

 Open access • Journal Article • DOI:10.5465/AMP.2017.0208

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**Institutions:** Florida Atlantic University, University of Exeter

**Published on:** 16 Feb 2021 - Academy of Management Perspectives (Academy of Management)

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**EQUITY CROWDFUNDING AND GOVERNANCE:  
TOWARD AN INTEGRATIVE MODEL AND RESEARCH AGENDA**

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Forthcoming in *Academy of Management Perspectives*, DOI: 10.5465/amp.2017.0208

**Acknowledgements.** We are grateful to the editors and two anonymous *AMP* reviewers for helpful suggestions. We acknowledge financial support from the Research Foundation—Flanders [Grant # G012716N].

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**ABSTRACT**

Equity crowdfunding markets have grown exponentially over the last few years. Despite this impressive growth, significant informational asymmetry problems may plague these markets, making them susceptible to difficulties and even market failure. In this paper, we depart from current equity crowdfunding research that focuses almost exclusively on the funding success and funding dynamics on platforms to study the effective governance of equity-crowdfunded (ECF) firms and how it relates to these firms' success. We propose a conceptual model that identifies a multitude of governance mechanisms (e.g., internal or external and formal or informal) that potentially operate in equity crowdfunding markets to reduce adverse selection and moral hazard problems. Further, building on this framework, we offer a roadmap for future research that examines how different governance mechanisms may help in the selection and development of successful ECF firms.

**Keywords:** Entrepreneurial finance; equity crowdfunding; corporate governance; information asymmetry; adverse selection; moral hazard

Attention to corporate governance has intensified over the last three decades, reflecting changes in ownership structures, the globalization of financial markets, and the occurrence of the global financial crisis (Wright et al., 2013). Some have taken a relatively narrow view of corporate governance, defining it as “the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment” (Shleifer and Vishny, 1997: 737). Others have taken a broader perspective, defining it as “the determination of the broad uses to which organizational resources will be deployed and the resolution of conflicts among the myriad participants in organizations” (Daily et al., 2003: 371). While much of governance research has focused on public firms (Hart, 1995; Shleifer and Vishny, 1997), more recently, private firms, including family firms and entrepreneurial start-ups have also gained increasing attention (Audretsch and Lehmann, 2004; Filatotchev and Wright, 2005; Schulze et al., 2001; Uhlaner et al., 2007; Zahra et al., 2009). As a result, governance research has become broader in scope, covering a multitude of organizational forms and actors.

After the 2008-09 global financial crisis, a new ‘hybrid’ organizational form has developed, namely the equity-crowdfunded firm.<sup>1</sup> Such a firm usually combines characteristics of public firms that have a large number of (small) shareholders with those of privately held entrepreneurial firms in which ownership and control largely overlap because entrepreneurs retain a large share of the equity. This new type of firm developed in post-crisis years as people searched for new ways of financing entrepreneurship that have the potential to democratize

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<sup>1</sup> Equity crowdfunding is “a method of financing, whereby an entrepreneur sells a specified amount of equity or bond-like shares in a company to a group of (small) investors through an open call for funding on Internet-based platforms” (Ahlers et al., 2015: 958). In some countries the sale of shares carrying voting rights through crowdfunding platforms has not been permitted but profit-participating arrangements are possible. These bond-like shares do not carry voting rights (Vismara, 2016).

entrepreneurial financing (Mollick and Robb, 2016), by engaging larger segments of the investing public and removing financing barriers for entrepreneurs. Nowadays, equity crowdfunding plays an important role in entrepreneurial finance. For instance, since 2012, the global equity crowdfunding market has roughly doubled in volume each year (Massolution, 2015) and if this growth continues some have suggested that this market could reach \$36 billion by 2020, surpassing the size of the venture capital market (Barnett, 2015). In the UK, an estimated 20% of all early-stage equity investments already occur through equity crowdfunding platforms (Beauhurst, 2015).

The emergence of equity-crowdfunded (ECF) firms poses challenges to existing theories and systems of governance, requiring new thinking about the best approach to structuring the relationships among different actors who typically have different incentives and time horizons. In agency theory, for instance, the focus is on how external investors should devise governance mechanisms to control agency problems but small equity crowdfunders may have limited incentives and power to do so (Ahlers et al., 2015). Moreover, equity crowdfunding involves both novel and pronounced governance issues. Governance issues are novel in the sense that small entrepreneurial firms typically do not have a large number of investors. As such, there are coordination issues and transactions costs that are unique to equity crowdfunding governance. Governance issues are more pronounced because small entrepreneurial firms often do not have boards, retail investors into crowdfunding are often ‘unsophisticated’ (as deemed by law in terms of wealth and income levels), and investments are very illiquid insofar as the best expectation to exit could be many years from the first investment. Thus, there is a need to better understand the different governance mechanisms that different actors could use to ensure effective participation in equity crowdfunding, while also ensuring ECF firm success.

To address these issues, we develop a conceptual model that highlights the multitude of governance mechanisms that (potentially) operate in equity crowdfunding markets. Our model and related discussion underscore the crucial importance of corporate governance for ECF firms and the viability of the equity crowdfunding market. Without such effective governance, this market may eventually fail and opportunities for further growth may be missed. Our discussion also draws attention to the need for a shift in research on equity crowdfunding from an almost exclusive focus on the funding success and funding dynamics on platforms to study the governance of ECF firms and how it relates to ECF firm success. Towards this end, we develop a research agenda on how corporate governance may help in the selection and development of viable ECF firms.

Even though different forms of crowdfunding exist (e.g., Mollick, 2014), we focus on equity crowdfunding for good reasons. First, equity crowdfunding allows for a more direct comparison with more traditional external financiers of entrepreneurship that include venture capitalists and angel investors. Similar to these financiers, in equity crowdfunding, potential monetary returns and the reduction of information asymmetries related to entrepreneurs' skills and firms' prospects are primary concerns (Ahlers et al., 2015; Cholakova and Clarysse, 2015; Cumming and Johan, 2013; Vismara, 2018). Second, while other forms of crowdfunding are often launched by *individuals* or represent 'artistic' *projects*, in equity crowdfunding the proponents are by definition *firms* (Vismara, 2018). Third, unlike the other forms of crowdfunding, equity crowdfunding may introduce a large set of new shareholders—with divergent secondary interests (besides realizing monetary returns) and time horizons—in firms, making corporate governance issues particularly salient (Bruton et al., 2015).

Our paper contributes to the equity crowdfunding and governance literature in several ways. First, current equity crowdfunding research has primarily investigated the factors related to

funding success on equity crowdfunding platforms (e.g., Ahlers et al., 2015; Block et al., 2018; Guenther et al., 2018; Lukkarinen et al., 2016; Mamonov and Malaga, 2018; Mohammadi and Shafi, 2018; Vismara, 2016, 2018; Vulkan et al., 2016) and the funding dynamics on equity crowdfunding platforms (e.g., Hornuf and Schwienbacher, 2018a; Vismara, 2018; Vulkan et al., 2016). We provide a more detailed overview of this research in Appendix A. This overview highlights the need for a broader investigation, where scholars examine the governance mechanisms that may lead to the selection of the most promising firms and benefit the post-campaign performance of ECF firms. Though it is important for entrepreneurs to raise financing, the implications for investors, other stakeholders, and eventually even entrepreneurs themselves, may be limited if equity crowdfunding does not allow for the selection of promising firms that develop into viable businesses.

Two recent studies illustrate that a shift in research focus may be necessary and timely. Walthoff-Borm et al. (2018a) show that equity crowdfunders have only access to a relatively narrow set of firms that are often highly unprofitable and lack additional debt capacity. This observation should not necessarily be a concern because venture capital-backed and angel-backed firms often share the same characteristics, and eventually fail. However, we also have many examples of such firms that develop into some of the largest ‘celebrity’ firms in our modern economies. However, Signori and Vismara (2018) show that most current exits in equity crowdfunding are bankruptcies and there are few successful exits so far. Even though some of the surviving ECF firms could eventually develop into the leading firms of the future they could equally (and probably more) likely develop into ‘empty shells’ or ‘zombie firms’. While corporate governance has the potential to stimulate the development of viable ECF firms, we lack insights into the governance mechanisms that could operate in equity crowdfunding markets and

in particular their effectiveness for creating viable ECF firms that create new jobs and value for society at large.

Second, despite the paucity of empirical evidence, the types and importance of governance mechanisms to which ‘traditional’ public and privately held firms are subject are likely to differ from those of ECF firms. For instance, while public firms may have strong track records and reputations that could explain why managers often deliver on their promises even when they cannot be forced to (Shleifer and Vishny, 1997), these mechanisms are generally lacking in young ECF firms. Further, public firms are actively monitored, tracked and evaluated by information intermediaries, such as stock analysts (Healy and Palepu, 2001) but this is not the case for ECF firms and much less in-depth information is available on them. Moreover, in contrast to public firms, the shares of ECF firms cannot be sold (easily) given the lack of liquid secondary markets (Signori and Vismara, 2018), limiting capital market discipline. There are also important differences with privately held firms that raise other sources of external equity finance such as venture capital and are subject to due diligence, extensive contracts, and monitoring (e.g., Amit et al., 1998; Sapienza et al., 1996). ECF firms, however, raise funding from small and oftentimes ‘unsophisticated’ investors who may lack the knowledge, incentives, and power to conduct a due diligence, write extensive contracts and monitor entrepreneurs (Ahlers et al., 2015). Thus, we cannot simply generalize findings from prior work on public firms with dispersed ownership or private firms with concentrated ownership to ECF firms. In other words, what works in public firms or in privately held firms might not work in ECF firms and other governance mechanisms may be at play that are specific to the equity crowdfunding context.

