

# BITE ME! ABC'S SHARK TANK AS A PATH TO ENTREPRENEURSHIP

Baylee Smith  
United States Navy

Angelino Viceisza  
Spelman College

[Preliminary. Comments welcome.](#)

November 7, 2016

## **Abstract**

The importance of early-stage financing and mentoring for firm survival and growth has been underscored. One avenue for gaining access to such resources is a business pitch competition. In this paper, we analyze data from possibly, the most public, high-stakes pitch competition in the US: ABC's Shark Tank. We construct a novel dataset comprising all entrepreneurs/firms that have aired since the show's inception by collecting publicly available data from sources such as show episodes, social media, and mattermark. Using a variety of identification strategies (such as instrumental variables and nearest neighbor matching), we find that the amount of an intention-to-fund (ITF) on the show is a significant driver of both firm existence and going public. We find limited impacts on patents. These impacts seem to be heterogeneous with regard to gender and race. While female firms are more likely to exist overall, this is not the case when they receive greater ITF amounts. Meanwhile, Black firms are less likely to go public overall and also less likely to obtain a patent when they receive greater ITF amounts. Our findings suggest that ST funding may benefit some, but not all, entrepreneurs. To the extent that this funding primarily relaxes financial constraints, our findings could suggest that female and Black firms are in greater need of mentoring on top of financial support.

*JEL Codes:* L26, O12, G30.

*Keywords:* entrepreneurship, pitch competition, angel-to-VC financing, Shark Tank.

# 1 Introduction

Given the widely acknowledged importance of entrepreneurship and innovation (E&I) for economic growth, the question of what stimulates these has been emphasized in several disciplines (e.g. Shapero and Sokol, 1985; Holtz-Eakin et al., 1994; Carpenter and Petersen, 2002; Fairlie and Robb, 2007; Bates and Bradford, 2008; Clementi and Hopenhayn, 2006; Kerr et al., 2011; Chatterji and Seamans, 2012; Frese and Gielnik, 2014; McKenzie and Woodruff, 2014; Bernstein et al., 2015, and the references within). For example, Kerr et al. (2014) indicate that “experimentation” by companies and financiers (who may fund stages of high-risk, high-reward projects as a means to identify “winners”) is important for cultivating E&I. Business “pitch” competitions provide a forum for financiers (specifically angel investors and venture capitalists/VCs) to assess potential winners. Thus, recent research has focused on what constitutes successful pitches (e.g. Milovac and Sanchez-Burks, 2014; Wood Brooks et al., 2014; Poczter and Shapsis, 2016) and the impact of participating in/winning competitions on E&I (e.g. McKenzie, 2015; Howell, 2016).

This paper analyzes data from possibly, the most public, high-stakes pitch competition in the United States: ABC’s Shark Tank (ST, <http://abc.go.com/shows/shark-tank>). We construct a novel dataset comprising all entrepreneurs/firms that have appeared on the show since its initial airing in fall 2009 ( $N=603$  through the end of season 7). Given we do not have access to internal ST data (an issue that Kaplan and Lerner, 2016, discuss more generally as a challenge for VC research), we collect a relatively wide set of pre- and post-ST characteristics by combining publicly available data from sources such as (1) show episodes, (2) the ST wikipedia page and blog (primarily for cross-referencing), (3) social media such as Facebook, LinkedIn, and Youtube, (4) fundraising sites such as Angellist, cruchbase, and kickstarter, and (5) apps such as mattermark and pretty-o-meter which assesses beauty. Using outcomes such as existence and going public, we seek to identify the impact of getting a final intention-to-fund (ITF) “good faith” offer from one or more sharks on the show.

To deal with anticipated endogeneity issues, we primarily rely on estimates from an instrumental variable approach in which the total number of ITF offers to a given firm during the aired negotiation process acts as an instrument for ITF. We further argue that we achieve an internally-valid estimate of the show’s ITF “treatment” effect, since entrepreneurs that make the final cut for filming are likely to be selected using similar criteria such as (a) their potential for funding (which sharks have indicated in interviews), (b) show/audience appeal (given ST is a reality TV show), or (c) some combination thereof. So, while the sample of aired entrepreneurs is expected to be “selected” relative to the population of US entrepreneurs who pitch in other contexts (calling into question the external validity of our findings), we expect those who receive an ITF versus not to be relatively comparable on pre-ST characteristics. Our analysis suggests that this is indeed the case. So, our interest in ST is as a case study of a business pitch competition that gives access to angel funding and possibly other benefits, comparable to for example McKenzie (2015) and Howell (2016).

We find that the amount of an ITF offer is a significant driver of both firm existence and going public, suggesting that financial constraints are a significant barrier to entrepreneurship. We find limited impacts on patents, possibly suggesting that this funding is less important for innovation.

These impacts seem to be heterogeneous with regard to gender and race. While female

firms are more likely to exist overall, this is not the case when they receive greater ITF amounts. Meanwhile, Black firms are less likely to go public overall and also less likely to obtain a patent when they receive greater ITF amounts.

