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The impact of labour market regulation on the unemployment rate: Evidence from OECD economies

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Abstract

Using data for the OECD economies, this paper investigates the relationship between labour market regulation and the unemployment rate. The results indicate that increasing the flexibility of labour market regulation via reforms can result in reductions in the unemployment rate. This average effect across all OECD member countries, however, is relatively small. Younger labour market participants, those aged 15–24 have more to gain in terms of employment opportunities as a result of flexibility enhancing labour market regulation reforms.

JEL Codes: E24, J53, L51

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Key points

- While labour market flexibility in Australia has declined in recent years, on the whole labour market flexibility in Australia performs relatively well compared to the OECD.
- Within the OECD, improvements in the flexibility of labour market regulation reduce the unemployment rate and the labour underutilisation rate.
- All else being equal, a one unit increase in the normalised labour market flexibility score from the Fraser Institute's Economic Freedom of the World (EFW) index results in a reduction in the unemployment rate by 0.044 percentage points.
- This points to a modest effect across OECD economies, suggesting possibility for incremental reforms rather than large-scale reforms of labour market institutions.
- Improvements in government (bureaucratic) effectiveness also play a modest role in decreasing the unemployment rate across OECD economies.
- Younger labour market participants, those aged 15–24, have more to gain from flexibility enhancing LMR reforms.

1. Introduction

A well-functioning labour market is the cornerstone of a prosperous economy; it performs a crucial role in factor allocation, output creation and income generation. Economists, social scientists and policy makers have contributed to a vast body of literature that seeks to understand and address issues that impact on the performance and efficiency of the labour market. Among these much debated issues is the influence of labour market regulation (LMR) on employment and unemployment. Notably, Bertola¹ and Stähler² argue that strict labour market regulations increase the cost of compliance for employers and reduce the incentives for job creation *and* job destruction. These strict regulations can include aspects such as hiring and firing policies as well as wage controls. In theory, this can lead to higher levels of unemployment in the long run. However, the actual impact of LMRs on employment and unemployment remains ambiguous with no clear consensus within the empirical literature.³

Such a discussion is topical in the Australian context, given recent concerns raised by business surveys that identify the rigidity and complexity of Australia's LMR regime as impediments to business performance. LMR can impact on the ability of businesses and industries to make changes to their labour mix and can therefore impact on their economic performance.

This paper adds to the recent discussion on the issue by providing an overview of LMR in Australia. It also provides an assessment of the relationship between LMR and the unemployment rate for OECD economies. Various socioeconomic factors are identified and controlled for to empirically determine the strength and nature of this relationship. Rationale and common forms of LMR are discussed first, followed by a relative assessment of the flexibility⁴ of LMRs in Australia and other OECD economies.

The core finding of this paper is that increasing the flexibility of LMRs can lead to reductions in the unemployment rate for male and female labour market participants in the OECD, however this effect is very modest. In addition, this paper finds that younger labour market participants (15–24 year olds) stand to benefit more from LMR reforms that increase flexibility.

¹ Bertola G (1990) Job security, employment and wages, *European Economic Review*, 34(4), pp 851–879

² Stähler N (2008) Unemployment and employment protection in a unionized economy with search frictions, *Labour*, 22(2), pp 271–289

³ Ibid.

⁴ Here flexibility implies LMR that does not excessively burden employers by increasing cost of compliance or hinder the ability of firms to make changes to the composition of their labour.

2. The need for and nature of labour market regulation

The need for government regulation of the labour market arises due to the fact that factor markets, such as the market for labour, are seldom perfectly efficient. For example, labour market imperfections such as asymmetric information, differences between private and social benefits, lack of bargaining power and lack of competition can lead to the creation of economic rents which can be exploited.⁵ Often it is employers who are able to extract these rents at the expense of employees. This is due to the fact that the former generally possess more bargaining power and influence than the latter.

Even a perfectly efficient labour market may not be a socially desirable outcome as it may lead to considerably less job security for employees, unsafe working conditions and lower wages. Employers may not consider employee wellbeing in their production decisions and may simply treat labour as another freely traded commodity. To avoid such outcomes the government can regulate certain aspects of the labour market such as wages, occupational health and safety requirements and restrictions on hiring and firing. Such government regulations essentially entail a trade-off between social equity and economic efficiency as they reduce the flexibility afforded to employers by the free market. As such a large part of the debate on government regulation of the labour market revolves around the optimal level and scope of government regulation that balances social equity considerations and economic efficiency.

Research reveals that the breadth and scope of LMR policies across the OECD depends on social norms, levels of economic sophistication and the origin of the legal system. In addition, some forms of regulation are not necessarily codified, implemented or administered by the government. Past market behaviour and expectations from market participants can result in forms of “pseudo regulation”, for example, through collective bargaining agreements, such that the market may be able to correct for certain market failures autonomously. However, most discussion of LMRs relates to policies instituted by the government.

As discussed by Botero et al.⁶ these state backed LMRs can be broadly classified into four categories:

- 1. Framework of basic employment rights** — These relate to policies that govern the basic employer-employee relationship, such as anti-discrimination laws, occupational health and safety laws, requirements to contribute to pension (super) funds, policies that govern maternity leave, payroll taxes and the minimum wage
- 2. Hiring and firing policies** — These include policies that influence employment contracts and the labour mix, such as governing the reliance on short term, non-permanent, or casual labour relative to permanent employees. Policies related to the numbers of hours worked per week also

⁵ Botero JC, Djankov S, La Porta R, et al. (2004) The Regulation of Labor, *The Quarterly Journal of Economics*, November 2004, pp 1339–1382

⁶ Ibid

fall under this category as well as policies that govern the circumstances under which employers can lay off workers

3. **Policies related to unionisation** — These policies enable employees to better represent themselves in negotiations with employers. For example, via government empowerment of freedom of association and or ratification and encouragement of collective bargaining mechanisms
4. **Direct government provision** — This includes forms of social insurance and benefits such as disability and unemployment benefits, pensions and access to job search tools and vocational training programmes. These policies are designed to improve social equity, reduce labour market vulnerability and help reduce frictional employment.⁷

Most countries deploy a mix of these policies although critics of LMRs argue that their use distorts the efficiency of the labour market. For example, it is often argued that the minimum wage raises the price of unskilled labour.⁸ The price floor created by the minimum wage can lead to a surplus of young unskilled labour relative to vacancies; essentially it can drive up youth unemployment as firms try to reduce their reliance on unskilled labour. The presence of a generous minimum wage can also prompt young individuals to forgo education and training in favour of paid work. The argument goes that this can reduce their expected life time earnings due to a lack of specialised training. Therefore, in theory, critics argue that the imposition of a minimum wage can decrease the quantity demanded of unskilled workers to the overall detriment of unskilled labour. However, the economic literature remains divided on the detrimental impacts of the minimum wage. Proponents of minimum wages offer the counter argument that the detrimental employment impacts on the low skilled of minimum wages is entirely theoretical.⁹ Arguing that even if minimum wages have a small negative effect on employment, this is probably insufficient to offset the increase in earnings for those who retain work.

