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New Evidence from Australia**

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ABSTRACT

Inequality and Market Concentration: New Evidence from Australia*

Are excessively concentrated markets inequitable as well as inefficient? We explore this issue by analyzing the degree of market concentration in the industries where Australia's wealthiest made their fortunes. Compared with the economy at large, we find that top wealth holders have tended to make their fortunes in industries with a higher-than-average degree of market concentration. Top wealth shares have grown substantially, and from 1990 to 2020, there appears to have been an increase in the propensity of top wealth holders to make their fortunes in highly concentrated industries.

JEL Classification: D31, L12, L41

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1. Introduction

Since the Gilded Age, concerns have been raised over the extent to which monopolies may exacerbate inequality. In arguing in favor of the 1890 law that would bear his name, US Republican Senator John Sherman argued that monopoly power ‘is a kingly prerogative, inconsistent with our form of government’.

One way that uncompetitive markets can increase inequality is by transferring resources from consumers (who pay higher prices) to shareholders (who earn higher profits). Because shareholding is more skewed than consumption, this has the effect of redistributing from the many to the few. For example, Gans et al (2019) find that the top 20 percent of US households consumed approximately as much as the bottom 60 percent, but had 15 times as much corporate equity. From the 1980s to the 2010s, corporate equity became more skewed relative to consumption.

A small literature explores the implications of this finding for top wealth holdings. Comanor and Smiley (1975) conclude that if monopoly profits constitute 2 percent of national income, then one-third of the net worth of the wealthiest is attributable to monopoly. However, if monopoly profits are 3 percent of national income, two-thirds of the net worth of the wealthiest is attributable to monopoly. Using a simulated general equilibrium model, Lankford and Stewart (1980) conclude that 30 percent of top wealth is attributable to monopoly power.

A series of papers by John Siegfried and co-authors investigated the topic in a more direct fashion, by identifying the industries in which the super-rich made their fortunes, and then asking a panel of experts whether each industry was competitive or uncompetitive (where competitive is defined as an industry that is ‘sufficiently competitive that expected long-run equilibrium economic profits at the margin are negligible’). The results were then aggregated to determine the share of top fortunes made in uncompetitive industries. This was calculated as 23 percent for Australia (Siegfried and Round 1994), 27 percent for Britain (Siegfried and Roberts 1991), 21 percent for New Zealand (Hazledine and Siegfried 1997) and 32 percent for the United States (Blitz and Siegfried 1992). Summing up these findings, the authors conclude that market power is responsible for a ‘surprisingly small’ share of the largest fortunes (Siegfried, Blitz and Round 1995).

A similar approach is taken by the ‘Crony Capitalist Index’ developed by *The Economist*, which classifies *Forbes* billionaires into rent-seeking and non-rent-seeking sectors. Rent-

seeking sectors are defined as those in which firms can inflate their earnings by garnering preferred access to land, licenses and resources. Such industries include banking, resources, construction and property (The Economist 2014). *The Economist* estimates that in democracies, around one-fifth of billionaire wealth accrues from rent-seeking, while in autocracies, over three-fifths of billionaire wealth is from rent-seeking sectors (The Economist 2023).

While these findings are informative, there are some limitations inherent in the methodology employed by Siegfried and his co-authors, and by *The Economist*. First, experts are unlikely to know the competitive dynamics in highly specific industries, such as nickel mining or plaster product manufacturing. Second, competitiveness is not binary. Few industries are complete monopolies or perfectly competitive. Third, this approach provides no way to compare top fortunes with the broader economy. Without an economy-wide benchmark, we cannot say whether the sectors in which the most affluent made their fortunes are more or less competitive than the economy as a whole.

To preview our findings, we estimate that the sectors in which the most affluent Australians made their money tended to be more concentrated than the economy as a whole. This effect is largely driven by the upper-middle part of the concentration distribution. From 1990 to 2020, Australian top wealth holders became more likely to have grown their fortunes in highly concentrated sectors.

The remainder of our paper is structured as follows. Section 2 discusses the top wealth share data and presents updated results on top wealth shares. Section 3 outlines the market concentration data and shows the most common industries for top wealth holders. Section 4 sets out our key results – analyzing the degree of market concentration in industries where top wealth holders made their fortunes. The final section concludes.

