

Competition and productivity

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Recent research by Motu Economic and Public Policy (Maré & Fabling, 2019a) highlighted different aspects of competition within industries in New Zealand. This work drew on a redeveloped firm-level productivity dataset (Maré & Fabling, 2019b) and formed the basis for a web-based data visualisation tool and summary report (Schiff & Singh, 2019). This research was funded by the Ministry of Business, Innovation and Employment, New Zealand Productivity Commission (NZPC), and The Treasury, with the Commerce Commission and Stats NZ providing advice on the project. This Cut to the Chase explains why these agencies undertook this work and some of the key messages that emerged.

Why this topic?

The relationship between competition and productivity is important for many reasons. New Zealand is one of a small number of OECD countries to have experienced both low levels of labour productivity and low labour productivity growth rates since 1996 (Nolan, Pomeroy & Zheng, 2019). There has also been a slowdown in the country's labour productivity growth rate since the Global Financial Crisis, with labour productivity growth in the measured sector averaging 1.4% between 1996 and 2018, but 1.0% from 2008 to 2018. This poor productivity performance is a major drag on living standards and wellbeing. A better understanding of the role that competition could play in improving productivity would thus play a key role in helping New Zealand achieve its productivity potential.

Before discussing the role that competition could play in lifting productivity it is useful to first distinguish three forces that shape an economy's productivity growth:

- the reallocation of people, physical resources, and finance from lagging to leading firms;
- the pushing out of the technology frontier; and
- the diffusion of technology from leading to lagging firms.

Competition affects all three forces. For instance, on the first (reallocation) issue, weak competitive pressure could allow relatively unproductive firms to continue trading and doing what they do with limited risk of going out of business in New Zealand. This could help explain the relatively large share of labour and capital employed by the least productive firms in New Zealand (Conway, 2018). Over 2000-2012 the bottom 50% of firms in the productivity distribution accounted for around 65% of both employment and capital, while the top 25% of firms accounted for only around 10% of employment and 12% of capital. This contrasts with the pattern in several other OECD economies, where firm productivity and the allocation of resources are more strongly related.

This result is reinforced by research on business dynamics, which shows how weak firm growth has been in New Zealand. Large numbers of firms are born and die every year, eg, of the 630 000 or so firms in New Zealand in 2016 just under 50 000 were born that year (Stephenson, 2019). About 80% of new firms are born very small (less than one employee) and about 30% of these very small firms survive for a decade or more. Of these survivors, about 80% do not experience any employment growth, which suggests that approximately 94% of very small firms fail to either survive or grow. In addition, like other OECD countries, New Zealand has seen a slowdown in the creation of new

firms since the mid-2000s, with the percentage of new firms as a share of total firms falling from 10% in 2005 to 5% in 2013, although this had recovered to 8% in 2016.

Competition can also be reflected in the growth in the technological frontier and how innovation (including improvements to business practices) spreads from leading to lagging firms. Competition encourages managers to undertake productivity-raising actions that they may otherwise not. As Maré and Fabling (2019a) put it – “competition acts as a discipline on firms.” Consequently, because adopting new technology or practices is costly, producers facing less competition may prefer to avoid the costs and risks associated with innovation. This can hold back both growth in the technological frontier and the diffusion of innovation.

Again, there is support for this finding, with Bloom and van Reenen (2010) noting that “strong product market competition appears to boost average management practices through a combination of eliminating the tail of badly managed firms and pushing incumbents to improve their practices.” This is especially important for New Zealand, with a number of studies highlighting the benefits of lifting management practices in Kiwi firms (eg, Fabling & Grimes, 2014). There is also evidence that New Zealand’s frontier firms (firms in the top 10% of the productivity distribution) are on average operating well below the international frontier, with their productivity levels being about 30% below that of their international peers (Conway, 2018).

What does the international literature tell us?