Third, we present an integrative model of governance mechanisms that (potentially) operate in equity crowdfunding markets. For this purpose, we draw on an information economics perspective. The most influential perspective in governance research, namely agency theory,



originates from information economics (Eisenhardt, 1989). However, agency theory has focused on how “*the principal* should seek to avoid or mitigate the agency problem” (Arthurs and Busenitz, 2003: 148, emphasis added) and portrays entrepreneurs as “potential thieves or deadbeats” and investors as “police officers enforcing the law” (Arthurs and Busenitz, 2003: 156). An information economics perspective argues that there are ‘good’ and ‘bad’ entrepreneurs and focuses on the role of investors (e.g., the crowd), intermediaries (e.g., crowdfunding platforms), country institutions, and even entrepreneurs themselves to minimize informational asymmetry problems that are the root cause of many agency issues. These problems include ‘hidden information’, which leads to adverse selection problems, and ‘hidden action’, which leads to moral hazard problems (Amit et al., 1998). Thus, we offer an encompassing conceptual model of how different actors and environments could minimize informational asymmetry problems in equity crowdfunding markets.

We propose that governance in equity crowdfunding markets will have to involve a broad bundle of mechanisms that mitigating costs associated with both adverse selection and moral hazard. Adverse selection costs are potentially very pronounced in equity crowdfunding because entrepreneurs with higher expected values for their projects have a higher opportunity cost of giving up equity, are less likely to want to give up equity, and hence equity crowdfunding is more likely to attract ‘lemons’ (Walthoff-Borm et al., 2018a). Even when the best governance mechanisms get established post-investment (if any get established) these cannot turn ‘lemons’ into ‘peaches’. The governance role played by the platform in screening low-quality projects from listing, and from investors to do their due diligence and invest less (or not at all) in low-quality projects mitigates these adverse selection costs. Governance also reduces moral hazard costs associated with entrepreneurs that misuse funds after investment. For example, voting rights afforded to investors on the Crowdcube platform in the UK may facilitate better governance

(Cumming et al. 2017c). Similarly, legal restrictions on the permissible use of funds can improve governance amongst equity crowdfunders (Hornuf and Schwienbacher, 2017).

Having defined the objective and scope of our paper, in the next section, we develop the idea why corporate governance is crucial in equity crowdfunding markets and then summarize the broad range of mechanisms (e.g., internal and external; formal and informal) that have been advanced in extant corporate governance research. We then discuss specific governance mechanisms that (potentially) operate in the equity crowdfunding markets, detail how these mechanisms can tackle information asymmetry problems, and how future research can contribute to answering some key questions that remain unaddressed. In so doing, we hope that our discussion helps to offer an agenda for future governance work in the equity crowdfunding context and illustrates how this research can also make meaningful theoretical contributions and influence policy design.

## **INFORMATION ECONOMICS AND THE NEED FOR GOVERNANCE IN EQUITY CROWDFUNDING MARKETS**

The information economics literature became particularly prominent after the seminal work of Akerlof, Spence, and Stiglitz (e.g., Akerlof, 1970; Spence, 1973; Stiglitz and Weiss, 1981). It focuses on the extent to which imperfect information, which can lead to adverse selection and moral hazard, influences decision making in the marketplace (Amit et al., 1998). Imperfect information is also a major cause for agency problems because it precludes the writing of complete contracts that clarify and stipulate the behavior of entrepreneurs in all eventualities, making corporate governance particularly salient (Hart, 1995).

When investing in young, entrepreneurial firms, external investors are confronted with *hidden information* problems that may lead to adverse selection—the situation where they invest in low-quality projects that have been presented to them as high-quality (Amit et al., 1998). This

situation is possible because entrepreneurs, who are intimately involved in their firms and their internal systems and operations, often have more information on the quality of their firms compared to external investors, who can only assess the average quality of firms on the market. Entrepreneurs may also have incentives to misrepresent the information they have to their advantage when searching for financing. For instance, they may highlight visible signs of progress on specific projects while withholding information about other projects or tensions within firms that could undermine the viability of firms. Consequently, the information-disadvantaged investors may only be willing to buy shares at a discount, which reflects their information disadvantage. This behavior may lower the average quality of firms that sell shares because entrepreneurs of above-average quality firms have no incentive to sell their shares at a discount and may thus withdraw from the market, potentially leading to market failure.

When investing in young, entrepreneurial firms, external investors are also facing *hidden action* problems because they cannot perfectly observe the effort and actions of entrepreneurs (e.g., Amit et al., 1998). This situation may lead to moral hazard problems, especially if the goals of entrepreneurs and investors are not perfectly aligned. Entrepreneurs, for instance, may shirk effort, invest in ‘pet’ projects (e.g., research projects with limited commercial value) to achieve private benefits at the expense of external investors and sometimes even take actions that not only harm external investors (and other stakeholders) but also themselves (Schulze et al., 2001). The risk of this occurring in entrepreneurial firms is particularly high because of their focus on exploration and experimentation, often outside known boundaries. Entrepreneurs also are rule breakers, who do not do things in conventional ways, increasing the causal ambiguity surrounding their intentions and actions (Harris et al., 2009).

Traditional external equity financiers have developed a range of mechanisms to reduce informational asymmetry problems (Amit et al., 1998). For instance, venture capital and angel

investors engage in detailed due diligence pre-investment to reduce adverse selection and active monitoring post-investment to reduce moral hazard (Fried and Hisrich, 1994; Sapienza et al., 1996). They also prefer to invest locally (Cumming and Dai, 2010) and rely on preexisting direct and indirect ties between themselves and entrepreneurs to reduce informational asymmetry (Shane and Cable, 2002). However, equity crowdinvestors may individually neither have the required experience nor the incentives (given their average small investments) to conduct a detailed due diligence (Ahlers et al., 2015). Equity crowdinvestors are also investing without meeting the entrepreneurial team in person. Moreover, for individual equity crowdinvestors it does not make economic sense to bear large monitoring costs. As a result, an information economics perspective would suggest that there is a clear danger of adverse selection and moral hazard in the equity crowdfunding context, making effective corporate governance crucial.

Extant corporate governance research has proposed a range of mechanisms that could protect investors and help them create value. These mechanisms can operate within the firm (*internal* mechanisms) or operate outside to the firm (*external* mechanisms) (Daily et al., 2003). The most widely examined corporate governance mechanisms include the board of directors and large investors (or ownership concentration), which serve as internal governance mechanisms that allow to both control and influence management (Shleifer and Vishny, 1997; Uhlener et al., 2007). Also widely examined are laws that protect investors against expropriation, which serve as external governance mechanisms (La Porta et al., 2000; Shleifer and Vishny, 1997). In their survey of the corporate governance literature, Shleifer and Vishny (1997: 769) propose that “legal protection of investors and some form of concentrated ownership are essential elements of a good corporate governance system”. While there has been significant attention to the *formal* governance mechanisms described above, there can also be effective *informal* governance mechanisms (Chrisman et al., 2018; Mustakallio et al., 2002). For instance, the external market

for corporate control, that is, the threat of a hostile takeover might discipline management. Reputations (Shleifer and Vishny, 1997) and trusting relationships (Arthurs and Busenitz, 2003) may also significantly reduce the probability of entrepreneurs' opportunistic behaviors.

As highlighted above, much of the existing governance literature examines the composition and functioning of boards and the impact of large investors but does not say much about information availability. This focus may not be surprising because there is often a great amount of information available on established firms. Moreover, large external investors in private, entrepreneurial firms (e.g., venture capitalists) have developed a range of mechanisms to reduce their informational disadvantage vis-à-vis entrepreneurs. However, informational asymmetry issues seem to be an especially important issue for small investors in ECF firms, because individual equity crowdinvestors may not have the time, resources and incentives to reduce informational asymmetry. Besides leading to wrong decisions to invest, informational asymmetries also may lead to the wrong kinds of board and other corporate governance mechanisms being established (if any get established) from the start, producing significant problems post-investment. Further, equity crowdinvestors may lack the incentives and power (related to the dispersion of shares across many small crowdinvestors) to take corrective actions post-investment.

Ultimately, a combination of governance mechanisms will have to operate in equity crowdfunding markets in order to reduce adverse selection and moral hazard problems. These mechanisms can operate within and outside ECF firms and can be formal or informal in nature. An information economics perspective suggests that without an effective bundle of governance mechanisms, the equity crowdfunding market is unlikely to remain a viable alternative in entrepreneurial finance. Thus, the role of corporate governance in equity crowdfunding should become a central part of the future research agenda.

## **GOVERNANCE MECHANISMS (POTENTIALLY) EMBEDDED IN EQUITY CROWDFUNDING MARKETS**

Drawing on the governance as well as the broader management (e.g., Certo, 2003; Filatotchev and Wright, 2005), entrepreneurship (e.g., Uhlaner et al., 2007; Wright et al., 2013), and finance (e.g., La Porta et al., 2000; Shleifer and Vishny, 1997) literature, we propose a conceptual model of the multitude of governance mechanisms that may operate in equity crowdfunding markets. These mechanisms start with the crowd (investors) but also cover entrepreneurs, crowdfunding platforms, and national institutions. As the discussion to follow and related Table 1 make clear, these mechanisms vary in terms of their formality (vs. informality) and whether they are internal or external. Below, we discuss the effectiveness of these mechanisms in addressing adverse selection and moral hazard problems, respectively. We also identify a broad range of issues for future research to examine, especially in reference to how these governance mechanisms may influence ECF firm success.

