Employment and Earnings for Federal Government Economists: Empirical Evidence by Gender and Race

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We contribute to the literature on diversity in the economics profession, which has mostly focused on academia, by providing a first look at the employment and earnings of federal government economists by gender and race. Combining micro-level data on federal workers with information on their earnings in federal and private-sector jobs, we examine the share of federal government economists by race and gender; earnings differences by race and gender; and whether earning gaps differ during their federal government tenure.

I. Diversity of the Economics Profession

A large literature has shown that economics has a pervasive diversity problem; women and minorities are underrepresented throughout the economics profession.[1] Bayer and Rouse (2016) elucidate the importance of diversity for the economics profession; noting that it "ensure[s] the profession produces robust and relevant knowledge" (p. 232). Whereas much of the existing literature on diversity of economists focuses on the academic market, we focus on the federal government which employs a significant number of Ph.D. economists. Our data allows us to follow federal economists when they leave government employment to see if earnings gaps increase for women and minorities when they work in other sectors.

While in the past the majority of doctoral recipients in economics worked in academia after graduation, this may no longer be true. Over the period 2012 to 2017, the share of *new* doctoral recipients in economics with post-graduation commitments in the U.S. who are going into academia falls from 49% to 42%; while at the same time, the share going into industry rises from 18% to 24% (NCSES, 2013

[1] Recent examples: Lundberg and Stearns (2019), Stevenson and Zlotnik (2018), and Bayer and Rouse (2016)). There are also concerns that economics lacks diversity over other characteristics.[2] It is not possible to provide information on the government sector, but the combined sector of "Other" which also includes non-profits has fallen from 21% to 16% over this time.

and 2018).[2] Others move out of academia and into these other sectors later in their careers. The current focus on academic economists in the literature thus misses a large and growing share of the economics profession.

This paper provides a more formal accounting of economists in the federal government, their gender and racial distribution, and pay. We start with some basic statistics on the diversity of Ph.D. economists in the federal government and other labor markets. We then explore some of the career dynamics of those economists, including employment flows into and out of the federal government.

We show that the diversity of U.S. government economists has grown over time, but still remains low relative to other disciplines, and is broadly comparable to the profession at large, with 32% female and only 7.3% from under-represented minorities (URM), Black, Hispanic, Native American. There are small but statistically significant differences in earnings between white male government economists and other race and gender subgroups, especially under-represented minority men. Earnings gaps for government economists pre- and post-federal employment are far larger. While the results for non-white economists who leave the federal government are fairly noisy due to small samples, white female economists (a larger group) go from having no earnings gap relative to white men in federal government (controlling for experience) to a 36% earnings gap in their future employment. We also observe a large earnings gap in pre-federal employment for URM men and women that is greatly reduced when they enter the federal government.

A. Comparing Academia and Federal Government Economists

Women and minorities are underrepresented within academic economics departments, especially full-time tenured faculty at research institutions. In 2017, women made up only 14% of Full Professors at Economic Departments granting doctorates. The female shares are higher at lower levels (Assistant Professor 29%, Associate Professor 23%) and at non-doctoral programs (Assistant Professor 43%, Associate Professor 40%, and Full Professor 24%) (CSWEP, 2018).

In 2017, minority representation for Full Professors at Economic Departments granting

[2] It is not possible to provide information on the government sector, but the combined sector of "Other" which also includes non-profits has fallen from 21% to 16% over this time.

doctorates was 6.5%. The minority shares are also higher at lower levels: Assistant Professor 10% and Associate Professor 9% (CSMGEP, 2018).

There have been many papers examining the causes of these disparities by gender and/or race in academia (for example, see Lundberg and Stearns (2019) and Bayer and Rouse (2016)). We do not address the causes for these differences in this descriptive paper, but only note that differences in the labor markets by sector may lead us to expect some differences in demographics over the sectors. For example, the importance of publications in academia relative to the federal government could lead to differences in hiring and promotion by gender given differences in publication rates (see Hengel (2017)). In terms of workplace culture, results from the recent AEA Climate survey suggest that academia is less welcoming of women and minorities (AEA, 2019).

Amongst economists in the federal government, the female and minority shares are higher, but still low relative to the general population. Wessel, Sheiner, and Ng (2019) find that in their collection of publicly available data on U.S. government economists, 30% are female and 24% are minority (Black, Hispanic, Asian, and other minority).

II. Data

Our empirical exercises use data from the Office of Personnel Management (OPM) matched to the Longitudinal Employer-Household Dynamics (LEHD) administrative earnings data.

