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Non-competes: a case of missing wages in Australia

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Contents

Abstract

Non-compete clauses have become a focal point in debates over fairness and efficiency in modern labour markets. We investigate the relationship between non-compete clauses and wages in Australia using linked survey and administrative data. A heuristic framework suggests workers should be compensated for the loss of mobility imposed by non-competes. However, the paper argues that market failures — such as bargaining power imbalances and incomplete information — likely prevent such compensation. Empirically, across multiple methods, we find no systematic evidence that workers are compensated for non-competes, making workers worse off. Non-competes are common in low-productivity industries and firms, where trade secrets or knowledge transfer are unlikely. These findings suggest non-competes can operate less to foster innovation and more as barriers to mobility, with limited economic justification. Smaller firms also appear to adopt non-competes in blanket fashion, without tailoring them to the needs of a job. Our broader findings raise concerns over both efficiency and equity, and underscore the case for policy scrutiny.

Key Points

- This paper provides a clear empirical and analytical foundation for government intervention in non-compete policy, establishing a strong rationale for regulatory reform.
- It complements recent contributions by Andrews and Jarvis (2023) and Buckley, Rankin and Andrews (2024) in underscoring the case for intervention, and draws on evidence from Cowgill, Freiberg and Starr (forthcoming), who experimentally show that including a non-compete in a job offer reduces worker mobility by 30–57 per cent.
- Non-compete clauses are contractual agreements that limit workers' ability to join competing firms or start competing businesses after leaving a job.
  - These clauses can restrict career opportunities and reduce the available talent pool.
  - However, they may also encourage companies to invest in employee training and innovation and can lead to increased compensation.
- While non-competes can support productivity by fostering skills and innovation, their restrictive nature can hinder labour market flexibility, leading to lower competition and productivity.
- Our framework shows how market failures (such as asymmetric bargaining power and incomplete information) can interact with NCs to make workers worse off, with non-competes particularly harming those with limited bargaining power or awareness of such clauses—raising concerns about fair use.
- Theoretically there could be both 'good' non-competes and 'harmful' non-competes. Hence, determining the impacts of NCs is an empirical question.
- Using a novel data for restraint clauses (RCs) and linking it to microdata we find:
  - Prevalence and application: non-competes are common across industries and firm sizes, including sectors with lower wages and productivity. They are often used alongside other restraint clauses, such as non-disclosure (NDAs) and non-solicitation clauses (NSs), which underscores the need to assess non-competes in combination with these clauses.
  - Usage of non-competes: Firms often use non-competes where its usage is not justified, for example, in low wage, low labour productivity and non-innovative sectors. This suggests that non-competes are more likely being used here to restrict competition rather than upskill workers, indicating that reform on how they are used could be essential.
  - Compensation for non-competes: While non-compete agreements restrict workers' mobility and career opportunities, we find no positive association with wages on average. This suggests that firms typically may not provide compensating wage benefits for mobility restrictions, diminishing worker wellbeing
  - In our robustness checks analysing how firms implement RCs in combination, we find no systemic evidence of a positive wage association with non-competes. These results remain robust to a number of methodologies and sample tests.

  - Smaller firms are more likely to apply non-competes broadly across their workforce, while larger firms tend to be more selective. This suggests that blanket application may be driven by efforts to reduce HR costs from managing differentiated contracts rather than tailoring them to specific job needs — a practice likely to make workers worse off.
- The above results suggest that policy can restrict the occurrence of bad non-competes and help improve workers welfare. Effective policy may lie in selectively restricting non-competes to deter misuse while preserving their benefits where justified.
- Our current data allows us to examine associations of RCs with firm and employees' characteristics. Data on additional time periods and data on individuals would allow us to make more definitive causal statements.

1. Introduction

Non-compete clauses are employment contract terms that can limit a worker's ability to move to a new job or start a business in the same field for a certain period after leaving an employer. Given this, do workers who face mobility restrictions — through non-compete clauses — receive compensation for these constraints? This question is at the heart of ongoing policy debates across several advanced economies. Growing access to data has revealed the widespread use of non-competes (such as Boeri, Garnero, and Luisetto (2024) from Italy and Alves et al (2024) from the UK, Australian Government Treasury & e61 Institute (2023) and Andrews and Jarvis (2023) in Australia) and prompted renewed attention to their implications for equity and efficiency in labour markets (Leigh, 2024). Workers face enormous constraints in the form of market failures, like asymmetric bargaining power and incomplete information. If a firm does not fully internalise the cost of the non-competes that it imposes on workers, and if the workers are not able to properly negotiate for compensation, then the welfare of the workers will be lower. Against this backdrop, a central question emerges: is there a case for government intervention — and if so, what principles should guide it? To answer this question, the paper examines microdata on non-competes and their impact on wages of workers while they are employed in a firm that has non-competes, focusing on Australia.

This question is especially important as the growing microdata evidence is contested. Some papers find a positive impact or association of wages with non-competes (such as Lavetti, Simon and White (2020)), while several papers find a negative effect or association (such as Buckley, Rankin and Andrews (2024) and Johnson, Lavetti, and Lipsitz (2023)) and yet others find a nil effect (Young (2021)). To overcome these mixed results, this paper undertakes tests on a number of samples and methods and presents robust results.

This paper begins by building a heuristic framework to illustrate that workers who give up freedom and mobility ought to be compensated when bound by non-compete clauses. This idea aligns with a growing literature that shows non-competes result in substantial lower mobility, for instance a forthcoming paper by Cowgill, Freiberg and Starr (forthcoming) find that a non-compete in a job offer lowers mobility by 30-57 per cent. The framework then lists market failures like bargaining power asymmetry and incomplete information to suggest that these factors will likely prevent compensation.

Using novel microdata for Australia, it tests the hypothesis that a wage compensation exists for signing non-competes. The analysis draws on multiple samples and econometric methodologies, exploiting how non-competes are used along with other RCs and the method used by Diegert, Masten, and Poirier (2023) to evaluate how stable the coefficient of interest is to unobservable factors.

The paper's main results show that, on average, workers subject to non-competes give up mobility without receiving compensating wages, leaving them worse off. This finding is consistent with recent behaviour studies showing that workers are typically unaware of the presence of a non-compete at the time of entering an employment contract (Cowgill, Freiberg and Starr (forthcoming)). The paper also finds that non-competes are not associated with wage growth.

This paper builds on evidence that non-competes are common across industries and firm sizes, including sectors with lower wages and productivity. This suggests that in sectors with lower wages and productivity — where protecting high-value trade secrets or specialised investments is less likely to be necessary — the rationale for using non-competes is weaker.

The results show that smaller firms are more likely to apply non-competes broadly across their workforce, whereas larger firms tend to be more selective. This pattern suggests that blanket

application may reflect an effort to reduce HR costs associated with managing differentiated contracts rather than tailoring them to specific job needs, which is likely to again make workers worse off.

An important, novel result is that there is the marked heterogeneity in how firms deploy non-competes, and in their wage associations, with sharp differences across firm size and productivity. Firms with really high labour productivity and capital investment tend to be positively associated with wages if they have non-competes, but then that this association does not exist for low productivity firms, suggesting non-competes use may vary based on firm level characteristics. It is important to note that this positive wage association is confined to firms with exceptionally high productivity and capital investment, and does not extend to firms closer to the average.

Firms use non-competes alongside other RCs, such as non-disclosure and non-solicitation of clients clauses (NSC), which underscores the need to assess non-competes in combination with these clauses. The paper also shows that firms with a single restraint clause differ markedly from those with four, with the latter being significantly more productive and offering higher average wages.

The paper uses novel data, 2023 Short Survey of Employment Conditions (SSEC), linked to the admin data using Business Longitudinal Analysis Data Environment (BLADE). It exploits the usage of non-competes along with the use of other RCs to provide a more comprehensive picture of how firms structure employment contracts and the potential implications for workers. The main limitation of this data is that the survey is only for one year, even though we link it to 5-7 years in the microdata, making it hard to establish a causal relationship. Thus, the results are best interpreted as associations. Regardless, the paper yields several important insights, which are consistent across various robustness tests.

The lack of evidence for a wage compensation for the average firm, along with concerns for market failures linked to bargaining power, incomplete information and management of contracts, raises the rationale for government intervention. Further, while non-competes may serve a legitimate role in certain high-productivity settings, their use in lower-productivity firms — where the economic rationale is less clear — raising concerns about potential misuse.

The rest of the paper is as follows. Section 2 gives an overview of the existing literature on the effects of non-compete clauses, focusing on their impact on wages and labour productivity. Section 3 outlines a conceptual framework to examine the relationship between wages and non-competes. Section 4 describes the data sources, key variables, and descriptive statistics. Section 5 presents the empirical analysis. Section 7 concludes.

