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https://doi.org/10.1590/SciELOPreprints.6459

Submetido em: 2023-07-18
Postado em: 2023-07-24 (versão 1)
(AAAA-MM-DD)

The JOBS Act and the boost for start-up fundraising A Regression Discontinuity design approach

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Abstract

Crowdfunding plataforms are becoming increasingly popular, allowing micro-entrepreneurs to raise money to fund projects in various categories. The present study aims to explorar the effects of the JOBS *(Jumpstart Our Business Startups, JOBS)* Act, which fostered the crowdfunding model by smoothing several securities regulations, on fundraising, attraction of backers and fundraising categories, seeking to identify ifthere has been a change in the backer profile for the crowdfunding market, especiallyin the Kickstarter.com platform. The empirical analysis used a Regression Discon- tinuity Design model. The discontinuity lies in verifying the incentive provided by the increase in the number of backers and the volume of fundraising after the Act came into effect. When assessing the results, it could be noticed that the Act af- fected fundraising levels for start-up projects in 75%. In a similar way, it affected the number of backers in 59%. In order to test model specification, robustness tests were performed by fundraising category. The Design, Video Games and Technology categories presented both positive and significant results and reinforced the titleof capital increase. There was an increase of US$ 22,599 in the coefficient, which represents a variation of 106% in relation to the average for the Design category.For the Video Games category, the increase was of US$ 42,523, or a variation of 222% in relation to the average. For the Technology category, it was observed that the effect generates an increase of US$ 52,733, or a variation of 174% in relation to the average. Looking at project quality and how it might attract backers, resultsfor successful and unsuccessful projects and for average fundraising were estimated. The results indicate a significative increase in fundraising for successful projects and that they also present evidence on a higher fundraising average. The growth of the crowdfunding movement associated with the JOBS Act brought more institutional and legal security to micro-entrepreneurs, backers and users of crowdfunding plat- forms, demonstrating a positive effect for projects hosted on the Kickstarter.com platform, boosting their volume of fundraising.

Keywords: JOBS Act; start-up companies; Crowdfunding; Regression Discontinuity Design.

JEL Classification: O43,K22, M13.

Introduction

The crowdfunding system can be defined as a social media platform where projects are developed with small contributions of online donors which may add up to fund big projects (Wash 2013). A considerable amount of crowdfunding platforms have emerged in recent years, generating a substantial amount of financial resources (Belleflamme, Lambert, and Schwienbacher 2014). The Kickstarter.com platform, specialized in financing creative projects, has received more than US$ 1 billion in pledges from 5.8 million funders (backers) from its inception in 2009, funding more than 58,000 projects. Thus, the crowdfunding industry has been growing strongly and is in a process of consolidation. As a result, the main crowdfunding websites have their market well defined (Stemler 2013b). In Brazil, the website Catarse, launched in January 2011, represents one of the first collective financing platforms. Being the largest collective financial community in the country, it has already raised more than R$ 12 million to fund about 800 projects. Its model is similar to Kickstarter.com's, that is, the entrepreneur uses the platform as a means to show their idea to the public, specifying the total amount required for investment and the cut-off date to evaluate the success of the project. (Mendes-Da-Silva et al. 2015).

The essence of the crowdfunding system is raising capital through the investment of small amounts of money from a large number of backers in Internet. ((Moritz and Block, 2014); Royal and Windsor 2014). Since crowdfunding is based on the necessity of raising financial resources from a large number of capital providers, four types of crowdfunding can be distinguished: donations, rewards, loans or debt financing (lending) and shares in the company according to the value of the contribution (equity) (Ahlers et al. 2015; Beck 2014; Collins and Pierrakis 2012; Giudici et al. 2012; Leimeister 2012). Moreover, the crowdfunding model allows that different types of business, such as agribusiness, social projects, innovation projects and private cultural production raise capital in away that avoids the traps of traditional funding methods (Braet, Spek, and Pauwels2013; Lehner 2013; Schwartz 2013; Agrawal, Catalini, and Goldfarb 2013). Prior to the JOBS Act, however, crowdfunding had a limited capacity of facilitating investments in smaller businesses because such offers did not fall within any pre-JOBS acts of private investment exemptions under the *Securities Act (SEC)* or in applicable State securities. The SEC usually barred companies from offering or selling securities unless the offer wasregistered in the government institution or qualified for a limited number of exemptions from registration.

The literature shows the importance of the collective financing market. Agrawal, Catalini, and Goldfarb (2011) and Rakesh, Choo, and Reddy (2015) present evidence on the influence geographic factors might exert on the nature and the success of project, and that geographically independent projects might raise more funds than local projects.

Zhang and Liu (2012) use data from the Prosper.com platform, the largest microcredit market in the United States. The results show that rational backers tend to compose the majority in terms of donations. Saxton and Wang (2013) focus on the determining effects of charitable donations in social network environments using data from Facebook.com. The results indicated effects on the crowdfunding market caused by the effect of small donations from backers concerned only with social causes. Stemler (2013a), Parker (2014) and Zheng et al. (2014) raised the discussion on the fact that, despite crowdfunding attracts funders, the need for information may increase the number of bad projects and, surprisingly, less informed backers may increase the number of to-be-funded good projects. Moreover, the empirical review of the papers shows the economic relevance of the Kickstarter.com platform to the crowdfunding market. Qiu (2013) showed the importance of advertising in their work about crowdfunding. The results indicated that projects highlighted in the front page of Kickstarter.com are associated with the greatest positive effect on pledges when compared to other forms of advertising. In this discussion, Colombo, Franzoni, and Rossi-Lamastra (2015) demonstrated the importance of the Linkedin.com social network and its strong relation with the success of the Kickstarter.com campaign. Kuppuswamy and Bayus (2015) sought to add to the discussion a deeper understanding of the crowdfunding market and its backers. The resulsts highlight the importance of the role played by family and friends in Kickstarter.com projects, the effects of social influence and the role played by project updates during the funding cycle. Mollick (2014), in their exploratory study, using data from Kickstater.com, concluded that a successful crowdfunding operation is negatively correlated with the amount raised and the length of the process, and that the size of the social network of the candidate, the existence of a video introducing the project and the geographic proximity with capital providers increase the chance of success. Mollick and Kuppuswamy (2014b) show evidence on video games and technology projects being more likely to succeed in Kickstarter.com. The paper suggest that crowdfunding market brings potential benefits beyond money, including access to customers, press, workers and independent sponsors. Pitschner and Pitschner-Finn (2014) presents results that suggest a simple selection mechanism based on expected returns of the project to Kickstarter.com. The evidence is constructed using quantitative methods to show the results, and focuses mainly on data from Kickstarter.com, but there is no clear identification in the literature of the effects of the JOBS Act on fundraising using Regression Discontinuity Design with data from Kickstarter.com.

The crowdfunding model is singularly positioned to help two groups of people ensure the money and the support they need: on the one hand, entrepreneurs trying to transform their idea into viable businesses and, on the other hand, small businesses that try to maintain or to grow their business. Both face huge challenges in the today's financial environment due to the lack of credit and operating history, causing difficulties in obtaining loans from banks (Fink 2012. This business model can collaborate with emergence of

innovative companies and job creation. On the other hand, there is the caution to protect small backers, for they might move resources from savings for high-risk ventures (Martin 2012; Bruton et al. 2015).

The present work aims to contribute to the crowdfunding literature by discussing and identifying the effects of the JOBS Act on fundraising, attracting backers, raising categories and change in the profile of the backer for start-up projects in the US crowdfunding market hosted on the Kickstarter.com platform. The relevance of studying the effects of the Act on the collective financing market lies in analyzing the importance of incentive mechanisms in an expanding market. Alternatively, the JOBS Act allows small business owners to raise funds through a good idea, enabling the development of future projects in the US and generating indirect effects of job creation and income. By using a Regression Discontinuity design (RDD), it is possible to explore the temporal cut-off point, being the treatment the transition to the JOBS Act in 5 April 2012, seen as an incentive to projects in the collective financing market. The dataset comprehends all the 87,260 projects available in the Kickstarter.com platform from January 2009 to May 2013.

