

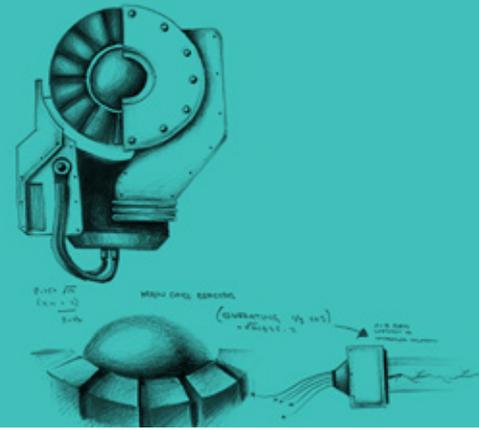
INTANGIBLE INVESTMENT AND FIRM PERFORMANCE

An Executive Summary

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INTRODUCTION

It is hard to see
where intangibles take you.
Happy customers?

Policymakers and researchers frequently discuss the ‘puzzle’ of New Zealand’s poor productivity performance. Popular explanations include low research and development (R&D) and small local markets that insulate firms from competitive pressure. Others believe poor management practices play an important role. In practice, these phenomena are difficult to separate, as competition, management and R&D investment are aspects outside of the overall economic system.

The possible importance of management and R&D in productivity reflects a growing recognition of the importance of intangible investment in firm performance. We use a broad definition of intangible investment, including activities as diverse as R&D, employee training, marketing and organisational restructuring. In this paper we explore whether low intangible investment can explain New Zealand’s productivity performance, by looking at how intangible investment relates to performance at the firm level.

