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Supervisor Expression of Interest
MSCA-IF Marie Sklodowska Curie Action-Individual Fellowship 2020

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Department Name: Research topic: (https://www.polimi.it/en/scientific-research/research-at-the-politecnico/departments/)	Department of Management, Economics and Industrial Engineering Venture capital and innovation
MSCA-IF Research Area Panels	☐ CHE_Chemistry X ECO_Economic Sciences ☐ ENG_Information Science and Engineering ☐ ENV_Environmental and Geosciences ☐ LIF_Life Sciences ☐ MAT_Mathematics ☐ PHY_Physics ☐ SOC_Social Sciences and Humanities
Politecnico di Milano Areas:	☐ Cultural Heritage X Smart Cities ☐ Territorial Fragilities ☐ Health ☐ Industry 4.0
Brief description of the Department and Research Group (including URL if applicable):	**The Department of Management, Economics, and Industrial Engineering** (DIG) of Politecnico di Milano was established in 1990. Its mission is to have a positive impact on society by creating and sharing knowledge at the crossroads between engineering, management, and economics. To this end, it engages in outstanding research, high quality education, and service to the community. Specifically, DIG pursues scientific excellence by adopting a tailored approach, which relies on multi-disciplinarity, diverse methodologies, and

	intense connections with practitioners and policymakers. With approximately one hundred professors, DIG is one of the largest departments of Politecnico di Milano. In 2003, DIG partnered with MIP - Politecnico di Milano Graduate School of Business (which focuses on post-experience education) to form the Politecnico di Milano School of Management (www.som.polimi.it). Nowadays, the School has the EQUIS and the AMBA accreditations and ranks among the best European business schools according to the Financial Times and the QS rankings. Moreover, the School participates in several international partnerships, like PRME, Cladea, ACE and QTEM. **The EFI (Entrepreneurship, Finance and Innovation, www.efi.polimi.it) research group** of the Department of Management, Economics and Industrial Engineering of Politecnico di Milano investigates topics at the intersection of Entrepreneurship, Finance, and Innovation. On these topics, EFI research group is one of the most reputable and acknowledged voice among leading Universities, public institutions, and private organizations. The group uses a multidisciplinary approach, which embraces state-of-art methodologies (e.g. econometrics, experiments, and machine learning) to advance economic and managerial theories and achieve scientific excellence.

Brief project description: **(max 1 page)**	The research project contributes to the economics of innovation literature. In particular, we are interested in the signals sent by young innovative companies searching for venture capital to develop and commercialize their inventions. For potential investors, it is difficult to assess the quality of a young innovative company, since these firms do not have a track record, are not yet profitable, and most of their assets are intangible. In this situation of imperfect information, young companies send credible signals referring to both the quality of the entrepreneurs (e.g. educational attainments, work experience) and the quality of their inventions (e.g. patents). Whereas the signaling theory and the related conceptual and empirical work that builds on this theory interpret a signal as inherently positive, there might also be negative information attached to a signal. For example, patents protecting radical

	inventions, i.e. the combination of knowledge components that had previously not been combined, send out a signal of tremendous earning potentials. However, they also require high investment sums and are characterized by a high risk of failure and delayed returns. These conflicting information lead to cognitive imbalance and psychological tension for the receiver of the signal. This research project builds on and contributes to the signaling theory by integrating psychological theory concerned with the cognitive processing of information under uncertainty (e.g. balance theory) and human capital theory in the context of entrepreneurship. First, we are interested in the perception of ambiguous signals by receivers characterized by bounded rationality. Potential investors of companies that want to develop radical inventions have to cognitively process the underlying conflicting information and behave accordingly. Second, we want to analyze how other signals of the company (e.g. concerning the human capital of the company) might compensate for the negative information contained in one signal to establish the necessary legitimacy for getting funding. We employ a quantitative empirical approach to investigate the above described research questions. Since signals are rarely determined exogenously, demonstrating causal effects of signals on financing decision of Venture Capital investors is an important objective of this work. The creation of a rich dataset is therefore necessary to control for characteristics that otherwise confound our results and might allow us to define appropriate instruments. This requires the expansion of the VICO dataset (see https://rcf.risis2.eu/dataset/12/metadata) by integrating other data sources with information on the inventions of young innovative companies (e.g. patent data from PATSTAT) and the background of the entrepreneurs (e.g. personal information from LinkedIn). In answering our research questions, we aim to make substantial theoretical and practical contributions which are of interest for science, practice, and policy makers. We contribute to the signaling theory, the entrepreneurial finance literature and the innovation management literature. Radical inventions are of particular interest, since they drive technological, industrial and societal change. Consequently, companies that develop these inventions need to understand the impact of the signals they send.