

7. Earnings shocks across age groups







'Labour market experiences vary significantly over the life cycle: unemployment rates are higher for younger individuals while participation rates fall dramatically for workers after a certain age'. Choi et al. (2015)

Key Findings

- For individuals under the age of 40, females are more likely to experience an earnings shock than males. After 40, the rates of males and females experiencing an earnings shock are very similar.
- The probability of earnings shocks for females aged 25 to 34 is higher than for males.
- The probability of falling into a shock is relatively similar at age 40-44. These differences are likely explained by females being more likely to leave the labour force, at least temporarily, after having children.
- Older individuals take longer to recover from an earnings shock than younger individuals.

7.1

Introduction



In most countries, Australia included, younger adults (those aged 15 to 24) experience higher unemployment rates than older adults.²¹ Cassidy et al. (2020) document that males experience longer periods of unemployment than females. They also document that older adults experience longer periods of unemployment relative to younger adults. More recently, Crossley et al. (2021) use data from the United Kingdom to explore the labour market shocks experienced during the pandemic. They were able to collect timely and important information from a representative sample of UK households through the *Understanding Society* survey. Their analysis demonstrates that individuals with precarious employment and younger workers experienced the biggest shocks, which included substantial declines in household earnings.

How do these observed employment trends relate to earnings shocks and recoveries? In this chapter, we focus the analysis of shocks and recoveries by grouping our tax filers based on the age in which we observe an earnings shock. We find striking differences in shocks and recoveries by age for each gender. The group with the highest shock rates is for females between the ages of 25 to 34, followed by males aged 25 to 29. Once we control for economic period, the earnings shock rates by age for males is relatively flat. For females, there is a sharp gradient by age, with a higher proportion of younger females experiencing an earnings shock relative to older females. Recovery from these shocks is faster for younger tax filers (versus older tax filers). Males, however, recover faster than females across all age groups.

