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## Long Range Planning

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## Entrepreneurs' Capital Budgeting Orientations and Innovation Outputs: Evidence From Australian Biotechnology Firms

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How do different kinds of planning orientations affect entrepreneurial firms' innovation outputs? To address this question, we position real options reasoning (ROR) and net present value (NPV) as business planning orientations with distinctive heuristics. We empirically investigate heterogeneity in entrepreneurs' business planning in terms of these ROR and NPV orientations and we relate this heterogeneity to material new venture outcomes. Key decision makers from biotechnology start-ups in Australia were surveyed and results from Generalized Method of Moments estimation models showed that an ROR orientation positively relates to the innovation outputs of new ventures in our sample, whereas a stronger NPV orientation is negatively associated with innovation outputs. We offer implications for the literatures on strategic decision-making and planning.

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### Introduction

How does business planning affect innovation outputs of nascent firms? On the one hand, [Delmar and Shane \(2003\)](#) found that planning in general helps entrepreneurs to make abstract and vague attitudes more concrete, to stage speedy future actions and to anticipate and minimize bottle necks. These authors operationalize business planning with a dichotomous variable that captures whether entrepreneurs have completed a formal business plan.<sup>1</sup> Using a sample of 223 new Swedish ventures, they find that plans hasten product development, strengthen organizing activity (a measure of the level of development of organizational processes) and reduce the likelihood of venture failure. Each of these outcomes has the propensity to improve innovation outputs. Similarly [Zott and Amit \(2007\)](#) showed that business model design can result in novel initiatives that increase performance of entrepreneurial firms.

On the other hand, there is reason to believe that planning may impede innovation outputs. In particular, greater planning may cause planners to commit to the strategic decisions underpinning projected cash that in turn limits their ability to flex with changing market conditions ([Chemawat, 1991](#)). Planning, especially that which is based on cause and effect, may prevent entrepreneurs from resourcefully marshaling their means to find innovative solutions ([Saravathy, 2001](#)). The planning fallacy emphasizes that decision makers, in general, and entrepreneurs, in particular, are unduly optimistic about their ability to complete projects on time and to budget – factors that can hinder them from unleashing innovative potential ([Buehler et al., 1994](#)).

Here we seek to contribute to this debate by suggesting that the heuristics embedded in different *kinds of planning orientations* affect innovation outputs in entrepreneurial firms. At one extreme, capital budgeting and planning involves hard decision rules based on whether a project is expected to generate a positive net present value analysis, a conventional way of considering decision making in corporate finance. Finance scholars note that NPV analysis is a cornerstone of capital budgeting that provides rich and detailed assumptions about the future, replete with detailed statements of revenues, costs and capital expenditures that provide point estimates to determine whether to proceed with investments (e.g., [Brealey et al., 2007](#); [Ross et al., 2008](#)). Henceforth, reliance on NPV analysis for planning and capital budgeting is referred to as an NPV orientation. NPV orientation varies in degree and could be held in conjunction with other orientations including those that, by design, flex with emerging opportunities and hurdles ([Kogut and Kulatilaka, 2001](#); [Lejarraga and Martinez-Ros, 2013](#)).

<sup>1</sup> They create a score from 0 to 4 that aggregates the number of times that respondents answered yes to: "Have financial projections been developed? Has the venture gathered information about the market and competition? Has a business plan been completed, and has a formal, written business plan document been prepared?"