

# Can the Media Spur Startup Activity? Evidence from “Shark Tank”\*

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## Abstract

We study how media portrayals of entrepreneurial fundraising affect startup activity by connecting Nielsen ratings for Shark Tank to measures of entrepreneurial intention. We instrument for ratings with conflicting broadcast schedules of live NBA games in some markets. In general, more positive portrayals of entrepreneurship and increased viewership in the show increase attendance at advice-seeking sessions sponsored by local Small Business Administration centers, but longer-term measures of new business formation show little response. The findings indicate that increased media exposure to entrepreneurship nudges individuals down the path of launching a business.

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“...I have a lot of years of watching inventors bring their products to market and bring them here to you on [Shark Tank]. You have all inspired me and given me the courage to launch Wad-Free.”

Cyndi Bray, Inventor of Wad-Free for Bedsheets  
Contestant on Shark Tank S13:E5 (Nov 5, 2021)

## 1 Introduction

The fact that entrepreneurship is so widely understood to be an engine of economic growth and job creation has spurred business leaders, educators, and policy makers to attempt to create more of it. Numerous strategies and mechanisms have been considered, most with limited success (see, for example, Fairlie et al., 2015; Lerner, 2009). In this paper, we explore a potential mechanism for spurring entrepreneurship that has received relatively little attention: television media, which has already been shown to impact a wide range of social phenomena in other contexts (see DellaVigna and La Ferrara, 2015, for an excellent overview).

We use the ABC reality show *Shark Tank*, which first aired nationwide in August, 2009, as a test-bed for exploring television’s potential impact on startup activity.<sup>1</sup> The show features entrepreneurs who pitch their business plans to a panel of investor-judges (i.e., the sharks) in an attempt to raise money for their ventures. The sharks pepper the entrepreneur-contestants with questions about their business ideas, and each shark ultimately decides whether to invest in the venture. Sometimes sharks invest alone, other times they join together to invest in groups, but the pitch is considered a failure if the entrepreneur cannot get the sharks to invest a pre-committed amount in their venture on agreeable terms. The show is popular: to date, it has counted an average of 7 million viewers per season, winning the Primetime Emmy Award for Outstanding Structured Reality Program in all four years of that category’s existence. “As Seen On Shark Tank” is now a product category on Amazon and at other retail outlets.

Our research design exploits both episode-level variation in the show’s content as well as plausibly exogenous market-level variation in its viewership. We link a series of localized

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<sup>1</sup>For more information see <https://abc.com/shows/shark-tank> (accessed on 2022-07-22).

measures of entrepreneurial interest and activity to viewership levels and to the amount of entrepreneurial success portrayed on the show. Our central finding is that exogenous increases in viewership, especially for episodes portraying relatively more successful fundraising, are followed by increased entrepreneurial interest, especially by novices. These increases in entrepreneurial interest do not translate into measurable increases in new business formation.

We rely on two aspects of the show’s format to develop episode-level variation. There are generally four contestants per episode, and while some contestants walk away victorious, other contestants depart empty-handed, sometimes seemingly demoralized by the interrogation they faced. Episode-level variation in the rate of success that entrepreneurs face on the show allows us to develop a measure of the degree to which positive portrayals of entrepreneurship spur interest in entrepreneurship. Second, the show features contestants from a range of different demographic backgrounds. This allows us to use episode-level variation in contestant gender and race to explore whether role model effects are present in sub-populations with lower rates of employment, akin to Porter and Serra (2020).

Finally, we use lagged Nielsen ratings to capture variation in viewership across markets and over time. Of course, the show’s ratings are potentially endogenous to measures of entrepreneurship. To instrument for the show’s popularity we use the fact that professional basketball (NBA) games sometimes conflict with Shark Tank episodes. Thus, in some markets, but not others, a televised professional sporting event diverts attention away from Shark Tank, lowering ratings for Shark Tank for reasons that are exogenous to entrepreneurial intentions. In addition, our measures relating to the entrepreneur-friendliness of the show and the variation in contestant demographics in a given episode are essentially surprises to the viewer; the interaction of these measures with the show’s ratings offers a plausibly exogenous measure of the degree to which entrepreneurship is portrayed as easy or difficult on any given episode.