There are several channels through which intangible investment may improve firm performance. R&D can lead to innovation, which affects productivity by reducing production costs or increasing product quality. Intangible investment may also increase efficiency through employee training and organisational restructuring, improving the workings and interactions within a firm. Finally, firms may invest in marketing strategies to differentiate their products, increasing markups and thereby increasing profitability and measured productivity.

METHODOLOGY

In this paper, we investigate the relationships among:

- intangible investment,
- firm characteristics and environment, and
- firm performance.

We do this using data on firms’ intangible investment linked to administrative and tax records of firm performance and characteristics.

We combine survey and administrative data for about 13,000 firms from 2005 to 2013 to study the inter-relationships among firm characteristics, intangible investment and firm performance. Using firm-level data from the Statistics NZ’s Longitudinal Business Database, we link self-reported intangible investment activities including R&D, employee training, marketing and organisational restructuring with measures of firm performance and activity.

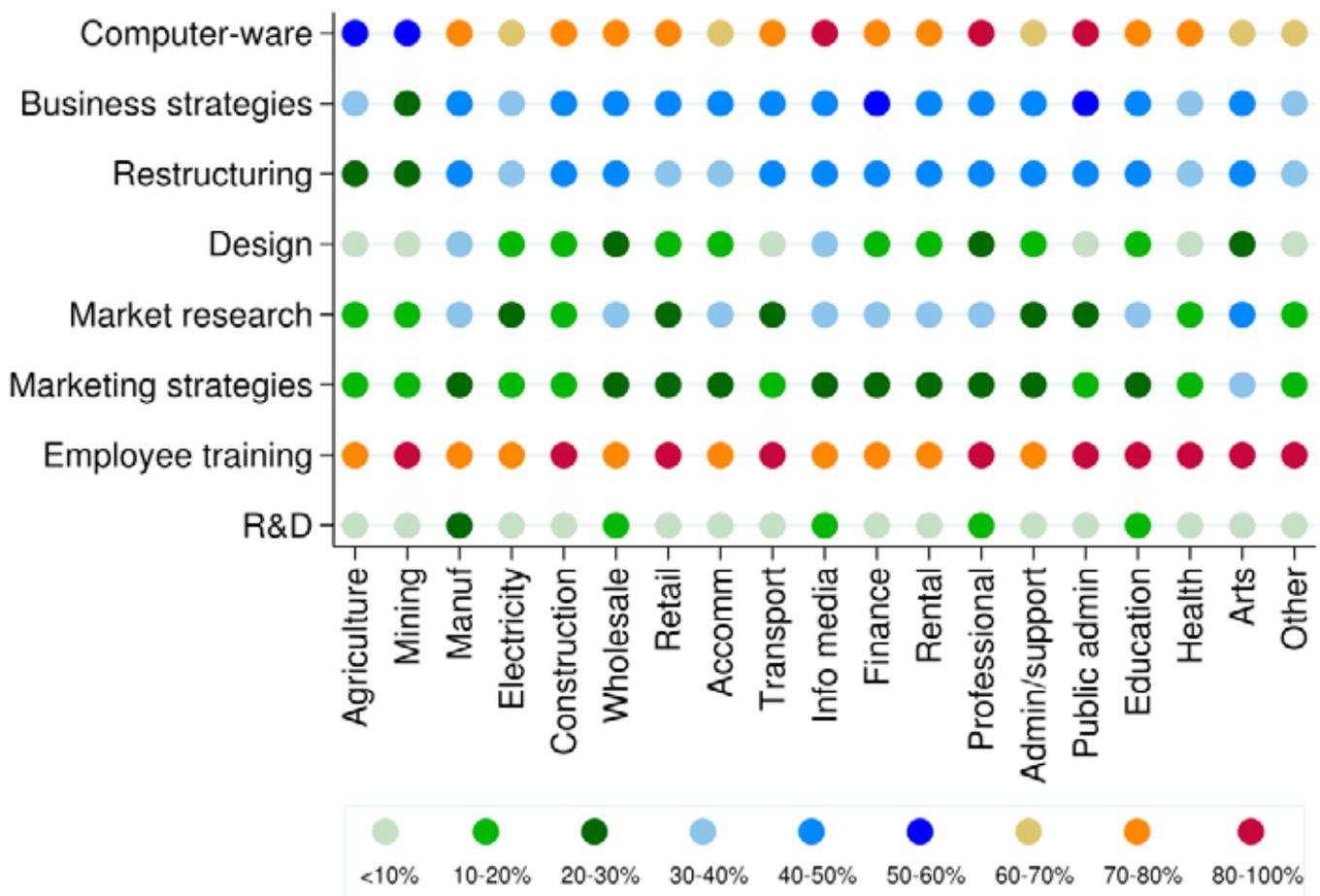
We examine both the characteristics of firms that are associated with intangible investment, and what firm performance looks like subsequent to such investment.

