**Where are all the female economists?**

1. **Introduction**

Women have made gains in many fields over the last few decades, including those in STEM – Science, Technology, Engineering and Math, but one field of study they have yet to succeed in is economics. Women are underrepresented in economics at every level: from undergraduate study to the Nobel Prize in Economics (Bayer & Rouse, 2016). According to the Nobel Prize’s official website, as of 2017, only one woman has ever been awarded the Nobel Prize in Economics – Elinor Ostrom in 2009. This statistic is telling when we consider that a greater number of women have been awarded the Nobel Prize in the science categories: Physics (2), Chemistry (4) and Medicine (12). It is even more astonishing when we learn that Elinor Ostrom is not an economist but a political scientist.

The issue of sexism and the underrepresentation of women in economics was recently covered extensively by the media following the publication of Alice Wu’s senior thesis about gender stereotyping in Academia (BBC, 2017). Wu’s thesis used language processing to analyze one million posts on the website ‘EconJobRumors.com’ (an online forum used mostly by academics within the economics community); she found that there were undeniably sexist differences between how male and female economists were spoken about (BBC, 2017). This sort of internalized sexism along with institutionalized sexism may explain why we see very few women succeed in the field of economics.

The factors that led to the underrepresentation of women in economics need to be studied further before any meaningful solutions can be found for the problem. It is important to address the issue of inequality in the field because of the following two reasons: equity and diverse perspectives. Firstly, economists must work towards women achieving parity because societal norm dictates that success ought to be determined solely on meritocracy. Secondly, studies have shown that diversity and inclusion of minority groups lead to better decision making and therefore better outcomes (Bayer & Rouse, 2016). It is important to note that the economic community is mostly homogenous and lacks diversity which affects the way in which contemporary issues and current events are studied. Most economists who study gender in economics do not consider the intersectionality of the issue at hand. Other factors such as race, class and sexual orientation also affect the study of gender in economics (Brewer, Conrad & King, 2002). Due to the complexity of this issue at hand and the lack of information, the data set and studies used in this paper will be analyzing gender without intersectionality.

There are many explanations as to why there are a lack of women in economics. Some economists believe that women may have different preferences whilst others believe there are other explanations such as a lack of role models for young women or an unwelcoming learning environment (Dynan & Rouse, 1997). This paper will focus on the underrepresentation of women in economics within the context of undergraduate education. Specifically, this paper will explore why more female undergraduates do not choose economics as their major.

This paper focuses on exploring the relationship between the prevalence of economics faculty who are female in undergraduate institutions and the prevalence of female undergraduate students who majored in economics. In other words, this study tests whether the prevalence of female faculty in economics departments has an effect on the prevalence of female economics students. This paper will utilize cross-sectional data for the year 2015 to study if such a relationship exists within a sample of top economics undergraduate departments in the United States. Unsurprisingly, there are many other factors that also influence the number of female undergraduate students studying economics; it is important to note that this study will be unable to account for all these variables.

1. **Literature Review**

There is a limited amount of literature that explores the relationship between the prevalence of female faculty and the prevalence of female students majoring in a subject. It is unclear from the literature whether there is a relationship between faculty gender composition and student gender composition. Some studies have stated that there is no relationship whereas other studies have stated there is a relationship. These studies are difficult to compare because of their small sample sizes and the large number of variables that need to be controlled for.

A study at Colgate University by Rask & Bailey (2002) found that ‘the proportion of classes taken with a faculty member “like you” has a positive effect on the probability a student will choose that major’. The study used the transcripts of students to analyze the major choice of students who graduated between 1988 and 2000; it used a behavioral model that comprised of modified utility functions. The study found that the ‘role model’ effect did exist; the higher the number of classes taken with a female faculty member, the higher the probability of a female student majoring in that subject (Rask & Bailey, 2002). The study also found that the gender of a faculty member acted as an incentive for students of the same gender as the faculty member whereas it acted as a disincentive for students with a different gender to that of the faculty member.