We relate instrumented Nielsen ratings to a variety of measures of entrepreneurial activity that vary in terms of their degree of commitment to the task of starting a new business. Building on Bennett and Chatterji (2019), we measure (1) advice-seeking created from counseling and training records of the Small Business Administration (SBA), (2) patent application counts from the US Patent and Trademark Office (USPTO), and (3), firm creation based on

the National Establishment Time-Series (NETS) data. These measures of entrepreneurial activity vary in terms of their commitment: an individual can seek advice from the SBA as a way of exploring one’s suitability to entrepreneurship, without going further. Similarly, filing a patent is a step along the path to starting an innovation-focused business, but this requires considerably less time and devotion to the task of entrepreneurship than starting a new business. As Bennett and Chatterji (2019) show, many individuals who state that they have an idea for a new business undertake some, but not all, of these steps before abandoning their idea. Measuring entrepreneurial intention as well as new business formation allows for us to measure the effects of media exposure at a finer level than would otherwise be possible if we were restricted to counts of startups in a region.

Lagged Nielsen ratings are positively associated with advice-seeking. For example, increased Shark Tank ratings predict increases in new clients and new clients counseled and new clients who have received training at SBA training facilities. Using the SBA’s measure of whether an individual is a novice or an experienced entrepreneur, we find that these results are more prevalent among novices—those who are first time visitors to SBA training centers and who have no prior entrepreneurial experience. We also find variation in episode-level characteristics that is consistent with the idea that positive media portrayals lead to mimicry. Episodes with a larger fraction of successful entrepreneurs are associated with larger numbers of individuals subsequently attending entrepreneurship counseling sessions at SBA centers in markets where viewership is higher. Episodes with larger numbers of female contestants predict more women signing up for training sessions in markets where viewership is higher.

Evidence of effects for longer-term, higher-commitment outcomes is mixed. We find weak evidence that lagged Nielsen ratings predict patent applications, and no evidence that it affects longer-term outcomes, namely new business formation. This is consistent with a treatment effect that decays over time, but is also consistent with the idea that the nudge is not strong enough to overcome the higher effort costs associated with these longer-term measures of entrepreneurial intention.

This research belongs to a broader literature that explores the effects of media exposure on a variety of behavioral outcomes. That literature is too large to review in its entirety here, but DellaVigna and La Ferrara (2015) provide an excellent review highlighting the importance

of the mimicry effect that we observe in our data. Perhaps the closest papers are Bjorvatn et al. (2020) and Peter and Pierk (2020). Bjorvatn et al. (2020) study the impact of an edutainment show on entrepreneurship by conducting a randomized field experiment among a sample of youth in Tanzania. They find some suggestive evidence that the show makes viewers more interested in entrepreneurship and business; however, their main finding is a negative effect – the show discouraged investment in schooling without convincingly replacing it with some other valuable activity such as new business formation. Peter and Pierk (2020) relate national-level counts of new firms to the introduction of shows like Shark Tank (known variously as Dragon’s Den, Lion’s Den, Dragon’s Nest in different markets) across a large number of different national markets throughout the world. Lacking measures of variation in both television ratings or show content, they find positive effects on startup activity broadly. One important challenge for their research design is the fact that entrepreneurs may occupy different social strata in different economic settings, clouding the channels through which media exposure would stimulate entrepreneurial activity.

Our work is also related to a large literature that evaluates mechanisms for stimulating entrepreneurship.<sup>2</sup> Somewhat consistent with this, prior work suggests that business training programs, which have been a go-to policy response, can have mixed effectiveness. Fairlie et al. (2015) assess the impact of a large randomized evaluation in the US and find a short-run effect on business ownership for those who were unemployed at baseline, but this effect dissipates at longer horizons. Moreover, they find no effects on business sales, earnings, or employees. Similarly, McKenzie and Woodruff (2014) survey the evidence on business training programs in developing countries and find that these impact business creation, but do not improve long-run survival. Finally, Howell (2021) explores application and judging data for new ventures in US competitions and finds that receiving negative feedback increases average venture abandonment by 13 percent.

The remainder of the paper is structured as follows. We begin in Section 2 with a description of the data. Section 3 discusses the empirical strategy. Section 4 presents our main findings. Section 5 concludes.

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<sup>2</sup>See, for example, Holtz-Eakin et al. (1994); Carpenter and Petersen (2002); Clementi and Hopenhayn (2006); Kerr et al. (2014); Chatterji and Seamans (2012); Frese and Gielnik (2014); Kerr et al. (2014); McKenzie and Woodruff (2014); Bernstein et al. (2015); Jayachandran (2020).

## 2 Data

We assemble data from a number of sources to study how entrepreneurial intentions and outcomes are affected by media exposure. Data for this study come from Nielsen, from SBA training centers via Freedom of Information Act requests, from the USPTO Patent Registry, and from the NETS database of new firms. The data are summarized in the Appendix in Table A.1, and are described here in greater detail.