Similar arguments are raised against LMRs related to hiring and dismissal costs. Critics argue that such regulations raise the cost of doing business and the cost of compliance for employers. This acts as a disincentive for employers to create new employment opportunities or to make frequent changes to their labour mix. In essence, the flexibility and economic freedom enjoyed by employers is diminished. Excessively strict or complicated LMRs can prompt noncompliance. This can lead to the creation of a shadow or grey economy such as individuals resorting to accepting cash in hand wages below the minimum wage. Another argument against LMRs is that it can create insiders, individuals who are employed and who enjoy the benefits of LMR, but this

⁷ Frictional employment refers to unemployment caused by the time lag that exists between ending one job and searching for another job that is suitable. The lag exists due to information asymmetries and job search costs. Frictional employment is generally short term.

⁸ For a brief overview of the common critiques refer to Addison JT and Teixeira P (2003) The economics of employment protection, *Journal of Labor research*, 24(1), pp 85–128

⁹ See for example, Card, D., & Krueger, A. B. (2015). *Myth and measurement: the new economics of the minimum wage*. Princeton University Press; Schmitt, J. (2013). Why does the minimum wage have no discernible effect on employment. *Center for Economic and Policy Research*, 22, 1-28

comes at the expense of outsiders, individuals who now find it more difficult to secure employment as a consequence of employer unwillingness to employ more labour. These factors therefore can *potentially* diminish the rights of vulnerable employees, contrary to the LMRs intended objectives and can lead to an increase in the number of discouraged workers.

Ultimately, none but the strictest of orthodox economists would argue against the need for LMRs. Some losses in economic efficiency are tolerable if the trade-off is an increase in social welfare and equity via the use of LMRs. In saying this, there is certainly scope for a discussion around the extent and scope of existing LMRs. This can shed light on whether changes can be made to increase economic freedom and businesses flexibility while still preserving a sufficient level of social welfare.

Therefore, the economically and socially relevant question is not “whether we need LMRs” but rather “what is the optimal mix of LMR that benefits, employers, employees, society and the economy?”

3. Labour market regulation in Australia

The workplace relations system in Australia is administered by the Commonwealth Parliament and the States.¹⁰ The system has its origins in common law and has evolved over time with the pace of revisions and refinements accelerating in the 2000s. The parliamentary library of Australia provides a concise chronological account of the most notable of these developments in recent decades, some of which are listed in Appendix A to this paper.¹¹ Historically Australia's system of industrial and work place relations was dominated by a complex structure of state and federal tribunals that played a central role in determining the process and form of wage determination and employer-employee bargaining.¹²

Since 2009 the *Fair Work Act* has been the key piece of legislation that now forms the core of Australia's workplace relations system.

¹⁰ Except for Victoria which has ceded its powers to the Commonwealth. Commonwealth jurisdiction also extends to the ACT and NT and constitutional institutions.

¹¹ Parliament of Australia website (2015) History of Employment Law, Parliamentary Library - Commonwealth of Australia, viewed 20 July, http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/Browse_by_Topic/employmentlaw/Historyemploymentlaw

¹² Gahan P and Harcourt T (1999) Australian Labour Market Institutions, 'Deregulation' and the Open Economy, *The Economic and Labour Relations Review*, 10(2), pp 296–318 ; Borland J and Woodbridge G (1998) 'Wage Regulation: Efficiency and Fairness', *Fairly Efficient? Equity and Productivity in the Australian Labour Market Conference*, Australian National University, Canberra, Australia

The key elements of the *Fair Work Act* are listed below¹³:

- A safety net of minimum terms and conditions of employment
- A system of enterprise-level collective bargaining underpinned by bargaining obligations and rules governing industrial action
- Provisions for individual flexibility arrangements as a way to allow an individual worker and an employer to make flexible work arrangements that meet their genuine needs, provided that the employee is better off overall
- Protections against unfair or unlawful termination of employment
- Protection of the freedom of both employers and employees to choose whether or not to be represented by a third party in workplace matters and the provision of rules governing the rights and responsibilities of employer and employee representatives.

Additionally the current workplace relations regime has safeguards in place to prevent racial and sexual harassment in the workplace, while also ensuring employee health and safety. Practical issues related to application of and compliance with workplace laws is overseen by the Fair Work Commission and the Fair Work Ombudsman. The States also have their own set of workplace legislation (in addition to federal legislature), with the notable exception of Victoria. As outlined by the Productivity Commission, in 2015 around 12 million people were employed in Australia, of which 70 per cent were covered directly by federal LMRs.¹⁴

3.1 The influence of awards on the Australian labour market

A unique aspect of Australia's workplace relations system is its reliance on awards. The recent review of Australia's workplace relations system by the Productivity Commission (PC) provides a discussion of the role of awards in the Australian labour market.¹⁵ Awards are formally defined as regulations that govern minimum wages, penalty rates and the conditions of work. Traditionally awards were codified in detailed and complex legal documents and at the peak of their use there were over 5,000 awards in effect in Australia. Since then their use has waned and awards have been simplified and their number greatly reduced under the system of Modern Awards, so that in 2015 there were only 122 awards in effect.

As pointed out by the PC, while their use has declined, awards remain an important aspect of the Australian workplace relations system. In terms of coverage, most employees in Australia have their minimum wage determined

¹³ Department of Employment website (2015) Australia's National Workplace Relations System, Department of Employment. Commonwealth of Australia, viewed 21 July, <http://www.employment.gov.au/australias-national-workplace-relations-system>

¹⁴ Productivity Commission (2015b) *Workplace Relations Framework, Overview*, Canberra, Productivity Commission, Commonwealth of Australia

¹⁵ Productivity Commission (2015a) *Workplace Relations Framework, Draft Report* Canberra, Productivity Commission, Commonwealth of Australia

by awards although in application awards now apply to a smaller proportion of the Australian workforce as more workers can command higher market wages. Workers that directly rely on awards are more common in sectors such as Accommodation and Food Services, Administrative and Support Services, Retail Trade, and Health Care and Social Assistance. The direct application of awards is more prevalent in small to medium enterprises; an Australian worker receiving award wages is more likely to be female and young. Beyond their direct application, awards are used as instruments for wage settings, dispute resolution, and benchmarks for enterprise and individual bargaining agreements. Like other aspects of Australia's workplace relations system, awards are determined and enforced by the Fair Work Commission, which reviews current awards every four years to assess whether they need revision in light of changing labour market dynamics.

3.2 Australian LMR relative to other advanced economies

Apart from a slight deviation from trend between 1993 and 1996, the level of employment protection afforded by the LMR regime to Australian employees has been remarkably consistent since the 1970s.¹⁶ Compared to other common law economies such as the United States and the United Kingdom, the level of employment protection in Australia is moderate; with the level of aggregate protection roughly at the same level as the UK and much higher than the US. However, in terms of employment protection, countries with a common law origin, such as Australia, generally rank lower than countries with a civil law origin such as France, Germany, Italy and Spain.