RESULTS

In our research, we sliced the data many different ways and found no evidence of intangible investment contributing positively to productivity in New Zealand. Rather, such investment appears to be associated with firm growth, and improvements in firm performance along dimensions not captured by productivity statistics.

The figure below shows the basic patterns of intangible investment for each industry, by presenting the proportion of firm-years engaging in each intangible activity. Employee training and computer-ware are the most common, with around 70 - 80 percent of firm-years reporting such investments. At the low end, most industries have fewer than 10 percent of firm-years engaging in R&D. Manufacturing is the exception, with a proportion of nearly 30 percent. The differences between industries are generally expected, and support the reliability of the self-reported measures we use.

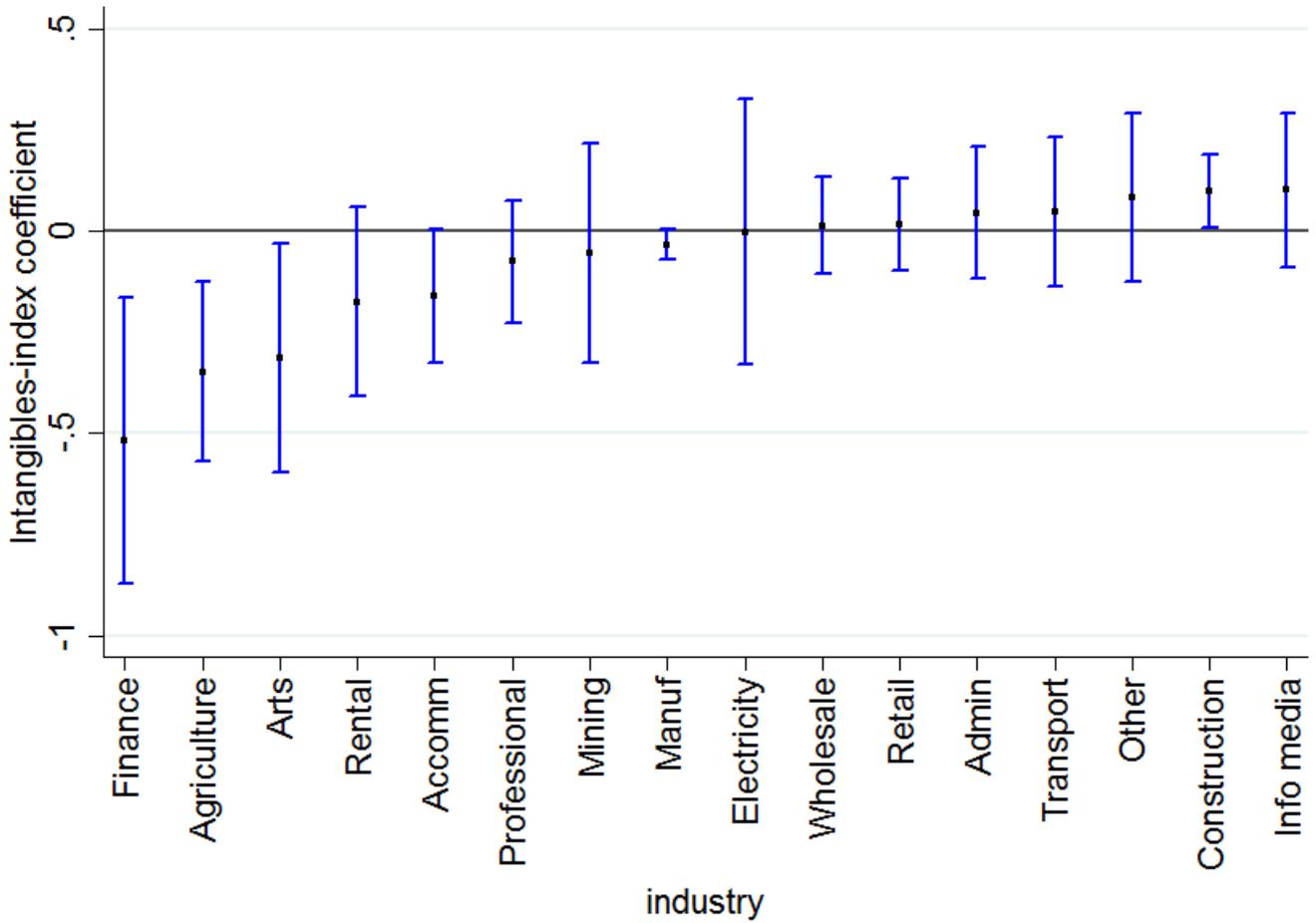
Figure 1: Proportion of firm-years engaging in each intangible activity, by industry



In exploring which firms tend to invest, when comparing firms within narrowly defined industries, we find intangible investment is increasing with firm size and decreasing with firm age. Both too little and too much competition are negatively associated with intangible investment, relative to the baseline of a moderate amount of competition. And importantly, investment appears unrelated to a firm's past growth relative to the industry average, meaning investing firms are neither struggling nor flourishing.

After they report intangible investment, firms appear to increase spending on both capital and labour inputs, and see an increase in revenue. However, the rates of increase of inputs and revenue are such that measured productivity and profitability do not increase in most specifications. We do find a small, but statistically significant, impact of recent intangible investment on the probability of enjoying a large productivity increase.

Figure 2: Intangibles-index effect on productivity, by industry





When looking for the difference that intangible investment has on productivity, we find a generally negative relationship across different quantiles of productivity, and it is most negative for the highest quantiles. Consistent with this “growth without profit” picture, we find some evidence that intangible investment is associated with subsequent improvement in ‘soft’ aspects of firm performance such as firm-reported customer and employee satisfaction.

