Yes Today, No Tomorrow:
Exploration of Deal Cancellations in Televised Pitch Competitions

Livia Boerner
Paderborn University

Bernd Frick
Paderborn University

Thomas Fritz
Aachen University of Applied Sciences

Early-stage entrepreneurs exert significant efforts to secure deals with angel investors, but many are canceled during the due diligence process. Drawing upon interpersonal persuasion theory and information asymmetries in the pitch context, we investigate deal cancellations as instances of biased communication and strategic misrepresentation. We analyze a novel dataset comprising N = 1,334 pitches from the British Dragons' Den and the German Die Höhle der Löwen format. Our examination delves into differences related to gender and team size of the involved parties, format, and level of financial risk. We find a bias against female investors, higher cancellation rates for more costly deals, and a country effect.

Keywords: business angels, information asymmetry, due diligence, overconfidence, gender differences

INTRODUCTION

Televised startup pitch competitions such as Shark Tank and Dragons' Den are popular platforms where early-stage startups present their ventures to a panel of angel investors seeking funding in exchange for equity. These competitions bear significant economic and societal implications, as vital sources of capital, publicity, and strategic support for startups. Simultaneously, they play a crucial role in shaping the public perception of the startup ecosystem, influencing expectations for aspiring entrepreneurs. Moreover, the unique setting of pitch competitions allows academic researchers to observe the interaction between entrepreneurs and investors, offering insights into their decision-making. The televised format provides a unique opportunity to explore behavior and decisions that usually occur behind closed doors.

While securing a handshake deal through a pitch competition indicates success for an early-stage startup, it is crucial to note that these agreements are not legally binding for any involved parties and typically undergo a thorough due diligence process after production. A significant number of these deals face cancellation during this process. Reports indicate that in specific seasons of the US format Shark Tank, approximately 50% of deals are not completed (Prince, 2023), and similar rates are observed in non-televised startup pitch competitions. As a result, these deal cancellations can decrease the credibility of

pitch competitions in the eyes of the audience and at the same time reduce the motivation of prospective entrepreneurs to pitch. Despite their high incidence and repercussions for entrepreneurs and investors, post-handshake deal cancellations are underexplored by researchers and mostly treated as a black box.

This study aims to fill this gap by empirically exploring deal cancellations, recognizing the role of information asymmetries and the reliance on the integrity of both parties in the pitch setting. Drawing upon interpersonal persuasion and deception theory, canceled deals may indicate discrepancies in the entrepreneur's communication of a venture's legitimacy, attributed to optimism and overconfidence, or even active deception, termed legitimacy lies. If these inaccuracies come to light during the due diligence, angel investors are likely to withdraw their investment offer.

Despite the limited public disclosure of specific reasons for deal cancellations, this study systematically examines the characteristics and commonalities of cancelled deals. Using a unique dataset of 1,334 pitches from the British format Dragons' Den and the German format Die Höhle der Löwen, we identify post-handshake deal outcomes through structured online searches. Our findings reveal significant differences between female and male investors, British and German formats, and the level of risk associated with the invested amount of money. This research contributes novel insights to both the theoretical literature and entrepreneurial finance practice.

THEORETICAL BACKGROUND

The Dynamic Setting of Angel Investor Decision-Making

Uncertainty and Information Asymmetries in the Pitch Context

Angel investors explore investment opportunities through diverse avenues, including formal applications, informal and private meetings, and pitch competitions (Pollack et al., 2012). The entrepreneur's pitch plays a pivotal role in the startup financing process, based on which the angel investors decide which startup to select for due diligence. Depending on the pre-selection of the startups that get to pitch in front of the angel, selectivity based on the pitch is high, with reported success rates as low as 7% (Balachandra, 2020). Importantly, the pitch decision setting is characterized by uncertainty and considerable information asymmetries between the angel investor and the entrepreneur.

The inherent uncertainty pertains to the future performance of the venture, constituting a risk for all parties involved. Optimism and overconfidence are highly prevalent and even deemed a prerequisite for action on both the entrepreneur and investor side (Graves & Ringuest, 2018; Kraft et al., 2022). Furthermore, angel investors face additional uncertainty due to limited knowledge about the venture compared to the entrepreneur.

Information asymmetry is a well-established construct in the economic and psychological literature on interpersonal persuasion and strongly shapes the dynamics in the startup pitch context (Courtney et al., 2017; Glücksman, 2020; Harrison & Mason, 2017; Venugopal, 2017). Given their background, the entrepreneur knows much more about their business' potential, operability, and challenges than the angel investor. While some investors may have a high level of expertise and can evaluate the potential market risk, they do not have the same level of knowledge about the specific business (Harrison & Mason, 2017). Hence, they can only choose to trust what the entrepreneur tells them about the business in the startup pitch.

Drawing on interpersonal persuasion theory, it can be assumed that entrepreneurs and angel investors have different objectives in the pitch. Entrepreneurs seek funding from angel investors to grow their business, which has shown to be highly beneficial for their future performance (Blaseg & Hornuf, 2024; Smith & Viceisza, 2018; Sohl, 2020). They are thus highly motivated to present positive signals and claims emphasizing their legitimacy (Fisher et al., 2017).