All in all, our findings suggest that ST funding may benefit some, but not all, entrepreneurs. To the extent that this funding primarily relaxes financial constraints, our findings could suggest that female and Black firms are in greater need of mentoring on top of financial support.

The remainder of the paper proceeds as follows. Section 2 discusses what is publicly known about the ST process. Section 3 explains the empirical strategy and data. Section 4 covers the main results. Finally, Section 5 concludes.

## 2 Shark Tank

### 2.1 Towards a pitch and funding

While access to detailed behind-the-scenes ST documentation is restricted, online sources such as Business Insider and Inc. give a sense of the ST production/pitch process and how this compares to other, day-to-day pitch competitions. Below are some documented facts about the process that results in the firms aired on the show:

1. The show’s producers hold open casting calls throughout the US. Typically, hundreds of entrepreneurs show up to give a brief pitch to members of the production crew. The producers keep favorite firms in mind as they narrow down the list of contestants for a particular season. Only one percent of these applicants actually ends up pitching in front of the sharks.
2. The show’s producers also recruit firms by monitoring crowdfunding sites like Kick-starter and attending trade shows.
3. An entire season is shot in 15-17 days, split across 1.5 weeks in early summer and 1.5 weeks in early fall. Given seasons air anywhere from late August to mid May, there could be a time lag of a few weeks to nine months between production and airing. After a firm pitches on ST, entrepreneurs are restricted from revealing any information about the end result. Failure to do so is likely to lead to lawsuits.
4. The sharks do not know the entrepreneurs or products before they enter the room such that the viewers learn about the firms along with the sharks.
5. A typical pitch lasts about an hour while an aired segment lasts about 10 minutes. The footage editors take out “unsexy” material, typically where the sharks and the entrepreneurs get into the “nitty gritty” details on finances.
6. During the negotiation process, interested sharks may compete for companies. At the same time, sharks may retract offers at any given time. On the flip side, entrepreneur contestants may attempt to pit sharks against each other or decline offers at any given time.

7. About 20 percent of the pitches are not aired. The producers decide if there enough “drama” in the unsuccessful pitches to warrant air time.
8. About 80 percent of the deals made on the show actually lead to funding (this statistic was somewhat lower in earlier seasons of the show). The “handshake” after a deal is a “good faith” agreement that initiates a due diligence process. If everything checks out, the sharks see if the firms are still interested. So, the funding decision made on the show is an intention-to-fund.
9. Sharks pitch “update” segments for future airing on the show based on the companies they have decided to fund.

## 2.2 Policy relevance

While ST is a reality show, there are several reasons why it is relevant from a policy standpoint. First, it is a sample pitch competition, similarly to those discussed by Howell (2016) and others. So, knowing the types of constraints that ST funding might relax is informative.

Second, to date the show has seen over 45,000 applicants (more than 6000 per year since its initiation) and directly impacted the lives of at least one percent of them. Thus, while selective, the show has carved a legitimate place for itself as a potential pathway to entrepreneurial development.

Third, while there are bold claims in the media as to the show’s major impacts on firms, the examples cited are typically based on only a hand full. Given the national and international acclaim that this type of show has (see next item), there is a need for more rigorous evidence representing the full sample of firms that have aired on the show; especially considering the potentially high stakes featured on the show.

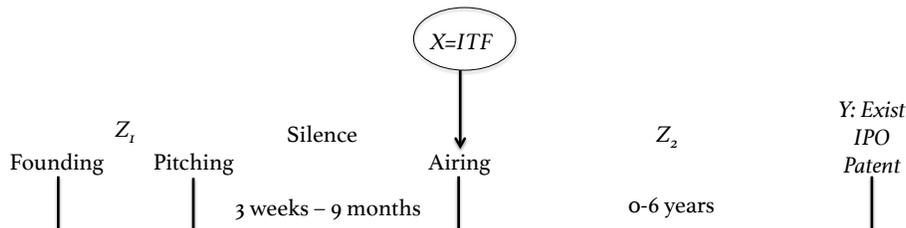
Fourth, the above is even more relevant for policy when one recognizes that ST is just one of several similar shows owned by Sony TV across the world. The show has its roots in “Tigers of Money” which aired in Japan in 2001. Based on this show, producers in the UK created “Dragon’s Den” which aired in 2005. In 2008, Mark Burnett created the US version – Shark Tank – which aired in 2009. As reported by Business Insider, similar shows have aired in Canada, Czech Republic, Finland, Poland, Spain, and Ukraine. There could also be other cases that we are not aware of.

