Job loss and Aging in the Philippines

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List of Acronyms

DOLE	Department of Labor and Employment
LabStat Updates	Labor Statistics Updates
LFS	Labor Force Survey
LTS	Labor Turnover Survey
PSA	Philippine Statistics Authority
SDG	Sustainable Development Goal

Abstract

Job loss scars an individual's employment prospects and this is especially serious as one ages. Staying in the working force is the common survival strategy especially in developing countries. In the Philippines where job losses are prevalent, little is known on the effects of job loss to one's reemployment likelihood. This research paper tries to estimate job loss effects in ones' employment prospects and see other factors that mediate this effect using a panel data culled from a nationally representative survey – Labor Force Survey (LFS) 2007-2008. Estimation was done by using random and fixed effects regression models with job loss, demographic and socio economic factors, industry and labor market condition as independent variables. Additionally, this research paper investigates if job loss effects magnifies with age and if gender differences exist. Results showed that job loss causes about 52 to 78 percentage points reduction in one's employment probability and is higher for women. Workers with secondary educational attainment are found to be more negatively affected by job loss than those with primary education. The large reduction effect of the job loss to employment likelihood is largely driven by the job losses from services sector and lastly, job loss effects increases with age.

Keywords Labor force survey, job loss, random and fixed effects.

Paper's Relevance to Development Studies

Extending working life is not uncommon for developing countries in order to accumulate earnings that will be used to enjoy one's remaining years, for older persons in developing countries to survive at the very least. This paper contributes to the meager literature in developing countries on the impact of job loss to one's employment prospects. Aging vis-à-vis healthy productive years is one indicator of a country's population that is geared toward inclusive development.

Chapter 1
Introduction

1.1. Background

Philippines, together with other countries, has about to come to an era of population ageing. Official census statistics in 2010 showed that there were six million aged 60-year-old and above individuals, that is nearly 7% share in the country's total population (PSA 2010). From 4.3% share in the population on 1960 where the first census is conducted that gradually increased to 5.4% share in 1995, it is projected to grow as much as 10.3% share of the country's population in 2030[1]. There is certainty that the country will be facing the economic and social consequences of the presence of older persons in the population -- "*increase in special needs such as health care, housing, income security, and other social services*" (DSWD 2006:10).

As the Philippine population ages, older adults' employability is a main concern. According to the UN Report, older adults in developing countries have no concept of retirement. Due to poverty, adults continue to work until physically able (UN 2007). The Philippines experiences the same, adults aged 55 and older comprises 30% of the 2014 labor force, significantly higher from 13 percent in 1990 (PSA 1990). If this age group's labor force participation rate grow at a consistent rate performed in 1999 to 2009, 35% of the labor force population will then be composed of older age groups 55 and older. "Working longer is often hailed as the best way to increase retirement incomes, yet the strategy depends crucially on seniors' ability to find work and hold on to their jobs. Being out of work is especially serious for older workers who are too young to qualify for Social Security retirement benefits, which provides an important lifeline for nonworking adults age 60 and older." (Johnson and Mommaerts 2011: 1).

However, job loss is an inevitable phenomenon and the older adults are the most affected by this event. Generally, job loss occurrence poses a number of consequences. In a macro level, the cost of non-employment of older persons is the same as the unemployment outcomes in an economy. The goods and services that the unemployed would have produced had they been gainfully employed is diminished. The unemployment of additional workforce leads to reduction of the possible income for the government that includes "losses in social contributions of the employees and the employers", the tax from their income and indirect tax from their consumption expenditures (Gerard, Valsamis, and Van der Beken 2012). The cost of unemployment will also affect the individual through their potential earnings that could have been used for expenditures or potential interest if saved in a bank. Being unemployed also corrodes the household savings since it is being used up during the time one is unemployed and exacerbates continuous debt or being unable to pay loans or rents (Nichols, Mitchell and Lindner 2013).

Other than the macroeconomic impact of older persons' non employment, widely studied also are the effects of job loss focusing on the individual. "Older persons experienced the same profound impact of unemployment as the young and middle-aged workers with its economic, psychological, social and health problems" (Briar et al 1980: 5). The strain brought about by job loss

[1] Population projection as shown in http://www.helpage.org/global-agewatch/population-ageing-data/country-ageing-data/?country=Philippines

in older persons accumulated wealth is also well documented (Ozturk and Gallo, 2013; Couch, Jolly, and Placzek 2009; Fallick 1996; Carrington and Zaman 1994;). While it is widely documented that health status can affect why individuals cannot go back to work, literature also tells us that job loss may cause mental health problems. Psychological consequences to older persons include loss of self-esteem and self-identity that at times leads to physical and mental health deterioration (Brand, Levy and Gallo 2008; Gallo, Bradley and Siegel 2004; Gallo, Bradley,Falba et al 2004). These area of research are getting much attention recently with the rise of aged population, decreasing fertility rate and advancing medical technology.

The effects of older persons' job loss do not end in individual level, earlier studies had been made regarding the impacts to their families and communities. Older persons' unemployment is seen as burden to its family. Because of health problems that may be associated with older persons unemployment, members of the household need to take care of the elderly and doing so incur household costs. At community level, communities with large proportion of older persons inactive in the labor market and usually bears complicated illnesses affects productivity levels and determine poverty levels of such communities (Nichols, Mitchell and Lindner 2013: 10-11).

1.2 Research Objectives

Given the need of older person to stay in the labor market and the effects of job loss of older persons on a macro, meso and micro level, the need to study the effect of job loss into their employment/reemployment probabilities deserves a look which can be an important insight to the policy makers. This paper aims to describe and analyze the effect of job loss and its interaction with age groups and other demographic, household and labor market characteristics in determining older persons' employment probabilities. This poses research questions to be addressed in this study:

Main research question:

To what extent does a prior job loss affect an older persons' employment probability?

Sub research questions:

1. What is the effect of a prior job loss to ones' employment probability?
2. What is the effect of a prior job loss among older age groups?
3. What other factors mediate with job loss in affecting reemployment probability?
4. Are their gender differences?

1.3 Study Limitation

In the literature, job loss is defined to be voluntary or involuntary. While this paper wishes to determine to what extent does job loss and other factors affect older persons' employment/reemployment probabilities, this study was not able to identify whether job loss is either of the two classification. The survey used in the study did not pose any question as to whether the job loss is voluntary or involuntary, whether the worker was displaced or choose early retirement. There were evidences in the literature that those who voluntarily exit their jobs are less likely to be reemployed. Not having the said category can underestimate the findings of this research paper. Other limitations also include the absence of health as an intervening factor, health status leads the many factors why older persons left their jobs and why older persons are not able to get back to work, due

to unavailability of this indicator, this is not considered in this study. Also, savings or other sources of income like pension or remittances received are also not in this study due again to data limitation.

1.4 Contribution to Literature

While a number of studies are focusing on the youth populations' employment prospects, it is also deemed necessary to take a look to the older age cohorts in the population with the given adverse effects in the literature. Saying so, first among this paper's contribution is that this undertaking is the first attempt to empirically describe the effect of one's job loss to one's employment chances using a national representative sample. Philippine labor force is majority composed of workers in informal sector where job losses are expected. The extent on how job loss affect their re-employability is still an unanswered research. Secondly, adding to the aging research in the Philippines, this study focuses on effects of job loss to older workers. Much of the studies in the aging literature is about their health status while labor market condition of older persons remains a research gap. Researchers argue that being not in the labor market makes the old people more ill. So the policy to address elderly's healthcare is a preventive measure and instead must be a proactive one where they are actually must be encouraged and facilitated to work. Third, specifying effects of job loss among later age groups is another significant contribution, this explores the job loss effects that may differ among increasing age groups so to specifically target population and proper timing where an intervention is needed. And lastly, the use of panel data in determining job loss effects on employment probabilities is another strength of the paper capturing somehow the complex unobserved factors that underlies in the mechanism of losing the job and factors in re-entering employment.

1.5 Preview of Results and Structure of the Paper

This research paper used panel data and employ econometric model in the form of random and fixed effect regression to understand the effect of a prior job loss to an individual's employment probability and explore other factors that mediate this effect. Some highlights of the findings of this research paper includes the large reduction of about 52 to 78 percentage points in employment probability given a prior job loss controlling for other demographic and household characteristics, industry and labor market condition and additional interaction. The prospects to reemployment after a prior job loss vary among older age groups. The effect of a prior job loss to the employment prospects differ largely in gender where educational background was found to be the confounding factor. The large reduction effect of job loss is brought about by the services sector. Job loss effects magnifies with age.

The structure of this research paper is as follows: Chapter 1 gives the background, motivation, objectives, contribution and limitations. Chapter 2 gives overview of the job loss theoretical framework and empirical evidences outside and within the country of interest that gives support to the framework and then gives the testable hypothesis I made; Chapter 3 describes in detail the data, data sources and rationale, and econometric specification applied in this paper; Chapter 4 presents employment patterns culled from the dataset and some descriptives. Chapter 5 interprets estimates from the methodology that was applied to describe effect of job loss to employment probabilities including some other factors considered and lastly the last chapter, Chapter 6 summarizes some highlights of the results and draws some conclusions and policy recommendations.

Chapter 2
Related Literature

The effect of job loss to ones' employment and reemployment probabilities had been studied as input to retirement policies for the government. Especially for older workers, effect of job loss is more prominent with the reason that this group faces more difficulty to find a job or be reemployed compared to its younger counterparts. This chapter formally enumerates theories available in the research field with respect to studies on job losses and will be followed by empirical evidences made outside and within Philippine literature. Thereafter, I will provide my testable hypotheses which are based from the cited literature and the mechanisms behind the chosen hypotheses.

2.1 Theoretical Framework

2.1.1 *Life Cycle Hypothesis*

Theories that can be cited in the study of older persons' behavior in the labor market is anchored in the life cycle hypothesis. The life-cycle hypothesis has indicated that individuals have plans for their earnings and expenditures behavior throughout their life course. Individuals intend to balance their expenditures in the most possible way during their life cycle, doing so by amassing their earnings during their prime working age and utilizing it when they retire. The fundamental assumption is that most individuals save and consume in a stable manner. This connotes that individuals usually do not save up a lot in one period to expend their savings frantically in the next period, instead they control their expenditure levels approximately the same in every period. (Modigliani, 1963)

2.1.2 Job loss "Scarring" Effect

Meanwhile, the study of job loss had been prominent since an occurrence of job loss disrupt the wealth accumulation of an individual in life cycle. Among the age cohorts, employment probabilities of aged individuals are most hurt with prior job loss. Job loss has been documented to have "scarring" effect. Job loss poses long lasting consequences. It reduces future earnings (von Wachter 2007) and increase job instability (Stevens 1997). For elderly persons still in the workforce, job loss is a lot tougher. Elderly persons will have to leave industry-specific skills and talents that they have acquired throughout the years when losing a career job and may have weak connections to use in associating themselves to possible job employment. Employers may also view the unemployed elderly workers as costly, may not be as productive as compared to the younger employees, difficult to retrain and older workers are less likely to relocate to find work. Existing studies on the hardship and struggles of elderly workers' job loss shows a lot of resemblance in its negative effects. Chan (1999) have shown that late-career job loss has a very considerable effect on wages, assets, actual employment, and employment expectations. In addition, pension incentives contribute very little to the reduction of employment. Johnson and Kawachi (2007) have depicted a descriptive analysis of career shifts of elderly persons in which the elderly persons who wished to have a change of career has went through steep decline in earnings and loss of benefits. All these are considered the scarring effects of a job loss.

2.2 Empirical Studies outside Philippines

In the United States**,** Johnson and Mommaerts (2011) study started with enumerating job losses, job search and reemployment studies made in the country. Accordingly, many of the job loss and consequent reemployment studies make use of Displaced Workers Survey (DWS)- a longitudinal survey that supplements the Current Population Survey. In the said survey, employees were asked if job loss occurred in a three-year period. The survey is limited to certain causes of terminations like employer initiated termination without of value of employees' performance. Examples are plant permanent or temporary closure, redundance of work and insufficient demand for the company's products. Terminations for cause are excluded. Pattern for job loss is like the unemployment rate pattern. During high unemployment times, job displacement also follows. Also observed is that the lower educated workers posted higher job loss rates than the educated ones. (Farber 2005; Rodriguez and Zavodny 2003). On the other hand, still with the comparison of lower educated workers, those with secondary education are found not to be affected much by recurring occurrence of job loss for they exhibit unchanged displacement rates amid financial lulls. In addition, those with higher education posted increasing job loss rates than those secondary education holders. (Farber 2005; Munnell et al. 2006). Job loss is more experienced by men than women, by manufacturing workers than services workers and who had shorter job tenure. Education shows beneficial in increasing reemployment likelihood after a job loss caused by layoff (Farber 2005; Munnell et al. 2006). In the same way that men have higher likelihood to be reemployed than women. During unemployment spells accessibility and leniency of unemployment benefits increases, albeit transitory advantage augmentations have little impact (Card and Levine 2000; Schwartz 2010). Employees who were formerly displaced and become reemployed experience reduction in earning in their new jobs and impacts persists for long time. This reduction is more pronounced among displaced workerd with lengthend job tenure and those who shifted to other industries (Carrington 1993; Farber 2005). Job loss effect in United States is found to vary among ages. Johnson (2011) discovered that when older workers after losing their jobs, appeared to have been in a bad position in finding work again compared to their younger counterparts. On a monthly duration, men aged 25 to 34 who are displaced from their jobs are 39% more likely to land to a new job than men with similar characteristics aged 50 to 61. While aged 25 to 34 female workers who lost their jobs are 18 % more likely to be reemployed as compared to the same but aged 50 to 61. Also like in general population, older workers who are displaced experienced wage reduction in their new jobs (Johnson 2011: 9).

In United Kingdom, Philipson and Smith (2005) had extensively reviewed studies made in the country with regards to why older persons remain in the labour force even after state pension age. In summary, factors behind these are "marital status, gender, educational attainment socio-economic group, housing characteristics, financial factors, attachment to work and type of employment". Humphrey et al (2003) look into staying at work and gender relationship and found that female workers are 33 percent more likely to extend working life after reaching the retirement age as compared to male workers with less likelihood of 10%. McNair et al. (2004) observed that educational qualifications have an influence on the decision of workers to pursue working past retirement. They were asked of their willingness to work past retirement and workers who are formally educated posted larger number of response to find similar type of job swhile without formal degrees closely followed. The probability to pursue working beyond the retirement age is highly connected with socioeconomic group and is evident among older age cohorts (Whiting 2005: 288). Self-employed individuals were the most likely to pursue working beyond the age of 65 (Whiting 2005: 288).

In European countries, Tatsiramos (2007) considered four states and showed job displacement impacts in relation to the routine of employment to retirement. He found out that countries like Germany and Spain which provides government benefits among older unemployed forward these older people to young retirement. Older workers who were displaced are found to be less going for another new job and choose retirement than who were not displaced.

In developing countries where no institutional provision for retirement exist, no pension data and limited panel data is merely available which can be the reason behind the scarcity of researches on job losses.

2.3 Empirical Studies in the Philippines

Like any developing countries where poor people has no notion of retirement (UN Report 2007), older persons' experience in the Philippines is the same. Although, 15- 64 years of age are considered the working population because this cohort are the ones considered fit to work, older persons because of poverty among many other reasons still want to work beyond the working age unless faced by unwell health conditions (UN 2007).