### 2.1 Measures of Entrepreneurial Interest

The first step in our data collection process is to build measures of entrepreneurial interest. Bennett and Chatterji (2019), using nationally representative survey data, show that while around 1/3 of Americans claim to have considered starting a business in the last five years, fewer than half have taken even the simplest steps towards launching the business, such as talking to family and friends, or talking to an expert who they did not know personally. Their findings suggest that counts of startup activity would greatly understate the amount of entrepreneurial *interest* sparked by the show. To take this into account, we develop a spectrum of entrepreneurial action that requires increasing degrees of effort, focusing on advice seeking, applying for patents, and new business formation. The idea is that advice seeking represents a relatively low cost, early-stage step in the process of new business formation, while developing intellectual property or actually starting a business require greater levels of financial and time commitment.

#### 2.1.1 Advice-seeking

One of the commonly observed ways of expressing entrepreneurial interest is to seek advice from a friend or from someone knowledgeable about the sector in which a proposed new business might operate (Bennett and Chatterji, 2019). While we cannot measure casual social interactions, we obtained admission data from Small Business Development Centers, Women’s Business Centers, and SCORE chapters. Through a Freedom of Information Act request, we obtained data for Form 641, which is the client in-take form submitted upon

physical or virtual arrival at any of the above-mentioned centers.<sup>3</sup> These data enable us to identify the number of people who are seeking advice from SBA centers in a given market on a weekly basis, as well as the stage of business development they are in, i.e., new or experienced entrepreneurs. Table 1 reports both the number of startup-counseling intake forms in a region, as well as the number scaled by the local population. The data allow us to track the type of counseling (Startup, Business Plan, Marketing, Finance), whether the counseling is sought by a novice or experienced individual, as well as the race and gender of the counselee.

### **2.1.2 Patent applications**

An alternative measure of entrepreneurial intention is to apply for a patent. Bennett and Chatterji (2019) report that relatively fewer individuals with an idea for a new business take the step of applying for a patent, or securing intellectual property, suggesting that this is a higher-cost, higher-commitment signal of entrepreneurial interest. This outcome is measured using USPTO’s publicly available data from PatentsView (<https://patentsview.org>, accessed on 2022-07-22), selecting on “all published patent applications.” We use reverse geocoding on inventor location to create patent (application) counts by location at a weekly frequency. This means that if one patent application has three inventors who live in the same Nielsen market area, that area receives a ‘1’, but if the three inventors live each in separate areas, each area receives a ‘1’.

### **2.1.3 Firm creation**

The strongest, most high commitment measure of entrepreneurial interest is of course creating a new business. To measure new firm creation, we acquired the 2014 release of NETS database, created by Walls and Associates. NETS contains annual time-series information for over 58.8 million U.S. establishments from January 1990 to January 2013. We use these data to create new firm counts by Nielsen market on an annual basis. This variable is not measurable at the weekly level.

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<sup>3</sup>For more information, see <http://bit.ly/2ZpLV36> (accessed on 2022-07-22).

## 2.2 Independent Variables

### 2.2.1 Media exposure

Our main independent variable of interest is Shark Tank viewership, measured by the Nielsen ratings the show receives in a given week. While Shark Tank first aired in Fall 2009, Nielsen does not have ratings available prior to 2010. Thus, we exploit ratings for each telecast (episode) of Shark Tank from 2010 to 2016 for all markets. Nielsen defines markets using the designated market area (DMA) concept. A DMA comprises a collection of US counties. There are approximately 200 DMAs in total.<sup>4</sup> Viewership appears to vary significantly across the US/DMAs. This can be seen in Figure 1 in the Appendix, which shows a map of annual viewership intensity at the DMA level across the nation for the year 2012, corresponding to seasons 3 and 4 of the show.

There are two main measures of viewership, SHR and RTG. SHR captures the percent of households (or Nielsen respondents) *using their television* who are tuned to a specific program, station or network in a specific area at a specific time. In other words, the denominator for SHR accounts for whether the television is turned on at the time of the show. Households who are not watching television do not figure into the calculation. The denominator for the RTG measure is instead the number of households in the DMA, regardless of whether they are turned on. Thus SHR tracks viewing behavior on the intensive margin while RTG tracks it on both intensive and extensive margins.<sup>5</sup>

### 2.2.2 Demographics and other controls

To control for potentially confounding factors, we pull demographic data from the US Census. We focus on median household income, unemployment, and home ownership as our control variables. Home equity is an important source of startup capital (Adelino et al., 2015). Likewise, household income is correlated with wealth, both of which alleviate financial barriers to entry (Fairlie and Krashinsky, 2012). Finally, unemployment rates could be correlated with entrepreneurship through a variety of channels. On the one hand, individu-

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<sup>4</sup>See <https://bit.ly/3I3S5fC> (accessed on 2022-07-22).