21 See, for example, <https://www.aihw.gov.au/reports/australias-welfare/employment-trends>

7.2

Earnings shocks by age and gender

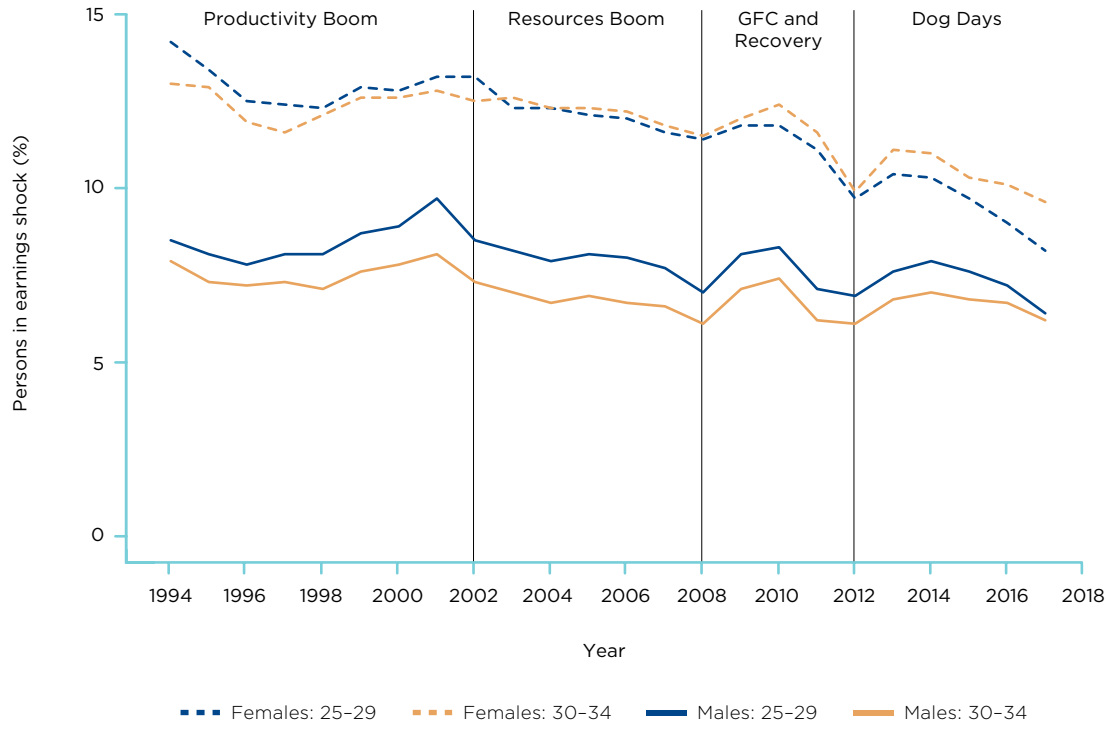


To study shocks by age and gender, we have grouped our tax filers into six age groups based on their age at the time of the earnings shock: 25 to 29; 30 to 34; 35 to 39; 40 to 44; 45 to 49; and 50 to 54. In Figures 7.1A to 7.1C we depict the earnings shock rates by age group and gender for each year for the period under study. In Figure 7.1A we focus on males and females aged 25 to 29 and 30 to 34. For both age groups, females are more likely to experience earnings shocks than males. During the mid-1990s the rates are at their highest level, ranging from 13 percent to 14 percent. Over the last two decades, however, their rates have fallen, ending at a shock rate of 9.6 percent for females aged 30 to 34 and 8.2 percent for females aged 25 to 29. For these two age groups, we should consider the extent to which observed shocks are correlated with personal decisions related to having and caring for children.

During the period under study, there would have been different rules in place regarding the availability of paid parental leave after the birth of a child. Based on a Productivity Commission Report (2009), 54 percent of female employees had some form of paid parental leave available to them. The leave was, however, variable and depended on salary level (higher wages more likely to have paid leave options), industry, and occupation. On average, unpaid maternity leave took up most of the leave taken by females. In 2011, Australia's first national paid parental leave schedule was introduced. The leave scheme provides eligible working parents (usually birth mothers) with up to 18 weeks of pay at the rate of the national minimum wage.

While the leave may be taken by females or males, we assume that most of the leave is taken by females. And given the ages between 25 and 34 are those in which females are likely to have children, it may be that the higher earnings shocks, relative to males, are partially attributable to decisions tied to having children. Moreover, given parental leave pay, in part, is received from one's employers, the steady decline in earnings shocks for females may only be partially tied to parental leave.

