Impacts of Employment Regulation: Towards an Evaluation Framework

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Key Points

- Alternative empirical methods each have strengths and limitations that mean that no method is unambiguously superior.
- Alternative methods rely on different data sources, and so data limitations may prevent the application of some methods.
- It is likely to be desirable to choose an empirical method to match to the purpose of the analysis and the type of regulation being analysed.
- The broadest and most robust understanding of the effects of employment regulation is likely to come from applying a variety of empirical methods.
- Each approach can potentially provide information that other approaches cannot.
- Where information from the alternative methods does overlap, application of alternative methods provides a robustness check.

Strategic Priorities:
SP4: Regulation
Executive Summary

The main objective of this report is to propose an approach for evaluating the impact of employment regulation on innovation, productivity and economic growth in the New Zealand economy. The report provides: a characterisation of the main types of employment regulation and objectives; a presentation of a conceptual framework to represent the effects of employment regulation on innovation, productivity and growth; a summary of the main empirical findings on effects of employment regulation; a description and evaluation of alternative empirical methodologies; and a recommended approach for research in New Zealand.

Alternative empirical methods each have strengths and limitations that make it difficult to conclude that a specific method is unambiguously superior. Moreover, the methods rely on different data sources, and so data limitations may prevent the application of some methods.

One implication is that it is likely to be desirable to choose an empirical method to match to the purpose of the analysis and the type of regulation being analysed.

A second implication is that the broadest and most robust understanding of the effects of employment regulation is likely to come from applying a variety of empirical methods. Each approach can potentially provide information that other approaches cannot – for example, the capacity to obtain a more detailed understanding of the relation between employment regulations and firm performance from firm-level data. As well, where information from the alternative methods does overlap, application of alternative methods provides a robustness check.

At a general level this suggests that an appropriate strategy for understanding effects of employment regulation in New Zealand is to apply or to draw on evidence from a variety of empirical approaches. More specifically, the main factors that should influence choice of empirical method, or the weight to place on evidence from different types of methods, are the purpose of the analysis; the type of regulation; and data.
Given that there is already a large international literature on effects of employment regulation, it also seems important to ask where there might be the greatest scope for researchers in New Zealand to contribute. It seems that this is most likely to occur through applying firm-level data to develop stylized facts using for understanding about effects of regulation, single-country (New Zealand) studies that examine the effects of changes in regulation, or case studies that make detailed comparisons between New Zealand and small groups of other countries. There are two reasons for this suggestion. First, there is already a large set of cross-country studies that include, or are relevant to, New Zealand, but relatively less research on effects of employment regulation using firm-level data. Second, the comparative advantage of researchers in New Zealand should be studies that are built on a detailed understanding of labour market institutions and data sources.

The current context in New Zealand – of developing an evaluation framework for a set of policy changes that are described as ‘incremental’ – is particularly challenging. It becomes more challenging the greater the level of aggregation at which it is desired to estimate effects of regulation (such as the economy-wide rate of economic growth). Given the range of factors that are likely to influence aggregate outcomes such as productivity and economic growth, evaluating the impact of incremental changes to employment regulation is likely to be a difficult exercise.
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Impacts of Employment Regulation: Towards an Evaluation Framework

1. Introduction

The main objective of this report is to propose an approach for evaluating the impact of employment regulation on innovation, productivity and economic growth in the New Zealand economy.

The report is organised into four main sections:
• Characterisation of the main types of employment regulation and objectives;
• Presentation of a conceptual framework to represent the effects of employment regulation on innovation, productivity and growth;
• Summary of the main empirical findings on effects of employment regulation; and
• Description and evaluation of alternative empirical methodologies, and recommended approach for research in New Zealand.

Having as its primary objective to present a summary framework and strategy for empirical analysis, the report does not attempt to provide a comprehensive review of literature on the topic of effects of employment regulation. The framework and strategy that are presented do of course draw extensively on existing literature; and in particular on the review undertaken for the Ministry of Economic Development by the New Zealand Institute of Economic Research (NZIER, 2005).
2. Types of Regulation and Objectives

To describe employment regulation it is useful to present a simple labour market model. This model is shown in Figure 1. On the supply-side is a set of potential workers who can supply labour inputs to production. On the demand-side firms require a set of production tasks to be completed in order to produce final output. Production requires a set of inputs including labour. Firms organise the required set of labour inputs into jobs. Considerable heterogeneity exists between workers in the skills that are embodied in their labour inputs, and hence the productivity of individual workers will differ between jobs. Assignment of workers to firms can be thought of as occurring through a process whereby workers and jobs are ‘matched’. Some workers and jobs may remain ‘unmatched’ at any point in time, so that unemployment and job vacancies exist. Each match between a worker and a firm involves those parties agreeing to the terms of an employment relation – wages to be paid to the worker; hours of work; tasks to be performed; and job ‘quality’. In the absence of government regulation, the terms of the employment relation would be determined through a bargaining process between the firm and worker (or by an agent – such as a collective organisation - representing the worker).

