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“IF YOU COMPETE WITH US, WE SHAN'T MARRY YOU”
THE (MARY PALEY AND) ALFRED MARSHALL LECTURE

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The title quote comes from an exchange between Alfred Marshall and Beatrice Potter Webb, described in her book *My Apprenticeship* (Webb, 1971). This paper was presented as the Marshall Lecture at the EEA Conference, 2021 and Pande thanks the organizing committee for the invitation. We thank Valerie Chuang, Nils Enevoldsen, Neil Himwich, and Bilal Moin for excellent research assistance. We are grateful to Keith Tribe and Rosemary Rodd for data assistance. Matthew Alampay Davis, Matt Brown, Charlotte Chorley, Joyee Deb, David Engerman, Thayne Forbes, Paola Giuliano, Dominic Leggett, Simone Schaner, Anna Stansbury, and Annie Williamson helped improve this paper with useful comments. We thank Yale Economics Growth Center and Yale Economics Department’s Scarf undergraduate RA program for financial support. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

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ABSTRACT

Alfred Marshall and Mary Paley Marshall are often described as the first academic economist couple. Both studied at Cambridge University, where Paley became one of the first women to take the Tripos exam and the first female lecturer in economics, with Marshall's encouragement. But in later life, Marshall opposed granting Cambridge degrees to women and their participation in academic economics. This paper recounts Alfred Marshall's use of gender norms, born out of a separate spheres ideology, to promote and ingrain women's exclusion in academic economics and beyond. We demonstrate the persistence of this ideology and resultant norms, drawing parallels between gendered inequities in labor market outcomes for Cambridge graduates in the UK post-Industrial Revolution and those apparent in cross-country data today. We argue that the persistence of the norms produced by separate spheres ideologies is likely to reflect, at least in part, the rents associated with preferential access to better paid, high-skilled labor market opportunities. In doing so, we ask who benefits from gender norms, who enforces them, and suggest relevant policy work and areas for future research.

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“If you compete with us, we shan’t marry you” The (Mary Paley and) Alfred Marshall Lecture

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November 7, 2021

Abstract

Alfred Marshall and Mary Paley Marshall are often termed the first academic economist couple. Both studied at the University of Cambridge, where Paley was one of the first women to take the Tripos exam and the first female lecturer in economics, with Marshall’s encouragement. But in later life, Marshall opposed granting Cambridge degrees to women and their participation in academia. This paper recounts Alfred Marshall’s use of gender norms, born out of a separate spheres ideology, to promote and ingrain women’s exclusion in academic economics and beyond. We demonstrate the persistence of this ideology and resultant norms, drawing parallels between gendered inequities in labor market outcomes for Cambridge graduates in the United Kingdom post-Industrial Revolution and those apparent in cross-country data today. We argue that the persistence of norms produced by separate spheres ideologies is likely to reflect, at least in part, the rents associated with preferential access to better paid, high-skilled labor market opportunities. In doing so, we ask who benefits from gender norms, who enforces them, and suggest relevant areas for future research. (JEL: A10, B13, J16, J70)

1 Introduction

In 1871, Mary Paley arrived at the University of Cambridge to study, something she later recounted was “in those days an outrageous proceeding” (Paley Marshall, 1947). She was one of five students in the first cohort at Newnham College, a newly founded women’s college associated with the University. Three years later she sat the Moral Sciences Tripos exams (effectively a bachelor’s degree)—one of the first of two women to do so (Roberts, 2019). She

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would become the first female lecturer in economics at Cambridge and founder of the primary library servicing the subject.

Paley's teaching and examination were facilitated by a small group of men and women within Cambridge. Led by Henry Sidgwick, this group founded Newnham and recruited Alfred Marshall—a founder of neoclassical economics—to teach the first cohort of students. Early on Marshall was a proponent of education for women; he suggested to Paley and a fellow Newnham student that they work for a Tripos exam (McWilliams Tullberg, 1991). He coached them and organized administration of the exam, well aware that women taking the same exams as men would be seen as a test of equal intellect.