2. Top Wealth Data

Since we rely on rich lists for information on top wealth holders, it is important to acknowledge some of the limitations of these lists. As Atkinson (2008) notes, wealth information may not be public, and subsequent inquiries can throw up additional information. Even when assets are known, it may be difficult to value them accurately. Atkinson gives the example of Robert Maxwell, who was listed on the United Kingdom’s rich list before his death revealed substantial debts. Given Australia’s high migration rates (and the peripatetic lives of some billionaires), determining who is an ‘Australian’ can be tricky. For example,

Rupert Murdoch moved to the United States in 1973 and renounced his Australian citizenship in 1985 (UPI 1985) but continued to appear on the Australian rich list until 1995.

Australia's main rich list was published by the magazine *Business Review Weekly (BRW)* in 1983 (with around 100 people or families), and then from 1984 onwards (featuring around 200 people or families). The *Australian Financial Review* newspaper took over the list from *BRW*, publishing it under both names in 2016, and as the 'Financial Review Rich List' from 2017 onwards.

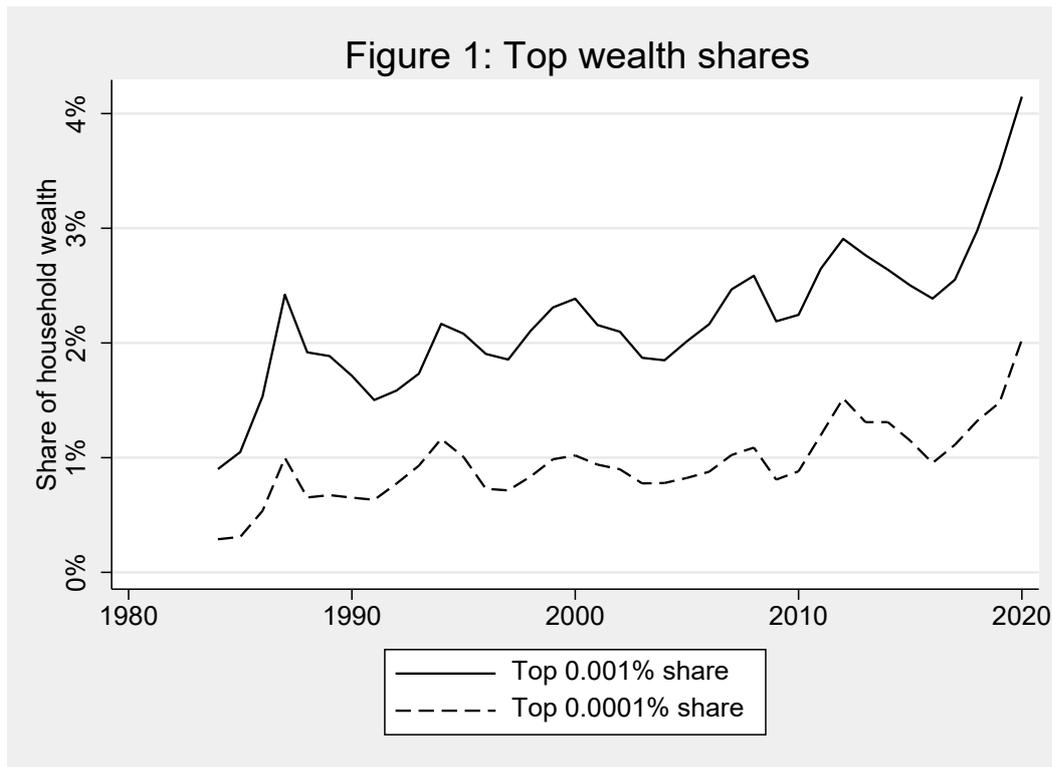
Over the period since annual rich lists for Australia have been available, top wealth inequality has grown. Figure 1 updates the analysis in Katic and Leigh (2016), using annual data to estimate the top 0.001 percent and top 0.0001 percent wealth shares. In 2020, Australia's adult (18 and over) population was 20 million people, so the top 0.001 percent is the country's wealthiest 200 people, while the top 0.0001 percent is the wealthiest 20 people.