In this framework, employment regulation can have two main types of effects on a labour market. First, regulation may mandate that the terms of an employment agreement must meet specific standards. Examples are minimum wages and penalty rates for hours of work outside standard hours; conditions on hours of work; conditions on rights of a firm to offer temporary employment and to terminate employment of any worker; conditions for grievance resolution; and conditions on workplace health and safety. Second, regulation may affect the matching and bargaining processes through which a worker agrees with a firm on the terms of an employment agreement. One channel by which this can occur is where regulation specifies conditions on the bargaining process between a worker and firm – for example, by requiring bargaining to occur at an enterprise-level, and by specifying whether there is scope for third-party arbitration to determine the terms of an employment
agreement and whether workers have the right to engage in strike activity. A second channel is where regulation affects the relative bargaining power of workers and firms. One example is that providing greater scope for collective organisation of workers may increase the relative bargaining power of workers, and hence would be expected to make the terms of an employment agreement more advantageous for workers. Another example is where affirmative action or anti-discrimination regulation requires firms to give appropriate consideration to all potential workers for an available job.

Envisaged in this framework, employment regulation can have effects on both efficiency and distribution. Regulation that changes the ‘price’ of labour inputs may cause changes in the allocation of labour to production activities, and hence a change in the degree of efficiency of economic activity. A change in the payment to labour is also likely to alter the distribution of the surplus from production activity between workers and a firm.

Two main types of motivation have been proposed for employment regulation: public interest and private interest (see for example, Botera et al., 2004). Application of public interest theory would suggest that employment regulation is designed to increase social welfare, either by an improvement in efficiency or by causing a distribution of income in society that corresponds more closely to the ‘ideal’ distribution. Regulation could improve efficiency where market failure would otherwise occur. For example, affirmative action regulations may be designed to alleviate market failure associated with statistical discrimination against some groups of labour force participants; and regulations to promote collective organisation of workers may be intended to overcome free-rider problems of supporting public good provision such as voice mechanisms for workers. For employment regulation to improve distributional outcomes would generally seem to be premised an assumption that outcomes for workers in the absence of regulation differ from what society prefers – for example, regulations prohibiting the use of child labour, or requiring minimum health and safety workplace conditions (for example, Richardson, 1999). Application of private interest theory would suggest that employment regulation is intended to benefit specific groups in a society. For
example, where workers ‘control’ policy-making, through having elected a left-wing government, they may seek to implement employment regulations that maximise their own welfare. Saint-Paul (2004, p.54) argues that “Political support for labor market rigidities will arise when a sufficiently large fraction of the workforce earns rents, when these rents can be enhanced by manipulating market outcomes through institutions, and when alternative, less distortionary means of redistributions are not feasible”.

This section presents a conceptual framework for understanding the potential effects of employment regulation on firm productivity and innovation. A graphical summary of the framework is displayed in Figure 2.

The starting point for the framework is the system of employment regulation. The main effect of employment regulation is represented as being to change the terms of the employment relation between a worker and firm – wages, hours of work, tasks, and job quality.

A firm is assumed to make two key decisions – about which final output to produce for sale; and about a production method. The decision on a production method involves choosing both a production function, quantity of each type of input to be used, and payment to inputs. (The firm also makes a decision on pricing its final output, which may affect the choice of which output to produce; in what follows this is assumed to be incorporated into the decision on choice of output.)

A firm's decisions will be determined by its objective of profit-maximisation and its operating environment. The profit-maximisation objective can be seen as the source of entrepreneurial activity – the process whereby firms seek to exploit new profit opportunities, by imitating successful products currently supplied by other firms or production methods used by other firms, by developing a new product that will attract customers, or by developing a more efficient method of production than existing methods. The firm's 'operating environment' includes all the information relevant to its decisions about output and production method. This would for example incorporate information on consumer preferences; degree of competition in product markets; and the labour market.

Productivity and innovation represent possible measures of firm performance. Productivity provides a static measure of the efficiency of production method
used by a firm (where defined in terms of units of output per unit of input); or potential efficiency of production method and choice of output (where defined in terms of monetary value of output per unit of input). Innovation provides a dynamic measure of firm performance that could encompass both changes to the final output produced by a firm and changes to production method. Innovation in a firm’s choice of output could for example be measured as expansion in the set of qualities of a given range of goods and services, or an increase in the variety of available goods and services (product differentiation). With reference to a firm’s choice of production method, Aghion and Howitt (2005) distinguish between firms that are ‘at’ and that are ‘below’ the technological frontier for production. Firms that are at the frontier would innovate in production methods by extending the frontier, whereas firms below the frontier would innovate by seeking to ‘catch up’ to the frontier technology. Hence a measure of firm innovation in production methods could be its distance from the technological frontier (see Aghion et al., 2005).

A key aspect of the firm’s decision on a production method involves its workforce. Essentially this requires a firm to decide about labour utilisation or the set of jobs it will offer. A firm must choose (or agree on through a bargaining process with workers):

• Number and type of workers required; and
• Nature of jobs (for example, wages, hours, job conditions, tasks assigned, extent of on-the-job training, and relationship to other jobs).

