IMPACT OF A NATURAL DISASTER ON EMPLOYEES

An Executive Summary

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INTRODUCTION

Quake! drop, cover, hold
Then employees recover
and subsidy helps.

Despite major upheaval and short-term job loss, on average, workers affected by the Canterbury earthquakes have bounced back. Three years on from the devastating shocks of September 2010 and February 2011, these workers are more likely to have jobs than similar workers (in Auckland and Hamilton) and are less likely to be on the unemployment benefit. They also have higher accumulated earnings than workers elsewhere.

Greater Christchurch workers have been more mobile than other similar workers, in terms of both job change to new employers, and outward migration from the region to other parts of New Zealand. Impacts vary substantially by worker characteristics and by location within the earthquake affected area.

The Earthquake Support Subsidy (ESS) appears to have achieved its goal of delaying involuntary job loss. As a result, fewer workers made immediate decisions to leave the region - decisions that persisted over the long-run.

SCENE SETTING

This paper is a companion to earlier work examining the impact of the quakes on businesses in the region[1]. That study showed firm profitability fell by an average of 3 percentage points immediately after the second major quake. This was driven by an average decline of 9 percentage points in sales revenue, which caused a high rate of firm exit immediately following the disaster, particularly among previously poor performing (low profitability) businesses. Employment in those firms that survived recovered, though with lower worker retention than expected.

Statistics NZ estimates show the population in Christchurch City dropped a total of 4 percent in the two years to June 2012. Firms have reported difficulty hiring workers in Christchurch, with employers attributing this mainly to people leaving the area and to difficulty in attracting new staff to Christchurch.

Christchurch experienced a large (59 percent) jump in the number of workers employed in the construction industry. Other industries, such as retail and hospitality, experienced an initial decline in sales, but have since recovered and are currently growing at above the national average rate.

METHODOLOGY

Data come from Statistics New Zealand's Integrated Data Infrastructure and the Longitudinal Business Database.

The research employs two difference-in-difference approaches, with extensive pre-quake (July 2010) controls relating to firm, job and worker characteristics. The first approach compares changes in labour market outcomes of affected workers in Greater Christchurch to "similar" unaffected workers in Auckland and Hamilton City, providing a counterfactual

[1] Timar, Levente, Arthur Grimes and Richard Fabling. 2014. "That Sinking Feeling: The Changing Price of Disaster Risk Following an Earthquake."

This research was funded by the Ministry of Business, Innovation and Employment's Natural Hazards Research Platform. The authors gratefully acknowledge this assistance.

for what might have happened to affected workers in the absence of the earthquakes. All our results relate to workers who were working within Greater Christchurch in July 2010, prior to the first major earthquake. It is difficult to know whether a person employed in a multi-region firm is employed in Greater Christchurch. As a consequence, the data is restricted to workers who can be assigned with certainty to a region in the reference (pre-earthquake) month.

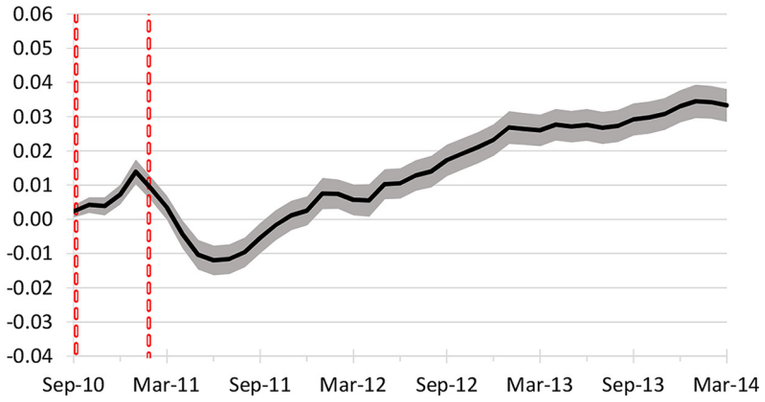
The second difference-in-difference approach compares subgroups of Christchurch workers, distinguished by worker characteristics, pre-quake job location, and/or whether the employer received the ESS.

One limitation of the analysis is that the research cannot consider the effect of changes in the housing stock on the outcomes of interest, instead focussing purely on the flow-on effects of the impact on the employer.

RESULTS

Likelihood of employment (Figure 1) initially rises after the first major quake, before falling rapidly after the second major earthquake. The initial rise in employment is consistent with a reduced willingness to be (temporarily) out of work during the uncertain period after the first quake. In contrast, the second major quake induced substantial firm exit, making involuntary job loss a dominant driver of subsequent employment dynamics. From peak to trough, the probability of employment falls by 2.6 percentage points in the space of five months. By November 2011, however, employment recovers and then increases significantly from January 2012. By March 2014 Greater Christchurch workers are, on average, 3.3 percentage points more likely to have a job than comparable Auckland/Hamilton workers.

