MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

COVERSHEET

Minister	Hon Brooke van Velden	**Portfolio**	Workplace Relations and Safety
Title of Cabinet paper	Minimum Wage Review: Setting the 2025 rates	**Date to be published**	17 December 2024

List of documents that have been proactively released		
Date	**Title**	**Author**
December 2024	Minimum Wage Review: Setting the 2025 rates	Office of the Minister for Workplace Relations and Safety
December 2024	Minimum Wage Review: Setting the 2025 rates [CAB-24-MIN-0489 Minute]	Cabinet Office
28 March 2024	Review of MBIE's Minimum Wage model	Motu Economic and Public Policy Research
8 May 2024	Peer Review Report on Motu's Review of the MBIE Minimum Wage Model	Tim Maloney
November 2024	Minimum Wage Review 2024	MBIE

Memorandum

To	Scott Ussher, Manager Workforce, Workplace and Migration, Evidence and Insights, Ministry of Business, Innovation and Employment
From	Tim Maloney, Economics Research Consultant
Subject	Peer Review Report on Motu's Review of the MBIE Minimum Wage Model
Date	8 May 2024

This memo contains my feedback and recommendations related to the report ("Review of MBIE's Minimum Wage Model") submitted by Motu Economic and Public Policy Research on 28 March 2024. The intention of this memo is to provide a constructive peer review to MBIE on the analysis and recommendations contained in this report. If there's anything in my report that's unclear, please contact me for further assistance to clarify this advice.

MBIE engaged Motu to review the statistical model that the Ministry uses to estimate the employment restraint resulting from the setting of New Zealand's statutory minimum wage.[1] Motu's review is broken into three parts. The first section reviews the international approaches and evidence on the unintended consequences of the minimum wage for employment. The second section reviews MBIE's Minimum Wage Model. Finally, the last section provides some recommendations stemming from this analysis. I'll provide my following feedback under this same structure and in the order in which these issues arise in the report.

A. Reflections on International Approaches to Considering Employment Impacts from Minimum-Wage-Setting Decisions

I don't have much to say about this section. This is not something that I've analysed in the past, but I accept the conclusion of the authors that no other country places as much reliance on a single econometric model to estimate the employment effects of annual reviews in the minimum wage (assuming that this is indeed true in New Zealand). The published works by Dickens (2015, 2023) are particularly useful in understanding the approaches adopted in minimum-wage-setting decisions in other countries.

I'm often struck on how rare it is for countries to index minimum wages to either price or wage movements, outside of a hand-full of European nations. New Zealand indexes social welfare benefits, superannuation payments and income tax categories, but not the minimum wage. The usual explanation is that governments prefer to use inflation to erode real minimum wage levels over time to allow discretion in periodically re-establishing the appropriate wage floor in the labour

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[1] The term "employment restraint" is unusual in the minimum wage literature. I take this as being synonymous with hypothesised employment effects from setting wage floors in the labour market. The reason I prefer the terms employment or disemployment (or something similar) is that they suggest that these are the unintended consequences associated with minimum wage protection designed to lift incomes and reduce both wage inequality and poverty in wider society. Using the word "restraint" seems to suggest, at least to me, that this is a purposeful or intended control over employment in the economy in the same way that we might talk about price controls dampening inflation or interest rates being used to constrain spending. I won't comment any further of this terminology in this report, but just offer this as food for thought in future discussions related to this model.

market. But given everything else that we index, it's not clear to me why minimum wages are that unusual.

I would take exception to the concluding sentence in this section that with automatic indexing "… there is no need for estimates of employment impacts." This is, of course, true in reference to any change in these employment effects with a constant real minimum wage, but it doesn't obviate the need to understand the overall employment effects due to the existence of a minimum wage.

B. Reflections on Estimating Employment Effects: A Review of Methods and Findings

The authors have done an exceptional job boiling down this huge international literature on methodological approaches to estimating the employment effects from the minimum wage and the resulting empirical findings. They summarise the time-series and cross-sectional approaches and provide a consensus on the empirical results from the studies in these areas.

The authors are correct to point out that there has been a gradual movement away from time-series analyses of the employment effects of minimum wages starting the 1990s. The use of 'natural experiments' have become much more prevalent in the literature. The New Zealand minimum wage literature has followed a similar pattern.