<sup>5</sup>Table 1 in the Online Appendix contains summary statistics for these measures for the 24,440 DMA-weeks in our data.

als may be more likely to try self-employment as a remedy for unemployment; on the other hand, high rates of unemployment likely correlate with low levels of economic opportunity, which may dampen entrepreneurial intentions.

### 3 Empirical Strategy

The central empirical objective of our study is to capture variation in treatment intensity associated with the television across markets and over time. Intuitively, we can think of this treatment intensity as comprised of two parts:  $treatment_{dt} = exposure_{dt} \times m_t$ , where  $exposure_{dt}$  is a measure of the strength of viewership in a given market  $d$  at date  $t$ , and  $m_t$  captures the valence or strength of the entrepreneurial message,  $m$ , depicted by the show at date  $t$ . Because individual entrepreneurs appearing on the show experience differing degrees of success, and receive differing degrees of encouragement and support from the sharks, it is important to control for some measure of the message of a given show.

The primary identification challenge in this setting stems from the fact that the Nielsen ratings used to measure exposure may themselves reflect underlying interest in entrepreneurship, thus making exposure a consequence of variation in entrepreneurial intention, not a cause of it. Even a strategy based on staggered roll-out across television markets, as in Peter and Pierk (2020), is unable to address concerns that the show’s early markets were chosen because of their strong local interest in entrepreneurship, thus potentially confounding measurement. Indeed, Shark Tank was not broadcast with any of these considerations in mind: it aired nationwide on ABC beginning in August, 2009.

To identify exogenous variation in Nielsen ratings, we develop an instrument for viewership intensity by using the fact that during part of the year, the show’s Friday night airtime overlaps with live broadcasts of NBA basketball games. The games air on different networks in different markets, but the overlap in air times means that the games pull viewers away from Shark Tank for reasons that are orthogonal to entrepreneurship intentions. Thus, we

estimate:

$$Y_{dt} = \beta_0 + \beta_1 \widehat{Nielsen}_{dt-1} + \gamma X_{d\tau} + \alpha_t + \alpha_d + \varepsilon_{dt} \quad (1)$$

$$Nielsen_{dt-1} = \pi_0 + \pi_1 NBA_{dt-1} + \gamma X_{d\tau} + \alpha_t + \alpha_d + \varepsilon_{dt-1} \quad (2)$$

We introduce a one-week lag between outcome and viewing date to guard both against a reverse causality concern that changes in interest in entrepreneurship spurs increases in viewership, as well as a more mechanical, day-of-week problem, which occurs due to the fact that a show airing on a Friday evening would not generally generate measurable entrepreneurial interest until the subsequent or later weeks.

Table 1 here

Table 1 helps to illustrate how our instrument works by reporting NBA markets and average Shark Tank viewership for 2012, which corresponds to seasons 3 and 4 of the show. Not every DMA in the Nielsen data has a clearly identifiable home team, but we can clearly match the DMA to a home team for the 27 DMAs listed in the table. We call this the “NBA Sample” in the tables that follow. These markets are considerably larger than most of the non-NBA markets that Nielsen tracks, which potentially helps with concerns about restricting the sample to 27 DMAs. There is considerable variation across markets in the average viewership of Shark Tank, as is depicted by the third column. The columns labeled “No NBA Game” and “NBA Game” report average ratings for that market in 2012 based on whether or not a conflicting game aired during the episode. In most markets, Shark Tank ratings were higher when no NBA game conflicted with the Shark Tank broadcast. The logic of the instrument is that because the television audience for NBA games skews towards gender and age demographics that are positively correlated with new business formation, the variation induced by NBA-game overlap pulls away viewers who would be otherwise be most at risk for being affected by the message of the Shark Tank broadcast.

Table 2 here

Table 2 takes the logic of Table 1 to the first-stage of the equation system above. In columns (1)-(4), regressions are run at the episode level, and here *SHR* and *RTG* are the

show’s Nielsen ratings for that episode. NBA Game is a dummy variable equaling one if DMA  $d$ ’s NBA team played on the same day as a Shark Tank broadcast. Columns (1) and (2) focus first on the SHR rating, while columns (3) and (4) focus on the RTG score. Columns (5)-(8) move the analysis to the weekly average level, and here we find similar results.

The direction of the NBA effect is confirms the intuition from Table 1 that live NBA broadcasts draw viewers away from Shark Tank episodes. Column 2 removes DMA-year level controls (median income, home ownership, and unemployment)—the estimates change very little. Given the similarity of the first stage for both Nielsen ratings measures, we focus for the sake of brevity on specifications using RTG as the ratings measure. But our results also hold with the SHR measure.

