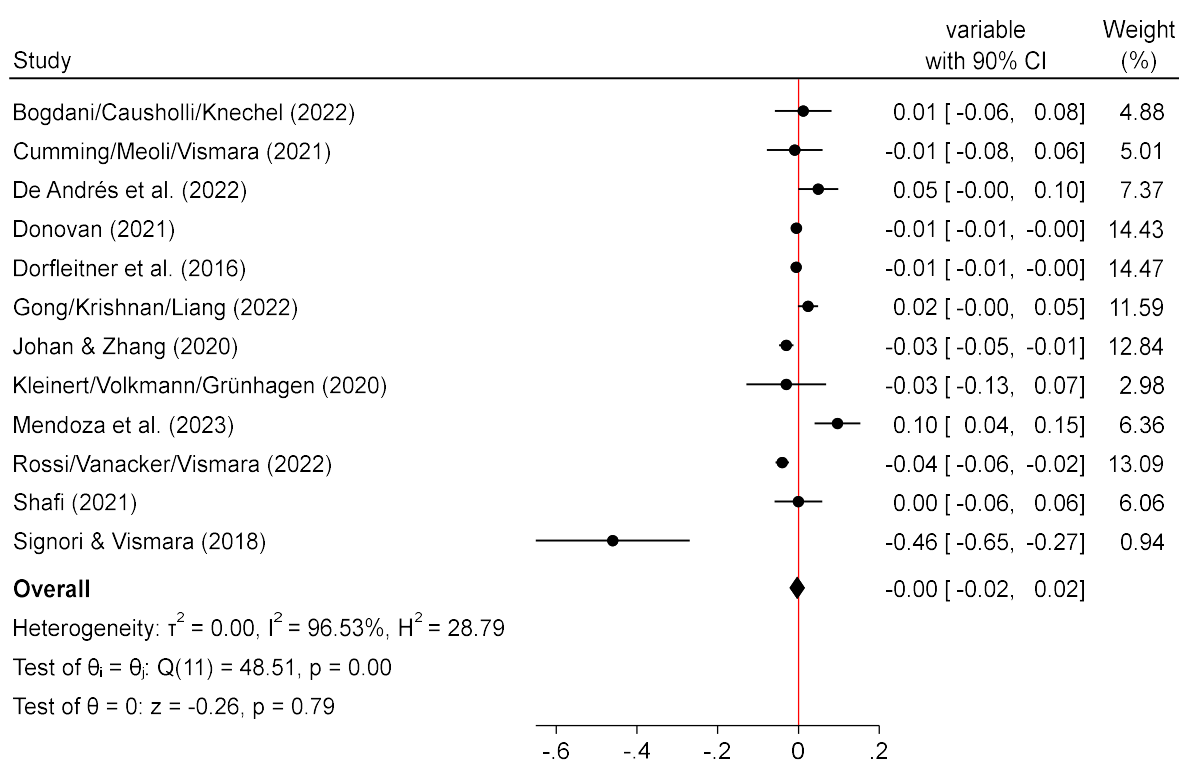


**Figure 13 Forest Plot of the Effects of Log Planned Campaign Duration on Funding Success**

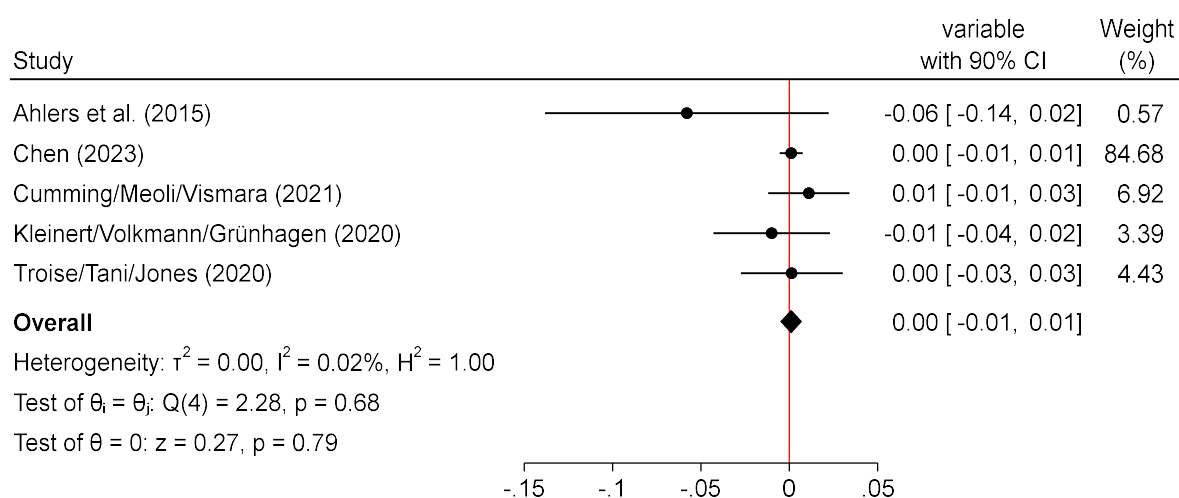


**Figure 14** Overview of Effects of Entrepreneur's Business Experience on Funding Success by Significance Level and Effect Direction

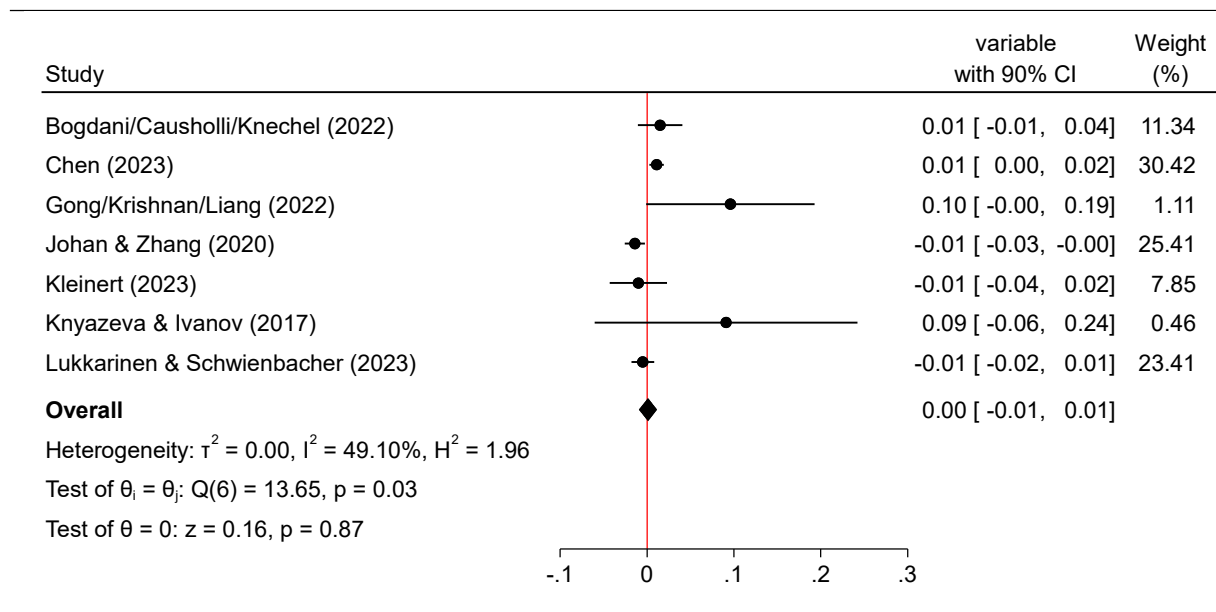
### Panel A: Effects of Entrepreneur's Business Experience on Fully Funded



