

# COMPETITION AND PRODUCTIVITY: DO COMMONLY USED METRICS SUGGEST A RELATIONSHIP?

An Executive Summary of Working Paper 19-16

David C Maré and Richard Fabling

Motu Economic and Public Policy Research

dave.mare@motu.org.nz, richard.fabling@xtra.co.nz



## SUMMARY HAIKU

More competition  
to lift productivity  
(Where) can we see that?

## INTRODUCTION

Theory says that aggregate productivity growth will be better facilitated in competitive markets. This could occur for various reasons, including the reallocation of resources to more productive firms, and by encouraging firms to make productivity-enhancing investments.

Our study has two main objectives: to evaluate the quality and usefulness of improved business microdata for the analysis of productivity and competition, and to estimate the relationship between competition and productivity in New Zealand industries. Specifically, we test whether:

- increasing competition is related to increasing turnover of businesses in an industry
- turnover aids aggregate multifactor productivity (MFP) growth through a selection effect
- competition affects the dispersion between high and low productivity firms in an industry

While administrative data is useful as a source of monitoring information at the industry level, it will never be a complete substitute for more focused investigations into competitive practices within industries of interest.

## DATA AND METHODS

Our data come from the labour and productivity datasets in the Longitudinal Business Database (LBD), which have recently been updated to include sixteen financial years (2001-2016). We exclude not-for-profit firms, and industries that aren't in Stats NZ's measured sector. We present results using three different industry aggregations.

We rely on multifactor productivity (MFP) to capture industry productivity. In our analysis, we use a revenue-based gross output production function, to allow for the substitutability of labour, capital and intermediate inputs.

We do not control for endogeneity or omitted factors that might affect both competition and productivity (for example, technological change). Caution is required when interpreting any findings as identifying causal relationships from increased competition to productivity growth.

## MEASURING COMPETITION

Rather than rely on a single measure of competition, we calculate eight different measures that have been used in previous studies of competition. These eight measures capture some of the same information.

We create three summary measures (“principal components”) that capture the main distinctive patterns.

- Price-cost margins: Can firms set prices as a mark-up on costs (2 variants)
- Profit elasticities: When costs increase, are profits lower? (2 variants)
- Concentration: Is output (or employment) concentrated in relatively few firms
- Dominance: What share of output (or employment) do the biggest 20 firms account for?

## RESULTS – COMPETITION IN DETAILED INDUSTRIES

Initially, we examine 318 detailed industries previously studied by MBIE and look at variation across two 7-year periods. The results from this analysis illustrate how two different competition measures give differing views on the relative level of competition in any given industry, and about whether competition has been increasing or decreasing over the past decade and a half.

Comparing our estimates to the MBIE results should be done with caution, since there are multiple differences in methodological approach including the use of different firm-level data. Taken at face value, though, our estimates produce substantially more negative profit elasticities than MBIEs for a similar time period suggesting increased competition.