Shortly after her graduation, Paley and Marshall got married, choosing to contract out of the obedience clause in Paley's vows (Paley Marshall, 1947).¹ Cambridge's celibacy requirement forced Marshall to give up his fellowship. Looking for employment, the Marshalls considered the radical possibility of living on Paley's income from Newnham alone (Paley Marshall, 1947). Instead, the couple moved to University College in Bristol. Later, Marshall would state that he was attracted "chiefly by the fact that it was the first College in England to open its doors freely to women."² In Bristol, he "insisted" that a salary for Paley be deducted from his; he did not want to accept the whole salary for himself "whilst delegating part of the work" to her (Paley Marshall, 1947). The couple collaborated on an economics textbook, titled *The Economics of Industry*, though the project had originally been Paley's and, based on Marshall's later testimony, reflected her ideas more than his. In an unusual move for the time, they dedicated a chapter to the gender pay gap, suggesting that women may be paid less than men for equal work "not because the value of the work they do is low, but because they and their employers have been in the habit of taking it for granted that the wages of women must be low" (Marshall and Paley Marshall, 1884). They advocated for reforming women's education such that women could "do more difficult work ... making them more ready to demand, and employers more ready to grant them higher wages for it" (Marshall and Paley Marshall, 1884). John Maynard Keynes wrote in Paley's obituary that it was "an extremely good book; nothing more serviceable for its purpose was produced for many years, if ever" (Keynes, 1944).³

By all accounts, Marshall benefited both from Paley's intellect and from her mental and physical support. Keynes asserted that without her "understanding and devotion [Marshall's] work would not have fulfilled its fruitfulness ... [Marshall had an] over-sensitive spirit which Mary was to spend so much of her life soothing away. ... She faced everything in order that he, sometimes, need not" (Keynes, 1944). This made it deeply perplexing—both today and to Marshall's contemporaries—that he turned so publicly and vehemently against women's education within Cambridge, after the Marshalls returned there, and their involvement in academic economics more generally. So began, in the words of Austin Robinson (Joan Robinson's husband), the phase of Paley's life in which she was "enslaved to forty years of self-denying servitude to Alfred: the 'fool-ometer' by which he measured the popular intelligibility of his

¹Anglican marriage vows traditionally included a pledge "to love and cherish" for the groom, and "to love, cherish, and obey" (emphasis added) for the bride.

²Letter 490. To Members of the Cambridge University Senate, 3 February 1896. Whitaker (1996) p.147-154.

³Keynes made time to write Paley's obituary in 1944, despite being "overwhelmed with labours of great national urgency" coming at the end of the Second World War (Robinson, 1948).

writing, the organiser of his materials, the breakwater between himself and the irritations of life” (Robinson, 1948).

In this paper, we recount Marshall’s involvement in the campaign against women’s education at Cambridge as a springboard for exploring how gender is considered in the profession today. Throughout history, gender-based systems of labor division have determined the work activities of women and men, but the extent to which this has generated economic inequality between the genders has varied over time and space (Boserup, 1970; Alesina et al., 2013). The Industrial Revolution in the United Kingdom, which saw the growth of individualized wage labor and separation of home and workplace, proved to be fertile ground for the resurgence of an economically unequal ideology that men and women should occupy *separate spheres* (Davidoff and Hall, 1987). Men were to occupy the public sphere of work, politics and finance. Women were associated with the private sphere of domesticity. This ideology conceptualized the household as a sanctified space, separate from the rest of society. To achieve this, the household had to be run by a woman who was commensurately innocent of social and political issues, focused instead on family and kinship. This separation was not intended to give women power within the household, however. The spheres separated the labor of men and women, but men were to have dominion over both: Man’s home was his castle, and the role of a wife was to sustain it for him (Pateman, 1988). For men, the ideal became a breadwinner able to fund this household. As the Industrial Revolution created a set of well-paying, skilled jobs in services, this ideology translated into prescriptive gender norms around who should be granted the necessary higher education, and appropriate labor market roles. In opposing women’s education and labor force participation, Marshall invoked these norms, endowing them with an appearance of economic integrity and laying much of the foundation for gender inequality at Cambridge, as well as for blindspots to gender norms within economics.