2. Literature Review

Recent literature examining non-compete clauses is growing, although most of the studies focus on the United States, with results on wages being mixed. Review of the literature shows that non-competes adversely affect worker mobility, innovation and competition. Some US studies use changes in enforceability rather than presence of non-competes as explanatory variable, as that approach may better infer causal effects (Federal Trade Commission, 2024). However, non-competes are linked to decreased employee mobility, regardless of enforceability (Starr, Prescott, and Bishara 2020). Similarly, using Italian data Boeri, Garnero, and Luisetto (2024) show that unenforceable non-competes are still associated with lower wages, while Cowgill, Freiberg, and Starr (2025) use a large field experiment to conclude that non-competes lower workers' total earnings.

Traditionally, NCs were justified in safeguarding trade secrets and client relationships among highly skilled professionals. However, Andrews and Jarvis (2023) reveal a troubling extension of these clauses into low-wage occupations—such as burger flippers and hairdressers—roles that typically involve no

transferable proprietary knowledge. This proliferation is particularly hard to reconcile with the classic rationale for NCs.

This section reviews key empirical studies on the relationship between non-competes and two outcomes: wages and productivity, which are the focus of this paper. While some studies suggest that the signing of non-competes may be associated with an increase in wages for employees, others emphasise non-competes' role in restricting labour market competition and suppressing wage growth.

The relationship between non-competes and wages is mixed, with studies finding both positive and negative associations depending on firm characteristics and enforcement conditions. Table 1 summarises the results from individual studies.

Table 1: Literature findings on the relationship between non-competes and wages.

Study	Relationship with income	Data	Type of claim
Cowgill, Freiberg, and Starr (forthcoming)	12%-16% lower total earnings	Field experiment	Causal
Gopal, Li, and Rawling (forthcoming)	9% higher wage from non-competes within one year, with effect persisting at least six years	US National Longitudinal Survey of Youth 1997	Causal
Buckley, Rankin and Andrews (2025)	Workers at firms that use non-competes extensively are paid 4% less on average than similar workers at similar firms that only use NDAs.	Australian Bureau of Statistics (ABS) survey data	Correlation
Balasubramanian, Starr, and Yamaguchi (2024)	Employees with all four restrictions earn 5.4% less than employees with only non-disclosures.	US employee-level survey complemented with a firm-level survey, bargaining power question from National Longitudinal Survey of Youth 1997	Correlation
Johnson, Lavetti, and Lipsitz (2023)	3.2% to 14.2% increase in average earnings for all workers if non-compete were rendered unenforceable.	US individual-level data on earnings and employment from 1991 to 2014, Job-to-Job Flows	Causal
Rothstein and Starr (2022)	Positive association	US National Longitudinal Survey of Youth 1997	Correlation
Balasubramanian et al (2022)	4.6% lower cumulative earnings over 8 years for technology workers in states with average enforceability relative to a nonenforcing state.	Employer-employee matched data for workers from 30 US states for 1991-2008	Correlation
Lipsitz and Starr (2022)	2-3% increase in hourly wages for hourly workers on average after a non-compete ban	Current Population Survey looking at hourly workers in Oregon, US	Causal
Young (2021)	No impact on overall earnings growth detected	Austrian Social Security Database	Causal
Lavetti, Simon and White (2020)	8 percentage points increase on average annual earnings growth in each of the first 4 years of a job, with a cumulative effect of 35 percentage points after 10 years on the job.	Physician Perspectives on Patient Care Survey from five US states	Causal

Starr, Prescott, and Bishara (2021)	9.7% higher earnings for those who learnt of non-compete before accepting job offer.	US large-scale survey administered in 2014 to a panel of verified respondents	Correlation

Some evidence suggests that employees are compensated for signing non-competes. For example, studying physicians in the US, Lavetti, Simon and White (2020) find non-competes increase the annual rate of earnings growth by an average of 8 percentage points in each of the first four years of a job, with a cumulative effect of 35 percentage points after 10 years on the job. Similarly, Starr, Prescott, and Bishara (2021) report that workers who are informed about non-competes before accepting a job tend to earn higher wages.

However, other studies find wage growth for those who sign non-competes appear to be reduced, suggesting that non-competes function as a labour market restriction and limiting options. Shi (2023) note that while executives may start with higher wages due to non-competes, their long-term wage growth is constrained. Balasubramanian et al. (2022) estimate that higher non-competes enforceability is associated with a 4.6 per cent decline in cumulative earnings over eight years for technology workers. Similarly, Lipsitz and Starr (2022) find that non-competes bans increase wages by 2-3 per cent on average, with this effect more pronounced for women. These findings align with the monopsony power hypothesis, where non-competes restrict worker bargaining power, allowing firms to pay lower wages than they would in a competitive labour market (Krueger and Ashenfelter, 2018).

Labour productivity

Theoretically, non-competes can have offsetting impacts on productivity.

On the one hand, non-competes might incentivise firms to invest in productivity-enhancing activities, such as employee training, when they can restrict employee mobility. Garmaise (2011) provides empirical support for this argument, finding that stronger non-competes enforceability is associated with higher capital investment, greater R&D spending, and increased worker training.

On the other hand, non-competes might hinder productivity by reducing knowledge spillovers and slowing labour market dynamism resulting in poorer job matching. Across the literature, nearly all studies find that non-competes hinder worker mobility, even in jurisdictions with lax enforcement (Boeri, Garnero, and Luisetto, 2024). Balasubramanian et al. (2022) show that higher non-competes enforceability is associated with fewer job transitions, which can limit the diffusion of skills across firms, particularly in knowledge-intensive sectors. When employees circumvent non-competes by seeking employment in a new industry, their productivity declines by 30 per cent whereas those who move voluntarily are 16 per cent more productive (Mueller, 2022), indicating an inefficient reallocation of human capital from non-competes. Gopal and Li (2024) find labour market misallocation due to non-competes fosters inefficiencies, and Shi (2023) finds that non-competes lower competition by limiting mobility and inhibiting new firm entry.

3. Conceptual framework

We present a simple heuristic model to frame how non-competes may influence wages. The section does not intend to develop a fully formalised model, but rather to provide a structured framework through which to generate priors and interpret our empirical findings. This framework aims to clarify the economic intuition behind non-compete clauses and their possible effects on worker compensation. Further, while we discuss a broad range on channels below, only key channels are explored in the empirical analysis.

Non-Competes: Balancing Utility, Profits, and Economic Dynamism

Non-competes can impact the welfare of employees, firms, and the broader economy. Below we discuss how various stakeholders can be impacted by non-competes.

Employees

The paper assumes that workers seek to maximize utility, a function of both consumption (c) and freedom (f):

$$Utility = U_i(c, f)$$

Non-competes reduce employees' freedom to pursue opportunities compared to an unrestricted contract ($f_{NC} < f_{UR}$). Thus, rational employees require higher compensation ($\tilde{w}$) (or a wage premium), which enables them to have higher consumption ($c + \tilde{w}$), to offset these restrictions on mobility.

So, for employees to accept a contract which includes a non-compete clause, the utility they gain from increased wage and increased consumption must at least compensate the workers for the disutility of giving up the freedom to move:

$$U_i(c + \tilde{w}\ , f_{NC}) \geq U_i(c, f_{UR})$$

This means that when employees negotiate with the firm over their compensation and conditions, employees seek higher wages if a non-compete clause is present in their contract.

Firms

The paper assumes that firms aim to maximise profits:

$$\pi = pq - wL - rk - OC$$

Where profits are reduced by costs of labour (w), capital (r), and additional outlays (OC) like training (including onboarding of new employees) and legal enforcement of non-competes (Varian, 2009). Firms value workforce stability, protection from competitors (which allows them to restrict quantities and raise prices), and protection of intellectual property.

This means that when firms write employment contracts for employees, including for compensation and conditions, firms will seek to minimise costs (wages, additional outlays) associated with imposing a non-compete. As such we assume that firms will prefer not to pay a wage compensation for non-competes wherever possible.

The Economy

At the macro level, growth depends on productivity, human capital development, competition, and dynamism.

Non-competes can undermine allocative efficiency by restricting the free movement of talent and preventing optimal reallocation of labour across firms and sectors (He, 2025), further explored in Box 1.

However, non-competes may have ambiguous effects on dynamic efficiency. Non-competes may increase human capital development and incentives for innovation, which is productivity enhancing and therefore improves long-term growth. However, non-competes may limit knowledge diffusion by reducing labour mobility and may reduce firm level incentives to innovate by undermining competitive pressures. These frictions may slow innovation and suppress long-term growth (see Box 1).