Given the range of challenges in identifying minimum wage effects (errors-in-variables issues, specification errors in terms of unobserved covariates and arbitrary functional forms, limited coverage or corresponding reductions in nonwage compensation, different institutional settings, and variation across time and jurisdictions in the extent to which minimum wages are binding), I'm often surprised at the relative consistency in the empirical findings. The conclusion by Brown (1999) that the employment elasticity of the minimum wage is in the range of -0.1 to -0.3 hasn't changed much in a quarter of a century.[2] I would think if anything, this elasticity range might have fallen slightly to between -0.05 and -0.2. It's negative as anticipated, but much smaller in magnitude than many would expect.

The review of the New Zealand literature in this area is comprehensive and fair. I'd note that in my original study is this area (Maloney 1997), the context was quite different to almost all overseas studies. Teenagers until 1994 were exempt from the minimum wage. Thus, while teenagers are, more often than not, the treatment group for changes in minimum wages in other countries, they were in some sense a control group in New Zealand in these early years. Moreover, they were a group that might be expected to experience an increase in employment due to factor substitution effects because of the increase in the adult minimum wage.

C. Reflections on the Review of MBIE's Model of Minimum Wage Employment Effects

This is the section where the authors provide feedback and recommendations on the 'restraint on employment' sub-model (specifically the econometric model that underpins this calculations). Let me take these recommendations in roughly the order in which they arise in this document and provide my own views on these issues.

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[2] That is, a 1% increase in the real or effective minimum wage reduces the employment of *affected groups* by between 0.1% and 0.3%. Note that this isn't an economy-wide estimate of the employment loss that might come from a hike in the minimum wage. That would be substantially lower. I'll return to this point later in this review report.

1. **Synthetic Panel**. The authors mention that the 'restraint on employment sub-model' uses quarterly panel data on (age*sex*region demarcated) cells. I looked at the Minimum Wage Review 2023 document but couldn't find any further description of this dataset. In particular, it would be useful to know the time span for these data. This is especially important for understanding the inclusion of variations in age-specific minimum wages over this sample period.

   It would be useful to refer to this as a synthetic panel because the observation of a cell-specific employment rate, for example, is an estimate of the true subpopulation rate in that quarter. It would have been useful to ask questions about the choice of attributes that define these cells. For example, highest educational qualifications could also have been used to gain a finer breakdown of the population. This educational dimension might have been particularly useful in identifying groups at-risk of employment loss due to an increase in the minimum wage. More on this later.

2. **Dependent Variable**. I agree with the authors that the use of the natural logarithm of the employment rate $ln\left(\frac{E_{it}}{POP_{it}}\right)$ would make more sense the dependent variable than the log of employment lnE_{it}. This removes the need to include the cell population, and its lag, as a regressors, and to estimate these two coefficients. This would seem to be a more parsimonious regression specification. I can't see any benefit of sticking with the current specification for the purposes of this analysis.

3. **The Kaitz Index as a Moving Average and the Measure of the Effective Minimum Wage**. Like the authors, I'd suggest replacing this moving average with a distributed lag specification (i.e., include the current and three lagged values for the relative minimum wage directly into this regression specification). The overall employment effect of the minimum wage would be measured by summing these four estimated coefficients (and producing a *p*-value on this summation). We would expect this effect to dissipate as the time difference increases between change in minimum wages and potential impacts on subsequent employment. The moving average assumes these quarterly effects are identical by construction. Thus, the distributed lag specification is more flexible.

   It wasn't clear to me that the wage in the denominator of this ratio was specific to each cell. Subsequent discussion in the Motu report seems to indicate that the average wage for the entire population was used in the denominator. As the authors suggest on p.13, it would seem to be preferable to use the mean or median wage in the cell for this purpose. The authors indicate that the QES doesn't allow for this, potentially because of small sample sizes, but this seems like an important aspect of this analysis that would be worth pursuing. For example, this ratio would help identify subpopulations most at risk of job losses from rises in the minimum wage. More on this later.

   Natural logarithms for these Kaitz variables would allow the sum of the coefficients in this distributed lag specification to be directly interpreted as an elasticity. So, I agree with the suggestion made by the authors.