This historical context demonstrates how gender-based ideologies can shape norms and institutions by offering rents to one gender. What do we mean by these terms? An ideology is defined as a set of prescriptive beliefs about the way a society should function. These beliefs can be generally applicable to the behavior of all members of society, or specific to individuals by gender, race, and class. Producers of ideology might be politicians, philosophers, or social reformers. We define norms as a set of beliefs about how an individual should act that are adhered to, or perceived to be adhered to, by a substantial fraction of the population. Gender norms are then (perceived) prescriptive beliefs about what men and women should or ought to do (Tankard and Paluck, 2016). Ideologies shape norms by consolidating and publicizing beliefs, often implying the ideology is endorsed by a substantial or powerful fraction of the population. Following Douglass North (1990), we define institutions as “the rules of the game in a society or ... the humanly devised constraints that shape human interaction”. We highlight how institutions are shaped by people, often in positions of power, and reflect society’s perceived “rules” or ideals. In this way, institutions (such as laws) can reinforce prevalent norms.⁴ When one of a society’s foundational ideologies is gender-based, norms and institutions reflect two types of enforcement. Norms enable collective enforcement of gender-based ideologies, which

⁴In the paper, we refer to institutions as formal bodies – such as the British Parliament or the University of Cambridge. Norms can be thought of as “informal” institutions (“rules of the game”), but we avoid this language for clarity.

are either uncoordinated or coordinated by informal means such as social stigma. Institutions can be thought of as coordinated and delegated enforcement (e.g. to government, or courts).

We demonstrate that derivatives of separate spheres ideology continue to impinge on both men's and women's labor market choices through norms and institutions. We argue against a wholesale attribution of support for such norms to culture and persistence thereof.⁵ Rather, we point to the rents afforded to men on average—both within marriage and in the labor market—by such norms. Similar to other institutions that persist because of the rents they provide to powerful insiders, gendered norms cause a misallocation of talent and are associated with significant productivity costs.⁶ Reducing the incidence of these norms has proven benefits for women, and their children, in health, wealth and well-being from formal labor (Heath and Jayachandran, 2018), as well as legal rights and economic development (Doepke et al., 2012).

Our paper contributes to multiple literatures. First, it relates to a growing literature on the normative and legislative underpinnings of gender inequities in the labor market (Bertrand, 2020). Distinct from technological advances, the mainstreaming of separate spheres ideology during and after the Industrial Revolution in Victorian Britain also shaped the trajectory of tertiary education and economically relevant labor market inequities since. Importantly, these norms were not universally accepted; many women and men fought against them. Second, we discuss the literature on policies to remove the constraints gender norms place on men's and women's choice. We highlight the need to more deeply probe both who benefits from norms and who enforces them. Finally, we contribute to a growing literature on women's status within the economics profession (Wu, 2018; Sarsons et al., 2021; Dupas et al., 2021). We highlight the marginalization of women at the birth of neoclassical economics, demonstrate the value of a historiographical approach in identifying how gender discrimination was perpetuated, and review some of the frontier research being produced today on continued gender inequities in our profession.

2 Gender Ideology, Norms and Institutions in the United Kingdom Post-Industrial Revolution

How do ideologies gain currency and shape (or strengthen) norms and institutions? And how do economic circumstance and extant power structures enable this? We anchor our discussion in the United Kingdom post-Industrial Revolution, a period of structural transformation when wage work outside the house becomes linked to better economic outcomes. We examine Marshall's reliance on separate spheres ideology to oppose women's full participation in academic life at Cambridge (including his wife's) and in economics more broadly. Using multiple historical datasets, we show how labor and marriage markets of Cambridge graduates were impacted.

⁵For an overview of this work, see for instance Guiso et al. (2006).

⁶See, for example, Bertrand (2013) and Hsieh et al. (2019).

2.1 How did gender ideology shape norms in the United Kingdom post-Industrial Revolution?

Throughout history, gender differences in physical strength and childbearing costs have contributed to ideologies that prescribe specific roles for each gender in society (Boserup, 1970). Prior to the Industrial Revolution, economic activity in the United Kingdom, as elsewhere, was often centered in or near the household, making it easier to reconcile women's labor force participation alongside men with otherwise gender-segregated roles at home (Valenze et al., 1995). The initial stages of the Industrial Revolution saw the manufacturing sector expand and factory work opportunities rise. Greater brawn requirements of this work and their location outside the household favored male employment (Burnette, 2008). Then, starting in the early 19th century, a key structural shift began with the rise of services (Shaw-Taylor and Wrigley, 2014). Shaw-Taylor et al. (2010) document that adult male employment in professional and administrative employment rose from 2.3% to 5% between 1813–20 and 1871. Education rates increased, with demand for secondary and tertiary education especially high. But while the 19th century would bring economic success for many, individual situations were often precarious and fluctuations common across new industries. The 1880s, for example, were a decade of deep economic depression for manufacturing, widespread unemployment and intense trade union agitation (Caine, 1982). Inequality grew: By 1871 the Gini coefficient for income inequality in England and Wales had increased to 0.62, from 0.40 in 1823 (Acemoglu and Robinson, 2000). Well-paying and relatively stable service sector jobs became increasingly coveted. Alongside the changing social landscape and growing middle class, economic differences within the household heightened. Women's access to tertiary education and service sector jobs remained limited. Moreover, until late 19th century, married women's property rights were governed by English common law, which required that the property women took into a marriage, or acquired subsequently, be legally absorbed by their husbands.