The overall assessment of Mitchell et al. was that labour laws in Australia have not disproportionately affected workers. However, they do note that casual workers enjoy relatively less protection from unfair dismissals or redundancy. Furthermore, they assessed that the workplace relations system in Australia provides moderate levels of employment protection, though is characterised by high levels of government intervention especially in regards to wage regulation¹⁷, and especially awards rates. While Australia's awards system has been progressively simplified over the years, yet it is still relatively inflexible and suffers from ambiguity resulting in unclear interpretation of awards for employers, employees and legislators.¹⁸

The impact of LMRs on employers in Australia has been disproportionate as well. Small and medium enterprises (SMEs) generally have less resources and expertise at their disposal and report greater difficulties in complying with LMRs in Australia.¹⁹

¹⁶ Mitchell R, Gahan P, Stewart A, et al. (2010) The evolution of labour law in Australia: Measuring the change, *Australian Journal of Labour Law*, 23(2), pp 61–93

¹⁷ Ibid.

¹⁸ Productivity Commission (2015b) *Workplace Relations Framework, Overview*, Canberra, Productivity Commission, Commonwealth of Australia

¹⁹ The Australian Industry Group (2014) *National CEO Survey: Burden of Government Regulation*, Sydney NSW, The Australian Industry Group, p 13

Survey results from 2014 by the Australia Industry Group (AIG) and the Australian Chamber of Commerce and Industry (ACCI) are able to provide further insight. For instance, 83 per cent of participants surveyed voiced concerns regarding the regulatory burden and a lack of flexibility in the Australian workplace relations system. Rigidity and complexity of LMRs such as health and safety policies and workplace relations were identified as areas of concern. Surveyed businesses and CEOs were of the opinion that the regulatory burden had increased in the preceding months and that regulations in Australia were overly complex. Surveyed industries were of the opinion that there had been an increase in time and resources devoted to compliance with LMRs and less time focused on core business activities. In addition, the results from the ACCI survey suggested that businesses were not always able to pass on higher costs of compliance to consumers. Therefore, profits and prospects of further growth were perceived to have diminished.

While useful as a tool to establish business opinions and attitudes; such surveys can be susceptible to subjectivity and issues such as small sample sizes and selection biases. Therefore, the results of these surveys are best discussed in a broader context as only one possible assessment of the state of LMR in Australia, rather than as a definitive assessment.

Keeping this subjectivity of LMR assessment in mind, Australia's LMR can also be discussed in an international context. Overall, Australia performs favourably in rankings of economic freedom. For example, in 2014 the World Bank ranked Australia as the 10th best economy in the world for doing business.²⁰ Similarly, the World Economic Forum (WEF) and the Fraser Institute provided a favourable overall assessment of the Australian economy.

However, the WEF and the Fraser Institute indicate that Australia lags behind in terms of LMR flexibility. The Fraser Institute ranks Australia 73rd out of 152 countries assessed in terms of quality and flexibility of labour regulation. In terms of labour market performance, the WEF ranks Australia even lower at 124th out of 144 countries assessed, citing regulatory complexity and the burden of labour regulations as impediments to conducting business in Australia.

Within OECD economies Australia makes the top 10 list in terms of quality and flexibility of labour market regulation.²¹ Table 3.1 and 3.2 report the ten highest ranked OECD economies in terms of quality and flexibility of labour regulation.²² The ranks are based on normalised scores calculated using data

²⁰ World Bank (2014) *Doing business 2015: Going beyond efficiency*, Technical report, the World Bank

²¹ International rankings of labour markets and labour market regulations such as those conducted by the Fraser Institute and the OECD place emphasis on not only the absolute number of LMRs but also their rigidity, scope and impact on ease of doing business.

²² The ranks were computed by the author using the average normalised index rankings for the period 2000–2012. The raw index scores were sourced from the OECD and the Fraser Institute.

from the Fraser Institute's Labour Regulation Index and the OECD's Employment protection legislation (EPL) index.

Table 3.1: Average flexibility of labour market regulation 2000–12 — Fraser Institute

<i>Rank</i>	<i>Country</i>	<i>Average Score</i>
1	United States	1
2	New Zealand	0.85
3	United Kingdom	0.85
4	Japan	0.84
5	Canada	0.84
6	Switzerland	0.75
7	Iceland	0.75
8	Australia	0.74
9	Ireland	0.69
10	Czech Republic	0.67

Notes: Based on average scores for the period 2000–2012. Higher values signify more flexibility, values range between 0 and 1.

Source: Fraser Institute – Economic Freedom of the World (EFW) index

Table 3.2: Average flexibility of labour market regulation 2000–12 — OECD

<i>Rank</i>	<i>Country</i>	<i>Average Score</i>
1	United States	1
2	New Zealand	0.97
3	Canada	0.82
4	United Kingdom	0.76
5	Australia	0.70
6	Ireland	0.69
7	Chile	0.65
8	Japan	0.63
9	Finland	0.62
10	Israel	0.60

Notes: Based on average scores for the period 2000–2012. Higher values signify more flexibility, values range between 0 and 1.

Source: OECD Employment Protection Legislation (EPL) index

The OECD's EPL index ranks Australia's LMR flexibility higher at fifth place. The difference in Australia's rank between the indexes compiled by the Fraser Institute and the OECD is largely due to a difference in methodology, weighting and scope. The OECD EPL is narrower in scope and relies more heavily on quantitative data on LMRs, whereas the Fraser Institute's EFW index relies on

a mixture of quantitative and qualitative data such as survey results. Other assessments of the labour market such as those provided by the WEF lean further towards qualitative data and rank Australia even lower in terms of flexibility of the labour market. The lack of methodological consensus on how these indices are constructed and the nature and scope of qualitative and quantitative information considered means that there is no definitive source for the international assessment of LMR. However the use of one or more of the above stated indices is common in the economic literature on LMR.

The two rankings presented in Table 3.1 and 3.2 would suggest that in recent years the scope and rigidity of LMRs in Australia has been moderate relative to other OECD members. However, perceptions do not always match reality. The *de jure* strictness and impact of LMRs on businesses (as captured by quantitative measures, such as stock or counts of legislation) can be markedly different from the *de facto* impacts.²³ Essentially some LMRs can be stricter to comply with in practice than they are on paper, however, the inverse is also possible.

The above discussion and ranking of LMR illustrates two important caveats. First, any attempt to rank LMR is prone to subjectivity, and second, there can be a discontinuity between the perceptions of LMR strictness, from diverse stakeholders such as policy makers, supranational organisations, employers and employees. As such while relative rankings are useful, these caveats must also be considered.

