EPRI #GradEarnings RESEARCH BRIEF #2 (Version '14-11-20)

Data and Methodology

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Overview of EPRI #GradEarnings Research Briefs:

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2) Data and Methodology

3) How Much Do University Graduates Earn?

4) The Boom and Bust of ICT Graduates' Earnings Over Time

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Introduction

This document describes the creation of the dataset that linked administrative University of Ottawa data with tax data held at Statistics Canada, which was then used to undertake the analysis of graduates. The results of this analysis are presented in the #GradEarnings Research Briefs #3 (How Much Do University Graduates Earn?) and #4 (The Boom and Bust of ICT Graduates' Earnings Over Time).

Creation of the Linked Dataset

The University of Ottawa's Institutional Research and Planning (IRP) office provided Statistics Canada with administrative data on all graduating students from 1998 through 2010. These data included information on students such as gender and program of study, among other variables.

The University of Ottawa also provided Statistics Canada with a separate file that included only the individual student identifiers (e.g., full name, precise date of birth, and postal code). Statistics Canada used this file to link students to their tax files. Once this linkage was made, Statistics Canada deleted the dataset containing the personal identifiers.

The student information contained in the first file was then matched to the tax data using a pseudo-student identification number that was included in each of the university-based files.

Using this sequential approach ensured that at no point were the two files containing the student information and the personal identifiers held at Statistics Canada at the same time, thus ensuring a high level of student privacy.

Data access and the reporting of results followed established Statistics Canada protocols (see further below), thus further ensuring individual confidentiality and data security.

This analysis uses tax record data from 1999 to 2011. Due to the very high tax-filing rates of Canadians, 98 percent of the graduating students at the University of Ottawa were matched to at least one tax year record and then followed over time. The final dataset consisted of 82,000 University of Ottawa graduates.

Statistics Canada Disclosure Rules

The results we report follow Statistics Canada's established disclosure rules. These rules state that no information on individual students can ever be released, and that results must be suppressed where observation counts are lower than 15 individuals. To further protect individual privacy, all observation counts are rounded to the nearest 10 and the earnings results reported to the nearest $100. All results were vetted for release by Statistics Canada.

The Earnings Measure and the Tracking of Outcomes

Our analysis focuses on total before-tax earnings, which includes wage and salary earnings, net self-employment income, and other employment income.

We tracked individuals' earnings on a year-by-year basis, and did so separately for each cohort of graduates. As an example: for a student who graduated in 1998 (the 1998 cohort), we observed their earnings each year after graduation for 13 years (i.e., through 2011). For later cohorts, we followed graduates for fewer years; for example, for the 1999 cohort we had 12 years of earnings information, while for the 2010 cohort we had just one year of earnings information.

In this work we focus on the mean earnings of graduates in any given year, but also present results for those who did best, those in the middle, and those at lower earnings levels. Median earnings have also been calculated and are available. All earnings are in Consumer Price Index (CPI) adjusted 2011 dollars.

Sample Inclusions and Censoring

We included only individuals that worked in a given year and whose earnings were greater than $1,000. We also calculated mean earnings where individuals with zero earnings were included in order to take non-earners into account, but this had little effect on our results. Of necessity, we excluded individuals that did not file tax forms in a given year from the calculations for that year, but allowed them to be included in all other years in which they did file tax forms.

Individuals were excluded if they returned to school in any given year and for all subsequent years, although individuals were included in any post-graduation years in which they were working before they returned to school. We considered individuals to have returned to school if they claimed more than $100 in tuition expenses in a given tax year. This approach ensured that we did not include current students in our calculations, or those who had upgraded their skills since

graduation. Future work could investigate the related earnings dynamics of those who did in fact return to school.

Employment Rates

Given the sample sizes available for graduates from each faculty group considered in the analysis and Statistics Canada disclosure rules, we were unable to generate meaningful employment rates that could be reported. In this context, for almost all cohorts of graduates in almost every faculty, very few graduates were unemployed in any given year. Meaningful employment rates could be calculated in the future, by including more post-secondary education (PSE) institutions – and more graduates – in the analysis, due to the greater sample sizes we would obtain.

Definition of the Faculty Groups

This analysis focuses on graduates who obtained a bachelor's degree and excludes individuals that graduated with advanced degrees. Those with bachelor degrees that could not be entered directly from high school (e.g. education, law or medicine) were also excluded. Future analysis could be undertaken to examine the outcomes of graduates with advanced degrees.

Using the Classification of Instructional Programs (CIP) codes, the bachelor degree sample was first divided into the following seven groups: 1) Business, 2) Health, 3) Social Sciences, 4) Mathematics and Natural Sciences, 5) Engineering and Computer Sciences, 6) Humanities and 7) Other, along with 8) All graduates taken together (#GradEarnings Research Brief #3).

We also present an analysis focused on ICT (Information and Communication Technologies) graduates, who are compared to graduates in (non-ICT) Engineering programs, as well as to graduates from All Other programs (#GradEarnings Research Brief #4).