On the other hand, Angel investors decide to invest in prospect of potentially large financial returns, but must also accept the risk of completely losing their invested capital (Sohl, 2020; Venugopal, 2017). Hence, entrepreneurs are interested in presenting their business as a highly attractive opportunity, while angel investors must evaluate it as accurately as possible. They must navigate the challenge of high agency risk when entrepreneurs have critical information that the investors lack (Carpentier & Suret, 2014). Issues arise when entrepreneurs prioritize their own interest at the expense of outside capital providers.

The Temptation and Consequences of Strategic Misrepresentation in the Pitch Context

In their pitches, entrepreneurs use signals and active statements to portray their business positively (Garud et al., 2014; Parhankangas & Ehrlich, 2014; Pollack et al., 2012). Statements that intend to persuade potential investors of their venture's legitimacy are termed legitimacy claims, and in the case of exaggeration and active misrepresentation, legitimacy lies (Rutherford et al., 2009). Exaggeration is shown to be highly prevalent in startup pitches, and is to be distinguished from naïve optimism and general overconfidence (Cottle & Anderson, 2020). These behaviors differ from exaggeration in the "knowableness" of the information and regarding the period that is referenced in the statement (Cottle & Anderson, 2020). Optimistic claims refer to the entrepreneurs' subjective beliefs about the ventures' performance in the future. Legitimacy lies, in contrast, occur when statements about relevant aspects of the business are made that represent it as being better than it is. This also includes excessive predictions and the deliberate withholding of information that eventually induces stakeholders to correct a mistaken assumption. Legitimacy lies can, in theory, be verified and often surface as a subject of the due diligence process.

Prior research suggests that managerial opportunism and the propensity to tell legitimacy lies is particularly strong for early-stage entrepreneurs (Cottle & Anderson, 2020; Garud et al., 2014; Rottenburger & Kaufmann, 2020; Rutherford et al., 2009; Theoharakis et al., 2021). While emphasizing that entrepreneurs are not accused of being maliciously deceptive, this work operates under the assumption that they are tempted to misrepresent facts to increase their legitimacy under pressure. They face the challenge of acquiring essential financial resources based on the liabilities of newness and smallness (Rottenburger & Kaufmann, 2020). Financial stress and the difficulty in accurately assessing venture legitimacy for outside parties enhances the temptation to engage in intentional misrepresentation (Theoharakis et al., 2021).

Recognizing this dynamic and the agency risk in the pitch context, angel investors prioritize perceived trustworthiness, making it a critical determinant in working with early-stage entrepreneurs (Lefebvre et al., 2022; Maxwell & Lévesque, 2014). They make inferences about the entrepreneurs' trustworthiness based on their first impression in the pitch and the personal characteristics of each founder (Carpentier & Suret, 2015). Accordingly, analyses of pitches from the startup competitions *Shark Tank* and *Dragons' Den* indicate higher propensity for funding when entrepreneurs actively employ trust-building behaviors (Maxwell & Lévesque, 2014) and send legitimacy signals (Pollack et al., 2012).

Remarkably, some researchers argue that the occurrence of legitimacy results in higher capital costsor entrepreneurs because angel investors adjust their valuation to the higher risk premium (Douglas et al., 2014; Rutherford et al., 2009). If these costs, whether entrepreneurs make accurate statements or not, is factored in by investors, entrepreneurs may feel like they are expected to lie, or at least exaggerate their legitimacy to some extent. One way or another, exaggerated claims and projective stories that are told in the pitch serve as the source of future disappointments, resulting in legitimacy loss, impairment of the relationship, and potential cancellation of investment deals (Garud et al., 2014; Pollack & Bosse, 2014). Thus, we interpret deal cancellations as instances where issues arise during due diligence linked to exaggerated legitimacy claims. We empirically explore their occurrence as well as the characteristics of the deal, entrepreneurs, and angel investors.

Post-Handshake Deal Cancellation in Televised Startup Pitch Competitions

Significance of Deals, Due Diligence Process, and Occurrence of Deal Cancellations

Televised startup pitch competitions, like *Shark Tank* and *Dragons' Den*, serve as critical global funding sources for early-stage startups(Blaseg & Hornuf, 2024; Robinson & Viceisza, 2021; Smith & Viceisza, 2018). The situation is virtually the same for all: Early-stage startups apply to pitch in front of a panel of expert angel investors, seeking funding and strategic support in exchange for equity in their business. The pitch is followed by an interaction in which investors ask questions and aim to better understand the value and risk of the opportunity. Ultimately, they either reject the proposal or offer to make a deal with the entrepreneurs, which is often substantiated by a handshake. Importantly, these handshake deals are not legally binding for either party. They are informal agreements to pursue a deal, rooted in the

angel investors' explicit "intent-to-fund", and are subject to a thorough due diligence before becoming final commitments (Maxwell, 2011; Prince, 2023; Smith & Viceisza, 2018).