Figure 3.1 further reveals that in recent years the flexibility of Australia's LMR, as determined by various independent organisations, has declined. Post 2009 there has been a persistent and pronounced deterioration in global perceptions of Australia's LMR flexibility. The discussion of this section therefore illustrates that while the LMR regime in Australia ranks well relative to other OECD economies, given the recent reductions in Australia's LMR flexibility score, there is scope to assess whether additional LMR reforms would be beneficial for the labour market by increasing LMR flexibility.

²³ Feldmann H (2009) The effects of hiring and firing regulation on unemployment and employment: evidence based on survey data, *Applied Economics*, 41(19), pp 2389–2401

Figure 3.1: Australia — Flexibility of labour market regulation in recent years



Notes: Normalized values - Higher values signify more flexibility

Source: Chart based on normalised LMR flexibility scores from the Heritage Foundation, Fraser Institute, and the OECD

4. Existing empirical research on labour market regulation

The majority of the analysis on LMR and its impacts on the economy occurs at the macroeconomic level and involves cross country comparisons. There are two major reasons for this. First, changes in regulation do not occur frequently. From an empirical perspective this results in time series data that lacks variability. Second, most assessments of regulation such as those provided by the OECD and the Fraser Institute are only available at the country level, resulting in limited scope for micro analysis. As such most recent literature uses panel data estimation to compare the variability across countries for country groupings such as the OECD.

The empirical literature on the impact of LMR on economic indicators such as the unemployment rate and other benchmarks such as trade, productivity, innovation, and entrepreneurship, remains divided. Authors such as

Feldmann²⁴, Addison and Teixeira²⁵, Debrun²⁶, Stähler and Botero et.al²⁷ established a statistically significant relationship between the rigidity and strictness of LMR and increases in the unemployment rate, especially its structural component.²⁸ Concluding that stricter regulation of labour can lead to increases in the unemployment rate, especially for younger labour market participants.

The subject has also received attention in Australia, Gahan and Harcourt²⁹ reviewed existing empirical literature on LMRs, and concluded that Australian labour market institutions had little effect on efficiency and labour market flexibility. Rather labour market institutions played a key role in making the Australian labour market more equitable in terms of income distribution. Gahan and Harcourt therefore argued that extensive deregulation of the Australian labour market could lead to an increase in inequality in the labour market without an increase in economic efficiency.

The analysis of Colombo, Cunningham and Garcia³⁰ using Australian data suggested that regulation has a tendency to reduce job creation and contribute to job destruction. However, the authors take a much broader approach. They did not differentiate or disaggregate the effect of different types of regulations such as LMR, financial regulation, health and safety regulation on employment.

Elsewhere authors such as Loayza et.al³¹ established a negative relationship between the rigidity of LMR and rates of aggregate economic growth. Busse

²⁴ Ibid.

²⁵ Addison JT and Teixeira P (2003) The economics of employment protection, *Journal of Labor research*, 24(1), pp 85–128

²⁶ Debrun X (2003) 'Unemployment and Labor Market Institutions: Why Reforms Pay Off', *World Economic Outlook*, pp 129–150

²⁷ Stähler N (2008) Unemployment and employment protection in a unionized economy with search frictions, *Labour*, 22(2), pp 271–289; Botero JC, Djankov S, La Porta R, et al. (2004) The Regulation of Labor, *The Quarterly Journal of Economics*, November 2004, pp 1339–1382

²⁸ Botero JC, Djankov S, La Porta R, et al. (2004) The Regulation of Labor, *The Quarterly Journal of Economics*, November 2004, pp 1339–1382

²⁹ Gahan P and Harcourt T (1999) Australian Labour Market Institutions, 'Deregulation' and the Open Economy, *The Economic and Labour Relations Review*, 10(2), pp 296–318

³⁰ Colombo L, Cunningham B and Garcia U (2015) Exploratory research into government regulation's impact on business-level employment growth, *Australian Journal of Labour Economics*, 18(3), p 375

³¹ Loayza N, Oviedo AM and Servén L (2004) Regulation and macroeconomic performance, *World Bank Policy Research Working Paper*, (3469)

and Hefeker³² and Bolaky and Freund³³ illustrated that rigidity of LMR can reduce the benefits from international trade. Van Stel et.al³⁴ reported evidence that revealed that stricter regulation of working hours and hiring and firing costs can reduce the rates of nascent entrepreneurship.

However, a notable proportion of empirical literature offers mixed or no evidence of any negative impact of LMR on aspects of economic growth. Part of the reason for a lack of consensus and ambiguity in the empirical literature is the difficulty of observing a counterfactual (a labour market with no regulations at all) and the realisation that existing economic models of employment at best provide an approximation of labour dynamics.³⁵ For example the work of Morgenstern et.al suggests that LMR has a neutral or modestly beneficial impact on employment. Goldschlag and Tabarrok³⁶ concluded that regulation, including LMR, had no adverse effects on rates of entrepreneurship in the US. Elsewhere, authors such as, Lazear, Addison and Grosso, Scarpetta, Cohen et.al and Taymaz³⁷ report mixed or inconclusive results regarding the detrimental effect of LMR on economic growth and unemployment.

The lack of a clear academic consensus suggests that the impact of LMR on macroeconomic factors such as the unemployment rate cannot be established *a priori*. Rather the literature reviewed suggests that the effect is contextual and that the impact of LMR may vary by the type of economy, the time horizon for the analysis and the state of the business cycle.

³² Busse M and Hefeker C (2009) Trade, labour market regulations and growth, *Applied Economics Letters*, 16(8), pp 809–812

³³ Bolaky B and Freund CL (2004) Trade, regulations, and growth, *World Bank Policy Research Working Paper*, (3255)

³⁴ Van Stel A, Storey DJ and Thurik AR (2007) The effect of business regulations on nascent and young business entrepreneurship, *Small Business Economics*, 28(2-3), pp 171–186

³⁵ Gahan P and Harcourt T (1999) Australian Labour Market Institutions, 'Deregulation' and the Open Economy, *The Economic and Labour Relations Review*, 10(2), pp 296–318

³⁶ Goldschlag N and Tabarrok AT (2014) Is Regulation to Blame for the Decline in American Entrepreneurship?, *Available at SSRN 2559803*,

³⁷ Lazear EP (1990) Job security provisions and employment, *The Quarterly Journal of Economics*, pp 699–726; Addison JT and Grosso JL (1996) Job security provisions and employment: Revised estimates, *Industrial Relations: A Journal of Economy and Society*, 35(4), pp 585–603; Scarpetta S (1996) Assessing the role of labour market policies and institutional settings on unemployment: A cross-country study, *OECD Economic studies*, 26(1), pp 43-98; Cohen D, Lefranc A and Saint-Paul G (1997) French unemployment: Why France and the USA are alike, *Economic Policy*, 12, pp 265–291; Taymaz E (2009) Labor market institutions and industrial performance: an evolutionary study, *Schumpeterian Perspectives on Innovation, Competition and Growth*, Springer, pp 207–222

5. Labour market regulation and the unemployment rate

This paper attempts to assess the relationship between LMR flexibility and the unemployment rate. Adopting a similar empirical methodology to Busse and Hefeker³⁸ and Feldmann³⁹, this paper uses panel data over the period 2000–2012⁴⁰ for OECD economies to assess the strength of this relationship.