[Include Table 1 about here]

### ***Crowdinvestors***

In successful equity crowdfunding campaigns, firms typically attract funding from several hundreds of small investors (i.e., ‘the crowd’) (Vismara, 2016). This situation is different from the traditional entrepreneurial finance model, where firms generally raise financing from one or a few investors. Traditional external equity financiers, such as venture capitalists, rely on formal, extensive and costly due diligence processes that occur before making an investment, aiming to minimize adverse selection issues (Fried and Hisrich, 1994). As Arthurs and Busenitz (2003: 150) note, “the due diligence process is a form of insurance against potential adverse selection”. Through a detailed analysis of investee firms’ business plans, meetings with entrepreneurs and other activities, investors (and their external consultants) aim to separate high-quality firms from

low-quality firms. Nevertheless, these due diligence activities entail fixed costs that do not vary with the investment size. As a consequence, the cost of these activities for individual equity crowdfunders would be prohibitively expensive relative to their small investments.<sup>2</sup>

The equity crowdfunding market, however, could rely on another, external and more informal governance mechanism aiming to minimize adverse selection risks: the ‘wisdom of the crowd’ (Table 1). The wisdom of the crowd principle (e.g., Surowiecki, 2005) suggests that crowds have more diverse sources of information and expertise than any individual (even when that individual is an expert), which can be leveraged through group decision making (Schwienbacher and Larralde, 2010). Although there is noise in the decision making of each individual, this noise is canceled out because of a large number of individuals in the investor crowd. Ultimately, this approach is believed to lead to better decision making by the crowd as a whole than decision making by the smartest individual from the crowd or an expert (e.g., Mollick and Nanda, 2016; Schwienbacher and Larralde, 2010). Thus, the crowd might be more effective in minimizing adverse selection issues relative to the traditional financiers of entrepreneurship.

The wisdom of the crowd mechanism in equity crowdfunding relates to the idea that public equity markets are ‘wise’ or efficient in a semi-strong form. This idea implies that, while each individual investor may lack the full set of publicly available information on firms, the stock prices reflect all publicly available information and expectations about the future. As Jensen

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<sup>2</sup> Isenberg (2012) suggests that venture capital investors “spent about \$50,000 just in legal fees, and sometimes hundreds of hours studying the ventures’ markets, engaging in business model discussions, talking to prospective customers, interviewing industry experts, studying the technology and intellectual property, and talking to each founder’s references, sometimes ten or more per founder”. Such due diligence costs are excessive for individual crowdfunders given that the average investment by an individual investor on Crowdfunder—a leading UK-based equity crowdfunding platform—for instance, is only about £20,000 (\$26,500) (Vismara, 2016).

(1978: 96) notes, “Indeed, the [the Semi-strong Form of the] Efficient Market Hypothesis progressed from the state of a curiosity taken seriously by only a few scientists in the economics and finance communities, to that of a dominant paradigm in finance”. One key difference with public equity markets, however, is that much less information is publicly available on small and young ECF firms.

Currently, we lack evidence on the potential utility of the wisdom of the crowd in equity crowdfunding, relative to the traditional due diligence activities performed by professional investors to reduce adverse selection problems.<sup>3</sup> There may certainly be constraints to the wisdom of crowds, leading some critics to highlight the ‘madness of crowds’. Isenberg (2012), for instance, observes that “crowds bring us tulip crazes, subprime meltdowns, the Kitty Genovese scandal, Salem witch trials, and other tragedies”. Social psychologists and cognitive scientists have also pointed out problems with group decision making such as groupthink (Janis, 1982) and social loafing (Latane et al., 1979). However, we are also much aware of problems that occur in venture capital decision-making. Venture capitalists, for instance, may be overconfident, which may negatively affect their decision accuracy (Zacharakis and Shepherd, 2001). They may also overemphasize an entrepreneurial team’s human capital when making investment decisions (Baum and Silverman, 2004). Thus, both the decision-making of crowds and experts may be

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<sup>3</sup> There is some evidence on the wisdom of crowds in reward-based crowdfunding and lending-based crowdfunding (e.g., Cumming et al., 2017a; Iyer et al., 2015; Mollick and Nanda, 2016). Nevertheless, while predicting the likelihood that firms will provide specific rewards that fulfill a funder’s expectations or repay their debts is also difficult, informational asymmetry is especially high in the equity crowdfunding context (Ahlers et al., 2015). Thus, the ability to select high-quality entrepreneurial firms with no (or a limited) track record may be particularly challenging (Isenberg, 2012).



imperfect. Scholars need to investigate the conditions under which either one of them (or potentially a combination of both) will work better to minimize adverse selection.

One possible way to reduce information asymmetry in equity crowdfunding is to allow for ‘testing the waters’.<sup>4</sup> This means that entrepreneurs can gauge investor interest through asking for non-binding investment commitments from investors prior to obtaining regulatory approval and making expenditures on full disclosure. This process helps to provide information to prospective crowdfunders (e.g., by showing investor interest and by allowing them to provide feedback and ratings on the proposed project), potentially reducing adverse selection. This type of hypothetical investment—before an actual equity crowdfunding campaign—has been met with much regulatory debate in the U.S.<sup>5</sup> But there is a history of such a policy, for instance, on the WiSEED equity crowdfunding platform in France (Cumming et al., 2017b).

Besides addressing adverse selection problems, the crowd may also play a role in addressing moral hazard issues (Table 1). However, contrary to external equity financiers who write detailed contracts and are involved in post-investment monitoring activities (by taking seats in the board of directors, holding frequent meetings with management and similar approaches) to reduce moral hazard problems (e.g., Sapienza et al., 1996), it might be economically infeasible for individual equity crowdfunders to bear such contracting and monitoring costs. Also, free rider problems are especially acute because if one equity crowdfunder actively monitors (and bears the full cost), this investor must share the benefits with others who do not bear a cost. Finally, the crowd usually consists of a diverse group of investors with distinct backgrounds, who may have different secondary motives besides realizing financial gains, such as investing for fun

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<sup>4</sup> <https://www.crowdfundinsider.com/2016/06/86824-testing-the-waters-is-all-about-transparency/>

<sup>5</sup> See <https://www.congress.gov/bill/114th-congress/house-bill/4855/text>

or social purposes. As a result, they may also have fundamentally different time horizons. These differences make coordination difficult as crowdfunders may disagree among themselves on how the firm should evolve. These differences may also hamper the effectiveness of crowd representation on the board, if present.

The above problems experienced by crowdfunders are similar to what dispersed shareholders in public firms often experience (e.g., Hart, 1995). However, while there are several mechanisms that protect dispersed shareholders against moral hazard issues in public firms, the wisdom of the crowd mechanism by itself may not be sufficiently effective in reducing moral hazard problems after the investment in ECF firms. One reason is that in public firms, information intermediaries, such as stock analysts and specialized media, often actively track the behavior and performance of listed firms and their management teams (Healy and Palepu, 2001; Pollock and Rindova, 2003; Pollock et al., 2008). These intermediaries bring information to dispersed public shareholders in a more efficient way than when each shareholder would monitor individually. However, these intermediaries typically do not focus on ECF firms which often remain ‘under the radar’. Another reason is that even when equity crowdfunders observe specific moral hazard issues in ECF firms, they might lack the power to influence entrepreneurs’ (or managers’) behaviors. Indeed, contrary to investors in public firms who can sell their shares on public capital markets and thus enforce market discipline, equity crowdfunders invest in illiquid shares that are very difficult, if not impossible to sell (Signori and Vismara, 2018). A final reason is that while there is always the possibility of a (hostile) takeover risk for public firms with dispersed ownership, so that management can be replaced (Schneper and Guillén, 2004), entrepreneurs in ECF firms generally retain a significant ownership percentage, which makes such actions infeasible.

Overall, if crowds are wise, the wisdom of the crowd could be a very effective external and more informal governance mechanism that curbs adverse selection. Unfortunately, to date, we lack evidence on the effectiveness of the wisdom of the crowd in the equity crowdfunding context. Moreover, the crowd might be wise in that it identifies moral hazard problems. Still, there are several reasons why without other governance mechanisms the crowd is expected to be constrained in addressing moral hazard problems.

### *Entrepreneurs*

In agency theory, informational asymmetry allows entrepreneurs to engage in opportunistic behaviors. As a result, an important task of the principal (shareholders) is to device governance mechanisms that minimize adverse selection and moral hazard (Arthurs and Busenitz, 2003). However, in an information economics perspective, particularly high-quality entrepreneurs can (and do) also take actions (i.e., self-governance) that reduce information asymmetry problems related to their own abilities, the quality of their projects and the prospects of their firms.

One important way entrepreneurs can reduce potential adverse selection issues, for example, is through signaling—where entrepreneurs provide credible pieces of information on firms’ unobservable quality and intentions including strategic moves (e.g., Connelly et al., 2011). Because entrepreneurs may have incentives to positively bias information or withhold negative information when they search for external financial resources, simply stating that they are ‘good’ or of high-quality will not be effective (Amit et al., 1998). In signaling theory (Spence, 1973), which has its roots in information economics as well, observable attributes function as a credible signal of unobservable quality, when these attributes are correlated with unobservable quality and are costly or difficult to obtain for low-quality firms relative to high-quality firms. Thus, by signaling, high-quality entrepreneurs can potentially differentiate their firms from low-quality entrepreneurs, potentially reducing adverse selection issues.

Past research has shown how entrepreneurs and managers engage in signaling unobservable firm quality to facilitate resource acquisition; for example, by making decisions about their boards' structures and adding prominent board members (e.g., Certo et al., 2001; Certo, 2003) and with endorsement relationships, including prominent VC investors and alliance partners (e.g., Colombo et al., 2019; Stuart et al., 1999), among others. Consistent with these findings, equity crowdfunding research also suggests that entrepreneurs signal unobservable firm quality to equity crowdfunders, aiming to increase their fundraising success (e.g., Ahlers et al., 2005; Vismara, 2016; Vulkan et al., 2016). One consistent finding, for instance, is that when entrepreneurs retain more equity this serves as an important signal that positively impacts the probability of funding success (Ahlers et al., 2005; Vismara, 2016). Moreover, Ahlers et al. (2015) show that when entrepreneurs provide more detailed information about risks, they increase the probability of funding success. Vismara (2016) also shows that social capital influences the probability of funding success.