In parallel, the ideology of "separate spheres" for women and men became entrenched as an integral part of the middle class collective identity. In 1865, the influential philosopher John Ruskin published his lectures on gender ideology to widespread success. He counselled women to see themselves as moral guides of action-oriented, aggressive men, and creators of a household as "a place of Peace. The shelter not only from all injury, but from all terror doubt and division" (Ruskin, 2012). (He also urged women's parents to educate them to this end.) Ruskin's writing, a bestseller at the time, encapsulates the separate spheres ideology: Innate gender differences implied that as the economy changed, women and men should specialize in roles that suited their inherently different natures. Women were seen as caregivers: altruistic, patient and emotional. Men were seen more broadly as leaders: creative, rational and entrepreneurial. These distinct ideals for each gender, in turn, bred norms that constrained the labor choices and behaviors of each gender.⁷ As high-wage opportunities increased, many households opted women out of formal labor, leading to a decline in the labor force participation rate of married women by the mid-19th century (Horrell and Humphries, 1995).

⁷This ideology was not limited to the United Kingdom. In *Democracy in America*, de Tocqueville wrote that when women married "the inexorable opinion of the public carefully circumscribes [her] within the narrow circle of domestic interests and duties and forbids her to step beyond it" (De Tocqueville, 1840).

Opportunities equally open to both genders were few and far between. Respectable labor choices for women were defined as such by their proximity to household tasks. Education, viewed as an extension of child-rearing, was one such industry. But to teach the burgeoning middle class, women themselves would need to be educated. This generated some support for women's education, eventually reaching the tertiary level. While some proponents argued for women's education based on equal right and ability, many accepted (or tolerated) it based on the demand for qualified teachers as well as, increasingly, the need for respectable professions for young middle class women before marriage. For men of all social classes, separate spheres ideology cemented a "breadwinner" aspiration, labor sufficient to earn a wage that would support a household, including a wife who did not work.⁸

These gender ideals were reflected in data collection, laws, and social welfare schemes. The social reformers and founders of the London School of Economics, Beatrice and Sidney Webb, argued that the New Poor Laws of the 19th century encouraged female dependency (Webb and Webb, 1910). Unlike the Old Poor Laws, which flexibly supplemented either male or female wages, the New Poor Law began to regard a male breadwinner wage as a reward for respectability that should be attainable by all men, and to achieve this the Laws placed restrictions on women's work (Clark, 2000). This approach was supported by Marshall—in his *Principles*, he described a theory of human capital whereby men and children flourished in a "true home" created by a woman, supported by a "family wage" paid to the male household head (Marshall, 1890). "Able workers and good citizens", Marshall argued, "are not likely to come from homes from which the mother is absent during a great part of the day". Marshall provides no quantitative analysis in support, despite available data. The 1881 Census of England and Wales placed the "female relatives" of men engaged in household-based agrarian labor in the "Unoccupied Class", where they had previously been counted as agricultural laborers. After the Second World War, the Beveridge Report that formed the bedrock of the United Kingdom's modern welfare state cemented the household's reliance on a man's income: Men and women would be granted social insurance benefits consistent with their roles of wage earner and mother. As a result, married women had fewer rights to unemployment benefits than their husbands, and a woman's pension rights were based on her husbands' contributory record.