The OPM data cover years from 2000-2015 and provide information on gender, age, race, educational level, field of degree, year of degree receipt, earnings, and agency identifiers. We identify economists in two ways, one by using the people working in the occupation series "Economist", (0110), and the other by identifying anyone with "Economics" listed as their field of degree. We restrict the sample to those with a Ph.D. in either case. This data does not include U.S. government economists not in OPM; notable exclusions are the White House, the Federal Reserve Board, and Legislative Branch agencies such as the Congressional Budget Office.[3]

We link this data to the LEHD administrative earnings data by Person Identity Key (PIK), a Census-specific person identifier, to capture pre- and post-OPM employment. The LEHD

[3] In the OPM data, economists are concentrated in Treasury, Agriculture, Commerce, Health and Human Services, and the independent agencies. A list of excluded agencies in OPM can be found in table 6.7 of the LEHD Infrastructure S2014 documentation (Vilhuber (2018)). Federal Reserve Banks are covered by UI and are in the LEHD data; we treat them as non-government employment.

data is an administrative dataset on employment and earnings that comes from state UI records and other administrative data sources. LEHD data cover 96% of employment in the US, including the federal workforce. From the LEHD data we use information on average annual earnings, and the industry (6-digit NAICS) of the primary (highest paying) employer for each calendar year.

III. Results

As in the overall profession, the diversity of OPM economists is growing, but is growing slowly. In 1998, 19% of OPM economists were women; that number has risen to 32% as of 2018. The racial distribution was 85% white, 10% Asian, and 4% underrepresented minority (URM) in 2006. In 2018, 75% of OPM economists were white, 16% Asian, and 7% URM. Relative to the economics profession as a whole, federal economists are slightly more diverse, and about on par with the diversity of new Ph.D. economists.[4]

A. Earnings Differences

Table 1 shows the log real (in 2015 dollars, CPI adjusted) earnings differences of OPM economists by race and gender subcategories, with white male economists as the excluded category. With no controls in the first column, only the earnings of URM males are statistically and economically different from those of white males. Race and gender categories explain a very small amount of the variation in earnings, with an R^2 of 0.005. Column 2 adds year fixed effects, which does not change the URM male coefficient, but increases the magnitudes of the other coefficients. Since diversity is higher in more recent years and economist pay has increased over time, even in inflation adjusted terms, the timing of employment of minority and non-minority women economists masks some of the pay inequality between the groups. Some of the earnings inequality is explained by sorting into different agencies, as can be seen in column 3. Column 4 includes a polynomial of experience, measured in years since Ph.D. receipt in addition to year fixed effects. Controlling for experience reduces the estimated differences in earnings between white men and some of the race by gender subgroups, but the gap in URM male earnings remains at around 10 percent.

[4] In 2017, 7.3% of new Ph.Ds were underrepresented minorities (CSMGEP 2018) and 34.2% were female (Survey of Earned Doctorates 2018).

B. Job-to-Job Flows Into and Out of OPM

Using the LEHD database, we can match economists in OPM to their employment and earnings pre- and post- OPM. This analysis sheds some light on whether pay norms in the federal government result in smaller earnings gaps for federal economists. Our pre-OPM sample includes economists who have LEHD earnings after Ph.D. receipt and before starting in OPM. Approximately one-third of our OPM economists have some post-PhD employment before joining the federal government.

Our post-OPM sample includes all economists that we observe with UI earnings after leaving OPM employment. Despite the federal government's reputation for low turnover, about one-fourth of our OPM economists leave federal government for outside opportunities. Of those who moved to a new employer within a year of leaving federal government, 35% moved to academia and the other 65% moved to the private sector or other public sector employment. A slightly higher percentage of white men moved from OPM into academia (37%) relative to other groups.

Figure 1 shows three specifications for each of the pre-OPM, OPM, and post-OPM sample periods. The first shows the baseline differences in log real earnings between subgroups with no other controls. The second includes controls year and agency/industry fixed effects (column 3 of Table 1). The third includes year fixed effects and controls for a polynomial of experience, measured in years since Ph.D. receipt. We see that the baseline differences between race by gender subgroups are much larger outside of OPM than within OPM.

Pre-OPM earnings differences for URM men remain consistently large and precise, at -40 percent across specifications. Estimates for URM women are similar, but less precise and fall more with controls for experience.

Post-OPM URM males once again appear to be disadvantaged relative to white men in most specifications, although within industry the earnings differences are lower. White women also appear to be disadvantaged relative to white men in the post-OPM period, and that effect persists even with industry and experience controls.

IV. Conclusions and Future Work

Combining micro-level personnel data from OPM with work history data from LEHD, we are able to provide a first look at the employment dynamics of federal government economists by gender and race. We find that the diversity of government economists is growing over time, both in terms of gender and race. There are differences in earnings between white male economists and other race by

gender groups, particularly for URM men. Finally, we find that the differences in earnings between race by gender groups appear to be larger for non-OPM employment.