The results showed that, after applying the policy of the JOBS Act, projects in the Kickstarter.com platform increased their amount raised in 75%. The results for the number of backers after the JOBS Act also showed an increase of 59%, which shows that after the change in the law many backers sought to invest in crowdfunding projects, especially in the design and technology categories. Following the methodological approach of exploring the effects promoted by the institutional change of the JOBS Act in the collective financing market, the optimal bandwidth selector proposed by Calonico, Cattaneo, and Titiunik (2014) was used. The effects of the pre- and post-JOBS Act periods were not statistically significant, indicating that no other policies affected the results. With regard to robustness, heterogeneity in eastimating the JOBS Act effects was tested for the dif- ferent categories. The design, video games and technology categories displayed positive and significant results and reinforced the title of capital increase. An increase of US$ 22,599 in the coefficient is observed, which represents a variation of 106% in relation to the average of amount raised for the design category. For the video games category, the increase presented a variation of 222%, which represented US$ 42,523 in absolute values.For the technology category, the effect provides a statistical significance of increase of US$52,733, which stands for a variation of 174% in relation to the average. Observing the quality aspect of projects and how it allows attracting backers, the results were estimated for successful and unsuccessful projects and for amount raised by average investment. The results showed a significant increase in fundraising for successful projects and that these projects display evidence on a larger amount raised by average investment. The results demonstrated that the policy implemented by the JOBS Act attains its objective when it comes to increasing financial resources collection, posing an incentive to collectivefinancing projects.

The paper is organized as follows: besides this introduction, the first section discusses the formulation of the policy and benefits provided by the JOBS Act. Second section describes the dataset used in the analysis based on projects present in the Kickstarter.com platform since 2009. Third section presents the empirical strategy, describing the Regression Discontinuity design model used to explore the effects of the JOBS Act. Fourth section specifically analyzes the policity of transition to the JOBS Act and the results of the effects on fundraising, as well as the heterogeneity between the categories. Fifth section summarizes the main conclusions.

1 The JOBS Act *(Jumpstart Our Business Startups Act)*

The JOBS Act passed the US Congress in 15 March 2012 and was sanctioned by President Barack Obama in 5 April 2012. The intention of the Act was to enable the access to capital, either public or private, which would allow small business to raise funds through funding operations exempt from registration with the Securities Act (SEC) and make it easier for startups to seek the initial public offering (IPO). The legislation also extends the timeframe from two to five years for public and private companies to comply with the requirements of the Act before the SEC. Besides, it has given greater legal and institutional security to entrepreneurs, backers and users of crowdfunding platforms (Hazen (2012); Griffin (2012); Wroldsen (2012)).

The recession of 2008 urged entrepreneurs to seek investment alternatives. The restriction on access to credit, previously available through banks, helped developing the crowdfunding model. With the advent of the JOBS Act, entrepreneurs started benefiting from the democratization of the access to private capital through donations from small backers, treating them like investors, granting them shares or rewards in exchange for their funding and profit expectation. Those backers became the first customers, with access to products produced by the capitalization of the projects, best prices, or some other special benefit (Fink 2012). The presale (Belleflamme, Lambert, e Schwienbacher, 2010) of products for first customers is a common feature of the crowdfunding market, which more traditionally resembles entrepreneurial initiatives such as software, hardware or consumer goods production projects. Moreover, it allowed exemption from registration for fundraising. The most important projects of electronic consumer goods are financed by the crowdfunding system, including products such as 3D printers, electronic watches, video game consoles, and computer hardware. (Mollick and Kuppuswamy (2014a)).

Backers must take into account the risk of failure inherent to startups and the lack of liquidity with regard to equity holdings. In this case, the JOBS Act provides protection to backers. In order to protect from this risk, all backers are subject to a limit on the

amount they can legally invest based on their net worth. According to the rules, an investor whose annual income or net worth is less than US$ 100,000 would be limited to invest up to US$ 2,000 or 5% of annual net income. In case annual income or net worth exceeds US$ 100,00, such investor can invest up to 10% of it. (Fink 2012; Wiltz (2013)).

The JOBS Act intended to attain the following objectives:

a) To increase the number of shareholders without the need for disclose information or register the shares with the SEC, given that previously it was required to provide information to the SEC with only 500 shareholders. Now, under the new legislation, such requirements will be required when the assets reach US$ 10 million and the company has either 500 accredited or 2,000 qualified shareholders. (Cohn 2012; Martin 2012);

b) To provide a new exemption from registration of public offerings with the SEC, for specific types of small oferings. This exemption enables the use of online funding platforms. One of the conditions of this exemption is the annual global limit on the amount each person can invest this kind of offering, differentiated by the person's annual income or net worth. The limits are: 2,000 dollars or 5% of the annual income (whichever is greater), if the income is of up to US$ 100,000; or 10%, if the income is greater than US$ 100,000. This exemption is a form of public funding.(Fink 2012; Stemler 2013b; Dambra, Field, and Gustafson 2015);

c) To define as startups the companies whose annual total gross revenue is of up US$ 1 billion in the last fiscal year. This allows the limit to be increased for offersof securities exempt under the regulation, which extended from US$ 5 million to US$50 million, enabling thus grater fundraising efforts under the simplified regulation (Fink 2012; Stemler 2013b);

d) To exempt startups from certain regulatory and disclosure requirements in the registration statement that was previously reported to the public for give years. The most significant relief provided was in the obligations imposed by the Section 404 of the Sarbanes-Oxley Act and the associated rules and regulations. New public companies have now an initial phase of 5 years before the disclosure of information. (Fink 2012; Stemler 2013b).

The Act is divided into 7 titles which make reference to the different levels of granting it gives. Titles I, V and VI came into force upon the signing of the Act in 5 April 2012. Title II came into force in 23 September 2013. Sections III and IV await a more detailed regulation from the Securities and Exchange Commission. The titles are: I - Reopening American capital markets to emerging growth companies; II - Access to capital for job creators; III - Crowdfunding; IV - Small company capital formation; V - Private company flexibility and growth; VI - Capital expansion; and VII - Outreach on changes to the Law or Commission.

Title II projected a higher expectation of investments with the possibility of raising funds above US$ 1 million for the aforementioned companies (Fink 2012; Stemler 2013b). Since the approval of Title II, it has been possible to publicly announce offerings of donations to the projects, which had previously been prohibited by the SEC. For the first time in almost 80 years, private startups and small businesses could increase investment funding through advertising, using websites such as Facebook.com or Twitter.com to help spread information on the project. Recently, in June 2015, the SEC approved Title IV, legislation that authorized equity crowdfunding in the US. Since then, the American legislation has allowed shares sold on the Internet to be freely traded by their holders. This allows startups to raise funds with thousands of backers. Companies like Uber.com, or EasyTaxi.com may, for instance, raise funds from drivers or taxi drivers spread throughout their markets, turning them into shareholders of the business.

1.1 Empirical evidence on the JOBS Act

The JOBS Act *(Jumpstart Our Business Startups Act, JOBS Act)* has been created with the purpose of encouraging the funding of American small businesses by smoothing several security regulations. It was sanctioned by President Barack Obama on April 5, 2012. The Act established rules for emerging micro-enterprises to raise funds from small backers, phenomenon known as collective financing or simply crowdfunding. Investment in projects started being considered securities, fiscalized by the Securities and Exchange Commission. One of the objectives of the JOBS Act was to protect small backers from high-risk applications, limiting to 2,000 dollars or 5% of their income (whichever is greater), if their income is of up US$ 100,000, or to 10%, if it is greater than this value (Cohn 2012; Martin 2012; Fink 2012; Stemler 2013b; Dambra, Field, and Gustafson 2015). The JOBS Act plays a key role when it comes to public offerings for small businesses. Dambra, Field, and Gustafson 2015 attempted to prove that the JOBS Act affected the activity of initial public offering (IPO). To sort this out, the authors employed international samples, sam- ples collected in the US two years prior to and after the implementation of the Act anda national sample of IPOs from January 2001 to March 2014. Controlling for the market conditions, it was estimated that the JOBS Act led to 21 incremental IPOs by year, an increase of 25% in relation to the levels verified before the Act. Dharmapala and Khanna (2014) analyzed market reactions to small businesses that made IPOs afte the cut-off date in relation to a group of similar companies (control) that made IPOs in the months prior to the cut-off date. The authors found abnormal, positive and statistically signifi- cant returns around March 15. This suggests the value to backers of the disclosure and compliance obligations under the JOBS Act is compensated by the adaptation costs. The initial results imply an abnormal return of between 3% and 4% and the implicit increase in the value of the affected companies is of at least US$ 20 million. The JOBS Act also

affected banks. Mitts (2014), using an RDD strategy showed that the Act was beneficial to smaller banks. Stemler (2013b) analyzed the effects of the JOBS Act and the crowd-funding market. His initial results indicated that this Act may open a potential market for small business owners. Burtch, Ghose, and Wattal (2013) examined the crowdfunder behavior and the information on previous contribution to journalism projects, including the amount raised and the calendar of contributions. The results showed a relationship between marketing efforts and the success of crowdfunded projects. Finally, Zimmerman (2015) analyzed a group of 365 companies and observed aspects of accounting disclosure and exemption from disclosure, with relevant impact on public offerings. The results in- dicate that small business would be reacting well to the exemption incentives of the Act. However, since there is exemption from information disclosure, those businesses can not be audited and do not provide transparency in the information passed on to backers.