Box 1: How economic factors affect compensation for non-competes

Incomplete and Asymmetric Information

- Many employees may not realise a non-competes exists in their contract until they attempt to leave. This lack of awareness tends to disadvantage employees, who face unexpected restrictions (Cowgill, Freiberg and Starr, forthcoming).

Bargaining Asymmetry

- Workers with higher productivity, education, and specialised skills typically possess greater bargaining power (Becker, 1964), enabling them to negotiate compensation in exchange for accepting a non-competes. Conversely, workers with lower bargaining power — such as those with lower levels of education or in occupations characterised by weaker union representation — are less able to secure this compensation. They are more likely to experience adverse outcomes that they are not fully compensated for, including wage suppression and reduced labour mobility.

Transaction Costs

- To reduce administrative complexity, firms may default to using standardised contracts with non-competes across all employees, even when such clauses are unnecessary. Smaller firms without dedicated HR support are especially likely to rely on this one-size-fits-all approach, whereas larger firms are more likely to be selective.

Human Capital

- Non-competes can incentivise firms to invest in employee training and skill development by reducing the risk of immediate post-training turnover. By limiting the ability of workers to join competing firms, non-competes create conditions under which employers may perceive a higher likelihood of recouping training costs. In certain contexts, non-competes are associated with increased employer-sponsored human capital investment, particularly when training is industry-specific and costly (Starr, 2019).

Externalities

- Firms may view non-competes as a way to protect their investment in employee training. However, as they also limit competition, they can suppress overall investment, reduce talent circulation, and distort markets (Marx and Fleming, 2012).

Diverse Employee Preferences

- Not all workers oppose non-competes, some may accept them in exchange for financial security in the form of gardening leave or valuable learning opportunities. For certain employees, non-competes can align with their personal career goals (Aydinliyim, 2020).

Time Preferences and Decision Bias

- Employees may undervalue future risks when signing non-competes, focusing on immediate benefits like a job offer, without fully considering the long-term career restrictions these clauses impose (Aydinliyim, 2020). This present bias can increase the prevalence of non-competes in the labour market.

4. Data

Data sources

We utilise Australian Bureau of Statistics Short Survey of Employment Conditions (SSEC), which captures information on the use of non-compete clauses, non-disclosure agreements, non-solicitation of clients and non-solicitation of co-workers clauses in Australian firms. SSEC, conducted in 2023, has 3,757 firms in the survey.

To assess the economic implications of these restraint clauses, we link the SSEC data to BLADE, a series of integrated longitudinal datasets linking survey and administrative data from the Australian Taxation Office (ATO) and ABS. The data cover all Australian Business Numbers registered for the goods and services tax (GST) at some point in time. For our analysis we use tax data for the years 2017–2023.

Final dataset includes 3,757 firms for 2022–23 and 21,128 observations from 2017–18 onward, allowing us to examine restraint clause use and trends in associated firm outcomes.

To mitigate distortions introduced by COVID-19, our robustness tests include just 2021–22 and 2022-23 years. Additionally, non-employing businesses (that is, those with a full-time equivalent of less than 1) and businesses lacking key characteristic data were excluded to maintain data quality. The data was weighted using survey weights for the SSEC sample to ensure representativeness of the broader Australian business population.

Table 2: List of key variables

Variables	Definitions and Source
Average wage per firm	Calculated as the total salary, wages, and other payments reported in the firm's Business Activity Statement (BAS), divided by the firm's full-time equivalent (FTE) workers, as derived from Pay-As-You-Go (PAYG) tax data.
NC, NDA, NSW, NSC	Binary variables for whether a firm reported that it used one of these restraint clauses (1 = used, 0 = did not use).
Restraint clause bundles	Binary variables identifying firms that used a specific combination of restraint clauses (see Table 4 for details).
Clause coverage (NC, NDA, NSC, NSW)	The extent of usage of a particular clause – low (up to 30% of employees) medium (31-75%) and high (more than 75%).
Capital Expenditure (log)	Defined as the log of firm-reported capital investment
Industry Classification	Based on Australian and New Zealand Standard Industrial Classification (ANZSIC) codes, allowing for industry fixed effects.
Labour Productivity (lagged)	A one-year lag of log labour productivity.
Time and Industry Fixed Effects	All models include financial year and industry fixed effects.
Capital Expenditure (log)	Defined as the log of firm-reported capital investment.
Industry Classification	Based on Australian and New Zealand Standard Industrial Classification (ANZSIC) codes, allowing for industry fixed effects.

All monetary variables are expressed in real terms in Australian dollars (base year 2022).

Descriptive statistics

Table 3 provides summary statistics for key variables in our sample for 2023. Similar to other microdata datasets (such as Coad and Hölzl (2012) and Coad and Rao (2008)), the table highlights that there is significant diversity in firms in the sample. In particular, the sample exhibits considerable heterogeneity in terms of the average wage and labour productivity. Similar earlier work in Australia such as Majeed et al (2021) and Suresh et al (2020) find firm size, as measured by FTE, is highly skewed. The median firm in the sample employs approximately 44 FTEs [1], while the mean is substantially higher at 833 FTEs, reflecting the presence of a small number of very large firms in the sample. As such, controlling for size will be important in our regressions.

The dummy variables indicate the prevalence of various restraint clauses. Approximately 72 per cent of firms in the sample report using non-disclosure agreements, while 34 per cent report using non-compete clauses, 42 per cent of firms report having non-solicitation clauses that restrict client poaching, and 34 per cent impose restrictions on soliciting workers. These shares suggest that RCs are a common feature of the employment landscape, particularly NDAs.

Table 3: Summary statistics for key variables – 2023

	N	Mean	SD	p25	p50	p75
Labour productivity	3535	477,304	4,616,826	118,489	200,827	378,433
Average wage	3555	87,924	272,269	58,670	71,738	89,310
FTE	3555	833	4,327	7	44	372
Capital expenditure	3730	46,688,509	1,479,160,467	0	0	989,430
Log of capital expenditure	1376	15.05	2.76	13.21	15.25	16.99
Turnover	3730	484,042,650	7,925,420,942	1,141,227	7,675,117	64,854,640
Growth of labour productivity (%)	3,379	0.03	0.44	-0.10	0.01	0.13
Growth of turnover (%)	3,558	0.11	0.57	-0.03	0.09	0.24
NDA [Dummy variable]	3,358	0.72				
NC [Dummy variable]	3,253	0.34				
NSC [Dummy variable]	3,187	0.42				
NSW [Dummy variable]	3,118	0.34				

Firms often bundle other restraint clauses with non-competes

Australian businesses often bundle non-competes with other RCs, mirroring patterns observed in the US, as per Balasubramanian, Starr, and Yamaguchi (2024). Figure 1 presents a Venn diagram illustrating the overlap between three types of RC used in employment contracts. Note, for the purpose of studying how firms bundle clauses, observations are removed if they reported "Unsure" for any of the clauses, and so the proportion of use differs slightly from the summary statistics in Table 3. Most firms (71 per cent) in our data use at least one restraint clause, and while 33 per cent report using non-competes, fewer than 10 firms impose them as a standalone restriction, confirming that non-competes are almost never used in isolation.

Table 4 further highlights how non-competes are used in conjunction with other clauses, in this table NSC refers to non-solicitation of clients and NSW refers to non-solicitation of co-workers. As such, to

1 Where this sample has overrepresentation of large firms, as such, our robustness in the results section will employ weighted analysis.

study their impacts, it is essential to understand how these clauses function together rather than analysing them separately.

Figure 1: How are non-competes bundled with other restraint clauses?