### Panel B: Effects of Entrepreneur's Business Experience on the Number of Investments

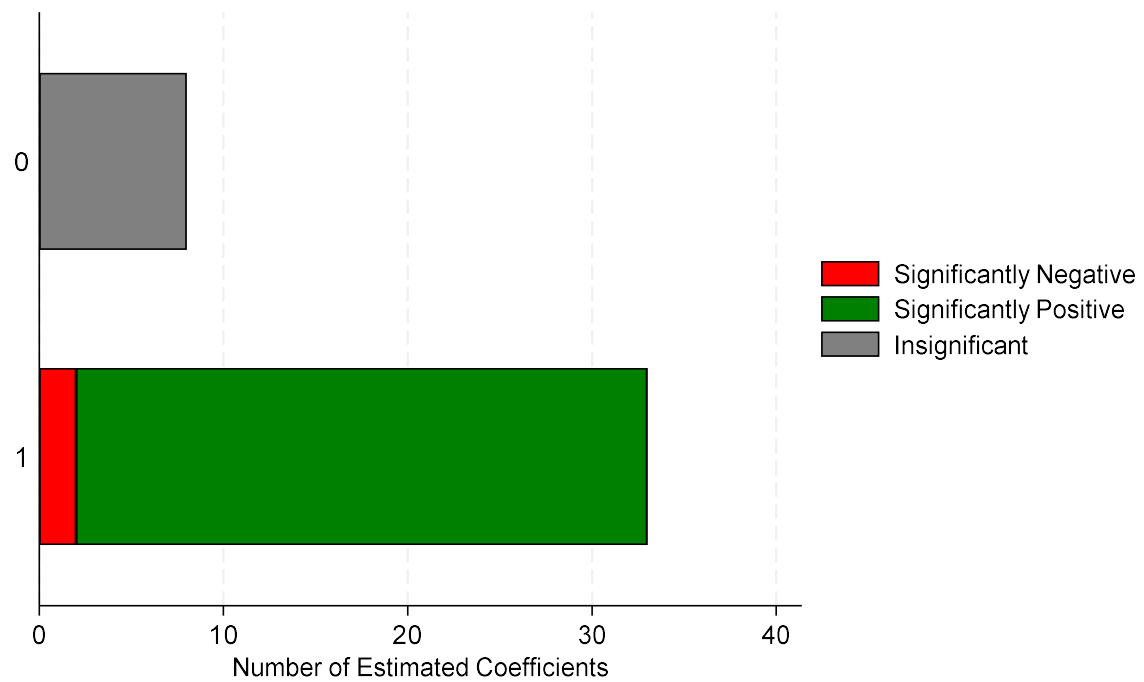


### Panel C: Effects of Entrepreneur's Business Experience on the Log Funding Amount

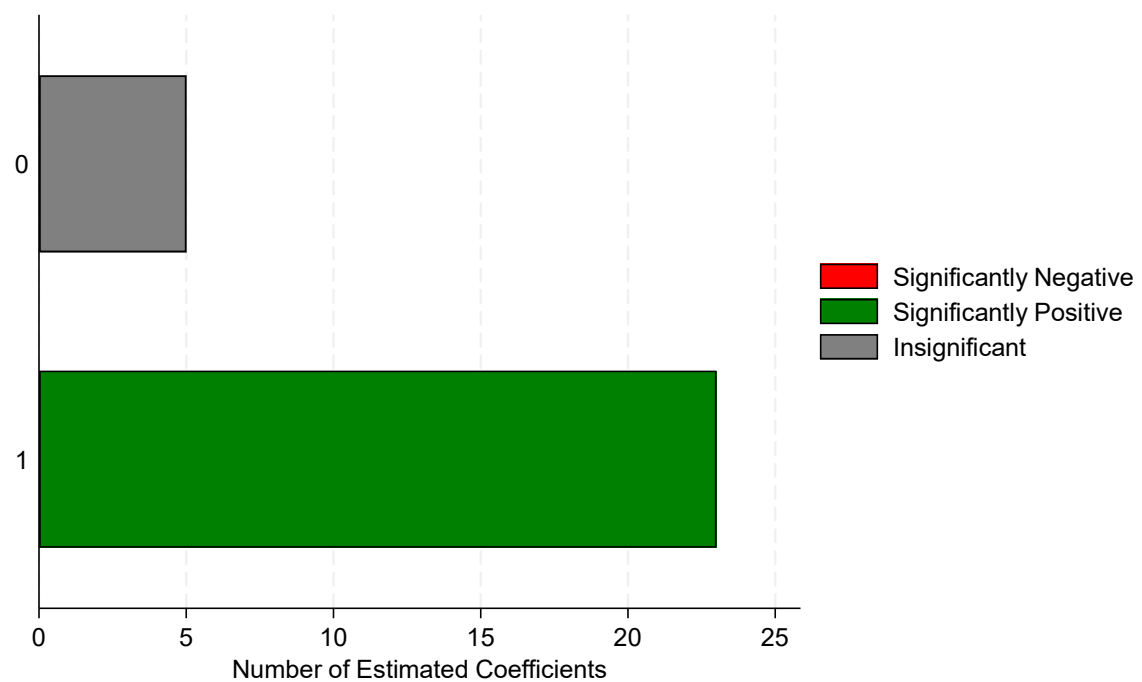


**Figure 15 Forest Plot of the Effects of Entrepreneur's Business Experience on Funding Success**

**Panel A: Coefficient Estimates of Campaign Description Length on Website (n = 41)**

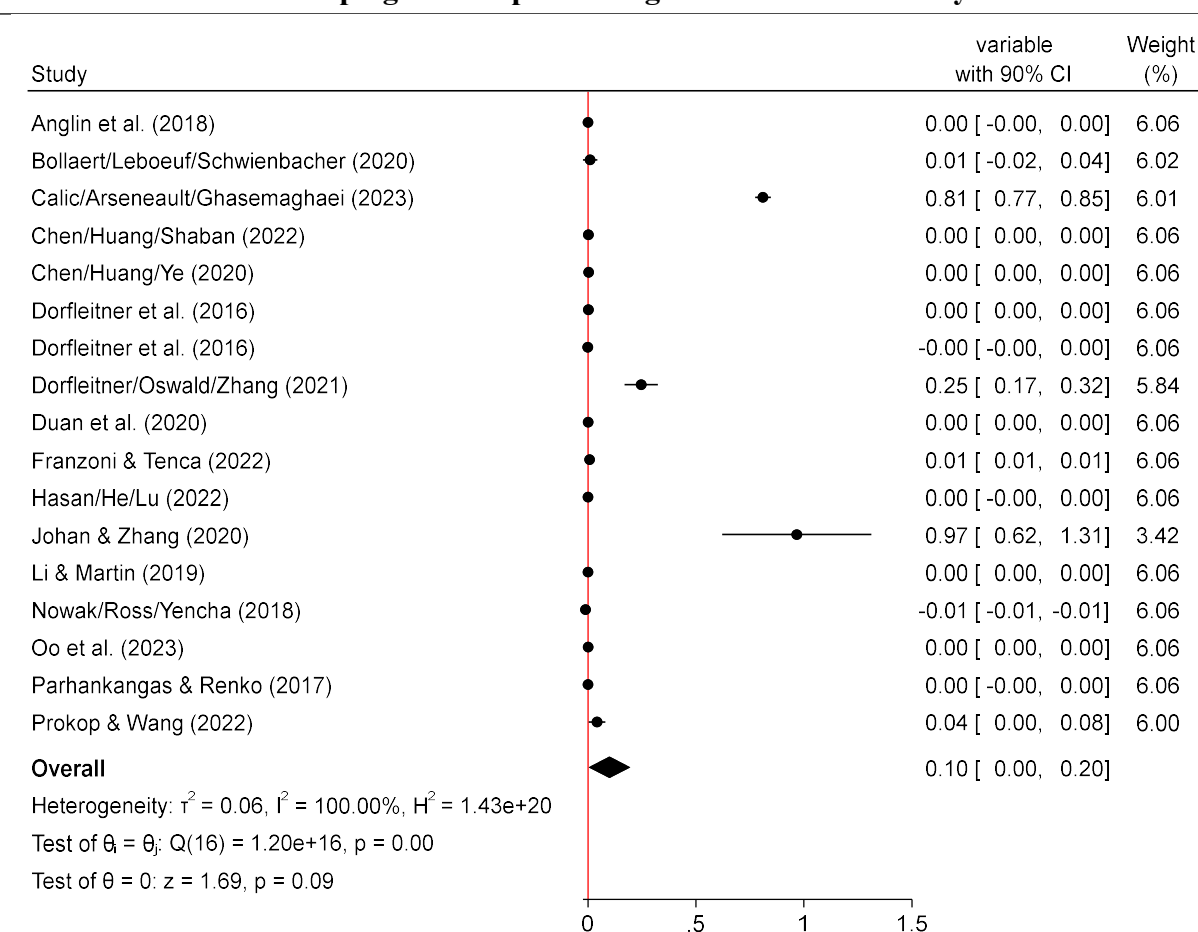


**Panel B: Coefficient Estimates of Log Campaign Description Length on Website (n = 28)**

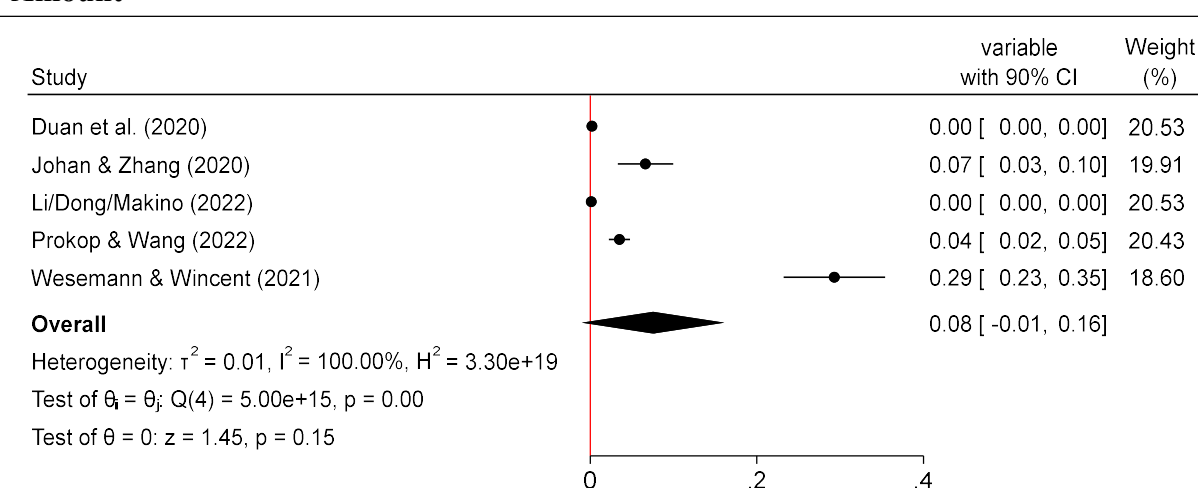


**Figure 16 Overview of Effects of Campaign Description Length on Website on Funding Success by Significance Level and Effect Direction**

### Panel A: Effects of Campaign Description Length on Website on Fully Funded



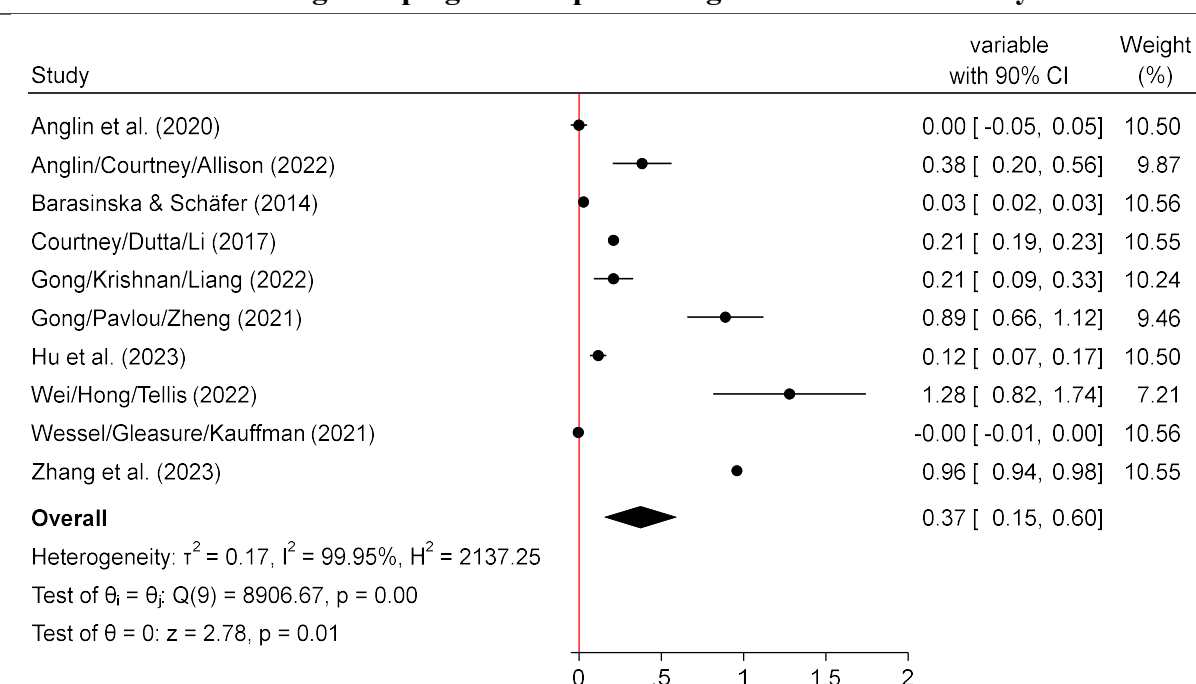
### Panel B: Effects of Campaign Description Length on Website on the Log Funding Amount