To estimate top wealth shares, we use the same methodology as Katic and Leigh (2016), basing our analysis on the adult population. The estimate of total household wealth (the denominator) is drawn from figures compiled by the Australian Treasury until 2007 and the Australian Bureau of Statistics thereafter, appropriately spliced.¹

We estimate that from 1984 to 2020, the top 0.0001 percent wealth share rose seven-fold, from 0.3 percent to 2.0 percent of national household wealth, while the top 0.001 percent wealth share quadrupled from 0.9 percent to 4.1 percent. As Figure 1 shows, wealth inequality fluctuates considerably, but two periods of rapid increase appear to have been the late-1980s and late-2010s. In 2020, the combined wealth of the top 200 Australians was almost as large as the poorest two-fifths of Australians. In 2020, the top 20 Australians had more wealth than the poorest one-fifth of Australians.²

¹ As Katic and Leigh (2016) note, over the overlap period (1991–2007), the Treasury wealth series is 93 percent of the ABS wealth series. Conceptually, the Treasury series is slightly closer to the rich list wealth concept, since it consolidates the household and business sectors, and values assets of unincorporated entities at market value (rather than replacement cost). We therefore use the Treasury series as the household wealth denominator for 1984–2007, and then use the ABS household wealth estimate for 2008–2020, scaled down by a factor of 0.93.

² According to Australian Bureau of Statistics (2022), the poorest one-fifth of households had 0.7 percent of Australian wealth in 2019-20, while the poorest two-fifths had 5.5 percent of household wealth.



The increase in Australian top wealth shares over this period is consistent with findings for Canada (Davies and Di Matteo 2021), New Zealand (Hazledine and Rashbrooke 2018), the United Kingdom (Alvaredo, Atkinson and Morelli 2018) and the United States (Piketty, Saez and Zucman 2022).

For the purposes of analyzing the degree of concentration in industries in which top wealth holders made their money, it is necessary to identify with a high degree of specificity the industry in which each person or family’s wealth was made. For the most affluent, this information is generally contained in the writeup accompanying the rich list. But for many of those on the list, the industry information published by *Business Review Weekly* and the *Australian Financial Review* is insufficient for our purposes. Where the sources of wealth were ambiguous, we therefore undertook detailed research for each person or family, taking an hour or more for a single case.

Because of this onerous data collection requirement, we restrict our analysis to two years: 1990 (chosen so that we can compare our results against the earlier findings of Siegfried and Round 1994), and 2020 (to provide more contemporary results). Our analysis does not attempt to follow people or families over time; instead we analyze a cross-sectional snapshot of the most affluent at two distinct moments in time.

3. Market Concentration Data

As noted in Section 1, Siegfried and coauthors asked experts to rate the degree of competition in an industry and classify industries as competitive or uncompetitive. By contrast, we opt to focus on market concentration. The two metrics are conceptually different. While competition regulators often use market concentration as a proxy for competitive intensity, there are scenarios in which this might not hold. For example, a domestic monopoly might face competitive threats from overseas, and therefore be constrained from exercising its monopoly power. Conversely, a market with low levels of concentration may nonetheless lack competitive intensity if firms act in concert with one another, and barriers to entry stand in the way of new challengers.

Nonetheless, because competitive intensity is difficult to measure directly, market concentration can serve as an imperfect indicator of the degree of competition, which is why regulators sometimes use it when assessing mergers. As with other proxies for competitive intensity (such as profitability and markups) market concentration is imperfect, but provides insights into the degree of competitive pressure in an industry.

To source data on market concentration, we use market concentration figures tabulated by Leigh and Triggs (2016) for 481 different Australian industries. This makes it possible for us to attribute to each top wealth holder a precise estimate of the degree of market concentration for the primary industry in which the fortune was made. Using these data, we can distinguish between specific mining sectors, different manufacturing industries, different parts of the media industry, and so on. Our approach provides a continuous metric rather than a binary one, and allows us to benchmark against the broader economy.