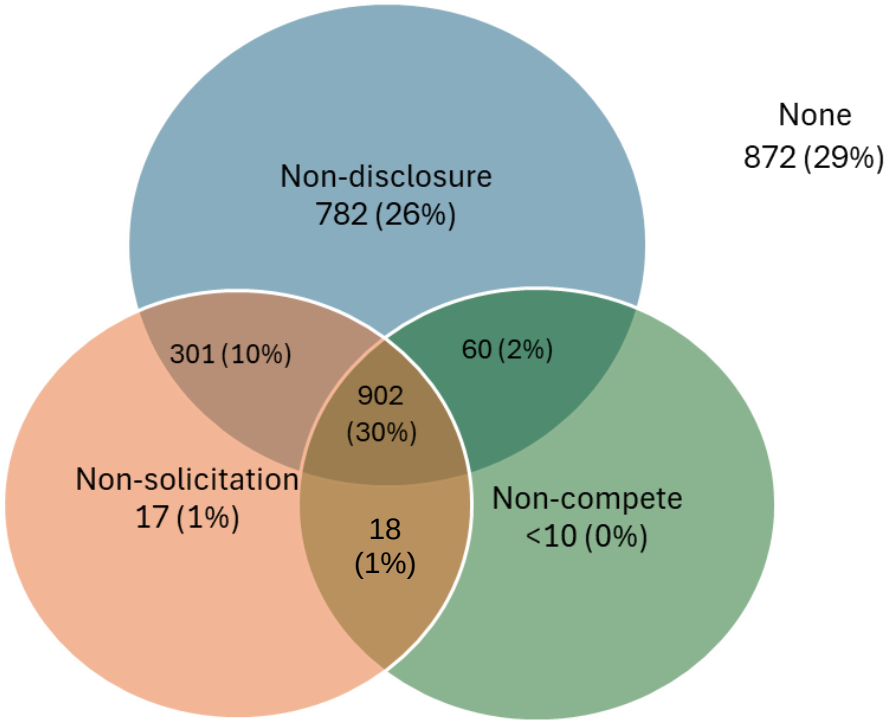


Table 4: Frequencies of combinations (2017-2023)

NDA	NC	NSC	NSW	N	Percent
×	×	×	×	4,884	28.97%
✓	×	×	×	4,552	27.01%
✓	×	✓	✓	955	5.67%
✓	×	✓	×	622	3.69%
✓	✓	✓	×	580	3.44%
✓	✓	×	×	337	2.00%
✓	×	×	✓	125	0.74%
×	✓	✓	✓	64	0.38%
×	✓	✓	×	44	0.26%
×	×	✓	×	40	0.24%
×	✓	×	×	43	0.26%
×	×	✓	✓	40	0.24%
✓	✓	×	✓	41	0.24%
✓	✓	✓	✓	4,529	26.87%
				16,856	100.00%

Note: The 2023 survey was linked to firms in the panel from 2017-2023.

Firm characteristics vary substantially based on the numbers of restraint clauses used. Table 5 summarises median wage, FTE, capital expenditure and labour productivity across firms grouped by number of clauses. Firms with three or four restraint clauses tend to be larger, more productive, and offer higher wages compared to those with fewer clauses. Firms with three and four restraint clauses are the most similar. This suggests that different types of firms may implement restraint clauses for distinct strategic reasons.

Given these results, one approach to studying the impact of non-competes is to compare firms that use all four RCs with those that use all RCs except for non-competes. These firms are more similar in terms of size, labour productivity, and wages than any other groups, making them more suitable for comparison. This allows for a clearer analysis of what happens when a firm adopts non-competes versus when it refrains from doing so, helping to isolate the effects of non-competes. This analysis is undertaken in the Empirical Section.

We complement Table A1 in the Appendix by comparing average wage, labour productivity and FTE workers between firms with all clauses except non-competes and firms who impose all clauses.

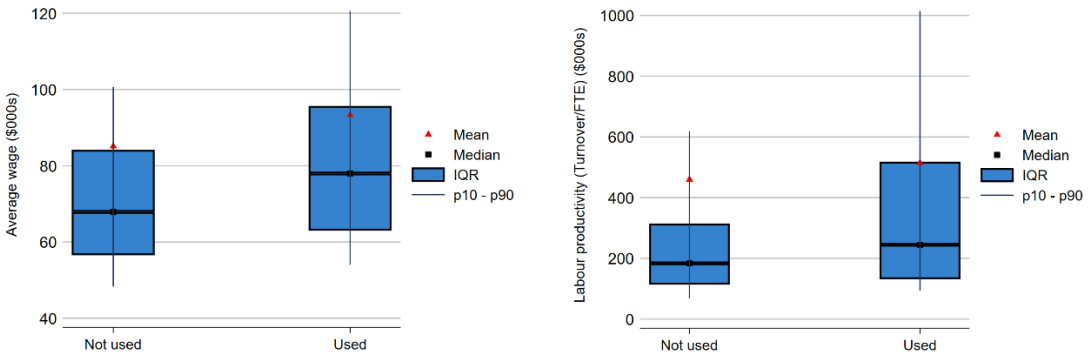
Table 5: Medians by number of clauses (unweighted) [2017-2023]

	0 Clause	1 Clause	2 Clauses	3 Clauses	4 Clauses
Average wage	66,282	74,410	71,572	75,135	82,354
Full-time equivalent	8	56	43	73	125
Log of capital expenditure	14.3	14.8	14.1	14.5	15.3
Labour productivity	180,770	185,823	197,059	203,418	273,055

Wage and labour productivity in firms using non-competes

On average, firms with non-competes tend to exhibit higher average wages and labour productivity. However, the data also shows substantial variation. Figure 2 illustrates the distribution of wage (left panel) and labour productivity (right panel) across firms that do and do not use non-competes in 2023.

Figure 2. The distribution of average wage and labour productivity across firms that impose non-competes and those that do not.



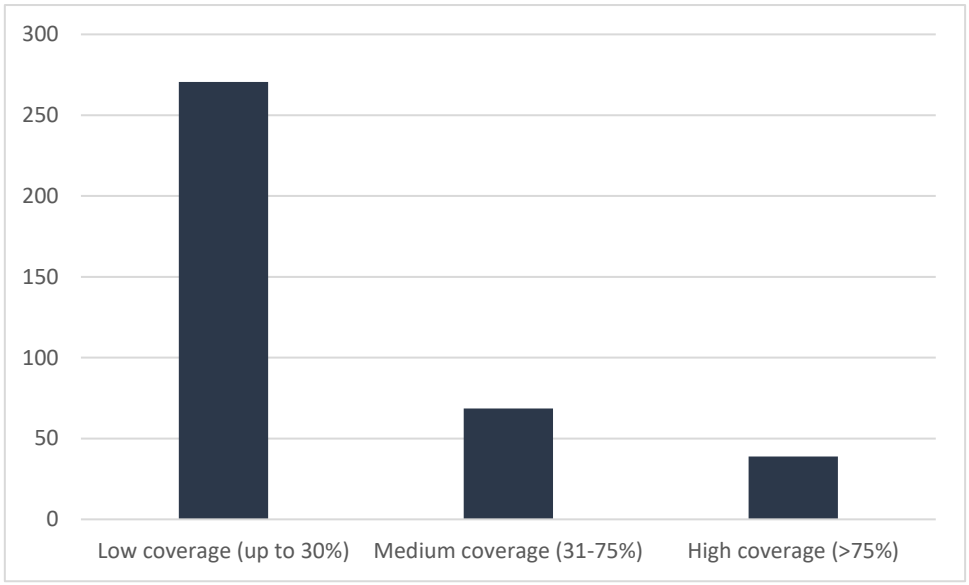
From the figure, many firms with relatively low wages and low productivity impose non-competes. Such firms are less likely to be operating in high-value or skill-intensive industries and may offer limited opportunities for on-the-job learning. Which brings into question why these firms use non-competes, especially if they are not contributing to the human capital of their employees in a substantial manner. Despite restricting worker mobility, non-compete clauses are not associated with lead low-paying firms with a wage premium for employees.

Combined, these figures suggest that there are likely several firms in the economy that may be using non-competes for anti-competitive reasons, administrative reasons and staff retention rather than using them to protect their investment in training employees or to compensates workers for their loss of mobility due to non-competes.

Coverage of non-competes by size

Figure 3 illustrates the relationship between the percentage of employees covered by non-competes and firm size. Firms that apply non-competes selectively, with lower coverage (up to 30 per cent) tend to be larger. In contrast, firms that implement non-competes more broadly tend to be smaller, as reflected in lower FTE counts across medium (31–75 per cent), and high non-competes coverage (more than 75 per cent). This pattern may reflect the fact that larger firms, with dedicated HR departments, are better equipped to apply non-competes selectively, while smaller firms may adopt a blanket approach to minimise the administrative costs of negotiating individual contracts.

Figure 3: Firm size (FTE median) by coverage



Note: Only firms with non-competes included

Non-competes are being used in firms where there is poor justification

The conceptual framework laid out above suggests that non-competes may be beneficial when accompanied by higher wages and/or firm-level productivity improvements consistent with investments in training or intellectual property development. Conversely, non-competes are more difficult to justify in lower-wage, lower-productivity, and lower-growth firms.

Our analysis indicates that in Australia, non-competes are being used in firms where there is a weak justification to do so: 21 per cent of the sampled firms using a non-competes experienced negative productivity growth over 2021-22 and 2022-23 (compared to 19 per cent in the sample of firms that did not use a non-competes). We also see that 20 per cent of the sampled firms that used a non-competes came from the bottom quartile for productivity, and 17 per cent in the bottom quartile for average wages. While this is consistent with firms that use a non-competes being slightly higher-paying and higher-productivity on average (see Figure 2), it also demonstrates that a notable proportion of the firms using non-competes are low-productivity and low-paying.