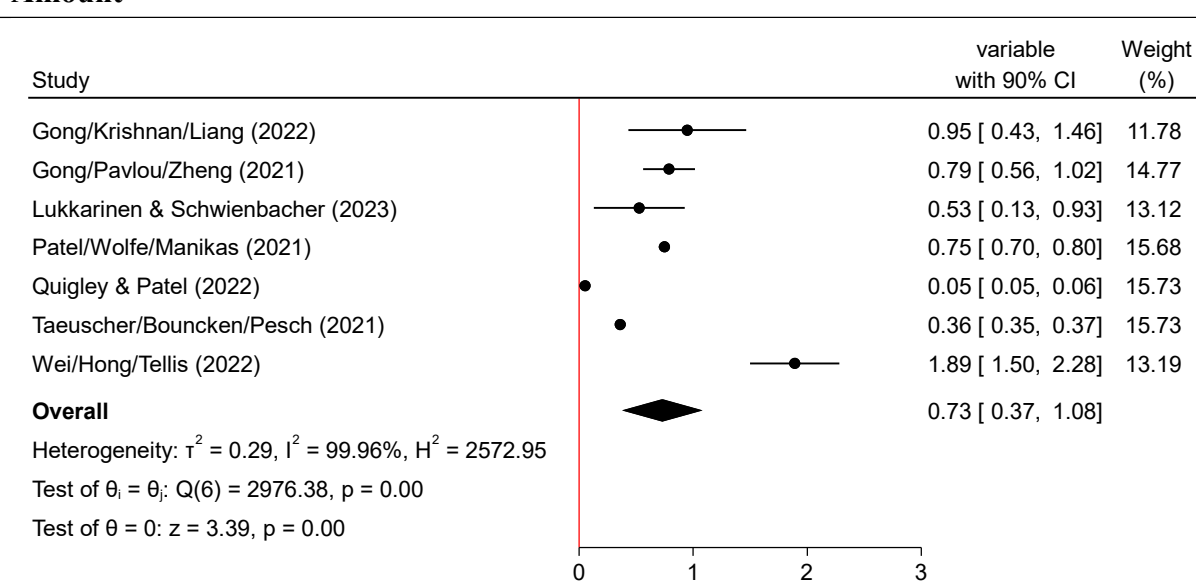
**Figure 17 Forest Plot of the Effects of Campaign Description Length on Website on Funding Success**



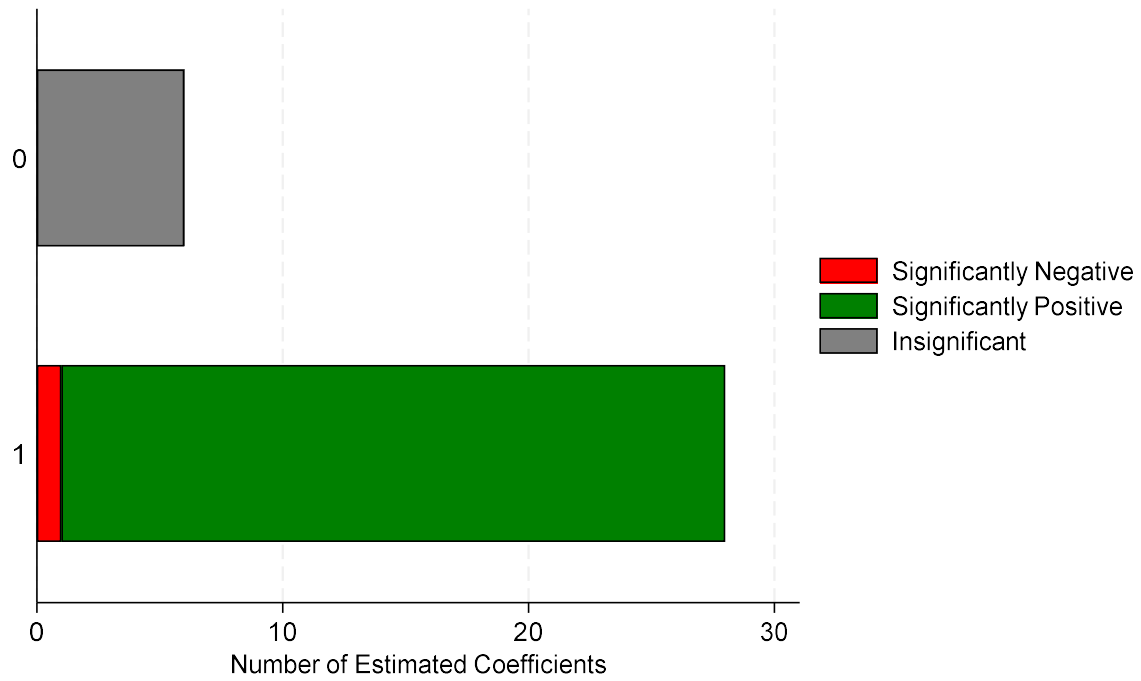
### Panel A: Effects of Log Campaign Description Length on Website on Fully Funded



### Panel B: Effects of Log Campaign Description Length on Website on the Log Funding Amount

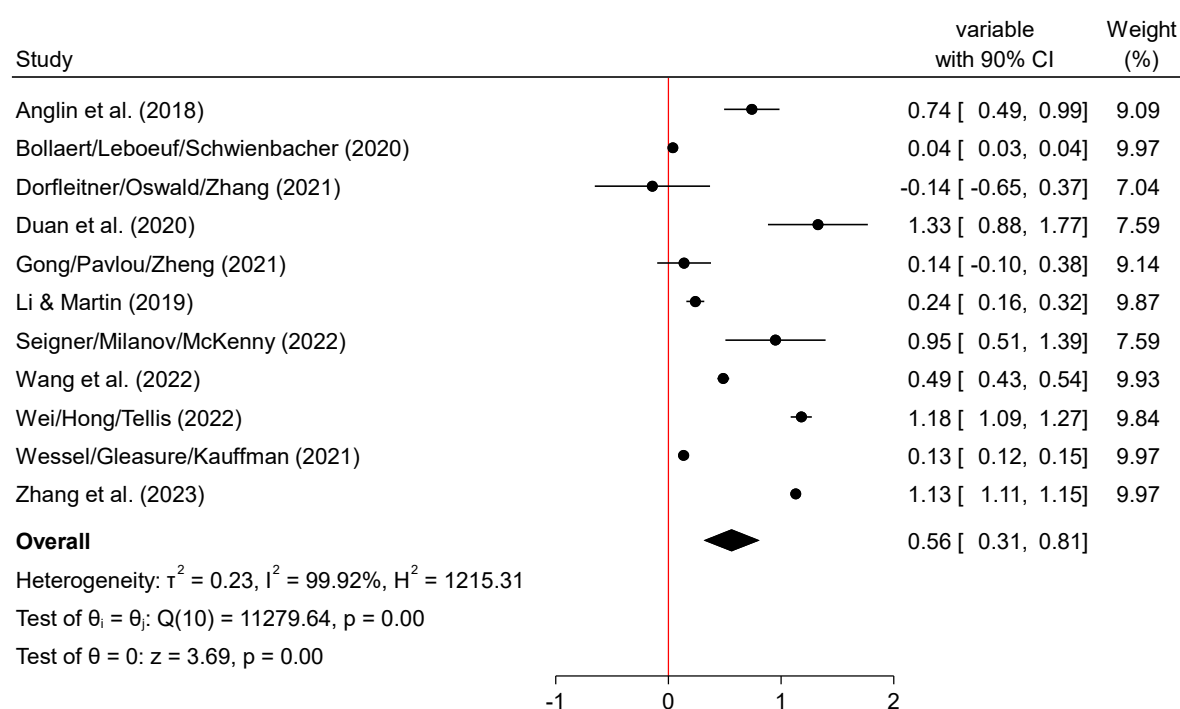


**Figure 18** Forest Plot of the Effects of Log Campaign Description Length on Website on Funding Success

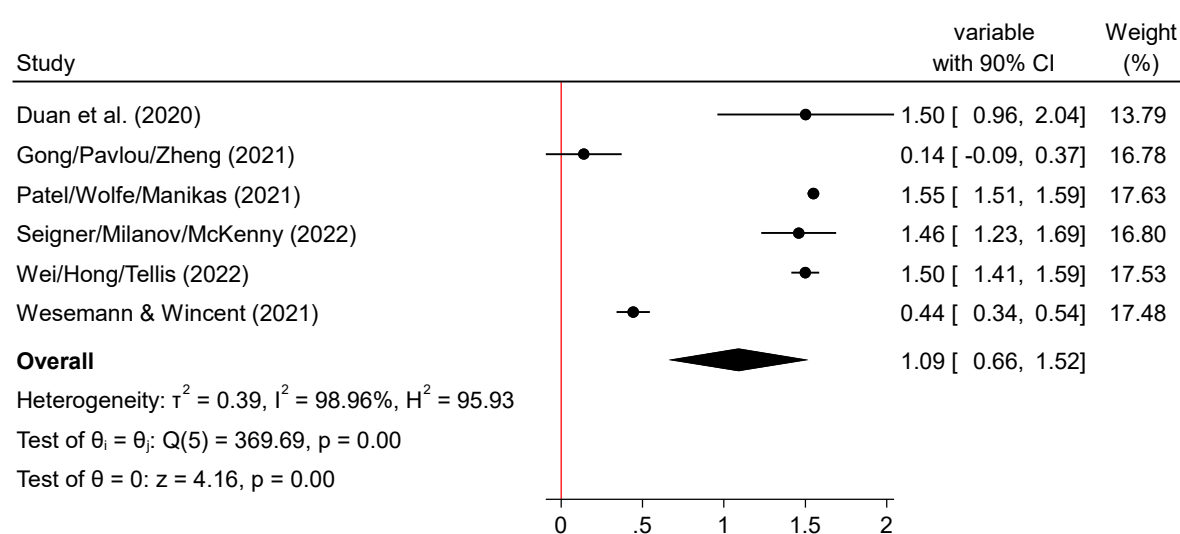


**Figure 19** Overview of Effects of Presence of Campaign Video on Website on Funding Success by Significance Level and Effect Direction

