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## Jacks-(and Jills)-of-all-trades: On whether, how and why gender influences firm innovativeness

Robert Strohmeier<sup>a,\*</sup>, Vartuhi Tonoyan<sup>b,\*</sup>, Jennifer E. Jennings<sup>c,\*</sup>

<sup>a</sup> Institute for SME Research (ifm) & Mannheim Centre for European Social Research (MZES), University of Mannheim, L9, 1-2, 68161 Mannheim, Germany

<sup>b</sup> School of Business, Stevens Institute of Technology, 1 Castle Point on Hudson, Hoboken, NJ 07030, USA

<sup>c</sup> Alberta School of Business, University of Alberta, Edmonton, AB T6G 2R6, Canada

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### ABSTRACT

This study examines whether, how and why an entrepreneur's gender influences firm innovativeness. Drawing upon research on gender-segregated educational and employment experiences, we suggest that firms led by women will exhibit less innovation breadth and depth than those led by men due to differences in the degree to which male versus female entrepreneurs resemble 'jacks-(or jills)-of-all trades'. Analysis of survey data collected from 900 business owner-managers in Germany lends overall support—albeit with some noteworthy exceptions. Our findings point to the need for an even more nuanced approach to research at the nexus of gender, entrepreneurship, and innovation.

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### 1. Executive summary

As highlighted in recent reviews of the women's entrepreneurship literature (e.g., [Alsos et al., 2013](#); [Jennings and Brush, 2013](#)), relatively little academic research has addressed the questions of whether, how and why an entrepreneur's gender influences the innovativeness of his or her firm. This lack of attention is unfortunate because it means that little scientific evidence currently exists to assist policy-makers interested in encouraging and supporting innovation by female entrepreneurs as a means of fostering economic growth. Specifically, academic research can only make limited contributions, at present, to the design of educational programs and other initiatives for realizing the innovative potential of women-led firms.

Besides their small number, existing studies at the 'gender, entrepreneurship, and innovation nexus' suffer from two key limitations. One is their primarily descriptive nature, the key implication of which is that the mechanisms underlying the gender-innovation relationship in entrepreneurial firms are not yet well understood. A second is their relatively narrow focus, with prior quantitative research primarily examining product-market or process innovation (e.g., [Kelley et al., 2013](#); [Strohmeier and Tonoyan, 2005](#); [Thébaud, 2015a](#)) and/or studying only technology-intensive firms (e.g., [DeTienne and Chandler, 2007](#); [Marvel et al., 2015](#)). It is well known, however, that female entrepreneurs are less likely to operate in high-technology industries, thereby raising questions about the extent to which the evidence accumulated thus far generalizes to settings in which female-headed firms are more prevalent.

Our study addresses the above-noted gaps by theorizing that the lower innovativeness likely to be exhibited by female-led firms is partially attributable to differences in the degree to which male versus female entrepreneurs resemble 'jacks-of-all-trades'.

\* Corresponding authors.

E-mail addresses: [strohmeier@ifm.uni-mannheim.de](mailto:strohmeier@ifm.uni-mannheim.de) (R. Strohmeier), [vtonoian@stevens.edu](mailto:vtonoian@stevens.edu) (V. Tonoyan), [jennifer.jennings@ualberta.ca](mailto:jennifer.jennings@ualberta.ca) (J.E. Jennings).

In turn, we suggest that this differential can be traced to gender-segregated educational choices and employment experiences. We conceptualize firm innovativeness along two dimensions, with *innovation breadth* referring to the number of different domains in which a firm has developed something new (i.e., product, process, marketing, and organizational) and *innovation depth* denoting the frequency and novelty of its offerings (i.e., continuous, imitative, or radical). We test our hypotheses using unique data from 900 business owner-managers in Germany.

Our findings offer several contributions to the literature upon which we have drawn. To the women's entrepreneurship literature, we offer evidence that although female-led firms tend to exhibit a lower breadth and depth of innovation overall, these differentials are non-existent within certain domains (specifically marketing or organizational innovations) and within certain types of industries (specifically for innovation depth within less-innovative contexts). For research on Lazear's (2004) jack-of-all-trades theory of entrepreneurship, we extend prior work on the implications of skill diversity for the decision to become an entrepreneur by providing evidence documenting subsequent consequences for firm innovativeness. To both literature streams, we demonstrate the merit of integrating broader sociological research on sex-based labor market inequality (e.g., Charles, 2011; Charles and Grusky, 2004; England and Li, 2006).