Standard economic theory makes predictions on the types of labour utilisation decisions a firm is likely to make. For example, other things equal, for a firm that hires labour in a competitive market, a higher wage will decrease its usage of labour – since an increase in the price of labour relative to other factors of production will induce a firm to substitute towards those other factors, and a firm is also likely to decrease its scale of activity due to higher costs.

Employment regulations have been interpreted as potentially changing the terms of employment agreements with workers. This would then alter the
labour utilisation decisions made by a firm, and thereby affect its choice of production method and perhaps its choice of final output.

One type of effect on labour utilisation can be thought of as occurring where employment regulation changes the ‘static’ optimal production method for a firm. One example would be the introduction of a minimum wage that increases the relative price of low-skill labour. This would be predicted to cause a firm to choose a profit-maximising method of production that involved a relatively lower level of employment of low-skill labour, and relatively higher level of employment of capital equipment and high-skill labour. Or where firms are required to pay ‘penalty rates’ for hours of work outside standard times by permanent workers, this may cause a firm to limit hours of permanent workers to standard hours, and create part-time casual jobs to constitute its workforce outside standard hours.

A second type of effect of employment regulation is on the process of adjustment for a firm as its optimal production method or optimal final output change. A change in a firm’s operating environment, or a firm’s experimentation that occurs as part of its process of entrepreneurial activity, may cause it to seek to adjust its production method or final output.

A change in a firm’s operating environment through for example an increase in the relative productivity of high skill workers and a decrease in relative productivity of low skill workers may cause a firm to seek to reorganise or to change its workforce by hiring extra high-skill workers and retrenching low-skill workers (see for example, Bresnahan et al., 1999, Autor et al., 2003, and Durbin, 2004).

Employment regulations can increase the costs for a firm in making adjustments to labour utilisation (see Caballero et al., 2004, and Bassanini et al., 2000). For example, more stringent employment protection regulation is likely to increase a firm’s cost of adjustment, and hence to slow the process of adjustment between production methods. At an aggregate-level, the process of adjustment between optimal production methods or final output in an
economy will also require entry and exit of firms. Employment regulations that increase the cost of hiring new workers and of retrenching an existing workforce will slow the rates of entry and exit.

The findings from a range of studies that have examined the importance of reallocation of employment between firms, and entry and exit of firms, can be summarised as “…reallocation plays a significant role in the changes in productivity growth at the industry level” (Foster et al., 1998, p.40). For example, new firms that enter an industry are likely to have higher productivity than firms which are exiting; and the greater competition that is implied by higher levels of entry is likely to cause an increase in productivity amongst incumbent firms seeking to adapt to entry (Aghion et al., 2004).

Entrepreneurial activity involves the firm seeking to make changes to its output or production method to exploit perceived profit opportunities (Kirzner, 1973). The incentive to undertake entrepreneurial activity will depend on returns to innovation. Employment regulation may change the returns to innovation by altering the distribution between workers and firms of the surplus from production activity. For example, where the innovation involves a relation-specific investment, and workers cannot commit to future wages, then regulation that increases the bargaining power of workers is likely to increase the share of surplus from an innovation than can be captured by workers, and hence to reduce incentives for firms to undertake entrepreneurial activity (see for example, Malcolmson, 1997). A variety of empirical evidence to support a relation between bargaining power and investment activity by firms and workers is available for the United States and United Kingdom (see Booth, 1995, pp.209-210).

The effect of a specific type of employment regulation is most likely to depend on other aspects of employment regulation or on labour market policy more generally; that is, policy complementarities exist. One example is the suggestion that effects of stringent employment protection legislation may be largest where a country also has a high level of minimum wages (Scarpetta at el., 2002). This is because one way in which a firm may seek to adapt to
higher job security for workers is by paying lower wages (as a compensating differential). Where minimum wages prevent this type of adaption then it would be expected that there would be larger effects on for example labour and firm turnover. Another example would be interaction between minimum wages or employment regulations that affect workers’ bargaining power and social welfare policy. The effect of a decrease in the minimum wage on the capacity for firms to hire labour at a lower price, or the ultimate effect on wages of a change to regulations that decreases the bargaining power of workers, can both in certain circumstances be shown to depend on the level of welfare payments. For instance, a decrease in the minimum wage to below the level of unemployment welfare payments could in theory cause a decrease in the supply of low-skill unemployed actively engaged in job search, even though demand for low-skill labour by firms would have increased.

The extent to which employment regulation affects productivity and innovation is also likely to depend on a variety of contextual influences. For example:

- **Degree of openness of an economy and product market environment**: The scope for bargaining power to affect the terms of an employment agreement, and hence for employment regulation to affect firm performance through causing a change in the relative bargaining power of workers and firms, may depend on the size of the surplus from an employment relationship. Increases in the degree of competition that a firm faces in its product market – either through greater domestic competition or international competition – will decrease the size of surplus from an employment relation. Therefore bargaining power, which determines the division of that surplus between workers and a firm, can have less impact on wages. Empirical evidence supports the underlying proposition that workers’ wages are related to the size of surplus from an employment relation, and with workers receiving a larger share of surplus as their bargaining power rises (see for example, Nickell, 1999).