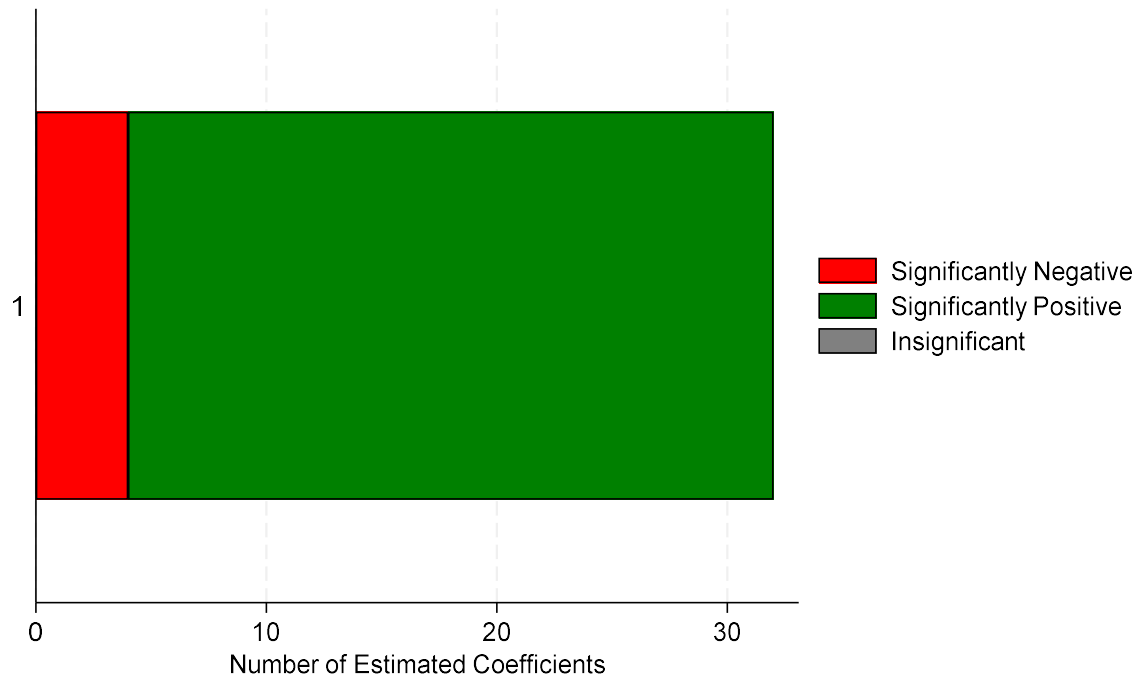
### Panel A: Effects of Presence of Campaign Video on Website on Fully Funded



### Panel B: Effects of Presence of Campaign Video on Website on the Log Funding Amount

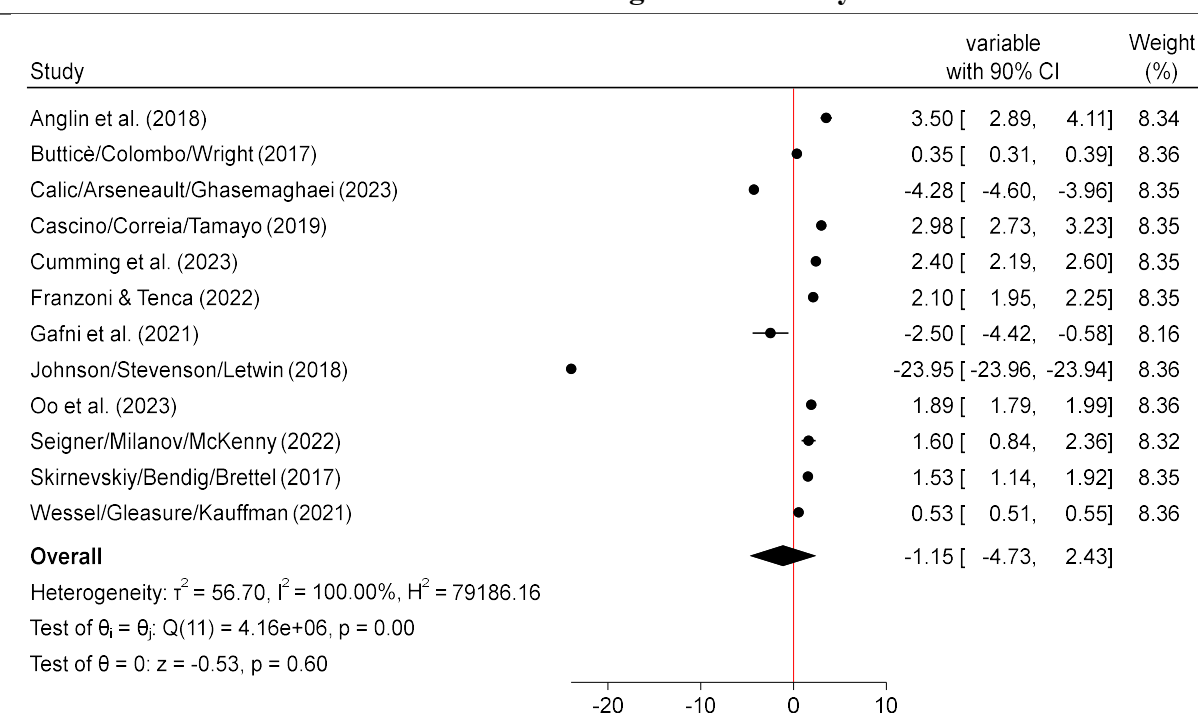


**Figure 20 Forest Plot of the Effects of Presence of Campaign Video on Website on Funding Success**

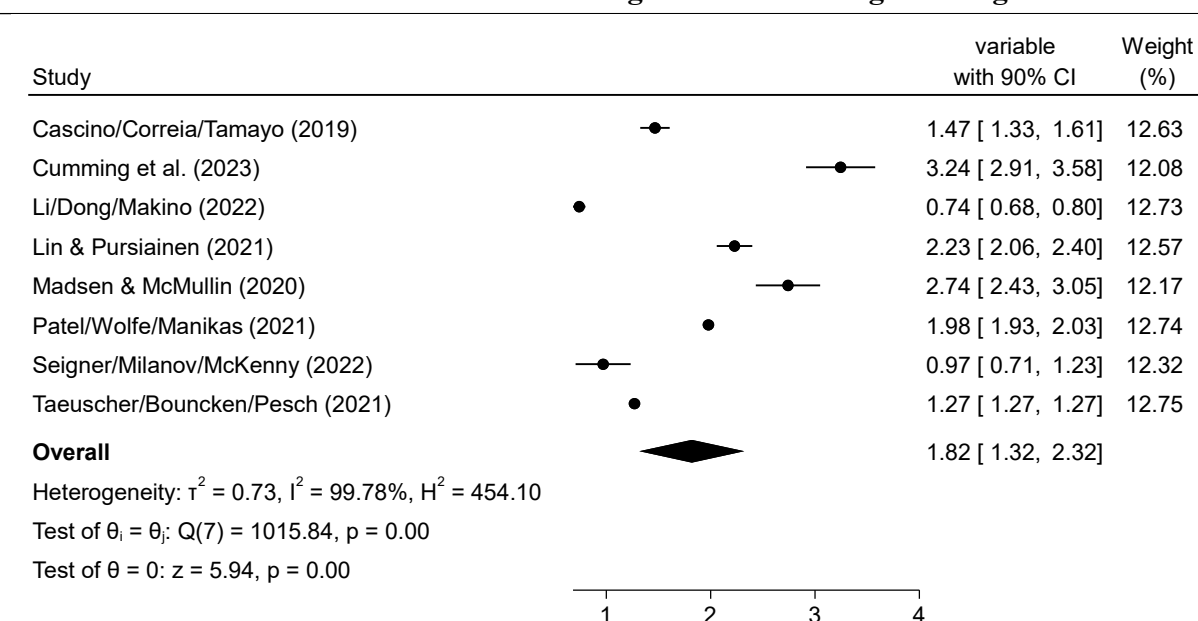


**Figure 21      Overview of Effects of Platform’s Staff Pick Designation on Funding Success by Significance Level and Effect Direction**

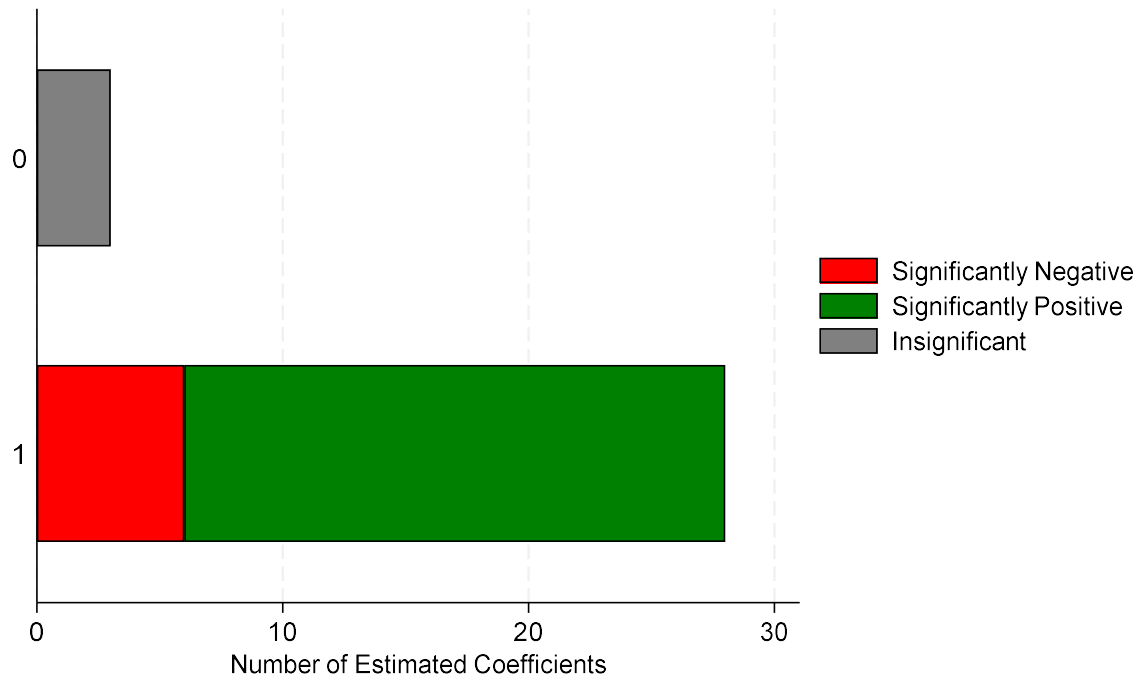
### Panel A: Effects of Platform's Staff Pick Designation on Fully Funded