Finally, ST is now the “lay” (popular) version of a pitch competition. The show has seen steady viewership of 6.7 million on average since its initial airing. In addition, while the show is not fully representative of day-to-day business pitch competitions, many courses in high school, college, and other levels have adopted its panel-style grilling approach. With such indirect “impacts” on the day-to-day populace, it is reasonable to rigorously assess the show’s direct impacts on those who actually appeared on it.<sup>1</sup>

---

<sup>1</sup>The show’s indirect impacts on entrepreneurship and innovation, particularly in the US, is addressed by Robinson and Viceisza (2016). That paper will contribute to the literature on media influence (see DellaVigna and La Ferrara, 2015, for an overview).

Figure 1: Timeline of events consistent with Section 2.1



## 3 Study design

### 3.1 Empirical strategy

We would like to identify the impact of receiving an ITF on three post-ST outcomes – existence, going public, and patents – using all firms that have aired on the show through May 2016.<sup>2</sup> For purposes of causality, ITF would have ideally been randomly assigned. Given ST is an actual pitch competition (couched in reality show), however, this was not done. So, in what follows we discuss a set of identification strategies that partly rely on the timeline set out in Figure 1.

First, since we only study firms that actually air on ST, we expect our sample to be relatively homogeneous. After all, the process of elimination that happens between founding and pitching is intended to result in firms that meet two main criteria: (1) fundability (i.e. having market potential) and (2) show appeal (i.e. having potential for good TV). If the sample of firms is indeed comparable across ITF, particularly prior to ST, significant differences in outcomes after the show are more likely to be attributable to it. So, we start by comparing firms across ITF on a wide range of pre- and post-ST characteristics (Tables 1 and 2 respectively).

Second, having identified whether and if so, how firms vary across ITF, we estimate a series of linear probability models (LPM) that include varying sets of control variables. Specifically, we regress each of the outcome variables on ITF controlling for (1) industry, episode, and season fixed effects; (2) whether the entrepreneur appeared on the show more than once; (3) whether the firm was featured as an update on a subsequent episode; (4) pre-ST characteristics that are unbalanced across ITF; (5) select post-ST characteristics; and (6) select demographic characteristics such as the proportion of women and racial minorities on the pitching team.

Third, we implement an instrumental variable (IV) strategy that utilizes the total number of offers received throughout the negotiation process as an instrument for ITF. While ITF is expected to increase with the total number of offers (a fact we verify in Table 3), there is no particular reason why such offers should directly impact the outcome variables of interest. So, we believe that this variable satisfies the criteria for a valid instrument.

Finally, for the main specification of interest, we also employ a nearest neighbor matching (NNM) technique along the lines of Abadie and Imbens (2006) and Abadie and Imbens (2011).

<sup>2</sup>This constitutes data from seasons 1-7. ST is currently in its eight season.

## 3.2 Data

We combine publicly available data from sources such as (1) show episodes, (2) the ST wikipedia page and blog (primarily for cross-referencing), (3) social media such as Facebook and LinkedIn, (4) youtube, (5) firm websites, (6) Amazon, (7) apps such as mattermark (which aims to track growth signals from all private tech, media and telecom companies) and pretty-o-meter (which assesses beauty), and (8) public registries on patents (by the United States Patent and Trade Office/USPTO) and initial public offerings (by the Securities Exchange Commission/SEC).

A complete list of variable definitions and sources is available from the authors upon request; however, below we highlight the most important variables for purposes of the analysis. The main outcome variables  $Y$  are defined as follows:

1. Exist: A firm is assumed to exist when pitching on ST and thus exists between founding and pitching. The firm's year of founding is gathered from a combination of cross-referenced sources including (1) Hoover, onesource, or Dun and Bradstreet (if available); (2) the entrepreneurs' social media pages such as LinkedIn, Facebook, and twitter; (3) state registries (in particular Delaware); and (4) manual web scraping through brute-force google searches (e.g. leading to relevant articles). Post-ST existence is verified through the above sources combined with (1) the ST blog; (2) the firm's website and social media activity; (3) the firm's/product's representation on Amazon (as applicable); and (4) mattermark (mm). The variable takes the value 1 if the firm shows sign of life (according to the above cross-referenced sources) and 0 otherwise.
2. Post-ST patent: Using publicly available data from USPTO, we track whether the entrepreneur(s), firm, or product/concept(s) in question are associated with a related patent and if so, for what time period. This variable takes the value 1 if such a patent exists after the firm having aired on the show and 0 otherwise.
3. Going public/initial public offering (IPO): Using publicly available data from SEC, we track whether the firm in question has undergone an IPO and if so, when. We also cross-reference this with mattermark when possible. This variable takes the value 1 if such an IPO took place and 0 otherwise.

The main explanatory and control variables are:

1. ITF: This variable takes the value 1 if the firm received a final intention-to-fund during the episode and 0 otherwise.
2. ITF amount: This variable is the total dollar amount agreed upon in the ITF. It takes the value 0 when ITF is 0.
3. # pitching: The total number of entrepreneurs pitching during the episode.
4. Attractiveness: This is an average rating obtained by feeding the entrepreneurs' pictures to two different beauty-rating apps.