- **State of firm technology**: Firm’s incentives to innovate may vary depending on their distance to the technological frontier. Aghion and Howitt (2005)
suggest that innovation incentives are greatest for firms close to the frontier operating in competitive markets, and are least for firms furthest from the frontier. For example, firms close to the frontier may through innovation maintain profitability against new entrants who have frontier technology; whereas firms farther from the frontier – even if they are able to make an incremental innovation – would still not be able to compete with new entrants with frontier technology. To the extent that employment regulation increases the cost of innovation, this would suggest a greater scope for a negative effect on innovation for firms that are closer to the technological frontier.

The ultimate effects of employment regulation on productivity and innovation will depend on how firms can respond or adapt to that regulation. For example, firms may respond to stricter employment protection legislation for permanent workers by greater use of temporary employment contracts (Pierre and Scarpetta, 2004); or it has been suggested that firms can respond to employment protection legislation by choosing types of output or production methods where a workforce with a long average tenure provides a comparative advantage such as a production process intensive in ‘cumulative knowledge’ (Bassanini and Ernst, 2002).

The final component of the conceptual framework is economic growth for the economy. This is depicted as depending on aggregation of firm level outcomes. For example, aggregate productivity growth will be the market share weighted average of productivity at individual firms, where market shares are determined through the process of competitive interaction between firms.

The conceptual framework for understanding the effects of employment regulation presented thus far has emphasised direct effects through on labour utilisation. It is also possible to think of a range of indirect channels through which regulation can affect firm behaviour performance.

One channel is where changes to employment regulations cause changes in market structure that affect future decisions on output and production
methods. Bartelsman and Doms (2000, p.586) note that: “Regulatory policy may affect not only the decisions firms make today but also the market structure tomorrow, by altering the incentives for innovating, investing, market entry, and gaining market share.” For example, regulation that specifies the locus of wage-setting to be at enterprise-level rather than industry-level may allow greater competition between firms through costs and thus pricing than otherwise. A greater degree of product market competition may then affect incentives for innovation (for example, Aghion and Howitt, 2005).

A second channel would be where employment regulation changes incentives of labour force participants to acquire human capital (for example, minimum wages causing a change in human capital investment by removing ‘bad’ low-skill jobs, or by compressing the returns to skill). Where firms’ decisions on choice of production method (and type of technology used) depend on the available supply of skilled labour, this may then provide a feedback effect to firm productivity (see for example, Acemoglu, 2002, and Durbin, 2004).

A third potential channel would be where technology diffusion between firms is an important determinant of productivity, and that diffusion depends on mobility of workers between firms. Then, for example, employment regulations that reduce the rate of labour mobility may reduce productivity growth through slowing the rate of technology diffusion between firms.

The conceptual framework also focuses on the effect of employment regulation on firm behaviour and performance. Of course, there are also a wide variety of other potential determinants of firm productivity. For example, the review of the determinants of firm productivity by Bartelsman and Doms (2000) identifies an important role for influences such as management/ownership; exposure to international competition; and technology/human capital.

This section supplements the overview of effects of regulation with a more detailed coverage of several of the main types of employment regulation. The focus here is on summarising literature on the potential effects of these regulations on firm productivity and innovation – so that the extensive literature on for example effects of labour market institutions on unemployment is not considered (see for example, Nickell and Layard, 1999).

4.1. Employment Protection

Employment protection is a catch-all term for ‘…restrictions placed on the ability of the employer to utilize labour’ (Addison and Teixeira, 2003). It is generally regarded to encompass: (i) regulation of termination of a worker’s employment at a firm (for example, provisions on advance notice of dismissal; role for a third party in determining conditions of termination; compensation for dismissal; and compensation for unjustified dismissal); (ii) availability and conditions on usage of fixed-term or temporary contracts by a firm; and (iii) regulation of working hours (Heckman and Pages, 2000; Addison, 2003; Botera et al., 2004)

Employment protection may increase the cost of labour inputs, and also increase costs of workforce adjustment. Increases in the cost of labour inputs could for example occur through restrictions on hours of work, and will have the standard negative effect on employment. Higher costs of adjustment are associated with for example monetary payments that must be made to workers who are dismissed under provisions of employment protection legislation (for an example see Abowd and Kramarz, 2003). Severance pay reduces the gain to a firm from dismissing a worker, and hence would be predicted to decrease the rate of worker dismissal. At the same time, in deciding whether to hire a new worker, a firm will take into account future costs of dismissal, and therefore the rate of hiring would also be predicted to be lower. This implies that the rate of labour turnover will be lower with employment protection regulations. The effect on total employment is
ambiguous in most theoretical models consisting of a positive effect on employment during downturns and a negative effect during upswings. However, there may still be effects on the composition of employment. Employment protection regulations increase the cost of hiring a ‘bad’ worker, so that it will reduce demand for workers about whom there is less information, such as younger workers.

Employment protection regulations – by reducing the likelihood of dismissal – will increase bargaining power of insiders and hence may cause upward pressure on wages and increase the scope for workers to capture the surplus from innovation by a firm. (Bassanini and Ernst, 2002, p.11). Caballero and Hammour (1997) also consider a model where job security provisions increase the appropriability of capital by workers by increasing the specificity of capital, and hence firms will invest in less labour intensive technologies.