The market concentration data produced by Leigh and Triggs (2016) are based on figures compiled by market research firm IBIS World. This is helpful in our context, since the market concentration figures can be publicly reported at a fine industry level. Other Australian studies have analyzed market concentration using the Business Longitudinal Analysis Data Environment (BLADE) dataset from the Australian Bureau of Statistics (Bakhtiari 2021; Leigh 2022). However, the BLADE data are subject to confidentiality restrictions, which would prevent us from publicly identifying the market concentration within narrowly defined industries. By contrast, IBIS World data can be reported for industries as specific as cinemas, amusement parks and aged care residential services.

Like our wealth data, our market concentration data has limitations. The market concentration estimates are based on figures compiled by market research firm IBIS World, which provides the market share of the top four firms. We do not have access to Herfindahl–Hirschman Index metrics at this fine level of analysis. Additionally, because we are using 2016 industry concentration measures, we are implicitly assuming that the degree of market concentration does not change over time. Further, although we conducted rigorous research to identify the most appropriate industry, we are limited by the degree of public information available on top wealth holders.

Where individuals made their fortunes in multiple industries, we average the degree of concentration across these industries, weighting each industry equally (the publicly available information does not allow us to determine the proportion of wealth that derives from each industry). Top wealth holders rarely switch industries. Where individuals made their fortunes in an overseas market, we exclude them from our analysis. This leads us to omit 11 of the 252 people on the 1990 list and 7 of the 200 people on the 2020 list.

Table 1 lists the largest sources of wealth for top wealth holders. Our main focus is on a wealth-weighted metric, but we also show the share of people (or families) in each industry. In 1990, the largest source of top wealth was ‘Commercial and industrial building construction’, which accounted for 10.8 percent of top wealth and 7.7 percent of people or families on the rich list. This was followed by ‘Retail property operators’, accounting for 10.0 percent of top wealth and 7.7 percent of people or families on the rich list.

In 2020, the most significant source of wealth was ‘Iron ore mining’, which comprised 20.2 percent of top wealth and 6.8 percent of people or families on the rich list. This was followed by ‘Computer system design services’, which accounted for 11.5 percent of top wealth and 5.7 percent of people or families on the rich list.

Table 1: Most Common Industries for Top Wealth Holders		
<u>1990</u>		
Industry (market share of top four firms)	Share of wealth (%)	Share of people/families (%)
Commercial and industrial building construction (9.5%)	10.8	7.7
Retail property operators (20.2%)	10.0	7.7
Free to air television broadcasting (67.3%)	7.9	1.0
Newspaper publishing (86.1%)	7.7	3.9
Iron ore mining (83.9%)	4.2	1.4
Department stores (94.3%)	4.1	1.4
Tailoring and clothing accessories manufacturing (16.0%)	3.6	1.4
Investment banking and securities brokerage (32.4%)	2.9	1.9
Multi-unit apartment and townhouse construction (17.2%)	2.8	1.9
Land development and sub-division (13.0%)	2.6	2.4
<u>2020</u>		
Iron ore mining (83.9%)	20.2	6.8
Computer system design services (16.3%)	11.5	5.7
Retail property operators (20.2%)	6.9	6.2
Pulp, paper and paperboard manufacturing (64.4%)	5.0	0.6
Beef cattle farming (4.0%)	4.9	1.7
Multi-unit apartment and townhouse construction (17.2%)	4.6	3.4
Fund management services (65.5%)	4.2	6.8
Free-to-air television broadcasting (67.3%)	3.4	2.3
Industrial and other property operators (10.9%)	2.8	3.4
Coal mining (40.2%)	2.4	4.0

Note: Analysis excludes people or families who made their fortunes in multiple industries, so the shares are estimated for those who made their wealth in a single industry.

4. Top Wealth Holders and Market Concentration

Table 2 shows the results of our industry concentration analysis. We find that the industries in which top wealth holders made their money tended to be more concentrated than the

economy at large. On a wealth-weighted basis (our preferred metric), we find that in 2020, in the industries where top wealth holders make their money, the top four firms controlled 43 percent of the market – a substantially higher share than in the economy as a whole (36 percent).