The due diligence process, integral to deals in private equity and entrepreneurial finance (Cleyn & Braet, 2007), involves quantitative analysis and a fact-based approach of investors and their teams to assess all aspects of the venture and determine an objective valuation. It aims to correct information asymmetries by scrutinizing financial, legal, and team structures and adding a thorough analysis of the respective market (Cleyn & Braet, 2007). Depending on the prior transparency and entrepreneurs' claims in the pitch, investors may encounter new information, risks, and challenges that were not evident during the first interaction. If new information emerges during this process, it may challenge the initial decision to invest, leading to deal reconsideration (Cleyn & Braet, 2007; van Osnabrugge & Robinson, 2000).

Post-handshake deal cancellations are not uncommon in the setting of televised startup pitch competitions such as Shark Tank or Dragons' Den. Production companies are not involved in the business that follows the pitch (Smith & Viceisza, 2018), allowing either party to retract from a deal if an agreements cannot be reached. Occasional media reports indicate significant deal cancellation rates, varying strongly by country and season, with numbers ranging from 20 percent up to 50 percent (Canal, 2016; Frankel, 2021; Ignor, 2021; O'Sullivan, 2021; Poole, 2023; Smith & Viceisza, 2018; Williams, 2015).

Reported Reasons for Post-Handshake Deal Cancellation

Despite considerable public interest, reasons for post-handshake deal cancellations usually remain undisclosed. Prior research so far failed to identify why exactly deals were cancelled after production (Blaseg & Hornuf, 2024). General statements citing "strategic differences" or "disagreements over direction" as the reason for cancellation prevail (Ignor, 2021; O'Sullivan, 2021), possibly due to non-disclosure agreements signed by angel investors.

However, repeated interviews with angel investors suggest that they usually realize issues with the startup or the entrepreneur, which were not evident before making the deal. Specifically, a British angel investor stated that around 90% of failed deals do so because entrepreneurs provided inaccurate information in the initial interaction (O'Sullivan, 2021). This is in accordance with another source indicating that "the main reason why deals […] fall through is usually that the entrepreneur was not completely honest during their pitch" (Prince, 2023). An American angel investor stresses that in their experience, most entrepreneurs are not intentionally dishonest, but may rather be overly optimistic when choosing to exaggerate their projections.

First, new information which arises during due diligence process and leads to cancellation can be linked to the venture's financial situation, such as inflated sales figures, wrong financial projections, or undisclosed debt (O'Sullivan, 2021; Schmidt, 2022). Second, issues may surface in relation to the venture's legal status and regulatory hurdles. This includes licenses, serious patent issues, undetermined intellectual property, ongoing legal claims against the company and existing contracts which make the investor reconsider their initial decision (Ignor, 2021; O'Sullivan, 2021). Third, angel investors may realize issues regarding the product or operations. For example, there can be technical deficiencies or defects which did not appear during the pitch, or it can prove impossible to get the product onto the shelves (Ignor, 2021; O'Sullivan, 2021).

Occasionally, deal cancellations are due to new information on the market conditions, which emerged during the due diligence process. If investors do not have prior experience with a specific market, they may initially misjudge its attractiveness. Moreover, changes in the market situation can be linked to external factors such as a general economic downturn and changes in the industry, such as the COVID-19 pandemic (Ignor, 2021).

Finally, angel investors emphasize the importance of a good relationship and communication with the startup, making personal concerns regarding the entrepreneurs a significant factor for deal cancellations (Balachandra, 2020; Ignor, 2021; O'Sullivan, 2021; Poole, 2023; Prince, 2023; Schmidt, 2022; van Osnabrugge & Robinson, 2000). Specifically, angel investors are focused on minimizing agency risk and evaluating the entrepreneurs' characteristics in their due diligence processes. Accordingly, they are likely

to reconsider deals when they notice conflicts with the team and with regards to the communication between the parties.

Determinants of Deal Cancellation: Research Gap and Hypotheses

The identified reasons for deal cancellations largely rely on anecdotal evidence, based on statements of investors and individual reports regarding specific deals. This creates a significant research gap in the empirical analysis of deal cancellation in these formats. To address this, we construct and analyze a comprehensive dataset, exploring common denominators that can be observed from an external perspective. Our focus includes deal characteristics and interpersonal dynamics, specifically gender and number of entrepreneurs and investors, as potential factors contributing to strategic misrepresentation and subsequent deal cancellations post-handshake. Our hypotheses draw on prior research in interpersonal persuasion, deceptive behavior, and overconfidence in entrepreneurial finance.

Deal Cancellations in Relation to Gender

Gender bias in entrepreneurial finance and televised pitch competitions is well-documented (Balachandra, 2020; Balachandra et al., 2019; Gupta et al., 2014; Hohl et al., 2021; Kanze et al., 2020). Angel investors tend to interact with entrepreneurs differently, and vice-versa, based on gender stereotypes. In most cases, the evidence suggests poorer outcomes for female entrepreneurs, such as requesting and receiving less capital for their ventures than their male counterparts (Hohl et al., 2021). While prior studies focus on gender bias regarding deal probability and valuations, how it affects the interaction with angel investors in the pitch and subsequent deal cancellations is underexplored.