5. **Showed MVP:** This variable takes the value 1 if the entrepreneur showed a minimum viable product (MVP; physical proof of concept) during the episode and 0 otherwise.
6. **Demonstration:** This variables takes the value 1 if the former variable is 1 or if the pitch included some other type of demonstration/illustration without an MVP. It is 0 otherwise.
7. **Pre-ST Patent:** Similarly to post-ST patent, this variable takes the value 1 if the patent was obtained prior to airing on ST and 0 otherwise.
8. **Overconfidence:** This variable is the difference between the entrepreneur’s (perceived) valuation based on the initial ask during the episode and the shark’s (perceived) valuation based on the final ITF amount and stake. The sharks’ valuation is assumed to be 0 when ITF amount is 0.
9. **Company on mm:** This variable takes the value 1 if the firm is found in the mm app and 0 otherwise.
10. **Youtube popularity:** This variable is the total number of views that a given pitch has received on Youtube to date. It is intended to proxy for a relative measure of viewership (in absence of pitch-level Nielsen ratings, which are not freely publicly available).
11. **Industry:** Since we do not have predetermined NAICS codes, we created the following broad classifications: apparel, children, entertainment, food, health, home, services, technology, and other. The industry fixed effects are dummies for these respective categories.

Finally, since these firms are typically privately held, we do not have accurate financial information for them. If so, the data are typically only available for one time period and/or noisy because they are self-reported during the episode. As such, we do not exploit any financial information for the firms.

## 4 Results

### 4.1 Balancing on characteristics

Table 1 compares a wide range of pre-ST characteristics across ITF as a test of homogeneity of the sample. As discussed in Section 3.1, firms are relatively comparable across ITF for many pre-characteristics suggesting that the filtering process applied by the ST pipeline is fairly effective. That said, there are some significant differences. In particular, the number of people pitching, their attractiveness, and whether or not they showed an MVP and/or did a demonstration significantly correlate with ITF.

By and large, these differences make sense. Two reasons why a team of entrepreneurs (as opposed to one person) may be more effective at pitching are: (1) teams are often formed to capitalize on the complementary strengths of certain members (e.g. in a two-person team, one may be more creative and the other may be better at financials) and (2) they may be better at dealing with the pressure (“heat”) faced by the sharks. Attractiveness of the team

not only makes intuitive sense, but is also consistent with previous work by for example Milovac and Sanchez-Burks (2014) and Wood Brooks et al. (2014). Finally, showing an MVP and/or demonstration is a key part of the pitch process, as it shows proof of concept (“beef”) and enables investors to better envision market potential.

Table 2 compares a wide range of other characteristics across ITF. These variables (which include the outcome measures) were determined during the pitch/episode or after and are thus sometimes considered post-ST. While firms are significantly different on a larger set of characteristics in this table, this is to be expected by mere definition of the variables. For example, one would expect sharks to be more likely to give an ITF if they get a better vibe from an entrepreneur.<sup>3</sup> Similarly, we would expect ITF to increase with the total number of offers made (as discussed in Section 3.1), the total number of sharks making such offers, the number of counteroffers, the number of sharks involved with the ITF, the shark’s valuation based on the ITF, and the ITF being “formalized” with a handshake or hug (the so-called “good-faith” deal).

Thus, more so of interest is the fact that (1) those who are more overconfident are less likely to get to get an ITF (as one might suspect) and (2) pitches that resulted in an ITF have been more popular on Youtube.<sup>4</sup>

In the following sections, we typically control for these “unbalanced” covariates (both pre and post) in our full specifications.

## 4.2 Main impacts

Table 4 examines the impact of ITF on firm existence by estimating (pairwise) specifications via LPM and IV . While columns (1)-(4) are suggestive of an ITF impact, columns (5)-(6) reveal that it is the amount of the ITF that matters. This suggests that ST funding is primarily relaxing a financial constraint, which in turn determines future existence.

Further, column (9) suggests that an ITF impacts “more female” teams differently than “more male” teams. Specifically, entrepreneurial teams that have a greater proportion of women are on average more likely to exist. That said, they are less (more) likely to exist when they receive an ITF (a greater ITF amount).

Table 5 examines the impact of ITF on the firm obtaining a patent post ST. The estimation approaches are the same as above. By and large, we find no average impacts on patents. There is, however, a negative effect of getting a greater ITF amount on teams with a greater proportion of Black entrepreneurs.

Finally, table 6 examines the impact of an ITF on the firm going public post ST. As with existence, it seems that the ITF amount is the main factor driving IPO, although in some specifications ITF itself is significant. Interestingly, we find that on average “Black” firms are less likely to go public, while “non-White” firms (which includes Hispanics, Asians, and other) are more likely to go public.

Thus, overall we find that:

---

<sup>3</sup>This variable takes the value 1 if the shark uses the term “good vibe (or comparable)”, -1 if “bad vibe (or comparable)”, and 0 if s/he does not use of such terms.