As indicated in Table 1, signaling by entrepreneurs may serve as an internal, informal (self) governance mechanism that is activated as entrepreneurs engage in the acquisition of equity crowdfunding. Nevertheless, existing studies on equity crowdfunding—just like signaling studies in the management literature more broadly—examine how signals influence resource attraction but this does *not* provide direct evidence that these signals are effective mechanisms in reducing adverse selection issues. Thus, existing research has not fully leveraged insights from signaling theory in information economics. More specifically, for signals to separate high-quality from low-quality entrepreneurs and their firms, the signal's expectations (i.e., the correlation between the observable characteristic and unobservable quality) should eventually get confirmed (Bergh et al., 2014). However, we lack evidence on whether specific signals are eventually correlated with firm success and might be an effective governance tool for entrepreneurs to reduce adverse

selection concerns of crowdfunders. The growing availability of data in the crowdfunding context should allow scholars to address these important issues in future studies—and provide the potential to make important contributions to signaling theory as well.

Moreover, as detailed before, existing studies have shown how entrepreneurs can signal unobservable firm quality with prominent board members, or prominent exchange partners to facilitate resource attraction (Certo, 2003; Stuart et al., 1999). An important question that remains, however, is how entrepreneurs of very early-stage firms can assemble the resources needed to attract managerial talent, affiliate with prominent others or stack their boards with industry leaders in the first place (e.g., Shane, 2003) to then signal their unobservable quality. Moreover, many early-stage firms do not have formal boards (Uhlener et al., 2007). Given these factors, the equity crowdfunding context provides an ideal setting in which to examine these important issues.

There is some evidence that equity crowdfunders also rely on ‘cheap talk’ or non-binding, non-verifiable and costless claims made by entrepreneurs (Farrell and Rabin, 1996). Specifically, Ahlers et al. (2015) show that claims by entrepreneurs that they envisage an IPO exit (48% of entrepreneurs in their sample do) increase the odds of a successful equity crowdfunding campaign. This finding suggests that equity crowdfunders rely not only on credible signals but also on other types of communication. Thus, there is a possibility that equity crowdfunders react to communications that do not represent the facts, which may foster adverse selection problems. This evidence provides opportunities for further research that examines how entrepreneurs combine costly signaling and other forms of communication, why the investors would rely on cheap talk, and when different types of credible signals or other types of communications become more impactful for subsequent resource attraction and firm success.

Finally, just like equity crowdfunding studies have focused on possible signaling by entrepreneurs around the time of the equity crowdfunding campaign (e.g., Ahlers et al., 2015), entrepreneurial finance scholars have generally investigated signaling around specific events, including VC fundraising or an IPO (e.g., Certo, 2003; Colombo et al., 2019; Ko and McKelvie, 2018). However, more substantive actions that relate to firm professionalization with which entrepreneurs signaled to raise early funds, such as setting up a formal board of directors, may have a more long-standing impact on firm behavior and success. Moreover, high-quality entrepreneurs may have incentives to engage in signaling across time in order to reduce crowdfunders' moral hazard concerns (Table 1) and low-quality entrepreneurs can also (deliberately or not) provide signals that reveal their true nature (Arthurs and Busenitz, 2003). For instance, by providing timely and accurate information, high-quality entrepreneurs can signal their trustworthiness. By doing so, entrepreneurs can also reduce the need for formal governance mechanisms. However, the question remains how equity crowdfunders can take corrective actions and reduce moral hazard when they receive signals of low-quality or inappropriate entrepreneurial behavior after the investment has taken place, given that crowdfunders obtain shares that are illiquid and cannot be easily traded.

Overall, our preceding discussion suggests that when crowds are wise, entrepreneurial signaling could be an effective internal and informal governance mechanism that could limit adverse selection, although empirical evidence is lacking. We also highlight that signaling and related substantive entrepreneurial actions could reduce moral hazard issues but may also be insufficient by themselves (and will need to be combined with other governance mechanisms) to completely remove these issues in equity crowdfunding markets.

### ***Crowdfunding Platforms***

When entrepreneurs decide they want to raise funding through a specific equity crowdfunding platform, their firms will not automatically list on these platforms. Rather, these platforms play an increasingly important role in filtering firms for their audiences (Younkin and Kashkooli, 2016). They also play a key role in determining the way in which the relationship between firms and equity crowdinvestors will be structured. In some cases, for example, crowdinvestors become direct shareholders in the firms they wish to fund but other platforms have used alternative structures. Despite heterogeneity between equity crowdfunding platforms, most evidence so far relates to one or a few platforms (e.g., Dushnitsky and Zunino, 2018).

There are many equity crowdfunding platforms active across the globe and even within single countries (Dushnitsky et al., 2016). For instance, in Italy, there are tens of active equity crowdfunding platforms and some of them come from abroad. Consequently, there will be a strong pressure for reputation building (e.g., Petkova, 2012) and professionalization by crowdfunding platforms to attract the best projects, retain a large base of equity crowdinvestors, and withstand competition from peers (Fleming and Sorenson, 2016). If people observe many outright fraud cases or failures on specific platforms, these platforms may experience a significant drop in the number of entrepreneurs who want to list their firms and a similar significant drop in crowdinvestors who want to contribute funds. This may threaten the very survival of these platforms. Moreover, competition from traditional entrepreneurial finance markets, including venture capital and angel markets, may further push the equity crowdfunding market and individual platforms to professionalize and consolidate.

Such reputational concerns by equity crowdfunding platforms and competition from alternative forms of financing may give equity crowdfunding platforms strong incentives to preselect the highest quality firms. To mitigate adverse selection problems, different crowdfunding platforms undertake due diligence (Table 1), which may serve as an external and

more formal governance mechanism. However, there is great variance in the extent of such due diligence across platforms. Crowdfunding platform due diligence could comprise background checks, site visits, credit checks, cross-checks, account monitoring, and third-party proof on funding projects. Cumming and Zhang (2018) find evidence of more due diligence performed by Canadian platforms that have fewer projects per employee (the busyness of platform employees constrains the ability to carry out due diligence) and incentive fee structures (platforms with fixed fees regardless of campaign outcomes carry out less due diligence). Because due diligence screens lower quality projects, Cumming and Zhang (2018) also find that more extensive due diligence by platforms is associated with a higher percentage of successful campaigns and larger capital raises on these platforms. Subsequent research (Rossi and Vismara, 2018) from investment-based platforms in France, Italy, Germany, and the UK is supportive of these findings.

While some equity crowdfunding platforms engage in more detailed due diligence to reduce adverse selection issues, we currently lack compelling evidence if this due diligence is effective and ultimately leads to more successful firms being funded (and not just firms that raise more financing on these platforms). These questions are important because more detailed due diligence by crowdfunding platforms may be at odds with the wisdom of the crowd mechanism, as discussed earlier, presenting an important anomaly. Specifically, if crowds are wise, the primary role of equity crowdfunding platforms would be to avoid outright fraud cases getting on the platforms and assure that the information provided in the crowdfunding campaign represents the facts. However, if equity crowdfunding platforms increasingly mirror the selection criteria typically used by traditional investors in entrepreneurial firms, this may limit the possibility of equity crowdfunding to democratize entrepreneurial finance.



Equity crowdfunding platforms differ in their selection activities as well as other dimensions. For example, platforms often employ different shareholder structures—i.e., how they structure the relationship between equity crowdfunders and firms. To date, the longer-term implications of these different structures for ECF firm actions and success remain largely unexplored (Cumming and Wright, 2017), although there may be significant variability in their effectiveness in addressing moral hazard and adverse selection problems (Table 1).

Some platforms use a direct shareholder model where each equity crowdfunder individually becomes a direct shareholder in a firm. In the case of Crowdcube, a leading UK-based equity crowdfunding platform, for example, crowdfunders may receive A-shares with voting and preemptive rights when they invest at or above a (possible) investment threshold or receive B-shares without voting and preemptive rights when they invest below the threshold (Cumming et al., 2017c). Crowdcube does not recommend any shareholders' agreement for the crowd (Walthoff-Borm et al., 2018b). The direct shareholder model most closely resembles the private firm with dispersed ownership, where an informational economics perspective suggests that shareholders may have little incentive and power to monitor (Hart, 1995) given their small investment. While this shareholder structure might be less effective in reducing moral hazard problems, it also has advantages. For instance, it might foster “the feeling of belonging” (Belleflamme et al., 2014: 589) by allowing crowdfunders to be more directly connected to the ECF firm.

Other platforms use a nominee structure. In this case, equity crowdfunders do not become direct shareholders in firms but they invest in ‘special purpose vehicles’ that combine all equity crowdfunders and are managed by nominees (i.e., the platform itself or an external individual). For instance, in the case of Seedrs—another prominent UK-based equity crowdfunding platform—the management board of Seedrs Limited acts as a nominee. Seedrs

develops subscription agreements with ECF firms that generally include consent rights that cover issues such as the winding-up of ECF firm, issuing preference shares, transferring assets out of the ECF firm, making certain loans or increasing director salaries beyond an agreed level (Walthoff-Borm et al., 2018b). The management board of Seedrs Limited is authorized to take votes and issue consents on behalf of each individual investor that provided funds through Seedrs. However, Seedrs Limited does not take a seat on the board of their portfolio companies. Because nominees generally share in the value created at an exit, they have incentives to monitor. Thus, free rider problems among individual crowdfunders are avoided. The nominee structure further reduces shareholder dispersion and decreases coordination costs, giving the nominee the power to influence entrepreneurs' behaviors. Hence, a nominee structure might be more effective to reduce possible moral hazard issues. A potential disadvantage of this structure is that it decreases crowdfunders' feeling of belonging by creating a wedge between the crowd and the ECF firm.