All of this led to tense change for women in Victorian England. While some could access opportunities unheard of for the previous generation, they did so with implicit conditions: that they use their educational achievements and intellect to serve as better wives, mothers, and teachers. While they were offered a chance to equal men in their chosen fields at universities—be it the study of classics, mathematics, or economics—they could not profit from that achievement in the same way afterwards. A growing sense of frustration at these restrictions contributed to women's suffrage becoming a national (and controversial) movement in the same era. John

⁸In fact, one impetus of support for women's education was a low marriage rate among middle class women prior to the 1870s (McWilliams Tullberg, 1991) and growing gender imbalance in the population (concentrated within the middle class) that became clear in the 1850s (Caine, 1982). This was driven in part by the difficulty of earning a breadwinner income. To retain their families' social standing, these women were limited to work in a profession considered respectable for women, such as a governess or schoolmistress. Other forms of labor risked damage to the social capital of the household and reducing the family to being labeled working class. Knowing this, middle class men did not want to marry unless they could financially support themselves and their families without additional funds. Many middle class women, therefore, began to marry later. Higher education was seen as a respectable pastime and potential investment.

Stuart Mill was elected to Parliament in 1865 on a pro-suffrage platform, but bills that he introduced aimed at extending suffrage to women failed by a large margin. Women landowners (“ratepayers”) received the right to vote in 1869, but only as long as they were unmarried. Until 1882, married women were unable to own property. Emmeline Pankhurst founded the Women’s Franchise League, founded in 1889, a precursor to the Women’s Social and Political Union in 1903. But women would not be granted the right to vote on the same terms as men until 1928.

2.2 The Fight for Degrees for Women at the University of Cambridge

“We worked very hard, for we were pioneers and we had to do credit to the ‘Cause’.” – Mary Paley Marshall on being one of the first of two women to take the Moral Sciences Tripos at Cambridge.⁹

In the late 19th century, the University of Cambridge was in a state of transition. In 1827 the Stamford Oath—a vow prohibiting Oxbridge graduates from lecturing outside the two universities—was abolished (Whyte, 2015). The University of London opened the following year, and more universities began to crop up. Fierce demand for higher education and new competition prompted Oxford and Cambridge to expand. Between 1850 and 1900, matriculation rates at Cambridge doubled, reaching roughly 1,000 per annum. Moving away from almost exclusively training and being run by clergy, Cambridge introduced degrees in the natural and moral sciences (including history, law and political economy) in 1848. The growing women’s education movement—both in and outside of Cambridge—led to the first women’s colleges associated with the university. Girton College was founded in 1869 and Newnham in 1871.

Women were lectured by Cambridge academics, but required special permission to sit the same exams as men. Mary Paley, at the behest of Alfred Marshall, was one of the first women allowed to take the Moral Sciences Tripos in 1874 and scored between an upper second and a first class.¹⁰ Between 1874 and 1881, 21 women were granted special permission to take the Tripos, and all passed, with 4 achieving a first class. In 1881 the Senate House approved a petition giving properly qualified women the right to admission to the Examinations for University Degrees (Smith, 2021). Women made full use of every new opportunity. In 1887, Agnata Ramsay topped one of the most storied subjects in Cambridge—the Classics Tripos—the only student that year (man or woman) to achieve a first class in the subject. In 1890, Philippa Fawcett (daughter of suffragist Millicent Fawcett) was graded “above the Senior Wrangler”—in other words, above the top-scoring man in the Mathematics Tripos. She was not given the official title because of her gender. Students at Newnham and Girton, as we discuss below in Section 2.3, consistently achieved first class results at equal or higher rates than their male counterparts.

But female students continued to face substantial barriers to utilizing the university’s resources. The University Library treated them as non-University members, forcing them to request access by applying to the Library Syndicate (committee). And, in response to their Tripos successes, these barriers were further raised. Restrictions on “non-members” (which

⁹See Paley Marshall (1947).

¹⁰A first class is the highest grade available to students in bachelor degrees in the United Kingdom. An upper second is the grade below.

included all women) were heightened (Smith, 2021). Hours and areas of access were reduced, and in 1891 it was proposed that a fee should be introduced. In response, twenty-four female Cambridge alumnae, including Phillipa Fawcett and Mary Paley Marshall, submitted a letter to the Syndicate, stating they would pay the proposed fee but requested permission “to work in the Library with the same freedom as heretofore”, explaining that for “some of us who have morning engagements” the reduced hours of access would make it near-impossible to use the library for research.

The letter is reflective of women’s diminishing tolerance for the inequalities in access to educational resources and certification. Other United Kingdom universities began to grant women degrees, starting with the University of London in 1878. As early as 1880 the Mistress of Girton petitioned the university for formal admission to degrees for her students (McWilliams Tullberg, 1991). In 1896, a Memorial asking the University Council to appoint a Syndicate to decide on the conditions of women’s admission to degrees received 2,000 favorable signatures. Eighteen months of often vicious campaigning against the motion followed; male undergraduates famously burnt an effigy of a female undergraduate riding a bicycle in Cambridge’s central Market Square. In 1897, 1,713 male Cambridge graduates voted against giving women degrees (though women would have been granted no share in university government), with only 662 in favour. Alongside, the University Librarian confirmed that non-members’ access to the library to be reduced even further.