In future work using this data we plan to further examine differences in degree of managerial duties and across agencies (e.g. whether they are more research or regulatory focused).

We have seen that industry is becoming an increasingly important sector for economists. In future work, we hope to expand our analysis to all sectors of the economy using micro-level data in the Survey of Earned Doctorates (SED). By linking the SED to LEHD (again, through PIKs), we will be able to conduct empirical exercises following the employment trajectory for all Ph.D. economists who earned degrees in U.S. and work in jobs covered by LEHD.

It is our hope that this descriptive work and the underlying databases can be used to better understand the complete picture of the state of diversity in the economics profession.

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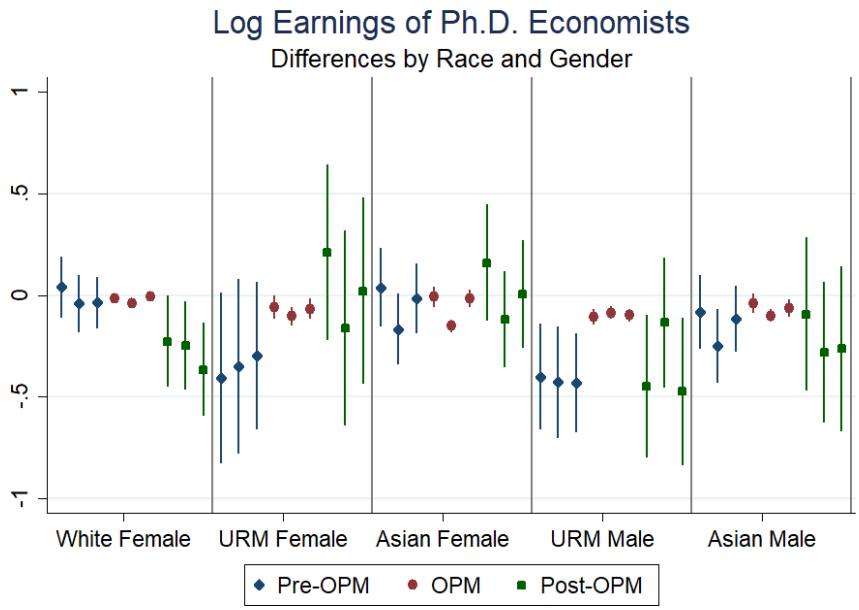

FIGURE 1. LOG EARNINGS OF PH.D. ECONOMISTS

Note: Coefficient of OLS estimates of log earnings on indicators for gender and race for Ph.D. economists, with white male economists as excluded category. First estimate in each group is the baseline estimate with no controls, the second controls for year and agency/industry fixed effects, and third controls for year fixed effects and a polynomial of experience, measured by years since Ph.D. Bars represent 95% confidence bounds.

TABLE 1— LOG EARNINGS OF FEDERAL GOVERNMENT PH.D ECONOMISTS

	Base	Year FE	Agency FE	Experience Control
Asian Male	-0.0405	-0.132	-0.100	-0.0648
	(0.0251)	(0.0222)	(0.0160)	(0.0223)
URM Male	-0.105	-0.104	-0.0863	-0.0983
	(0.0192)	(0.0181)	(0.0155)	(0.0158)
White Female	-0.0141	-0.0493	-0.0386	-0.00534
	(0.0116)	(0.0113)	(0.0098)	(0.0098)
Asian Female	-0.00846	-0.139	-0.151	-0.0159
	(0.0259)	(0.0234)	(0.0165)	(0.0227)
URM Female	-0.0579	-0.138	-0.104	-0.0659
	(0.0296)	(0.0303)	(0.0235)	(0.0261)
Experience				0.0399
				(0.0024)
Experience^2				-0.00110
				(0.0001)
Experience^3				0.0000103
				(0.0000)
Constant	11.50	11.0	10.84	10.63
	(0.0057)	(0.0076)	(0.0391)	(0.0106)
Year FE	No	Yes	Yes	Yes
Agency FE	No	No	Yes	No
R-squared	0.005	0.549	0.699	0.685
Observations	3300	3300	3300	3300

Notes: Coefficient of OLS estimates of log earnings on indicators for gender and race for Ph.D. economists, with white male economists as excluded category. First estimate in each group is the baseline estimate with no controls, the second controls for year and agency fixed effects, and third controls for year fixed effects and a polynomial of experience, measured by years since Ph.D.

Source: Author calculations. Office of Personnel Management administrative data 2000-2015