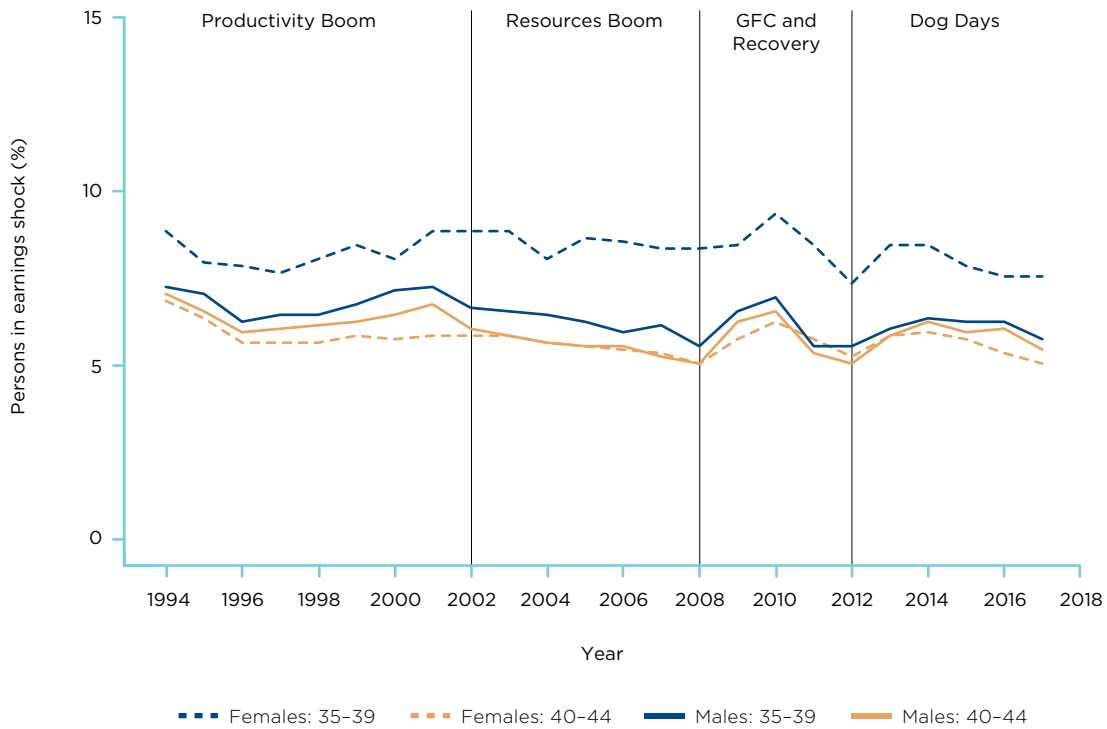
Figure 7.1A. Persons experiencing an earnings shock, by gender—Age 25-34



Notes: Numerators are number of people experiencing an earnings shock. Denominators are persons at risk of experiencing an earnings shock.

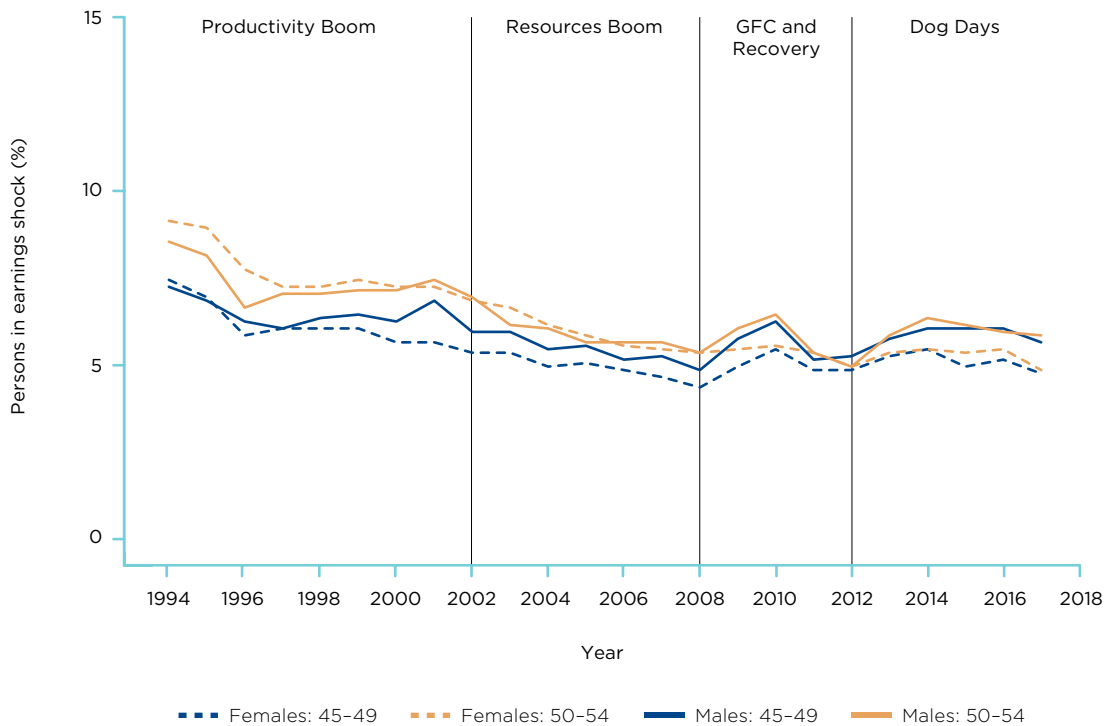


Figure 7.1B. Persons experiencing an earnings shock, by gender—Age 35-44



Notes: Numerators are number of people experiencing an earnings shock. Denominators are persons at risk of experiencing an earnings shock.