Despite his early support for women taking Tripos exams, during the campaign Marshall emerged as a ferocious and leading opponent to admitting women to the degrees they had earned. His motivations are revealed in his letters and speeches during the 1896-1897 campaign. These boil down to three arguments.

First, Marshall believed that women gained all the qualifications they needed for the labor that they were naturally predisposed to from the unequal status quo. In 1897, Marshall began a speech to the University Senate on the question of admitting women to degrees, stating “the University has distinct duties towards women, for women will be the mothers of the men who come after, and they will be the teachers of those men, and the mothers of the men are those who form the men; and if you can form the teachers and the mothers of the men, you can form the men. And therefore, even from the point of view of men, we are bound to do everything we can for the education of women which is essential for them ... even if it does involve some slight injury to Cambridge as a University for men”.¹¹ Women should be educated such that young *men* did not suffer from inept teaching or care in their primary and secondary education—labor that “nature and custom alike have marked as specially theirs” and which “needs all the natural aptitudes in which women are pre-eminent, and scarcely any others”.¹² But given women needed “scarcely” any other skills beyond their “natural aptitudes” to fulfill their duties, Marshall and his allies saw little reason to admit them to full degrees.

Second, the demands of residency and continued study for three years to achieve the BA meant that admitting women to degrees would incentivize neglect of their household duties, or

¹¹Appendix I: Reports of Marshall’s Speeches to the Cambridge University Senate, 1891-1902. Discussion of Report of the Degrees for Women Syndicate, 16 March 1897. Whitaker (1996) pp. 428-435.

¹²Letter 490. To Members of the Cambridge University Senate, 3 February 1896. Whitaker (1996) p.147-154.

attract an unnatural type of woman to Cambridge. Women who would (or who would be asked to) interrupt their studies to care for household members were those “whose natures are the fullest” and who Cambridge should most like to educate, but who would be “most likely to be deterred” from going to Cambridge by the demands of a degree.¹³ Instead, Cambridge would be filled with women who, by the separate spheres ideology, either were of a perverse nature or had innately lower ability, as demonstrated by her willingness to abscond from her household, or her household’s ability to survive without her, for three years. Marshall claimed to have witnessed this at Bristol, where the women who “could probably have obtained places in the first class of a Tripos” were either in greater demand at home, or felt that duty more strongly, and as such “had to see honours which were denied to them, attained by women of less ability, but whose home ties were slighter.”¹⁴ The temptation of wielding a Cambridge BA would be strong and instituting it would be, in effect, “bribing hundreds of low-grade women students to Cambridge”.¹⁵ Thus, despite arguing women were naturally inclined away from higher education and formal labor, and toward the household, negative incentives were required to keep this social structure in place. Offering women a lesser qualification at Cambridge (and lower wages in the labor market) was Marshall’s proposition to maintain a “natural” social state. Rewarding household labor in any meaningful economic sense did not appeal: “virtue of those who have aided [the child or husband in building human capital] must remain for the greater part its *own* reward” (Marshall, 1890).

Finally, Marshall claimed women were intellectually inferior to men and their full participation in Cambridge reduced men’s ability to engage in the classroom, creating a less productive class of students. Marshall viewed women as fundamentally incapable of contributing novelty on the subject. “Economics is like a fine chest of tools”, he wrote in 1894, “which will not turn out anything of value except in skillful hands. This indicates that economics is a subject generally unsuited for advance by women.”¹⁶ Inconveniently for Marshall’s argument, women successfully achieved first class degrees at high rates ever since Newnham and Girton were founded. To justify his opposition, he deployed two further arguments. First, making men compete against women in exams would leave men at an unfair disadvantage: “Those very virtues which make women’s influence preeminent in the family, enable them to prepare for examination with a sedulousness which belongs not to men.” Second, exams tested qualities that women held naturally, but which were of little import to future intellectual productivity. Women and men should not sit equivalent examinations, because “examinations test receptivity and diligence in prescribed lines: and these are the strong points of women ... but the constructive work which has been done in after years by the women has not been comparable with that done by the men”.¹⁷ While he felt “the questions asked by women generally relate to lecture or book-work, or else to practical problems, such as poor relief ... men who have attended fewer lectures, read fewer books, & are perhaps likely to obtain less marks in examination, are

¹³Letter 490. To Members of the Cambridge University Senate, 3 February 1896. Whitaker (1996) p.147-154.