### Panel B: Effects of Platform's Staff Pick Designation on the Log Funding Amount

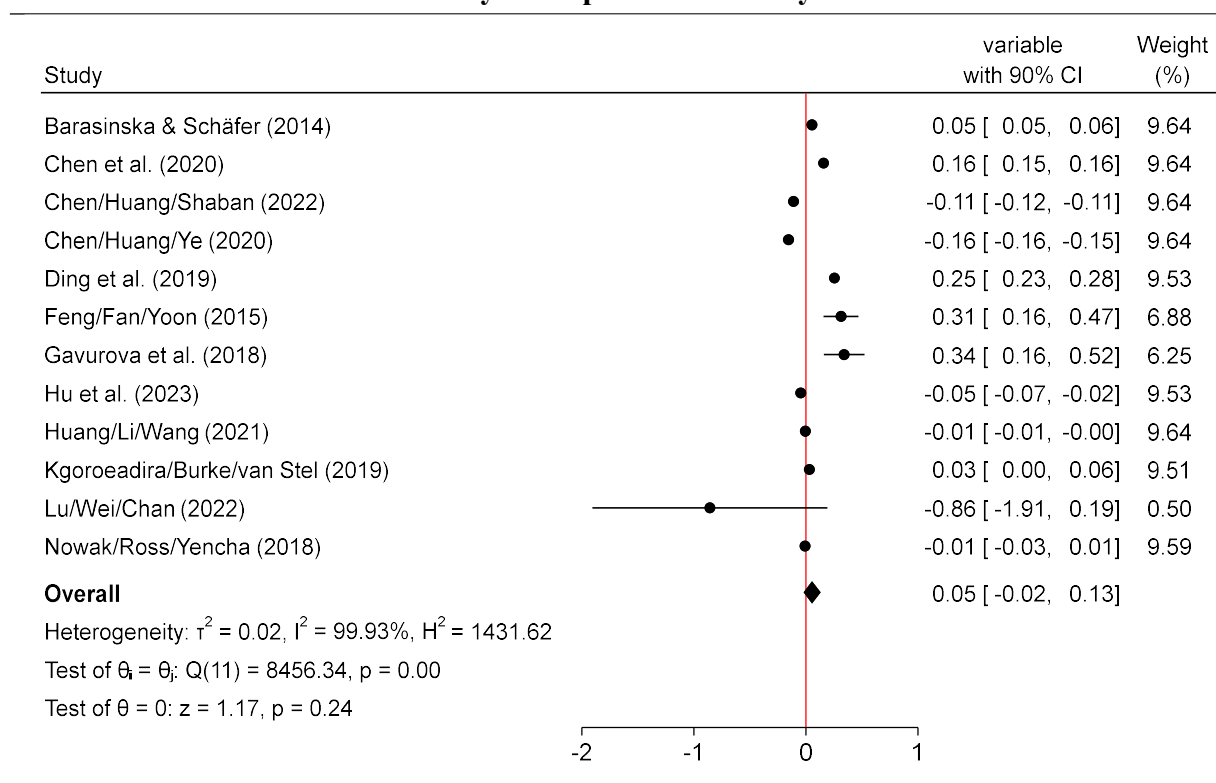


**Figure 22 Forest Plot of the Effects of Platform's Staff Pick Designation on Funding Success**

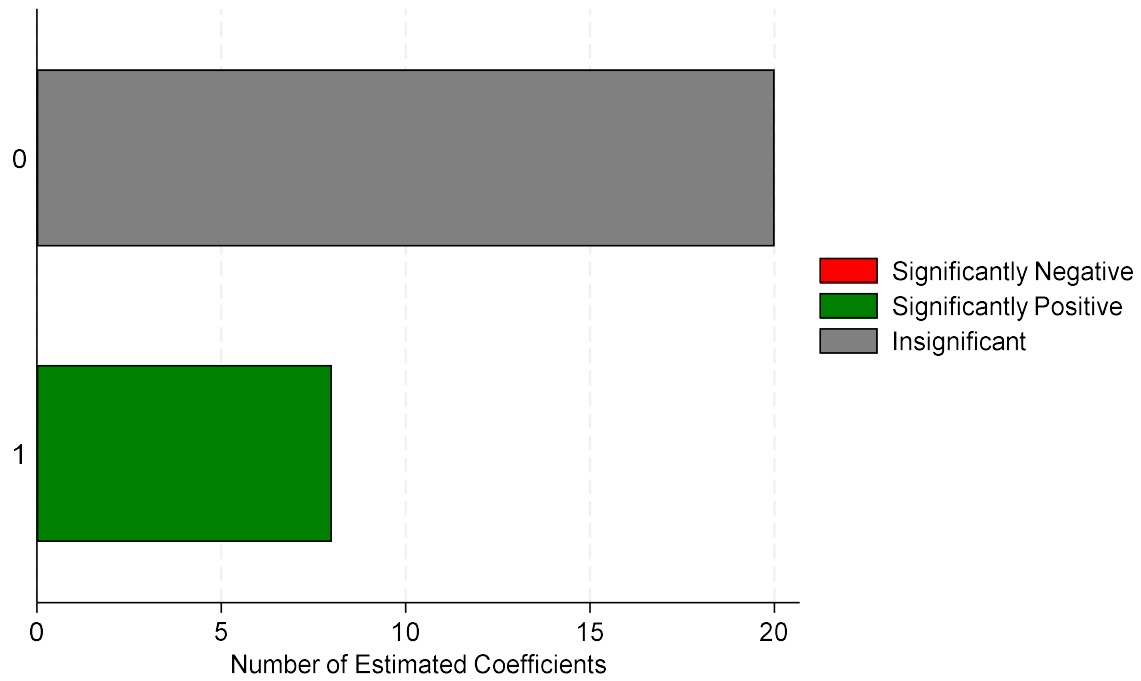


**Figure 23      Overview of Effects of Interest Rate Offered by Entrepreneur on Funding Success by Significance Level and Effect Direction**

## Effects of Interest Rate Offered by Entrepreneur on Fully Funded



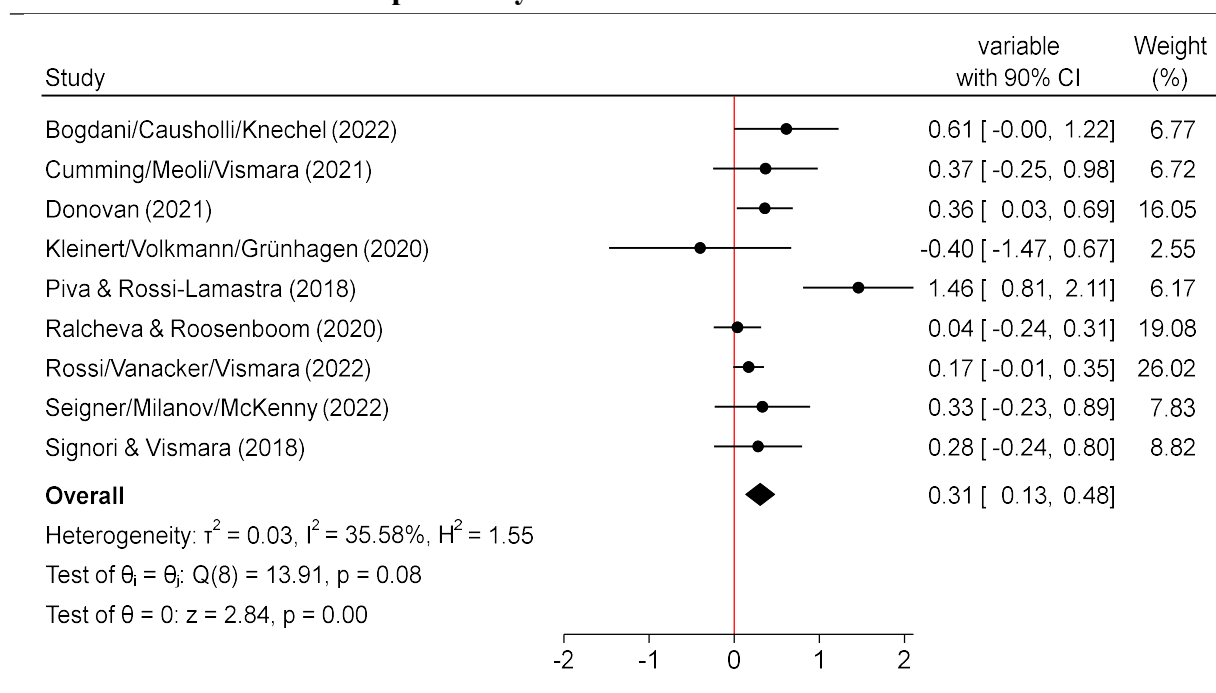
**Figure 24 Forest Plot of the Effects of Interest Rate Offered by Entrepreneur on Funding Success**



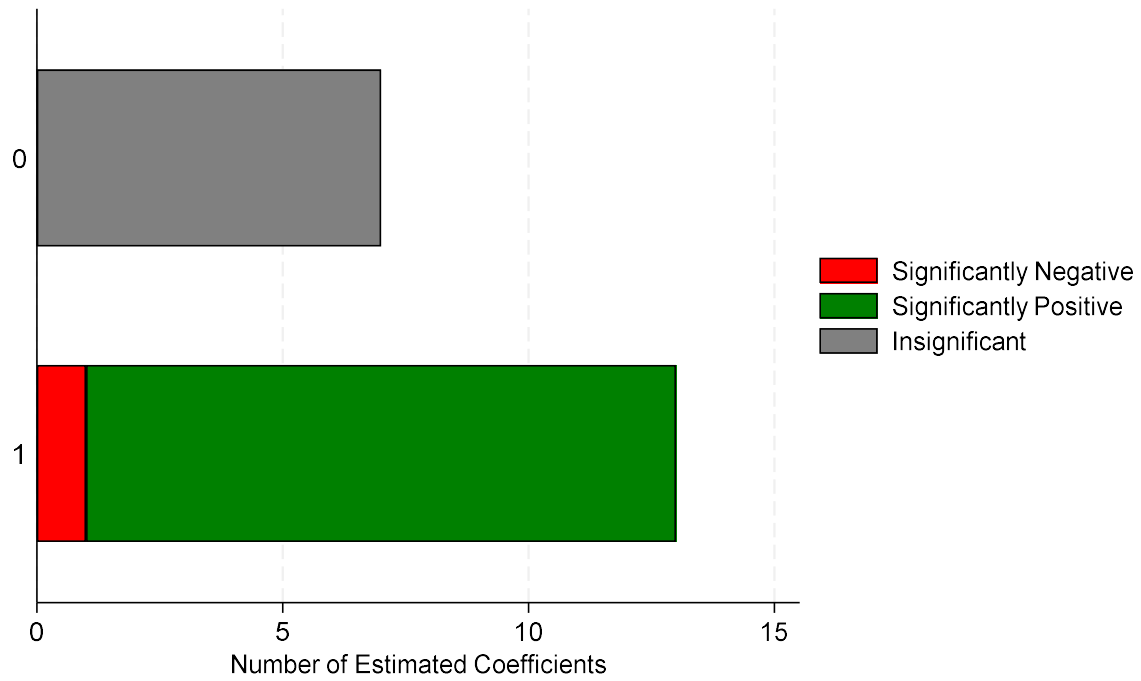
**Figure 25    Overview of Effects of Patent Ownership on Funding Success by Significance Level and Effect Direction**