Figure 7.1C. Persons experiencing an earnings shock, by gender—Age 45-54



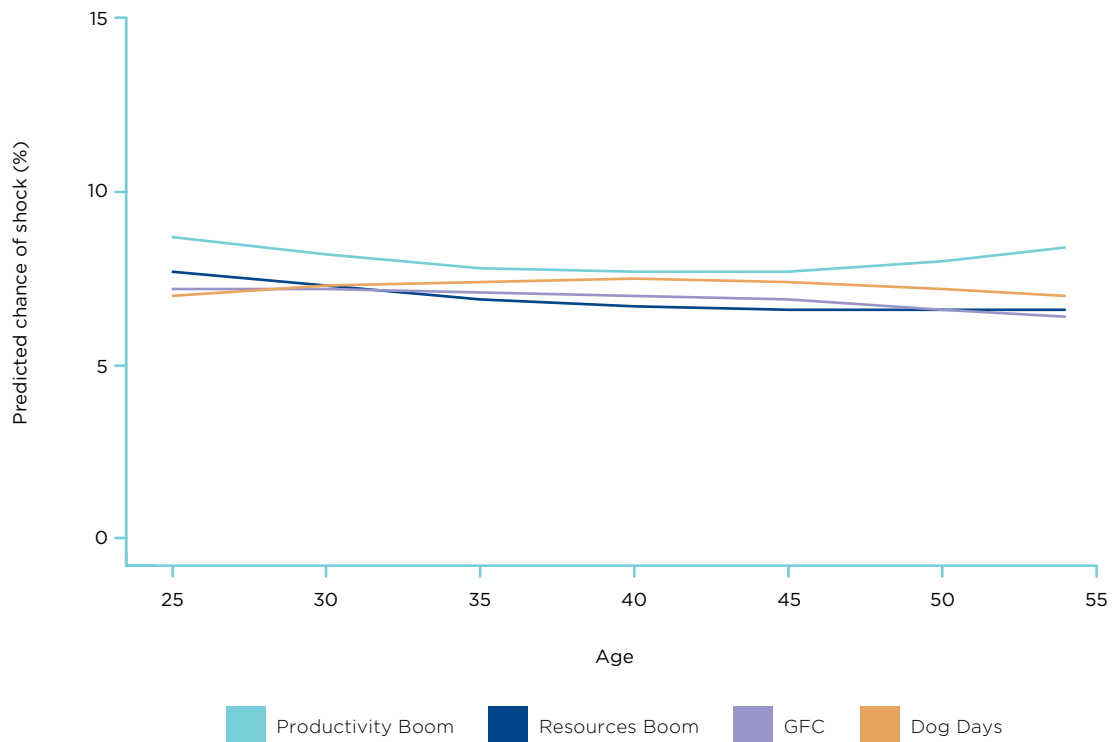
Notes: Numerators are number of people experiencing an earnings shock. Denominators are persons at risk of experiencing an earnings shock.

The earnings shocks for males, aged 25 to 29 and 30 to 34, respectively also declined for most of the sample period. The decline between 1994 and 2017 was about two percentage points, from approximately 8 percent to 6 percent. Around the 2001 recession and again around the GFC the earnings shock rates, however, increased. Rates are mostly higher for males aged 25 to 29 than for males aged 30 to 34.