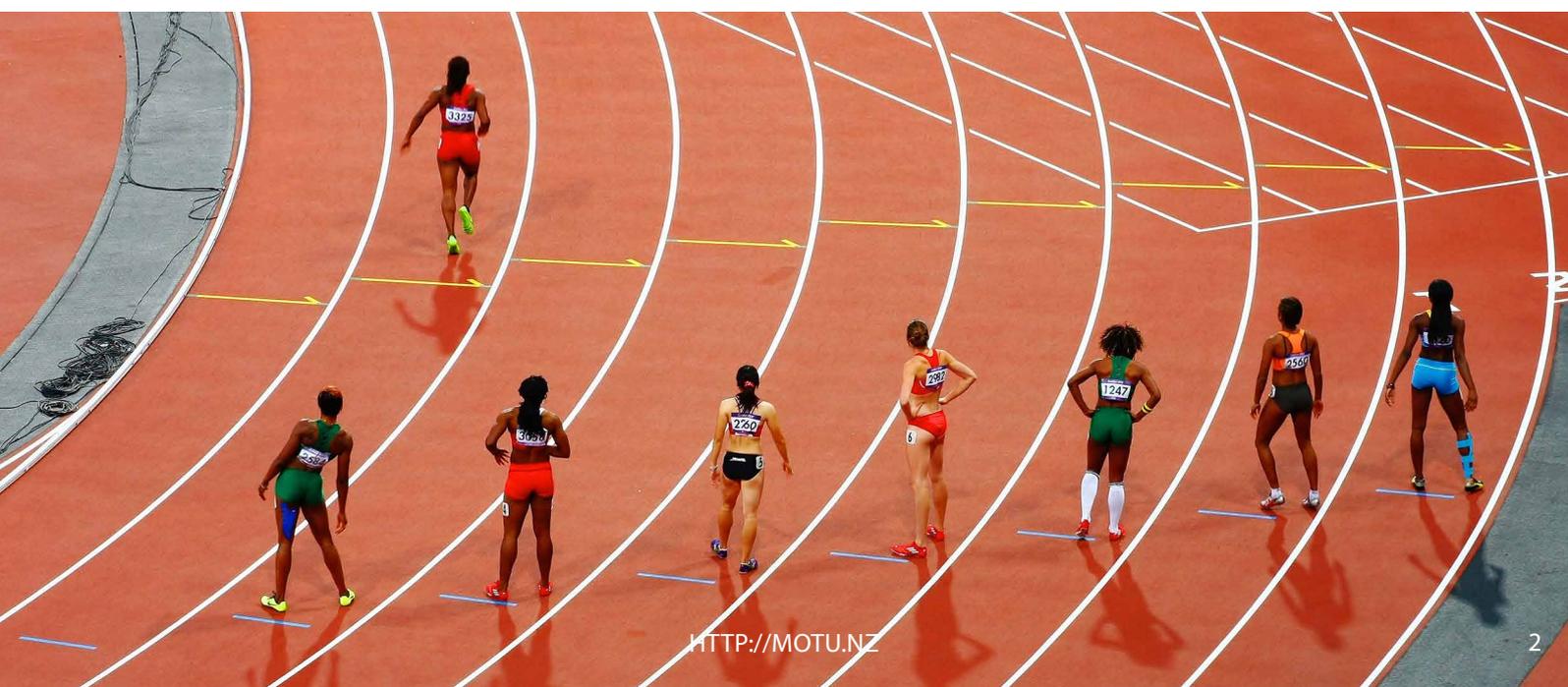
## RESULTS – COMPETITION AND PRODUCTIVITY

In the subsequent analysis we focus on the relationship between the three summary components of competition and productivity outcomes, rather than trends for specific competition measures or specific industries. To do this, we group industries into 39 groups, allowing us to use more frequent (annual) information. Based on this dataset, there is some evidence that:

- More competitive industries (less concentrated; relatively low mark-ups or more negative within-firm profit elasticities) have:
  - lower productivity dispersion, derived largely from a compression of the bottom end of the productivity distribution in industries
  - less entry, exit and churn, consistent with higher productivity discouraging entry
  - higher relative productivity of exiting firms
  - higher relative entrant productivity
- industries with more negative industry-level profit elasticities (more competitive) have higher productivity dispersion, especially among less productive firms

## RESULTS – GROUPING SIMILAR INDUSTRIES

Using the annual 39 productivity industry dataset to relate competition metrics to productivity outcomes, we identify clusters of industries that have similar patterns of competition components. We do this recognising that industries with differing patterns of competition across metrics may have different underlying determinants of competition levels (e.g., varying importance of localised or international competitors).





Our analysis suggests four distinct groups of industries:

1. industries such as construction, where both industry concentration and metrics measuring average price-cost margin imply markets are competitive
2. professional services and other industries which are unconcentrated but have relatively high mark-ups/margins
3. food retailing, which is relatively concentrated but has a mix of high and low mark-up industries
4. transport and telecommunications, which are two highly concentrated industries

We look at whether the relationship between productivity and competition components depends on observed characteristics of the industry clusters. Overall, we find no convincing evidence of specific industry characteristics where relationships between competition metrics and productivity outcomes are consistently strong.

## CONCLUSION

We demonstrate the power of recently redeveloped productivity microdata to produce a range of meaningful competition indicators highlighting different aspects of industry competitiveness.

Overall, the limited evidence we find for a direct relationship between competition and productivity does not mean there is no relationship. It more likely reflects that recent changes in competition in New Zealand have not been particularly pronounced, making it difficult to separate the effect of competition on productivity from other changes affecting both competition and productivity.

We have shown that relying on any single competition metric can tell us only part of what is going on. It may be hard to reach clear conclusions about the state of competition in New Zealand without taking a clear view on which metrics (if any) capture the aspects of competition that matter most in specific industries for policy outcomes such as productivity growth.

READ THE FULL VERSION OF THE WORKING PAPER AT  
[WWW.MOTU.ORG.NZ](http://WWW.MOTU.ORG.NZ) OR CALL US ON 04 939 4250

Motu is the top-ranked economics organisation in New Zealand. It is in the top ten global economic think tanks, according to the Research Papers in Economics (RePEc) website, which ranks all economists and economic research organisations in the world based on the quantity and quality of their research publications. It also ranks in the top ten climate think tanks in the world according to the International Center for Climate Governance.