5. Empirical analysis

In this section, we estimate the relationship between non-competes use and average wage using several regression approaches and samples. We begin with a simple OLS regression where we estimate the relationship between firm's average wage and non-competes use while controlling for the use of other RCs and other firm characteristics observable in the data. Subsequently, we implement an alternative estimation strategy where we compare firms with all RCs with firms that use all clauses except for non-competes. We then test to see how stable the results are, when testing for omitted variable bias using the Diegert, Masten, and Poirier (2023) (DMP).

Linear regression estimates of restraint clauses on wage

Method

To examine the relationship between RCs and wages, we start by estimating an OLS regression model, following approaches used in Alves et al. (2024), Rothstein and Starr (2022), and Starr, Prescott, and Bishara (2021). As shown earlier, since restraint clauses are used in bundles, it will be important to control for all RCs when examining the impact of non-competes. To this effect, we estimate:

$$\log w_{it} = \beta_0 + \beta_1 NC_i + \sum_{j=1}^{3} \beta_j RC_{jit} + X_{it}\Gamma + \gamma_s + \delta_t + \epsilon_{it} \qquad (1)$$

where $\log w_{it}$ is the log the average wage per firm i in year t, NC_{it} is a binary indicator for whether the firm imposes non-competes, i.e. that is, does anyone have a NC, and RC_{jit} is a set of binary indicators for whether the firm imposes NDA, NSW and/or NSC.

We also include a matrix of firm-level control variables X_{it} that include firm size (log of full-time equivalent workers), log of capital expenditure and lagged labour productivity. Γ is the vector of coefficients associated with the control variables. γ_s represents industry fixed effects at the ANZSIC 2-digit level, δ_t represents time fixed effects, and ϵ_{it} is the error term.

As highlighted in the descriptive section, controlling for all restraint clauses is essential, since firm wages and productivity differ systematically with the number of clauses adopted. Firms with one or two clauses diverge considerably from those with three or four clauses, while firms with three and four clauses display the most comparable characteristics, making them the most relevant for comparison. We exploit this similarity in our robustness.

We are unable to eliminate firm level fixed effects as RC data is only available for a single period. However, we can see the impact of non-competes over several years by linking SSEC data with tax data for years 2017 to 2023.

We differentiate firms by size, running separate regressions for large firms (200 or more FTEs) and SMEs (fewer than 200 FTEs) to assess whether non-competes effects vary by firm size. Additionally, while the full sample covers financial years 2017-18 to 2022-23, we run separate regressions for 2021-23 to account for potential distortions introduced by COVID-19. Industry and time fixed effects are included to control for sectoral differences and broader economic conditions.

Results

Table 6 presents the OLS results based on Equation 1. Columns (1) and (2) report results for all firms, covering all years and the subset years comprising 2022 and 2023, respectively. Columns (3) and (4) focus on SMEs over the same time periods, while Columns (5) and (6) present results for large firms.

Across all specifications, non-competes show a weak and inconsistent association with wages, with an estimated 3 per cent wage premium for employees with non-competes. However, this effect is statistically weak, being significant at only the 10 per cent level in two models and insignificant in the others. This suggests that, on average, there is no strong evidence of compensation for non-competes.

In contrast, NDAs are positively associated with wages for SMEs. Yet for large firms, NDAs have a significant negative relationship with wages. Similarly, NSC consistently show a negative association with wages across all firm sizes, with a stronger and highly significant negative effect for large firms. Conversely, NSW (non-solicitation of co-workers clauses) exhibit a positive association with wages, though the effect varies across firm sizes and time periods.

Overall, the findings indicate that non-competes do not lead to meaningful wage compensation, and the impact of restrictive covenants varies depending on firm size and clause type.

Table 6: Relationship between firms' log average wage and RCs

	All firms All years	All firms 2022 & 23	SME All years	SME 2022 & 23	Large All years	Large 2022 & 23
NDA	0.03***	0.04***	0.03***	0.04**	-0.10***	-0.08***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
NC	0.03*	0.03	0.03*	0.03	0.02	0.02
	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
NSC	-0.03**	-0.04*	-0.03**	-0.04*	-0.06***	-0.11***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.04)
NSW	0.04**	0.05*	0.04**	0.05*	0.04	0.09*
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.05)
Log of full-time equivalent hours (lagged)	0.03***	0.03***	0.03***	0.03***	0.04***	0.03***
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)
Log of capital expenditure (lagged)	0.00	0.00	0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Log of labour productivity (lagged)	0.07***	0.06***	0.07***	0.06***	0.09***	0.07***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
Constant	10.85***	11.00***	10.86***	11.01***	10.58***	10.74***
	(0.11)	(0.16)	(0.01)	(0.17)	(0.14)	(0.23)
Observations	12,359	5,302	8,486	3,696	3,873	1,606
R-squared	0.35	0.36	0.34	0.36	0.46	0.43
Industry FE at 2 digits	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Combined effect of RC1	0.07	0.05	0.07	0.05	-0.12	-0.10

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Combined effect (last row) includes all results that were significant at the 10 per cent or above. Source: BLADE analysis by Treasury.

Margins analysis

As we saw in the descriptive statistics, firms with various levels of productivity and investments use non-competes. It is thus possible that different types of firms use non-competes for various reasons and therefore the impact of non-competes is likely to vary.

Boeri, Garnero, and Luisetto (2024) employ interaction terms to analyse how non-competes affect labour market outcomes in different contexts. By interacting non-compete clauses[2] with various firm characteristics linked to productivity, this methodology seeks to capture the heterogeneity in responses to non-competes. We apply their method and modify equation (1) to estimate

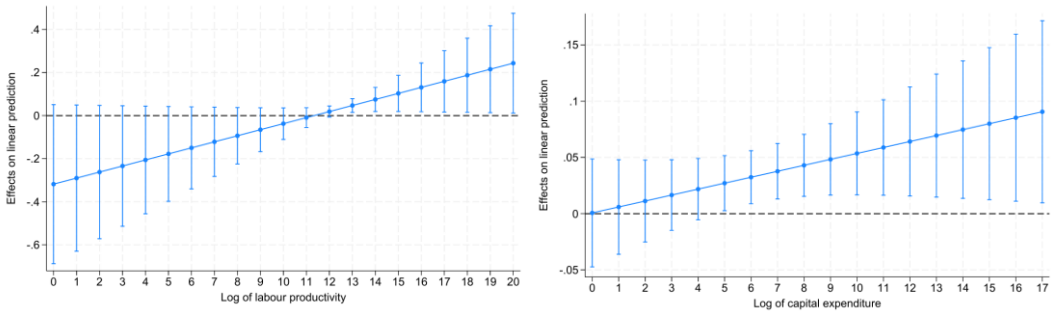
$$\log w_{it} = \beta_0 + \sum_{k=1}^{4} \beta_k RC^k + \sum_{j=1}^{4} \beta_j RC^j \times Z_{it} + \theta Y_{it} + X_{-Y,i,t}\Gamma + \gamma_s + \delta_t + \epsilon_{it}$$

where $RC_{it} \in \{NC, NDA, NSC, NSW\}$ and, Z represents interaction terms with Labour Productivity, Capital Investment, or FTE — included one at a time in separate specifications. For each specification, the corresponding variable in Z is excluded from the control vector X. $X \in \{Labour\ productivity, Capital\ invesment, FTE\}$.

Figure 4 presents the marginal effect of non-competes use on firm's average wage at different levels of labour productivity (left-panel) and capital expenditure (right-panel). At lower productivity levels, non-competes are associated with a negative wage effect, though the results are statistically insignificant. However, as productivity increases, non-competes are associated with a positive wage impact and this increases in magnitude as productivity increases. This result is significant at the 90 per cent level and as such is taken as partial evidence for wage premium.

Given that labour productivity is typically clustered at the lower end, its influence on wage differentials remains minimal for most firms when non-compete clauses are in effect. Further, the labour productivity distribution is heavily skewed — even at the 75th percentile (with log productivity around 8) this effect is not evident, meaning most firms do not demonstrate this positive association between average wages and labour productivity in the presence of a non-compete.

Figure 4. Average marginal effect of using non-competes on wage by labour productivity and investment.



2 A dummy variable for different types of non-competes. For example, likely unenforceable clauses vs. potentially enforceable ones.

Note: The dots plot the average marginal effect. The horizontal bars give the 95% confidence interval around the marginal effect.