## Effects of Patent Ownership on Fully Funded

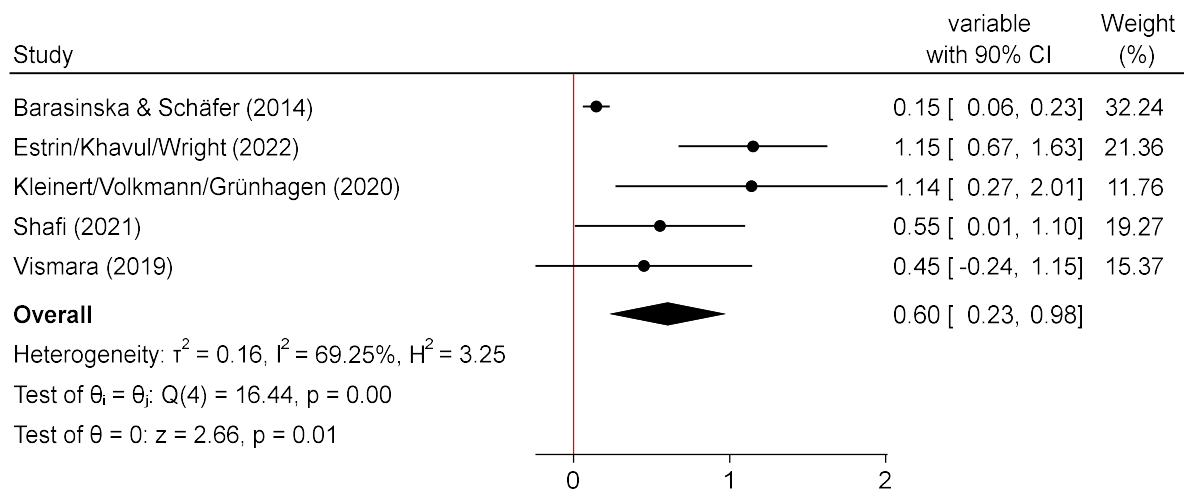


**Figure 26 Forest Plot of the Effects of Patent Ownership on Funding Success**

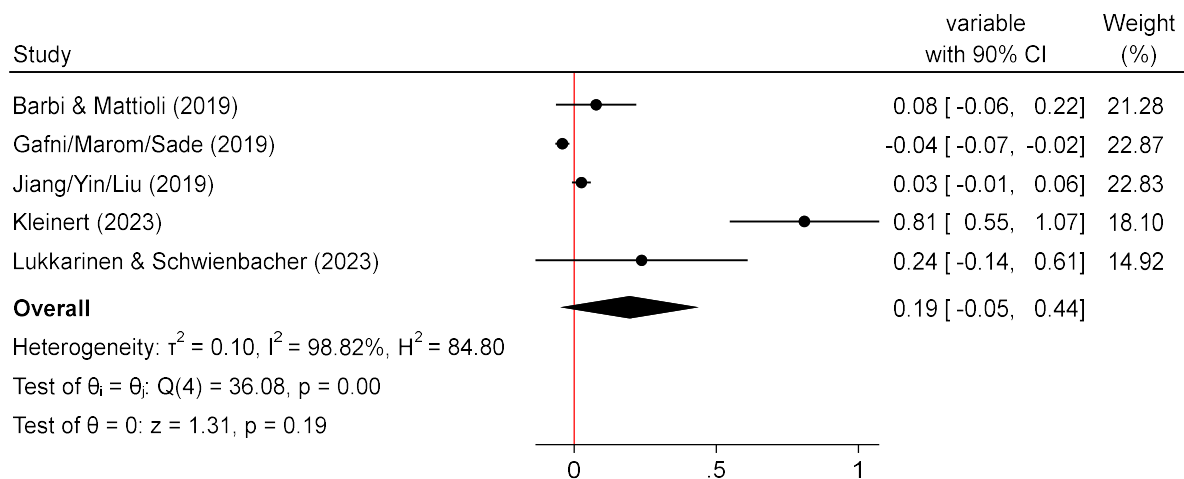


**Figure 27 Overview of Effects of Entrepreneur's Past Crowdfunding Success on Funding Success by Significance Level and Effect Direction**

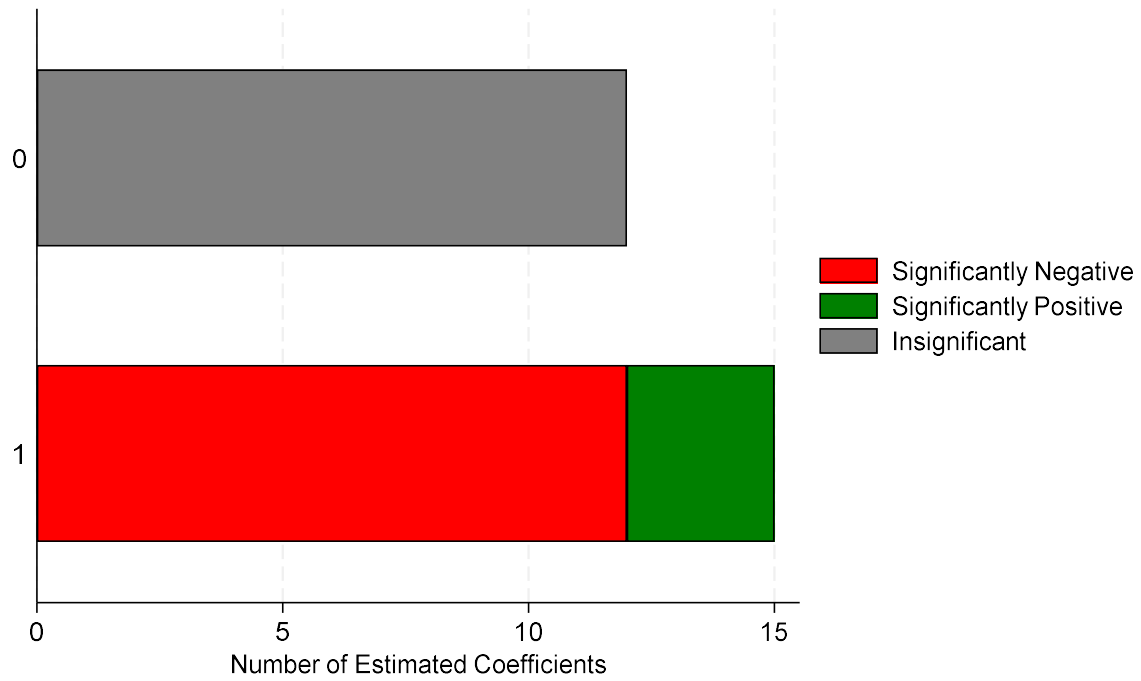
### Panel A: Effects of Entrepreneur's Past Crowdfunding Success on Fully Funded



### Panel B: Effects of Entrepreneur's Past Crowdfunding Success on the Log Number of Investments

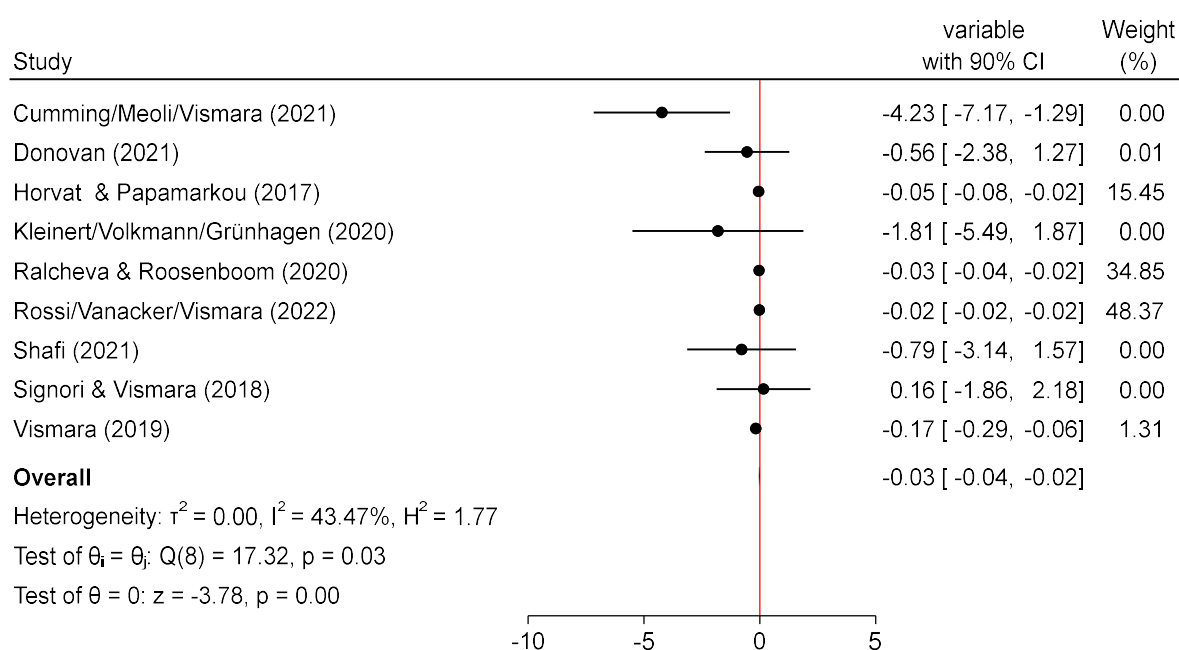


**Figure 28 Forest Plot of the Effects of Entrepreneur's Past Crowdfunding Success on Funding Success**

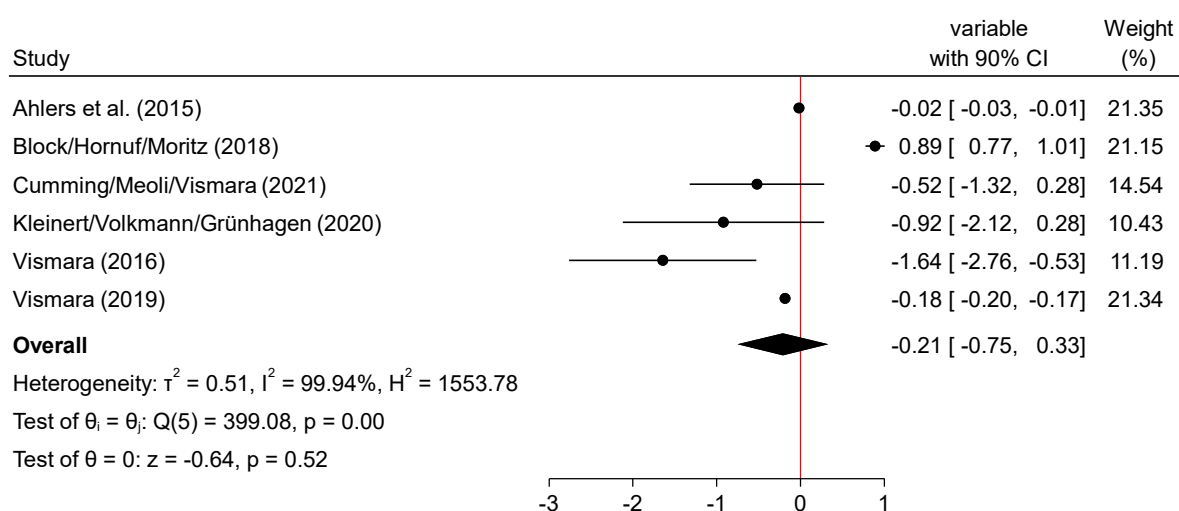


**Figure 29** Overview of Effects of Equity Share Offered by Entrepreneur on Funding Success by Significance Level and Effect Direction