2 Data

The data used in this study come from the Kickstarter.com platform, the largest crowd-funding platform in the US. Several startup projects of different categories seek to raise funds to finance their proposals. Some requirements must be observed in order to raise funds from potential backers, such as: rewards to potential backers, quality in the presentation at different stages of the project, videos of periodic updates etc. (Mollick (2014)). The data available in the Kickstarter.com platform enable identifying the numerous features of each project. This work aims to identify the minimum fundraising target of each project, its campaign period, its category, the number of backers who pledged to a project and the amount raised at the end of a campaign. Kickstarter.com operates under the all- or-nothing system when it comes to the form of donations. In this system, the creatorof the project sets the fundraising goal and keeps nothing unless the goal is achieved, returning the pledged funds to backers (Cumming, Leboeuf, and Schwienbacher (2014)). According to Zhang and Liu (2012) and Kuppuswamy and Bayus (2015), a longer cam- paign period implies a greater propension to higher pledges. In addition, as exposed by Qiu (2013), advertising must be taken into account in websites such as Kickstarter.com inorder to reach the minimum amount funded. Thus, family, friends and followers play a keyrole in making the project successful (Agrawal, Catalini, and Goldfarb (2011); Saxton andWang (2013)). Moreover, according to Colombo, Franzoni, and Rossi-Lamastra (2015), agreater number of contacts in Linkedin turned out to be associated with both the number of supporters and the volume of capital raised in 669 projects on Kickstarter.com.

The Kickstarter.com platform falls within the crowdfunding modalities of donations and rewards. A typical project in Kickstarter.com has a small video, a text and pictures describing it. In addition, it brings more information such as location, number of support-

ers, amount raised, timeframe, profile updates, number of owners who are supporters of the projects on Facebook, a list of rewards supporters can receive in case they contribute, usually differentiated by the amount of the contribution. Projects on Kickstarter.com consist of a founder posting information on its project on a page, defining a minimum fundraising target and the timeframe for the fundraising effort. Then, potential backers can contribute with whatever amount they wish, receiving the reward compatible with such amount. Fundraising will be deemed successful if the amount met or exceeded the initial minimum target. The value is then transferred to the founder, after a deduction of 5%. In case the project does not reach its financial target in the established timeframe, donations are returned to each backer and the proposal will not be developed. The lim- itation on Kickstarter.com states that donations can be made only by credit card from people who have a bank account in the US.

The dataset used in this study comprehends all the projects available on Kickstarter.com from January 2009 to May 2013. There are about 87,260 projects in the sampling period, and 44,36% of them were successfully funded. The average length of a campaign, considering all the processes analyzed, is approximately 37 days. However, projects failing to reach the minimum fundraising target present a censored time. From this amount, projects prior to 2011 and after 2012 were ruled out for they were too distant from the cut-off point of the analysis. In a similar way, projects exceeding US$ 1 million were excluded because they skewed the average upward. These transformations did not affect the results and the database was left with 38,085 observations after adjustments.

Table 1: Descriptive Statistics - 2009 to 2013

	2009		2010		2011		2012		2013	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Fundraising	2,603	4,737	3,044	11,328	4,329	19,025	8,232	88,875	9,329	92,669
Backers	37	65	42	178	58	218	112	1,012	138	1,404
Target	7,010	28,632	13,464	346,996	10,050	41,454	21,005	270,311	20,390	142,364
Length	64	24	47	21	39	15	33	11	31	10
					Volume of fu draising by category					
Arts	2,381	6,906	2,078	3,716	2,656	5,541	2,800	7,644	2,708	5,405
Comics	3,529	4,710	2,280	4,530	5,255	51,402	7,274	25,865	7,016	22,774
Dance	2,466	4,202	2,382	2,443	2,760	3,007	3,470	4,350	3,030	3,985
Design	2,029	3,269	10,408	66,418	15,093	66,838	27,415	248,793	12,606	33,333
Fashion	838	1,412	2,232	5,197	2,422	5,279	4,497	21,613	10,275	56,966
Film & Video	3,075	5,379	3,408	8,818	4,588	11,542	6,415	20,095	9,277	134,873
Food	4,080	6,417	3,780	5,340	4,988	11,888	6,489	18,752	5,565	8,950
Video Games	1,897	3,224	2,555	6,304	5,790	14,053	30,882	237,468	31,692	203,221
Music	2,893	3,960	2,973	4,972	3,427	6,433	3,798	15,274	3,511	7,736
Photography	1,771	2,750	2,404	4,512	2,472	4,177	2,752	5,803	3,273	6,970
Advertising	2,187	3,630	1,727	3,502	2,513	6,164	2,824	12,611	2,888	9,955
Technology	1,740	3,055	4,440	16,393	14,608	55,114	39,769	166,962	30,532	127,187
Performing Arts	1,639	1,995	2,632	4,432	3,044	4,862	3,971	9,039	4,804	12,527
					Volume of backers per category					
Arts	35	95	35	98	40	85	42	88	42	78
Comics	71	134	46	86	92	623	152	516	140	418
Dance	34	47	36	34	40	46	47	43	44	56
Design	28	41	190	1,047	195	680	297	1,742	220	637
Fashion	10	13	26	84	31	68	58	279	133	861
Film & Video	34	55	37	107	51	157	72	274	129	2,136
Food	60	74	49	62	60	102	82	193	75	120
Video Games	31	48	48	124	125	374	511	3,300	492	3,009
Music	44	60	44	68	50	110	57	298	57	159
Photography	25	32	33	55	34	57	40	287	45	92
Advertising	44	77	30	69	40	102	49	270	56	273
Technology	27	40	71	443	151	395	363	1,133	327	1,463
Performing Arts	23	24	36	54	41	45	53	105	67	224

The descriptive statistics such as mean and standard deviation of each variable and of the 13 crowdfunding categories present in Kickstarter.com are displayed in Table 1. The covariates or control variables were obtained on Kickstarter.com and correspond to the number of backers, fundraising goal (*goal*) duration (*duration*), category (*parentcat*) and days of the week. All information is at the project level for the 2009-2013 period.

The descriptive statistics with mean and standard deviation of each variable and of the 13 crowdfunding categories considering the pre-treatment and post-treatment period of the JOBS Act implementation are displayed in Table 2. It can be observed an increase in the mean in the post-treament period, that is, after the JOBS Act came into effect.