We also carry out this analysis for 1990 and find a slightly lower level of market concentration in the industries where that year’s rich listers made their fortunes, compared with 2020. On a wealth-weighted basis, we find that in 1990, in the industries where top wealth holders make their money, the top four firms controlled 40 percent of the market.

Another way of carrying out the analysis is to weight each member of the rich list equally, rather than allocating more weight to larger fortunes (this is the approach taken by John Siegfried and coauthors). On this basis, in the industries where 1990 top wealth holders made their money, the largest four firms controlled an average of 33 percent of the market (slightly below average for the economy as a whole). In 2020, this figure was 38 percent (slightly above the average for the economy as a whole).

Table 2: How concentrated are the industries where top wealth holders made their fortunes?	
	Average share of top four firms (%)
Entire economy	36
Industries of top wealth holders in 1990 (unweighted)	33
Industries of top wealth holders in 1990 (wealth-weighted)	40
Industries of top wealth holders in 2020 (unweighted)	38
Industries of top wealth holders in 2020 (wealth-weighted)	43

Note: Estimates for market concentration across the entire economy are for 2016. The number of top wealth holders for which industries can be ascertained was 241 in 1990 and 193 in 2020.

As noted above, our results are based on measuring market concentration at a single point in time, using data that provides industry-specific concentration figures. However, studies that do not disaggregate specific industries (due to confidentiality concerns) find that the average level of market concentration in Australia has risen in the first two decades of the twentieth century (Bakhtiari 2021; Leigh 2022). This implies that the increase in market concentration in the industries where top wealth holders made their money reported in Table 2 is likely to be an underestimate of the true rise.

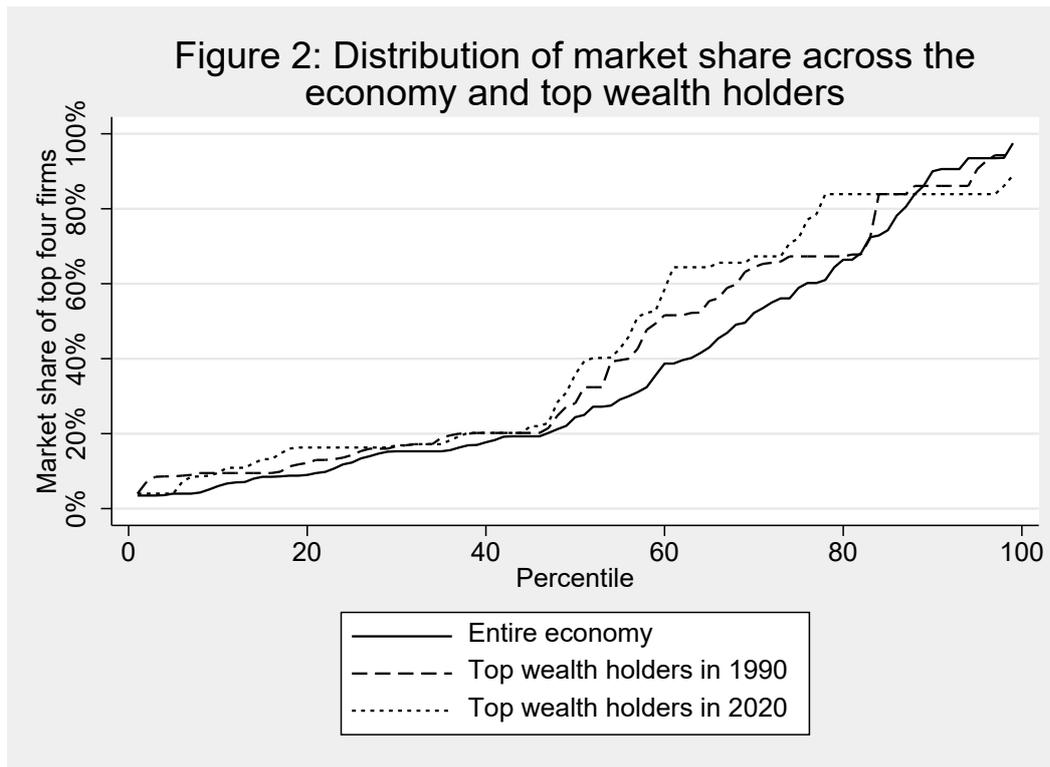
How do our results compare with the prior literature? Recall that Siegfried and Round (1994) found that for top wealth holders in 1990, 23 percent made their fortunes in an uncompetitive

industry. In order to match this result using data on the market share of the top four firms, it is necessary to set the cutoff for an uncompetitive industry as being an industry in which the top four firms control more than 55 percent of the market (not weighting by wealth). This provides the most direct possible comparison using the available data.