One appeal of our instrument relative to others previously used in the literature is that it operates at a weekly frequency. Nevertheless, it faces some important limitations. In addition to the fact that it is only available for 27 markets, the NBA regular season runs from October to April; the Shark Tank regular season runs from September to May in most years. Finally, there is potentially only partial overlap for some games in some markets, especially when one considers the availability of television recording.

To address these shortcomings, our empirical strategy relies on a second source of exogeneity: the message content,  $m_t$  of the show on a given date. To capture the degree to which a given episode offers a positive portrayal of entrepreneurship, we measure the number of “winners” on the show (i.e., an entrepreneur who is able to successfully secure funding for their venture). We introduce indicator variables for whether a show has two winners, fewer than two winners, or more than two winners. (Two is the median number of successes on an episode.) We also track the gender and race of contestants based on work in Smith and Viceisza (2018). Variation in  $m_t$  is exogenous from the perspective of a television viewer, as it would be difficult for a viewer to possess advanced knowledge of the content of a new episode and tailor their viewing behavior accordingly. The success rate of entrepreneurs and their demographic characteristics are only revealed as the show is aired.

## 4 Results

### 4.1 Advice Seeking

Table 3 presents our main results linking advice seeking to measures of viewership. The first three columns report OLS regressions of new client visits on lagged Nielsen ratings, using all 200 DMAs available, regardless of whether an NBA team can be mapped to the DMA. Here we find a modest, but statistically insignificant, positive relation between ratings and advice-seeking. The dependent variable in column (1) is all counseling counts, while columns (2) and (3) split the dependent variable according to whether the counseling was sought by a novice or experienced individual. The effects for novice are much larger, and make up most of the overall effect. In columns (4)-(6), we restrict the sample to the 27 DMAs which can be mapped to an NBA market. The results in this restricted sample are around twice that of the full sample, with a point estimate that is statistically significant at the 5% level. A likely reason for this increase in effect size is that these are much larger television markets, and thus the scope for variability in week-to-week changes in the number of counseling cases is larger.

Table 3 here

In the final three columns we use instrumented Nielsen ratings. The increased value of the point estimate indicates that the instrument is purging negative correlation from the OLS estimate, which in turn indicates that those who are pulled away from the broadcast by the game had lower *ex ante* probability of seeking counseling.

Table 4 here

Next we explore how episode-level variation is related to the uptake of advice. This is reported in Table 4. In the first column, the dependent variable is the population-scaled count of counseling cases in a DMA and independent variables measure entrepreneur-friendliness of the show with indicator variables for whether two, more than two, or fewer than two entrepreneurs were able to secure funding successfully. (Recall that two is the median number of successes.) The point estimates show a clear pattern: below-median offers have a negative

effect on counseling cases, while above-median offers have a positive effect. Although these are OLS estimates, it is important to bear in mind that this episode-level variation is a surprise to viewers. Because the funding outcomes are not discernible ex ante, it is hard to imagine that these point estimates are confounded by reverse causation to the same degree as the main point estimates that do not rely on episode-level variation. Also, the fact that below median success rates drive people away from seeking counseling while above median success rates drive people towards the counseling also helps to explain why the main effect in the full sample is modest.

In the remaining columns we turn to gender- and ethnicity-based counts of counseling services and explore how these are explained by the presence of female and minority contestants on the show. In Column (2) the independent variables interact the ratings share with the number of women on the show, and the dependent variable is the number of women signing up for counseling sessions in the following week. The interaction term is positive and highly significant, indicating that an increased presence of women on the show spurs women to explore entrepreneurship. We do not see the same effect for underrepresented racial groups. In particular, while increased ratings predict greater turnout among Black, Asian and Hispanic advice seekers, these effects are not stronger when more minority contestants appear on the show.

## 4.2 Longer-term Measures of Entrepreneurial Action

Panel A of Table 5 reports regressions of patent applications on Nielsen ratings. In columns (1) and (2) we report OLS regressions of patent applications on lagged ratings shares for the full sample and for the NBA-only sample and find no statistically significant findings.

Table 5 here

Column (3) uses the instrumented Nielsen ratings. Here we find a modest positive effect, significant at the 10% level.

In Panel B we regress new business formation on Nielsen ratings. Across specifications, there is no discernible relation between viewership and measures of new firm creation. This holds whether we use the full sample or restrict to the NBA-only sample. It also holds re-

ardless of whether we instrument for Nielsen ratings, and for alternative clustering schemes. One possible explanation for this could be the fact that our dependent variable is only measured at the annual level, and average annual ratings are a poor measure for whether the media exposure was salient. We cannot rule out, however, that the interest it spurred was insufficient to translate into new firm starts.