Other platforms (e.g., SyndicateRoom) require firms to also obtain co-funding from venture capitalists or angel investors. In this case, the equity crowdfunders may benefit from the detailed due diligence (that could limit adverse selection) and monitoring (that could limit moral hazard) by the professional (lead) investor (Agrawal et al., 2016). This structure resembles syndication in venture capital investments, with the difference that all syndicate members generally conduct their own detailed due diligence and monitor the portfolio companies as well (Baeyens et al., 2006). While this structure may seem to combine the best of two worlds (detailed due diligence and monitoring by a professional investor and the wisdom of crowds) it also raises new concerns. The need for co-investment with traditional financiers may limit the democratization of entrepreneurial finance. Moreover, harmful co-investments and principal-principal problems could occur (e.g., Morck and Yeung, 2003). For example, there is the risk that

more powerful venture capital investors expropriate wealth from less powerful crowdinvestors. Still, venture capital investors often care about their reputations, which are crucial in their industry, and as such, they might refrain from taking actions that harm other minority shareholders in ECF firms.

Another recent development is that some equity crowdfunding platforms have started to experiment with the creation of secondary markets to increase liquidity (Table 1). Currently, the shares of ECF firms are illiquid and difficult to trade (Signori and Vismara, 2018). Some crowdfunding platforms, for example, enable investors to trade shares at ‘fair value’ to the current investors in a given firm (e.g., Seedrs). Others have organized an on-platform secondary share trade (e.g., Crowdcube). More liquid secondary markets may increase the information available through the share price. When minority shareholders are unhappy with firms’ plans or actions, they can sell their shares. When entrepreneurs cannot convince other prospective investors of the value of their plans or actions, entrepreneurs will see the value of their shares decreasing. Such market discipline might influence entrepreneurial behavior and minimize moral hazard issues.

Overall, as our preceding observations indicate, there is significant heterogeneity among equity crowdfunding platforms but current research has largely ignored this heterogeneity and how it relates to ECF firm success. Our discussion also highlights how platform heterogeneity and related differences in external governance mechanisms induced by these platforms (e.g., platform due diligence, shareholder structures, the provision of shares with or without voting rights, and secondary markets) may affect the potential for adverse selection and moral hazard issues to occur and thereby significantly impact ECF firm success.

### ***Country Institutions***

It is well-established that countries' formal (i.e., the codified rules and standards) and informal institutions (i.e., the collective meanings, values and understandings shared by its inhabitants) define or enforce socially acceptable behavior and thereby influence firm performance (Holmes et al., 2013, 2016; North, 1991; Scott, 1995). Some of these institutions may limit the adverse selection and moral hazard problems and serve as external governance mechanisms (Chrisman et al., 2018). For instance, stronger investor protection enshrined in a country's legal codes and regulatory frameworks may limit managers' ability to engage in self-dealing, including executive perquisites, excessive compensation, or even outright theft of corporate assets (Djankov et al., 2008; Shleifer and Vishny, 1997). There are also important differences between national cultures and dominant values. For instance, higher country-level trust might reduce opportunistic behavior by individuals (La Porta et al., 1997a). Such informal institutions also support and reinforce formal institutions; together, they can significantly reduce informational problems, fostering the performance of firms and the growth of entire financial markets.

Scholars have examined how formal and informal institutions influence the behavior of venture capital investors and the development of venture capital markets as a whole. For instance, research shows that cross-country differences in legality have a significant impact on the governance structure of investments in the venture capital industry: better laws facilitate faster deal screening and deal origination, lower the probability of potentially harmful co-investment, and facilitate investor board representation (Cumming et al., 2010). Cultural distance between venture capital investors and entrepreneurs may hamper deal screening, contracting and post-investment involvement and monitoring (Li et al. 2014). Ultimately, formal institutions and informal national cultural constraints can even influence the development of venture capital markets as a whole (Li and Zahra, 2012).

Scholars have also started to provide a descriptive picture of the formal legal institutions related to equity crowdfunding markets, especially the laws that regulate access to equity crowdfunding for firms and crowdfunders (e.g., Vismara, 2016; Horváthová, 2018). Legal restrictions on public offerings of shares to the general public have constrained the development of equity crowdfunding markets in many countries (Bruton et al., 2015). For instance, equity crowdfunding has played a trivial role in the US, probably because SEC regulations required entrepreneurial firms that solicit equity investments from non-accredited investors to register for a disproportionately costly public offering. With the SEC approval of Title III of the JOBS act, non-accredited, amateur investors will now be able to invest in such entrepreneurial firms. Yet, regulations do not always positively influence the size of crowdfunding markets. For example, in the Canadian case, despite introducing equity crowdfunding rules in 2016, no entrepreneur to date has used the Canadian crowdfunding securities exemption. Informal institutions have also been correlated to various crowdfunding metrics; but because informal institutions show little variation over time, the cross-country nature of the evidence does not directly allow causal inference (Cumming et al., 2017d).

Horváthová (2018, Table 28.1) summarizes equity crowdfunding regulations in 42 countries around the world. Countries with specific crowdfunding regulations as of 2017 include Austria (2015), Canada (2015), China (2015), Finland (2016), France (2014), Germany (2015), Israel (2017), Italy (2012), Japan (2014), Lithuania (2016), the Netherlands (2016), New Zealand (2014), Portugal (2015), Spain (2015), the U.K. (2000), and the U.S. (2012, 2015). Countries without specific crowdfunding regulations normally have securities regulations that are pertinent to crowdfunding activities. Such countries include Australia, Belgium, Brazil, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Greece, Hong Kong, Hungary, Iceland, Ireland, Malta, Poland, Romania, Slovakia, Slovenia, Sweden, and Switzerland. Further, some countries

have crowdfunding legislation proposed but not yet signed into law. Examples are Australia, Israel, Latvia, and Luxembourg. And other countries such as Russia have recently put together working groups to develop crowdfunding rule proposals.

Still, existing crowdfunding research has only skimmed the surface of how country institutions may limit adverse selection and moral hazard issues in equity crowdfunding markets and thus influence firm success. One may ask why there is such limited research, given the widespread interest in institutions in the management literature, the fact that cross-border crowdfunding is commonplace and the potential role of crowdfunding in entrepreneurial internationalization (Cumming and Johan, 2016). We believe this lack of evidence relates to the current focus in equity crowdfunding research on funding success on platforms. Thus, as highlighted before, while some studies have begun to study how institutions influence the size of equity crowdfunding markets as a whole, we lack empirical evidence on how (bundles of) country-level institutions might influence the selection and development of viable ECF firms in different countries (Table 1). Clearly, future research needs to address several complex issues.

One common issue is that the heterogeneity in the scope and goals of laws often remains underappreciated. Specifically, some laws regulate the amounts of money that firms can raise or the maximum amount of money investors can invest in equity crowdfunding campaigns. For instance, in the UK, there is an aggregate investment limit of 10% of net investable financial assets that can be allocated to equity crowdfunding by individual investors (Hornuf and Schwienbacher, 2017). In essence, these laws might have limited effects on reducing potential adverse selection and moral hazard problems but do limit the exposure of investors to the risks and uncertainty involved in equity crowdfunding.

Other laws focus on specifying the types of firms that can raise equity crowdfunding (or not) or focus on increasing the flow of information towards equity crowdfunders. These laws

might limit potential adverse selection. Laws that increase information availability also make it more likely that equity crowdfunders detect moral hazard problems in ECF firms. However, they might still be hampered in taking corrective actions against moral hazard. Moreover, using a theoretical model, Hornuf and Schwienbacher (2017) provide interesting insights into the impact of exemptions to prospectus regulations on entrepreneurs' fundraising decisions. Specifically, they argue that restrictive laws may create a funding gap for small firms.

Still other laws focus on the rights that shareholders have vis-à-vis the assets of the firm and how shareholders can appeal to courts to enforce their rights when entrepreneurs violate the terms of the contract (Shleifer and Vishny, 1997). These laws do not necessarily increase the costs for entrepreneurs that search for equity crowdfunding when they stick to the shareholders' agreement. While we lack empirical evidence, these laws may be effective in minimizing moral hazard problems, thus improving ECF firm performance. Overall, our discussion suggests that we need a much finer-grained understanding of how distinct aspects of laws may influence the development of viable ECF firms, which can also bring important contributions to the law and finance literature.

A related issue is that we need to be careful in borrowing and employing legal measures that have been developed for specific sets of firms (e.g., public firms with dispersed ownership) to other sets of firms because the legal reality can be very different for these other sets of firms (e.g., firms with concentrated ownership). As Bebchuk and Hamdani (2009: 1263-1264) argue:

“The impact of many key governance arrangements depends considerably on companies' ownership structure: measures that protect outside investors in a company without a controlling shareholder are often irrelevant or even harmful when it comes to investor protection in companies with a controlling shareholder, and vice versa. Consequently, governance metrics that purport to apply to companies regardless of ownership structure are bound to miss the mark with respect to one or both types of firms.”

For instance, several elements of the widely-used Anti-Director Rights Index (La Porta et al., 1997b) are not relevant for firms with a controlling shareholder (and in many ECF firms, entrepreneurs remain controlling shareholders). More specifically, elements of the Anti-Director Rights Index, such as shareholders' ability to vote by mail or to call a special meeting, will be ineffective in protecting the rights of minority shareholders (e.g., crowdfunders) in firms where entrepreneurs hold the majority of shares. Indeed, in such a situation, the crowd (or any other minority shareholder) will lack the power to fundamentally influence or challenge entrepreneurs, as majority shareholders. The Anti-Self-Dealing Index (Djankov et al., 2008), however, does focus on elements that protect minority shareholders from possible moral hazard issues. In a similar vein, scholars have sometimes paid disproportionate attention to corporate bankruptcy laws, while personal bankruptcy laws may be theoretically more impactful in an entrepreneurial setting (Armour and Cumming, 2008).