Table 2: Descriptive Statistics for 2012

	Prior to the JOBS Act		After the JOBS Act	
	Mean	Std. Deviation	Mean	Std. Deviation
Fundraising	5,885	27,385	7,195	31,068
Backers	84	437	104	488
Target	15,937	148,614	21,953	272,198
Length	35	12	32	10
Volume of fundraising by category				
Arts	2,957	5,508	2,728	7,715
Comics	5,297	13,507	7,752	27,591
Dance	2,966	3,214	3,534	4,594
Design	19,657	68,788	21,808	59,363
Fashion	3,096	16,251	5,771	24,516
Film & Video	5,964	15,125	6,326	21,500
Food	5,963	10,469	6,391	18,650
Video Games	18,592	78,566	19,372	67,583
Music	3,406	7,092	3,698	7,876
Photography	2,405	4,807	2,979	6,350
Advertising	2,620	7,221	2,900	13,283
Technology	17,663	55,553	34,026	90,285
Performing Arts	3,791	6,466	4,233	10,675
Volume of backers by category				
Arts	45	75	41	90
Comics	110	270	161	543
Dance	44	37	47	48
Design	235	705	249	631
Fashion	45	299	76	457
Film & Video	63	174	75	318
Food	77	129	82	192
Video Games	354	1,484	350	1,239
Music	49	90	56	132
Photography	36	75	42	91
Advertising	45	148	52	298
Technology	220	792	328	1,018
Performing Arts	53	78	56	148

3 Empirical Strategy

This section presents the empirical strategy used to identify the causal effect of the JOBS Act on startups. The (*Regression Discontinuity Design - RDD*) model is proposed by Lee and Lemieux (2009) and seeks an identification strategy through a deterministic function, the day when the JOBS Act was enacted - April 5, 2012. The to-be-explored discontinuity takes into account the effect on the amount raised by projects hosted in Kickstarter.com after the crowdfunding incentives brought to startups by the JOBS Act. Considering the characteristics, formal notation is used to model impact indicators (outcome variable) of the JOBS Act through the following equation:

$$Y_{it} = \beta_0 + \beta_1 JOBS_{it} + \beta_2 Diastrans_{it} + \beta_3 JOBS_{it} * Diastrans_{it} + X_{it}\Theta + \epsilon_{it} \quad (1)$$

where Y_{it} is the outcome of interest for project i, in year t. $JOBS_{it}$ is an indicator that takes value 1, if project i is being affected by the JOBS Act in the year t, and 0 if not. $Diastrans_{it}$ measures the transition in days prior to and after the JOBS Act. X_{it} is a control vector previously described in the Data section. Finally, ϵ_{it} is an error term.

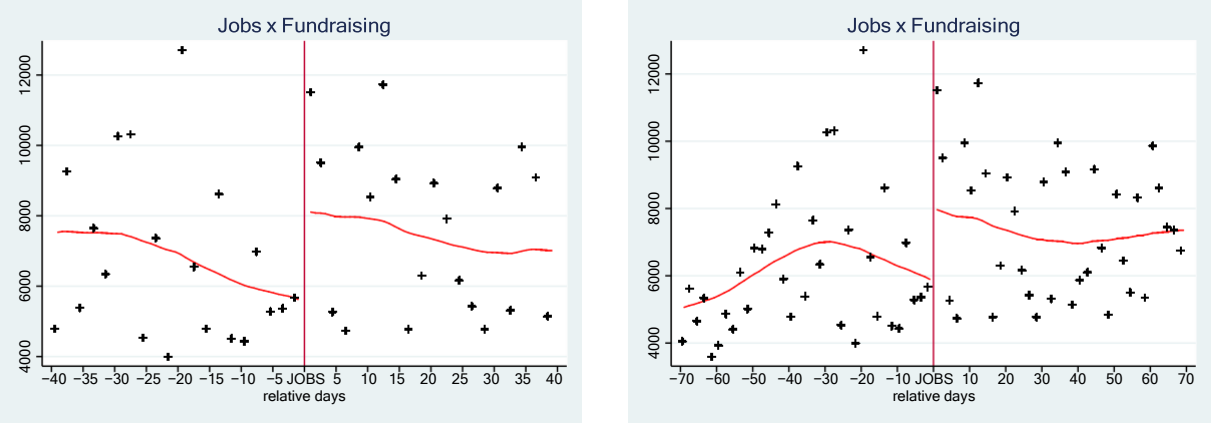
Yet, we still need to confirm the empirical strategy through robustness tests. To do so, a regression with joint *dummies* for periods prior to the enactment. As a result, those *dummies* can not display statistical significance to explain increases in fundraising.

Other robustness tests attempted to show the effects when considering the alternation in the format of the data distribution (kernel), considering results by fundraising categories. The expected results when using these tests is that the statistical significance is maintained when the format of the data distribution (kernel) is alternated, be it tri- angular, unfirom or Epanechnikov. Since the evaluation is by fundraising category, itis expected that more robust fundraising values be confirmed for the technology, video games and design categories.

4 Results

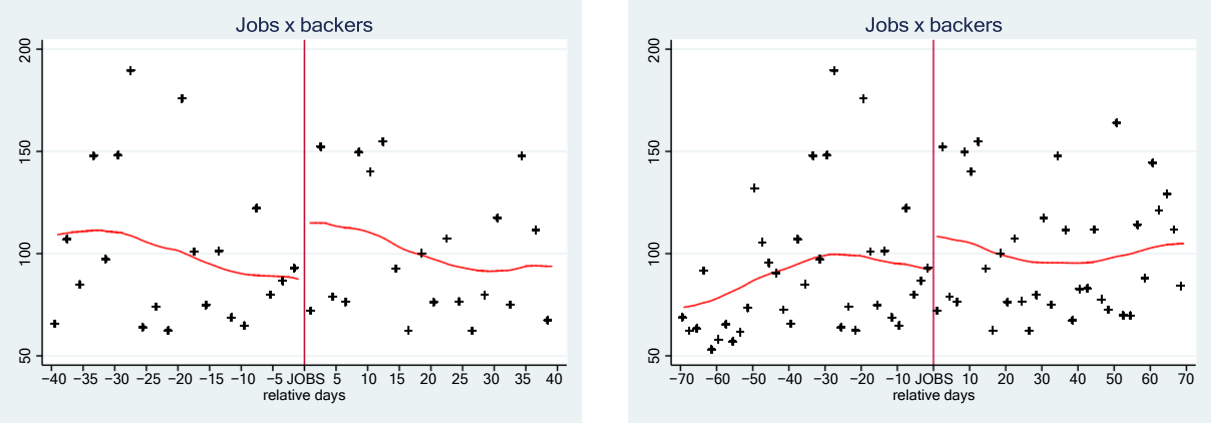
This section analyzes the results based on the RDD sharp model described in the Empirical Strategy section. Figures 1 and 2 demonstrate graphically the discontinuity after the implementation of the Act and its effects on fundraising for projects hosted on Kickstarter.com and backers, respectively. The points to the right of the cut-off point are slightly shifted upward, implying a higher incidence of fundraising after the transition.It can also be noticed a positive and significant outcome after the treatment, considering the interval of 40 days prior to and after the enactment. Considering a greater interval(70 days), there is a tendency in data to keep moving upwards. A potential result had already been demonstrated by Agrawal, Catalini e Goldfarb (2014) also due to changes brought by the JOBS Act in a research conducted by Google.com.

Figure 1: Transition to the JOBS Act - Fundraising



Note: The residuals are generated by the fundraising regression.

Figure 2: Transition to the JOBS Act - Backers



Note: The residuals are generated by the backers regression.

Table 3 presents the results for the impact of the JOBS Act on fundraising when considering an optimal bandwidth selector (CCT). In columns 1 to 5, estimates of the temporal cut-off of the discontinuous transition to the JOBS Act in 5 April 2012 are shown, demonstrating the treatment effect on projects hosted on Kickstarter.com. Results in column 1 demonstrate that, after the transition, the volume of fundraising increased in US$ 5,154.1, or 75%. In column 2 the results were estimated together with residuals of the fixed effect of categories and controls for campaign period and fundraising target. This reinforces the allegation of the existence of a causal effect of the JOBS Act on projects hosted on Kickstarter.com. In column 3 the results were estimated with a second-degree polynomial. The results are in line with the JOBS Act by enabling capital expansion for small business as well ass the democratic access to private capital, providing also exemp- tion from registration of small public offerings with the SEC, that is, debureaucratizing and encouraging donations from small investors. In order to corroborate the results for the fundraising estimates and to prove that the JOBS Act affects not only fundraising,

but also the number of backers, stimulated by the provision of the Act about the promotion of the projects and protected by legal security, as well as by the expectation of future return of investments, the results of the impact of the JOBS Act on the number of backers of projects hosted on Kickstarter.com (columns 4 and 5); The results showed a growth of 59% (column 4) in crowdfunding backers after the JOBS Act. Column 5 presents the results with residuals. It is clear that the transition to the JOBS Act through the promo- tion of the projects and the possibility of becoming shareholds in future projects enabled the attraction of new backers.