## 5 Conclusion

Television media has been shown to influence a wide range of economic activities. Can positive media portrayals of entrepreneurship spur entrepreneurial interest and activity? We take up this question by studying how a popular reality television show affects measures of entrepreneurial intent and action. We find that increases in viewership predict increased numbers of visits to SBA training centers, but we do not find increased rates of new business formation or patent applications.

Our results are stronger when the entrepreneurship message is more positive; i.e., when greater numbers of contestants secure funding on the show. The results are concentrated among those who are least familiar with entrepreneurship, such as first-time visitors to the training centers. Increased numbers of women apply for training in weeks after greater numbers of female contestants have appeared on the show. Taken together, these results indicate that we measure a mimicry effect: television viewers watch the show and think, “I can do that too.”

Our findings raise a number of interesting questions for future work. Perhaps the most salient concerns the gap between entrepreneurial interest and entrepreneurial action. Why does increased entrepreneurial interest not manifest in more startup activity? One explanation is that because the show’s purpose is not to promote entrepreneurship, but instead to provide entertainment, that the “treatment dosage” is small relative to that required to undertake the task of launching a new business. After all, the show highlights one step in the entrepreneurial process: negotiating outside financing. Demystifying the process of raising outside financing removes only one hurdle among many that entrepreneurs face. A related explanation is hinted at by the quote offered by contestant Cyndi Bray. She appears on

the show to raise money for a business that was started after years of watching the show. Perhaps the decision to start a business plays out over a time-scale that makes it difficult to match to exogenous variation in television exposure. A third explanation is that it spurs interest among a group of people who were not well suited towards entrepreneurship in the first place. For these individuals, the process of visiting a training center and learning more about the steps to launching a business dissuades them from continuing further. From a policy perspective, this explanation suggests that efforts to affect the extensive margin of entrepreneurship are probably much less effective than efforts to affect the intensive margin of startup activity.

## References

- Adelino, M., A. Schoar, and F. Severino (2015). House prices, collateral, and self-employment. *Journal of Financial Economics* 117(2), 288–306.
- Bennett, V. and R. Chatterji (2019). The entrepreneurial process: Evidence from a nationally representative survey. *Strategic Management Journal*, 1–31.
- Bernstein, S., A. Korteweg, and K. Laws (2015). Attracting early stage investors: Evidence from a randomized field experiment. *Journal of Finance* 72, 509–538.
- Bjorvatn, K., A. W. Cappelen, L. H. Sekei, E. . Srensen, and B. Tungodden (2020). Teaching through television: Experimental evidence on entrepreneurship education in tanzania. *Management Science* 66(6), 2308–2325.
- Carpenter, R. E. and B. C. Petersen (2002). Is the growth of small firms constrained by internal finance? *Review of Economics and Statistics* 84(2), 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., D. Karlan, and J. Zinman (2015, May). Behind the GATE experiment: Evidence on effects of and rationales for subsidized entrepreneurship training. *American Economic Journal: Economic Policy* 7(2), 125–61.
- Fairlie, R. W. and H. A. Krashinsky (2012). Liquidity constraints, household wealth, and entrepreneurship revisited. *Review of Income and Wealth* 58(2), 279–306.

- 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. T. (2021, 02). Learning from Feedback: Evidence from New Ventures. *Review of Finance* 25(3), 595–627.
- Jayachandran, S. (2020). *Microentrepreneurship in Developing Countries*, pp. 1–31. Cham: Springer International Publishing.
- Kerr, W. R., J. Lerner, and A. Schoar (2014). The consequences of entrepreneurial finance: Evidence from angel financings. *The Review of Financial Studies* 27(1), 20–55.
- Kerr, W. R., R. Nanda, and M. Rhodes-Kropf (2014). Entrepreneurship as experimentation. *Journal of Economic Perspectives* 28(3), 25–48.
- Lerner, J. (2009). *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed and What To Do About It*. Princeton University Press.
- 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.
- Peter, C. D. and J. Pierk (2020). Does shark tank enhance entrepreneurial activities? Working paper, Erasmus University.
- Porter, C. and D. Serra (2020, July). Gender differences in the choice of major: The importance of female role models. *American Economic Review: Applied Economics* 12(3), 226–254.
- Smith, B. and A. Viceisza (2018, March). Bite me! ABCs Shark Tank as a path to entrepreneurship. *Small Business Economics* 50(3), 463–479.