Job loss in the Philippines was first look into in a case study by Pascual (2011). The study is specific among 200 displaced workers and used non-random survey to generate characteristics of "affected workers and the lost job, the post-displacement experience of affected workers, and the economic and noneconomic effects of job loss on workers and their families" (Pascual 2011:2). Findings include that displaced workers experienced low re employment rates, found temporary jobs after the lay off, those who found new jobs suffered wage loss, while others resorted to self employment,. Additionally, unemployment duration was found to be around 14 months which ranged from 1 to 57 months. All these were interpreted as a general picture of workers incapability of staying in the job (Pascual 2011: 3).

As per studies on aging in the Philippines, these mainly are focused on elderly's (60 and above) welfare. Giving us the picture of elderly characteristics however can help us understand the results of this study and provide background of this country specific research. In 2004, Abejo explored on describing the living arrangements of the elderly using census data. Accordingly, elderly's living arrangement shows that elderly are independent from their children. One important highlight of the study is that "co-residence with children does not necessarily mean economic dependence of parents on children but could also mean dependence of children on parents" (Abejo 2004: 23).

Mapa (2010) on the other hand, focused on economic variables relating the elderly. With the use of an econometric model of savings, he looked into the population connection with the economic circumstances of the elderly. He found out that "the saving rate of the elderly is substantially higher compared to the other age groups. However, the saving rate has been on the decline through the years. While the elderly accumulate saving perhaps to serve as buffer during the long retirement years or as bequest motive, its contribution is not substantial to increase the aggregate saving rate". On 2011, the research was extended to the effects this time of population to poverty of households headed by elderly. The study showed that "high proportion of young dependents create negative effects on the welfare of the elderly-headed household by increasing the probability of that household being poor" (Mapa 2011: 1).

Racelis (2012) is the one closest to studying labor prospects of the older population. His study include simulation of labor force participation of elderly to look into the possibility of expanding elderly's employment choices in their present lengthened years. Results showed that the " higher the increase in labor force size (1) the higher the increase in aggregate labor income, (2) the higher the proportion of consumption that can be covered by own labor income, (3) the higher the elderly deficit age cut-off, and (4) the larger the decline in the aggregate lifecycle deficit of the elderly" (Racelis 2012:1).

Adding to the Philippine literature, this study is the first to identify the effect of a job loss experienced by the working population. The labour market of the Philippines is notably composed of informal employment which is the group vulnerable from the effects of job loss because of nonexistence of security net in informal sector like health and social insurances. The extent to how job loss affects once employability remains a research gap. Since older age groups will be the most to be affected in a job loss, the focus of this study are the effects of job loss at given later age groups to one's employment probability.

2.4 Job Loss Situationer: Philippines

To understand the state of employment or job loss persistence in the country, I present also in passing some important notes in relation to job loss, employment and unemployment in the Philippines largely by use of official statistics in the country.

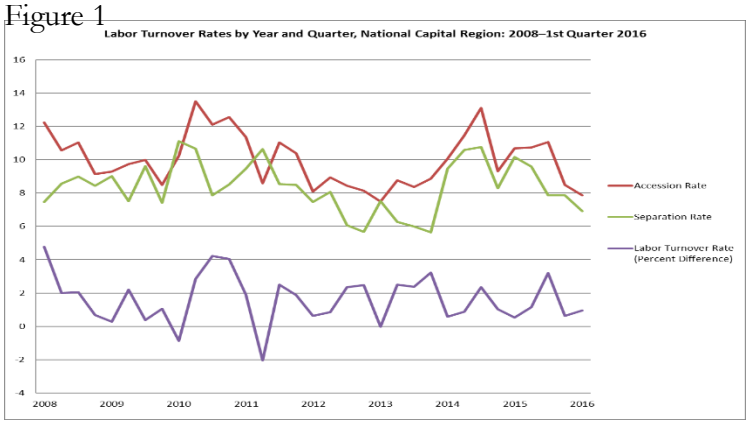
Employment Insecurity

Cross-country data have shown that employment insecurity has a higher percentage among the workers in the Philippines as compared to other countries. Six out of ten of the employees observed in the Philippines have shown concern to some extent or a great deal of it about the tenure of their current jobs in 1997, in contrast to the mean of three out of every ten employees from the 32 countries that were covered in the study. Employment insecurity in the Philippines has further increased later in 2005 when it reached seven out of 10, while the averages for the other countries have stayed the same. Other variables have also shown similar pattern; 45 percent have expressed that it was "very difficult" or "fairly difficult" to obtain a job tantamount to their current job in 2005, while the proportion of who have expressed the opposite opinion with the pronouncement of "my job is secure", have increased from 15 to 20 percent from the years 1997 to 2005. This was amid the course when the Philippine economy was developing every year by 4 percent. In any case, business development, while positive, was sporadic amid this period with the official unemployment rate drifting above 11 percent. Hence, the high magnitude of employment insecurity which was observed from the results in surveys presumably reflects low confidence on employment expectations conceived from the awareness of the fact that finding a job is for the most part troublesome. Referring to prior studies Green [2009] contends that the apparent job insecurity for the most part is pursued the direction of the unemployment rate (Esguerra 2010).

Labor Turnover

The labor market of the Philippines is frequently faced by job separation and job accession[2]. Philippine Statistics Authority (PSA) quarterly reports labour turnover rates[3] of National Capital Region enterprises since 2003 seeing the importance of labor turnover as one of the key indicators of employment situation in the country. Employment growth is reported in terms of this dimension. As seen in the graph below, except for some major economic downturn caused by external factors and typhoons or calamities, movement of labor turnover is generally erratic. (see Figure 1). In general, occurrence of job loss follows some seasonality. Accession caused by workers replacement normally at peak on first three quarters, usually second quarter but never at peak on last quarter. The separation initiated by employer is usually at high rates during first and third quarters but never on second quarters. Noted is this pattern varies with industry. In general, second or third quarters are the peaks of labor turnover rates and not ever in first quarter of each year (Labstat, Updates 2008: 2).

Figure 1



Source: Philippine Statistics Authority (2016)

Esguerra (2010) connect labor turnover rates of 2003 to 2007 to the expanding job insecurity among workers. The accession rate which measures the percentage of new hired employees, whether temporary or permanent, to total employment in the company over a time period, has shown that nearly 70 percent of newly hired in 2003-2007 were for replacement, and the rest was for expansion. On the different side, the separation rate, which measures the percentage of job terminations to the total employment of the company over the same period of time, have shown that 57 percent of separations throughout the same period of time have been employer-initiated (fired from work) rather than employee initiated (quits the job). The labor turnover rate has risen from 0.6 to 2.83 between 2003 and 2007. While the increase in labor turnover rate may be seen in a positive light as a mark of good economic activity, it might also be viewed as a sign of business fluctuations to which companies have been progressively subjected. This has an untoward effect on labor productivity and wages, and further underscores the vitality of macroeconomic policy. A high turnover rate additionally implies that workers' average job tenures have been gradually decreasing. The increase in labor turnover rate would have been good if workers who have left their jobs will land for better ones as the case in an

[2] "Job accession refers to permanent or temporary additions to employment in the enterprise due to 1) expansion of business activity; and 2) replacement of separated workers and employment resulting from changes in methods/technology of production or service while job separation refers to refer to terminations of employment due to a) quits or terminations initiated by the employees; and b) layoffs or terminations initiated by the employers due to economic reasons (e.g., lack of market, financial losses, redundancy) and noneconomic reasons (e.g., gross negligence, AWOL)". http://psa.gov.ph/psada/index.php/catalog/117/related_materials

[3] Labor turnover rate is computed as accession rate minus separation rate

improving economy. However, the Philippines history in capital formation may not precisely be a great one and this is affirmed by the findings above that expansions have played only a small part as far as the hiring in labor in the past period of years is concerned. (Esguerra 2010: 6)

Recent labour turnover reports tells us that "laid off workers" are greater than job quitters (Labstat Updates 2015: 2). This is complementary to the fact that in general, Filipinos cannot afford to lose a job and most of the time will not decide to quit but the experience is they are being laid off. Industries that posted most number of laid off workers are "mining and quarrying, construction, wholesale and retail trade, and arts and entertainment creation. [4]"

Job displacement

Another labor market indicator used in the Philippines is job displacement. Unlike the labor turnover rates which are representative only of the biggest region in the Philippines, Department of Labor and Employment since 1990s using regional administrative data regularly reports the monthly layoffs of establishments nationwide. The report includes number of establishments that reported closure, number of establishment who reduced their workforce and number of displaced workers affected by closure and reduction of workforce. In a summary report in 2007, most number of workers displaced were usually found in second quarter or third quarter and followed by the last quarters (PSA 2007). Reasons for retrenchment include "reorganization/downsizing/redundancy, lack of market, financial losses, change in management/merger, high cost of production, and lack of capital" (PSA 2002). Most displaced workers reported come from industry sector specifically the manufacturing industry. Though official reported employment rates in the country usually peaked at last quarters, it is actually the addition of seasonal workers in the labor market that constitutes the bulk of rise. The reemployment prospects after displacement is another more important thing to look into as also supported by the turnover rates that in the Philippines, job loss are usually employer initiated and not employee-initiated (Labstat Updates 2008: 2).

[4] http://psa.gov.ph/sites/default/files/attachments/ird/pressrelease/LABSTAT%20LTS%202015_final.pdf

2.5 Testable Hypotheses Stemming from Previous Empirical and Theoretical Work

This paper would like to explore on the extent of how job loss is affecting an individual's employment probabilities and see age differences and gender differences if there is any. Based on the above discussion on theoretical framework and existing literature outside and within the Philippines, I would like to hypothesize on four points:

Hypothesis 1: Job loss scars employment prospects.

Hypothesis 2: The scarring effect magnifies with age.

Hypothesis 2: Education must play a role in reemployment after a job loss. Those with higher education are more reemployed than their lower educated counterparts.

Hypothesis 3: Given both gender had previous job loss, men are still advantaged than women with reemployment.

In this research paper, the effect of job loss is firstly hypothesized to have scarring effect focused on employment prospects, one response variable among many where job loss is seen affecting that were established already in the literature. Another, job loss effect is hypothesized to scar increasingly as individual ages. Age is often associated with productivity thus reemployment prospects after a job loss especially in middle age will be seen problematic both by individual and employer. Exploring on what age groups does actually job loss has more effect on employment probabilities gives clearer distinction on the extent a job loss is decreasing an older person's employability. This will provide empirical evidence for policy makers as to what group should be targeted if ever a policy intervention will be made. Lastly, men who are dominating employed statistics in the country are hypothesized that given a job loss at any age, remain advantaged than women. Other individual demographic characteristics will also be included on how these affect their employability, together with some household characteristics and labor market condition indicator.

Chapter 3
Data and Methodology

This chapter describes the source of the data, construction of the dataset, variable choice explanation in Philippine context and relevance to the study, variable coding, data descriptives, and finally the econometric model used in answering the objectives of this research paper.

3.1 Data description and Variables

3.1.1 Data sources

This research paper used datasets culled from a national representative survey the Labor Force Survey (LFS). LFS is a quarterly survey conducted by the Philippine Statistics Authority covering 51, 000 households and gathers information on demographic and socio economic indicators of the population. The results of the survey are translated as official statistics of "labor force participation rates, employment rates, unemployment rates, underemployment rates" among others. These generally depicts the levels and trends of the said employment indicators in the country.

This study made use of the rotated samples that occurred in survey years 2007 and 2008. Rotation of samples happened on previous years where half of the sampled housing units were re-interviewed in the same quarter the next year. I used the October round, last survey round where employment rates are at peak annually. To identify which individuals in October 2008 where initially sampled in October 2007, matching identification used is the region, province, municipality, barangay, household sequence number, respondent line number, sex and age. The use of panel data allows us to control for variables that we cannot observe like individual heterogeneity say one individual maybe lazy to find work and others are not after a job loss. This trait is unmeasurable. Many individual differences on the attitude or perception on getting a work after having a job loss is accounted for when using a panel data. The focus of the paper is the effects of job loss to older persons thus the comparison group is the age 15 to 39, the samples therefore used in this study is individuals aged 15 and above. The unit of analysis is individual level.

3.1.2 Dependent Variables

Dependent variables include job loss which is the main variable in focus of this study and other dependent variables which are categorized into demographic characteristics, household characteristics and industry type and labor market condition. The main concern however of this study is the effect of job loss and specify the effect for later age groups.

a. Job loss

The main focus of this study is the effect of job loss to employment probability. Job loss for this research is referred to a negation of a response to an item in the Labor force survey. Job loss is determined in the survey from the question "Did work or had job during the past quarter". Respondents who were tagged as new entrants in the labor force were not included in the sample. Had prior job loss is therefore coded 1 if the individual did not work or did have no job during the past quarter and 0 otherwise.

b. Demographic characteristics

As many of the usual estimations in employment studies, age and age squared are used in the econometric estimation. It is an established research that age can affect the probability of one's employment. Age is often associated with one's productivity hence employers based their decision to hire on age. Older workers therefore are disadvantaged with respect to age where advertised job requirements have long before had age brackets. There are perceptions where older workers are seen to be slow, less creative and less productive (Gust 2006: 29). Furthermore, employers prefer hiring younger workers because of lower cost in terms of salary paid and benefits extended. Numerous businesses express worry that more seasoned laborers are more costly than more youthful specialists, on account of inflexible position wage structures or in light of the fact that wellbeing and annuity advantages are more costly at more seasoned ages. Also, to separate effects of job loss by later age groups, dummy variable for each late age groups will be included in the estimation. Later age groups considered are age brackets of 40 to 50 years old, 51 to 60 years old, 61 to 70 years old and 71 years old and above. Interaction of these age groups with prior job loss experience is the one considered important for this research.

To answer whether there are differences in employment prospects by gender, inclusion of the sex variable is a must. Women and men have very different labor market experiences. Although Filipino women have surpassed the men in terms of education, have increased their labor force participation, and mostly comprised the sectors of education, health services, and the civil service, they still face discrimination in terms of employment opportunities and remuneration (Gust 2006: 4). Marital status is generally correlated with gender. Married males may be more intensive in their job search compared to females because of the cultural norm that the "man of the house" should provide for the family's needs. Gender is arbitrarily coded to be 1 if male and 0 if female while marital status is coded to be 1 if ever married and 0 if never married. Role in the household is also considered, being the head of the household carries more pressure to have continued work as to have continued income to support other household members. Dummy variable head is thus included in the demographic characteristics, coded 1 being the head and 0 otherwise.

Education is one's human capital for prospect jobs in the future. The educated unemployed is a notable feature of labor markets in most developing countries including the Philippines. Individuals who have tertiary education accounted for 41.2 percent of the total number of unemployed persons in 2010. Fan & Stark (2007) found this uneducated unemployment is the result of the growing labor migration since workers believed that skills acquisition or human capital returns in general is higher in developed countries than in developing countries. They further added that if these jobseekers fail to secure a highly-paid job overseas, they may well decide to remain unemployed and continue their search for more highly-paid employment abroad. Highly-educated individuals, most of which are young and unmarried members of households, have higher reservation wages and can afford to wait for better job offers because they may get financial support from their families while searching for a job (ILO 2012). From the perspective of employers, education is often used as an indirect measure of worker productivity therefore we would expect that more educated jobseekers will receive more job offers than their less educated counterparts. Moreover, in the case of college graduates in particular, the program/course that they completed may also be influential in determining their chances of finding a job because employers look for skills and experience in jobseekers from certain educational background. These clearly illustrate that an individual's educational background is closely linked to his or her personal decisions and outcomes pertaining to job search.