Table 3: RD - Estimates of the effects of the JOBS Act on the volume of fundraising and number of backers

	(1)	(2)	(3)	(4)	(5)
JOBS	5,154.1***	4,637.4***	4,291.6**	57.83**	56.59
	(1872.9)	(1583.2)	(2243.5)	(26,71)	(26.13)
BW selector	CCT	CCT	CCT	CCT	CCT
bandwidth	29	29	35	28	28
Polynomial	linear	linear	Quad	linear	linear
Kernel	Uni	Uni	Uni	Uni	Uni
Controls	NO	YES	NO	NO	YES
Obs. to the left	3,399	3,399	4,122	3,279	3,279
Obs to the right	3,430	3,430	4,237	3,348	3,348
total	6,829	6,829	8,359	6,627	6,627

Note: Dependent variable Raised. Kernel Uniform; CCT Calonico, Cattaneo, and Titiunik (2014). Columns 1 to 3 refer to backers. Standard erros are in parentheses. *** represents p<1%, ** represents p<5% and * represents p<10%.

4.1 Robustness tests

A common practice in causal inference literature suggests that the identification assumption can be supported by estimates of the causal effect of a treatment that supposedly has no effect under such assumption (Imbens, 2004). Not rejecting the hypothesis that a similar effect is zero would not prove that the identification has been obtained, but would considerably provide more plausibility to that assumption. In this section, a set of results supporting that the discontinuity found in the transition to the JOBS Act is not a mere statistical coincidence is provided.

The first robustness test consists of assessing whether the dataset remains unchanged when different types of data distribution (kernel) ae considered: Uniform, Triangular and Epanechnikov. Table 4 presents the results. The purpose of this estimation is to demonstrate that the results are maintained even when different data distributions are considered, corroborating the initial results. The first two columns present the results for the Uniform kernel, columns 3 and 4 for the Triangular kernel, and columns 5 and 6 for the Epanechnikov kernel. In Table 5, the same robustness tests are applied in order to evaluate the results for the impact of the JOBS Act on the number of backers.

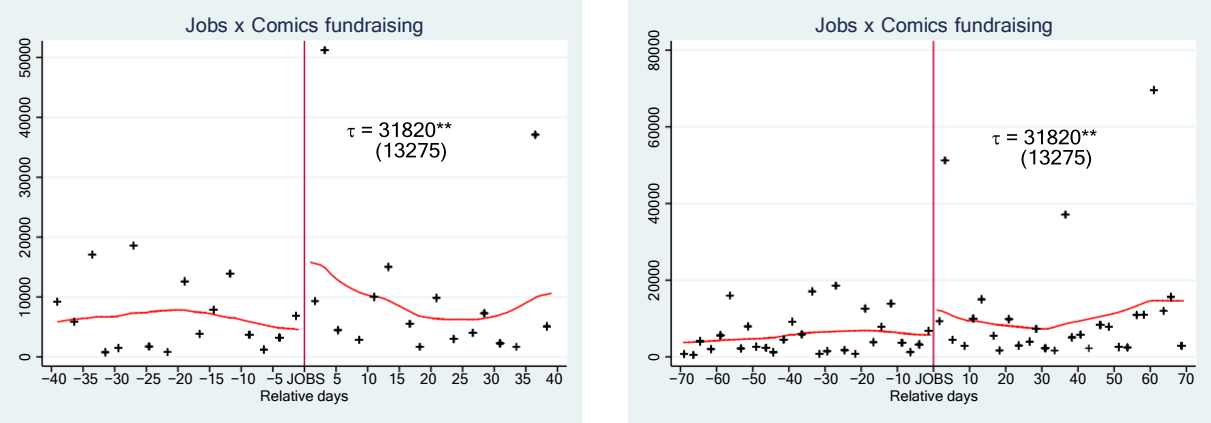
The following step consists of testing the Granger (1980) causality and estimating the pre-treatment or anticipatory effects as well as post-treatment effects, an usual test for the difference-in-differences estimator used to ascertain robustness in results. In case the model specification is correct, no statistical relevance is expected for the periods prior toand after the transition to the JOBS Act. Tables 6 and 7 present the results for the pre- and post-treatment effects. Effects of 1 year, 5 months, 60 days, 30 days, 15 days and 7days prior to and after the transition to the JOBS Act were observed (regression columns 1 to 6, respectively). It can perceived that the effect of the Act practically does not occurin periods prior to and after its implementation, since no fundraising increase is verified. With regard to past factors or previous trends, no effect on fundraising has been detected, resulting in coefficients without statistical significance as expected. A linear polynomial and a Uniform distribution kernel were used. All these tests confirm that results have not been influenced neither by previous nor by future trends.

So far, it has been observed that the impact of the JOBS Act is both positive and significant, even when robustness tests for previous periods, global polynomials and different kernel types are applied, what indicates an increase in fundraising for projects hosted on the Kickstarter.com platform.

In order to further explore model specification and the impact of the JOBS Act on heterogeneous responses, some tests on how backers behave toward particular categories were performed. [1] The Design, Video Games and Technology categories reinforce the preference of backers for projects with expectations of future returns to fundraising. The Arts, Dance, Fashion, Film & Video, Food, Music, Photography and Advertising categories display local fundraising characteristics such as the ones pointed out by Mollick (2014), whereas projects involving Design, Video Game and Technology have characteristics that minimize geographic constraints to fundraising (Sorenson and Stuart (2001); Petersen and Rajan (2002); Agrawal, Catalini, and Goldfarb (2011); Lin and Viswanathan (2015)). A hypothesis that can be posed is the fact that some backers may be migrating their funds from the zero-coefficient categories to the Design, Video Games and Technology categories.

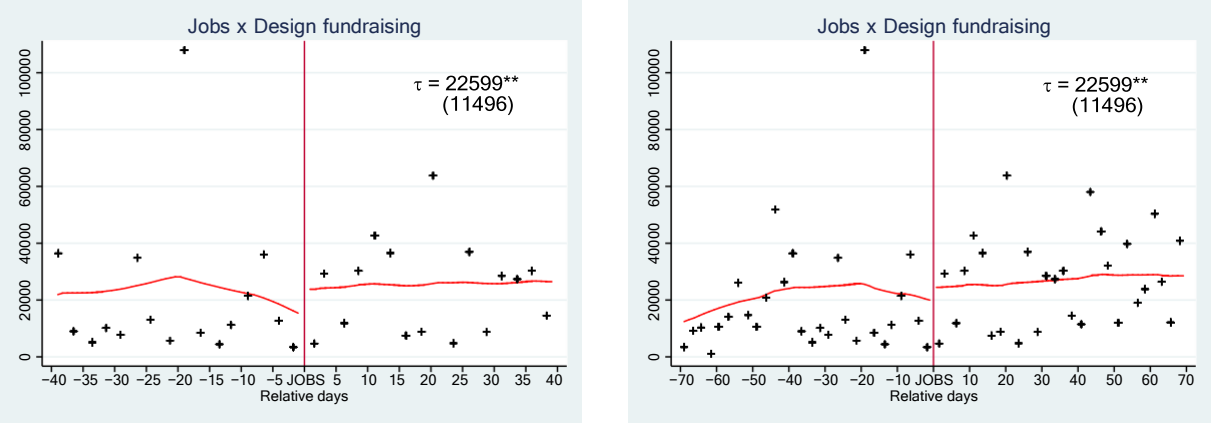
[1] All categories were tests; however, the Arts, Dance, Fashion, Film & Video, Food, Music, Photography and Advertising did not present statistical significance. This corroborates the fundraising statistics for the categories presented here