Some benefits for firm performance may also arise from employment protection regulations. Primarily this occurs where the regulations cause a better alignment of objectives of workers and firms, or where the regulations assist in overcoming a market failure problem in a firm. For example, the longer duration of employment relations that is implied by employment protection regulations may increase worker training and human capital acquisition that partly overcomes sub-optimal levels of training due to imperfect capital markets; and workers may be more willing to cooperate with employers in development of more efficient production methods (Akerlof, 1984).

Results from empirical analysis - somewhat contrary to predictions from theory – provide quite strong evidence that employment protection regulations are associated with lower levels of employment, but effects on labour turnover appear ambiguous (Addison and Teixeira, 2003, and Pierre and Scarpetta, 2004). There also appears to be strong evidence of composition effects on employment – prime-age males are largely unaffected by employment protection regulations, but there are negative effects for other groups such as
younger and female workers; and self-employment is higher where employment protection regulations are more stringent.

Empirical analysis therefore suggests that the main potential effect of employment protection regulations on firm’s labour utilisation is through a ‘level’ effect on employment and the types of workers hired, rather than changes to the rate of adjustment of employment. By contrast, however, simulation-type studies suggest that employment protection regulations can have significant effects on workforce adjustment, and firm entry and exit, that then cause relatively large changes in productivity and growth (for example, Alonso-Borrego et al., 2004). These different findings might be reconciled by employment regulation causing a shift in the type of workforce adjustment made by firms, rather than the level of worker turnover (see Hopenhayn and Rogerson, 1997; but also Blanchard and Portugal, 2001).

Research on effects of employment protection regulations has also emphasised that the impact is likely to display significant heterogeneity across firms and between countries. Factors that are likely to affect the impact that have been identified include: the scope for firms to ‘offset’ the effects of regulation by using temporary contracts, reducing wages, or increasing worker training; the characteristics of firms such as size and the rate of technological change in the industry in which they compete (see for example, Pierre and Scarpetta, 2004); and other dimensions of employment regulation.

4.2. Minimum Wage

Most studies of minimum wages have focused on employment consequences. This was of course an area of significant debate in the 1990s. Brown (1999) reviews a variety of recent evidence and concludes for the United States that the elasticity of teenage employment with respect to the minimum wage is relatively small. For several reasons – higher levels of minimum wages; broader application of minimum wage provisions; differences in social welfare systems and levels of benefit; and differences in workforce composition – findings for the United States may not be applicable to other countries. However, for countries such as Australia it has nevertheless been concluded
by some authors that reducing the level of minimum wages by quite large amounts would not have a significant effect on employment (for example, Borland and Woodbridge, 1999; and Fritjers and Gregory, 2005). This is due to the likelihood that unemployment payments would constitute a binding constraint on labour supply, and a small estimated employment effect.

The other effect of minimum wages that has been considered is on training and worker human capital. One approach has been to suggest that by introducing a uniform wage structure, minimum wages may accelerate job destruction at low-productivity plants, or force the economy away from an equilibrium where firms are induced to offer low-skill jobs by an available supply of low-skill workers to a new equilibrium where workers obtain higher levels of skill and firms choose production methods that match with high-skill workers (for example, Acemoglu, 1996, and Bassanini and Ernst, 2002, pp.11-12). The alternative approach predicts that the decrease in wage differentials by skill level caused by the minimum wage will decrease incentives for training. There is not strong empirical evidence to support either hypothesis – as Nickell and Layard (1999, p.3069) note: ‘There is no solid evidence on the second of these [hypotheses] and, as for the first, the problem is that low productivity jobs also tend to be eliminated if there is a shortage of low productivity people.’

4.3. Unions and Bargaining Process

Employment regulations can affect the bargaining process between workers and firms, and outcomes from that process, in a variety of ways. First, regulations can affect the costs and benefits of collective organisation (unionisation) for workers, and thereby affect the relative bargaining power of workers in determining the terms of an employment agreement. For example, allowing ‘closed shop’ arrangements increases the benefits to setting up a union and will be likely to increase union density. Second, regulations can affect the bargaining process that occurs between workers and firms. For example, regulations that prohibit strike activity during the bargaining process reduce the capacity of workers to impose costs on a firm, and hence reduce
its bargaining power; or regulations may specify the locus at which bargaining over terms of employment agreements must occur.

Regulations that promote the role of unionisation can be seen as having the fundamental effect of increasing worker bargaining power. This will increase the share of surplus from production activity received by workers (through higher wages), and hence potentially affect outcomes such as employment and firm investment. Nickell and Layard (1999, p.3067) also suggest that unions may oppose introduction of new technology and work practices because existing union-imposed restrictions are associated with ‘featherbedding’ and union workplace control. The main potential benefit of unionisation that is generally identified is to provide a ‘voice’ mechanism that allows grievances to be resolved without workers leaving a firm, and promotes a better understanding between workers and management (Freeman, 19??).