This study included educational attainment as dummy variables, 3 dummy variables for reached at least elementary (1/0), at least highschool (1/0) and at least college (1/0).

c. Household Characteristics

Household characteristics are important determinants of an individual's decision to be employed or reemployed. For elderly, they were seen to be dependent to their children, the larger the household size may translate to increasing number of working household members, the less chances an older person in the household engage him/herself to employment. However, the other way around may take place, a bigger household size can also translate to more non- earning household member thus the pressure for the older person to engage to employment. This study includes the household size as explanatory variable affecting employment prospects. On the other hand, the decision to be employed by any of the household member can be influenced by other working/ non working household member In addition, older persons are also given the task to take care of the young in the household while the parents of these young household members engaged to work. This role differs by sex, older women generally take this role in the household. Thus proportion of the number of children below 7 years old relative to household size will also be included among the household characteristics.

d. Major Industry Group and Unemployment rate

Industry where employment takes place for an individual is also considered in the regression. Reemployment highly depends on what industry an individual works for. Industry groups were grouped into three: Agriculture, Industry and Services[5]. This study included two dummy variables, the industry and services variable.

Regional unemployment rate is used to proxy labor market conditions. Regions wherein the amount of labor supplied by households is larger than the number of labor demanded by establishments are the regions with high unemployment rates. In contrary to areas with high unemployment rates, low unemployment rates are areas where the amount of labor supply of households are less than the amount of labor demanded by companies. In other words, when the area has a low unemployment rate, businesses will find a harder time to supply their labor needs and conversely, people who wants to work will have a harder time landing on a job on low unemployment regions. A strong labor demand indicates more recruitment and hiring or an incline in the amount of job offers (De Jesus 2015:15).

[5] As per PSA industry classification, Agriculture includes "Agriculture, Hunting and Forestry and Fishing and Aquaculture". Industry can still be broken down into "Mining and Quarrying, Manufacturing, Electricity, Gas, Steam and Air Conditioning Supply, Water Supply; Sewerage, Waste Management and Remediation Activities and Construction". While Services consists of "Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles, Transportation and Storage, Accommodation and Food Service Activities, Information and Communication, Financial and Insurance Activities, Real Estate Activities, Professional, Scientific and Technical Activities, Administrative and Support Service Activities, Public Administration and Defense; Education; Human Health and Social Work Activities, Arts, Entertainment and Recreation, Other Service Activities, Activities of Households as Employers"; (PSA 2016) https://psa.gov.ph/sites/default/files/attachments/ird/pressrelease/E-CLS%20October%202016.pdf

3.1.3 Sample Descriptive Statistics

Our sample covers 47, 331 individuals aged 15 and above that are matched from October 2007 and October 2008 survey rounds. The mean age is at 39 years old ranging from 15 to 99 years old and evenly distributed are male and female. Half of the samples are the base group (aged 15 – 39 years old) About 60% of the samples are ever married while 35% are identified head of the households. Largest proportion (39%) had at least secondary education, closely followed by (31%) those who had at least elementary education, and not far behind are those with tertiary education (27%). Household size ranges from 1 to 19 household members having 5 members on the average. Proportion of children under 7 years old to the household size posted 11% share on the average ranging from none to 75%. About three fourths (73%) of the sample were employed and proportion did not vary much in respective of year though a bit smaller for 2008. Same is true with proportion who had prior job loss, which had no significant change in the share of 25%. As per older age groups starting from aged 40 to 50, the proportion of who experience job loss increases as older age group advances ranging from 17% to 66%.

Table 1. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Age	38.6	16.8	15	99
No job past quarter	.24	.43	0	1
Base Group: Aged 15-39	.54	.49	0	1
Aged 40-50	.20	.40	0	1
Aged 51-60	.12	.33	0	1
Aged 61-70	.07	.25	0	1
Aged 71-99	.04	.20	0	1
Male	.50	.50	0	1
Ever married	.60	.48	0	1
Primary Education	.31	.46	0	1
Secondary Education	.39	.48	0	1
Tertiary Education	.27	.44	0	1
Household head	.35	.47	0	1
Household size	5.2	2.2	1	19
Proportion of children aged 7 below	.11	.15	0	.75
Unemployment Rate	5.1	2.3	2.2	12.8
Base industry: Agriculture	.29	.45	0	1
Industry	.09	.29	0	1
Services	.60	.48	0	1
Employed				
2007	.73	.44	0	1
2008	.73	.44	0	1
Experienced Job loss				
2007	.24	.43	0	1
2008	.25	.43	0	1
Aged 15-39	.23	.00	.22	.23
Aged 40-50	.17	.00	.16	.17

Aged 51-60	.22	.00	.20	.22
Aged 61-70	.39	.01	.37	.40
Aged 71-99	.66	.01	.65	.67

Author's calculation based from the sample.

3.2 Empirical Specification

To determine the effect of job loss into an individual's employment probability, a random and fixed effect model will be utilized in this research paper. A random or fixed effects estimation is an advanced treatment for panel data. To be able to provide more robust estimates of causal relationship of job loss to employment probability and controlling for individual's observed and unobserved characteristics that don't change over time, I use the fixed effects model as the main model for further interactions of variables. As mentioned in the literature, the study of employment prospects determinants are classified into individual characteristics, housing characteristics, labor market condition, social pension schemes and health factors. As mentioned also in the limitation, social pension schemes and health factors will therefore not be included in the model. Reiterating, the focus of the study is to determine effect of job loss in later age groups, thus the model that will be used follows the empirical specification below:

Fixed Effect:

$$Y_{it} = a_i + \beta_1 priorjobloss_{it} + \beta_2 agegroups_{it} + \beta_3 (priorjobloss \times agegroups)_{it} + \beta_4 \begin{bmatrix} demographic \\ household \\ labor\ market\ condition \end{bmatrix}_{it} + u_i + \varepsilon_{it}$$

Where β_1 is the measure of main effect of prior job loss to the employment probability, β_2 the measure of main effects of different older persons' age group categorized for the purpose of this study into individuals aged 40 to 50 years old, 51 to 60 years old, 61 to 70 years old and 71 years old and above with comparison group aged 15 to 40, β_3 the interaction effects of the prior job loss with age groups and β_4 gives us the main effects of each demographic characteristics (gender, marital status, household head, level of education, works in informal sector), household characteristics (household size, proportion of children below 7 years old with respect to household size) and major industry group and labor market condition proxied by regional unemployment rates, i for individual and t for time dummy, u_i for the unobserved effect also known as unobserved heterogeneity and lastly ε_{it} for idiosyncratic errors.

Random Effect:

Random effect model follows the same specification only that a strong assumption is that u_i – the unobserved effect is not correlated with the explanatory variables.

Other specification of this model was also ran in smaller samples like disaggregation of gender and educational attainment to probe further the mechanisms that underlie in using a general model.

Chapter 4
Employment Patterns and Characteristics

This chapter provides graphs that illustrates how the factors mentioned in the previous chapter interplay with employment status. In addition, the focus is how these factors also differ once one experienced job loss.

To understand how job loss and other factors affect one's employment probability in a life course, I start with graphical representation of the interaction of each factor with employment.

Figure 2

Figure3

Figure 4

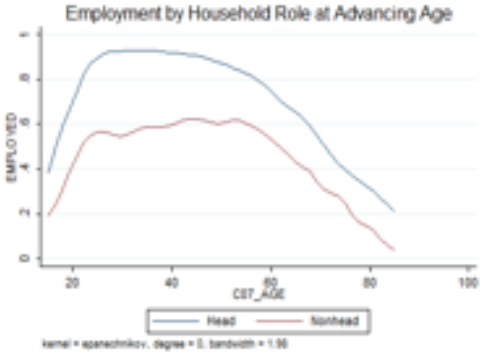


Figure 5

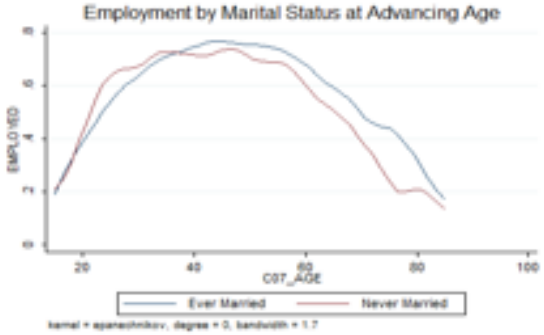


Figure 6

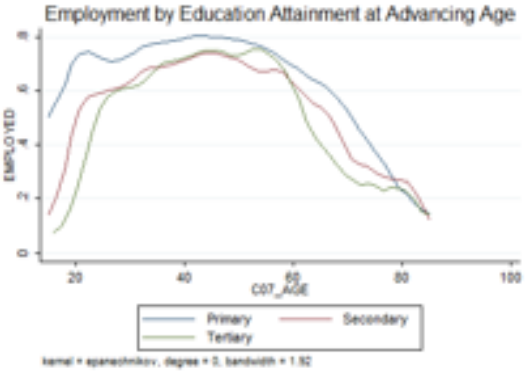


Figure 2 shows us the hyperbolic relationship of age and employment. Since the sample is restricted to 15 years old and above since this is the start of the age bracket of the working group in the Philippines, the graph suggests that the employed status is achieved at an increasing rate generally with age up until 40 years old and decreases as an individual come to age. Both sexes follow almost similar trends however, the increasing relationship of age to employment status is observed to be faster for male than female with even earlier than 40 years of age. Most female on the other hand achieved the employment status at around 50 years of age. Decline in employment status is observed at 55 years of age and continuous trend start at 60 which is the retirement age in the Philippines. Still, employment is experienced by later age groups beyond the retirement age. Figure 3 on the other hand shows different trend on the experience of job loss among the sampled population used in this study. Male generally experience less job loss and the dip is at 40 years old. There is increasing job loss experience by females up around 30 years old and follows the same dip up to 45 years old. The graph depicts that job stability somehow occurs at ages 40 to 50. The rising job loss experience at age can be attributed again with the retirement age.

Figure 4 shows that the employed status is largely attained by those individuals who are household head and this status is maintained until age 60. For those non household heads, deviation from the employed status can be observed from ages 30 to 50. Non household heads can afford the non-stability in employment for these individuals experience less pressure than the household heads. While Figure 5 shows that those ever married had smooth transition of employment to non-employment over their life course as compared to those never married. Same intuition where those married which may imply to have their own family have more pressure to be employed than the non-married in general terms.

Figure 6 depicts relationship of educational status attainment with employment status, true enough the Philippine working force is notable for uneducated working force. Employed status is highly attained by individuals having at least primary education while individuals with at least tertiary education had lesser share. This can be attributed to the fact that students finished tertiary level in the Philippines at around age 21, thus may explain why the employed status is not achieved by many of tertiary education holders in the sampled population. Also observed is the peak for tertiary holders is at the latest age compared to the primary and secondary education holders. Education is a major factor why at later ages, an individual can still be employed, at least tertiary includes beyond tertiary education holders and the data shows larger share among tertiary holders were employed at later ages as old as years before the retirement age. Another interesting story from the graph is that individuals with at least having tertiary education had the fastest drop after a peak. Having tertiary education may imply that these individuals found employment in formal sector where retirement benefits is required to be given by employers thus the drop of with employed status even before the retirement age.

And now we will see how patterns change or kept unchanged after a job loss. Generally, a large reduction in share of those who are employed were observed when a job loss was experienced.

Figure 7

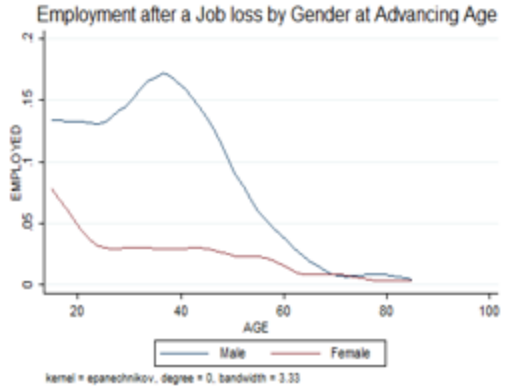


Figure 8

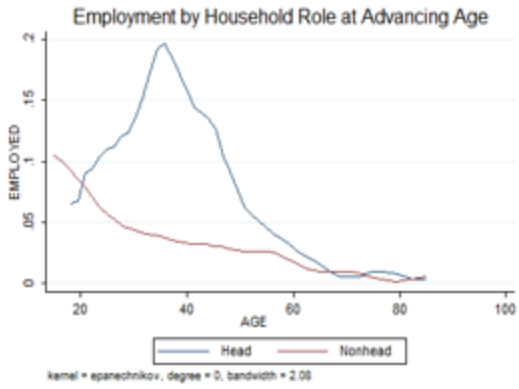


Figure 9

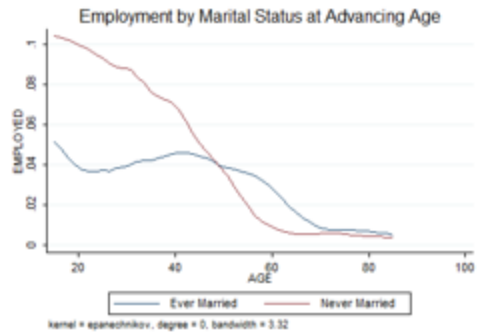


Figure 10

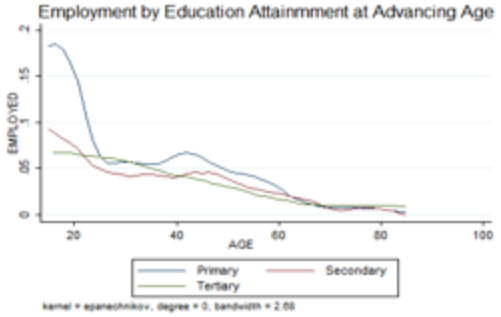


Figure 7 to 10 shows employment trends for individuals who had prior job loss. These graphs generally depicts that the employed status is lower for individuals who experience job loss. Female is observed to be more affected showing almost the non- attainment of the employed status at earlier ages. Males can still be observed to attain employment status at increasing rate but at a very slow increase (Figure 7). Drop of employment status starts at age nearing 40. Almost same trend was observed when disaggregated for household head and non-head where the peak is again at 40 (Figure8). Figure 9 shows employment patterns at advancing age by marital status. Observed is that individuals who were never married have relatively higher employment status share than those who were never married. The decline especially observed for those ever married starts at age 40. Can be that at this age – 40 and beyond, older adults start to have grandchildren and after a job loss and difficulty to find a job after will make them resort to take care of their grandchildren instead.

Now, figure 10 shows the employment status by educational attainment among individuals who had prior job loss. Even with prior job loss, individuals with at least primary education were employed more than those at least with secondary and tertiary level of education at younger working age. This can be attributed to the fact that on earlier ages individuals with at least primary education has less competition in the labour market with at least secondary and tertiary level. It can be observed that ages around 30 years old, those with primary education who had prior job loss cannot compete enough compared to its counterparts. However, the rise on the number of employed who had at least primary education was observed at around age 40. It can be that those with higher level of education

once experienced job loss at around this age were careful on landing what jobs to be reemployed since these individuals are considering continuity of career they had started. While those with at least primary education can be re-employed at occupations with less job requirements like agriculture services.

Chapter 5
Results and Discussion

This chapter provides interpretation of the results generated from econometric modelling. The discussion will follow a structure where interpretation of results be based on: a) job loss main effect controlling for all factors b) other main effect variables (demographic, household characteristics, industry type and labor market indicator) c) job loss interaction with other variables- (age groups x educational attainment, industry x educational attainment) and finally d) gender differences in job loss effect, other main effects, and job loss with interaction effects.