Our preceding observations suggest that, as we move forward, it will be important to examine how (bundles of) formal and informal country institutions, which might serve as external governance mechanisms, influence the selection and development of viable ECF firms. Scholars need to ensure that they focus on appropriate country institutions. Indeed, the institutional indices that have been developed for other types of firms (and have been shown to be relevant for these firms) may not be relevant for ECF firms.

## **GOVERNANCE AS THE PROTECTION OF VALUE AND THE CREATION OF VALUE**

The idea that entrepreneurs have an information advantage with respect to the quality of their firms, projects and own abilities, over external stakeholders, including investors, is well-established in the literature (Amit et al., 1998). Thus, entrepreneurs can use this information advantage to the detriment of other stakeholders. Up to this point, our analysis has primarily



focused on the role of corporate governance in avoiding adverse selection and moral hazard problems (Table 1) or, in other words, the role of governance in protecting shareholders' wealth. This focus is commonplace in the corporate governance literature (Uhlener et al., 2007).

However, scholars have also highlighted situations in which entrepreneurs lack information about their industry, their competitors and the new capabilities that will be required as their firms grow (Zahra and Filatotchev, 2004). These 'blind spots' in the information, knowledge and experiences of entrepreneurs are one of the main reasons why professional external equity investors often spend significant effort and time on their so-called 'coach' function (Colombo and Grilli, 2010; Sapienza et al., 1996). There is increasing recognition in the governance literature that governance could also serve as a source of wealth creation in firms (Filatotchev and Wright, 2005; Zahra et al., 2009). For instance, firms' board of directors or advisory boards may help entrepreneurs to collect new information about their industry and competitors, helping entrepreneurs to make more effective strategic choices (Zahra et al., 2009).

Thus, while entrepreneurs may have certain information advantages relative to other stakeholders, some stakeholders may also have specific information advantages relative to entrepreneurs. Ultimately, the exchange of information among these key actors in the corporate governance systems of firms will be crucial for their long-term success (Zahra and Filatotchev, 2004). Currently, we lack insights on how the governance mechanisms in the equity crowdfunding market—and particularly the wisdom of the crowd—may bring new information to entrepreneurs, allowing them to make better strategic decisions that benefit firm development while addressing the potential downside of these mechanisms. We propose that the equity crowdfunding market and equity crowdfunders may provide both opportunities and threats to information exchange and, as a result, value creation in ECF firms.

More specifically, crowdfunding campaigns can play a key role in bringing new information and knowledge to entrepreneurs that provide them with important insights into opportunities and how to best pursue them (Afuah and Tucci, 2012). This role can be performed in multiple ways. First, the equity crowdfunding market may provide a ‘laboratory’ for entrepreneurs and equity crowdfunders alike. Entrepreneurs can pitch their business ideas to a broad set of individuals. Significant investment interest by the crowd indirectly provides information to entrepreneurs about the viability of their ideas. For equity crowdfunders, it further allows spreading the risk related to funding early stage, potentially innovative ideas. Second, entrepreneurs may also acquire valuable information in a more direct way. Individual equity crowdfunders, for example, not only contribute (small) amounts of money, they are also frequently active in providing comments, feedback and more or less innovative ideas to entrepreneurs. Such indirect and direct information flows from equity crowdfunders to entrepreneurs might give the latter with more confidence in their business ideas and provide new information to better pursue existing opportunities, while pointing toward new opportunities.

However, the diversity of equity crowdfunders—in terms of background, possible secondary motives to invest next to financial gains, and time horizons—might also bring significant challenges for ECF firms. Effective governance systems require an understanding of the motives of its key players (Zahra and Filatotchev, 2004), but the crowd could be so diverse that such an understanding is very difficult to obtain for entrepreneurs. The different feedback, comments and ideas provided by such a very diverse group of people can also lead to ‘information congestion’. It is also likely that when entrepreneurs choose a specific strategic action that pleases some equity crowdfunders, it makes others feel disgruntled. Finally, given that the information flows between equity crowdfunders and entrepreneurs often occur in public, such a situation may lead to the release of sensitive information that may ultimately harm

the ECF firm. Thus, despite the potential value of the information that is embedded in the crowd for ECF firms, the same crowd also raises important challenges.

Overall, it is clear that we need more research on how governance mechanisms may limit informational asymmetry and related adverse selection and moral hazard issues in equity crowdfunding. It is also crucial for future scholarship to improve our theoretical and empirical understanding of how equity crowdinvestors may help to create value in ECF firms. From the discussion we presented above, it should be clear that equity crowdinvestors can both contribute to, but also hamper, effective governance that creates value for ECF firms. Research on these potential effects is necessary.

## **DISCUSSION AND CONCLUSION**

The global equity crowdfunding market presents an important conundrum. On the one hand, this market is growing exponentially and has the potential to democratize entrepreneurial finance by reducing barriers for both entrepreneurs and small investors. On the other hand, this market is replete with informational asymmetry problems, such as adverse selection and moral hazard, which may eventually cause its failure. Corporate governance can play a crucial role in alleviating such adverse selection and moral hazard problems and thereby sustain the growth of the global equity crowdfunding market.

Existing corporate governance research, however, has primarily focused on large and public firms. More recently, this research has also embraced other, more commonplace, organizational forms such as small and medium-sized enterprises and entrepreneurial firms. Still, our understanding of what works (or does not work) in one type of firm may not generalize to other types of firms (Audretsch and Lehmann, 2014), including the ECF firms we have discussed throughout this paper. For example, relative to shareholders in public firms, shareholders in ECF firms obtain illiquid shares, which should limit capital market-based corporate governance

mechanisms. Similarly, relative to professional venture capital investors in entrepreneurial firms, the large number of small online crowdfunders in ECF firms may have limited incentives and power to conduct a detailed due diligence and actively monitor their portfolio firms.

Our paper calls for a fundamental shift in the focus of equity crowdfunding research, which has almost exclusively focused on the factors that drive funding success on equity crowdfunding platforms (e.g., Ahlers et al., 2015; Block et al., 2018; Guenther et al., 2018; Lukkarinen et al., 2016; Mamonov and Malaga, 2018; Mohammadi and Shafi, 2018; Vismara, 2016, 2018; Vulkan et al., 2016) and the funding dynamics on these platforms (e.g., Hornuf and Schwienbacher, 2018a; Vismara, 2018; Vulkan et al., 2016). It is important to understand how entrepreneurs can more successfully raise funds on equity crowdfunding platforms but if entrepreneurs do not create viable businesses with the money raised, investors and society at large will ultimately gain limited benefits. Thus, it is essential to understand what is happening after the equity crowdfunding campaign and how corporate governance can improve the viability and long-term success of these firms.

For this purpose, we have developed a conceptual model of the different mechanisms that could operate in the equity crowdfunding context to minimize adverse selection and moral hazard problems (see Table 1). In so doing, we move beyond the most often used theoretical framework in corporate governance, agency theory, which has largely focused on how shareholders (i.e., principals) should take actions to reduce agency problems created by entrepreneurs. Instead, drawing on an information economics perspective, we suggest that a combination of actors can trigger or install a host of (internal or external, formal or informal) governance mechanisms to reduce adverse selection and moral hazard problems. These actors include crowdfunders, entrepreneurs themselves, equity crowdfunding platforms and governments (see Table 1).

First, the wisdom-of-crowd effects may explain why equity crowdinvestors can select firms that are equally (or even more) likely to create value than professional investors, even when it does not make economic sense for crowdinvestors to conduct a detailed due diligence given their relatively small investments. Still, we lack evidence on wisdom-of-crowd effects in equity crowdfunding markets. While empirical work on the possibility that equity crowdinvestors are (not) wise, may not reach the contribution to theory threshold at many entrepreneurship/management journals, there is an increasing receptivity by leading journals for replication-style studies (e.g., Bettis et al., 2016). Finance journals have also been more receptive for studies that examine important aspects of a specific phenomenon. For instance, hundreds of empirical papers have been published on the question whether (and to what extent) public capital markets are efficient. However, by clarifying the possible boundary conditions of the wisdom of the crowd and how it interacts with the decision making of professional investors, there is still significant room for scholars to make important theoretical contributions as well.

Second, entrepreneurs often provide credible signals that reduce adverse selection and moral hazard issues. While extant crowdfunding research has addressed how such signals could influence the ability of entrepreneurs to raise equity crowdfunding (e.g., Ahlers et al., 2015), future research should also examine how these signals eventually relate to firm success. Some of these signals, such as setting up a formal board of directors and appointing prominent directors, may not only have a signaling value at the time of raising funds but could also have more substantive effects on ECF firm behavior and success after the investment. To address such questions, scholars will need to collect data not only from equity crowdfunding platforms but they will also need to collect firm-level data on the actions, strategies and performance following an equity crowdfunding campaign. With the increasing maturity of equity crowdfunding markets, we now have sufficient firms that can be tracked across time. Moreover, the increasing

availability of data on private firms may provide significant benefits (e.g., Vanacker et al., 2017). For instance, in several European countries (such as Belgium, France, Italy, Spain and the UK) even the smallest and youngest firms report financial accounts data.

Third, equity crowdfunding platforms may play an important role in ensuring that the information that firms provide on their platforms represents the facts, reducing adverse selection problems. Different platforms also have different modes of operating—with some platforms, for example, allowing crowdfunders to become direct shareholders in firms, while others use a nominee structure—which may have important consequences for ECF firm governance and subsequent firm performance. Unfortunately, to date, scholars have primarily focused on data from one specific platform (e.g., Dushnitsky and Zunino, 2018). To increase our understanding of how platform structures and platform diversity influence firm performance, scholars need broader datasets that include firms that were listed on different platforms. Obviously, entrepreneurs themselves may self-select by applying for a listing on specific platforms that fit best with their characteristics and the characteristics of their firms, which should make scholars wary of such self-selection effects.