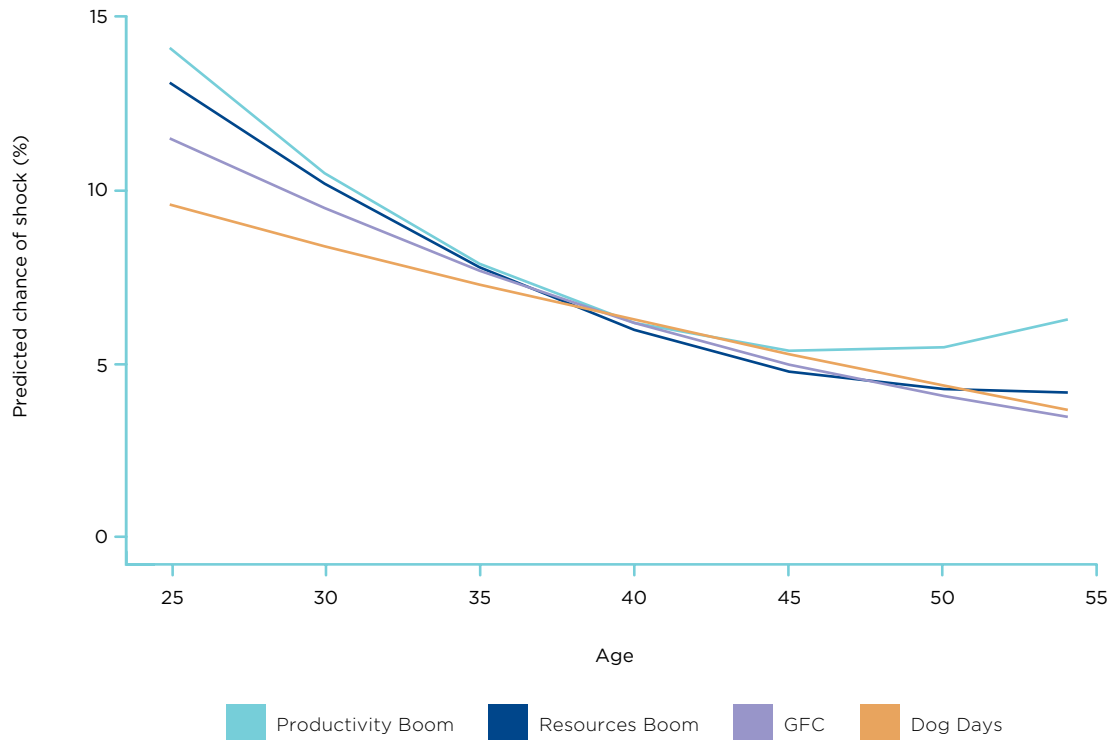
In Figure 7.1 B, we depict the earnings shock rates for those aged 35 to 39 and 40 to 44. Focusing first on those aged 35 to 39, the rates are lower than for younger ages, reaching a maximum of 9 percent for females and 7 percent for males. Between 1994 and 2017, the rates have fallen for both genders by approximately 1.5 percentage points. Both genders exhibit higher shock rates during economic downturns. Consistently across the period, the rates for females are higher than the rates for males. For those aged 40 to 44, across the period, the earnings shock rates are very similar for females and males. Males, however, exhibit higher shock rates during the late 1990s and early 2000s.

The earnings shock rate for older individuals are depicted in Figure 7.1C. For those aged 45 to 49, the rates are very similar for males and females with the female rate being slightly lower and less sensitive to periods of economic downturns (2001 and 2009–2011). The rates are also the lowest for all ages, across most years. The shock rate starts around 7 percent in 1994 but then falls during the 1990s and hovers around 5 percent for most of the period from 2011 to 2017. In contrast, the rates are higher for those aged 50 to 54, starting around nine percentage points in 1994 and falling to less than six percent in 2017. The rates for males and females in this age group are nearly identical.