Table 1: NBA Markets and Shark Tank Ratings for 2012

Designated Market Area	Team Name	Mean		
		Average	No NBA Game	NBA Game
Atlanta	Hawks	8.03	8.39	7.74
Boston	Celtics	7.32	8.38	6.66
Charlotte	Bobcats	5.64	6.4	4.93
Chicago	Bulls	9.02	9.35	8.41
Cleveland-Akron	Cavaliers	6.79	6.62	6.92
Dallas-Ft. Worth	Mavericks	4.95	5.13	4.78
Denver	Nuggets	5.65	5.88	5.47
Detroit	Pistons	7	7.43	6.65
Houston	Rockets	6.15	6.33	5.97
Indianapolis	Pacers	5.34	5.75	5
Los Angeles	Lakers	5.68	6.25	5.4
	Clippers			
Memphis	Grizzlies	3.23	3.38	3.11
Miami-Ft. Lauderdale	Heat	5.31	5.56	5
Milwaukee	Bucks	10.32	10.82	9.91
Minneapolis-St. Paul	Timberwolves	6.53	6.31	6.77
New Orleans	Hornets	3.18	3.63	2.75
New York	NY Knicks	7.14	8	6.53
	Brooklyn Nets			
Oklahoma City	Thunder	6.66	6.83	6.55
Orlando-Daytona Bch-Melbrn	Magic	7.42	7.71	7.18
Philadelphia	76ers	8.43	9.59	7.72
Phoenix	Suns	5.29	5.43	5.16
Portland, OR	Trailblazers	7.23	7.56	6.77
Sacramnto-Stkton-Modesto	Kings	4.84	4.75	4.93
Salt Lake City	Jazz	4.89	5.12	4.74
San Antonio	Spurs	7	7.63	6
San Francisco-Oak-San Jose	Warriors	5.68	5.79	5.54
Washington, DC	Wizards	4.2	4.68	3.71

Table 2: Do NBA Games Affect Shark Tank Ratings?

	Episode Level Data				Weekly Level Data			
	<u>SHR</u>		<u>RTG</u>		<u>SHR</u>		<u>RTG</u>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NBA Game	-0.000299 (0.0600)	-0.180 (0.0581)	-0.00468 (0.0293)	-0.0882 (0.0325)	-0.0499 (0.0385)	-0.133 (0.0415)	-0.0312 (0.0184)	-0.0668 (0.0226)
Sample	All	NBA	All	NBA	All	NBA	All	NBA
N	33669	8718	33670	8718	24440	6413	24440	6413
Mean	5.996	5.705	3.033	3.072	6.258	5.921	3.153	3.172
SD	3.963	2.605	1.942	1.447	3.610	2.321	1.751	1.287
F-Stat	0.000	9.547	0.026	7.386	9.025	10.163	8.320	8.688
$R^2$	0.542	0.692	0.569	0.701	0.536	0.698	0.560	0.710

In Columns (1)-(4), observations are at the ratings level, in columns (5)-(8), at the DMA-week level. For columns (1), (2), (5), and (6), the dependent variable is SHR, the fraction of households with their televisions on who are viewing the broadcast, while in the other columns the dependent variable is RTG, the percent of total households watching the show. In columns (1)-(4), NBA Game is a dummy variable for whether the broadcast of a local NBA team conflicts with the Shark Tank broadcast. In columns (5)-(8), the dependent variables are averaged at the weekly level and the NBA Game variable counts the number of NBA broadcasts in the previous week. Columns (5)-(8) also include DMA-level controls for income, percentage home ownership, and local unemployment rate.

Table 3: Does Shark Tank Spur Advice-Seeking?

VARIABLES	(1) All	(2) Nov	(3) Exp.	(4) All	(5) Nov.	(6) Exp.	(7) All	(8) Nov.	(9) Exp.
Mean Weekly Rating	0.227 (0.157)	0.208 (0.123)	0.043 (0.057)	0.479 (0.253)	0.447 (0.194)	0.013 (0.089)	14.599 (7.390)	8.098 (5.380)	5.504 (2.678)
Controls	Yes	Yes	Yes						
Sample	All	All	All	NBA	NBA	NBA	NBA	NBA	NBA
Model	OLS	OLS	OLS	OLS	OLS	OLS	IV	IV	IV
Observations	24,440	24,440	24,440	6,413	6,413	6,413	6,413	6,413	6,413
R-squared	0.671	0.640	0.504	0.744	0.704	0.713	-0.574	-0.292	-0.699

This table reports regressions of counts of SBA counseling visits on lagged Nielsen ratings for the show Shark Tank under various specifications. Mean Weekly Rating is the average RTG rating at the DMA level. Columns labeled “All” include all counseling visits. Columns labeled “Nov.” include only first-time visits to SBA centers, while columns labeled “Exp.” include only visits from experienced individuals. The first three columns use the full sample. The second and third sets of columns use the NBA-matched sample, with columns (7)-(9) using the NBA game as an instrument for Shark Tank viewership. Robust standard errors in parentheses