<sup>4</sup>This could be suggestive of ST’s media impact on viewers at home, which was alluded to previously.

1. The amount of an ITF offer is a significant driver of both firm existence and going public, suggesting that financial constraints are a significant factor.
2. Female firms are more likely to exist overall; however, when they receive greater ITF amounts, they are less likely to exist.
3. Black firms may be less likely to (a) obtain patents when receiving greater ITF amounts and (b) go public overall.

### 4.3 Mechanisms

To further tease apart potential mechanisms, Table 7 explores interactions of ITF with three additional covariates: (1) whether the entrepreneur self-invested, (2) the total number of sharks involved in the ITF, and (3) whether the firm has a pre-ST patent. All columns in this table use the full-blown IV specification from Tables 4-6 (i.e. column 9) as the starting point.

The findings further confirm that the ITF mainly relaxes a financial constraint. On average, entrepreneurs who self-invested are less likely to exist. However, if they receive an ITF, they are more likely to exist, suggesting that the ITF “softens the blow”.

## 5 Conclusions

We construct a novel dataset comprising all entrepreneurs/firms that have appeared on ABC’s Shark Tank since its initial airing in fall 2009. We find that the amount of an ITF offer is a significant driver of both firm existence and going public, suggesting that financial constraints are a significant barrier to entrepreneurship. We find limited impacts on patents, possibly suggesting that this funding is less important for innovation.

These impacts seem to be heterogeneous with regard to gender and race. While female firms are more likely to exist overall, this is not the case when they receive greater ITF amounts. Meanwhile, Black firms are less likely to go public overall and also less likely to obtain a patent when they receive greater ITF amounts.

All in all, our findings suggest that ST funding may benefit some, but not all, entrepreneurs. To the extent that this funding primarily relaxes financial constraints, our findings could suggest that female and Black firms are in greater need of mentoring on top of financial support.

## 6 Acknowledgments

We thank audiences at Duke I&E (Fuqua), GA Tech (Scheller), and the Kauffman Foundation Workshop “Seeking New Insights and Potential Sources of New Entrepreneurial Growth: Minority Entrepreneurship” for useful comments. We also thank Peter Arcidiacono, Tim Bates, William Bradford, Aaron Chatterji, Andrew Dillon, Eric Edmonds, Erica Field, Fred Finan, Robert Garlick, Ruth Vargas Hill, Joe Hotz, Sari Kerr, Eduardo Maruyama, Manju

Puri, EJ Reedy, Howie Rhee, Alicia Robb, David Robinson, Rodney Sampson, Rob Seamans, Juan Carlos Suárez Serrato, Joel Sobel, and Wilbert van der Klaauw for meaningful discussions/suggestions. Viceisza is particularly grateful to the Economics Department at Duke University where much of this work was completed. We also thank Abiana Adamson, Kendyl Curry, Easlynn Lee, Rayna Thornton, and Kadija Yilla for assistance with collecting the data.

## References

- Abadie, A. and G. W. Imbens (2006). Large sample properties of matching estimators for average treatment effects. *Econometrica* 74(1), 235–267.
- Abadie, A. and G. W. Imbens (2011). Bias-corrected matching estimators for average treatment effects. *Journal of Business & Economic Statistics* 29(1), 1–11.
- Bates, T. and W. D. Bradford (2008). Venture-capital investment in minority business. *Journal of Money, Credit and Banking* 40(2-3), 489–504.
- Bernstein, S., A. Korteweg, and K. Laws (2015). Attracting early stage investors: Evidence from a randomized field experiment. *Journal of Finance*.
- Carpenter, R. E. and B. C. Petersen (2002). Is the growth of small firms constrained by internal finance? *Review of Economics and Statistics* 84, 298–309.
- Chatterji, A. K. and R. C. Seamans (2012). Entrepreneurial finance, credit cards, and race. *Journal of Financial Economics* 106(1), 182 – 195.
- Clementi, G. L. and H. A. Hopenhayn (2006). A theory of financing constraints and firm dynamics. *The Quarterly Journal of Economics* 121(1), 229–265.
- DellaVigna, S. and E. La Ferrara (2015). Economic and social impacts of the media. In S. Anderson, J. Waldfogel, and D. Stromberg (Eds.), *Handbook of Media and Economics*, Volume 1A.
- Fairlie, R. W. and A. M. Robb (2007). Why are black-owned businesses less successful than white-owned businesses? The role of families, inheritances, and business human capital. *Journal of Labor Economics* 25(2), 289–323.
- Frese, M. and M. Gielnik (2014). The psychology of entrepreneurship. *Annual Review of Organizational Psychology & Organizational Behavior* 1(1), 413–438.
- Holtz-Eakin, D., D. Joulfaian, and H. S. Rosen (1994). Sticking it out: Entrepreneurial survival and liquidity constraints. *Journal of Political Economy* 102(1), 53–75.
- Howell, S. (2016). Learning in entrepreneurship. Working paper, New York University.
- Kaplan, S. N. and J. Lerner (2016, August). Venture capital data: Opportunities and challenges. Working Paper 22500, National Bureau of Economic Research.