Internationally, the global slowdown in productivity growth since the Global Financial Crisis has focussed attention on how changes in business dynamism and market power could be influencing productivity growth. The OECD (Bajgar et al., 2019) has, for example, documented an increase in industry concentration (based on sales) in Europe as well as in North America between 2000 and 2014 of the order of 4-8 percentage points for the average industry. This increase was observed for both manufacturing and non-financial services and was not driven by digital-intensive sectors. Other research has shown that the mark-ups firms charge over their marginal costs have increased. Taken together this has led to concern that product market power has risen, which has in turn been given as an explanation for phenomena such as sluggish productivity growth, declining business dynamism, and a falling labour share of GDP.

However, as van Reenen (2018) noted, higher concentration or mark-ups are not necessarily a symptom of excessive market power. Indeed, rising concentration may reflect increased reallocation (concentration may increase when more productive firms attract resources and less productive firms exit), which is supportive of aggregate productivity growth. As he went on to argue, “Many of the patterns are consistent with a more nuanced view where many industries have become ‘winner takes most/all’ due to globalisation and new technologies rather than a generalized weakening of competition due to relaxed anti-trust rules or rising regulations.”

For instance, de Ridder (2019) highlighted the growing role of intangible inputs, such as information technology and software. There has been a dramatic increase in the investment in intangible assets, with software and database investments alone now making up over 25% of total investments in France.¹ In contrast to other inputs, intangible inputs can be duplicated at close to zero marginal cost. Consequently, a rise in the use of intangible inputs shifts the cost of production away from variable to fixed costs and can potentially lead to “untouchable firms”, where the presence of firms with a high take-up of intangible inputs deters other firms and entrants from innovating and developing higher quality products (de Ridder, 2019).

¹ For New Zealand research on intangible investments see Chappell and Jaffe (2016).

Why are these issues important for New Zealand?

Among OECD countries New Zealand faces an unusual set of challenges and opportunities. Features of the New Zealand economy (being remote with relatively small markets) do not naturally lend themselves to intense competition. To illustrate, the NZPC has measured the extent to which Kiwi firms trade in local or national markets. The idea is that when the cost of trading a good or service over distance are high – such as for services that require face-to-face delivery – markets tend to be localised and less open to competition.

A key message emerging from this work is that New Zealand's small and isolated markets tend to lack competitive intensity, especially at the regional level. Firms in some of the biggest service industries often service local markets and while these firms are likely to be individually small collectively they employ a lot of people. Features that mark out high productivity industries – scale, capital intensity, export activity, connections with global value chains – do not exist in large parts of New Zealand's services sector. And the economic costs of this go beyond services themselves, with their being close interconnections between services and goods markets as a substantial share of the value encapsulated in goods is embodied services.

Competition within a sector or industry can thus have important indirect effects. These indirect effects can be broad. It has, for example, been argued that changes in market power can influence income inequality and that, as Ilzkovitz and Dierx (2016) noted, "the corollary of this is that competition policy, which aims at preventing companies from abusing market power, contributes to inclusive growth." Lower income groups often disproportionately suffer from an increase in prices or fall in quality and choice due to a lack of competition. These distributional effects not only reflect the incidence of higher consumer prices but also any effect of low levels of competition on economic, job and wage growth.

For example, as the earlier discussion noted, low levels of competition could hold back technological progress, leading to low productivity growth and, in turn, slow growth in living standards. This is particularly important for New Zealand given our persistently low productivity growth. There are many factors behind this but in this context a lack of capital deepening and low participation in global value chains (GVCs) are important. New technologies are often embedded in capital equipment or diffused through trade channels. Hence, low investment in capital or participation in GVCs is likely to slow the diffusion of technology into New Zealand. This creates a risk that New Zealand could miss the opportunity that new technologies provide to lower transaction costs and, in turn, reduce the effects of distance and small scale on the New Zealand economy.

How can competition be measured?