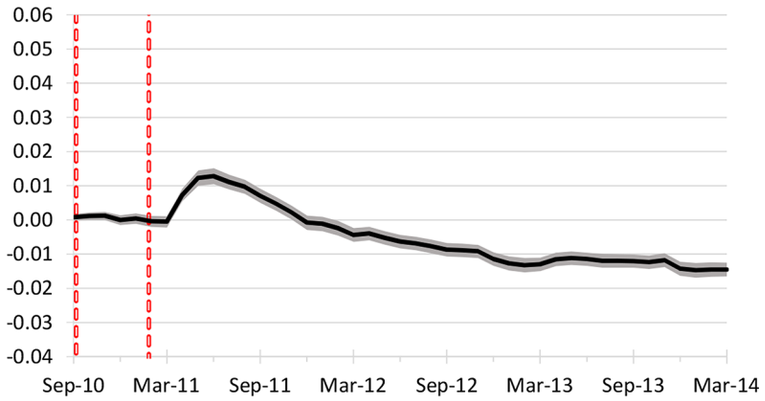
Figure 1: Likelihood of Employment



The vertical red lines indicate the earthquakes. The grey shaded area indicates the 95% confidence intervals

Benefit receipt (Figure 2) follows the inverse pattern with a distinct hump between April-November 2011 when involuntary job displacement was at its strongest. By March 2014 benefit receipt is 1.5 percentage points less likely for Christchurch workers than the control group.

Figure 2: Benefit Receipt



Accumulated earnings (Figure 3) are persistently higher for Greater Christchurch workers, initially reflecting the higher relative employment rate. Over the longer term the accumulated earnings gap continues to expand, reaching 4.4pp by the end of period. On average, employment rates over the period are only elevated by 1.4pp, suggesting other mechanisms are driving earnings up in Canterbury. Obvious candidates are the combination of reduced aggregate labour supply, and the potential need to provide financial inducement to stay in the region. The loss of assets may also induce some workers to increase their hours worked, which would manifest as higher accumulated earnings.

Figure 3: Accumulated Earnings

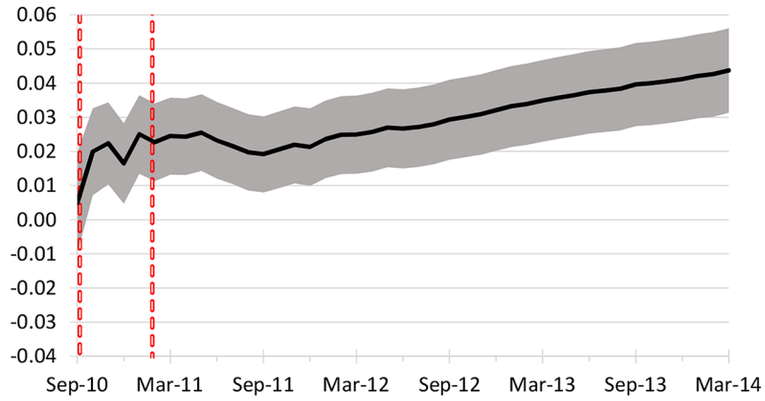
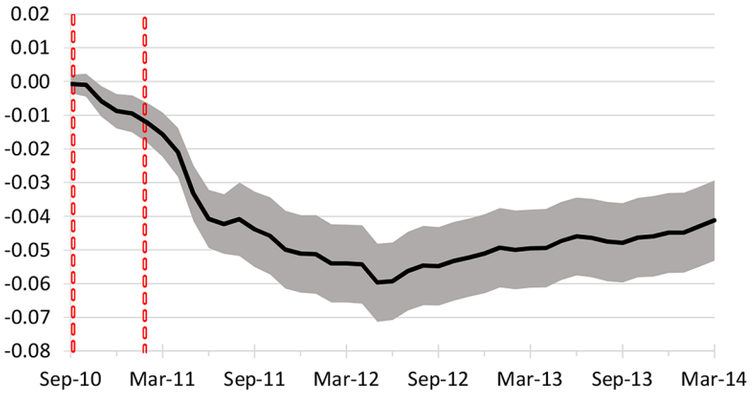