Relationship between non-competes coverage and wage

We now examine whether the wage relationship differs by the breadth of non-competes use within a firm. To do so, we replace the binary variable non-competes variable in equation (1) with a categorical variable "NC coverage" that groups firms based on the proportion of employees who have a non-competes in their employment contracts. This is given as

$$\log w_{it} = \beta_0 + \beta_1 NC\ coverage_i + \sum_{j=1}^{3} \beta_j RC_{jit} + X_{it}\Gamma + \gamma_s + \delta_t + \epsilon_{it} \quad (1)$$

Table 7 presents the results of this regression. The results show a statistically significant wage premium of 4 per cent for firms with high coverage, though largely driven by SMEs with high non-competes coverage. This effect is consistent across both the full SME sample and the 2022–23 subsample. While all other categories including large firms with high coverage yield null or insignificant results. These findings suggest that wage compensation for non-competes is not widespread but may arise in specific contexts.

Table 7: Firms' log average wage and non-competes coverage

	All firms All years	All firms 2022 & 23	SME All years	SME 2022 & 23	Large All years	Large 2022 & 23
NC coverage (base = no NC use)						
- Low (<=30%)	-0.01	-0.02	-0.00	-0.00	-0.02	-0.02
	(0.011)	(0.016)	(0.018)	(0.027)	(0.012)	(0.017)
- Medium (31-75%)	0.02	0.01	0.04	0.03	-0.00	0.01
	(0.014)	(0.020)	(0.022)	(0.029)	(0.019)	(0.024)
- High (>75%)	0.04***	0.04*	0.04**	0.04*	0.01	0.02
	(0.010)	(0.016)	(0.013)	(0.020)	(0.015)	(0.023)
NDA	-0.01	0.00	0.00	0.01	-0.09***	-0.09***
	(0.007)	(0.011)	(0.009)	(0.014)	(0.014)	(0.020)
NSC	-0.03***	-0.04**	-0.03**	-0.04*	-0.03	-0.04
	(0.009)	(0.014)	(0.011)	(0.017)	(0.014)	(0.022)
NSW	0.04***	0.05**	0.06***	0.06**	0.01	0.04
	(0.009)	(0.015)	(0.013)	(0.019)	(0.014)	(0.023)
Log of full-time equivalent hours (lagged)	0.03***	0.03***	0.04***	0.05***	0.03***	0.03***
	(0.002)	(0.003)	(0.004)	(0.006)	(0.005)	(0.007)
Log of capital expenditure (lagged)	0.00***	0.00**	0.00**	0.01*	0.00**	0.00
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)
Log of labour productivity (lagged)	0.07***	0.07***	0.08***	0.07***	0.07***	0.06***
	(0.005)	(0.007)	(0.008)	(0.010)	(0.006)	(0.009)
Constant	10.74***	10.80***	10.72***	10.80***	10.89***	10.94***
	(0.072)	(0.101)	(0.097)	(0.137)	(0.095)	(0.141)

R-squared	0.37	0.37	0.31	0.31	0.50	0.48
Industry FE at 2 digits	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Combined effect (last row) includes all results that were significant at the 10 per cent or above. Source: BLADE analysis by Treasury. Each column incorporates industry and time fixed effects

Comparing firms with all RCs to firms with all RCs except for non-competes

Method

As discussed in Section 4, it is hard to establish causality, in terms of non-competes impacts on wage. A key limitation is that our RC data provides only a single point in time, making it challenging to account for reverse causality. This section undertakes another robustness to limit this endogeneity, though we still only claim association in this section.

As discussed earlier, RCs are often deployed in bundles. We exploit how firms bundle RCs to explore the potential wage effects of non-compete clauses (non-competes). In effect, we compare those that impose all four RCs, and those that impose all but the non-competes. As shown in Table 3, these firms are closely aligned on observable characteristics such as labour productivity, firm size, and turnover, suggesting a credible basis for comparison. Because the RC bundles are otherwise identical — with the key distinction being the presence or absence of a non-competes — any observed differences in average wages between the two groups may offer suggestive evidence of the role non-competes play in shaping wage outcomes.

We estimate the following regression model for this sub-sample of firms:

$$\log w_{it} = \beta_0 + \beta_1(\text{"All RC including NC"}) + +X_{it}\Gamma + \gamma_s + \delta_t + \epsilon_{it} \quad (1)$$

where "All RC including NC" is a binary variable that is equal to 1 if a firm uses all RCs and 0 if a firm uses all RCs except for non-competes. In this comparison, we only keep firms that either have all 4 RCs or firms that have all RCs except for non-competes.

If non-competes are associated with higher wages, we expect a positive coefficient on this variable, indicating that when firms go from 3 RCs (that doesn't include non-competes) to 4 RCs, employees get compensated for using a non-competes. In other words, we expect the presence of non-competes to correspond with higher compensation, consistent with the idea that firms should offer higher wages to offset the mobility restrictions imposed by non-competes.

The coefficient on the relevant variable "All RCs including NC" is positive but statistically insignificant across all columns, confirming our previous results that employees typically do not get compensated for signing a non-competes.

Table 8: Difference in firms' wage between firms with all RCs and those with all except non-competes

	All firms All years	All firms 2022 & 23	SME All years	SME 2022 & 23	Large All years	Large 2022 & 23
All RCs including NC	0.02	0.04	0.02	0.04	0.00	0.03
	(0.03)	(0.04)	(0.03)	(0.04)	(0.02)	(0.03)

Full-time equivalent hours (lagged)	0.03***	0.03*	0.03**	0.03	0.04***	0.03**
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
Log of capital expenditure (lagged)	0.00	-0.01	0.00	-0.01	-0.01***	-0.01**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Log of labour productivity (lagged)	0.10***	0.08**	0.10***	0.08**	0.10***	0.06
	(0.02)	(0.03)	(0.03)	(0.04)	(0.02)	(0.04)
Constant	10.86***	11.08***	10.88***	11.10***	10.30***	10.96***
	(0.24)	(0.33)	(0.24)	(0.34)	(0.32)	(0.51)
Observations	4,209	1,794	2,344	1,028	1,865	766
R-squared	0.33	0.38	0.33	0.38	0.47	0.46
Industry FE at 2 digits	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: BLADE analysis by Treasury. Each column incorporates industry and time fixed effects

Effect of omitted variable bias on the relationship between non-competes and wages

Another robustness that we undertake is to assess how sensitive our findings are to unobserved confounders, using the DMP method (Diegert, Masten, and Poirier (2023)), which is specifically designed to gauge how much omitted variables might affect our estimates. The DMP method is also used by Olivo-Villabrille and Breunig (forthcoming) on their study of competitive restraints. For more details on the methodology, please refer to the original paper.

The DMP approach creates bounds around our estimated effect, showing how the relationship between non-competes use and wages would change under different assumptions about unobserved influences. At the heart of the method is a sensitivity parameter r_X, which benchmarks how strong the selection on unobservables would need to be relative to the selection on observables (such as firm size, capital expenditure, or industry), to explain away the estimated association between non-competes and wages.

- If $r_X = 0$ this assumes no bias from unobserved confounders.
- As r_X increases, we assume unobservable factors are progressively more important.

A key output is the breakdown value, the r_X value at which the lower bound of the estimated positive association between non-competes and wages would cross zero, indicating a reversal of the observed relationship.

The value of r_X is used to calculate an upper and lower limit (a bias factor) for our coefficient of interest. If the relationship crosses zero (i.e. reverses signs) at r_X values very close to zero, then the estimated relationship is highly sensitive to omitted variables bias (that, is even when we assume that observable factors are not very important).

As shown in Table 9, the breakdown value for the effect of non-competes on wages is low (0.04). This means that even a small influence from unobserved confounders could overturn the positive wage effect associated with non-competes. Similarly, we don't find a robust negative effect.

Overall, this analysis suggests that the positive relationship between non-competes and wages is highly sensitive to unobserved confounding, and we cannot conclude that firms that use non-

competes are associated with a wage premium. We do not find any evidence of a negative association. This lines up with our previous results, showing that there is no compelling evidence that wages are positively associated with non-competes.

Table 9: Treatment effect bounds of non-competes on firms' average wage (all years, all firms)

$\bar{r}_X, \beta_r > 0$	Lower bound	Upper bound
0.00	0.04	0.04
0.08	-0.04	0.13
0.15	-0.13	0.22
0.23	-0.23	0.32
0.30	-0.34	0.43
0.38	-0.48	0.57
0.46	-0.67	0.76
0.53	-0.99	1.08
0.61	-1.86	1.95
Breakdown: 0.04	0.000	0.088

Time invariant nature of RCs

If RC adoption reflects deeper, stable characteristics of firms — such as business models or strategic orientation — we would expect them to correlate with time-invariant firm-level wage determinants. In essence, we want to know whether RCs are associated with firm wages, even after netting out a range of time-varying firm characteristics.