Figure 7.2A. Predicted probability of experiencing an earnings shock, by age and period—Males



Notes: The predicted probabilities are calculated using a regression with earnings, earnings squared, age, age squared, sa4-level unemployment rate, positive and negative changes in unemployment rate and indicator variables for macroeconomic periods.

Figure 7.2B. Predicted probability of earnings shock, by age and period—Females

Notes: The predicted probabilities are calculated using a regression with earnings, earnings squared, age, age squared, sa4-level unemployment rate, positive and negative changes in unemployment rate and indicator variables for macroeconomic periods.

In Figures 7.2A and 7.2B we explore the predicted probability of a shock after controlling for pre-shock earnings, regional unemployment rates, age and macroeconomic period. The figures depict the predicted probability of an earnings shock by age and macroeconomic period. In Figure 7.2A we depict the probabilities for males. For the period of the productivity boom (pre-2000), the predicted probability of an earnings shock resembles a u-shape curve. Males near 25 and 55 are more likely to experience an earnings shock, close to 9 percent, than males in their 40s (close to 8 percent). As we observed in Figure 7.1, the rates are highest for all ages for this period. In contrast, for the more recent period, the 'dog days' period, males aged in their 40s are more likely to experience an earnings shock than younger or older males. During this period, younger and older males have a 7 percent probability of experiencing a shock versus a closer to 7.5 percent for those aged in their 40s. Across all periods, once we control for earnings and other factors, the probability of a shock for males ranges from 6.4 to 8.7 percent.

The range of shock rates for females after controlling for income and other factors, is 14.1 to 3.7 percent. The patterns of the shocks, moreover, are mostly symmetric across the four economic periods. Young females, those aged around 25, have much higher rates than older females. During the productivity boom (pre-2000), females near the age of 55 have earnings shock rates that mirror the rates for those around 40. As raised above, for younger females, the earnings shock rates are highest for the period before 2000 and lowest for the most recent period.

When we compare the predicted probabilities for males and females, there are big differences by gender and age. From 25 to 35, females are observed with higher shock rates than males. From 40 to 55, however, males are observed with higher shock rates than females. There are striking differences between Figures 7.2A and 7.2B. This highlights the importance of considering the importance of controlling for confounding factors when assessing the likelihood of experiencing an earnings shock.

