

The 2019 Technology Transfer Society Annual Conference

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Session 2.1 – Chair Chiara Marzocchi

Location – CCF

Title: Does governmental support help Canadian firms surmount obstacles to innovation and be more innovative?

Authors: Catherine Beaudry, Charles Bérubé

Presenter: Catherine Beaudry

Abstract:

Canada's sub-par innovation performance has been a concern for a number of years now. Policymakers are therefore on the lookout for appropriate and effective means by which to foster a better environment in which to innovate and to encourage innovation. There is no consensus however on the extent to which such policies should be used. We first build a theoretical framework to study the impact of innovation policy on firm innovation performance. Then, using two Surveys of innovation and business strategies run by Statistics Canada (SIBS) in 2009 and in 2012, we examine whether firms that have taken measures to overcome obstacles to innovation or that have benefited from various government incentives to overcome innovation obstacles have succeeded in innovating.

Our first analysis examines multiple sample definitions to avoid the innovation obstacle paradox where firms that encounter such hurdles are more likely to innovate. For instance, when we include non-technical innovators (those that generate organisational innovations or marketing innovations) results change drastically (not only does the level of significance of the results change, but so do the sign of the coefficients). The reason is simple; the majority of government incentives are targeted at technical innovations. It is thus imperative to perfectly circumscribe the sample if one is to draw appropriate conclusions.

Our results show that not taking any measures to mitigate innovation obstacles is the worst strategy. Regardless of the success of the measures taken, it is always a better strategy to do something to try to overcome these obstacles to innovation. Second, firms that have used federal government assistance programs to try to surmount these innovation obstacles have a greater propensity to innovate than those that did not use any government support. These same firms also have a greater rate of success when it comes to overcoming obstacles associated with innovation. Obviously, specific government programs, i.e. programs other than direct grants or tax credits that are used widely and not targeted at specific problems, affect differently the capacity of firms to mitigate some innovation hurdles. Training programs, and to a lesser extent, programs aimed at recruiting recent graduates influence the capacity of firms to overcome skills-related difficulties. In contrast, no government programs seem to be able to help firms to mitigate obstacles related to reaching collaboration agreements with external partners or to surmount intellectual property protection or regulatory problems. Now that the government is taking active measures to ensure that heavy regulation does not put a stop or seriously hamper the propensity to innovate, realising which programs are useful, or none as it turns out, to help firms climb over the various innovation obstacles is highly relevant to innovation policy.

Title: The impact of I-Corps on academic entrepreneurship

Authors: Jan Youtie, Seokkyun Woo, Seokbeom Kwon

Presenter: Jan Youtie

Abstract:

University commercialization support initiatives have evolved since the Bayh-Dole Act (Wright and Siegel, 2015). Approaches after the Bayh-Dole Act emphasized technology transfer offices and tended to be more centralized, intellectual property-oriented, and revenue seeking (Brenzitz, 2011). Studies of these traditional technology transfer support programs have not been found to be significantly associated with positive commercialization outcomes such as new venture capital, companies, or jobs (Grimaldi et al., 2011). Methodological factors are an issue in these studies. There are few quantitative studies that are able to find comparison groups that can account for the effects of confounding variables such as the quality of the service, characteristics of the university and location, or attributes of the scientist. Individual-level characteristics also are not well captured. Another issue with these studies is that the commercialization support landscape has evolved toward accelerators and entrepreneurship training programs that tend to be more decentralized, emphasizing entrepreneurship capacity development (Clarysse et al., 2015).

This research will address these gaps by comparing the outcome of individual projects that received support through the US I-Corps program. I-Corps is a program that originated in the National Science Foundation (NSF) in 2011 to provide training in evidence-based entrepreneurship methodologies to accelerate commercialization research of its principal investigators. I Corps training is provided through a network of nodes. Georgia Tech's I-Corps South Node was established in 2012 through the university's VentureLab unit as one of the first three sources for the evidence-based entrepreneurship curriculum. VentureLab is a Georgia Tech program established in 2001 to assist faculty members through the commercialization process.

This paper compares two entrepreneurship support efforts to accelerate academic entrepreneurship of Georgia Tech faculty projects: I-Corps services delivered through VentureLab (VentureLab+I-Corps); and similar services through VentureLab but outside of I-Corps (VentureLab-only). The comparison assesses the likelihood of commercialization outcomes such as attraction of substantial financial capital, new company formation, or jobs. The independent variable of interest is whether or not the project involves VentureLab+ I-Corps or VentureLab-only, which represents whether there is something particular about the approach that I-Corps uses over and above the basic evidence-based methodology which has been widely disseminated. A significant consideration is the ability to identify factors that encourage investigators to select into the VentureLab+I-Corps versus the VentureLab-only service. A selection equation first presents significant variables that distinguish the two service groups. A second stage analysis presents outcome variables—financial capital, new company formation, jobs—as a function of the main independent variable of interest, and control variables for year of service, discipline, and characteristics of the investigator.