- Kerr, W. R., J. Lerner, and A. Schoar (2011). The consequences of entrepreneurial finance: Evidence from angel financings. *Review of Financial Studies*.
- Kerr, W. R., R. Nanda, and M. Rhodes-Kropf (2014). Entrepreneurship as experimentation. *Journal of Economic Perspectives* 28(3), 25–48.
- McKenzie, D. (2015). Identifying and spurring high-growth entrepreneurship: Experimental evidence from a business plan competition. Bread working paper 462.
- McKenzie, D. and C. Woodruff (2014). What are we learning from business training and entrepreneurship evaluations around the developing world? *The World Bank Research Observer* 29(1), 48–82.
- Milovac, M. and J. Sanchez-Burks (2014). Positivity makes for poor pitches: Affective tone conveyed by entrepreneurs shapes support for creative ideas. *Academy of Management Proceedings* 2014(1).
- Poczter, S. and M. Shapsis (2016). Know your worth: Angel financing of female entrepreneurial ventures. Working paper.
- Robinson, D. and A. C. G. Viceisza (2016). See and ye shall be: The impact of ABC’s Shark Tank on entrepreneurship and innovation. In progress.
- Shapero, A. and L. Sokol (1985). The social dimensions of entrepreneurship. In C. A. Kent, D. L. Sexton, and K. H. Vesper (Eds.), *Encyclopedia of Entrepreneurship*. Upper Saddle River, NJ: Prentice Hall.
- Wood Brooks, A., L. Huang, S. W. Kearney, and F. E. Murray (2014). Investors prefer entrepreneurial ventures pitched by attractive men. *Proceedings of the National Academy of Sciences* 111, 4427–4431.

# A Tables

Table 1: Balance of pre-characteristics across ITF (No versus Yes)

Pre-characteristics	N	All	No	Yes	P-value diff.
# pitching	601.00	1.47	1.38	1.55	0.00
proportion management women	601.00	0.33	0.31	0.35	0.28
proportion management non-white	601.00	0.14	0.13	0.16	0.28
proportion management black	601.00	0.08	0.08	0.07	0.86
proportion management hispanic	601.00	0.02	0.02	0.02	0.48
attractiveness (beauty apps)	603.00	0.75	0.73	0.76	0.01
firm age on ST	585.00	4.26	4.50	4.04	0.21
industry	603.00	5.71	5.76	5.66	0.68
showed MVP (1=yes)	603.00	0.94	0.92	0.96	0.04
demonstration (1=yes)	603.00	0.96	0.94	0.97	0.08
pre-ST patent	603.00	0.07	0.06	0.08	0.39
self investment (1=yes)	603.00	0.14	0.12	0.16	0.16
amount self investment	603.00	41,464.51	43,338.03	39,796.55	0.87
entrepreneur's valuation (ask)	603.00	2,386,561.11	2,426,153.90	2,351,312.35	0.82
California	587.00	0.29	0.27	0.30	0.49
Colorado	587.00	0.03	0.04	0.02	0.13
Florida	587.00	0.06	0.04	0.07	0.12
Georgia	587.00	0.04	0.03	0.04	0.40
Illinois	587.00	0.04	0.03	0.05	0.33
North Carolina	587.00	0.03	0.03	0.02	0.31
New York	587.00	0.09	0.10	0.08	0.57
Oregon	587.00	0.03	0.03	0.03	0.99
Pennsylvania	587.00	0.03	0.02	0.03	0.43
Texas	587.00	0.09	0.08	0.09	0.86
Utah	587.00	0.04	0.03	0.05	0.14
Washington	587.00	0.02	0.03	0.02	0.44

p-values in last column are for two-tailed t-tests. All variables are in principle pre-determined.

Table 2: Balance of other characteristics across ITF (No versus Yes)