Regression Estimates

To support the employment patterns showed in the previous discussion, I used panel data regression- random and fixed effects to provide robust estimates in explaining job loss as a factor in affecting employment/reemployment probabilities. To see the effect of some variables that does not change through time, I use a random effect extension of panel regression (Table 1). The final model would be as expected is the fixed effects extension as per Hausman test (see Appendix). Clustering individual standard errors were accounted when using the fixed effects extension. I used then four specifications of the fixed effect regression where specification 1 includes all the main effects, second specification includes main effects with some interaction effects and to test if gender differences exist, last two specifications run for male and female (Table 2). Other specifications were performed following the results of these main models, where job loss is interacted with age groups and industry disaggregated on educational attainment levels. These additional specifications were also analysed if gender differences exist so the split of samples into gender. For robust check, logit and probit regressions were also ran in the panel data which also confirms some interesting highlights of the results from the random and fixed effect regression.

In summary, results showed that job loss causes about 52 to 78 percentage points reduction in one's employment probability and is higher for women. Workers with higher educational attainment are found to be the most negatively affected by a job loss compared to those with lower level of education. This is shown largely by the male group. The large reduction effect to employment likelihood is largely driven by the job losses from services sector and finally, job loss effects magnifies with age.

Table 2. Random Effects Regression Estimates (Main effects)

	Main Effects	Male	Female
Had prior Job loss	**-0.76**	**-0.71**	**-0.78**
	(0.002)**	(0.003)**	(0.002)**
Demographic Characteristics			
Male	0.004	-	-
	(0.002)*		
Age	0.007	0.007	0.007
	(0.000)**	(0.000)**	(0.000)**
Age Squared	-0.000	-0.000	-0.000
	(0.000)**	(0.000)**	(0.000)**
Household Head	0.039	0.032	0.022
	(0.002) **	(0.004)**	(0.004)**
Ever Married	0.000	0.024	-0.015
	(0.002)	(0.003)**	(0.003)**
Base: No education			
Had at least primary education	0.015	0.001	0.031
	(0.005)**	(0.007)	(0.007)**
Had at least secondary education	0.034	0.014	0.056
	(0.005)**	(0.007)**	(0.007)**
Had at least tertiary education	0.069	0.033	0.101
	(0.005)**	(0.007)**	(0.007)**
Household Characteristics			
Household Size	-0.015	-0.013	-0.018
	(0.001)**	(0.001)**	(0.007)**
Total no. of employed in the	0.049	0.044	0.057
household	(0.001)**	(0.001)**	(0.001)**
Proportion of Children aged	0.087	0.097	0.089
7yo and below	(0.006)**	(0.008)**	(0.084)**
Type of Industry and Labor Market Condition			
Base: *Agriculture*			
Services	-0.138	-0.134	-0.015
	(.002)**	(0.002)**	(0.000)**
Industry	0.003	0.007	-0.010
	(0.003)	(0.003)**	(0.005)*
Unemployment Rate		-0.000	0.001
		(0.004)	(0.001)
Constant	0.77		0.75
R square	81.6	74.6	83.3
N obs	77,855	41,081	20,645

*Author's calculation from the sample. Significant at **5% * 10%, enclosed in parenthesis are standard errors*

Table 3 Fixed Effects (FE) Regression Estimates (Main & Interaction Effects)

Explanatory Variables	FE 1	FE 2	FE 3 (Male==1)	FE 4 (Male==0)
Had prior Job loss	**-0.61**	**-0.58**	**-0.52**	**-0.61**
	(0.003)**	(0.004)**	(0.007)**	(0.007)**
Demographic Characteristics				
Male	*Omitted*	*Omitted*	*Omitted*	*Omitted*
Age	0.004	-	-	-
	(0.000)**			
Age Squared	-0.000	-	-	-
	(0.000)**			
Household Head	*Omitted*	*Omitted*	*Omitted*	*Omitted*
Ever Married	-0.002	0.002	.018	-.028
	(0.007)	(0.007)	(0.008) **	(0.011) **
Base: No education				
Had at least primary education	-0.004	-0.004	-.016	.013
	(0.014)	(0.014)	(.019)	(.021)
Had at least secondary education	-0.006	-0.006	-.017	.008
	(0.015)	(0.015)	(.019)	(.023)
Had at least tertiary education	0.003	0.003	-.013	.022
	(0.016)	(0.016)	(.021)	(.024)
Household Characteristics				
Household Size	*Omitted*	*Omitted*	*Omitted*	*Omitted*
Total no. of employed in the household	0.828	0.824	.066	.104
	(0.001) **	(0.001) **	(.001) **	(.002) **
Proportion of Children aged 7yo and below	0.110	0.110	.086	.142
	(0.015) **	(0.015) **	(.018) **	(.022) **
Type of Industry and Labor Market Condition				
Base: *Agriculture*				
Services	-0.279	-0.277	-.255	-.303
	(0.003) **	(0.003) **	(.004) **	(.006) **
Industry	-0.028	-0.025	.003	-.067
	(0.005) **	(0.005) **	(0.006)	(.010) **
Unemployment Rate	-0.002	-0.002	-0.002	.001
	(0.000)	(0.000)	(0.002) **	(.002)
Age Groups				
Base: *Age 15-39*				
Aged 40 – 50		.005	-.000	.007
		(0.007)	(0.009)	(.011)
Aged 51 – 60		-.000	-.003	-.000
		(.010)	(.013)	(.016) **
Aged 61 – 70		-.013	-.014	-.012
		(.014)	(.018)	(.022)
Aged 71 and above		-.045	-.013	-.067
		(.020) **	(.027)	(.032) **
Job loss X Age Groups				
Prior Job loss x Aged 40 – 50		-.052	-.057	-.031
		(.007) **	(.014) **	(.010) **

Prior Job Loss x Aged 51 – 60		-.067	-.108	-.039
		(.008) **	(.013) **	(.011) **
Prior Job Loss x Aged 61 – 70		-.075	-.139	-.041
		(.009) **	(.014) **	(.013) **
Prior Job Loss x Aged 71 and above		-.034	-.116	.010
		(.011) **	(.015) **	(017)
Constant	.80	.87	.90	.83
No. of observations	77,855	77,855	41,081	37,774
R-squared	74.9	75.	67.0	76.7

*Author's calculation from the sample. Significant at **5% * 10%, enclosed in parenthesis are standard errors*

5.1 Job loss

Among all the specifications, job loss was found to have large negative effect on the employment probability, random effects model from 71 to 78 percentage points (pp) and fixed effect model ranges from 52 to 61 pp with main and interaction effects as control (Table 1, 2). It can again be reviewed that the job loss indicator was asked on time of the interview referring if the individual did work on the past quarter. This translates that an individual whose got no job on the past quarter is most likely to remain not having a job on the current quarter.[6] We have no data when does this individual started to get unemployed and this can only mean that the unemployment duration can actually be even more than three months. This coincides with the findings of de Jesus (2015) where the average completed duration of unemployment in the country is estimated to be 7.1 months while the incomplete duration is 5.4 months[7] An individual's being selective of the next job to land to after a prior job loss causing the long duration can be accounted for as unobserved characteristic in the panel fixed effect estimation. Referring to labor turnover trends, the third quarter which is the reference of the question "'Did work on the past quarter?" is where the most number of employer initiated separation takes place. It might bother us then whether these employees landed on jobs at most the next quarter wherein hiring of employees due to replacement is never at peak during last quarters of every year. Hence, the important effect of a prior job loss to an individual's probability of reemployment while controlling for other factors tells us that one will most likely to remain searching for a job having the status unemployed in at least a quarter after the job loss.

It can be observed that controlling for individual fixed effects, there are 20 pp reduction in job loss estimates from random main effects model as compared to fixed main effects estimates. Addition of interaction groups in fixed effect model reduce job loss estimate by 3 percentage points.

5.2. Demographic Factors

[6] The assumption of having one job loss during a single continuous spell is supported by literature, "the possibility of several unemployment spells occurring during the unobserved periods is discounted" (Foley, 1997; Galiani & Hopenhayn, 2001; Grogan & Van den Berg, 2001; Tansel & Taşçı, 2010) in De Jesus (2015)

[7] Using only unemployed sample of LFS 2009 where only unemployed where asked of their job search duration

Among the demographic factors, age, being the head, male, and having tertiary education have positive relationship with being employed all significant at 5% level. Variables that do not change through time like individual characteristics such as gender was dropped in the panel fixed effect estimation. The head variable was omitted in the panel fixed effect estimation due to some collinearity issues with other variables. But when estimated by random effect regression (Table 1), showed positive relationship with employment probability. Being the head increases the likelihood of being employed by 4 pp, the pressure for a household head to earn for the family is supported by this result. An additional increase in age increases the likelihood to .7 pp which is expected. As an individual age, more experience is gained thus more attractive for employers. The negative sign of effect of age squared to employment probability is also expected implying that there is a certain age where the employment probability actually decreases, this is the age where the productivity to the face of employer is actually diminishing. Being a male increases the likelihood of being employed by about .4 percentage point. In the Philippines, the employed population is majority comprises of men, it is widely established even outside Philippine literature that employment is on the past and still remains favorable for men being perceived to be the stronger gender. Being married gives positive relationship with employment likelihood in RE model but change direction when ran for FE, both are not statistically significant. All the education level indicators in RE model showed positive direction towards employment probability, all significant at 5% level but when ran for FE, having primary and secondary direction showed different direction and loses statistical significance. Both models suggests that having the highest education adds up to an individual likelihood. Having at least primary education shows positive relationship to the probability of being employed while having at least secondary education shows negative effect. Racelis (2012) described the labor force that those with lower level of education were the ones in the labor force. Additionally, the Philippines is noted for uneducated workforce (De Jesus, 2015). Those workers who had at least primary education were found in informal sector which largely constitutes the employed sector. In model 1, covering the full sample, having at least tertiary units makes one's chances on being employed higher though not significant for FE model. Having the highest level of education do not seem to favour in attaining the employed status, reasons that can be cited are waiting for rehire or recall, or being selective of the new job for career concerned individuals.

5.3 Household Characteristics

Household size was dropped in the panel fixed effect estimation due to collinearity with other characteristics. However, performing a random effect regression shows the negative relationship of household size to employment probability. The increase in household size decreases the probability of being employed by 1 percentage point significant at 5% level. The bigger the household size can be translated to increased number of members eligible to work. Common intuition tells us that this direction means that these household members depend on those members who are working. Household size composition in the Philippines may be mirrored in the dependency ratio. Dependency ratio[8] in the Philippines averages of about 70% since 1990 census, on 2007 it is posted 66%, still relatively high compared to neighbouring countries like Indonesia and Malaysia who have similar

[8] "*Population dependency ratio (Age dependency ratio)* is the ratio of persons in the "dependent" ages (generally under age 15 and over age 64) to those in the "economically productive" ages (15-64 years) in the population. Divided into the old-age dependency (the ratio of people aged 65 and older to those aged 15-64 years) and the child dependency (ratio of people under 15 to those aged 15-64 years)". http://philfsis.psa.gov.ph/index.php/id/15/matrix/I60FSPDR

family ties in their culture having 53% and 52% respectively[9]. However, we must be cautioned that this ratio does not mean economic dependency, thus we include total number of employed household member in the estimation. This also gives us positive direction to employment probability both generated from random and fixed effect models. An addition of 5 percentage point to employment likelihood from the RE model and 9 pp from FE model both significant at 5 % level were interpreted from the results. One explanation can be is that household members are encouraged to do work as the working members earn their own money. Another household characteristic included in predicting employment probability is the proportion of seven years old and below household member to the household size. The positive direction suggests that as the number of young members increases the probability of one to be employed increases. The needs of these young cohorts to be addressed lead an individual to be employed.

5.4 Industry and Labor Market Condition

Seventeen kinds of businesses as per LFS category were initially considered in the estimation but as expected because of collinearity fails to produce regression estimates. Instead, the three major classifications-- agriculture, industry and services were thus considered, agriculture industry being the base category to compare with, industry and services were found significant. From RE model, an individual who works for industry has .4 percentage points addition in employment probability as against to those who worked for agriculture though not siginificant. On the other hand, those who works for the services has 14 percentage points reduction in employment probability compared to agricultural workers significant at 5 % level. From the FE model, those who works for the industry has 3 pp reducation to employment likelihood than agricultural workers, now significant at 5% level, While those who works for services have around large reduction of 30 pp in their employment probability than those who worked for agricultural sector significant at 5% level. The higher reduction to employment probability by the services sector compared to industry sector with agriculture as base industry may be explained by the fact that services requires more skills than agriculture, there is a higher gap between skills needed in services compared to agriculture than industry to agriculture. The review of our sample composition tell us that total number of employed in agriculture sector and services sector do not vary much which comprises 41% and 46% accordingly.

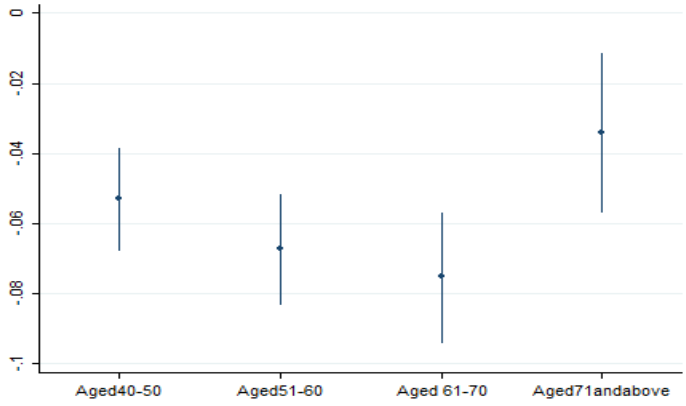
The labor market condition being proxied by regional unemployment rate gives positive effect to employment probability in a random effect model and was not significant, but for fixed effects model gives negative effect to the probability of employment. As expected, the lesser the demand for labor, the more workers are discouraged to find work with the belief that there are not enough jobs for them in the market. The increase in every percent of unemployment rate translates to a reduction of 2 percentage points in employment probability.

[9] Culled from world bank database http://data.worldbank.org/indicator/SP.POP.DPND

5.5 Job loss x Age groups

As seen from the employment patterns, sudden rise or fall of share of employed persons in the sample occurs at age 40 thus in the estimation the analysis of job loss effects for older people starts with age 40 with comparison groups aged 39 and below. As seen in Table 3, age groups as explanatory variables were not found significant but when interacted with the prior job loss were then becomes significant. Results showed that older adults who had previous job loss aged 40 to 50 compared to the workers aged 15 to 39 have 6pp reduction in their employment probability. Older adults aged 51 to 60 who are in the retirement age who experienced a prior job loss have 7pp reduction in employment probability compared to the baseline group. Those age group where the mandatory retirement age of 65 belongs who experience job loss have 8 pp reduction in employment probability compared to the 15 to 39 years old. And the aged 71 and above have 4 pp reduction in employment probability after a job loss compared to the younger cohorts. The results shows that job loss effects magnifies with age though not supported by the age group 71 to 99, this is most probably the age group that are not physically able to do more work. The results after all are expected since as an individual age, the productivity in the face of the employer diminish so after a job loss, older age groups will have difficulty compared to its younger counterparts to be offered the job

Figure 11 Job loss Marginal effects per Older Age Groups



In Table 3, the large reduction of 60 pp to employment likelihood for job loss main effect is attributed to the full sample where half of it are the base group, aged 15-39. Since this research paper is focused on older age groups, we interact job loss with age groups to disentangle effects for older age cohorts. From a large reduction of averaging to 60 pp, interaction with age groups resulted to a range of 5 to 8 pp reduction to employment likelihood. To explain more on why the effect of prior job loss interaction with age group gives us those estimates and hinting on educational attainment to be the confounding factor as shown by demographic estimates, I investigate further to provide robust estimates of the interaction of job loss with educational attainment and age on the focus while still controlling for other explanatory variables. I split the samples by educational attainment accordingly and determine turning point of age in each regression splits.