Even with the quality of the data that we have at our disposal, measuring competition is not a simple exercise. Maré and Fabling (2019a) highlighted how different conclusions could be reached about industries depending on the choice of competition measure. Indeed, as Schiff and Singh (2019) noted, in the real-world competition is often more nuanced than can be captured by a single metric and a more detailed study of the structure and outcomes in a market is usually necessary to fully understand how competition is working. Nonetheless, there are several key approaches to measuring competition:

- structural measures assume that competition is related to market structure. A widely used-measure is the Hirschman-Herfindahl Index (HHI), which is based on the sum of the squared market (of labour) shares of firms in the industry;
- price-setting measures emphasise firms' financial data. Key measures include firms' Price-Cost Margin (PCM), which is based on the value of firms' output and their total variable costs, and Profit Elasticity (PE), which reflects firms' responsiveness of profits to variation in their costs; and

- other measures provide a picture of firms' subjective view of the competition they face (eg, measures based on responses to the Business Operations Survey).

Each of these approaches has strengths and weaknesses (Maré & Fabling, 2019a; Schiff & Singh, 2019). For structural measures it is especially important to identify well-defined markets within which firms compete. Defining markets generally involves finding groups of products or services that are close substitutes in terms of demand and/or supply. If markets are not well-defined then firms that do not compete (or that do compete) may be included (or excluded) from measures and so lead to incorrect conclusions about the state of competition. Price setting measures are less sensitive to market definitions, as they reflect overall average competition across the markets that the firms operate in. However, they can vary considerably over time for reasons that do not directly relate to competition (eg, short-term variations in input costs) and given data constraints cannot be calculated for geographic regions.

What does the New Zealand data tell us?

As Maré and Fabling (2019a) noted different competition measures can show different and sometimes contradictory results about variations in competition across industries and across time. They thus derived composite indicators of competition using principal component analysis, which can succinctly capture the main patterns in the competition data. They then applied these composite indicators to a 39-industry productivity dataset and estimated the impact on productivity outcomes.² They found suggestive results that the tail of unproductive firms may be truncated when competition is greater, in part due to greater selection-to-exit based on productivity. Stronger competition appears to lower productivity dispersion by driving low productivity firms out of the market.

Overall, however, they did not find statistically significant evidence of a relationship between competition and productivity in their data. As they note, this does not necessarily mean that competition and productivity are unrelated but could reflect the fact that changes in competition over the period studied have not been particularly pronounced, meaning any effect of competition changes on firm productivity has been masked by other sources of time variation in productivity. Internationally, the strongest evidence of a positive relationship between competition and productivity comes from studies that analyse industries or countries over periods when there were substantial identifiable changes in competition.