Title: Novel data uses for innovation research: Analyzing websites of small and medium-sized manufacturers in Cana46

Authors: Sandra Schillo, Louise Earl

Presenter: Sandra Schillo

Abstract:

Research on innovation in companies is limited by the data available for analysis. Traditionally, economists have been able to discern the impact of innovation in the context of aggregate, e.g. national-level studies. Micro-level empirical studies typically involve surveys, with the associated biases, respondent limitations, and response burden. Administrative data such as data based on tax returns, can address some of the issues relating to response biases, completeness and accuracy of responses, but does not typically contain information on innovation behaviour. In this context, the use of publicly available data, and in particular company web sites, has been considered by some researchers – in the academic, public, and private sectors – as a potential solution to many of the data issues. Indeed, researchers (including Youtie et al. 2012, Shapira et al. 2014, Gök et al. 2015, Beaudry et al. 2016) have used web-based data to complement existing data sources. The key issues arising throughout this research, however, is that of validation of data and indicators.

This paper presents results of a joint university – public sector research collaboration to address validation issues with the guiding principles of enhancing national statistical holdings, developing new techniques and approaches to data development and exploring new research themes. The paper presents findings from a case study covering 13000 Canadian manufacturing companies. The university researchers first collected information to identify the companies and Statistics Canada experts matched them to existing Statistics Canada records. Statistics Canada records contain information on all Canadian companies from administrative data files, but given that corporate websites typically do not display Business Number information, matching information from web sites to existing records is not always possible. In our data set, 60% of the web-based records were matched with Statistics Canada data, for a total of approximately 7800 identified records.

The focus of this paper is to discuss the data sources and methods and process challenges and opportunities associated with each source, as well as results from our case study. Furthermore, one purpose of this project was to explore whether inclusive innovation dimensions can be captured using web-based data, and we comment on the related challenges and opportunities. We also discuss next steps for the project, including additional linkages to the new federal government-wide Business Innovation and Growth Support (BIGS) programs microdata series that is being developed in partnership between Treasury Board of Canada Secretariat and Statistics Canada.

This paper provides guidance for other researchers attempting to use websites to complement innovation data. It provides insights into the kind of analyses currently possible, their validity, and provides a discussion of further indicator development.

Title: Innovation and societal strategies of SMEs in emerging technologies: Insights from business websites

Authors: Philip Shapira, Fatemeh Salehi, Abdullah Gök

Presenter: Philip Shapira

Abstract:

The formation of small and mid-sized enterprises (SMEs) represents one of the fundamental components of dynamic regional and national economies, with enterprise start-up and early growth being a particularly significant element in pioneering and developing emerging technologies and disruptive innovations. However, multiple challenges need to be addressed as SMEs in emerging technologies seek to commercialize their inventions and research. These challenges include ones of manufacturing scale-up, access to finance, business strategy, market uncertainty and user absorptive capacity, and competition from incumbent technologies and businesses. Additionally, SMEs in emerging technologies increasingly need to anticipate and engage with issues of societal and public concern. Building on literature on responsible research and innovation, corporate social responsibility and business innovation, this study examines the business and societal models of SMEs in the emerging technological domain of synthetic biology. We use a combination of structured data (from open-source business databases) and unstructured data (from enterprise websites and social media) to identify enterprise characteristics and gather information on development, innovation and commercialization activities and on approaches towards societal responsibility. Within our global set of synthetic biology SMEs, we focus on a group of 138 companies in the UK and US. These two countries provide relevant locations for study as each has an emerging and fast-developing synthetic biology sector, but with distinguishing governance strategies and contexts (including the presence of explicit frameworks for responsible research and innovation). We operationalize responsibility (as expressed by business statements and business responsible governance actions) and test how responsibility is associated with innovation strategy, customer orientation and application targets, product or process focus, regulation, finance, and other business characteristics. The analysis is exploratory: it further examines the opportunities to use publicly-available online enterprise data not only to probe business and innovation aspects but also to investigate societal claims and strategies. We also consider the limitations and caveats of using such online sources. The findings of the study enhance our understanding of distinctive ways that SMEs combine new business models and societal models for addressing the challenges in commercializing emerging technologies. We anticipate findings that will shed light on similarities and differences in strategies for responsible commercialization of synthetic biology for UK and US SMEs. The research also informs management and policy strategies related to how societal challenges of emerging technologies are framed and operationalized by SMEs.