Other characteristics	N	All	No	Yes	P-value diff.
years of schooling	377.00	16.36	16.36	16.36	0.98
overconfidence (ask-valuation)	602.00	1,178,865.33	2,412,069.39	77,513.28	0.00
firm exists 2016	603.00	0.87	0.81	0.92	0.00
post-ST patent	603.00	0.10	0.08	0.12	0.16
IPO around ST	603.00	0.03	0.01	0.05	0.01
avg. annual sales (D&B/onesource)	162.00	2,386,805.58	2,780,054.05	2,056,119.36	0.59
credit score (onesource)	101.00	74.36	76.48	72.72	0.11
credit limit (onesource)	100.00	2,717.50	2,187.50	3,133.93	0.50
# employees (onesource/mattermark)	200.00	11.29	10.28	12.01	0.52
company on mattermark (mm)	603.00	0.54	0.33	0.73	0.00
mm growth score	324.00	51.44	51.54	51.40	0.99
mm 1-month score change	295.00	-0.00	-0.12	0.04	0.28
mm 6-month score change	306.00	0.36	0.13	0.46	0.52
sharks' vibes	603.00	0.21	-0.23	0.61	0.00
# offers throughout pitch	603.00	1.39	0.25	2.40	0.00
# sharks making ITFs	591.00	1.27	0.25	2.21	0.00
# offers countered	547.00	0.33	0.14	0.51	0.00
# offers rejected	603.00	0.81	0.22	1.33	0.00
# sharks in ITF	601.00	0.71	0.00	1.35	0.00
ITF amount	603.00	140,048.63	0.00	264,731.42	0.00
sharks' valuation (final offer)	602.00	1,209,168.47	14,084.51	2,276,476.16	0.00
handshake if ITF=1	603.00	0.53	0.00	0.99	0.00
hug if ITF=1	603.00	0.14	0.00	0.27	0.00
panel gender diversity	603.00	0.25	0.24	0.25	0.18
panel minority diversity	603.00	0.15	0.15	0.14	0.10
youtube popularity to date	578.00	35,830.28	18,312.79	51,080.14	0.00

p-values in last column are for two-tailed t-tests. All variables are in principle pre-determined.

Table 3: ITF as a function of total number of offers

# observations	# offers	ITF (%)
239	0	0
135	1	0.8
105	2	0.88
64	3	0.95
31	4	1
13	5	0.85
9	6	1
3	7	1
1	8	1
2	9	1

Table 4: Impact of ITF on firm existence (LPM, IV, NNM)

	LPM	IV	LPM	IV	LPM	IV	NNM	LPM	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
intent-to-fund (ITF)	0.057 (0.037)	0.112 (0.043)***	0.043 (0.038)	0.095 (0.044)**	0.003 (0.043)	0.070 (0.060)	0.054 (0.035)	0.040 (0.057)	0.173 (0.074)**
ITF amount					0.000 (0.000)***	0.000 (0.000)**		0.000 (0.000)**	0.000 (0.000)
proportion # pitching women								0.057 (0.067)	0.172 (0.074)**
women*ITF								-0.142 (0.091)	-0.385 (0.120)***
women*ITF amount								0.000 (0.000)	0.000 (0.000)**
proportion # pitching black								0.017 (0.175)	0.042 (0.168)
black*ITF								-0.025 (0.196)	-0.051 (0.231)
black*ITF amount								0.000 (0.000)	0.000 (0.000)
proportion # pitching non-white								0.011 (0.164)	-0.019 (0.173)
non-white*ITF								0.032 (0.196)	0.075 (0.250)
non-white*ITF amount								0.000 (0.000)	-0.000 (0.000)
Constant	0.457 (0.058)***	0.446 (0.051)***	0.199 (0.164)	0.223 (0.140)	0.144 (0.177)	0.164 (0.151)		0.125 (0.181)	0.149 (0.157)
$R^2$	0.31	0.31	0.33	0.32	0.34	0.33		0.34	0.33
$N$	603	603	601	601	576	576	576	576	576
pre-ST controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
post-ST controls	No	No	No	No	Yes	Yes	Yes	Yes	Yes

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Robust standard errors clustered at episode level in parentheses.

Included in all specifications (not shown): industry, season, and episode fixed effects,

whether the firm/entrepreneur appeared twice on ST, whether the firm/entrepreneur was featured as an update.

Additional pre-ST controls (not shown): #pitching, attractiveness, showed MVP, demonstration.

Additional post-ST controls: overconfidence, company on mm, Youtube popularity.

Table 5: Impact of ITF on post-ST patent (LPM, IV, NNM)

	LPM	IV	LPM	IV	LPM	IV	NNM	LPM	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
intent-to-fund (ITF)	0.009	0.037	-0.003	0.020	0.002	0.046	0.026	0.026	0.118
	(0.025)	(0.040)	(0.024)	(0.039)	(0.038)	(0.059)	0.041	(0.050)	(0.079)
ITF amount					0.000	-0.000		0.000	-0.000
					(0.000)	(0.000)		(0.000)	(0.000)
proportion # pitching women								0.016	0.086
								(0.039)	(0.055)
women*ITF								-0.022	-0.171
								(0.078)	(0.110)
women*ITF amount								-0.000	0.000
								(0.000)	(0.000)
proportion # pitching black								0.031	0.014
								(0.149)	(0.143)
black*ITF								0.067	0.134
								(0.151)	(0.182)
black*ITF amount								-0.000	-0.000
								(0.000)**	(0.000)***
proportion # pitching non-white								0.013	0.017
								(0.136)	(0.144)
non-white*ITF								0.010	-0.015
								(0.143)	(0.199)
non-white*ITF amount								-0.000	-0.000
								(0.000)	(0.000)
Constant	0.202	0.197	0.221	0.232	0.153	0.167		0.159	0.170
	(0.041)***	(0.034)***	(0.132)*	(0.112)**	(0.127)	(0.107)		(0.130)	(0.109)
$R^2$	0.51	0.51	0.55	0.55	0.56	0.56		0.58	0.57
$N$	603	603	601	601	576	576	576	576	576
pre-ST controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
post-ST controls	No	No	No	No	Yes	Yes	Yes	Yes	Yes

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Robust standard errors clustered at episode level in parentheses.