4. **The Inclusion of the Labour Force Participation Rates as Covariates**. I don't think the authors mentioned this, but I would suggest dropping labour force participation rates as explanatory variables. Firstly, every regression on minimum wage employment effects is essentially a labour demand function. Labour supply variables wouldn't normally appear on the right-hand side of such expressions. Secondly, if these covariates are included to

capture cyclical factors, this job is already being done by the GDP variable. Finally, most of the variation in participation is due to variation in employment, so there is a spurious relationship here. I think including labour force participation rates as regressors is difficult to justify and this potential misspecification could bias the results we care about.

5. **Group Fixed Effects**. I endorse the recommendation of the authors that a more parsimonious specification would be to include the individual fixed effects for the age, sex, and regional location. Interactions could be explored but some clear justification for this added complexity would be necessary.

6. **Non-Stationarity**. Like the authors, I think the key variables to consider would be the log employment rate and the Kaitz variable. If each is non-stationary, then first-differencing would be warranted, and potentially an error-correction approach could be adopted.

7. **Unweighted Regression Estimation**. Given that this is a synthetic panel (see point one above), I would strongly suggest that these regressions are weighted using the sample size of each cell. Larger cells would generally contribute more information to the estimation of the parameters in this model.

8. **Estimates Based on the Entire Population vs. Identified At Risk Groups**. Picking up on a point raised by the authors starting on p.16, one of the most obvious concerns for me in this analysis is that entire working age population from age 16 to 64 is included in this regression.[3] This runs counter to the international and domestic approaches that differentiate between subpopulations that are likely to suffer employment losses from increases in the minimum wage (i.e., the treated groups) relative to everyone else (i.e., the control groups).

   For example, most studies look for these employment effects among teenagers, or other at-risk groups (e.g., slightly older adults with no formal educational qualifications, or those living in isolated rural areas where prevailing wages are substantially lower). I think this regression is mis-specified by assuming that this employment effect (α) is same for the entire population.

   I can suggest two strategies here. Firstly, like the approach of almost all past studies, these potential treatment groups can be chosen at the outset of the analysis (e.g., teenagers or the slightly broader group of those aged between 16 and 24). Secondly, if we could produce cell-specific Kaitz measures with the subpopulation's own mean or median wage in the denominator, the data could suggest who to include in this treatment group. (This is one of the reasons why I'd consider defining the cells by the added dimension of the highest formal educational qualification attained.)

   This also offers up an opportunity to consider some placebo tests that might indicate any issues with the base specification. For example, we wouldn't expect to see any negative effects for control groups like those aged between 35 and 55 or highly qualified individuals living in urban areas. Finding measurable employment effects from the minimum wage relegated to low-wage subpopulations would be decidedly reassuring. I find the current estimates for the full populations to be implausibly large by what we know from previous

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[3] I agree with the authors that the upper limit on this working age population should be reconsidered. By many measures, the fastest growth in employment in the New Zealand economy is coming from those aged over 65. The assumption of the working age being capped at 64 is antiquated.

international and domestic studies. This echoes the concerns of the authors on p.17 of their report.

D. Reflections on the Summary Discussion and Recommendations

I am somewhat sympathetic to the concerns raised and recommendations offered by the authors in this concluding section. Most importantly, recent gradual increases in the minimum wage that are routinely reviewed and adjusted on an annual basis provide a poor database for empirically estimating employment effects stemming from small and gradual increases in the effective minimum wage. This annual review and adjustment process to this uniform wage floor must be so ingrained in the thinking of potential employers that it can hardly come as a surprise when it takes place. This is more than just an announcement effect. This regular saw-toothed pattern of adjustments to the real minimum wage over recent periods must be common knowledge and largely anticipated by everyone in society (including employers).

Yet, I think it would be worth exploring how the data for this synthetic panel might be improved and extended back in time to pick up some of the more substantial changes to age-specific minimum wages. If this could be done, this regression analysis might yield some interesting findings, especially if we could hone in on the most vulnerable groups in society (e.g., teenagers, young people with few if any educational qualifications, those living in rural areas, etc.), especially if this could be done with empirical evidence on the extent to which minimum wages would be binding for a particular group. I wouldn't abandon this regression analysis altogether, but current attempts to estimate a simple employment effect across the whole population should probably be discontinued.

The simple simulation approach suggested by the authors has definite merit. It relies on some fairly consistent estimates of these employment elasticities from overseas studies and can be applied to the domestic at-risk population of those earnings wages less than the proposed increases in the minimum wage. This will likely overstate the potential job losses, but it would be well worth pursuing.

References

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