This finding from the study is fascinating as it helps explain why the gender composition of students pursuing majors changes over time: most male and female students choose the same subjects as most of their predecessors in academia (i.e. their current professors). One point of consideration regarding this study is that Colgate University allows students to change their major as late as their fourth year of study (Rask & Bailey, 2002). This unique feature of this undergraduate institution may affect the results of this study because the students are not faced with the constraint of committing to a major early in their college careers unlike their counterparts in other colleges and universities.

Canes and Rosen, on the other hand, found that increasing female representation in faculties had no impact on the gender composition of students in an academic department (1995). They studied panel data from three undergraduate institutions: Princeton University, University of Michigan at Ann Arbor and Whittier College. Although the results of their study hold true for these three undergraduate institutions, it is problematic to assert that gender composition of faculty does not affect undergraduate major choice at all undergraduate institutions. The primary problem with this study is selection bias; Canes and Rosen themselves admit that the ‘reason these institutions were selected is simply that they were willing to give us the information we requested; a number of schools we approached were unwilling or unable to provide the necessary information’ (1995). Given that this study’s sample is not representative of the population, we cannot accept its conclusion that there is no ‘role model’ effect. This study should be repeated with a greater sample size before we can meaningfully analyze the effect or lack thereof faculty gender ratio has on female undergraduate major choice.

Another study conducted at Harvard University examined the major choice of a sample of men and women enrolled in the economics introductory courses between 1991 and 1992 (Dynan & Rouse, 1997). This study concluded that although there was a gender gap in the probability of majoring in economics, this difference is not statistically significant. Dynan and Rouse (1997) believe that this gap may arise because of individual preferences or ‘some other unmeasured characteristic’. They also state that when upper class students were surveyed in the study, ‘women were twice as likely as men to respond that they “did not think economics was interesting” (Dynan & Rouse, 1997). The results of this study are interesting to analyze because the study looks at commonly held assumptions as to why women lack an interest in Economics such as a lack of numerical ability or the lack of an encouraging classroom environment. This paper takes issue however with the conclusion of the study; the authors seem to imply that perhaps the underrepresentation of women is due to personal choice and a lack of interest. I think that discounting societal factors that influence women’s ‘lack of interest’ in economics is worrying as the underlying assumption is that it is women who are to blame for the lack of female representation in Economics.

The current literature lacks a consensus regarding the relationship between the gender ratio of the economics faculty and the gender ratio of undergraduate economic students. It is evident given the literature review that previous studies on this issue have focused on a few institutions due to time and data constraints. This paper strives to analyze data from a larger sample size of undergraduate institutions and conduct some meaningful empirical analysis into this alleged “role model effect.”

1. **Data Description**

Most of the data used in this paper is from the Integrated Postsecondary Education Data System (IPEDS) provided by the National Center for Education Statistics.

The dataset is a cross-sectional dataset, for the year 2015, of top-ranked colleges in the continental United States (as defined by the National Center for Education Statistics (NCES)).

Only medium to large colleges were included (defined by NCES as greater than 5000 students). The colleges were either private or public four-year institutions that awarded all levels of degrees (bachelors, masters & doctorates).

Data about number of faculty in each department was unavailable in the IPEDS database, and therefore, had to be collected manually. The technique used was counting the number of faculty members and noting the gender of each faculty member in each economic department as reported on each college’s website. Due to the complex analysis required in differentiating between different types of faculty for department faculty websites (e.g., teaching vs. research faculty, full- vs. part-time faculty, tenured vs. tenure-track vs. untenured faculty, visiting vs. permanent faculty), this paper defines faculty as “all faculty” regardless of faculty type at a given institution. This data may be prone to human error, particularly in counting accurately and correctly identifying the gender of a faculty member. This paper took the following steps to minimize human errors: Several volunteer people counted the faculty and the average of these results was recorded, internet research was used to determine the gender for faculty with gender ambiguous names and lastly, the collected data was compared to the overall faculty size to see if this data passes the “reality check” test.

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1. **Data Summary**

[Table of descriptive statistics, histograms, scatter diagrams, discussion of results, etc]

1. **Econometric Results**

[Side-by-side tables of regression results, discussion of results, etc]

1. **Policy Implications**

[Policy implications and recommendations based on econometrics results, etc.]

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