Empirical evidence tends to suggest that unions are associated with some (albeit possibly minimal) decrease in investment activity, and support the mechanism for this effect being the scope for unions to capture an increasing share of surplus from investment activity as their bargaining power increases (for example, Booth, 1995, pp.209-210; and Nickell and Layard, 1999, p.3068). Firm-level evidence tends to suggest that unions have a negative effect on productivity (Nickell and Layard, 1999, p.3068); although this effect does not generally show up in cross-country regression analysis of the determinants of economic growth, and there is also some evidence that the effect of unions on productivity may be affected by how management responds to unions (for example, Ichniowski and Shaw, 1995).

Regulations that specify the locus of bargaining may affect employment agreements both through an effect on worker bargaining power, and by influencing the extent to which enterprise-level (compared to macroeconomic) factors will be taken into account in bargaining (see for example, Flanagan, 1999, p.1160). There does not appear to be extensive evidence on the influence of the locus of bargaining on firm performance or growth; although one study by Bassanini and Ernst (2002) suggests that the greater
centralisation in wage bargaining – by aligning incentives of workers and firms – may reduce the negative effect of employment protection regulations on innovation.

5. Empirical Methods

There is by now an extensive literature that has examined the effects of labour market regulations. Initially, the focus of this literature was to examine how a country’s set of labour market institutions might affect unemployment (for example, Calmfors and Drifill, 1988; and Nickell and Layard, 1999 for a survey), and used fairly simple empirical methods such as correlation coefficients to study the relation between institutions and labour market outcomes. Subsequently this literature has broadened to include more detailed analysis of the effect of specific institutions, to consider the effects of institutions on a wider set of outcomes including productivity, the distribution of earnings, and training, and by adopting more sophisticated empirical methods.

5.1. Taxonomy of Empirical Methods

In the next part of this section I draw on the empirical literature on effects of labour market institutions to suggest a taxonomy of possible approaches for analysing the effect of employment regulation on productivity, innovation and economic growth. I also discuss what appear to be the main strengths and weaknesses of the alternative approaches.

5.2. Simulation of (Historical) Data-Based

One choice is between attempting to estimate the causal effect of a regulation using a data-based method, compared to simulating the effects of a regulation using a theoretical model. Research on the effects of employment regulations has almost exclusively adopted the data-based approach. The main exception is studies of effects of employment protection regulations. For example, a recent study by Alonso-Borrego et al. (2004) applies a general equilibrium calibrated to firm-level data to examine the effects of fixed-term contracts on unemployment, output, and productivity in Spain (see also Hopenhayn and Rogerson, 1993; and the review in Bertola, 1999).
Simulation modelling has several strengths for analysis of effects of employment regulations. First, it allows the effect of a specific regulation to be studied in a straightforward manner. This can by contrast be problematic in empirical analysis that for example uses regulatory reform or cross-country regulatory differences to identify the causal effect of a specific regulation. In this type of analysis it may be difficult to isolate the effect of a specific regulation since there is likely to be correlation between institutions in changes across time or in cross-country differences (see for example, Botera et al., 2004). Second, it allows the consequences of a regulation for macro-level outcomes such as output and growth to be examined. This can be difficult in empirical analysis where effects of a specific regulation may not be easy to disentangle from the large range of other factors that will affect those macroeconomic outcomes. Limitations of the simulation approach are that effects of regulation that are derived will be dependent on the theoretical model used and the quality of data used to calibrate the model. As well, any model that sought to incorporate a range of types of regulation would be likely to be very complex, and hence difficult to solve.


Empirical analyses of employment (and other) regulations have adopted a range of levels of aggregation. One approach has been country-level where the regulations and measures of economic performance are defined at the national level. For example, Botera et al. (2004) and Aiginger (2004) use cross-country differences in labour market regulations to identify the effect of those regulations on labour market outcomes and macroeconomic performance. (Of course, it would also be possible to identify effects of employment regulation by analysis of time-series data from a single country from before and after some change to that regulation.) A second approach uses industry-level data on measures of economic performance with national-level data on labour market regulations. With this approach it is again cross-country variation in regulation (or variation within a country across time) that allows the effect of regulations to be identified. However, disaggregating performance measures to the industry-level allows analysis of whether the
effect of regulation differs between different types of industries (for example, Bassanini and Ernst, 2002; and Cabellero et al., 2004). A third approach has involved application of firm-level data on economic performance. A comparison between firms in different countries can again be used to identify effects of different employment regulations (for example, Barrett et al., 2003 and Scarpetta et al., 2002). Alternatively, analysis of the determinants of variation in firm performance may have direct implications for the expected effects of regulation (for example, Aghion et al., 2005).