5.1 Estimation methodology and data sources

To provide unbiased estimation of the relationship between LMR flexibility and the unemployment rate, this paper controls for time invariant characteristics of OECD countries. Therefore, a fixed effects model is used.

The unemployment rate in country i at time t can be expressed as

$$unemp_{it} = \alpha + X_{it}\beta + (v_i + \epsilon_{it}) \quad (1)$$

Where X denotes a vector of explanatory variables and controls and β is a vector of parameters. The compound error term $(v_i + \epsilon_{it})$ in equation 1 consists of v_i which is the country specific error term that is time invariant but varies across countries. ϵ_{it} is the idiosyncratic error term which is homoscedastic, with mean zero, and uncorrelated and independent of X_{it} and v_i .

Estimation of equation 1 by ordinary least squares (OLS) would lead to biased results as it would not control for the time invariant heterogeneity (v_i) across countries.

Taking the mean of the time variant variables in equation 1 we can write an expression of the form:

$$\overline{unemp}_i = \alpha + \bar{X}_i\beta + v_i + \bar{\epsilon}_i \quad (2)$$

Where $\overline{unemp}_i = \sum_t unemp_{it}/T_i$, $\bar{X}_i = \sum_t X_{it}/T_i$ and $\bar{\epsilon}_i = \sum_t \epsilon_{it}/T_i$

Subtracting equation 2 from equation 1 results in the elimination of the time invariant error term:

$$(unemp_{it} - \overline{unemp}_i) = (X_{it} - \bar{X}_i)\beta + (\epsilon_{it} - \bar{\epsilon}_i) \quad (3)$$

³⁸ Busse M and Hefeker C (2009) Trade, labour market regulations and growth, *Applied Economics Letters*, 16(8), pp 809–812

³⁹ Feldmann H (2009) The effects of hiring and firing regulation on unemployment and employment: evidence based on survey data, *Applied Economics*, 41(19), pp 2389–2401.

⁴⁰ This period was chosen as at the time of analysis, it offered the most consistent data, with the least amount of gaps in the various data series.

Equation 3 controls for the time invariant heterogeneity. Estimation of equation 3 by OLS gives us the fixed effect (within) estimator, which provides unbiased estimates of the impact of the independent variables on the unemployment rate.

The explanatory variables used for this research paper include:

- Lagged real gross national income per capita which is sourced from the World Bank WDI data base. This variable is included to assess and control for the relationship between economic prosperity and the unemployment rate
- Normalised labour market flexibility scores from the Fraser Institute's EFW index. The scores range from zero to one where larger values denote more flexibility.⁴¹ This index is chosen as it lies in the middle of the qualitative vs. quantitative spectrum relative to other sources such as the WEF and the OECD. As such it takes into consideration both objective and subjective data in its assessment. For a further discussion of the relative strengths and weaknesses of the EFW index, refer to Appendix B of this paper
- The natural log of labour productivity, which is sourced from the OECD.⁴² The relationship between productivity and employment is ambiguous in academic literature⁴³ and this variable is included to control for and ascertain the nature and magnitude of the relationship
- The population growth rate which is sourced from the WDI database and is included to control for scale and demographic effects
- A measure of government effectiveness sourced from the WDI database is included. It can be argued that the quality of labour regulation is influenced by the quality, independence and credibility of the bureaucracy tasked with implementing said regulations.⁴⁴ As such, controlling for government effectiveness is important
- Government final consumption expenditure as a proportion of GDP, which is sourced from the WDI database and is included to assess the impact of government size and crowding out effects
- A measure of output gap from the OECD is also included in alternate specifications to control for business cycle fluctuations.

⁴¹ Details of the components of the labour regulation index are available in Appendix B to this paper.

⁴² As defined by the OECD, Labour productivity at the national level is Gross Domestic Product (GDP) per hour worked.

⁴³ For a thorough discussion of the issue, refer to Blanchard O, Solow R and Wilson BA (1995) Productivity and unemployment, *Massachusetts Institute of Technology. Mimeo*,

⁴⁴ Loayza N, Oviedo AM and Servén L (2004) Regulation and macroeconomic performance, *World Bank Policy Research Working Paper*, (3469)

It is possible that LMRs may have a heterogeneous impact on different segments of the labour force. Notably there may be differences based on gender or age. For example, as discussed earlier, in Australia, young workers as well as female workers are more likely to have their working conditions and wages governed by awards. Therefore the model is re-estimated separately for males and females and for younger labour market participants aged 15–24.

5.2 Results

Table 5.1 presents the results from the fixed effects model which considers the impact of labour market regulation and other explanatory variables on the aggregate unemployment rate across OECD economies.

Overall, the chosen model specification performs well, especially when business cycle fluctuations are controlled for via the inclusion of the output gap variable in model (b). Controlling for business cycle fluctuations provides consistently more stable and statistically significant results and model (b) is the preferred specification for this paper.⁴⁵

Table 5.1 Impact of labour market regulation on the aggregate unemployment rate

	<i>Impact on aggregate unemployment</i>			
	(a)		(b)	
<i>GNI per Capita</i> $t-1$	-0.158	***	-0.089	***
<i>Flexibility of LMR</i>	-0.034	*	-0.044	***
<i>Government Effectiveness</i>	-0.020	*	-0.017	**
<i>Government Expenditure</i>	0.612	***	0.032	
<i>Labour Productivity</i>	0.100	***	0.068	***
<i>Population Growth</i>	-1.674	**	-1.121	
<i>Output Gap</i>	na		-0.349	***
Constant	1.286	***	0.797	***
R² (within variation)	0.48		0.60	
R² (between variation)	0.40		0.36	
R² (Overall)	0.38		0.43	
AIC	-2216		-2331	
N	407		407	

Notes: *** Significant at 1 per cent ** Significant at 5 per cent * Significant at 10 per cent

Model specification in column (a) does not control for cyclical fluctuations whereas the results in column (b) does via the inclusion of the output gap variable.

⁴⁵ In all cases, for all cohorts, the model that controls for business cycle fluctuations via the output gap performs better as adjudged by the Akaike Information Criterion (AIC), which is a measure of the relative explanatory quality of an empirical model.

For the primary variable of interest, flexibility of LMR, the results in Table 5.1 illustrate that *ceteris paribus* a one unit increase (improvement) in the regulatory flexibility score reduces the aggregate unemployment rate by 0.044 percentage points. It should be noted that this is an average effect across all OECD member countries. The actual impact of LMR on the unemployment rate in Australia could be more or less than this OECD average.

A one unit change (increase) in this context implies the normalised LMR index (that ranges from 0 to 1) changing by 0.01. To provide some context, across all OECD countries, the LMR index on average barely changed over the period 2000 to 2012. With the largest year-on-year increase only being 0.03, offset by decreases over the 2000 to 2012 period in the range of 0.02 to 0.01.