Figure 3: Transition to the JOBS Act - Fundraising by category



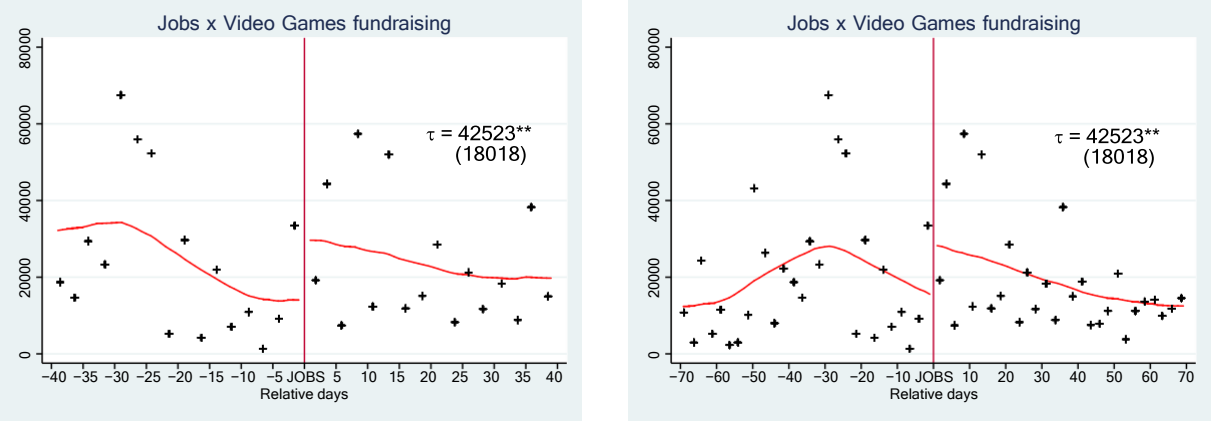
Note: The residuals are generated by the fundraising regression. The phased lines represent a local linear regression.

Figure 4: Transition to the JOBS Act - Fundraising by category



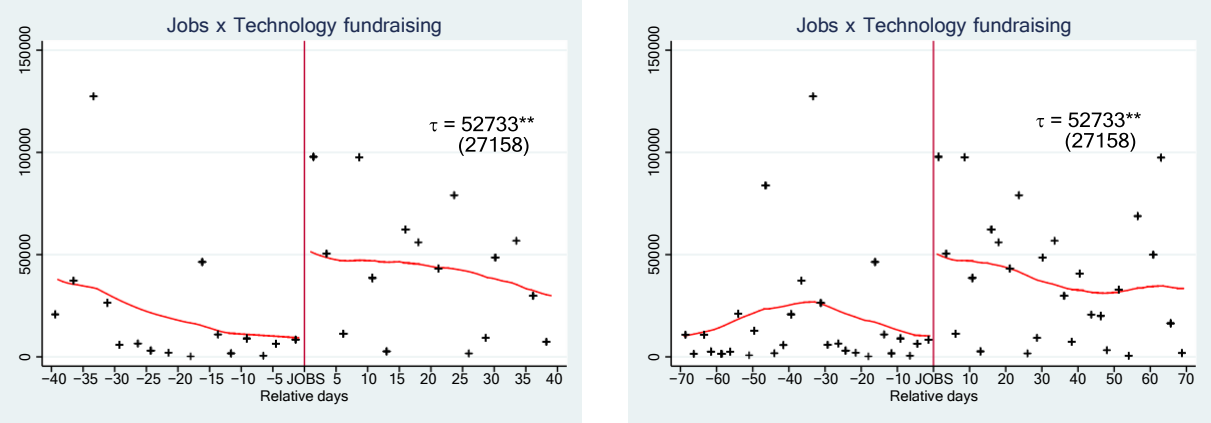
Note: The residuals are generated by the fundraising regression. The phased lines represent a local linear regression.

Figure 5: Transition to the JOBS Act - Fundraising by category



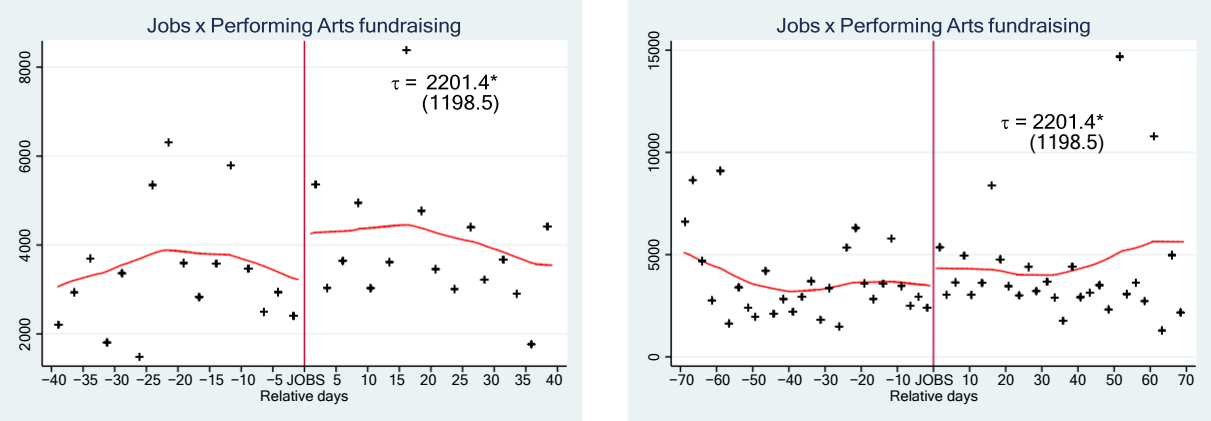
Note: The residuals are generated by the fundraising regression. The phased lines represent a local linear regression.

Figure 6: Transition to the JOBS Act - Fundraising by category



Note: The residuals are generated by the fundraising regression. The phased lines represent a local linear regression.

Figure 7: Transition to the JOBS Act - Fundraising by category



Note: The residuals are generated by the fundraising regression. The phased lines represent a local linear regression.

Table 4 presents the effects of the JOBS Act on increasing fundraising for the Design, Video Games, Technology, Comics and Performing Arts categories. It is observed that the effect of the policy indicates a considerable statistical significance in terms of fundraising. In column 1, it can also be observed that there is an increase of US$ 22,599 in the coefficient, which represents a variation of 106% in relation to the fundraising average of the Design category. These results corroborate the idea that the crowdfunding market puts startups in a prime position to raise money directly from its potential customers. For the Video Games category (column 2) it was verified an increase of US$ 42,523 in the coefficient, a variation of 222% in relation to the average. Start-up companies have the ability of establishing their game titles as brands and develop a personal connection with customers and funders (Wiltz, 2013). The results indicate that the video game industry is well-funded, be it by small investors or by investment clubs (Wiltz, 2013). For video game and technology developers, crowdfunding provides the economic freedom necessary

to promote creative freedom. Start-up companies can use crowdfunding to reach backers that crave innovation. In doing so, they can mitigate the risk associated to the production of game titles outside of mainstream genres and can, simultaneously, assess the appeal of its product from the amount and frequency of investments. On the other hand, the backer can also boast about having backed a game title or a design/technology product.
[2]

Table 4: RD estimates of the impact of the JOBS Act on fundraising by category

	Design	Video Games	Technology	Comics	Performing Arts
	(1)	(2)	(3)	(4)	(5)
JOBS	22,599**	42,523**	52,733**	31,820**	2,201.4*
	(11,496)	(20,753)	(27,158)	(13,275)	(1,198.5)
BW selector	CCT	CCT	CCT	CCT	CCT
bandwidth	28	29	29	22	24
Polynomial	linear	linear	linear	linear	linear
Kernel	uni	uni	uni	uni	uni
Obs. to the left	114	248	50	86	151
Obs. to the right	148	214	73	61	133
total	262	462	123	147	284

Note: Dependent variable: Raised. Uniform Kernel; CCT Calonico, Cattaneo, and Titiunik (2014). Standard errors are in parentheses. *** represents p<1%, ** represents p<5% and * represents p<10%..