Table 3. Fixed Effects Regression Estimates Split via Educational Attainment, with Turning point of Age

	Full Sample	With at least Primary Education	With at least Secondary Education	With at least Tertiary Education
Prior Job loss	-0.32 (.017)**	-0.23 (.034)**	-0.31 (.032) **	-0.27 (.045) **
Age Age square	.008 (.001)** -.000 (.000)**	.006 (.002)** -.000 (.000)**	.008 (0.002)** -.000 (.000)**	.007 (.003)** -.000 (.000) **
Other demographic characteristic controls	Yes	Yes	Yes	Yes
Household characteristic controls	Yes	Yes	Yes	Yes
Industry and Labor Market Condition controls	Yes	Yes	Yes	Yes
Age* Job loss Age square * Job loss	-.012 (.000)** .000 (.000)**	-.012 (.001)** .000 (.000)**	-.012 (.001)** .000 (.000)**	-.016 (.002)** 000 (.000)**
Turning Point of Age (-B1/2*B2)	31	40	41	54

*Author's calculation from the sample. Significant at **5% * 10%, enclosed in parenthesis are standard errors*

Table 3 shows job loss fixed effects by educational attainment specifications. Job loss main effects differs among educational attainment split which was found most negatively affecting the secondary education holders. Why not the least educated are the ones mostly affected? Philippines as previously mentioned is notable for uneducated workforce. This may be due of the fact that those with lower level of education from the start were already employed in their low paying jobs as early as their life cycle and that advantages them of more experience than secondary education holders who are trying to get better jobs. The turning point of age for primary and secondary holders do not vary much, turning point of age is interpreted as the hyperbolic relationship of age to employment status where increasing in nature up to the turning point and then decrease after reaching the turning point of age. The tertiary holders because of their profile with education seems can hold to the employed status the longest (10 years more) compared to its counterparts.

5.6 Job loss x industry

A job loss experience was also interacted with industry to see how job loss estimate change when accounting for major industry groups. This is necessary since an inclusion of industry factors in main effects model improves the model reliability and reduction effect of job loss lessens. Disaggregating effets by group of different educational attainment samples will give us skill-specific industries (skills are mostly proxied by education). A job loss in services sector was found driving the large reduction of job loss to employment likelihood.

Table 4. Fixed Effects Regression Estimates: Job loss x Major Industry

	Full sample	With at least Primary Education	With at least Secondary Education	With at least Tertiary Education
Job loss	.012	-.009	.026	.065
	(.013)	(.017)	(.024)	(.044)
Age	.004	.004	.006	.007
	(.001) **	(.002) **	(.002) **	(.003) **
Age square	-.000	-.000	-.000	-.000
	(.000) **	(.000) **	(.000) **	(.000) **
Other household characteristic controls	Yes	Yes	Yes	Yes
Household characteristic controls	Yes	Yes	Yes	Yes
Labor Market Control	Yes	Yes	Yes	Yes
Industry Sector	-.028	-.019	-.009	-.015
	(.005) **	(.008) **	(.009)	(.014)
Services Sector	-.243	-.30	-.224	-.162
	(.003) **	(.005) **	(.007) **	(.010) **
Job loss x Industry	.034	.046	.013	-.026
	(.023)	(.037)	(.041)	(.062)
Job loss x Services	-.682	-.627	.013	-.775
	(.013) **	(.018) **	(.025) **	(.045)
Turning Point of Age (-B1/2*B2)	38	41	39	47

*Author's calculation from the sample. Significant at **5% * 10%, enclosed in parenthesis are standard errors*

A noticeable highlight from Table 4 is that the large job loss effect observed previously was largely driven by job loss in services sector. The job loss main effects are now not significant at any levels and job loss effects are actually channelled greatly through sector variables. As per education attainment groups, job loss effects by industry though not found significant for each groups change direction among the tertiary holders. Industry which includes retail trade is not attractive for higher education levels, this results suggest. The large job loss effect to reduction in employment prospects in services sector mirrored the current Philippine labor situation. True enough services sector in the Philippines are known for subcontracting services where job security is always in question and where the most job displacement comes from.

5.7 Gender Differences

Demographic Characteristics

Being the head generally posted additional probability on being employed when random effect regression was performed and when specifications for male and female were ran, both showed positive relationship to employment. Our data shows no gender differences in employment chances if an individual is a household head. Though marginal difference in estimates was observed higher for male than female, both statistically significant at 5% level. There is 3 percentage point addition to employment likelihood for male household heads. Men household heads experience more pressure to find work. Also, notice that the ever married variable becomes significant when ran separately among men and women. In the FE model, ever married shows negative implying that the ever married status decreases the probability of being employed. The direction changes however when ran for males. There is 2pp increase in the likelihood to be employed when a male had been ever married.

Historically in the Philippines, men are the ones responsible for the expenses of his family. Though it is changing nowadays, the data supports that male has still the pressure to support his family thus needs to have a job. More so, when males are head of the family, chances of employment is also higher. While women posted different direction. Though qualitative and some empirical evidences tell us that married women work hand in hand with men to support the family, our data says otherwise. The ever married status of women decreases the likelihood to be employed. One plausible explanation is that on the employer side, ever married women will incur cost in the company for they have the privilege of taking paid leaves for maternity and most of the time will be incurring absences due to children matters.

In terms of educational levels, it is observed in fixed effects regressions that educational attainment as controls were not statistically significant yet a change in direction was observed for female. With main effect specification, with interaction effects and the male specification, having primary to secondary levels showed negative relationship to employment probability. The female specification posted a different direction. This may suggest that female with primary until tertiary level of education may be advantaged than males in attaining the employed status.

Household Characteristics

No gender differences were found among the household characteristics that were used in the estimation, namely household size, total number of employed in the household and proportion of children aged seven years old and below. These variables all showed positive relationship with employment probability. This may tell us that our samples were inclined to be employed regardless of gender and generally driven by a household size increase regardless of composition. The mean proportion of children below 7 year old for those employed and not employed in our panel sample do not vary from each other, the explanation why we cannot see any difference in its effect to employment probability.

Industry and Labor Market Condition

As for the type of industry, industry estimates for males though not significant deviate direction as compared to the main effects model, with interaction and for female specification. Men who works for industry has .3 pp advantage than those working in agriculture in terms of likelihood to be employed. Industry sector is dominated by male as official statistics in the country also shows. As for labor market condition, data shows that male compared to females are more discouraged when unemployment rates gets high. The discouraged workers profile says the same, official statistics consistently show that "discouraged workers were predominantly male, young persons in the age bracket 15 to 24 years old and largely single or unmarried persons, completed high school education."(PSA 2005) This may also explain the negative direction of at least having tertiary education to the employment probability for males and females, inactive unemployed workers express they are still waiting for their previous job application as main reason of inactivity thus the lesser likelihood to be in the employment status shown by the samples (PSA 2005).

5.8 Gender Differences in Job loss

Job loss main effect

Job loss main effect on reduction to the employment probability (controlling for other factors) for women is higher than job loss effect on employment probability compared to men. One reason for this can be the reason behind Chan (2001) findings where women are less motivated to work because of the reduction in income caused by a job loss.

Job loss × age groups

However when broken down into older age groups, observed is that reduction in employment likelihood are greater for male than females. (Figure 10,11) It goes to show that job loss in later lifestage of men affects the probability of attaining the employed status. This can be connected with the educational attainment of each gender. Enrolment in tertiary education is more prominent for women than men.[10] Since greater investment in education is observed for women, once a job loss is experienced, women still sees the opportunity to still work at later ages. This can be mirrored in the number of employed national and local government agencies where women dominate (PSA, 2014). Older women can find jobs in these agencies eg. Consultants given their higher education.

Figure 12

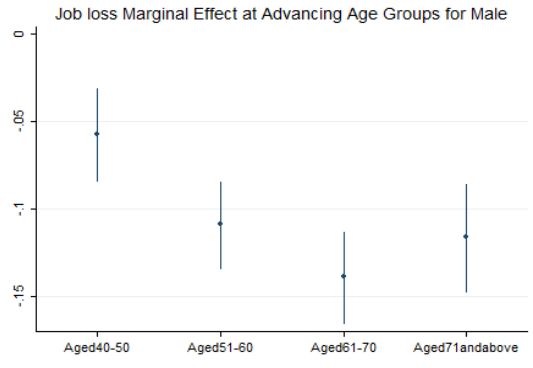
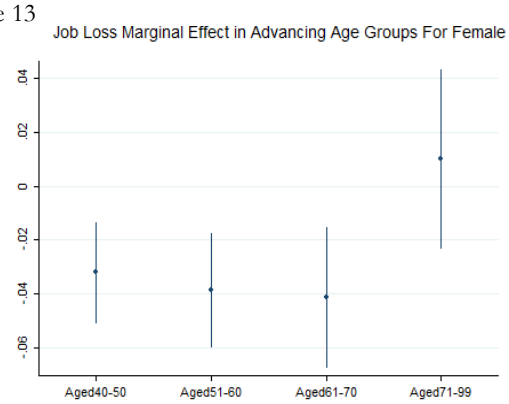


Figure 13



Job loss effects among older age groups by gender were ran as another specification and is shown graphically (Figure 12,13). Large reduction was found among males as older age group advances compared to females and more so, aged 71 and above females were found with at most no effect in employment prospects.

[10] "Fact sheet of Men and Women in the Philippines" http://www.nscb.gov.ph/gender/PSA-NSCB_2014%20Factsheet%20on%20WAM.pdf

Job loss x educational attainment

Table 5. Fixed Effect Estimates: Job loss x Age groups split via Educational Attainment

	With at least Primary Education (M) | (F)		With at least Secondary Education (M) | (F)		With at least Tertiary Education (M) | (F)	
Job loss	-.42 (.013)**	-.53 (.013)**	-.50 (.010)**	-.60 (.010)**	-.58 (.013)**	-.65 (.010)**
Other household characteristic controls	Yes		Yes		Yes	
Household characteristic controls	Yes		Yes		Yes	
Labor Market Control	Yes		Yes		Yes	
Job loss x Aged 40-50	.047 (.025)*	-.025 (.017)	-.033 (.024)	-.027 (.016)*	-.165 (.025)**	-.077 (.018)**
Job loss x Aged 51-60	-.118 (.021)**	-.057 (.018)**	-.150 (.024)**	-.015 (.021)	-.112 (.026)**	-.089 (.023)**
Job loss x Aged 61-70	-.192 (.020)**	-.073 (.019)**	-.122 (.027)**	-.025 (.030)	-.142 (.030)**	-.054 (.027)**
Job loss x Aged 71 up	-.159 (.020)**	-.001 (.023)	-.192 (.043)**	.039 (.047)	-.098 (.051)*	-.115 (.046)**
Constant	.91	.75	.84	.80	.85	.92

*Author's calculation from the sample. Significant at **5% * 10%, enclosed in parenthesis are standard errors*

Table 5 gives empirical explanation why the job loss effects vary between male and female among aged groups as shown in Table 3 (FE 3, FE 4). And from the plausible reason where education because tertiary enrolment is higher for women might be attributing the change, the estimates above confirm this. Marginal effects of job loss in aged 40-50 men having tertiary education showed higher reduction in employment likelihood than women. The situation persists until aged beyond mandatory retirement age of 65 but not until 71.

5.9 Robustness Check

Initial panel regression with main effects are compared to fixed effect regression using hausman test. As expected, fixed effect regression was statistically preferred than random effects. Then I continued with interactions and disaggregation for male and female, and disaggregation for educational attainment using fixed effects regression as shown above. Regression with main effects were also ran using xtologit and xtprobit regressions-the logit and probit regressions using panel data to futher provide robust estimates this time accounting for employed as categorical variable (see Appendix for results). Majority of the explanatory variables showed similar directions with the fixed effect regression although not accounting for kind of industry because regression do not iterate with the inclusion of this. The estimation using logit and probit regression now gives us estimates of variables that were dropped in the fixed effect regression, the male, head and household size. The estimates resulted from the said regressions has directions similar to the estimates from random effect regression except for the household size and unemployment rate. Logit estimation showed that males more likely to be employed, household heads are likely to be employed, married are likely to be employed, and more employed household and children 7 year old below encourages employment. The same was interpreted from probit regression results.

5.10 Results Vis-a-vis Hypotheses

Results showed that job loss has important scarring effects on employment prospects. Also effect of job loss magnifies with age. While employment and age showed hyperbolic relationship from age and age squared coefficient, job loss effects on the other hand was found increasing as age groups advances forward as can be seen from the interaction of job loss and age groups estimates. This is statistically supported by the regressions in each specification even with disaggregation for male and female. With the hypothesis that educational attainment must favour workers in reemployment after a job loss, results showed non confirmation of this for the covered survey sample. When samples were split into educational attainment, secondary education holders showed the most negatively affected by job loss. Gender differences were observed and the hypothesis that given a job loss, men are advantaged than female is observed in main effects, however when interacted with old age cohorts found the opposite, older women are advantaged than men.

Chapter 6
Conclusion, Implications and Policy Recommendation

The occurrence of job loss is still inevitable yet knowing the extent of effect and the factors that mediate this effect gives information to researchers and policy makers on possible policies that can aid in the aggravation of job loss effects to workers. Policies and programmes in the country are focused on youth employment having high share in unemployment rate but we cannot downplay the effects of job loss to middle aged to old workers. Promotion of greater life chances and opportunities for greater wellbeing for all is supported by SDGs. This research paper tackled employment prospects in a life course and focused on aging workers in a condition of job loss.

This research paper is humbly limited to some methodological limitations. Our results still point to potential large biases that is caused by uncontrolled unobserved heterogeneity in employment econometric models, especially that this research paper tries to see effect on aged workers which is often associated to retirement, empirical retirement models more so have to control for large unobserved heterogeneity. Also, the endogeneity of variables used with displacement, retirement decision or pension incentives cannot be ignored. Due to data limitations, this study was not able to capture pension benefits which is an easy access data for developed countries. Lastly, measurement error is present in the use of any survey data.

However, results of this research paper still gives us empirical estimates in explaining job loss effects to employment likelihood. Established via the result of this research paper is the important effect of job loss in an individual's employment prospects. Being the male, household headship and married are the demographic factors mediating this effect. Increased household size, share of children below 7-year-old and total employed household members are among the household characteristics that drive this job loss effect toward employment possibilities.

In addition, results showed that job loss in services sector make it harder to attain the employed status. Services sector require highly skilled workers among the major industries. This is the spill over effect of the government's action on focusing in the revitalization of manufacturing (Financial Times 2013) industry where less skills were developed. Demand for skills in services sector is increasing yet the country's education system is not continually updating to match the demand. Once a job loss is experience in the service sector, it is harder for an individual to land to another job since more demand of skills is required from him/her. Another thing is that job insecurity is associated mostly in services sector where outsourcing is widely almost a norm. While official statistics (LTS 4th quarter reports 2015, 2016) claims that employment increased in industries under services sector, the analysis must be dealt carefully wherein seasonal jobs which are mostly service oriented are at peak during last quarters every year. The large reduction to reemployment likelihood driven by services sector as a pronounced result in this study must be looked into. Behind these statistics, there can be workers who lost their jobs and experiences difficulty in finding jobs again.