In addition to increases in the flexibility of LMR, this paper also finds support for the hypothesis that a more competent civil service has the capacity to further reduce the unemployment rate. In essence, a more capable civil service can increase the efficacy of a given regulatory regime. However, while statistically significant, as shown in Table 5.1 this average effect across the OECD is again quite small; a one unit increase in the bureaucratic quality index reduces the unemployment rate by approximately 0.02 percentage points.

The controls for economic prosperity (GNI per capita) and labour productivity also perform as expected. An increase in GNI per capita decreases the unemployment rate, whereas an increase in labour productivity increases the unemployment rate. These effects are highly statistically significant, and therefore should be controlled for. However, in terms of their magnitude, current results suggest that their impact on the aggregate unemployment rate within the OECD is very small.⁴⁶

The model fails to find definitive evidence for the government crowding out hypothesis. Government expenditure is often used as a proxy for government size and there is an established adverse effect of increased government expenditure on the unemployment rate, otherwise known as the Abrams Curve.⁴⁷ High levels of government expenditure can impact on the unemployment rate in a number of ways⁴⁸:

- High levels of government expenditure can lead to higher levels of taxation which can act as a disincentive against employment and change the work-leisure decision

⁴⁶ Due to the natural logarithmic transformation of the GNI per capita and labour productivity variable, the reported parameter estimates need to be divided by 100 to be interpreted correctly. The interpretation is: a 1 per cent increase in the GNI per capita or labour productivity changes the unemployment rate by $\frac{\hat{\beta}}{100}$, where $\hat{\beta}$ is the parameter estimated by the model.

⁴⁷ Christopoulos DK, Loizides J and Tsionas EG (2005) The Abrams curve of government size and unemployment: evidence from panel data, *Applied Economics*, 37(10), pp 1193–1199

⁴⁸ Abrams BA (1999) The effect of government size on the unemployment rate, *Public Choice*, 99(3–4), pp 395–401

- High government expenditure in the form of generous unemployment benefits and other forms of social assistance can lower the cost of unemployment, thus reducing the incentive to work

All else being equal the results illustrate that a one per cent increase in government expenditure increases the unemployment rate by 0.60 percentage points, which is quite a large impact. However, controlling for cyclical fluctuation drastically reduces the magnitude of the effect and results in the variable dropping out of statistical significance. As government expenditure can be counter cyclical and can increase and decrease with the state of the business cycle, there is likely an issue with multicollinearity.⁴⁹ This issue is flagged for further research, for now the tentative conclusion is that once cyclicality is controlled for, government expenditure does not exert an influence on the unemployment rate within the OECD.

The population growth variable is not statistically significant in the preferred specification which controls for business cycle fluctuations. Economic theory and intuition would suggest that as population demographics evolve and grow there would be a corresponding increase in employment opportunities; however the impact of population growth on the unemployment rate remains ambiguous. Within the OECD, maturing populations, declining fertility rates, high capital intensity and reliance of temporary labour may be confounding the estimated result. While interesting, analysis of this issue is beyond the scope of the current paper, although this is another area that affords opportunities for future research.

The output gap variable performs as expected; a positive value (an increase) in the output gap implies that real GDP is above potential GDP. This leads to a reduction in the unemployment rate as labour demand increases during an expansion or economic boom. The converse would be the case if the output gap variable decreases or turns negative.

Table 5.2 reports results for the two gender cohorts, the results are largely consistent with the discussion of all labour market participants in the preceding paragraphs.

⁴⁹ As an additional robustness check the models were re-estimated without the government expenditure variable. The results indicate that the relationship between LMR and unemployment is robust to the inclusion or exclusion of government expenditure in the model.

Table 5.2 Impact of labour market regulation on male and female unemployment

	<i>Male</i>				<i>Female</i>			
	(a)		(b)		(a)		(b)	
<i>GNI per Capita</i> $t-1$	-0.160	***	-0.075	**	-0.159	***	-0.094	
<i>Flexibility of LMR</i>	-0.039	*	-0.045	**	-0.040	**	-0.044	
<i>Government Effectiveness</i>	-0.025	**	-0.025	***	-0.005		-0.004	
<i>Government Expenditure</i>	0.804	***	0.115		0.416	***	-0.094	
<i>Labour Productivity</i>	0.109	***	0.060	**	0.092	***	0.056	
<i>Population Growth</i>	-2.149	***	-1.413		-1.364	**	-0.815	
<i>Output Gap</i>	na		-0.415	***	na		-0.309	
Constant	1.248	***	0.665	**	1.330	***	0.905	
R2 (within variation)	0.52		0.65		0.41		0.53	
R2 (between variation)	0.30		0.26		0.32		0.31	
R2 (Overall)	0.28		0.37		0.34		0.36	
AIC	-2044		-2172		-2114		-2197	
N	388		388		384		384	

Notes: *** Significant at 1 per cent ** Significant at 5 per cent * Significant at 10 per cent

Model specification in column (a) does not control for cyclicalities whereas the results in column (b) does via the inclusion of the output gap variable.

The results in Table 5.2 do not suggest any drastic differences in gains from increasing labour market flexibility (via reform of LMRs) across male and female labour market participants. It is notable however, that increases in government effectiveness only seem to be beneficial in reducing the male unemployment rate across OECD economies.

Regarding increases in the flexibility of LMRs and their impact on younger labour participants, the results clearly confirm that younger individuals have more to gain from LMR reform. The results in Table 5.3 illustrate that a one unit increase in the LMR flexibility index score decreases the youth unemployment rate by 0.084 percentage points, a beneficial effect that is nearly double the result for all labour market participants.

Younger individuals often do not possess specialised training or notable labour market experience relative to older labour market participants. As such, they are more likely to rely on forms of LMR such as the minimum wage and award and weekend penalty rates. However, if LMRs such as the minimum wage and award rates are too strict and inflexible then this can act as a disincentive for employers to employ young workers. Therefore, modest improvements in these aspects of LMRs as well as improvements in other related areas such as vocational and work certification requirements have the capacity to reduce

youth unemployment. This is especially relevant in Australia which has a relatively high minimum wage and a regimented schedule of penalty rates.

Table 5.3 Impact of labour market regulation on the youth unemployment rate

	<i>Youth Unemployment</i>			
	(a)		(b)	
<i>GNI per Capita</i> $t-1$	-0.250	***	-0.099	
<i>Flexibility of LMR</i>	-0.061	***	-0.084	**
<i>Government Effectiveness</i>	-0.060	**	-0.053	***
<i>Government Expenditure</i>	1.220	***	-0.048	
<i>Labour Productivity</i>	0.215	***	0.145	***
<i>Population Growth</i>	-3.790	**	-2.586	
<i>Output Gap</i>	na		-0.762	***
Constant	1.860	***	0.796	
R2 (within variation)	0.42		0.56	
R2 (between variation)	0.33		0.25	
R2 (Overall)	0.33		0.34	
AIC	-1556		-1663	
N	407		407	

Notes: *** Significant at 1 per cent ** Significant at 5 per cent * Significant at 10 per cent

Model specification in column (a) does not control for cyclicalities whereas the results in column (b) does via the inclusion of the output gap variable.