What reinforces the allegation of investments in projects involving the Video Games and Technology categories are the operational advantages fostered by crowdfunding, where creators or developers can establish their commercial operations or development studios in areas where the fiscal environment is favorable and attract talented programmers and developers. It enables, for instance, start-up companies to compete with huge companies, increasing their access to crowdfunding networks, which may help with indirect costs such as payroll, software licenses are hardware. Table 4 also presents the results for the Technology category (column 3). It is observed that the effect is a statistically signifi- cant increase of US$ 52,733 in absolute value, or a variation of 174% in relation to the fundraising average of projects. Some highlights within the Technology category are the Pebble watch, which raised about US$ 10 million, and the virtual reality glasses Oculus Rift, which raised about US$ 2,4 million. A similar result was found by O'Connor (2013). Policies associated with technology companies has already been demonstrated by Zhao and Ziedonis (2012), pointing out evidence on Research Development funding for start-up companies in the state of Michigan considering from 2002 to 2008. The study suggests that relaxing financial constraints allowed companies to remain in business, besides the benefits.

[2]The robustness results for the IK estimator by category can be found in the Appendix.

Geography also plays a key role in the crowdfunding model to attain the success of the entrepreneurial venture. Agrawal, Catalini, and Goldfarb (2011) identified that online platforms tend to eliminate economic frictions regarding distance because they make monitoring and feedback easier for distant backers. Yet, social frictions may not be completely eliminated. Rakesh, Choo, and Reddy (2015) state the Video Games, Comics and Technology projects are less dependent on their location, differently from projects involving Performing Arts, Food, and Dance. A reason for this trend can be the rewards given by projects. In the case of Performing Arts, for instances, rewards include general tickets, premiere tickets or even a personal interaction with the cast. Such rewards are extremeley dependent on geographic proximity between backers and where the project is going to be developed. In contrast, rewards offered by Video Games, Technology, Design and Comics projects can be sent to people all over the world.

Ordanini et al. (2011) conducted an exploratory research to understand the motivation of backers. They surveyed entrepreneurs participating in three kinds of projects: (1) charitable initiatives; (2) projects in need of funding to complete or develop new products, similarly to the presale crowdfunding model mentioned by Hemer (2011); (3) projects with financial return to backers. The study indicated a clear difference in motivation patterns, with different levels of willingness to sponsor. The project needs to be part of a social initiative or to reward backers. The characteristics identified by the authors with respect to backers is that they should be involved with innovative behavior and have a strong feeling of identification with the entrepreneur or with the project, being motivated to learn, to have fun and to improve their visibility before their community. This could explain some customer preferences for donations and for the Performing Arts and Comicscategories.

Mollick and Kuppuswamy (2014b) investigated the opinion of entrepreneurs in Video Games and Technology campaigns. The results gather evidence that projects in these two categories are more likely to be successful. The work suggests that the crowdfunding market brings potential benefits beyond money, including access to customers, press, workers and independent sponsors. Table 9 presents the impact of the JOBS Act on the number of backers for the Design, Video Games, Technology, Comics, and Performing Arts categories (columns 1 to 10). It was observed an increase of 138% for Design (column 1), 134% for Technology (column 5) and 123% for Video Games (column 3). For the Comics category, the number of backers increased by 286%. This represents a growing increase in capital supply for this category, which is in rapid expansion. These results indicate a significant increase, possibly demonstrating preferences and expectations of backers for projects that bring future benefits (Wiltz, 2013). [3].

[3]The robustness Table of the impact of the JOBS Act on the number of backers by category, using the IK estimator, can be found in the Appendix.

Table 5: RD estimates of the impact of the JOBS Act on the number of backers by category

	Design	Video Games	Technology	Comics	Performing Arts
	(1)	(2)	(3)	(4)	(5)
JOBS	352.01*	439.76	446.51	414.58*	5.24
	(213.59)	(335.54)	(280.59)	(238.72)	(13.53)
BW selector	CCT	CCT	CCT	CCT	CCT
bandwidth	24	28	28	18	20
Polynomial	linear	linear	linear	linear	linear
Kernel	uni	uni	uni	uni	uni
Obs. to the left	96	233	49	75	126
Obs. to the right	131	211	71	51	119
total	227	444	120	126	245

Note: Dependent variable: backers. Uniform Kernel; CCT Calonico, Cattaneo, and Titiunik (2014). Standard errors are in parentheses. *** represents p<1%, ** represents p<5% and * represents p<10%.

4.2 Mechanism - change in the backer profile

After the JOBS Act the backer profile seems to have changed. Apparently, the crowdfunding market has attracted backers with expectations of return on their investment and of being a partner in the venture. The evidence seem to indicate that backers observe the characteristics of successful projects with greater acuity and seek to direct their contributions based on expectations of future return on the investment. The delivery rate of rewards could explain motivation factors that could determine contribution by category (Mollick (2015)).

In order to discuss whether quality influences the decision of contributing to investment in projects, Mollick (2013) examined 2,101 crowdfunded projects to identify the behavior of venture capitalists or amateur crowdfunders. The results showed that entrepreneurial quality is evaluated the same way by both groups. Discussing the different funding categories, from Arts to Technology, Mollick and Nanda (2015) evaluated if amateur funders judge which ideas to fund differently from experts. The results showed that amateurs are more willing to fund local or regional quality projects, according to their interest and personal motivation aspects, not worrying about financial return. This could explain the heterogeneous responses to fundraising in projects like Dance, Music, Fashion, and Advertising, where results did not display statistical significance for most estimators, democratizing the process of donating. This idea is defended by Lin, Boh, and Goh (2014). The authors investigated the heterogeneity in the choice of donations to projects and identified four archetypes of backers: active backers, trend followers, the al- truistic, and the crowd. The results pointed to different motivations reflected in strategies and behaviors of each archetype.

Signs of success can be noticed in projects hosted on Kickstarter.com by observing or-

dinary characteristics. Mollick (2014) assessed the performance of Kickstarter.com campaigns from 2009 to 2012. The fact "project update" is strongly correlated with the final result of the initiatives, the success rate is close to 60%, whereas projects without up- dates have a success rate of 32.6%, what suggests that updates are valuable to backers. Another success factor of campaigns might be positively correlated with project quality and number of friends involved in social media. The results indicate that in 80% of fail- ure cases, projects failed to raise 20% of their initial target. Social predictors, such as number of supporters, number of friends on Facebook, and number of tweets mentioning the project can also help explain the likely success or failure. Using only social variables, however, generates low-accuracy forecasts. The model used by Etter, Grossglauser, and Thiran (2013) substantially increased the accuracy of forecasts at the early stages of the campaign by mixing financial and social data.

When analyzing successful projects, that is, those with quality characteristics in their construction, one can notice an even greater evolution in fundraising (Table 12, columns 1 and 2) of 76%, whereas for projects that failed, the results are significant, indicating a negative response (Table 12, columns 5 and 6). Paying more attention to which categories successful projects belong, results remain positive and significant, reinforcing the quality of the venture. For the categories, in fundraising terms Design showed an increase of 244% (Table 13, column 1); Video Games, 210% (Table 13, column 3); Technology, 212% (Table 13, column 5); Comics, 262% (Table 13, column 7) and a relatively more timid increase of 60% for the Performing Arts category (Table 13, column 9). Still with regard to quality, Table 14 presents the results for the categories that showed higher fundraising indices and it can be observed that practically all categories did not display statistical significance [4].

[4]The robustness Tables of the impact of the JOBS Act on fundraising for successful and unsuccessful projects, using the IK estimator, can be found in the Appendix, together with the charts for successful categories (Figures 8, 9, 10, 11 and 12)

Table 6: RD estimates of the impact of the JOBS Act on fundraising and number of backers - successful and unsuccessful projects

	Successful projects				Unsuccessful projects			
	Fundraising		Backers		Fundraising		Backers	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
JOBS	10,358***	11,033***	163***	143***	-1,175.2***	-581.68***	-17***	-5*
	(3885.5)	(2613.4)	(61)	(38)	(363.92)	(2613.4)	(5)	(3)
BW selector	CCT	IK	CCT	IK	CCT	IK	CCT	IK
bandwidth	23	52	27	59	15	54	20	58
Polynomial	linear	linear	linear	linear	linear	linear	linear	linear
Kernel	Uni	Uni	Uni	Uni	Uni	Uni	Uni	Uni
Obs. to the left	1,263	2,912	1,465	3,277	1,019	3,475	1,326	3,707
Obs. to the right	1,162	2,869	1,417	3,216	1,039	3,639	1,396	3,860
total	2,425	5,781	2,882	6,493	2,058	7,114	2,722	7,567

Note: Dependent variables: Raised and Backers. Uniform Kernel; CCT Calonico, Cattaneo, and Titiunik (2014) and IK (Imbens and Kalyanaraman, 2011). Standard erros are in parentheses. *** represents p<1%, ** represents p<5% and * represents p<10%.