Educational attainment plays a role in reemployment prospects especially after a job loss. This research paper suggests that having secondary education do not advantage workers in their reemployment prospects compared to those with primary education. As for the Philippines, increased school enrolment is only found until secondary education and because of poverty less are enrolled in

tertiary education (LMP 2014: 15). These findings can be explored on by the government as to improve the country's labour force. The results suggest that enrolment in tertiary must be encouraged in order to be at least less affected by any job loss, that having secondary education are more affected by job loss than those with primary education.

Women are generally disadvantaged than men in reemployment prospects but when analysed into later age groups, men are less advantaged than women after a job loss attributed to more enrolment in tertiary education by women. Done is the time where women do not continue to study and stay in the house instead. They have even surpassed men in terms of education. This may explain why older men are less likely to be reemployed than older women. Older men still have the pressure to earn for the household and if they fail to find jobs suffer from acute depression and become a burden of the household. Thus older men need to be in the labor force. From the results where older men are not landing on employed status must be looked upon into. This can start from improving enrolment rates in higher education for men so to have enough education and then skills as when he ages and loose a job, can compete with older women as well. In general, education seems to still be lacking to support the skills needed for jobs.

Job loss effects magnifies with age hypothesis is confirmed by the result of this study. We are only limited to identifying an individual to be employed or not, can be that in middle age, they have high reservation wage that takes them longer to accept job offer. Some who are in the same sector for their employment for a long time, like manufacturing if were affected by lay off will definitely have difficulty on finding the same kind of job because of age. The newly passed law (August 2016) on prohibiting age discrimination in workplace in the country hopes to address this gap. "Under the law, it shall be unlawful for an employer to decline an employment application, and impose early retirement on the basis of such employee's or worker's age, among others" (GMA 2016).

Towards the end, the results of this undertaking culled from a national survey data confirms the Philippine labor market situation and sees gaps behind official statistics and see venues for government intervention. The results of the study support the newly anti age discrimination law while proper targeting among those who lost their jobs must be addressed especially the services sector. Towards a more lasting impact, strengthened monitoring and impact evaluation of government interventions are necessary to determine if these gaps, at least from the results of this research paper, are already in the direction that needs to be addressed towards a more dynamic, gender-responsive, and inclusive Philippine workforce.

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Appendices

Appendix 1

Random Effects Regression Main Effects

```
Random-effects GLS regression                   Number of obs      =     77855
Group variable: count                           Number of groups   =     42815

R-sq:  within  = 0.6800                         Obs per group: min =         1
       between = 0.8369                                        avg =       1.8
       overall = 0.8164                                        max =         2

                                                Wald chi2(15)      = 297461.99
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

EMPLOYED	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
nojobpastqtr	-.7647131	.0020587	-371.46	0.000	-.768748	-.7606782
C07_AGE	.0066332	.0002937	22.58	0.000	.0060575	.0072089
agesq	-.0000733	3.05e-06	-23.99	0.000	-.0000792	-.0000673
male	.0039869	.0021258	1.88	0.061	-.0001796	.0081535
head	.0397748	.0024059	16.53	0.000	.0350594	.0444902
married	.0004932	.0020917	0.24	0.814	-.0036064	.0045929
primary	.015232	.0051504	2.96	0.003	.0051374	.0253266
secon	.0336315	.0052398	6.42	0.000	.0233616	.0439014
tertiary	.0687003	.0053615	12.81	0.000	.0581921	.0792086
HHSIZE2	-.0145145	.0004521	-32.11	0.000	-.0154005	-.0136284
totemphh	.0499072	.0007714	64.70	0.000	.0483953	.0514191
pchild7below	.0878219	.0056694	15.49	0.000	.0767101	.0989336
unemprate	.0002273	.0003323	0.68	0.494	-.000424	.0008785
industry	.0039507	.002793	1.41	0.157	-.0015236	.009425
services	-.1386933	.0020219	-68.60	0.000	-.1426561	-.1347305
_cons	.7705712	.0083171	92.65	0.000	.7542699	.7868724
sigma_u	.11350424					
sigma_e	.15601967					
rho	.34608706	(fraction of variance due to u_i)				

Appendix 2

Fixed Effects Regression Main Effects

```
Fixed-effects (within) regression               Number of obs      =     77855
Group variable: count                           Number of groups   =     42815

R-sq:  within  = 0.7034                         Obs per group: min =         1
       between = 0.7564                                        avg =       1.8
       overall = 0.7490                                        max =         2

                                                F(12,35028)        =   6923.33
corr(u_i, Xb)  = -0.0807                        Prob > F           =    0.0000
```

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.614058	.0033857	-181.37	0.000	-.6206941	-.6074219
C07_AGE	.0047105	.0011259	4.18	0.000	.0025038	.0069172
agesq	-.0000659	.0000114	-5.77	0.000	-.0000883	-.0000435
male	0	(omitted)				
head	0	(omitted)				
married	-.0019837	.0068345	-0.29	0.772	-.0153795	.0114121
primary	-.0038517	.0144428	-0.27	0.790	-.0321601	.0244566
secon	-.0052312	.015232	-0.34	0.731	-.0350863	.0246239
tertiary	.0051406	.0161078	0.32	0.750	-.0264312	.0367123
HHSIZE2	0	(omitted)				
totemphh	.08286	.0014417	57.48	0.000	.0800343	.0856857
pchild7below	.1102881	.0144729	7.62	0.000	.0819207	.1386556
unemprate	-.0014535	.0011652	-1.25	0.212	-.0037374	.0008304
industry	-.027313	.0053177	-5.14	0.000	-.0377359	-.0168901
services	-.2796278	.0039261	-71.22	0.000	-.2873231	-.2719324
_cons	.8032272	.0298622	26.90	0.000	.7446964	.8617581
sigma_u	.20444495					
sigma_e	.15601967					
rho	.63195972	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(42814, 35028) =     1.92        Prob > F = 0.0000
```

Appendix 3

Hausman Test

	Coefficients (b) fixed	(B) .	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
nojobpastqtr	-.614058	-.7647131	.1506551	.0027262
C07_AGE	.0047105	.0066332	-.0019227	.0010973
agesq	-.0000659	-.0000733	7.32e-06	.0000111
married	-.0019837	.0004932	-.0024769	.006571
primary	-.0038517	.015232	-.0190838	.0136321
secon	-.0052312	.0336315	-.0388627	.014448
tertiary	.0051406	.0687003	-.0635598	.0153428
totemphh	.08286	.0499072	.0329528	.0012332
pchild7below	.1102881	.0878219	.0224663	.0134576
unemprate	-.0014535	.0002273	-.0016807	.0011278
industry	-.027313	.0039507	-.0312637	.0045812
services	-.2796278	-.1386933	-.1409345	.0034066

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 4276.02
Prob>chi2 = 0.0000

The hypothesis that random effects model adequately models individual level effects was rejected, thus Fixed effects model was utilized in all specifications made in this research paper.

Random Effect (Male) ---* *for head, household size interpretation* Random Effect (Female)

```
Random-effects GLS regression                   Number of obs      =     41081
Group variable: count                           Number of groups   =     22170

R-sq:  within  = 0.6063                         Obs per group: min =         1
       between = 0.7710                                        avg =       1.9
       overall = 0.7460                                        max =         2

                                                Wald chi2(15)      = 764447.45
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

EMPLOYED	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
nojobpastqtr	-.7130093	.0032592	-218.77	0.000	-.7193971	-.7066214
C07_AGE	.0070602	.0004058	17.40	0.000	.0062648	.0078556
agesq	-.0000868	4.21e-06	-20.62	0.000	-.000095	-.0000785
male	.7876983	.0107119	73.53	0.000	.7667034	.8086933
head	.0326371	.0038494	8.48	0.000	.0250925	.0401818
married	.0243947	.0033306	7.32	0.000	.0178669	.0309225
primary	.0008612	.0069137	0.12	0.901	-.0126894	.0144119
secon	.0142895	.0070153	2.04	0.042	.0005398	.0280393
tertiary	.03343	.0072275	4.63	0.000	.0192644	.0475956
HHSIZE2	-.0128284	.0005893	-21.77	0.000	-.0139833	-.0116734
totemphh	.044093	.0009753	45.21	0.000	.0421815	.0460045
pchild7below	.0974002	.0075657	12.87	0.000	.0825717	.1122287
unemprate	-.0000589	.0004321	-0.14	0.891	-.0009058	.0007879
industry	.0076591	.0031051	2.47	0.014	.0015733	.013745
services	-.1347944	.0024672	-54.63	0.000	-.1396301	-.1299588
_cons	0	(omitted)				
sigma_u	.11123719					
sigma_e	.14464869					
rho	.37161695	(fraction of variance due to u_i)				

```
Random-effects GLS regression                   Number of obs      =     36774
Group variable: count                           Number of groups   =     20645

R-sq:  within  = 0.7310                         Obs per group: min =         1
       between = 0.8472                                        avg =       1.8
       overall = 0.8328                                        max =         2

                                                Wald chi2(14)      =         .
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =         .
```

EMPLOYED	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
nojobpastqtr	-.7779449	.002791	-278.73	0.000	-.7834153	-.7724746
C07_AGE	.0073934	.0004341	17.03	0.000	.0065427	.0082442
agesq	-.0000748	4.50e-06	-16.60	0.000	-.0000836	-.0000659
male	0	(omitted)				
head	.0221989	.0047556	4.67	0.000	.012878	.0315198
married	-.0157435	.0035866	-4.39	0.000	-.0227732	-.0087138
primary	.0315328	.0076194	4.14	0.000	.0165992	.0464665
secon	.0553871	.0077763	7.12	0.000	.0401458	.0706284
tertiary	.1016371	.007912	12.85	0.000	.0861298	.1171444
HHSIZE2	-.017658	.0007	-25.22	0.000	-.0190301	-.0162859
totemphh	.0577275	.0012198	47.32	0.000	.0553367	.0601183
pchild7below	.0886001	.0084706	10.46	0.000	.071998	.1052023
unemprate	.0006458	.0005078	1.27	0.203	-.0003494	.001641
industry	-.0103317	.0056168	-1.84	0.066	-.0213404	.0006771
services	-.1532031	.0034408	-44.52	0.000	-.159947	-.1464591
_cons	.7461921	.0123175	60.58	0.000	.7220502	.770334
sigma_u	.11481972					
sigma_e	.16599285					
rho	.32362485	(fraction of variance due to u_i)				

Appendix 4

Fixed Effect with Interaction Effects (Specification 2) Full Sample

```
Fixed-effects (within) regression               Number of obs      =     77855
Group variable: count                           Number of groups   =     42815

R-sq:  within  = 0.7043                         Obs per group: min =         1
       between = 0.7538                                        avg =       1.8
       overall = 0.7477                                        max =         2

                                                F(18,35022)        =   4635.08
corr(u_i, Xb)  = -0.0760                        Prob > F           =    0.0000
```

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.5847645	.0044137	-132.49	0.000	-.5934154	-.5761136
male	0	(omitted)				
married	.000746	.0067167	0.11	0.912	-.012419	.013911
head	0	(omitted)				
primary	-.002837	.0144224	-0.20	0.844	-.0311055	.0254314
secon	-.0044825	.0151911	-0.30	0.768	-.0342575	.0252925
tertiary	.0061896	.0160498	0.39	0.700	-.0252685	.0376476
HHSIZE2	0	(omitted)				
totemphh	.0824	.0014403	57.21	0.000	.079577	.0852231
pchild7below	.1091387	.014417	7.57	0.000	.0808809	.1373965
unemprate	-.0013304	.0011624	-1.14	0.252	-.0036087	.0009479
industry	-.0251176	.0053207	-4.72	0.000	-.0355464	-.0146888
services	-.2771136	.0039393	-70.35	0.000	-.2848347	-.2693925
aged4050	.0058816	.006232	0.94	0.345	-.0063334	.0180966
aged5160	-.0056255	.0082456	-0.68	0.495	-.0217872	.0105362
aged6170	-.0311911	.0107364	-2.91	0.004	-.0522347	-.0101475
aged7199	-.0846536	.01466	-5.77	0.000	-.1133877	-.0559195
nojobpastqtraged4050	-.052533	.0074974	-7.01	0.000	-.0672282	-.0378377
nojobpastqtraged5160	-.0676443	.0080669	-8.39	0.000	-.0834556	-.051833
nojobpastqtraged6170	-.0765488	.0094293	-8.12	0.000	-.0950305	-.058067
nojobpastqtraged7199	-.0375332	.011528	-3.26	0.001	-.0601285	-.014938
_cons	.8711347	.0174146	50.02	0.000	.8370015	.9052679
sigma_u	.20543621					
sigma_e	.15579194					
rho	.63488427	(fraction of variance due to u_i)				

```
F test that all u i=0:     F(42814, 35022) =     1.95        Prob > F = 0.0000
```

For Male (Specification 3)

Fixed-effects (within) regression Number of obs = 41081
Group variable: count Number of groups = 22170

R-sq: within = 0.6353 Obs per group: min = 1
between = 0.6740 avg = 1.9
overall = 0.6673 max = 2

F(18,18893) = 1828.20
corr(u_i, Xb) = -0.1258 Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.5171903	.0066288	-78.02	0.000	-.5301833	-.5041973
male	0	(omitted)				
married	.0213977	.0080596	2.65	0.008	.0056001	.0371953
head	0	(omitted)				
primary	-.0137218	.0190258	-0.72	0.471	-.051014	.0235705
secon	-.013614	.019832	-0.69	0.492	-.0524864	.0252585
tertiary	-.0074522	.020842	-0.36	0.721	-.0483043	.0333999
HHSIZE2	0	(omitted)				
totemphh	.0656365	.0017446	37.62	0.000	.062217	.0690561
pchild7below	.0846422	.0183147	4.62	0.000	.0487438	.1205406
unemprate	-.0028334	.001474	-1.92	0.055	-.0057226	.0000557
industry	.0037327	.0059706	0.63	0.532	-.0079701	.0154355
services	-.2551777	.0049784	-51.26	0.000	-.2649358	-.2454197
aged4050	-.000773	.0077957	-0.10	0.921	-.0160532	.0145072
aged5160	-.0124334	.010558	-1.18	0.239	-.0331281	.0082613
aged6170	-.0395168	.013843	-2.85	0.004	-.0666503	-.0123833
aged7199	-.0662967	.0192716	-3.44	0.001	-.1040707	-.0285227
nojobpastqtraged4050	-.0558638	.013508	-4.14	0.000	-.0823407	-.0293869
nojobpastqtraged5160	-.110243	.0126259	-8.73	0.000	-.1349909	-.0854951
nojobpastqtraged6170	-.1407822	.01348	-10.44	0.000	-.1672043	-.1143602
nojobpastqtraged7199	-.1219254	.0157069	-7.76	0.000	-.1527123	-.0911386
_cons	.9047661	.0224591	40.29	0.000	.8607443	.9487879
sigma_u	.18927688					
sigma_e	.1441247					
rho	.63298964	(fraction of variance due to u_i)				

F test that all u_i=0: F(22169, 18893) = 2.00 Prob > F = 0.0000

For Female (Specification 4)

Fixed-effects (within) regression Number of obs = 36774
Group variable: count Number of groups = 20645

R-sq: within = 0.7535 Obs per group: min = 1
between = 0.7612 avg = 1.8
overall = 0.7650 max = 2

F(18,16111) = 2736.05
corr(u_i, Xb) = -0.0738 Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.6107538	.0060819	-100.42	0.000	-.622675	-.5988326
male	0	(omitted)				
married	-.0244601	.0112931	-2.17	0.030	-.0465958	-.0023245
head	0	(omitted)				
primary	.0133781	.0215698	0.62	0.535	-.0289011	.0556573
secon	.0091752	.0230186	0.40	0.690	-.0359437	.0542941
tertiary	.0242353	.0244749	0.99	0.322	-.0237382	.0722088
HHSIZE2	0	(omitted)				
totemphh	.1043841	.0023791	43.88	0.000	.0997208	.1090474
pchild7below	.1403465	.0224219	6.26	0.000	.0963972	.1842959
unemprate	.0006333	.0018101	0.35	0.726	-.0029146	.0041813
industry	-.0677139	.0102993	-6.57	0.000	-.0879016	-.0475262
services	-.3028175	.0062071	-48.79	0.000	-.3149842	-.2906508
aged4050	.0104244	.0099497	1.05	0.295	-.0090782	.0299269
aged5160	-.0012593	.0128151	-0.10	0.922	-.0263783	.0238596
aged6170	-.0231548	.0165126	-1.40	0.161	-.0555214	.0092118
aged7199	-.0972892	.0221341	-4.40	0.000	-.1406745	-.0539039
nojobpastqtraged4050	-.031978	.0095832	-3.34	0.001	-.0507622	-.0131938
nojobpastqtraged5160	-.0386997	.0108029	-3.58	0.000	-.0598745	-.0175248
nojobpastqtraged6170	-.0419337	.0133269	-3.15	0.002	-.0680559	-.0158115
nojobpastqtraged7199	.0080763	.0169569	0.48	0.634	-.025161	.0413136
_cons	.8313075	.0269013	30.90	0.000	.778578	.884037
sigma_u	.21953968					
sigma_e	.16590525					
rho	.63650627	(fraction of variance due to u_i)				

F test that all u_i=0: F(20644, 16111) = 1.88 Prob > F = 0.0000

Appendix 5

Age X Job loss (with Turning point) Full Sample