7.3

Recovery from earnings shocks by age and gender

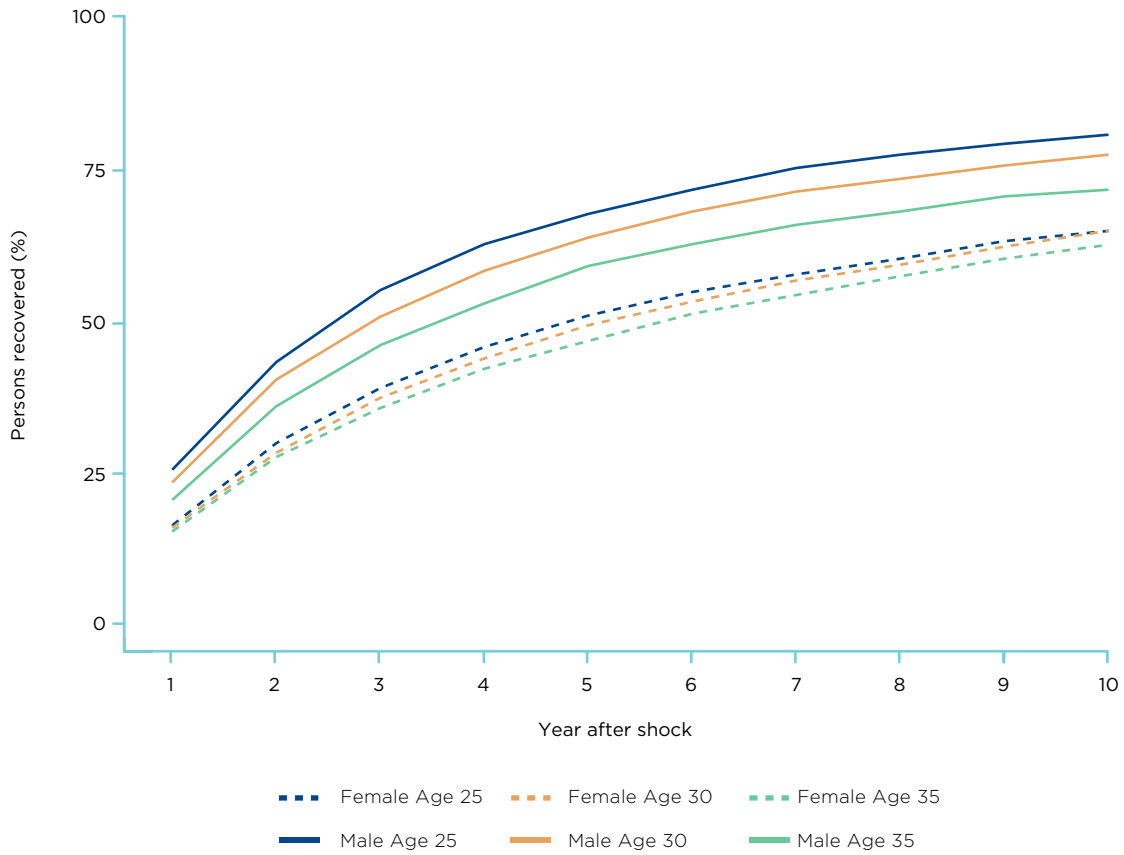


In the previous section we observed striking differences in earnings shocks by age and gender. In this section we explore recovery rates by age and gender. Our analysis focuses on the predicted probability of recovery up to ten years after the shock, after controlling for pre-shock earnings, macroeconomic period and other factors. We define recovery as earning at least as much as one did in the two years prior to the observed earnings shock.

In Figure 7.3A we depict the probability of recovering from a shock over a 10-year period for those aged 25, 30 or 35 at the time of the earnings shock. Males are depicted using a solid line; females are depicted using a dashed line. For these ages and for both genders, the probability of recovering from a shock within one year is less than 30 percent. More than 50 percent of males aged 25 or 30 have recovered within three years, however. For males aged 35, it takes four years for at least 50 percent to have recovered. Within 10 years, close to 80 percent of males who were 25 at the time of the shock have recovered from the earnings shock but for males who were 35 at the time of the shock, the 10-year recovery rate is closer to 70 percent.