The results of our study also possess the following practical implications. In order to boost the innovativeness of their firms, female entrepreneurs would benefit from greater skill diversity. For this to occur, it would be helpful if policy-makers could take further steps to decrease the gender inequalities in pre-entry entrepreneurship by reducing institutional barriers that are responsible for women's workforce interruptions as well as their lower likelihood of obtaining managerial positions within wage-and-salaried work. In sum, our study suggests that such efforts will help narrow the documented differentials in the innovativeness of male- versus female-led firms.

## 2. Introduction

Despite calls for greater research at the intersection of gender,<sup>1</sup> entrepreneurship, and innovation (Alsos et al., 2013; Jennings and Brush, 2013), comparatively little work has accumulated to date. The lack of scholarly attention to this topic is unfortunate given the widespread policy interest in fostering the entrepreneurial and innovative activities of women (Ahl and Nelson, 2015; Kelley et al., 2013). It is also surprising considering the prominence with which innovation features in classic and contemporary definitions of entrepreneurship (Schumpeter, 1934; Shane and Venkataraman, 2000), the growing interest in how entrepreneurs foster firm-level innovation (Baron and Tang, 2011; Baumol, 2010; Cliff et al., 2006), and the documented relationship between new/small firm innovativeness and performance (Jennings et al., 2009; Rosenbusch et al., 2011; Zott and Amit, 2007).

Besides their small number, existing studies of gender, entrepreneurship and firm innovativeness suffer from two key substantive shortcomings. One is their relatively narrow focus. Even though several scholars have argued for a more inclusive and gender-neutral approach (e.g., Alsos et al., 2013; Blake and Hanson, 2005; Ranga and Etkowitz, 2010), extant quantitative work has tended to concentrate primarily on product-market or process innovation (Kelley et al., 2013; Marvel et al., 2015; Sonfield et al., 2001; Strohmeier and Tonoyan, 2005; Thébaud, 2015a) and/or upon entrepreneurs heading technology-intensive firms (DeTienne and Chandler, 2007; Marvel et al., 2015). As a result, the field possesses only a limited understanding of *whether* and *how* male versus female-led firms differ with respect to their innovativeness. The second substantive limitation pertains to underlying theoretical mechanisms, which so far have either gone unexamined (Kalleberg and Leicht, 1991; Kelley et al., 2013; Sonfield et al., 2001) or been unable to account for a large proportion of any observed gender-based differentials (Marvel et al., 2015). The key consequence is that very little knowledge currently exists with respect to the further question of *why* an entrepreneur's gender is likely to impact the nature of innovation within his or her firm.

By addressing the above-noted shortcomings, this paper strives to not only enhance understanding of whether, how, and why male versus female-led firms differ in their innovativeness but also inspire additional research at the gender, entrepreneurship, and innovation nexus. Our theorizing starts by offering a more inclusive conceptualization of firm innovativeness that is attentive to both the breadth and depth of innovation exhibited. We then delineate an interrelated set of mechanisms linking an entrepreneur's gender to these dimensions and their constituent sub-components, integrating Lazear's (2004) jack-of-all-trades theory of entrepreneurship with sociological research on sex-based labor market inequality (e.g., Charles, 2011; Charles and Grusky, 2004; England and Li, 2006). We test our hypotheses using secondary survey data collected from 900 owner-managers in Germany, with external validation checks conducted on several additional datasets.

Our findings contribute to a much more nuanced understanding of the relationship between an entrepreneur's gender and firm innovativeness. While we find, for instance, that firms headed by female entrepreneurs tend to exhibit a lower overall breadth and depth of innovation than those headed by male entrepreneurs, more fine-grained analyses reveal a lack of gender differences in certain types of innovation and within certain types of industries. Our findings also extend understanding of the factors that contribute to the observed gender gaps in firm innovativeness, highlighting, in particular, the role played by gendered labor market experiences that contribute to differences in the extent to which male versus female entrepreneurs resemble jacks-(or jills)-of-all-trades. In sum, this study not only demonstrates the usefulness of a labor market perspective for shedding light on

<sup>1</sup> We use the term 'gender' instead of 'sex' following extant sociological literature (Lindsey, 2015), which suggests that 'sex' merely describes biological differences whereas gender describes an individual's "mental (cognitive and affective) framework ... which colors or conditions perception, values, and behavior..." (Bird and Brush, 2002: 43). The two terms are often used interchangeably in the entrepreneurship literature; a notable exception is the distinction between an entrepreneur's sex and his/her gender identity in the study by Eddleston and Powell (2008).

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