Included in all specifications (not shown): industry, season, and episode fixed effects,

whether the firm/entrepreneur appeared twice on ST, whether the firm/entrepreneur was featured as an update.

Additional pre-ST controls (not shown): #pitching, attractiveness, showed MVP, demonstration.

Additional post-ST controls: overconfidence, company on mm, Youtube popularity.

Table 6: Impact of ITF on IPO (LPM, IV, NNM)

	LPM	IV	LPM	IV	LPM	IV	NNM	LPM	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
intent-to-fund (ITF)	0.043	0.059	0.043	0.061	0.022	0.039	0.038	0.038	0.086
	(0.021)**	(0.028)**	(0.022)**	(0.029)**	(0.021)	(0.043)	(0.021)*	(0.025)	(0.057)
overconfidence (ask-valuation)					0.000	0.000		0.000	0.000
					(0.000)*	(0.000)**		(0.000)*	(0.000)**
ITF amount					0.000	0.000		0.000	0.000
					(0.000)	(0.000)		(0.000)	(0.000)
proportion # pitching women								0.037	0.063
								(0.031)	(0.041)
women*ITF								-0.041	-0.097
								(0.049)	(0.080)
women*ITF amount								-0.000	-0.000
								(0.000)	(0.000)
proportion # pitching black								-0.189	-0.166
								(0.122)	(0.098)*
black*ITF								0.307	0.247
								(0.171)*	(0.151)
black*ITF amount								-0.000	-0.000
								(0.000)	(0.000)
proportion # pitching non-white								0.179	0.178
								(0.117)	(0.099)*
non-white*ITF								-0.172	-0.172
								(0.115)	(0.120)
non-white*ITF amount								-0.000	-0.000
								(0.000)	(0.000)
Constant	-0.028	-0.031	-0.052	-0.044	-0.112	-0.107		-0.131	-0.115
	(0.036)	(0.032)	(0.085)	(0.072)	(0.096)	(0.080)		(0.098)	(0.078)
$R^2$	0.29	0.29	0.29	0.29	0.33	0.33		0.35	0.35
$N$	603	603	601	601	576	576	576	576	576
pre-ST controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
post-ST controls	No	No	No	No	Yes	Yes	Yes	Yes	Yes

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Robust standard errors clustered at episode level in parentheses.

Included in all specifications (not shown): industry, season, and episode fixed effects,

whether the firm/entrepreneur appeared twice on ST, whether the firm/entrepreneur was featured as an update.

Additional pre-ST controls (not shown): #pitching, attractiveness, showed MVP, demonstration.

Additional post-ST controls: overconfidence, company on mm, Youtube popularity.

Table 7: Mechanisms/heterogeneous impacts (IV)

	Exist (1)	Exist (2)	Exist (3)	Patent (4)	Patent (5)	Patent (6)	IPO (7)	IPO (8)	IPO (9)
intent-to-fund (ITF)	0.023 (0.063)	0.086 (0.080)	0.059 (0.060)	0.046 (0.066)	-0.001 (0.095)	0.042 (0.060)	0.036 (0.044)	0.036 (0.056)	0.035 (0.043)
self investment (1=yes)	-0.269 (0.107)**			-0.014 (0.051)			-0.029 (0.042)		
self investment*ITF	0.260 (0.138)*			-0.003 (0.078)			0.019 (0.066)		
# sharks*ITF		-0.012 (0.038)			0.028 (0.050)			0.002 (0.021)	
pre-ST patent			0.064 (0.123)			-0.098 (0.059)*			-0.049 (0.037)
pre-ST patent*ITF			0.108 (0.143)			0.072 (0.065)			0.069 (0.063)
Constant	0.145 (0.156)	0.168 (0.149)	0.168 (0.152)	0.167 (0.106)	0.163 (0.108)	0.169 (0.108)	-0.108 (0.081)	-0.108 (0.082)	-0.105 (0.081)
$R^2$	0.35	0.33	0.33	0.56	0.57	0.56	0.33	0.33	0.33
$N$	576	574	576	576	574	576	576	574	576
pre-ST controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
post-ST controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Robust standard errors clustered at episode level in parentheses.

Included in all specifications (not shown): industry, season, and episode fixed effects,

whether the firm/entrepreneur appeared twice on ST, whether the firm/entrepreneur was featured as an update.

Additional pre-ST controls (not shown): #pitching, attractiveness, showed MVP, demonstration.

Additional post-ST controls: ITF amount, overconfidence, company on mm, Youtube popularity.