When attributing deal cancellations to the exploitation of information asymmetry in the startup pitch, we must consider gender differences regarding interpersonal persuasion strategies and honesty. For instance, evidence from economic psychology suggests gender differences in strategic misrepresentation, with men showing lower social value orientation and higher propensities to engage in deception than women (Capraro, 2018; Grosch & Rau, 2017; Nieken & Dato, 2016; Olekalns & Kennedy, 2020). In negotiations, men have been shown to be more pragmatic and egocentric regarding ethical reasoning (Kray & Haselhuhn, 2012). Moreover, investors ask male entrepreneurs more promotion-focused questions, which might increase their likelihood of making exaggerated predictions (Kanze et al., 2018). This may result in higher rates of deal cancellations for male entrepreneurs due to legitimacy lies.

Moreover, strategic misrepresentation in the pitch may be influenced by the gender of the investor. Prior studies on negotiation behavior show that women are perceived as more credulous, more easily misled, and more likely to be deceived than men (Kray et al., 2014). This is partly linked to perceptions of women as being less competent in the negotiation setting, which makes entrepreneurs think they can be led into deals under false pretenses. Hence, in the context of startup pitch competitions, the entrepreneurs may answer questions of female investors less accurately, with a higher likelihood for exaggeration and legitimacy lies. The chance of issues arising during due diligence and resulting deal cancellation may thus be higher for female investors.

Deal Cancellation About the Size of the Involved Parties

The involvement of multiple entrepreneurs in a pitch may influence the dynamic of the pitch, the negotiation, and the due diligence process. Prior research on interpersonal persuasion and negotiation strategies suggests that teams employ deceptive strategies more frequently than individual negotiators (Aykac et al., 2017). Hence, post-handshake deal cancellation rates may be higher for startups pitched by larger numbers of entrepreneurs.

Additionally, the numbers of investors involved in the deal can impact the complexity of the dynamic. In the setting of televised pitch competitions, if multiple angel investors are interested in funding the venture in return for equity, they may opt to join forces and offer the entrepreneur a combined deal in which the investors split the cost and equity. Following prior studies of televised pitch competitions (Blaseg & Hornuf, 2024), it can be assumed that larger groups of angel investors imply higher levels of available resources, and distributed thus lower relative risk. This includes agency risk, and presumably the risk of being lied to

in the pitch. Hence, it is plausible that deal cancellation rates are lower if multiple investors are involved in the deal.

Deal Cancellation in Relation to Financial Risk and Ownership

The handshake deal's valuation and implied risk likely influence the deal cancellation probability. Prior research indicates that the investment amounts of the deals that were upheld after due diligence were significantly lower than the average of all handshake deals (Blaseg & Hornuf, 2024). This suggests that deals with higher agreed-upon investment amounts are more likely to be canceled. In addition, the need for venture legitimacy and propensity for strategic misrepresentation is positively linked to the financial need of ventures (Theoharakis et al., 2021). Thus, deal cancellation may be more likely for deals with higher amount of agreed-upon funding, and, correspondingly, deals with larger equity shares.

Other Potential Determinants of Deal Cancellations

Furthermore, other potential determinants include country, industry, year, as well as individual, angel fixed effects. Following the individual numbers reported by different media outlets, cancellation rates seem to be higher in the US format *Shark Tank* and the British format *Dragons' Den* than in the German format *Die Höhle der Löwen.* This may be linked to cultural differences regarding persuasion strategies and use of exaggeration in the pitch, or differences regarding the subsequent due diligence processes. Considering potential cultural differences regarding the impact of gender stereotypes, the country of the pitch may further moderate the hypothesized relationships between gender and cancellations.

Industry of the venture and year of the pitch may influence deal cancellation due to different levels of contextual uncertainty and macroeconomic effects. For instance, investments in high tech firms involve greater uncertainty than other industries and may entail higher levels of projective storytelling by entrepreneurs. Besides, certain industries may experience surprising downturns in certain years, irrespective of the interaction in the pitch.

Lastly, it is essential to consider each investor's individual propensity to offer and cancel a deal. There are likely differences between investors regarding their individual risk appetite (Croce et al., 2017) and their likelihood to make a deal under uncertainty given limited information (Boulton et al., 2019). Additionally, the probability to cancel a deal after the due diligence process may also be affected by individual preferences, thoroughness, and weighting of new information that may arise. Thus, angel fixed effects are included in our estimations to account for differences among individual investors.

MATERIAL AND METHODS

Sample and Procedure

We constructed a dataset based on startup pitches and deals from British pitch competition *Dragons' Den*, and the German version *Die Höhle der Löwen (abbr.: DHDL;* German for "The Lions' Den"). The total sample consists of N = 1,334 startup pitches ($n_{Dragons\ Den}$ = 651; n_{DHDL} = 683) broadcasted between August 2013 and May 2023 in the United Kingdom (season 11-20) and Germany (seasons 1-13).