```
Fixed-effects (within) regression               Number of obs      =     77855
Group variable: count                           Number of groups   =     42815

R-sq:  within  = 0.7061                         Obs per group: min =         1
       between = 0.7575                                        avg =       1.8
       overall = 0.7513                                        max =         2

                                                F(14,35026)        =   6010.28
corr(u_i, Xb)  = -0.0813                        Prob > F           =    0.0000
```

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.3219305	.0179731	-17.91	0.000	-.3571583	-.2867026
C07_AGE	.0086533	.0011803	7.33	0.000	.0063399	.0109667
agesq	-.0001035	.0000123	-8.43	0.000	-.0001275	-.0000794
male	0	(omitted)				
married	-.0015401	.0068043	-0.23	0.821	-.0148766	.0117965
head	0	(omitted)				
primary	-.004495	.0143801	-0.31	0.755	-.0326805	.0236904
secon	-.0083654	.015167	-0.55	0.581	-.0380933	.0213624
tertiary	.0009289	.0160399	0.06	0.954	-.0305099	.0323677
HHSIZE2	0	(omitted)				
totemphh	.0825005	.0014356	57.47	0.000	.0796866	.0853144
pchild7below	.1105121	.0144083	7.67	0.000	.0822713	.1387528
unemprate	-.0012556	.0011601	-1.08	0.279	-.0035294	.0010182
industry	-.0265631	.0053061	-5.01	0.000	-.0369632	-.016163
services	-.2781805	.0039294	-70.79	0.000	-.2858822	-.2704787
agenojob	-.0125381	.0008458	-14.82	0.000	-.0141959	-.0108803
age2nojob	.0001139	9.08e-06	12.54	0.000	.0000961	.0001317
_cons	.714341	.0304734	23.44	0.000	.6546121	.7740698
sigma_u	.20388175					
sigma_e	.15532295					
rho	.63275807	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(42814, 35026) =     1.92        Prob > F = 0.0000
```

Primary

Fixed-effects (within) regression — Number of obs = 27479
Group variable: count — Number of groups = 15528

R-sq: within = 0.7351 — Obs per group: min = 1
between = 0.7855 — avg = 1.8
overall = 0.7774 — max = 2

F(11,11940) = 3011.58
corr(u_i, Xb) = -0.2003 — Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.2347528	.0340153	-6.90	0.000	-.3014283	-.1680772
C07_AGE	.0060864	.002304	2.64	0.008	.0015702	.0106027
agesq	-.0000753	.0000223	-3.38	0.001	-.000119	-.0000316
male	0	(omitted)				
married	-.0025487	.0135264	-0.19	0.851	-.0290627	.0239652
head	0	(omitted)				
HHSIZE2	0	(omitted)				
totemphh	.0727607	.0022762	31.97	0.000	.0682989	.0772225
pchild7below	.1907127	.0228223	8.36	0.000	.1459773	.2354481
unemprate	-.0010626	.0017796	-0.60	0.550	-.004551	.0024257
industry	-.0168686	.0084786	-1.99	0.047	-.0334882	-.0002491
services	-.3474755	.0058918	-58.98	0.000	-.3590245	-.3359266
agenojob	-.012447	.0014445	-8.62	0.000	-.0152785	-.0096154
age2nojob	.0001058	.0000144	7.34	0.000	.0000775	.0001341
_cons	.758187	.057345	13.22	0.000	.6457814	.8705926
sigma_u	.19141666					
sigma_e	.14314867					
rho	.64132912	(fraction of variance due to u_i)				

F test that all u_i=0: F(15527, 11940) = 1.90 — Prob > F = 0.0000

Secondary

Fixed-effects (within) regression — Number of obs = 28905
Group variable: count — Number of groups = 17635

R-sq: within = 0.6841 — Obs per group: min = 1
between = 0.7290 — avg = 1.6
overall = 0.7277 — max = 2

F(11,11259) = 2216.27
corr(u_i, Xb) = -0.0333 — Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.3114748	.03222	-9.67	0.000	-.3746317	-.248318
C07_AGE	.0087811	.0026363	3.33	0.001	.0036135	.0139486
agesq	-.0001073	.0000296	-3.63	0.000	-.0001653	-.0000494
male	0	(omitted)				
married	-.004709	.0139281	-0.34	0.735	-.0320105	.0225925
head	0	(omitted)				
HHSIZE2	0	(omitted)				
totemphh	.0946175	.0026944	35.12	0.000	.089336	.099899
pchild7below	.0487386	.0266864	1.83	0.068	-.0035714	.1010486
unemprate	-.0018567	.0021837	-0.85	0.395	-.0061371	.0024237
industry	-.0111897	.0094115	-1.19	0.234	-.0296379	.0072584
services	-.2590148	.0071125	-36.42	0.000	-.2729565	-.2450731
agenojob	-.0129354	.001654	-7.82	0.000	-.0161776	-.0096933
age2nojob	.0001218	.0000194	6.28	0.000	.0000838	.0001598
_cons	.6714679	.0553525	12.13	0.000	.5629674	.7799683
sigma_u	.22387658					
sigma_e	.16455343					
rho	.64924432	(fraction of variance due to u_i)				

F test that all u_i=0: F(17634, 11259) = 1.93 — Prob > F = 0.0000

Tertiary

```
Fixed-effects (within) regression               Number of obs      =     19575
Group variable: count                           Number of groups   =     11635

R-sq:  within  = 0.6924                         Obs per group: min =         1
       between = 0.7781                                        avg =       1.7
       overall = 0.7745                                        max =         2

                                                F(11,7929)         =   1622.71
corr(u_i, Xb)  = 0.1129                         Prob > F           =    0.0000
```

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.2776467	.0451855	-6.14	0.000	-.3662221	-.1890713
C07_AGE	.0079347	.0030471	2.60	0.009	.0019615	.0139079
agesq	-.0000732	.000032	-2.28	0.022	-.000136	-.0000104
male	0	(omitted)				
married	-.004069	.0136848	-0.30	0.766	-.0308949	.0227569
head	0	(omitted)				
HHSIZE2	0	(omitted)				
totemphh	.0820948	.0030418	26.99	0.000	.076132	.0880575
pchild7below	.0458613	.0308814	1.49	0.138	-.0146744	.1063969
unemprate	-.0015825	.0023833	-0.66	0.507	-.0062544	.0030894
industry	-.0164886	.0140174	-1.18	0.240	-.0439664	.0109893
services	-.1900133	.0110747	-17.16	0.000	-.2117226	-.168304
agenojob	-.0167184	.0022143	-7.55	0.000	-.021059	-.0123777
age2nojob	.0001446	.0000249	5.81	0.000	.0000958	.0001933
_cons	.7006075	.068821	10.18	0.000	.5657003	.8355148
sigma_u	.20098001					
sigma_e	.15044883					
rho	.64087522	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(11634, 7929) =     1.84         Prob > F = 0.0000
```

Appendix 6

FE Job loss X Major Industry

```
Fixed-effects (within) regression               Number of obs      =     77855
Group variable: count                           Number of groups   =     42815

R-sq:  within  = 0.7315                         Obs per group: min =         1
       between = 0.7879                                        avg =       1.8
       overall = 0.7809                                        max =         2