¹⁴Letter 490. To Members of the Cambridge University Senate, 3 February 1896. Whitaker (1996) p.147-154.

¹⁵Letter 523. To Herbert Somerton Foxwell, 18 April 1897. Whitaker (1996) pp.185-186.

¹⁶Marshall quoted in McWilliams Tullberg (1991), from a manuscript note, 28 May 1894, Marshall archives, Box 5, item 1b.

¹⁷Letter 490. To Members of the Cambridge University Senate, 3 February 1896. Whitaker (1996) p.147-154.

more apt to ask questions showing mental initiative & giving promise of original work in the future".¹⁸

Eleanor Sidgwick, then Principal of Newnham College, wrote an incisive response. In a substantial data collection exercise, Sidgwick surveyed over 500 female Oxbridge alumni and their sisters (who had not attended the universities) to prove that there was "nothing in a university education at all specially injurious to the constitution of women ... As mothers of healthy families the students are more satisfactory than their sisters" (Sidgwick, 1890).¹⁹ Responding to Marshall's assertion that women were incapable of original academic work, she pointed out that any failure of women obtaining firsts to advance knowledge in academic economics was due to a lack of opportunities and incentives in a vastly unequal playing field; something Marshall had frequently helped ensure at Cambridge. Women at Cambridge were excluded from all University prizes, scholarships, fellowships, and teaching posts, while facing increasingly limited access to the University Library (McWilliams Tullberg, 1991).

Marshall not only ignored this point but continued to proactively prevent equality of opportunity for women within Cambridge. In October 1896 he responded to a questionnaire on the facilities then available to women at Cambridge by writing: "As regards lectures, I consider my first duty is to members of the university, & consequently endeavour to lecture as though men only were present. When lecturing to women alone I have adopted a different manner of treating my subject which I believe to be better adapted for them."²⁰ With respect specifically to advanced academic work, when a proposal for Advanced and Research Degrees was drafted in 1894, Marshall pointed out that they should use the word "men" instead of "persons" to ensure women did not think they could take these degrees.²¹ In his later life, he was especially concerned with ensuring women and men did not have to compete in academic life. In his will (written a decade after the 1897 vote on women's degrees), he donated a sum for a studentship at the university, but stipulated that "No such studentship shall be open to competition by men and women simultaneously."²²

Unsurprisingly, female Cambridge graduates had few labor market options. Charitable work on social issues—particularly as pertained to domestic welfare—was respectable, but rarely remunerated (Summers, 1979). One common route was to enter the education sector, though

¹⁸Letter 508. To the Women's Degree Syndicate, 15 October 1896. Whitaker (1996) p.172.

¹⁹As the first two Newnham students to sit the Tripos examinations, Paley and her companion, Amy Bulley, were taken to the nearby city of Ely for two days afterwards, until the results were known, "for fear the excitement might be too great." (Paley Marshall, 1947) Arguments that a university education would damage a woman's health (and therefore her ability to bear children) were common at the time. Sidgwick (1890) responded specifically to Grant Allen, who had recently written in the *Pall Mall Gazette*: "You educate your women at the expense of their reserve fund; and after all you find they marry, and make very unsatisfactory and physically inefficient mothers ... You may think you have done no harm to her health by your training; and that may be true enough while she remains single; but have you done it positive good? Have you let it lay up that reserve fund of strength without which child-bearing is dangerous and (what is far worse for the community) inefficient? You can never tell till the time comes, and then many of your seemingly healthy Girton and Newnham Girls break down utterly." Sidgwick's evidence directly contradicted his claim. Francis Galton – the statistician and eugenicist – wrote to Sidgwick's husband upon reading the report suggesting a dowry fund in lieu of fellowship for female Cambridge students: "It is a monstrous shame to use any of these gifted girls for hack work, such as breadwinning."

²⁰Letter 508. To the Women's Degree Syndicate, 15 October 1896. Whitaker (1996) p.172.

²¹Second Report of the Council, dated 22 October 1894, on degrees for Advanced Study and Research, University Reporter, 6 November 1894, p.174, cited in McWilliams Tullberg (1991).