Table 7: RD estimates of the impact of the JOBS Act on fundraising by category - Successful projects

	Design	Video Games	Technology	Comics	Performing Arts
	(1)	(2)	(3)	(4)	(5)
JOBS	110,000***	100,000**	140,000**	37,859*	3,279.3**
	(33,337)	(52,103)	(60,422)	(20,000)	(1,602.1)
BW selector	CCT	CCT	CCT	CCT	CCT
bandwidth	28	29	22	28	28
Polynomial	linear	linear	linear	linear	linear
Kernel	uni	uni	uni	uni	uni
Obs. to the left	49	74	17	49	115
Obs. to the right	55	78	25	36	118
total	104	152	42	85	233

Note: Dependent variable: Raised. Uniform Kernel; CCT Calonico, Cattaneo, and Titiunik (2014). Standard erros are in parentheses. *** represents p<1%, ** represents p<5% and * represents p<10%.

Table 8: RD estimates of the impact of the JOBS Act by category - Unsuccessful projects

	Design	Video Games	Technology	Comics	Performing Arts
	(1)	(2)	(3)	(4)	(5)
JOBS	-5,163.5	-3,673.2	1,167.4	1,326.8	-634.89
	(3,287)	(2,101.9)	(2,962.6)	(1,388.8)	(581.45)
BW selector	CCT	CCT	CCT	CCT	CCT
bandwidth	18	40	30	30	28
Polynomial	linear	linear	linear	linear	linear
Kernel	uni	uni	uni	uni	uni
Obs. to the left	46	233	33	52	55
Obs. to the right	62	184	47	52	46
total	108	417	80	104	101

Note: Dependent variable: Raised. Uniform Kernel; CCT Calonico, Cattaneo, and Titiunik (2014). Standard errors are in parentheses. *** represents p<1%, ** represents p<5% and * represents p<10%.

Pitschner and Pitschner-Finn (2014) seek to identify, based on the evaluation of 50,000 campaigns, that some results point toward a simple selection mechanism based on expected returns from the project. In order to test the hypothesis that bigger projects attracts bigger funds when compared to smaller projects, which attract more investors with small amounts, a variable of average fundraising (raised/backers) was constructed. The results of the estimates of average fundraising for successful and unsuccessful projects can be found in Table 15. Columns 1 and 2 show that, for successful projects, fundraising is positive, presenting evidence that backers may be giving large contributions. This result is strongly correlated with the quality of successful projects, which would attract more donations and possibly be supported by the selection of projects with expectations of return. In the case of unsuccessful projects, fundraising is negative, possibly indicating that there are many backers contributing with small amounts.

When assessing projects in the categories of higher average fundraising, that is, success- ful or unsuccesful ones, one can see that for the Video Games, Technology, and PerformingArts categories the results fall within what was expected in terms of the hypothesis of bigger projects attracting a higher average fundraising, with evidence of expectations of future return. In Tables 17 and 18, where the results for the other categories characterizedby low fundraising are presented, the hypothesis that smaller or even local and regional projects attract smaller amounts of average fundraising becomes clear and reinforced. Most coefficients were negative and/or did not show statistical significance. Another fac- tor that could explain success or failure rates is gender. The results of Marom, Robb, and Sade (2015) seem to show that women are more successful at projects in the Dance, Fash-ion and Food categories, whereas men are more successful in Video Games, Technology and Comics.

Table 9: RD estimates of the impact of the JOBS Act on average fundraising - Successful and unsuccessful projects

	Successful projects		Unsuccessful projects	
	(1)	(2)	(3)	(4)
JOBS	3.72	6.87*	-16.57	-12.11*
	(6.64)	(3.44)	(14.67)	(6.60)
BW selector	CCT	IK	CCT	IK
bandwidth	24	82	18	63
Polynomial	linear	linear	linear	linear
Kernel	Uni	Uni	Uni	Uni
Obs. to the left	1,320	4,500	1,016	3,406
Obs. to the right	1,222	4,455	1,057	3,564
total	2,542	8,955	2,073	6,970

Note: Calonico, Cattaneo, and Titiunik (2014) and IK (Imbens and Kalyanaraman, 2011). Robust Standard errors are in parentheses. ***, ** and * represent p<1%, p<5% and p<10% respectively.

Table 10: RD estimates of the impact of the JOBS Act on average fundraising by category - Main fundraising categories

	Design	Video Games	Technology	Comics	Performing Arts
	(1)	(2)	(3)	(4)	(5)
JOBS	-10.76	17.37	146.47	-2.20	35.92*
	(20.64)	(13.86)	(91.93)	(9.62)	(20.07)
BW selector	CCT	CCT	CCT	CCT	CCT
bandwidth	20	18	20	22	30
Polynomial	linear	linear	linear	linear	linear
Kernel	uni	uni	uni	uni	uni
Obs. to the left	87	154	36	83	166
Obs. to the right	117	130	60	59	163
total	204	284	96	142	329

Note: CCT refers to the bandwidth selector of Calonico, Cattaneo, and Titiunik (2014) e IK (Imbens and Kalyanaraman, 2011). Robust Standard errors are in parentheses. ***, ** and * represent p<1%, p<5% and p<10% respectively.

In summary, the results showed that the policy implemented through the JOBS Act attains its target when it comes to stimulating the increase in fundraising as a form of incentive to crowdfunding projects, clearly evidencing the purpose to foster projects that tend to be technology-intensive.

5 Final considerations

The concern of the US government with regard to stimulating job creation, the opening up of small businesses, capital increase and the implementation of public policies to foster

such targets have had positive effects. For instance, the JOBS Act has been implemented in order to regulate the proposal of funding through the crowdfunding model, generating incentives to emerging small-business owners who seek this market to raise funds to develop their ideas.

Empirical evidence attesting that the JOBS Act boosted fundraising for crowdfunding projects and led to a behavioral change for backers in the short run is presented. More specifically, it was estimated using the Regression Discontinuity Design model that the transition to the JOBS Act, by smoothing many securities regulations and reducting transaction costs between backers and entrepreneurs, allowed an expansion of private capital and an increase in fundraising for projects hosted on the Kickstarter.com platform of about 75%. In a similar way, it attracted a higher number of backers, stimulated by the promotion of the projects as well as the expectation of future return on their investment.

These results are shown to maintain consistency when the sample is decomposed by fundraising category. For more technology-intensive categories such as Video Games, Design and Technology are positive and statistically significant, demonstrating a substantial increase in fundraising and number of backers, what reflects a particular interest for these categories. Finally, robustness tests showed that there is no effect for periods preceding the policy. Project quality is also contemplated in this work. Successful projects were tested and compared to unsuccessful projects. The successful ones obtained higher co- efficients than unsuccessful projects in the categories of higher average fundraising and number of backers. When estimating average fundraising, it can be observed that for successful projects (best quality), fundraising is positive for most categories and both positive and significant for technology-intensive projects. The evidence lead us to believethat successful technology-intensive projects attract higher volumes of average fundrais- ing, whereas smaller or local projects attract more backers, though with smaller amounts to fund.

This paper contributes to crowdfunding literature by exploring the effects of the JOBS Act, an institutional change of democratization of the access to the private capital of backers spread across the US. The results broaden the scope of research by assessing a mechanism with empirical evidence of the short-run effects on fundraising and number of backers in response to a law of incentive to start-up companies. In addition, it innovates in the methodological approach since it is the first one in crowdfunding literature to employ robust causal inference techniques, which allows to contemplate important issues such as endogeneity, reverse causality and omitted-variable bias. This work becomes important to discussions on the formulation of policies for start-up companies.

6. Authors' contribution

Interpretation and writing of the work: author 1. Conception of the econometric model, planning, analysis and interpretation: author 2; Both authors approved the final version sent.

7. Conflict of interests

There is no conflict of interest in this work.

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