IMAGE BY: eguidetravel CC BY 4.0

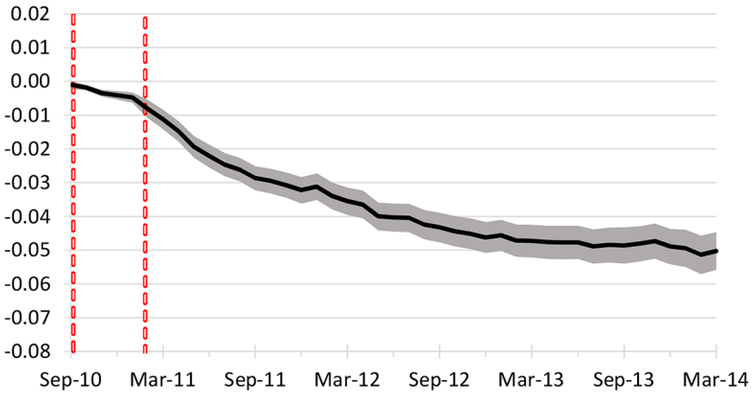
Workers in Christchurch are more likely to switch jobs (Figure 4), and job change is often associated with rapid wage growth in New Zealand. An increase in job switching starts immediately following the first major earthquake before accelerating further when firms start exiting after February 2011. The estimated effect bottoms out at -6.0 percentage points in May 2012, implying a substantial loss of job-specific human capital in the Greater Christchurch area. Beyond that point the differential impact of the earthquakes reduces. This tailing off is consistent with firm-level findings that suggest some of the acceleration in firm exit in Christchurch is of firms that would have subsequently exited in later years anyway due to poor performance. If this is true, then we expect worker separation rates to converge somewhat as firm exits in the Auckland/Hamilton population catch up over the long-run.

Figure 4: Current Employees Staying with Pre-Earthquake Employer



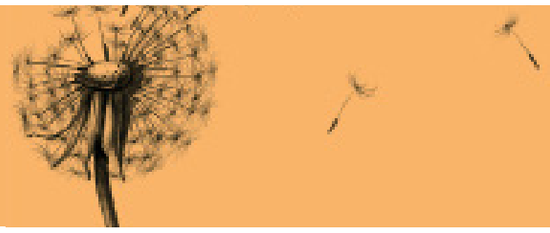
Changes in employer go hand-in-hand with internal migration (Figure 5). The migration effect is initially weaker, consistent with it being more expensive to change location than it is to change jobs. However, by March 2014, internal migration to other parts of New Zealand is 5.0 percentage points higher for Greater Christchurch workers than similar workers elsewhere.

Figure 5: Current Employees Staying in Pre-Earthquake Location



Young workers are more likely to have moved regions than older workers (significant at the 1% level). Young female workers are the most affected, with a 7.6 percentage point greater internal migration effect than older workers. This effect stretches back to the immediate aftermath of the second major earthquake, with a 1.1pp (significant at the 1% level) gap in outward migration over young men (the next most affected group) already evident in March 2011. This young female-male migration gap widens over time to end the period at 6.5pp. It seems likely that these differences stem at least in part from the initial industry distribution of workers, and the subsequent shift in production towards construction, which is a male-dominated industry.

The research finds differences in the short-term effect of the earthquakes depending on the geographic locations of the employer. These differences persist in the long-run for employment and accumulated earnings, but don't persist for benefit receipt and employer/location change. Workers in both low and high earthquake impact areas are less likely to be



on benefit in the long-run due to the increased employment opportunities caused by the earthquakes. In the long-run, Christchurch workers are also more likely to have changed employer or region due to the quakes, regardless of whether their employer was located in a high impact area or not.

It seems initially counter-intuitive that Christchurch workers have not experienced long-term losses either in terms of employment or earnings. However, these positive findings are consistent with studies of Hurricane Katrina survivors and partially result from the increased demand for labour at the same time as it was in reduced supply.

POLICY IMPACT OF THE EARTHQUAKE SUPPORT SUBSIDY

ESS-recipient workers were eventually equally likely to have changed jobs as non-recipients working in high impact area firms. Workers with the (up to) five month extension to their tenure at the pre-quake employer were more likely to have stayed in Greater Christchurch than workers in non-ESS firms three years after the quakes.

The difference in long-term internal migration rates appears linked to the fact that forced job loss required some badly affected non-ESS workers to make immediate decisions about taking jobs in other regions. In contrast, ESS recipients stayed in Christchurch at their original employer for longer, because that employer remained in business, and this choice to stay in Christchurch persisted even though their original employer eventually exited.

CONCLUSIONS

While Canterbury workers' employment outcomes were adversely affected in the short-run, those workers were more likely to have jobs three years later (relative to a matched control group), and to have higher accumulated earnings. At the same time, they were less likely to be at the same employer, and more likely to have migrated to jobs in other New Zealand regions.

Impacts vary substantially by worker characteristics and by the naturally-induced geographic variation in the severity of the shock. Workers in firms that were located in badly affected areas, have persistently worse outcomes. Women in their prime and low-skilled women have persistently lower earnings than expected given their pre-earthquake characteristics, consistent with job sorting by industry and the shift in relative demand following the quakes towards construction.

From a public policy perspective, the research shows the Earthquake Support Subsidy influenced the extent of outward migration decisions for most types of workers. This is despite our finding that receipt of the ESS did not affect long-term retention of the pre-quake job under which the subsidy was gained. We interpret these findings as evidence that the subsidy achieved its goal of delaying involuntary job loss and, as a result, fewer workers made immediate decisions to leave the region - decisions that persisted over the long-run.

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