                                                F(14,35026)        =   6817.56
corr(u_i, Xb)  = -0.0657                        Prob > F           =    0.0000
```

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	.0122599	.0132229	0.93	0.354	-.0136575	.0381773
C07_AGE	.0047734	.0010712	4.46	0.000	.0026738	.0068729
agesq	-.0000621	.0000109	-5.71	0.000	-.0000834	-.0000408
male	0	(omitted)				
head	0	(omitted)				
married	-.0036335	.0065027	-0.56	0.576	-.0163789	.009112
primary	-.0094044	.013742	-0.68	0.494	-.0363391	.0175303
secon	-.0112703	.0144928	-0.78	0.437	-.0396768	.0171361
tertiary	-.00128	.0153262	-0.08	0.933	-.0313199	.0287598
HHSIZE2	0	(omitted)				
totemphh	.07558	.0013769	54.89	0.000	.0728812	.0782789
pchild7below	.0892653	.0137746	6.48	0.000	.0622666	.1162639
unemprate	-.0005311	.0011088	-0.48	0.632	-.0027044	.0016422
services	-.2435889	.0037849	-64.36	0.000	-.2510075	-.2361703
industry	-.0289994	.0050908	-5.70	0.000	-.0389776	-.0190213
joblossindustry	.0343098	.0238222	1.44	0.150	-.0123824	.081002
joblosservices	-.682772	.0135842	-50.26	0.000	-.7093974	-.6561465
_cons	.8022389	.0284122	28.24	0.000	.7465501	.8579277
sigma_u	.19059438					
sigma_e	.14844325					
rho	.62243338	(fraction of variance due to u_i)				

Primary

Fixed-effects (within) regression — Number of obs = 27479
Group variable: count — Number of groups = 15528

R-sq: within = 0.7630 — Obs per group: min = 1
between = 0.8224 — avg = 1.8
overall = 0.8121 — max = 2

F(11,11940) = 3494.59
corr(u_i, Xb) = -0.1783 — Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.009297	.0173223	-0.54	0.591	-.0432515	.0246575
C07_AGE	.0042854	.0021114	2.03	0.042	.0001468	.008424
agesq	-.0000526	.00002	-2.62	0.009	-.0000919	-.0000133
male	0	(omitted)				
head	0	(omitted)				
married	-.0064413	.0127906	-0.50	0.615	-.031513	.0186304
primary	0	(omitted)				
secon	0	(omitted)				
tertiary	0	(omitted)				
HHSIZE2	0	(omitted)				
totemphh	.0669953	.0021587	31.03	0.000	.0627638	.0712268
pchild7below	.1607694	.0215993	7.44	0.000	.1184313	.2031075
unemprate	-.0001244	.0016834	-0.07	0.941	-.003424	.0031753
services	-.3001614	.005692	-52.73	0.000	-.3113186	-.2890042
industry	-.0198692	.0080876	-2.46	0.014	-.0357221	-.0040163
joblossindustry	.0460921	.0374687	1.23	0.219	-.0273526	.1195368
joblosservices	-.6273854	.0181673	-34.53	0.000	-.6629962	-.5917746
_cons	.793235	.0533691	14.86	0.000	.688623	.8978471
sigma_u	.17361945					
sigma_e	.13539018					
rho	.62185046	(fraction of variance due to u_i)				

F test that all u_i=0: F(15527, 11940) = 1.81 — Prob > F = 0.0000

Secondary

Fixed-effects (within) regression — Number of obs = 28905
Group variable: count — Number of groups = 17635

R-sq: within = 0.7097 — Obs per group: min = 1
between = 0.7620 — avg = 1.6
overall = 0.7599 — max = 2

F(11,11259) = 2501.74
corr(u_i, Xb) = -0.0209 — Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	.0263213	.0244434	1.08	0.282	-.0215919	.0742346
C07_AGE	.0056481	.0024699	2.29	0.022	.0008066	.0104895
agesq	-.0000727	.0000274	-2.66	0.008	-.0001264	-.000019
male	0	(omitted)				
head	0	(omitted)				
married	-.0020055	.0133505	-0.15	0.881	-.0281748	.0241639
HHSIZE2	0	(omitted)				
totemphh	.0858115	.0025953	33.06	0.000	.0807242	.0908987
pchild7below	.0387416	.0255853	1.51	0.130	-.0114101	.0888933
unemprate	-.0013635	.0020938	-0.65	0.515	-.0054677	.0027408
services	-.2244657	.0068952	-32.55	0.000	-.2379814	-.21095
industry	-.0092659	.0090608	-1.02	0.306	-.0270267	.0084948
joblossindustry	.0137278	.0414363	0.33	0.740	-.0674946	.0949503
joblosservices	-.6796299	.0250954	-27.08	0.000	-.7288213	-.6304385
_cons	.7389286	.0522932	14.13	0.000	.6364247	.8414324
sigma_u	.20977514					
sigma_e	.15775033					
rho	.63877361	(fraction of variance due to u_i)				

F test that all u_i=0: F(17634, 11259) = 1.91 — Prob > F = 0.0000

Tertiary

Fixed-effects (within) regression — Number of obs = 19575
Group variable: count — Number of groups = 11635

R-sq: within = 0.7081 — Obs per group: min = 1
between = 0.8010 — avg = 1.7
overall = 0.7955 — max = 2

F(11,7929) = 1748.54
corr(u_i, Xb) = 0.1252 — Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	.0650006	.0444385	1.46	0.144	-.0221105	.1521118
C07_AGE	.0065837	.0029073	2.26	0.024	.0008846	.0122828
agesq	-.000069	.0000303	-2.28	0.023	-.0001283	-9.64e-06
male	0	(omitted)				
head	0	(omitted)				
married	-.0070689	.0133327	-0.53	0.596	-.0332045	.0190667
HHSIZE2	0	(omitted)				
totemphh	.0766896	.0029738	25.79	0.000	.0708602	.082519
pchild7below	.0238082	.0300906	0.79	0.429	-.0351772	.0827937
unemprate	-.000922	.0023217	-0.40	0.691	-.0054732	.0036292
services	-.1625767	.0108647	-14.96	0.000	-.1838745	-.141279
industry	-.0158457	.0137142	-1.16	0.248	-.0427291	.0110376
joblossindustry	-.0264119	.0628346	-0.42	0.674	-.1495842	.0967605
joblosservices	-.7757645	.0449118	-17.27	0.000	-.8638034	-.6877256
_cons	.7423442	.0661091	11.23	0.000	.612753	.8719354
sigma_u	.19030146					
sigma_e	.14656572					
rho	.62767866	(fraction of variance due to u_i)				

F test that all u_i=0: F(11634, 7929) = 1.82 Prob > F = 0.0000

Appendix 7 Logit and Probit Regression Estimates

XTOLOGIT

Random-effects ordered logistic regression — Number of obs = 77855
Group variable: count — Number of groups = 42815

Random effects u_i ~ Gaussian — Obs per group: min = 1, avg = 1.8, max = 2

Integration method: mvaghermite — Integration points = 12

Wald chi2(13) = 1091.19
Log likelihood = -10737.774 — Prob > chi2 = 0.0000

EMPLOYED	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
nojobpastqtr	-9.489579	.2884429	-32.90	0.000	-10.05492	-8.924241
C07_AGE	.2475121	.0132249	18.72	0.000	.2215917	.2734324
agesq	-.0028372	.0001445	-19.63	0.000	-.0031204	-.0025539
male	1.13833	.082487	13.80	0.000	.9766587	1.300002
head	1.620538	.1045677	15.50	0.000	1.415589	1.825487
married	.1710849	.0798093	2.14	0.032	.0146616	.3275082
primary	.0055365	.2114018	0.03	0.979	-.4088034	.4198763
secon	-.1619224	.2127018	-0.76	0.446	-.5788103	.2549655
tertiary	.2016993	.2159559	0.93	0.350	-.2215665	.6249652
HHSIZE2	-.5507505	.0240893	-22.86	0.000	-.5979646	-.5035363
totemphh	2.113492	.0731859	28.88	0.000	1.97005	2.256933
pchild7below	3.568789	.2545032	14.02	0.000	3.069972	4.067606
unemprate	.0264868	.0130612	2.03	0.043	.0008874	.0520862
/cut1	2.917096	.3253623	8.97	0.000	2.279397	3.554794
/sigma2_u	5.962345	.5930179			4.906323	7.245662

LR test vs. ologit regression: chibar2(01) = 421.86 Prob>=chibar2 = 0.0000

XTOPROBIT

Random-effects ordered probit regression — Number of obs = 77855
Group variable: count — Number of groups = 42815

Random effects u_i ~ Gaussian — Obs per group: min = 1, avg = 1.8, max = 2

Integration method: mvaghermite — Integration points = 12

Wald chi2(13) = 1556.32
Log likelihood = -10791.116 — Prob > chi2 = 0.0000

EMPLOYED	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
nojobpastqtr	-4.76628	.1223846	-38.95	0.000	-5.00615	-4.526411
C07_AGE	.121497	.0063502	19.13	0.000	.1090508	.1339432
agesq	-.0013969	.0000692	-20.18	0.000	-.0015325	-.0012612
male	.5558957	.0397729	13.98	0.000	.4779422	.6338492
head	.7951207	.0501507	15.85	0.000	.6968272	.8934142
married	.0844546	.038994	2.17	0.030	.0080279	.1608813
primary	.0144116	.1027583	0.14	0.888	-.186991	.2158142
secon	-.0723414	.1033754	-0.70	0.484	-.2749534	.1302707
tertiary	.1059646	.1049277	1.01	0.313	-.09969	.3116192
HHSIZE2	-.2702202	.0113135	-23.88	0.000	-.2923944	-.2480461
totemphh	1.02463	.0338768	30.25	0.000	.9582324	1.091027
pchild7below	1.746621	.1218837	14.33	0.000	1.507734	1.985509
unemprate	.0129139	.0063569	2.03	0.042	.0004546	.0253731
/cut1	1.339965	.1594517	8.40	0.000	1.027445	1.652484
/sigma2_u	1.353778	.1268569			1.126639	1.62671

LR test vs. oprobit regression: chibar2(01) = 379.42 Prob>=chibar2 = 0.0000

Jobloss x Age groups Split educational Attainment

Primary_Male

Fixed-effects (within) regression Number of obs = 15256
Group variable: count Number of groups = 8495

R-sq: within = 0.6700 Obs per group: min = 1
between = 0.7260 avg = 1.8
overall = 0.7174 max = 2

F(14,6747) = 978.27
corr(u_i, Xb) = -0.1923 Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.4225504	.0136887	-30.87	0.000	-.4493845	-.3957163
male	0	(omitted)				
married	.0008464	.0135625	0.06	0.950	-.0257403	.0274331
head	0	(omitted)				
HHSIZE2	0	(omitted)				
totemphh	.0476549	.002428	19.63	0.000	.0428952	.0524146
pchild7below	.1278912	.025408	5.03	0.000	.0780836	.1776989
unemprate	-.0030604	.0019931	-1.54	0.125	-.0069676	.0008468
industry	.0057508	.0085481	0.67	0.501	-.0110061	.0225078
services	-.3239831	.0072395	-44.75	0.000	-.3381747	-.3097914
aged4050	.0055886	.0100473	0.56	0.578	-.0141072	.0252845
aged5160	.0023333	.0105582	0.22	0.825	-.0183641	.0230308
aged7199	-.0450616	.0181065	-2.49	0.013	-.0805561	-.0095672
nojobpastqtraged4050	.0471833	.0250812	1.88	0.060	-.0019838	.0963505
nojobpastqtraged5160	-.1180305	.0212545	-5.55	0.000	-.159696	-.076365
nojobpastqtraged6170	-.1924465	.0202774	-9.49	0.000	-.2321966	-.1526965
nojobpastqtraged7199	-.1592651	.0206943	-7.70	0.000	-.1998325	-.1186977
_cons	.9184299	.0167808	54.73	0.000	.8855342	.9513255
sigma_u	.15996917					
sigma_e	.11992353					
rho	.64020492	(fraction of variance due to u_i)				

F test that all u_i=0: F(8494, 6747) = 1.97 Prob > F = 0.0000

Primary_Female

Fixed-effects (within) regression Number of obs = 12223
Group variable: count Number of groups = 7033

R-sq: within = 0.7776 Obs per group: min = 1
between = 0.7616 avg = 1.7
overall = 0.7641 max = 2

F(14,5176) = 1292.47
corr(u_i, Xb) = -0.2096 Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.5311706	.0131517	-40.39	0.000	-.5569535	-.5053877
male	0	(omitted)				
married	.0003291	.0280662	0.01	0.991	-.0546925	.0553507
head	0	(omitted)				
HHSIZE2	0	(omitted)				
totemphh	.1117236	.004236	26.38	0.000	.1034193	.1200278
pchild7below	.2745146	.0396481	6.92	0.000	.1967877	.3522416
unemprate	.0018451	.003061	0.60	0.547	-.0041558	.0078461
industry	-.0430287	.0179913	-2.39	0.017	-.0782992	-.0077582
services	-.3551564	.0094131	-37.73	0.000	-.3736101	-.3367027
aged4050	.0171142	.0171969	1.00	0.320	-.016599	.0508275
aged5160	.0078546	.0171105	0.46	0.646	-.0256892	.0413985
aged7199	-.0768504	.026101	-2.94	0.003	-.1280194	-.0256814
nojobpastqtraged4050	-.0254233	.0178594	-1.42	0.155	-.0604353	.0095887
nojobpastqtraged5160	-.0570138	.0181627	-3.14	0.002	-.0926203	-.0214073
nojobpastqtraged6170	-.0738108	.019562	-3.77	0.000	-.1121606	-.035461
nojobpastqtraged7199	-.0010297	.0239492	-0.04	0.966	-.0479802	.0459208
_cons	.7579543	.0310552	24.41	0.000	.6970731	.8188355
sigma_u	.22383074					
sigma_e	.16447273					
rho	.64937446	(fraction of variance due to u_i)				

F test that all u_i=0: F(7032, 5176) = 1.87 Prob > F = 0.0000

Secondary_Male

Fixed-effects (within) regression — Number of obs = 15623
Group variable: count — Number of groups = 9392

R-sq: within = 0.6053 — Obs per group: min = 1
between = 0.6257 — avg = 1.7
overall = 0.6150 — max = 2

F(14,6217) = 681.13
corr(u_i, Xb) = -0.0933 — Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.5011641	.010946	-45.79	0.000	-.5226221	-.4797061
male	0	(omitted)				
married	.0274711	.0162338	1.69	0.091	-.0043528	.059295
head	0	(omitted)				
HHSIZE2	0	(omitted)				
totemphh	.0760102	.0032842	23.14	0.000	.0695721	.0824484
pchild7below	.0707781	.0345399	2.05	0.040	.003068	.1384883
unemprate	-.0020357	.0027645	-0.74	0.462	-.0074551	.0033836
industry	.017071	.0105591	1.62	0.106	-.0036284	.0377704
services	-.2477967	.0088074	-28.14	0.000	-.2650622	-.2305312
aged4050	.0037184	.0141769	0.26	0.793	-.0240731	.03151
aged5160	-.0008478	.0194371	-0.04	0.965	-.0389512	.0372556
aged7199	.0041142	.0475219	0.09	0.931	-.0890452	.0972736
nojobpastqtraged4050	-.0334075	.0243012	-1.37	0.169	-.0810463	.0142313
nojobpastqtraged5160	-.1504651	.0240946	-6.24	0.000	-.1976989	-.1032313
nojobpastqtraged6170	-.1229341	.0275551	-4.46	0.000	-.1769516	-.0689166
nojobpastqtraged7199	-.1925279	.043667	-4.41	0.000	-.2781304	-.1069254
_cons	.8485468	.021239	39.95	0.000	.806911	.8901825
sigma_u	.21268986					
sigma_e	.15531461					
rho	.65220927	(fraction of variance due to u_i)				

F test that all u_i=0: F(9391, 6217) = 2.04 Prob > F = 0.0000

Secondary_Female

Fixed-effects (within) regression — Number of obs = 13282
Group variable: count — Number of groups = 8243

R-sq: within = 0.7410 — Obs per group: min = 1
between = 0.7403 — avg = 1.6
overall = 0.7511 — max = 2

F(14,5025) = 1026.75
corr(u_i, Xb) = -0.0687 — Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.6058205	.0101736	-59.55	0.000	-.6257652	-.5858757
male	0	(omitted)				
married	-.046349	.0239525	-1.94	0.053	-.0933064	.0006083
head	0	(omitted)				
HHSIZE2	0	(omitted)				
totemphh	.1184639	.0045113	26.26	0.000	.1096198	.127308
pchild7below	.0423991	.0409075	1.04	0.300	-.0377974	.1225956
unemprate	-.0023043	.0034333	-0.67	0.502	-.009035	.0044265
industry	-.0470482	.0190572	-2.47	0.014	-.0844086	-.0096878
services	-.2738558	.0116678	-23.47	0.000	-.2967298	-.2509818
aged4050	.0201075	.0176228	1.14	0.254	-.0144408	.0546558
aged5160	.0089983	.0236781	0.38	0.704	-.0374211	.0554176
aged7199	-.043722	.0619671	-0.71	0.480	-.1652046	.0777607
nojobpastqtraged4050	-.0272295	.0167223	-1.63	0.104	-.0600125	.0055535
nojobpastqtraged5160	-.0156692	.0214848	-0.73	0.466	-.0577888	.0264504
nojobpastqtraged6170	-.025239	.0308163	-0.82	0.413	-.0856525	.0351745
nojobpastqtraged7199	.0391637	.0472636	0.83	0.407	-.0534934	.1318209
_cons	.8062225	.0297701	27.08	0.000	.7478601	.864585
sigma_u	.23594488					
sigma_e	.1736529					
rho	.64864294	(fraction of variance due to u_i)				

F test that all u_i=0: F(8242, 5025) = 1.88 Prob > F = 0.0000

Tertiary_Male

Fixed-effects (within) regression — Number of obs = 9257
Group variable: count — Number of groups = 5508

R-sq: within = 0.6350 — Obs per group: min = 1
between = 0.7180 — avg = 1.7
overall = 0.7124 — max = 2

F(14,3735) = 464.23
corr(u_i, Xb) = 0.0989 — Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.5848605	.0137989	-42.38	0.000	-.6119147	-.5578064
male	0	(omitted)				
married	.0117568	.0186771	0.63	0.529	-.0248615	.0483751
head	0	(omitted)				
HHSIZE2	0	(omitted)				
totemphh	.0720401	.0043465	16.57	0.000	.0635183	.0805619
pchild7below	.0468455	.0442935	1.06	0.290	-.0399962	.1336873
unemprate	-.0005192	.003499	-0.15	0.882	-.0073794	.006341
industry	.0097515	.0176104	0.55	0.580	-.0247754	.0442784
services	-.1533687	.0141929	-10.81	0.000	-.1811954	-.1255421
aged4050	.0199829	.017025	1.17	0.241	-.0133964	.0533621
aged5160	.0239255	.0210826	1.13	0.257	-.017409	.06526
aged7199	-.0267882	.0691312	-0.39	0.698	-.1623268	.1087505
nojobpastqtraged4050	-.1651884	.0256719	-6.43	0.000	-.2155207	-.114856
nojobpastqtraged5160	-.11218	.0269042	-4.17	0.000	-.1649283	-.0594316
nojobpastqtraged6170	-.1426025	.0306849	-4.65	0.000	-.2027634	-.0824416
nojobpastqtraged7199	-.0987421	.0517952	-1.91	0.057	-.2002917	.0028074
_cons	.8541822	.0288443	29.61	0.000	.7976302	.9107342
sigma_u	.20202894					
sigma_e	.14942235					
rho	.64640366	(fraction of variance due to u_i)				

F test that all u_i=0: F(5507, 3735) = 1.97 — Prob > F = 0.0000

Tertiary_Female

Fixed-effects (within) regression — Number of obs = 10318
Group variable: count — Number of groups = 6127

R-sq: within = 0.7310 — Obs per group: min = 1
between = 0.7972 — avg = 1.7
overall = 0.7974 — max = 2

F(14,4177) = 810.88
corr(u_i, Xb) = 0.0889 — Prob > F = 0.0000

EMPLOYED	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nojobpastqtr	-.6597867	.0107986	-61.10	0.000	-.6809576	-.6386157
male	0	(omitted)				
married	-.015462	.0197527	-0.78	0.434	-.0541877	.0232638
head	0	(omitted)				
HHSIZE2	0	(omitted)				
totemphh	.0909163	.0042606	21.34	0.000	.0825633	.0992694
pchild7below	.0270401	.04287	0.63	0.528	-.0570079	.1110882
unemprate	-.00154	.0032321	-0.48	0.634	-.0078767	.0047967
industry	-.062135	.0230824	-2.69	0.007	-.1073888	-.0168812
services	-.2524424	.0177342	-14.23	0.000	-.2872109	-.217674
aged4050	.024699	.0169065	1.46	0.144	-.0084467	.0578447
aged5160	.0423003	.0209676	2.02	0.044	.0011927	.083408
aged7199	-.0168357	.0493425	-0.34	0.733	-.1135733	.0799018
nojobpastqtraged4050	-.0777761	.0184789	-4.21	0.000	-.1140046	-.0415476
nojobpastqtraged5160	-.0897888	.0232838	-3.86	0.000	-.1354374	-.0441402
nojobpastqtraged6170	-.0541803	.0279336	-1.94	0.052	-.108945	.0005845
nojobpastqtraged7199	-.1153009	.0460031	-2.51	0.012	-.2054915	-.0251104
_cons	.9254534	.0301364	30.71	0.000	.8663701	.9845368
sigma_u	.20268862					
sigma_e	.15119522					
rho	.64249235	(fraction of variance due to u_i)				

F test that all u_i=0: F(6126, 4177) = 1.78 — Prob > F = 0.0000