To further assess the influence of improvements in LMR flexibility on employment outcomes, an alternative dependent variable, the labour underutilisation rate, is expressed as a function of the original explanatory variables. The labour underutilisation rate is defined as the sum of the unemployed and the underemployed. Rigid labour market regulation may not only result in higher rates of unemployment, but could possibly also reduce employment opportunities. In terms of hours worked per week, employees who are willing and able to work more hours may be unable to get more work due to employer reluctance to increase employee hours as a response to rigid labour market regulations. Table 5.4 presents the results from this additional fixed effects model. Due to data availability issues Canada, Chile, and Iceland were excluded from the estimation sample.

Similar to the earlier results, Table 5.4 reveals that improvements in LMR flexibility decrease the labour underutilisation rate. *Ceteris paribus* a one unit increase in the LMR flexibility score decreases the labour underutilisation rate by 0.05 percentage points. These average effects for the OECD member countries therefore suggest that improvements in LMR flexibility not only create new employment opportunities, but can also provide employed individuals an opportunity to increase their labour market engagement.

Table 5.4 Impact of labour market regulation on the labour underutilisation rate

<i>Labour underutilisation rate</i>	
<i>GNI per Capita</i> $t-1$	-0.100 *
<i>Labour Regulation</i>	-0.051 **
<i>Government Effectiveness</i>	-0.053 ***
<i>Government Expenditure</i>	-0.046
<i>Labour Productivity</i>	0.152 ***
<i>Population Growth</i>	-3.091 ***
<i>Output Gap</i>	-0.521 ***
Constant	0.704
R2 (within variation) (per cent)	65
R2 (between variation) (per cent)	10
R2 (Overall) (per cent)	29
N	304

Notes: Notes: *** Significant at 1 per cent ** Significant at 5 per cent * Significant at 10 per cent

5.3 Results in summary

The important empirical findings from the preceding section can be summarised as follows:

- Improvements in LMR flexibility reduce the unemployment and labour underutilisation rate, although this effect is modest across OECD economies
- Improvements in government (bureaucratic) effectiveness also play a modest role in decreasing the unemployment rate via more effective implementation of regulatory regimes and institutional reforms
- Within the OECD, with regards to gains from LMR reforms the results suggest that there are no disproportionate effects by gender
- The research findings do indicate that younger individuals, those aged 15–24, have more to gain from flexibility increasing LMR reforms.

Additionally, the modest beneficial impacts of reduced unemployment as a result of further improvements in LMR suggest diminishing marginal returns to additional reforms in the OECD. Auxiliary regression results confirm that marginal gains from improvements in LMR flexibility are nonlinear. Auxiliary regressions incorporating a quadratic for the flexibility of labour regulation variable returned statistically significant results. The results suggest that the turning point in terms of flexibility of labour regulation occurs at a LMR flexibility score of 0.70 for OECD economies.

As shown in Figure 3.1, Australia's LMR flexibility score is already higher or close to this turning point depending on which LMR flexibility index is considered. Excessive dismantling of the Australian LMR regime in order to increase flexibility or attempts to institute "big bang" type reform of the labour market are unlikely to help drastically reduce the unemployment rate in an effective or efficient manner. Rather, excessive dismantling of existing LMR is likely to adversely affect Australian employees.

5.4 Potential areas of LMR reform in Australia

While the estimated marginal effects of LMR flexibility on the unemployment rate is small, the results of this paper suggest that going forward there is still scope for incremental LMR reforms in OECD economies, such as Australia. This section briefly comments on areas of LMR reform that have the potential to increase Australia's LMR flexibility.

A recently published report by the PC⁵⁰ which assessed Australia's workplace relations system framework identifies some potential areas for reform. The overall assessment of the PC was that Australia's Workplace Relations system was not dysfunctional, needing repair rather than replacement. The PC report recommended revisions and reform in areas such as; award and weekend penalty rates for certain sectors such as retail and hospitality, more streamlined individual work flexibility arrangements, and better protection of migrant and vulnerable workers.

Additionally there is scope within Australia to reduce cost of compliance for small and medium enterprises (SMEs) especially young⁵¹ entrepreneurial firms to make LMR less burdensome. There is a tangible link between young firm entrepreneurship and job creation⁵², and improvements in this area are likely to lead to further employment opportunities in Australia. This is supported by recent research conducted by the Department⁵³ which reveals that young SMEs contribute disproportionately to total net job creation (40 per cent) in the Australian economy.

Furthermore, as supported by the empirical results, better implementation and evaluation of LMR policies via improvements in bureaucratic capacity and efficiency can further increase the efficacy and flexibility of Australia's LMR regime, and assist in reducing unemployment.

⁵⁰ Productivity Commission (2015b) *Workplace Relations Framework, Overview*, Canberra, Productivity Commission, Commonwealth of Australia

⁵¹ Young, in this context refers to firms that are less than 5 years old.

⁵² Decker R, Haltiwanger J, Jarmin R, et al. (2014) The role of entrepreneurship in US job creation and economic dynamism, *The Journal of Economic Perspectives*, pp 3–24

⁵³ Hendrickson L, Bucifal S, Balaguer A, et al. (2015) *The employment dynamics of Australian entrepreneurship*, Canberra, Department of Industry, Innovation and Science, Commonwealth of Australia, <http://www.industry.gov.au/Office-of-the-Chief-Economist/Research-Papers/Documents/2015-Research-Paper-4-The-employment-dynamics-of-Australian-entrepreneurship.pdf>

5.5 Sensitivity, robustness and limitations of results

While the time span of 2000 to 2012 is not long enough to suggest issues with non-stationarity, prior to estimation the stationarity of the variables was confirmed using an Im-Pearson-Shin (IPS) test. The results are also robust to heteroskedasticity and levels of significance reported are based on Huber-White standard errors. The appropriateness of the fixed effects model against alternatives such as pooled OLS and random effects estimation was also confirmed via a series of Hausman specification tests. In all cases, the Hausman test confirms the use of a fixed effects model as the appropriate choice.

The reported results are understandably also sensitive to the choice of the regulatory index utilised for analysis. The WEF, OECD, Fraser Institute, the Heritage Foundation and the World Bank all offer indices of regulatory quality and flexibility. Each has its strengths and weaknesses. The Fraser Institute's index is chosen for the current research as it offers a more balanced mix between qualitative and quantitative assessment of regulation. Preliminary analysis prior to estimation also confirms that the Fraser Institute index is correlated⁵⁴ with the more objective OECD EPL index.