Finally, governments set ‘the rules of the game’ for equity crowdfunding and the effectiveness of these rules, in combination with national cultures, could also significantly reduce the adverse selection and moral hazard problems we discussed throughout this paper. The development of alternative factor markets such as the size and development of the venture capital and angel market might also be impactful. Existing crowdfunding research, however, has focused on funding success on a specific platform operating in a specific country. Recently, researchers have also explored how formal and informal country institutions influence the size of equity crowdfunding markets (e.g. Cumming et al., 2017b). However, this focus has constrained our understanding of how national institutions influence the decisions and outcomes of ECF firms

themselves. Again, we not only need evidence on the institutions and factor markets that influence the size of equity crowdfunding markets but also on how they can influence the success of ECF firms. Such research should use cross-country datasets to examine how ECF firms develop and perform relative to similar firms that do not attract crowdfunding, and how national institutions moderate this relationship.

### **Additional Avenues for Future Research**

Having presented a research framework on the governance of ECF firms and its impact on firm success, our discussion highlights some additional avenues for future research. First, our framework suggests that some governance mechanisms will probably be more effective than others in addressing adverse selection and moral hazard problems, respectively (Table 1). We also discussed these governance mechanisms in a largely sequential manner. However, any mechanism in isolation is unlikely to be completely effective in reducing severe adverse selection and moral hazard issues. Still, governance research has often focused on a specific governance mechanism, such as the board of directors, in isolation (e.g., Audretsch and Lehmann, 2014). The equity crowdfunding context opens up opportunities to examine how different governance mechanisms at different levels (i.e., firm-platform-country) interact and impact firm development—an issue that has not been systematically explored in the broader governance literature (e.g., Aguilera et al., 2008; Strange et al., 2009; Vanacker et al., 2014). For example, a promising avenue for future research is to examine how the heterogeneity in the strength of contracts between crowdfunders and ECF firms (often linked to the choice of crowdfunding platform on which entrepreneurs will list their projects) and the national governance systems have a complementary or substitutive effect.

Second, the framework presented in Table 1 focuses on governance mechanisms as value protection safeguards, consistent with the broader governance literature. However, research on

how corporate governance mechanisms can potentially create value in ECF firms is lacking. Equity crowdfunders can provide ECF firms with more than money. Equity crowdfunders often also provide feedback and they could serve as ECF firm ‘ambassadors’. The question of how entrepreneurs can attract valuable crowdfunders remains unaddressed. We know that entrepreneurs can communicate with potential crowdfunders through the platforms on which they are listed (Block et al., 2018) but we do not know whether differences in entrepreneurial behavior allow firms to attract funding from a crowd with distinct characteristics and backgrounds—and whether this matters for ECF firm outcomes. Recent theoretical work indicates that firms may obtain distinct competitive advantages from engaging with online communities (Fisher, 2018). Still, currently, we lack evidence on whether, how and when equity crowdfunders can add extra-financial value to ECF firms.

Third, recent research on crowdfunding and equity crowdfunding, in particular, has further strengthened the already heavily segmented entrepreneurial finance literature (Cumming and Johan, 2017). Entrepreneurs generally use several sources of financing to form and grow their ventures (Cosh et al., 2009). Still, academic papers generally focus on one specific source of finance (or two sources at a maximum). For instance, we have a relatively established literature on venture capital, angel financing, bank financing, trade debt and now a growing stream of work on (equity) crowdfunding. However, cross-fertilization between these literature streams is limited. The question of how entrepreneurs choose between these different sources of financing also remains largely unexplored. Existing equity crowdfunding research, for instance, focuses on the firms that are already listed on specific platforms (e.g., Walthoff-Borm et al., 2018a). Thus, we need to better understand why entrepreneurs search for specific sources of financing, how they combine different sources of financing, and how their bundle of financing sources influences firm behaviors and outcomes. Overall, we need more work that crosses the largely distinct



literature streams that are segmented by financing source within the entrepreneurial finance literature.

### **Practical implications**

Even though we currently lack evidence on the governance of ECF firms and its impact on firm performance, our conceptual framework provides some guidance and implications for policy-makers. It suggests that the need for governments to craft stricter regulations that reduce adverse selection problems in equity crowdfunding markets should be evaluated next to alternative governance mechanisms that might be available. Notably, there are other mechanisms at the crowd- and crowdfunding platform-levels that could be effective in dealing with adverse selection. At the crowd-level, wisdom-of-crowd effects can lead to the selection of firms that are equally, if not more, likely to create value relative to those firms selected by professional investors. Even if future empirical work finds that crowds are not ‘wise’, one can wonder whether it is the role of governments to protect the crowd against their ‘madness’. It could be sufficient for governments to craft ‘soft’ regulations that limit crowdfunders to invest excessive portions of their total wealth exclusively in equity crowdfunding. Besides this, crowdfunders will learn with their own money whether the potential returns are worthwhile for the risk they take, especially because specific crowdfunders may also value other benefits besides monetary returns such as supporting entrepreneurship. Furthermore, at the platform-level, there are also some mechanisms that could reduce adverse selection issues. Platforms can perform more thorough due diligence to screen out the lowest quality firms. Platform managers also have strong reputational incentives to devise mechanisms that reduce adverse selection because over time, more failures of ECF firms funded through their platforms are likely to reduce the inflow of new deals, hampering the survival of their own business.

However, the role of governments to develop regulations that discourage moral hazard problems in ECF firms may be particularly critical. Once invested, even ‘wise’ crowdinvestors obtain largely illiquid shares. In essence, they are locked-in until an exit can be realized several years after their investment. Some platforms also take a relatively passive attitude after the crowdfunding campaign. While some platforms device more professional contracts and manage the shares of the crowd, they are not necessarily active in boards of directors.<sup>6</sup> Platforms can also create co-investment structures, where they require the crowd to co-investment with professional investors, who have more incentives to monitor. Still, in all these cases, minority investors require efficient courts and investor laws that protect them against opportunistic behaviors by entrepreneurs, who often remain controlling shareholders. Fostering the development of capital market-based governance mechanisms, such as active secondary markets for the shares of ECF firms, could also be instrumental.

Governments not only serve as regulators of equity crowdfunding markets but also often provide individuals with tax reductions when they invest in early-stage firms through equity crowdfunding platforms or other means. A key reason behind such tax shelter initiatives is that they might activate the significant amounts of savings that otherwise just remain on savings accounts. The money that is infused into the economy in this fashion may serve as a strong facilitator for entrepreneurship and economic growth. Thus, governments need research that informs them on whether the costs to support the development of the equity crowdfunding market are worthwhile, given the benefits it creates. The question whether equity crowdfunding markets can create viable businesses and how this market can be governed to create more successful

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<sup>6</sup> Boards might not even be present in ECF firms and even when they are it remains challenging for (crowd) representatives on the board to represent a heterogeneous group of investors with different backgrounds, interests, and time horizons.

businesses is crucial from a policy perspective. If equity crowdfunding markets, however, mainly create firms ‘zombie firms’ or ‘empty shells’, this could not only imply the ineffectiveness of tax shelter initiative but actually entails that governments indirectly hamper the productivity of existing firms. Such insights will obviously also be crucial for entrepreneurs themselves as they search for the financial resources needed to startup and grow their firms.

In summary, we see both opportunities and threats related to the developing equity crowdfunding market. We hope that our paper offers a meaningful starting point for significantly more research that enhances our theoretical and empirical understanding of ECF firm governance and how it impacts ECF firm success.

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**Table 1: Governance mechanisms that potentially operate in equity crowdfunding markets**

<b>Governance Mechanism</b>	<b>Adverse Selection</b>	<b>Moral Hazard</b>
<b>Crowdinvestors</b>		
Wisdom of the crowd	When the crowd is wise, this mechanism might be very effective in reducing adverse selection problems. If the wisdom of the crowd mechanism does not work, other governance mechanisms, such as platform due diligence, should become more developed to reduce adverse selection.	The wisdom of crowds mechanism may reveal moral hazard issues. However, the diversity in backgrounds, goals and time horizons of small equity crowdinvestors may provide more discretion to entrepreneurs, thereby fostering moral hazard problems. Additional governance mechanisms will be required to minimize moral hazard issues.
<b>Entrepreneurs</b>		
Signaling and related substantive actions	Entrepreneurial signaling may decrease adverse selection. It may further reduce the need for formal regulations that increase information availability.	Signaling and related substantive actions (e.g., board formation and composition) can limit moral hazard. However, signaling will need to be combined with other governance mechanisms, such as active secondary markets and strong investor protection laws, to minimize moral hazard issues.
<b>Platforms</b>		
Due diligence	If the wisdom of crowds mechanism functions, probably the most important task for platforms is to reduce fraud cases and assure that information provided on platforms represents the facts. When crowds are not (sufficiently) wise, more detailed platform due diligence should become more important to reduce adverse selection.	Does not directly address moral hazard.
Structural differences across platforms; for example, shareholder structures	Both direct and nominee shareholder structures do not directly address adverse selection issues. In the co-investment structure, however, crowdinvestors may benefit from the due diligence efforts of professional investors.	The direct shareholder structure might be more problematic in dealing with moral hazard problems because of shareholder dispersion and related free-rider problems. The nominee structure and co-investment structure might be more effective because of shareholder concentration. When voting rights are offered to crowdinvestors on platforms this may facilitate professional investor involvement and corporate governance more broadly.
Secondary markets	Does not directly address adverse selection.	May be effective to reduce moral hazard by creating a form of market discipline.



**Table 1 [Continued]**

Governance Mechanism	Adverse Selection	Moral Hazard
<b>Country Institutions</b>		
Formal institutions	Laws that increase information availability may be important to reduce adverse selection but can also be problematic because they raise the cost of firms that search for equity crowdfunding.	Strong investor protection laws may be particularly important to curtail self-dealing and other moral hazard problems. The effectiveness of these laws may further depend on how elaborate shareholder agreements are between crowdinvestors and the ECF firm.
Informal institutions	Informal institutions, such as trust, may be efficient to reduce both adverse selection and moral hazard problems. Also, informal and formal institutions may have complementary or substitutive effects.	