Analysis at a greater level of disaggregation can potentially provide a more detailed understanding of the channels through which employment regulation affects productivity and innovation. Sometimes in fact, it is possible to think that the precise nature of the effect an employment regulation would be obscured by not being able to undertake analysis at a disaggregated level. For example, analysis by Aghion et al. (2005) suggests that effects of employment regulation on innovation may vary in a non-linear manner between firms depending on the extent of product market competition that each faces; or alternatively, the importance of firm entry and exit for productivity-growth, and hence the potential effect of employment regulation that retards employment reallocation, may differ between industries (for example, Foster et al., 1998). At a more disaggregated level it is probably also likely that the effect of employment regulation can be isolated from other factors that would affect more aggregated macroeconomic performance measures. Hence there seem to be significant advantages to analysis at a disaggregated (for example, firm) level. Nevertheless, performance measures being defined at the macroeconomic level (for example, economic growth), difficulties in obtaining firm-level data for a sufficiently large sample of countries to capture a range of types of regulation, and complexity of econometric modelling of firm performance, suggest that country-level studies are also likely to a valuable source of evidence on effects of employment regulation.

The bulk of analysis of effects of regulations on economic performance has used a cross-country methodology (for a review see NZIER, 2005). This approach uses cross-country variation in employment regulations to identify the causal effect of those regulations. The main types of cross-country analysis applied have been a case study approach where a detailed comparison is made between a relatively small number of countries, and a regression model approach where effects on economic performance are estimated using quantitative proxies for employment regulations with pooled data for a larger number of countries (such as the set of 20 OECD countries). An alternative approach is to examine economic performance within a single country, and to identify the effect of employment regulations through a change in those regulations. For example, Blanchard and Landier (2002) examine the effects of changes to regulations on capacity of firms to offer fixed-term employment contracts since the late 1970s in France; and Bertrand and Kramarz (2002) examine the effect of changes to zoning regulations for establishment of new retail establishments in France in 1973-74 on job creation.

Case study and regression modelling approaches have fairly obvious strengths and limitations that mirror each other. The advantage of the case study approach is that it will generally provide a more detailed and nuanced understanding of how employment regulations differ between countries, and how this affects firm and macroeconomic performance. The advantage of the regression modelling approach is that it can provide a perspective on the effects of employment regulation for a broader range of countries, and can quantify the effects of regulation. As Temple (1999, pp.119-20) discusses, the two approaches are probably best seen as complementary – case studies generate hypotheses but then regression analysis is necessary to test the validity of a generalization; or regression modelling establishes average patterns that can inform the choice of countries to study in greater detail.
Cross-country and single-country studies can also be seen as complementary. Single country studies potentially have advantages for obtaining precise estimates of the effect of a specific regulation (that has changed during the sample period). Cross-country studies have the advantages of being likely to provide variation in a much wider set of institutions, and greater extent of variation in any specific regulation.

Their extensive application – especially for modelling the determinants of economic growth – has meant that problems with cross-country regression studies have received extensive discussion (see for example, Temple, 1999 and Easterly, 2005). These problems include:

- Bias due to potential joint endogeneity between economic performance and regulations;
- The apparent need to allow for heterogeneity between countries in effects of regulations on performance;
- Measurement error in developing quantitative proxies for regulations that can be used as explanatory variables in regression analysis;
- Sensitivity of results to outlier country observations;
- The absence of a structural interpretation of results (that is, a failure to identify the theoretical model underlying results);
- Difficulties in controlling for complementarities between policies (for example, Coe and Snower, 1997), and potential endogeneity between regulations (for example, Blanchard, 2004, p.21); and
- Omitted variable bias (for example, the degree of enforcement of legal regulations).

Some of these problems – such as joint endogeneity between regulations and economic performance – also apply to single country studies.

### 5.5. Single Regulation cf. Multiple Regulations

Some studies focus on estimating the effect of a particular type of regulation – for example, simulation-type analyses that allow the effect of changes to specific regulations to be studied, or empirical analysis of the effect of reform of a specific regulation (for example, analysis of reform of employment contract options in France by Blanchard and Landier, 2002). Other studies
are concerned with evaluating the effect of multiple regulations. For example, the general approach of cross-country regression studies is to seek to provide a comprehensive representation of the different dimensions of some area of regulation or institutions.

A well-designed analysis of the effect of a single regulation has the advantages of providing the opportunity to use a detailed or multi-faceted representation of that regulation, and may make it easier to integrate empirical analysis with theoretical modelling. A whole series of this type of study, for a variety of different regulations, might then seem preferable to a multi-regulation approach. However, studies of a single regulation do not allow issues such as policy complementarities or correlation and joint endogeneity between policies to be addressed as is possible in a study with multiple regulations. As well, it will generally be a smaller-scale exercise to undertake a single multi-regulation study than a series of studies of individual regulations.

5.6. Quantitative cf. Qualitative

Quantitative studies use a cardinal measure of economic performance from which it is possible to derive (for example, using regression analysis) estimates of the quantitative effect of a regulation on performance. Qualitative analysis uses an ordinal-type measure of performance (for example, that a firm’s performance improved/stayed same/worsened over some period) from which it can be possible to derive estimates of the qualitative effect of regulation on performance (positive, zero or negative). Generally, there might be a presumption that the precision of quantitative analysis would be preferred; but for some types of studies (for example, where measures of economic performance are based on firm-level subjective responses) ordinal or qualitative measures of performance might be considered to have greater validity.