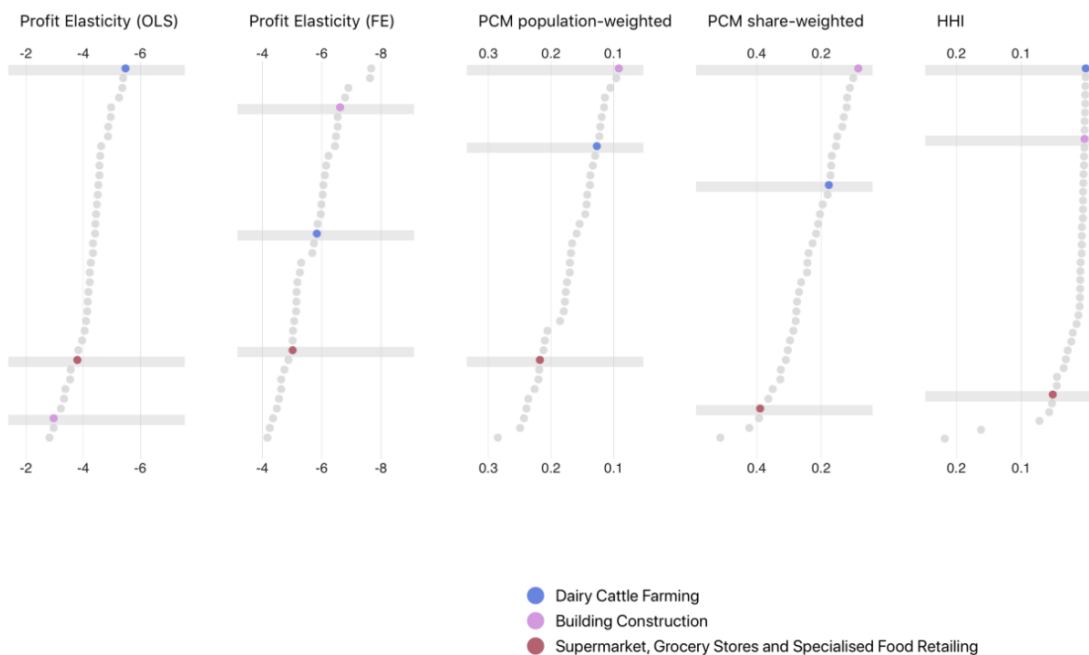
Based on the Maré and Fabling (2019a) dataset, Schiff and Singh (2019) developed a web-based data visualisation tool and summary report. The goal was to produce material accessible to readers without a background in competition economics. This work highlighted key trends over time and identified differences in competition intensity across industries. Some of the industries that performed poorly against the metrics over time included (Schiff & Singh, 2019):

- supermarket, grocery stores, and specialised food retailing: the data suggest a relatively static industry (after consolidation in 2003/04, which lowered competition) with indicators of relatively high margins over variable costs and weakening competition over time;
- financial and insurance services: overall the evidence indicates a relatively static industry where the market structure has not changed much over time, but there is some evidence of high and increasing profit margins over variable costs, which could reflect a lack of competition or other factors such as high fixed costs; and

² They also undertook analysis of a more detailed breakdown of 318 industries and with data pooled over two time periods (2001-08 and 2009-16). For this analysis they used two available competition metrics: the fixed effects version of the profit elasticity measure and the industry average of the price-cost margin. They found that in the case of profit elasticity the predominant pattern was for competition to be increasing over time, while the price cost margin showed a very static distribution. They then noted (p. 14) that this "presents somewhat of a conundrum for assessing overall competition trends, without making some judgement as to a "preferred" metric on theoretical or empirical grounds or through a detailed assessment of why the metrics may differ (including data-related reasons)."

- auxiliary financial and insurance services: this industry is comprised of a relatively large number of firms with small market shares, however, margins appear relatively high and profits are relatively unresponsive to costs.

Figure 1: Comparison of competition measures for three selected industries in 2016



Source: competition visualisation tool

Note: for each measure competition increases the further the observation from the bottom left

What does this mean for policymakers?

Competition policy is evolving, dynamic territory. For instance, as the New Zealand and the Australian Productivity Commissions (2019) recently noted, digital goods and services are moving issues that were at the fringe of competition analysis to centre stage. These include:

- how competition law could apply to zero-priced transactions;
- how network effects may entrench incumbents or lead to winner-takes-most markets;
- possible conflicts of interest when companies who run platforms also produce goods and services sold on them;
- price-setting by algorithms, which may lead to uncompetitive outcomes in the absence of agreements to fix prices; and
- the role of data as a source of market power.

Governments in other countries have taken steps to update their regulatory regimes to reflect digital goods, services and markets. For instance, if winner takes most/all markets do end up prevailing, competition regulators may need to consider extending tools such as essential service access regimes to digital services. Further, based on the NZPC's earlier work on service sector productivity, there could also be value in:

- addressing search and switching costs, including better support for comparison websites, dealing with unfair contract terms, promoting switching facilities and portability;

- addressing occupational regulations, including the role of professional bodies in supporting competitive entry to the market and the merits of certification regimes as opposed to those based on registration; and
- continuing to refine competition law, including Section 36 relating to the misuse of market power and its interpretation.

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