Initially, we generated an overview using the exhaustive list of startups featured in both formats available from their respective Wiki webpages. Subsequently, a team of independent observers coded selected variables about the entrepreneurs, the venture, the investors, and their interaction from the video material of the pitches, which is publicly accessible from the webpages of the respective broadcasters. Finally, we retrieved data about deal outcomes (completion vs. cancellation) from startup databases and with structured online searches. The operationalization and measurement of each variable is described in the following section.

Variables

Dependent Variables

Deal. Handshake deals between angel investors and entrepreneurs agreeing on an equity investment were coded as a binary variable. The deals represent an intent-to-fund that is subject to a due diligence

process, occurring after production and typically completed by the time the episode is broadcasted. Considering the likelihood of startups securing a deal in the first place allows accounting for selection effects related to the startup's attractiveness on subsequent deal outcomes.

Deal Outcome. For every handshake deal, the post-handshake outcome was coded as a binary variable (deal completion vs. deal cancellation). The outcome was determined using available data from startup databases (Crunchbase, Pitchbook) and structured online search on every startup that made a deal, including their own webpage, newspaper articles, and press releases. Given that there can be up to six months' time between the handshake deal on production day and airing of the respective episode, the due diligence process takes place behind closed doors and is likely not influenced by the public. Media outlets often reported completion or cancellations of handshake deals immediately after the respective episode aired.

Explanatory and Control Variables

Entrepreneur Gender. Gender of each individual entrepreneur present at the pitch was recorded as a binary variable. For pitches of startup teams, groups with at least one female entrepreneur were considered female, following the approach of prior studies of pitch competitions (Balachandra et al., 2019; Hohl et al., 2021; Poczter & Shapsis, 2016), As a result, we created a dummy variable for entrepreneur gender with 1 if the team included at least one female, and 0 for all-male teams.

Investor Gender. The names and gender of all angel investors involved in each handshake deal were recorded. Analogously, investor gender was coded as a binary variable. If multiple angel investors made a deal together, we followed the same approach as above, coding dummy variables of investor teams with at least one female investor as 1 and all-male investor teams as 0 (Poczter & Shapsis, 2016).

Entrepreneur Count. While many ventures in the sample are pitched by single entrepreneurs or a pair of two co-founders, there can be teams of up to five individuals pitching together. The number of entrepreneurs present at the pitch representing the startup team was recorded as a continuous variable.

Investor Count. Analogously, for every handshake deal that was aired, the number of investors that joined together to make a deal with the venture was coded as a continuous variable, ranging from one to five angel investors.

Funding Amount. In case of a deal, the agreed-upon funding amount to be provided by the angel investor was recorded as a continuous variable. This variable may help capture both the venture's need for capital and the investors' confidence level in the entrepreneurs (Blaseg & Hornuf, 2024). For pitches from *Dragons' Den*, this funding amount was converted into Euro currency at the exchange rate of the broadcasting date to allow for comparisons between formats. Subsequently, we log-transformed this variable to account for skewness.

Equity Share. Equally, the agreed-upon venture equity share to be transferred to the angel investor in exchange for the capital investment was recorded in percent as a continuous variable.

Format. A format dummy variable was created to account for discrepancies between the two formats and measure potential cultural differences. Pitches and deals from *Dragon's Den* were coded 1, and pitches from DHDL 0.

Industry. While there is a primary focus on B2C products in the setting of televised startup pitch competitions, the startups are from a very wide range of industries. For every pitch, the startups industry was determined by observers based on the product and market description. To include this aspect in the empirical analysis, 15 different industry dummies were created (Automotive, Beauty & Cosmetics, Beverages, Children & Babies, Education, Fashion & Accessories, Fitness & Sports, Food, Hardware & Tools, Health & Wellness, Lifestyle & Home, Media & Entertainment, Pet products, Platforms, Software & Tech).

Year. Broadcasting dates for all pitches were recorded to create dummy variables for each year. This allows to account for unobserved heterogeneity linked to changes in macroeconomic conditions, inflation of investments, as well as potential learning effects of entrepreneurs and investors (Poczter & Shapsis, 2016).

EMPIRICAL ANALYSIS AND RESULTS

Descriptive Analysis of Handshake Deals and Deal Cancellation

A total of N = 1,334 startup pitches were analyzed from both formats, with 623 (46.70%) of those securing a deal. The average investment for successful deals was M = 145,894 EUR (SD = 153,884 EUR), and the average deal equity share was M = 25.69% (SD = 10.16%). Based on the observed handshake deals, venture valuations varied widely, averaging M = 715,099 EUR (SD = 963,468 EUR) across all deals and formats. Of the n_{Deal} = 623 handshake deals that were agreed upon by angel investors and entrepreneurs, 412 (66.18%) were completed after due diligence, while 211 (33.87%) were canceled. Notably, cancellation rates were higher in the British format *Dragons' Den* (40.23%) compared to German format *DHDL* (29.42%).