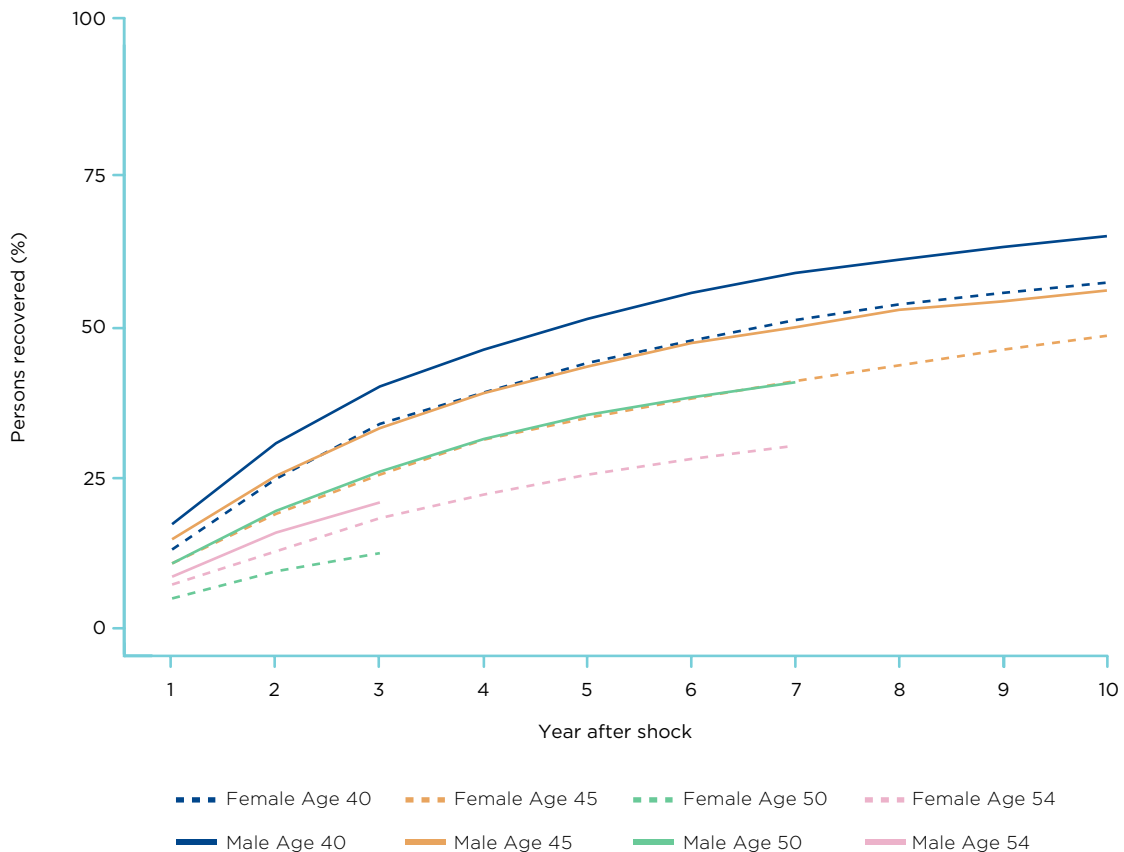
Across the three ages for females, recovery takes longer. It takes an average of six years to reach the point where 50 percent of those with a shock are observed with pre-shock earnings. The 10-year recovery rates are approximately 65 percent for these ages. The question of what is driving these slower recovery rates for females is likely to require a quite complex answer. One of the potential explanations is fertility decisions by females. It is also worth pointing out that the rates of recovery between males and females are slowly converging over time. This might reflect a change in attitudes—it becomes more socially acceptable for males to take parental leave—as well as workplace changes, such as more organisations offering parental leave.

Figure 7.3A. Predicted recoveries from an earnings shock, by age and gender— Age 25–35



Notes: Horizontal axis shows after-shock years, vertical axis shows proportions of people projected to recover by a given year. Numbers are calculated using Cox proportional hazard model.

Figure 7.3B. Predicted recoveries from an earnings shock, by age and gender— Age 40–54



Notes: Horizontal axis shows after-shock years, vertical axis shows proportions of people projected to recover by a given year. Numbers are calculated using Cox proportional hazard model.

7.4

Summary



This section explored earnings shocks and recoveries by age and gender. We observe striking differences. We find that females are more likely to experience earnings shocks and take longer to recover. The shares of males experiencing shocks at age 24–35 declined throughout the period, but the decline is of smaller magnitude than among females. The probability of earnings shocks for females aged 40–44 is the same as for males. These facts hint at the potential explanation of such differences: female fertility decisions. When it was customary for females to leave the workforce or reduce hours to care for a newborn child, the gap in the shares of males and females experiencing earnings shock was the largest. The gap gradually declined throughout the period, hinting at the role of changing attitudes and workplace policies.

The age distribution of shocks and recoveries is also different among males and females. For females, the highest rate of shock is observed for younger individuals (consistent with the mechanism discussed above), but for males the probability of a shock (conditional on other factors) is relatively flat. We also observe that the speed of recovery declines with age. This fact calls for thinking about potential policy interventions to help older individuals.