However, a replication of the empirical results using the OECD EPL index results in statistically insignificant conclusions regarding the impact of LMR on the unemployment rate. There is no consensus in the research literature on the choice of an index and as such the results derived and presented in this paper are only accurate in the context of the Fraser Institute's measure of LMR flexibility.

As a limitation of the current research it must also be acknowledged that the empirical results presented in this research paper are average effects across all OECD countries. In the absence of a measure of LMR flexibility that is unique to the Australian economy and provides detailed information on LMR across Australian industries, it remains difficult to isolate the effects of LMR on Australia's unemployment rate. There is not enough year to year variability in the EFW index to be able to isolate the relationship between LMR flexibility and the unemployment rate for Australia. One possible solution to this issue is to interact a binary dummy for Australia with the LMR flexibility variable to isolate the Australia specific effect. The results of such an interaction suggest that the net impact of LMR flexibility on Australia's unemployment rate is quite trivial.

This lack of consistency between different measures of LMR flexibility highlights the complex and nuanced nature of the issue and stresses the need for a multifaceted assessment of LMR. Due to social, political and economic considerations, it is challenging to construct a catch all measure of LMR flexibility that is accurate, incorporates the views of all stakeholders rather than just employers, and remains free from subjective biases. There remains scope for further research in this area, especially at the micro (industrial sector) level within Australia.

⁵⁴ The coefficient of correlation between the FI EFW and OECD EPL index is 0.64

Finally, it must be acknowledged that a fixed-effects model (which removes the average variation across countries) was estimated over an unusual time span (2000–2012). This time period includes the global recession caused by the GFC, which had a differential effect across OECD economies, and the features of the estimation process may be partly responsible for the muted effects of LMR on the unemployment rate.

6. Conclusion – Modest gains from increases in LMR flexibility

This paper set out to investigate the relationship between LMR flexibility and the unemployment rate. It offered a brief review of LMR in Australia which illustrated that while LMR flexibility in Australia has declined in recent years, on the whole LMR in Australia performs relatively well compared to the OECD. However there are aspects of Australia's LMR regime such as its awards system and impact on SMEs that offer scope for further reforms.⁵⁵

The empirical analysis confirms that across the OECD increases in LMR flexibility have a beneficial downward impact on the unemployment rate. Furthermore, there is a complementarity between increases in government effectiveness and LMR. While the estimated relationship between LMR flexibility and the unemployment rate is statistically significant and robust to alternative specifications, the beneficial marginal effects of further LMR reforms in the OECD appear to be quite small. Still, there remains the prospect for targeted incremental LMR reforms that increase the efficacy of regulations and reduce the compliance costs of LMR regimes. Notably, any further flexibility enhancing LMR reforms in OECD economies such as Australia have the potential to create relatively more employment opportunities for younger labour force participants.

However, the results of this paper should not be treated as a definitive assessment of the influence of LMR on the unemployment rate. Given the complexities of accurately quantifying LMR flexibility, and the lack of a measure of LMR flexibility that is uniquely Australian, the empirical results of this paper should be treated as exploratory and an invitation for further research into this socially and policy relevant aspect of the Australian labour market.

⁵⁵ Productivity Commission (2015a) *Workplace Relations Framework, Draft Report* Canberra, Productivity Commission, Commonwealth of Australia

Appendix A – Notable developments in Australia’s workplace relations system

- Creation of the Department of Industrial Relations in 1987.
- Enactment of the Industrial Relations Act 1988 which replaced the previous Conciliation and Arbitration Commission.
- The Industrial Relations Reforms Act of 1993, which promoted enterprise bargaining and established the Industrial Relations Court of Australia.
- The Workplace Relations Act of 1996, which stipulated rules and conduct related to voluntary unionism, introduced individual contracts (Australian Workplace Agreements) and transferred jurisdiction over industrial relations issues to the Federal Court.
- The creation of the Department of Workplace Relations and Small Business in 1997 to replace the Department of Industrial Relations.
- The Workplace Relations Amendment (Work Choices) Act of 2005, which established the Australian Fair Pay Commission. This broadened the scope of individual workplace agreements and overrode certain state legislature related to workplace relations within corporations.
- The introduction of the Fair Work Act in 2009 which now forms the backbone of Australia’s current workplace relations system and provides a safety net of minimum terms and conditions of employment, collective bargaining, provision for individual flexibility arrangements and protection against unfair dismissal.
- In November 2015 the Fair Work Act 2009 was amended via the Fair Work Amendment Act 2015 to apply good faith bargaining rules to negotiations, maintain the value of monies held by the Commonwealth for underpaid workers, and to ensure that request for extensions for unpaid parental leave cannot be refused in most reasonable circumstances.

Appendix B – Measurement of labour market regulation flexibility

The measure of LMR flexibility used in this research paper is one of the subcomponents of the Fraser Institute's Economic Freedom of the World (EFW). Specifically component 5B of the EFW index relates to aspects of LMR such as:

- minimum wage regulation
- hiring and firing regulation
- prevalence of centralised collective bargaining
- regulation of hours of work
- mandated cost of worker dismissal
- conscription.

As discussed in the Fraser Institute's annual report on the economic freedom of the world, the labour market components of the EFW index assess the prevalence of and the extent to which the aforementioned factors impinge on the flexibility and economic freedom of a market economy.⁵⁶ To score more highly on the index, countries must allow the market to determine wages, conditions of employment and refrain from the use of conscription.

To construct the LMR component of the EFW index, the Fraser Institute relies on data sources such as the World Bank's doing business indicators, the World Economic Forum's (WEF) Global Competitiveness Report, and the International Institute for Strategic Studies. Further details on the construction and weighting of the components of the LMR index are available in the appendix to the EFW Annual Report 2014.

The other alternatives to the Fraser Institute's index are the OECD's Employment Protection Legislation (EPL) index, the World Bank's Doing Business Indicators and the World Economic Forums Global Competitiveness Indicators. The LMR components of the EFW already incorporate information from the World Bank and the WEF therefore the only true alternative to the EFW is the OECD EPL.

The EPL index is well regarded in the research literature and benefits from the OECD's extensive knowledge of the labour market dynamics of its member countries. However a major drawback of the EPL index is its lack of year to year variability in the original (non-normalised) scores. Furthermore, the EPL index can be considered as having a narrower and more limited scope as it predominantly only considers hiring and firing legislation.

However, the EFW index suffers from its own limitations, while it covers more aspects of LMR relative to the OECD EPL, and incorporates information from more varied sources, this makes the EFW vulnerable to further subjective

⁵⁶ Gwartney J, Lawson R and Hall J (2014) *Economic Freedom of the World: 2014 Annual Report*, Canada, Fraser Institute

biases. These biases arise due to the third party information used as well as biases arising due to the determination of weights (degree of importance) for splicing the third party information into the composite EFW index.

In the absence of a tailor made measure of LMR for Australia, the EFW index is used for the current research, with the caveat that the empirical results should be interpreted in the context of the shortcomings of LMR measures discussed in this appendix.

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