5.7. Objective cf. Subjective

Most studies have used a method of analysis that can be regarded as objective in that it is application of data on employment regulations from an
independent source to data on firm performance that is used to evaluate
effects of employment regulation. An alternative subjective approach is to ask
firms what effect they believe that employment regulation has had on their
decisions and performance (for example, Pierre and Scarpetta, 2004). A
variety of weaknesses with the subjective approach – such as difficulties in
knowing how respondents interpret questions on regulation, the way
responses are known to vary with a firm’s current performance, and the
biases inherent in a firm’s perspective on regulation – suggest a preference
for the objective approach. However, there are also some strengths of the
subjective approach. First, it may be possible to obtain data on effects of
employment regulation on some decisions (such as worker training) that might
not otherwise be possible. Second, knowing how firms regard the stringency
of regulation can provide information both on the legal statement of
regulations and their enforcement, whereas objective measures tend to
incorporate only the legal dimension. Third, while firms’ perceptions of the
stringency of regulations may on average be biased upwards (relative to some
objective measure), these perceptions may still provide useful information on
how regulatory impact varies between different types of firms.
6. The Way Forward

It does not seem possible to suggest any unique preferred approach for undertaking empirical analysis on the effects of employment regulation. This is primarily because the alternative empirical methods each have strengths and limitations that make it difficult to conclude that a specific method is unambiguously superior. Another reason is that the methods rely on different data sources, and so data limitations may prevent the application of some methods.

One implication is that it is likely to be desirable to choose an empirical method to match to the purpose of the analysis. For example, where the objective is to examine the effects of a specific type of regulation on firm-level and macroeconomic outcomes, a simulation/calibration approach would have many advantages; alternatively, if the objective is to understand the effect of multiple types of regulation on firm-level outcomes, the preferred approach might be cross-country analysis using either firm-level or aggregate-level data.

The same point also applies with regard to the type of regulation being analysed. Regulations that can be effectively summarized in a quantitative measure, or a cardinal-type index, may be suitable for analysis using a regression cross-country method. Whereas for regulations that are more complex to describe, or difficult to summarize quantitatively or in a cardinal index, may be more appropriately studied using a cross-country case study method, or examining effects of a change to that regulation within a single country.

A second implication is that the broadest and most robust understanding of the effects of employment regulation is likely to come from applying a variety of empirical methods. Each approach can potentially provide information that other approaches cannot – for example, the capacity to obtain a more detailed understanding of the relation between employment regulations and firm performance from firm-level data. As well, where information from the
alternative methods does overlap, application of alternative methods provides a robustness check.

At a general level this discussion suggests that an appropriate strategy for understanding effects of employment regulation in New Zealand is to apply or to draw on evidence from a variety of empirical approaches. More specifically, the main factors that should influence choice of empirical method, or the weight to place on evidence from different types of methods, are the purpose of the analysis; the type of regulation; and data.

Given that there is of course already a large international literature on effects of employment regulation, it also seems important to ask where there might be the greatest scope for researchers in New Zealand to contribute to the literature. It seems to me (but this is admittedly based on a limited understanding of data) that this is most likely to occur through applying firm-level data to develop stylized facts using for understanding about effects of regulation, single-country (New Zealand) studies that examine the effects of changes in regulation, or case studies that make detailed comparisons between New Zealand and small groups of other countries. I have two reasons for making this suggestion. First, there is already a large set of cross-country studies that include (or are relevant to) New Zealand, but relatively less research on effects of employment regulation using firm-level data. Second, the comparative advantage of researchers in New Zealand should be studies that are built on a detailed understanding of labour market institutions and data sources (for example, Law and McLellan, 2005).

The current context in New Zealand – of developing an evaluation framework for a set of policy changes that are described as ‘incremental’ - is particularly challenging. It becomes more challenging the greater the level of aggregation at which it is desired to estimate effects of regulation (such as the economy-wide rate of economic growth). Given the range of factors that are likely to influence aggregate outcomes such as productivity and economic growth, evaluating the impact of incremental changes to employment regulation is
likely to be a difficult exercise. (Gregory, 1998, p.420 discusses similar problems)
Figures

Figure 1: The Labour Market – A Simple Framework

- **Demand**
- **Supply**

**Matching of workers and jobs**

**Employment Agreement:**
- Wages
- Hours of work
- Tasks
- Job quality

1. Employment regulation
   - eg. minimum wages

2. Bargaining process
   - eg. role of trade unions
Figure 2: Effects Of Employment Regulation

Employment regulations
1. Mandatory terms of employment agreement
2. Effects on matching / bargaining process

Terms of employment agreement
- Wages
- Hours of work
- Job quality

Operating environment

Entrepreneurial activity

Firm performance
- Choice of final output
- Production method
- Measures of performance: Innovation, Productivity

Labour utilisation
- Mix of labour & other inputs
- Types of labour (skill; contract)
- Training
- Job & organisation design

Macroeconomic performance
Measure: Economic growth

Context:
- Openness of economy
- Product market environment
- Welfare & tax system
- State of technology

Context:
Macroeconomic performance
Measure: Economic growth

Context:
Macroeconomic performance
Measure: Economic growth
References

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