Table 1 presents descriptive statistics for the sample, including entrepreneur and investor gender and count. In addition, means are presented individually for both formats.

TABLE 1
DESCRIPTIVE STATISTICS AND DEAL CHARACTERISTICS OF FULL SAMPLE

	N	***M***	***SD***	***Min***	***Max***	$M_{Dragons\ Den}$	M_{DHDL}
Handshake deal (%)	1334	46.70	49.90	0	100	39.32	53.73
Deal cancellation (%)	623	33.87	47.36	0	100	40.23	29.42
Funding amount (EUR)	623	145,894	153,884	11,500	1,500,000	78,200	193,114
Equity share (%)	623	25.69	10.16	2.5	100	25.61	25.74
Entrepreneur gender (female)	1334	.41	.49	0	1	.42	.40
Investor gender (female)	623	.38	.48	0	1	.51	.28
Entrepreneur count	1334	1.64	.70	1	5	1.44	1.83
Investor count	623	1.40	.65	1	5	1.44	1.38

Note. $N_{Dragons' Den}$ *=651;* N_{DHDL} *= 683*

Regression Analysis

Regression models were estimated to explore deal cancellation dynamics and test our hypotheses regarding entrepreneur, investor, and deal characteristics. All models include the control variables for venture industry and year, with standard errors clustered at the investor level to account for individual differences.

The first model shows a logistic regression of deal cancellation on the set of variables observed in relation to entrepreneur and investor characteristics. In model 2, we include an interaction term between gender and format. This model specification allows to account for potentially different sizes and directions of the gender effects in both formats, presumably relating to differences in culture and the specific group of angel investors present in each format.

Obviously, the observation of deal outcomes and deal cancellation is conditional upon receiving a deal with an investor in the first place. This selection may affect the regression of deal cancellation, so we adapt models 3 and 4 to account for selection on observables and use a two-stage regression model as suggested by Heckman (1979). The first-stage regression of deal selection includes entrepreneur gender and count as well as format, venture industry, and year of the pitch.

Table 2 displays the coefficients and significance levels of all regression models. Overall, we find that the significant results found in models 1 and 2 are robust to including a first-stage regression of deal selection in models 3 and 4.

TABLE 2
DETERMINANTS OF POST-HANDSHAKE DEAL CANCELLATION

	(1) Logistic regression	(2) Logistic regression incl. interaction terms	(3) Two-stage Heckman probit regression	(4) Two-stage Heckman probit regression incl. interaction terms
Entrepreneur gender (female)	-.070 (.196)	-.250 (.268)	.030 (.079)	-.015 (.090)
Entrepreneur gender * Format	-	.706 (.369)	-	.187 (.112)
Investor gender (female)	.224 (.281)	.975** (.389)	.088 (.063)	.330*** (.099)
Investor gender * Format	-	-1.339*** (.498)	-	-.411*** (.131)
Entrepreneur count	.061 (.125)	.031 (.127)	.059 (.054)	.037 (.056)
Investor count	.069 (.154)	-.010 (.151)	-.006 (.051)	-.038 (.050)
Funding amount (ln)	.667*** (.198)	.639*** (.199)	.199*** (.043)	.207*** (.047)
Equity share	1.638 (1.098)	1.181 (1.100)	.560* (.289)	.398** (.091)
Format (DDUK)	1.008*** (.317)	1.278*** (.435)	.540*** (.085)	.641*** (.109)
Constant	-9.324 (2.838)	-8.805 (2.807)	-1.880 (.644)	-1.451* (.698)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
N	623	623	1,334	1,334
R^2	.105	.120	-	-
AIC	778.248	769.616	2,538.073	2531,842
Likelihood ratio test of independent equations $X^2(1)$	-	-	6.82**	8.68**

Note. Standard error clustered at investor level in parentheses; *** $p < .01$, ** $p < .05$ * $p < .1$

First, our results show no significant effect of entrepreneur gender on deal cancellations. Contrary to our initial hypothesis, this indicates that the gender of the individual entrepreneur or venture team is not linked to legitimacy claims in the pitch, resulting in higher rates of cancellation post-handshake.

Second, while the simple models identify no significant effect of investor gender on deal cancellation, both models including interaction terms show a significant negative main effect of female investor gender. As hypothesized, this indicates that more female angel investors cancelled their deals after due diligence than their male counterparts. This relates to our hypothesis that female investors are more likely to be presented with exaggerated legitimacy claims in the pitch setting. The negative interaction of investor gender and format, however implies that this main effect for investor gender is only observable in the German format *DHDL*. Notably, the estimates indicate that adding interaction terms increases the predictive accuracy of both models.

The number of entrepreneurs and investors involved does not significantly affect deal cancellations. Thus, the evidence implies that a larger number of individuals involved in the deal does not allocate risks to the extent that cancellation rates are affected.