One way to interpret this result is to assume that our industry classification matches that of Siegfried and Round (1994) and to ignore any change in market concentration over time. Under these two assumptions, our findings imply that when Siegfried and Round (1994) asked their expert panel to assess whether an industry is ‘sufficiently competitive that expected long-run equilibrium economic profits at the margin are negligible’, the average response was to classify industries as competitive if the four-firm concentration ratio is below 55 percent. For context, 55 percent is somewhat below the 75 percent threshold that triggered a presumption against mergers in the US Department of Justice’s 1968 merger guidelines and the Australian Competition and Consumer Commission’s 1999 merger guidelines (the Herfindahl–Hirschman Index has now generally replaced the four-firm share for this kind of analysis).

Are our results being driven by mildly concentrated or highly concentrated sectors? If we were simply to use a binary measure of industry competitiveness, such an analysis would not be possible. However, because we have a continuous measure of market concentration, we plot in Figure 2 the four-firm share for the economy as a whole, and for top wealth holders. For the entire economy, we sort industries from lowest to highest market concentration, and then plot the distribution (weighting each industry by their share of total revenue). Similarly, for top wealth holders, we sort their industries from lowest to highest market concentration, and then plot the distribution (weighting each top wealth holder by their wealth). The chart shows that the lines for the top wealth holders typically sit above the line for the economy as a whole – reflecting the results in Table 2. Similarly, in accord with the results in Table 2, the line for 2020 top wealth holders generally sits above the line for 1990 top wealth holders.

Figure 2 also provides additional insights on the parts of the distribution that are driving the difference. For the bottom half of the distribution, there is little difference between the three lines. Most of the action is from the 50th to 80th percentiles. This suggests that the difference between concentration in industries that produce top fortunes is to be found in the greater prevalence of moderately concentrated industries among top wealth holders (as compared with the economy as a whole).



What explains the greater prevalence of top wealth holders in concentrated industries in 2020 compared with 1990? As noted, our measure of industry concentration is based on a single point in time, so our analysis does not take account of changes in concentration over time. Instead, it is driven by the shift in top wealth holders towards more concentrated industries. For example, Table 1 shows that the largest source of top wealth in 1990 was ‘Commercial and industrial building construction’, in which the top four firms have a 9.5 percent market share. In 2020, the largest source of top wealth was ‘Iron ore mining’, in which the top four firms have an 83.9 percent market share. Above-average returns in concentrated sectors may well have propelled some top wealth holders up the rich list rankings.

That said, other more benign explanations are possible. Perhaps a preponderance of top wealth holders in concentrated industries is a function of a third factor, such as entrepreneurial talent, which increases both concentration and top wealth shares. Given the concentration of Australian top wealth holders in property and mining, we regard this explanation as unlikely, but our data do not allow us to confidently distinguish correlation from causation.

5. Conclusion

The emergence of substantial fortunes has a variety of causes. Siegfried, Blitz and Round (1995) point to the way in which extreme wealth can arise in competitive industries because

of risk and uncertainty, infra-marginal (Ricardian) rents, and disequilibrium. Increased international trade over the past century has led to many instances in which incumbent firms are able to deploy their business model in a much larger market. Technology and globalization can expand the audience for athletes and entertainers, providing outsized returns for ‘superstars’ – even those who are operating in highly competitive environments.

Yet our results also suggest that monopoly power should not be ignored as one possible factor contributing to the rise in wealth inequality. In the case of Australia, recent decades have seen an increase in top wealth shares and an increase in market concentration. A similar pattern may be observed in several other advanced nations. Insufficient economic dynamism may increase inequality.

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