This matters because, for RC usage to be theoretically associated with economic benefits, this usage should be responsive to the firm's circumstances — for example, productivity levels or changes in productivity, size etc. If RC usage is not fully explained by these observable traits, examining the link between time-invariant firm attributes and RC usage helps reveal whether the decision to implement RCs reflects deeper structural firm characteristics — such as organisational culture, managerial strategy, firm habits or historical HR practices — that shape wage and non-competes policies over time. Specifically, we estimate whether time-invariant firm characteristics — captured via firm-level fixed effects from a wage and FTE regressions (Table 10) — are associated with the presence of RCs.

To examine the relationship between time invariant firm characteristics and the presence of RC, we first estimate an OLS regression using firm-level data. The dependent variable in this regression is the logarithm of average wages, which we regress on key firm characteristics: turnover growth, the lag of the logarithm of labour productivity (LP), and the lag of the logarithm of FTE. Additionally, we control for time-fixed effects and industry-fixed effects to account for macroeconomic fluctuations and industry-specific wage determinants. The regression specification is as follows

$$log(wage)_{i,t} = \beta_1 Turnover.Growth_{i,t-1} + \beta_2 \log(LP)_{i,t-1} + \beta_3 \log(\mathrm{FTE})_{i,t-1} + \gamma_t + \delta_j + \varepsilon_{it}$$

Where γ_t represents time-fixed effects, δ_j represents industry-fixed effects, and ε_{it} is the error term.

Following this estimation, the firm-specific fixed effects from the regression are extracted. These fixed effects capture time-invariant characteristics of firms that influence wages but are not directly observable in the data. To explore the relationship between these firm-specific attributes and the use of RCs, we then regress the extracted firm fixed effects on the presence of RCs:

$$Firm\ FE_i = \ \alpha + \ \mu\sum Rc_i + J_i$$

Where Firm FE are extracted from the equation above, and $\mu\sum Rc_i$ control for all the RCs and J_i is an error term.

Table 10: Relationship between firms' time invariant characteristics and RCs

	Model 1	Model 2	Model 1	Model 2
Dependent variable in 1st stage	Log of average wage	Log of average wage	Log of full-time equivalent employees	Log of full-time equivalent employees
	$\log w_{it}$	$\log w_{it}$	$\log fte_{it}$	$\log fte_{it}$
Control variables in 1st stage	All	Excluding $\Delta turnover_{it}$	Excluding $\log fte_{it-2}$	Excluding $\Delta turnover_{it}, \log fte_{t-2}$
NDA	0.01*	0.01	1.25***	1.29***
	(0.01)	(0.01)	(0.06)	(0.06)
NC	0.05***	0.02**	0.24***	0.31***
	(0.01)	(0.01)	(0.07)	(0.07)
NSC	-0.01	0.01	-0.52***	-0.53***
	(0.01)	(0.01)	(0.08)	(0.08)
NSW	0.05***	0.06***	0.98***	0.95***
	(0.01)	(0.01)	(0.08)	(0.08)
Constant	-0.04***	-0.04***	-1.25***	-1.28***
	(0.01)	(0.01)	(0.04)	(0.04)
Observations	9,552	9,607	9,552	9,607
R-squared	0.02	0.01	0.11	0.11
Industry FE at 2 digits	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: BLADE analysis by Treasury. Each column incorporates industry and time fixed effects

The results indicate that RCs are statistically significant in explaining firm fixed effects. This suggests that the use of RCs is systematically associated with time-invariant firm characteristics. One interpretation of this finding is that certain types of firms are inherently more likely to implement RCs, potentially due to their business model, workforce composition, or strategic considerations. Alternatively, the presence of RCs may actively shape a firm's long-term behaviour. Therefore, we can say that there is a time invariant nature of RCs in Australia.

This analysis strengthens the policy relevance of our findings: it suggests that some firms — or segments within certain industries — may systematically rely on restrictive clauses as a core feature of their wage-setting architecture. This may be driven either by a strategic intent to limit competition in their market area, by management practices, firm level habits or by the routine inclusion of non-compete clauses in employment contracts, thereby constraining worker mobility by default. In either case, the findings point to a potential role for regulatory intervention, and suggest that policy design could consider these deeper, structural drivers of RC usage.

6. Policy implications based on the results

This paper shows that there is a clear rationale for government intervention on non-compete policy, based on several grounds. First, while the framework of the paper demonstrates that firms should

compensate workers for the mobility restrictions imposed by non-competes, the empirical analysis finds no systematic associated evidence that such compensation occurs in practice.[3] This potentially suggests that there might be a substantial wage compensation missing for a large segment of workers.

Second, the framework highlights how market failures — particularly those stemming from bargaining power imbalances and information asymmetries — can result in welfare losses for large segments of the workforce, especially among more vulnerable workers.

Third, the prevalence of non-competes in non-innovative, low-productivity firms suggests that many clauses are not being used to protect trade secrets or firm-specific investments but may instead be aimed at reducing staff turnover — often without corresponding compensation. In some of these cases, non-competes may even be used for anti-competitive purposes.

Further, we find some evidence that smaller firms may be applying non-competes in a blanket fashion — potentially to minimise contracting costs — rather than tailoring their use to specific roles.

Finally, we find that non-competes usage reflects persistent, time-invariant firm characteristics, suggesting that some employers embed non-competes into business models or organisational practices rather than designing the clause based on the specific features of the job. This blanket approach to non-compete usage within a firm weakens the case for relying on market discipline or private contracting alone to ensure efficient use. Taken together, these findings suggest scope for a targeted regulatory intervention.

7. Conclusion

How to regulate non-compete clauses has become a pressing policy question across OECD economies. In settings where non-competes are widespread but weakly justified, are workers adequately protected? And could governments play a more active role in regulating or restricting non-competes where their economic rationale is unclear? As several countries consider regulatory action, this paper provides timely evidence from Australia to inform that debate.

New data has revealed that non-competes are more pervasive than previously understood and have a high prevalence in sectors with little evidence of trade secrets or firm-specific capital. In parallel, a growing body of research has documented their potential to impact workers' welfare, limit mobility, and distort market competition.

Guided by a tractable framework, this paper demonstrates that non-competes reduce worker welfare through reduced mobility and, consequently, should be accompanied by compensating wage differentials, i.e. a wage premium. The framework also lists market failures such as asymmetric bargaining power, incomplete information and additional administrative costs are likely to constrain workers from getting compensated for lost mobility due to non-competes.

Empirically, this paper explores the impact of non-competes on Australian wages, using linked survey and administrative data. Across multiple samples and estimation strategies — including comparisons of firms with and without non-competes, coverage-based analyses, different samples and sensitivity checks — the paper finds no systematic evidence that non-competes are associated with a wage

3 This general finding is not inconsistent with compensation being paid for non-competes in some industry settings. For example, it is well documented that firms in the financial services sector expressly provide compensation for the non-compete lay-off periods in their employment contracts. See: Australian Financial Markets Association; Managed Funds Association, *Submissions to the Competition Review's Issues Paper*, 2024.

premium. While non-competes may be linked to higher wages in a subset of high-productivity firms, for most workers, these clauses appear to restrict labour market mobility without any clear positive association with wages.

Data disclaimer The following data disclaimer should be noted: the results of these studies are based, in part, on Australian Business Registry (ABR) data supplied by the Registrar to the ABS under A New Tax System (Australian Business Number) Act 1999 and tax data supplied by the Australian Taxation Office (ATO) to the ABS under the Taxation Administration Act 1953. These require that such data are only used for the purpose of carrying out functions of the ABS. No individual information collected under the Census and Statistics Act 1905 is provided back to the Registrar or ATO for administrative or regulatory purposes. Any discussion of data limitations or weaknesses is in the context of using the data for statistical purposes and is not related to the ability of the data to support the ABR's or the ATO's core operational requirements. Legislative requirements to ensure privacy and secrecy of these data have been followed. Only people authorised under the Australian Bureau of Statistics Act 1975 have been allowed to view data about any particular firm in conducting these analyses. In accordance with the Census and Statistics Act 1905, results have been confidentialised to ensure that they are not likely to enable identification of a particular person or organisation.

Bibliography

Australian Bureau of Statistics. (2023, August). Employee earnings and Hours. ABS. https://www.abs.gov.au/statistics/labour/earnings-and-working-conditions/employee-earnings/latest-release.

Australian Government Treasury and e61 Institute, *Non-compete clauses—prevalence, impact and policy implications: Summary of Treasury–e61 Institute Joint Webinar* (webinar summary, 18 October 2023).