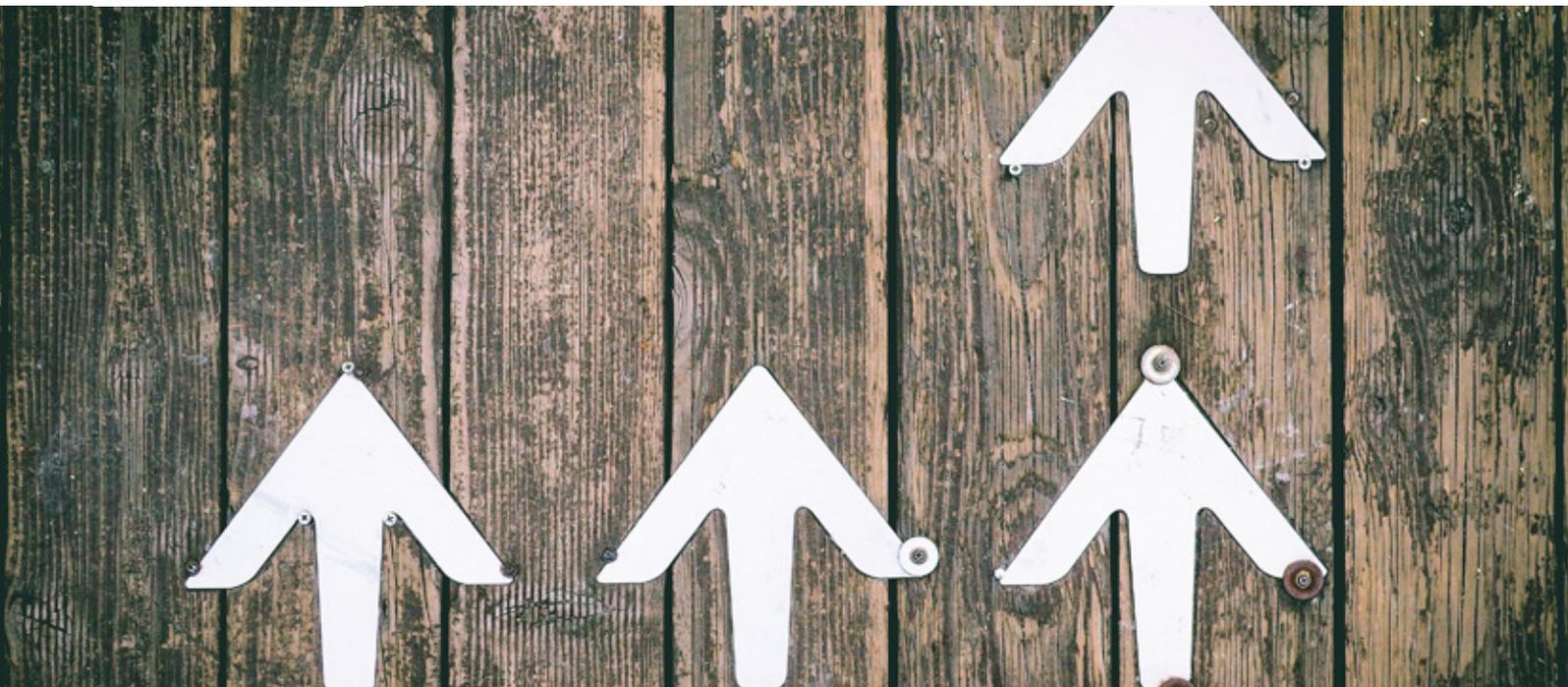
We note that we have not estimated a causal model, as firms decide whether and when to invest in intangibles. Nonetheless, we do not think it is likely that struggling firms choose to invest and downwardly bias our results. This is because investing firms had similar growth to others in their industry. More probable is that our straightforward associations are too positive, because investing firms are likely to have good managers and would have performed well anyway. Given that we find zero-to-negative associations throughout our results, it seems unlikely that investing in these reported activities causes higher productivity and profitability.

IMPLICATIONS OF THE RESULTS

Our results suggest that low intangible investment is unlikely to explain much of New Zealand’s apparent low productivity. There are several possibilities listed in the paper that may allow us to reconcile the negative relationship between intangible investment and firm performance, but none of these fully explain the data. We can and should continue to try to understand better what is going on, but we should have no illusions that with enough data and the right econometrics we can produce “The Answer”.

Because of this uncertainty, the policy implications of these findings seem limited. They do suggest that if productivity improvement is the goal, encouraging intangible investment is unlikely to be a powerful tool. But at the same time, they suggest that perhaps productivity is not the right goal.





If firms themselves are truly more focused on growth than on profitability, policy prescriptions become quite tricky. The standard formulation of seeking public policies that rectify market failures is predicated on the basic welfare economics optimality results, which in turn rest on the assumption of profit-maximizing behaviour. A model in which firms systematically seek growth rather than profits may well be realistic, but it requires a rethinking of the appropriate role for government.

Finally, if firms systematically seek profits but systematically fail to use intangible investment effectively toward that end, then there are clearly some informational issues to be dealt with. Figuring out if policy could improve on this situation will require a better understanding of how and why firms make the decisions they do.

CONCLUSION

We find that firm size is associated with higher intangible investment, while firm age, very low competition ('captive market') and very high competition ('many competitors, none dominant') are associated with lower intangible investment. Relating intangible investment to subsequent firm performance, we find that higher investment is associated with higher labour and capital input and higher revenue, relative to what would otherwise have been predicted. We also find that higher investment is associated with higher employee and customer satisfaction, but is not associated with higher productivity or profitability. While we cannot estimate a causal model, the evidence suggests that intangible investment is associated with firm strategies related to growth and possibly to 'soft' performance objectives, but not to productivity or profitability.

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