As expected, the coefficient for funding amount is significantly positive in all models. This indicates that angel investors are more likely to cancel deals when there are large sums of money on the table, suggesting potentially greater legitimacy claims from the entrepreneurs in the pitch but also more rigorous due diligence processes given the greater financial risk for investors. Conversely, this means that deals with smaller tickets are more likely to be upheld by both parties. Similarly, the coefficients for equity share are slightly positive in models 3 and 4. This means that, after accounting for the likelihood to receive a deal in the first place given the proposed equity transfer, investors are likely to cancel deals resulting in higher stakes and responsibility in the venture.

Finally, consistent with the descriptive results, we observe a robust main effect of the format dummy variable. This indicates a significantly higher rate of deal cancellation in British format Dragons' Den.

DISCUSSION

Interpretation of Results in the Context of Prior Research

Behavior and decision-making in startup pitch competitions is characterized by uncertainty, lack of information, and trust between the involved parties. Despite the extensive research on information asymmetries and the pursuit of legitimacy in this context, deal cancellations after the initial handshake have not been empirically investigated before. This study offers a unique perspective into this black box of deal cancellations by exploring their occurrence and potential determinants based on a set of observable variables.

Overall, deal cancellations occur quite often in the sample we explore, indicating that many handshake deals do not complete after production. In line with anecdotal reports from angel investors in various media outlets, we assume that some entrepreneurs use exaggeration, strategic deception, or omit crucial information in the pitch and initial interaction with angel investors, resulting in cancellation after the due diligence process. These cancellation rates underscore the relevance of exploring potential determinants regarding observable characteristics of deals, entrepreneurs, and investors.

Although we cannot identify a significant effect of entrepreneur gender in either format, our findings indicate a significant negative main effect of female investor gender on deal cancellations in the German startup pitch competition *DHDL*. This effect is independent of the personal risk profiles and cancellation rates of individual angel investors. It offers a nuanced perspective on gender dynamics in the pitch setting and investment decisions.

The absence of an effect regarding entrepreneur gender challenges the general assertions of entrepreneurial gender differences in the pitch context reported in prior studies (Balachandra, 2020; Balachandra et al., 2019; Hohl et al., 2021). While prior research associates male gender with being more pragmatic and deceptive in negotiations (Capraro, 2018; Grosch & Rau, 2017; Kray & Haselhuhn, 2012) and thus more likely to tell legitimacy lies, our results suggest that entrepreneur gender might not be a decisive factor to influence post-handshake deal outcomes in the specific context of televised startup

pitches. Hence, this calls for reevaluating the generalizability of gender-related findings across diverse entrepreneurial settings.

Conversely, our identification of a negative main effect of female angel investor gender on cancellation rates in the German format aligns with prior research highlighting the challenges faced by female investors. Specifically, stereotypes about gender are shown to influence perceptions of competence and credulity (Kray et al., 2014). In line with this, our results suggest that female investors might encounter more exaggerated legitimacy claims or strategic misrepresentation in the interaction with entrepreneurs, which is assumed to contribute to higher cancellation rates when the due diligence process unveils discrepancies. This finding underscores the result of considering gender dynamics among entrepreneurs and within the angel investor community when exploring deal outcomes.

Alternatively, this finding also raises the intriguing possibility that female investors might be more careful and thorough in the due diligence process, revealing flaws that their male counterparts might overlook. This coincides with gender stereotypes about risk aversion, suggesting that women might be better in uncovering critical information after the initial agreement. The psychological phenomenon of "escalation of commitment" might play a further role in this context. It relates to individuals persisting with their decisions, even in the face of contradictory information and negative outcomes, to avoid cognitive dissonance (Bazerman et al., 1984; Staw, 1997). Prior research suggest that the escalation of commitment bias may strongly influence angel investor(Devigne et al., 2016; Zhou & Kato, 2017). In the context of our research, male investors might be more prone to the escalation bias and uphold deals despite encountering flaws during the due diligence process, because they want to adhere to the commitment they made after the pitch. Female investors, on the other hand, might demonstrate a more pragmatic approach in response to unfavorable conditions and cancel the deal.

The negative coefficient of the interaction of female gender and format introduces another layer to this discussion. It implies that the main effect for female investor gender is primarily observable in the German pitch format while it does not arise in the British format. This format-specific difference might be attributed to varying gender stereotypes across different cultures.

The positive association between larger funding amounts and cancellation rates aligns with prior research emphasizing the role of financial risk in due diligence and investment decisions (Blaseg & Hornuf, 2024). The results indicate that, as the stakes increase, investors adopt a more cautious approach and subject deals to more rigorous scrutiny during the due diligence process. Thus, the positive relationship between equity share and cancellations suggests that investors may be more inclined to cancel deals with higher stakes and responsibilities, which may be linked to increased financial risk.

The considerable format differences, with cancellation rates being higher in the British format *Dragons' Den* compared to the German format *DHDL* add to the body of research exploring the cultural context influencing startup pitch dynamics and investment decisions. This difference emphasizes the need to consider cultural and procedural disparities between the two pitch competitions. Future research could also expand on the underlying mechanisms driving these gender-specific patterns, exploring whether female investors apply unique decision-making strategies during the due diligence and how these strategies vary with cultural and format-specific dynamics in startup pitch competitions. The results would contribute to a more comprehensive understanding of the many determinants influencing post-handshake deal outcomes and help entrepreneurs navigate diverse entrepreneurial landscapes.