Alves, Julian, Bruno Serra, Jason Greenberg, Yaxin Guo, Ravija Harjai, and John Van Reenen. 2024. 'Labour market power: New evidence on Non-Compete Agreements and the effects of M&A in the UK', *Centre for Economic Performance*.

Andrews, Dan, and Bjorn Jarvis. 2023. *The ghosts of employers' past: how prevalent are non-compete clauses in Australia?*. e61 Institute.

Aydinliyim, Lauren E., 2020. 'The case for ethical non-compete agreements: executives versus sandwich-makers', *Journal of Business Ethics*.

Balasubramanian, Natarajan, Jin Woo Chang, Mariko Sakakibara, Jagadeesh Sivadasan, and Evan Starr. 2022. 'Locked In? The Enforceability of Covenants Not to Compete and the Careers of High-Tech Workers', *The Journal of Human Resources*.

Balasubramanian, Natarajan, Evan Starr, and Shotaro Yamaguchi. 2024. 'Employment restrictions on resource transferability and value appropriation from employees.' *Strategic Management Journal*.

Baslandze, Salomé. 2022. 'Entrepreneurship through employee mobility, innovation, and growth', *Working Paper, No. 2022-10, Federal Reserve Bank of Atlanta*.

Becker, Gary S., 1964. *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*.

Boeri, Tito, Andrea Garnero, and Lorenzo G. Luisetto. 2024. 'Noncompete agreements in a rigid labor market: the case of Italy', *The Journal of Law, Economics, and Organization*.

Buckley, Jack, Ewan Rankin and Dan Andrews. 2024. 'Non-compete clauses, job mobility and wages in Australia', *e61.*

Coad, Alex, and Werner Hölzl. 2012. 'Firm growth: empirical analysis.' *Handbook on the Economics and Theory of the Firm*.

Coad, Alex, and Rekha Rao. 2008. 'Innovation and firm growth in high-tech sectors: A quantile regression approach.' *Research policy*.

Diegert, Paul, Matthew A. Masten, and Alexandre Poirier. 2022. 'Assessing omitted variable bias when the controls are endogenous.' *arXiv preprint*.

Federal Trade Commission. 2024. 'Non-Compete Clause Rule'.

He, Zhaozhao. 2025, 'Non-compete agreements, innovation value and efficiency'. *Journal of Corporate Finance*.

Garmaise, Mark J. 2011. 'Ties that truly bind: Noncompetition agreements, executive compensation, and firm investment.; *The Journal of Law, Economics, & Organization*.

Gopal, Bhargav, Xiangru Li, and Luke Rawling. 2025. 'Do non-compete agreements help or hurt workers? Evidence from the NLSY97'. Preliminary paper

Johnson, Matthew S., Kurt J. Lavetti, and Michael Lipsitz. 2023. 'The labor market effects of legal restrictions on worker mobility', *National Bureau of Economic Research*.

Johnson, Matthew S., Michael Lipsitz, and Alison Pei. 2023. 'Innovation and the enforceability of noncompete agreements', *National Bureau of Economic Research*.

Krueger, Alan B., and Orley Ashenfelter. 2022. 'Theory and evidence on employer collusion in the franchise sector.' *Journal of Human Resources*.

Lavetti, Kurt, Carol Simon, and William D. White. 2020. 'The impacts of restricting mobility of skilled service workers', *The Journal of Human Resources*.

Leigh, Andrew. 2024. 'Unshackling innovation: rethinking non-compete clauses for a dynamic economy: Address to the McKell Institute, Sydney'.

Lipsitz, Michael, and Evan Starr. 2022. 'Low-Wage Workers and the Enforceability of Noncompete Agreements', *Management Science*, 68.

Majeed, Omer, Antonio Balaguer, David Hansell, Luke Hendrickson, Abasi Latcham, and Tessa Satherley. 2021. 'What drives high growth? Characteristics of Australian firms.' *Economic*.

Majeed, Omer, and Robert Breunig. 2023. 'Determinants of innovation novelty: evidence from Australian administrative data.' *Economics of Innovation and New Technology*.

Marx, Matt. 2022. 'Employee Non-compete Agreements, Gender, and Entrepreneurship', *Organization Science*, 33.

Marx, Matt, and Fleming, Lee. 2012. 'Non-compete agreements: Barriers to entry… and exit?', *Innovation Policy and Economy*.

Mueller, Clemens. 2022. 'How reduced labor mobility can lead to inefficient reallocation of human capital'.

Olivo-Villabrille, Miguel, and Robert Breunig. Forthcoming. 'The relationship between competitive restraints, R&D activity, and productivity'.

Reinmuth, Kate, and Emma Rockall. 2023. 'Protect or Prevent? Non-Compete Agreements and Innovation'.

Rothstein, Donna, and Evan Starr. 2022. 'Noncompete agreements, bargaining, and wages', *Monthly Labor Review*.

Shi, Liyan. 2023. 'Optimal Regulation of Noncompete Contracts', *Econometrica*, 91.

Starr, Evan, Natarajan Balasubramanian, and Mariko Sakakibara. 2018. 'Screening Spinouts? How Noncompete Enforceability Affects the Creation, Growth, and Survival of New Firms', *Management Science*, 64.

Starr, Evan, James J. Prescott, and Norman Bishara. 2020. 'The behavioral effects of (unenforceable) contracts.', *The Journal of Law, Economics, and Organization*, 36.

———. 2021. 'Noncompete agreements in the US labor force.', *The Journal of Law and Economics*, 64.

Suresh, Marcus, Ronnie Taib, Yanchang Zhao, and Warren Jin. 2020. *Sharpening the BLADE: Missing Data Imputation using Supervised Machine Learning*, Department of Industry Science, Energy and Resources.

Varian, Hal R., 2009. *Intermediate Microeconomics: A Modern Approach*.

Young, Samuel. 2021. 'Noncompete clauses, job mobility, and job quality: Evidence from a low-earning noncompete ban in Austria'.

Appendix

Firm's characteristics for key restraint clause bundles

Table A1: Firm characteristics for key restraint clause bundles

	All RC except NC	All including NC
Count	170	791
Labour productivity ($AUD)		
Mean	378,811	559,274
Median	202,097	262,271
Standard deviation	479,798	1,096,855
Average wage ($AUD)		
Mean	165,778	98,328
Median	70,414	80,258
Standard deviation	1,112,811	163,946
Full-time equivalent workers		
Mean	678	1,098
Median	94	112
Standard deviation	1,947	3,179

Note: Table shows summary statistic for the sub-sample of firms who used all 4 clauses (col2) and those who used all except non-competes (col1). Firms using all restraint clauses exhibit higher median labour productivity ($262,271) than firms that exclude non-competes ($202,097). This suggests that firms implementing non-competes, alongside other restraint clauses, on average tend to be more productive than those that do not. Similarly, firms that impose all restraint clauses report a higher median wage ($80,258) than firms that impose the other restraint clauses excluding non-competes ($70,414). However, these labour productivity gains and wage premia are not uniform, as dispersion is high across all groups.

Restraint clauses and wage growth

To examine whether restrain clauses are associated with wage growth, we repeat the regression (1) with the one-year growth in firms' average wages as the independent variable instead of log average wages.

11Table A2: Relationship between firms' wage growth and RCs

	All firms All years	All firms 2022 & 23	SME All years	SME 2022 & 23	Large All years	Large 2022 & 23
NDA	0.02	0.03*	0.02	0.03*	0.02	-0.01
	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
NC	0.01	0.02	0.01	0.02	-0.02	0.00
	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
NSC	-0.03	-0.07	-0.03	-0.07	0.01	-0.01
	(0.02)	(0.05)	(0.02)	(0.05)	(0.02)	(0.02)

NSW	0.02	0.03	0.02	0.03	-0.01	0.01
	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)
Log of full-time equivalent hours (lagged)	0.00	0.00	0.01	0.00	0.04**	-0.00
	(0.00)	(0.01)	(0.00)	(0.01)	(0.02)	(0.01)
Log of capital expenditure (lagged)	-0.00	-0.00	-0.00	-0.01	-0.00	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Log of labour productivity (lagged)	-0.02***	-0.01	-0.02***	-0.01	-0.05***	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Constant	0.25***	0.11	0.25***	0.12	0.47***	0.23
	(0.08)	(0.12)	(0.08)	(0.12)	(0.15)	(0.17)
Observations	12,358	5,302	8,486	3,696	3,872	1,606
R-squared	0.03	0.04	0.03	0.04	0.08	0.10
Industry FE at 2 digits	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Combined effect of RC1	0.07	0.05	0.07	0.05	-0.12	-0.10

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Except for NDA, we observe no significant association between wage growth and restraint clauses.