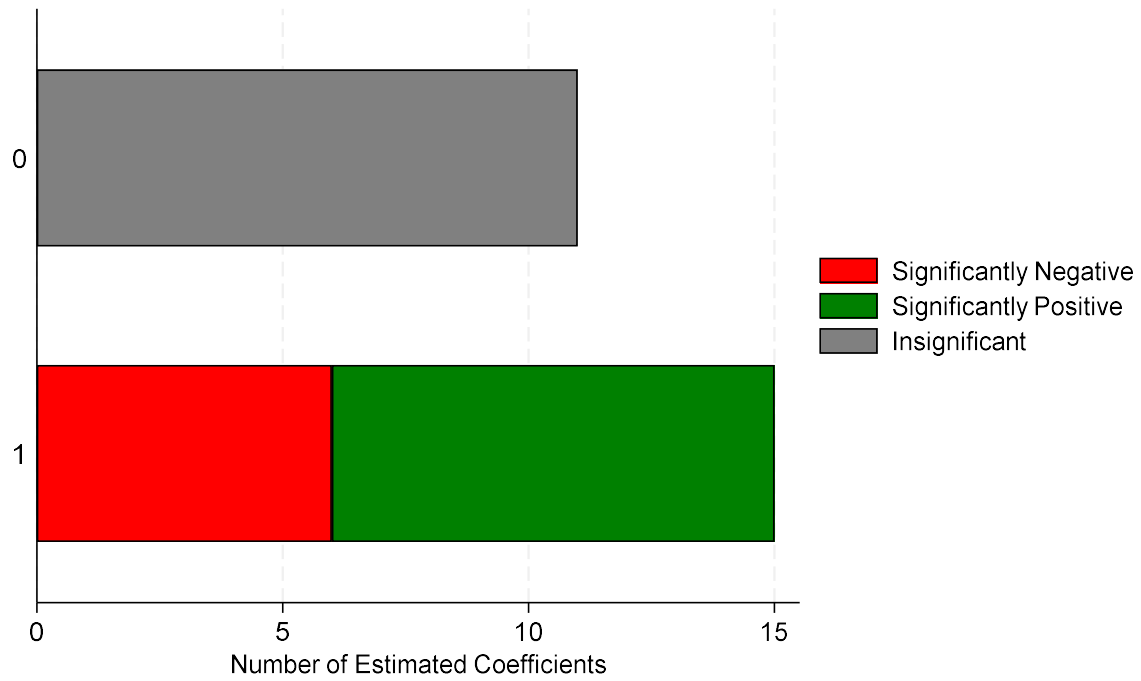
### Panel A: Effects of Equity Share Offered by Entrepreneur on Fully Funded



### Panel B: Effects of Equity Share Offered by Entrepreneur on the Number of Investments

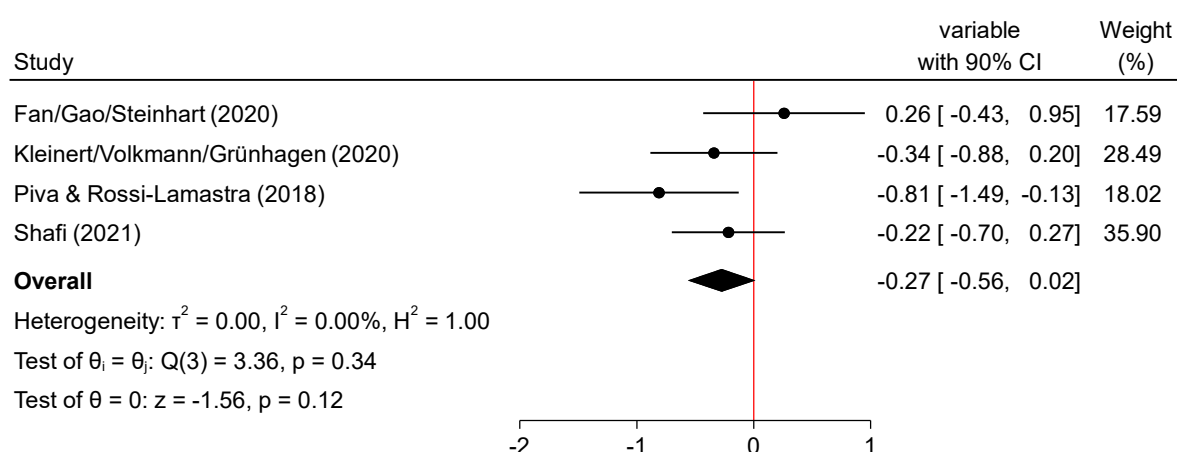


**Figure 30 Forest Plot of the Effects of Equity Share Offered by Entrepreneur on Funding Success**

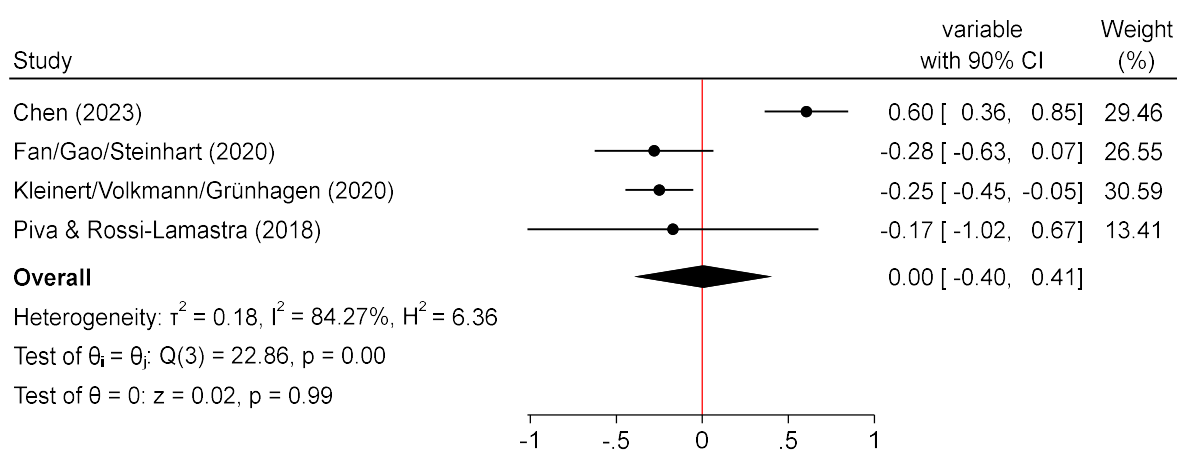


**Figure 31** Overview of Effects of Technology Sector Affiliation on Funding Success by Significance Level and Effect Direction

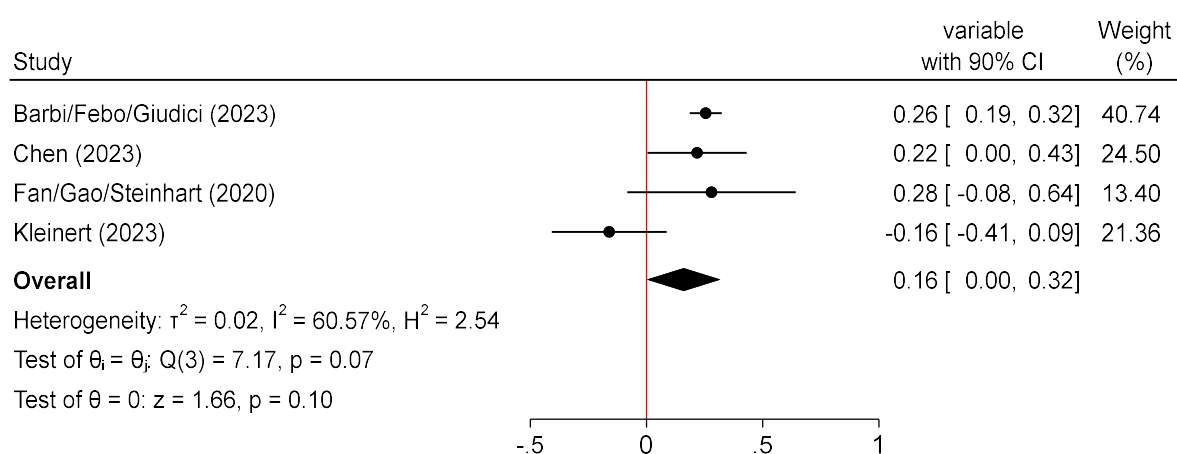
### Panel A: Effects of Technology Sector Affiliation on Fully Funded



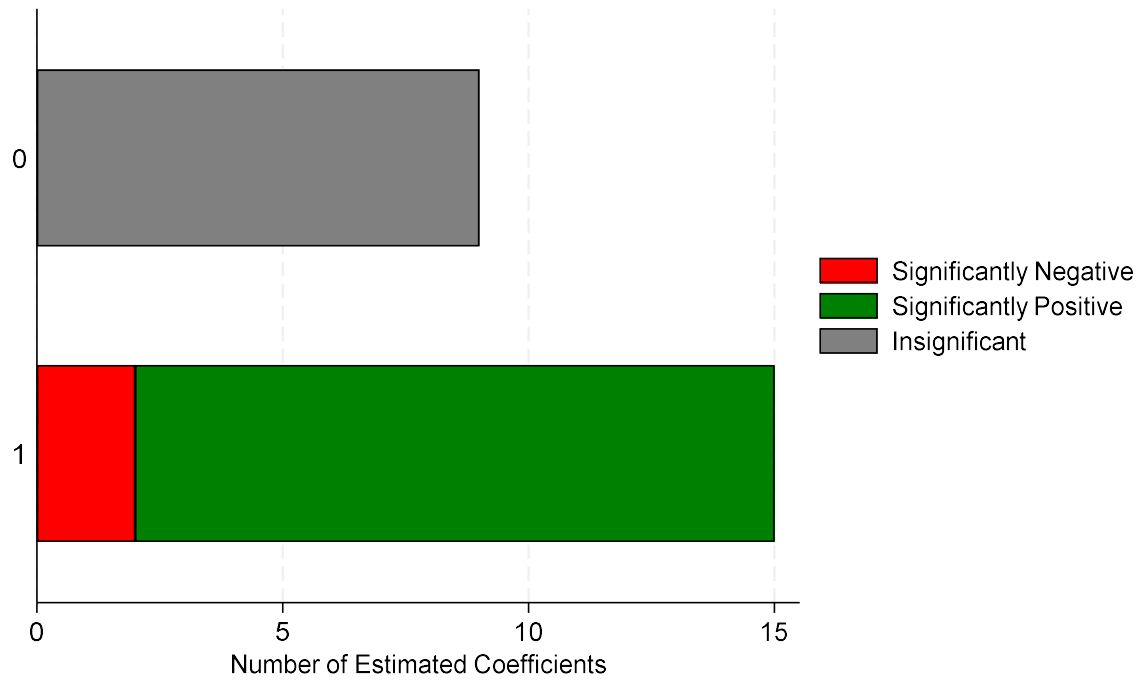
### Panel B: Effects of Technology Sector Affiliation on the Number of Investments