Limitations and Directions for Future Research

A main limitation of this work is the lack of information available about the individual due diligence processes and deal cancellations. Given that we can only include variables in our analysis that are observable from the outside, we may still only scratch the surface of understanding why exactly deals are canceled. Moreover, we acknowledge a temporal limitation. Our analysis focuses on the immediate post-handshake outcomes of deals from televised pitch competitions. In doing so, we neglect the long-term success or failure of the ventures which were or were not funded. Future studies could extend the analysis and apply a funding discontinuity approach (Kerr et al., 2014). Including longitudinal data on the

subsequent performance and sustainability of startups would allow a more comprehensive perspective of the impact of deal cancellations on entrepreneurial outcomes.

Second, we must challenge the intent of startups to secure a deal in televised pitch competitions and consider the possibility that deals are canceled by entrepreneurs. Our work operates under the assumption that all entrepreneurs who pitch their venture want funding from investors because it increases their chances of success and that post-handshake deal cancellations decisions thus most likely stem from investors. However, it is possible that the televised setting attracts entrepreneurs who want to pitch and secure deals in front of the camera for publicity purposes, and then pursue cancellation of those deals afterwards, because they needed no funding in the first place or found a more attractive deal elsewhere (O'Sullivan, 2021). In line with this notion, Blaseg and Hornuf (2024) found that startups who receive a deal in these televised pitch competitions experience a positive impact from attracting a popular angel investor even if the deal got canceled after the due diligence. Besides, some of the deal contracts are reportedly changed into debt-based financing and hence become unattractive for entrepreneurs, which might be a reason for them to rethink and cancel (Cayasso, 2022). Future studies could address this limitation by identifying which party was responsible for the deal cancellation and conduct separate analyses of the potential determinants.

Third, a more general constraint is the reliance on publicly available data from media sources, introducing potential biases in the representativeness of entrepreneurial pitches. The startups that are chosen to pitch in front of the angel investors are pre-selected, largely B2C businesses, and at similar early stages - and thus cannot be considered representative for the entire startup landscape. In addition, cultural and contextual nuances cannot be sufficiently explored using only two formats. Further investigation of various formats with more different cultural settings could offer deeper insights. Lastly, the televised setting and perceived desirability of providing capital to startups in need of financial resources may influence the investors' decision to offer deals in front of the camera, even if their intention to follow through is low. Hence, exploring deal cancellations in startup pitch competitions that are not televised would provide a valuable contribution to ongoing research.

CONCLUSION

The interactions and deals in the context of televised startup pitch competitions enjoy a consistently high level of public interest. Reports of post-handshake deal cancellations without further explanation are likely to decrease their credibility and perceived authenticity for the audience and negatively affect prospective entrepreneurs' motivation. Independent of the televised setting, cancellations of deals in entrepreneurial finance have direct negative consequences for entrepreneurs, who do not receive the required capital, as well as for investors, who spent significant time and resources without making an investment. Our work constitutes an important first step towards better understanding the occurrence and determinants of deal cancellations. Drawing on interpersonal persuasion theory and the concept of information asymmetries in the pitch context, cancellations are interpreted as instances in which the due diligence surfaces crucial information which the entrepreneur did not accurately communicate in the pitch and initial interaction. We then explore their occurrence using observable information on the venture, entrepreneur, and investor characteristics.

Our findings affect all practitioners engaged in startup pitches, due diligence processes and investment decision-making. Both entrepreneurs and investors need to be cognizant that the handshake deals after pitches are not legally binding, that there is a serious risk for deal cancellation, and that they must manage their expectations and strategy accordingly. Considering that all handshake deals are subject to a thorough due diligence, exaggerations and misrepresentations in the pitch are likely to be uncovered later. This is emphasized by the overall high cancellation rates in our sample. When legitimacy lies surface, even if they do not result in deal cancellations, they definitely entail disappointment and loss of legitimacy for the venture (Garud et al., 2014). Hence, to secure funding sustainably and build a trusting relationship with the angel investors, entrepreneurs should provide a positive but most importantly accurate perspective on their venture in the pitch and avoid all kinds of strategic misrepresentation. Moreover, based on our findings regarding the relationship between deal outcomes and investor gender, we posit that female investors should

be aware of potential challenges regarding perceived credulity in their interaction with entrepreneurs. They should emphasize their own competence to avoid being misled and be diligent in their decision to offer handshake deals.

In conclusion, this study provides novel insights into the occurrence and the multifaceted determinants of deal cancellations in the context of televised startup pitch competitions. At the same time, our findings call for continued research efforts to shed more light on the black box of due diligence processes. Ultimately, this will allow to us to deepen our understanding of the complex dynamics that shape angel investor decision-making and prepare the ground for unbiased interactions between entrepreneurs and investors in diverse settings.

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