Table 4: Variation in Media Portrayals of Entrepreneurship

VARIABLES	(1) All	(2) Women	(3) Black	(4) Asian	(5) Hispanic
Mean Weekly Rating (MWR)		0.034 (0.135)	0.133 (0.048)	0.029 (0.014)	0.052 (0.025)
MWR[# with offers < 2]	-0.040 (0.546)				
MWR[# with offers = 2]	0.269 (0.257)				
MWR[# with offers > 2]	0.626 (0.213)				
MWR # Women		0.093 (0.044)			
MWR # Black			-0.044 (0.046)		
MWR # Asian				-0.004 (0.014)	
MWR # Latin					-0.059 (0.041)
Controls	Yes	Yes	Yes	Yes	Yes
Sample	All	All	All	All	All
Model	OLS	OLS	OLS	OLS	OLS
Observations	14,963	14,963	14,963	14,963	14,963
R-squared	0.673	0.602	0.501	0.267	0.560

This table reports OLS regressions in which the dependent variable  $\text{start-up counseling}_{dw}$  is the number of counseling cases where the primary area of assistance is ‘start-up assistance’ for clients at DMA  $d$  on week  $w$  per thousand HHs of DMA  $d$ . Mean weekly rating is the average RTG rating of DMA  $d$  in the previous week.  $[\# \text{ with offers} < 2]$  is a dummy variable that equals 1 if the number of teams on Shark Tank that receive at least 1 offer in week  $w - 1$  is less than 2, and 0 otherwise.  $[\# \text{ with offers} = 2]$  and  $[\# \text{ with offers}_{w-1} > 2]$  are defined analogously. Women, Black, Asian and Hispanic interactions are interactions of the mean weekly ratings with the number of contestants who were of that demographic. The dependent variable for these columns is the number of startup counseling visits recorded from individuals of that demographic group. All specifications include control variables for DMA  $d$ 's median income, unemployment rate, and home ownership rate, all defined at the annual level. All DMAs are used. Standard errors are clustered at the DMA-week level. DMA and week fixed effects are included in all specifications.

Table 5: Evidence for Longer-term Outcomes

Panel A: New patent applications, next 3 weeks

	(1)	(2)	(3)
Mean Weekly Rating	-0.0002 (0.0001)	0.0004 (0.0004)	0.0287 (0.0161)
Model	OLS	OLS	IV
DMAs	ALL	NBA	NBA
Controls	Y	Y	Y
N	24440	6413	6413
Mean	0.111	0.152	0.152
SD	0.094	0.088	0.088
$R^2$	0.930	0.945	-0.861

Panel B: Annual new firms

	(1)	(2)	(3)
Mean Annual Rating	0.7679 (0.2465)	0.1113 (0.8879)	-2.5975 (32.0119)
Model	OLS	OLS	2SLS
DMAs	All	NBA	NBA
FE: DMA	X	X	X
FE: year	X	X	X
FE: week			
Controls	X	X	X
Cluster	Year	Year	Robust
N	571	81	81
Mean	15.537	19.400	19.400
SD	8.675	10.011	10.011
$R^2$	0.870	0.902	-0.400

The dependent variable in Panel A is the number of patent applications by inventors at DMA  $d$  from week  $t$  to  $t + 3$  per thousand households at DMA  $d$ . In Panel B the dependent variable is the number of new firms created in year  $y$  at DMA  $d$ . We identify initial location of each firm by the location of its headquarter at the firm's inception. Control variables are DMA  $d$ 's median income, unemployment rate, and home ownership rate, all defined at the annual level. Standard errors are clustered at the year level in Panel B.

# Appendix

## A Additional Materials

This appendix includes summary statistics for the main variables used in the analysis, as well as a map depicting spatial variation in Shark Tank viewing for the year 2012.

Table A.1: Summary statistics

	N	Mean	Median	SD
# start-up counseling <sub>dw</sub>	24,440	41.63	23.00	68.87
start-up counseling <sub>dw</sub>	24,440	0.05	0.04	0.04
SHR <sub>dw</sub>	24,440	6.26	6.00	3.61
RTG <sub>dw</sub>	24,440	3.15	2.95	1.75
# households	770	588606.11	323123.50	871685.45
home ownership rate	770	68.12	68.50	4.81
median income	770	51,709.13	50,032.12	9,161.42
unemployment rate	770	8.58	8.40	2.24

This table reports the summary statistics of key variables in our analysis. The data comprise weekly observations from 200 DMAs over the 2010-2016 period. Count variables are denoted with #, and corresponding variables without # are scaled by the number of households at the DMA in units of thousands. Demographic measures vary at the DMA-year level.

Figure 1: Shark Tank viewership based on Nielsen ratings by DMA, 2012