### Panel C: Effects of Technology Sector Affiliation on the Log Funding Amount



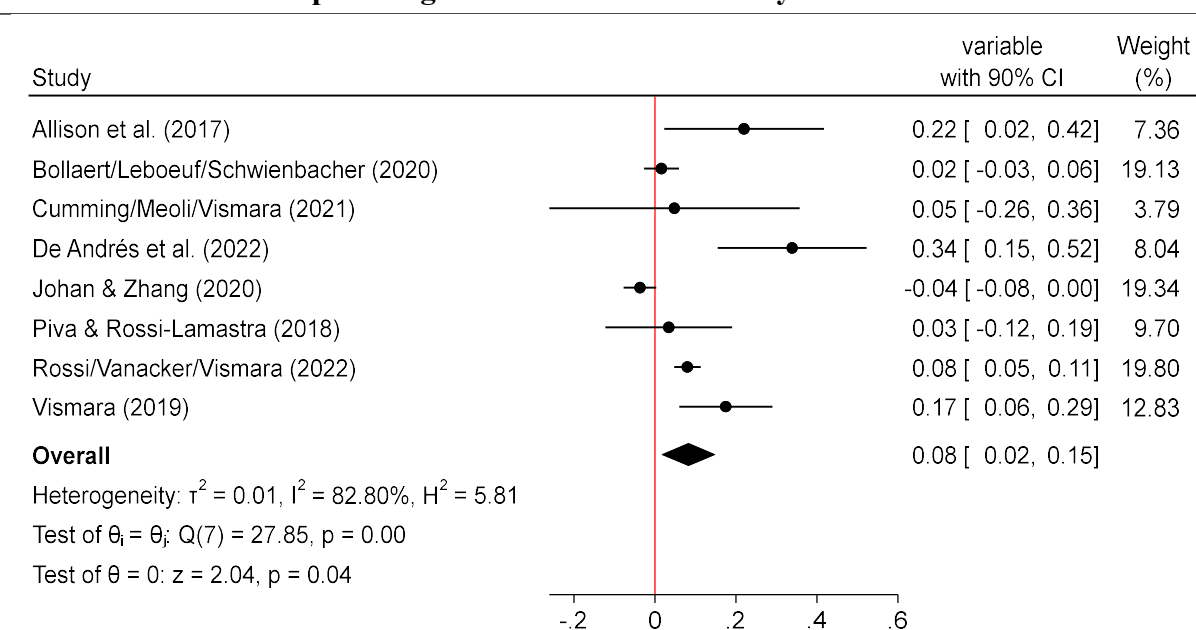
**Figure 32 Forest Plot of the Effects of Technology Sector Affiliation on Funding Success**



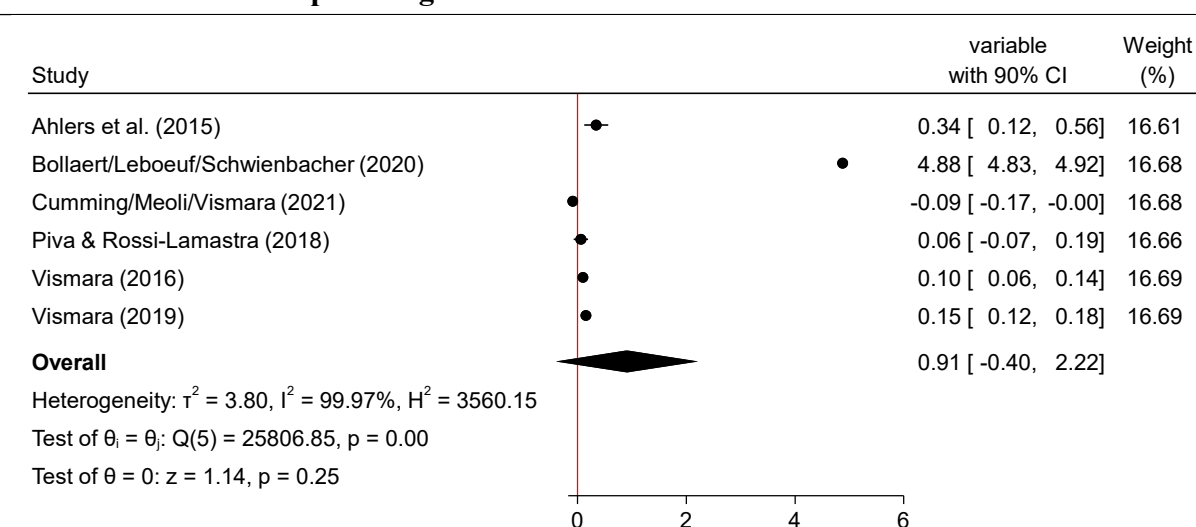
**Figure 33      Overview of Effects of Top-Management-Team Size on Funding Success by Significance Level and Effect Direction**



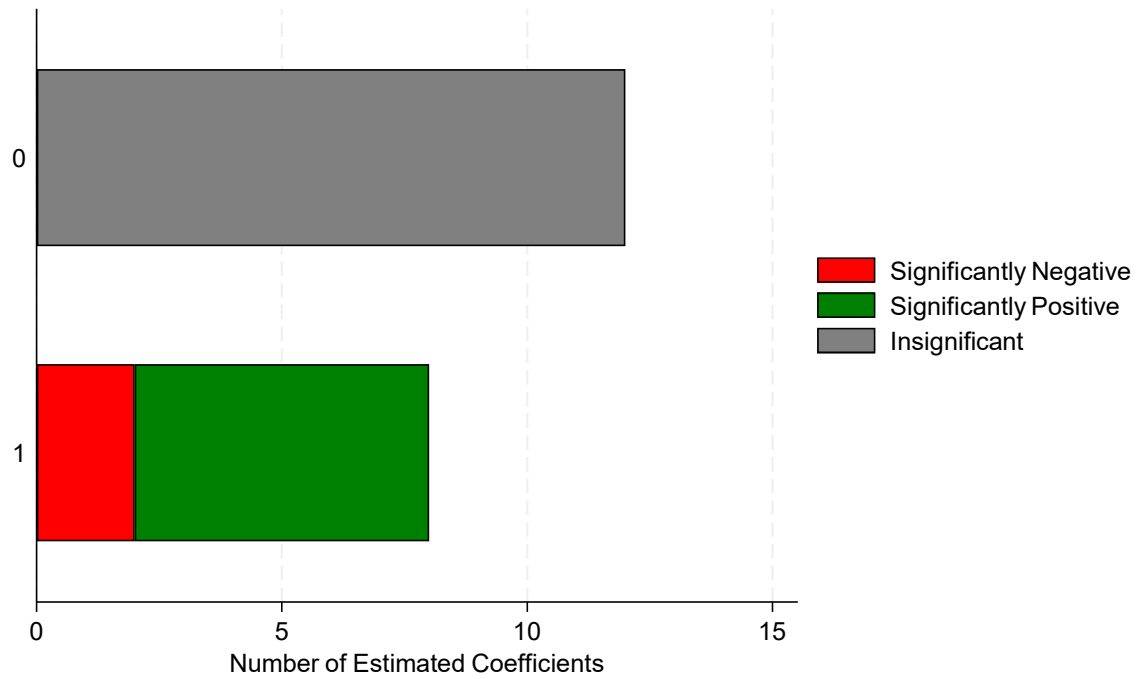
### Panel A: Effects of Top-Management-Team Size on Fully Funded



### Panel B: Effects of Top-Management-Team Size on the Number of Investments

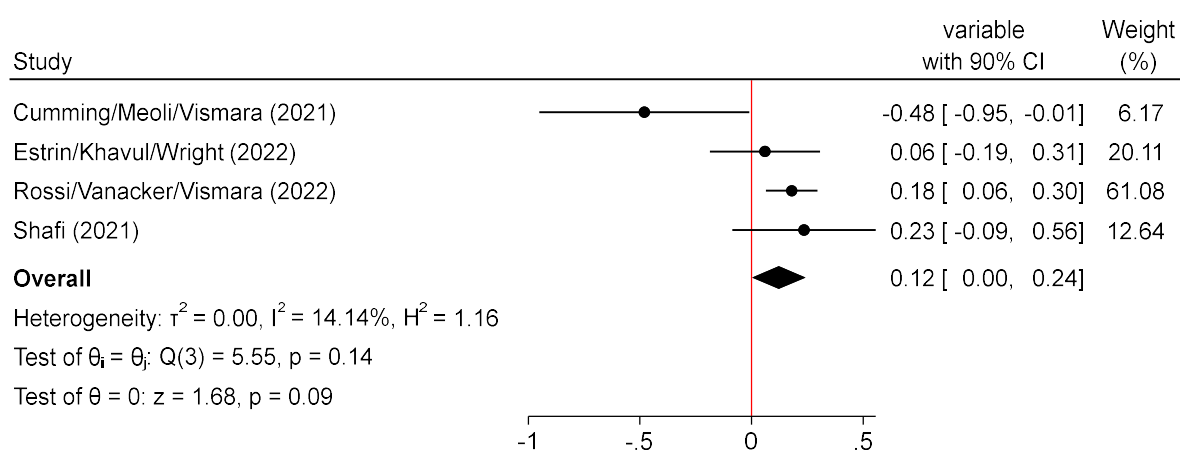


**Figure 34 Forest Plot of the Effects of Top-Management-Team Size on Funding Success**

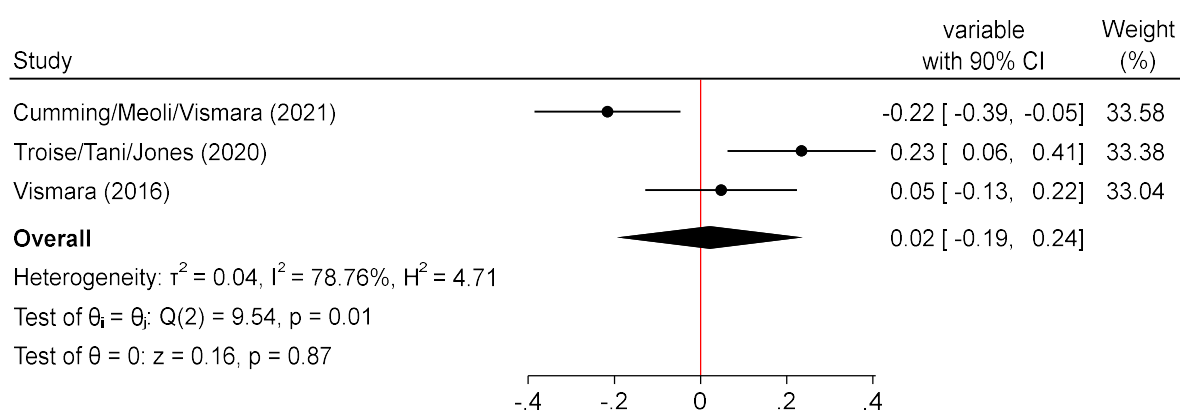


**Figure 35      Overview of Effects of Firm Location in Metropolitan Area on Funding Success by Significance Level and Effect Direction**

### Panel A: Effects of Firm Location in Metropolitan Area on Fully Funded



### Panel B: Effects of Firm Location in Metropolitan Area on the Number of Investments



**Figure 36 Forest Plot of the Effects of Firm Location in Metropolitan Area on Funding Success**