## Appendix A: Overview of existing equity crowdfunding research

<u>Author(s)</u>	<u>Sample</u>	<u>Dependent variables</u>	<u>Independent variables</u>	<u>Main findings</u>
Ahlers et al. (2015)	104 projects listed on the Australian platform ASSOB between October 2006 - October 2011	Fully funded dummy, number of investors, investment amount and speed of investment	Human capital, social (alliance) capital, intellectual capital, equity share retained by entrepreneurs, financial projections	Retaining equity and providing more detailed information about risks can be interpreted as effective signals and can therefore strongly impact the probability of funding success.
Vismara (2016)	271 projects listed on the UK platforms Crowdcube and Seedrs between 2011 – 2014	Number of investors and funding amount	Percentage of equity offered and social capital	Campaigns launched by entrepreneurs (1) who sold a smaller fraction of their companies at listing and (2) had more social capital had higher probabilities of funding success.
Lukkarinen et al. (2016)	60 projects on the Invesdor platform between May 2012 and September 2014. The sample includes 1,742 investments, of which 76% were made into successful campaigns.	Number of investors and amount raised	‘Traditional’ investment criteria (e.g., team, markets, scalability, terms, stage) and crowdfunding features (e.g. early funding from private network, social media networks, understandability of concept)	The criteria used by venture capitalists or angels are not of prime importance for funding success in equity crowdfunding. Funding success is instead related to pre-selected crowdfunding campaign features and the utilization of private and public networks
Agrawal et al. (2016)	N.A.	N.A.	N.A.	Syndicates may reduce market failures caused by information asymmetry by shifting the focal investment activities of the crowd from startups to lead investors.
Hornuf & Neuenkirch (2017)	44 projects and 499 backers who invested during the period from November 6, 2011, to March 25, 2014, on the German equity crowdfunding portal Innovestment.	Premium over ticket price (Premium = 100 x (offered price - ticket price)/ticket price)	Campaign characteristics (e.g., pre-valuation, funding goal), backer sophistication (e.g., investment experience), progress in the funding campaign (e.g., funding share, funding goal reached), herding, stock market volatility, remaining time	Campaign characteristics, investor sophistication, progress in funding, herding, and stock market volatility influence backers' willingness to pay for shares in equity crowdfunding. Geographic distance, learning effects, and sniping at the end of an auction have no effect.

## Appendix A [Continued]

<u>Author(s)</u>	<u>Sample</u>	<u>Dependent variables</u>	<u>Independent variables</u>	<u>Main findings</u>
Hornuf & Schwienbacher (2017)	N.A.	N.A.	N.A.	A theoretical model that shows that too strong investor protection may harm entrepreneurial initiatives. Optimal regulation depends on the availability of alternative early-stage financing such as venture capital and angel finance.
Block et al. (2018)	71 projects and 39,399 investment decisions on two German equity crowdfunding portals.	Number of investments and the amount of capital pledged	Number of updates and update characteristics	Posting an update has a positive effect on funding success. This effect lags the update by a few days. The effect of updates loses statistical significance with the number of updates posted during a campaign. Easier language used in updates increases crowd participation. The positive effect of updates can be attributed to updates about new developments of the start-up such as campaign developments, new funding, business developments, and cooperation projects.
Mamonov & Malaga (2018)	133 venture listings across 16 US platforms	Funding success (i.e., raising the minimum amount of capital that was sought)	Variables related to market risk, execution risk and agency risk	Lower market (i.e., ventures that completed product or service development and have large corporate clients), execution (i.e., ventures with larger entrepreneurial teams) and agency risks (e.g., ventures that attracted angel or venture capital funding) positively affect funding success
Guenther et al. (2018)	104 projects listed on the Australian platform ASSOBS between 2006 and June 2012. Including 418 retail investors, 76 accredited, 5 professional, 79 foreign, 25 associates, and 43 existing shareholders	Investment decision dummy	Distance	Geographic distance is negatively correlated with investment probability for all home country investors. A comparison of home country and overseas investors reveals that overseas investors are not sensitive to distance.

## Appendix A [Continued]

<u>Author(s)</u>	<u>Sample</u>	<u>Dependent variables</u>	<u>Independent variables</u>	<u>Main findings</u>
Mohammadi & Shafi (2018)	2,537 investments by 1979 unique investors between 2012 and March 2015 from FundedByMe (Swedish platform)	Firm age, technology firm and equity offering	Gender	Female investors are less likely to invest in the equity of firms that are younger and high tech and have a higher percentage of equity offerings. Female investors are also more likely to invest in projects in which the proportion of male investors is higher.
Kshetri (2018)	N.A.	N.A.	N.A.	Exploring the effects of informal institutions on entrepreneurs' ability and willingness to engage in efforts to raise equity crowdfunding.
Brown et al. (2018)	42 equity crowdfunded start-ups in the UK	N.A.	N.A.	There is strong demand for equity crowdfunding from entrepreneurs within innovative, consumer-focused, early-stage firms. Equity crowdfunding also seems to confer intangible benefits to companies which amount to more than money.
Vismara (2018)	132 projects on Crowdcube in 2014	The percentage of public profile investors, the number of early investors over the first 5 days of offerings and the number of investors after the first 5 days.	Public investors and early investors	Information cascades among individual investors play a crucial role. Investors with a public profile increase the appeal of the offer among early investors, who in turn attract late investors.
Signori & Vismara (2018)	212 firms that raised initial equity crowdfunding on Crowdcube between 2011-2015	Failure, Follow-on fundraising	Investor participation in the initial offering, company- and offering-specific variables	18% of firms already failed. 9% raised follow-on financing in the form of a private equity injection and 25% raised a follow-on crowdfunding offering. Three firms were acquired. Firms with more dispersed ownership are less likely to issue further equity, while those that reach the target capital more quickly are more likely to launch a follow-on offering. Further, none of the firms initially backed by qualified investors subsequently failed.

## Appendix A [Continued]

<u>Author(s)</u>	<u>Sample</u>	<u>Dependent variables</u>	<u>Independent variables</u>	<u>Main findings</u>
Walthoff-Borm et al. (2018a)	277 firms that searched for equity crowdfunding between 2012 and 2015 on Crowdcube and two matched samples of firms that did not list on crowdfunding platforms but were similar in terms of firm industry, age and size.	Searching for equity crowdfunding dummy	Internal funds, leverage, tangible assets, intangible assets	Firms list on equity crowdfunding platforms as a ‘last resort’—that is, when they lack internal funds and additional debt capacity. Firms listed on equity crowdfunding platforms are less profitable, more often have excessive debt levels, and have more intangible assets than matched firms not listed on these platforms.
Walthoff-Borm et al. (2018b)	250 firms that raised equity crowdfunding from Crowdcube or Seedrs.	Firm financial and innovative performance	Equity crowdfunding, direct versus nominee shareholder structure	ECF firms have higher failure rates than matched non-ECF firms. However, more ECF firms have patent applications than matched non-ECF firms. Within the group of ECF firms, ECF firms financed through a nominee structure make smaller losses, while ECF firms financed through a direct shareholder structure have more new patent applications, including foreign patent applications.
Hornuf & Schwienbacher (2018a)	89 funding campaigns, which were run by 81 startups on four German platforms. Investors funding these campaigns made 26,967 investment decisions.	Investments	Information disclosure, peer effect, end-of-campaign, and collective action variables.	In contrast with campaigns on Kickstarter, on which the typical pattern of project support is U shaped, equity crowdfunding dynamics are L shaped under a first-come, first-served mechanism and U shaped under a second-price auction. Investors base their decisions on information provided by the entrepreneur in the form of updates as well as by the investment behavior and comments of other crowd investors.
Hornuf & Schwienbacher (2018b)	181 successful and unsuccessful campaigns between August 2011 and September 31, 2014 on a broad set of German platforms	Number of investors, campaign success, amount raised	Low minimum ticket, pooled investment scheme, and profit-participating loans	Crowd participation is largest when the minimum ticket size is small, the crowd is pooled in a financial vehicle, and the crowd is offered investments in the form of profit-participating loans. These mechanisms also increase the chances of achieving successful campaigns and raising a larger amount.

## Appendix A [Continued]

<u>Author(s)</u>	<u>Sample</u>	<u>Dependent variables</u>	<u>Independent variables</u>	<u>Main findings</u>
Estrin et al. (2018)	64 semi-structured interviews between 2014 and 2017	N.A.	N.A.	The large financial flows to entrepreneurs in the UK have probably been largely incremental to traditional sources of early-stage entrepreneurial finance. Investors appear to understand and appropriately evaluate the risks that they are bearing. ECF allows entrepreneurs to test their products, to develop their brand, to build a loyal customer base and to turn customers into investors.
Hornuf et al. (2018)	413 firms that ran at least one successful equity crowdfunding campaign (on 13 different portals) in Germany or the United Kingdom between 2011 and 2016	Follow-up funding, firm failure	Senior management team, trademarks and patents, ECF campaign characteristics,	German ECF firms stood a higher chance of obtaining follow-up funding through business angels or venture capitalists but also had a higher likelihood of failure. The number of senior managers and initial venture capital investors had a positive impact on obtaining follow-up funding, whereas the average age of the senior management team had a negative impact. The number of initial venture capital investors and the valuation of the firm were significant predictors increasing the hazard of firm failure, whereas the number of senior managers and the amount raised during previous equity crowdfunding campaigns had a negative impact.

*Notes.* The Table includes selected papers on the topic ‘equity crowdfunding’ included in Web of Science’s Social Science Citation Index within the Business, Management and Economics categories.

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