²²The scholarship would be offered to women at Newnham once every four years. Will of Alfred J. Marshall, dated 13 June 1908, cited in McWilliams Tullberg (1991.)

academia remained heavily gate-kept. Sidgwick (1890) found in her survey of female Cambridge alumni that 78% were engaged in educational work after leaving the university, while less than 50% of their sisters were (see Table 1). Even in education, discrimination was institutionalised. In 1883, for example, the School Board of London (the single largest school authority in London) decreed that female teacher salaries should be 75% of those for male teachers with equal qualifications and experience. Work in sectors such as law or finance was unheard of. No woman would be able to join one of the Inns of Court (or enter the legal profession) until the day after the royal assent of the Sex Disqualification (Removal) Act in 1919, which enabled women to join professional bodies, sit on juries and award degrees. Burnette (2008) argues that labor unions – whose power grew over the nineteenth century – were also important gatekeepers to labor market opportunities for women. “Unions desired to limit access to their trades, in order to reduce labor supply and increase their wage. Gender ideology made women a natural target.”²³

Moreover, women would, in all likelihood, marry a man opposed to her use and advancement of her higher education. This gave rise to a choice between remaining unmarried and having a career, or marrying and facing greater constraints. But a labor market marked by significant gender bias in wages and employment meant remaining unmarried was economically fraught with risk. So, for a woman who wanted to work in the public sphere, that desire was suppressed on two fronts: as a married woman via her household, and as an unmarried woman via the workplace. The testimony of a few Cambridge women reveals the relative freedom their education gave them, and the tension they felt on giving it up when faced with marriage proposals. Paley herself got engaged at eighteen: “In those days women married earlier than now and the notion was common that if a girl did not marry or at any rate become engaged by twenty she was not likely to marry at all. So I became engaged” (Paley Marshall, 1947). Her fiancé was an officer in the military and travelled to India for three years almost immediately. While away, Paley prepared for the Cambridge examinations and, on the officer’s return, broke off the engagement and moved to Cambridge to study. Beatrice Webb, considering marriage to a wealthy MP who wanted “intelligent sympathy” from a wife, wrote: “If the fates should unite us (against *my will*) all joy and light heartedness will go from me. I will be absorbed into the life of a man whose aims are not my aims; who will refuse me all freedom of thought in my intercourse with him; to whose career I shall have to subordinate all my life, mental and physical without believing in the usefulness of his career, whether it be inspired by earnest conviction or ambition ... I should become par excellence the mother and the woman of the world intent only on fulfilling practical duties and gaining practical ends.”²⁴ Agnata Ramsay – the first woman to top the Classics Tripos – married the Master of Trinity College, Henry Montagu Butler, in 1888 and became, in the words of the Classics scholar Mary Beard, “one of the most notorious casualties of the university marriage market.”²⁵

²³Burnette (2008), p. 245.

²⁴Webb, Beatrice. Diaries. Entry dated 16 March 1884, p.368.

²⁵Beard, Mary, writing in *The Independent*. September 22, 2011. “Mary Beard: Lessons in Love.” Available here.

2.3 Women's Outcomes at the University of Cambridge

Within this historical context, we provide quantitative analysis of the labor and marriage outcomes of women and men who matriculated from Cambridge during this period. We use a novel data source "A Cambridge Alumni Database" (ACAD), a digitization project of alumni records at Cambridge containing the biographical details of everyone identified as academically associated with Cambridge from approximately 1200 to 1900. In our time period of focus (1869-1900), the database draws from two sources: (i) ten volumes of *Alumni Cantabrigienses*, a compilation of university, college and administrative records completed by John and John Archibald Venn; (ii) college records from Newnham and Girton Colleges (the only two women's colleges pre-1900). We create a student-level database recording matriculation year, degree subject, class (grade), employment and marriage outcomes at the student level. We have so far digitized a subset of the (substantial) male records – those with surnames A – G, L and S. Ongoing work is extending this analysis to the entire male sample.

Additionally, we incorporate information on a degree certification process for female Oxbridge alumnae initiated by Trinity College, Dublin. Between 1904 and 1907, female Oxbridge alumnae could travel to Dublin to obtain a BA certificate. In addition to travel costs, the fee for conferring the BA degree was £10 3s. (roughly a third of the average annual salary for a woman in the United Kingdom in 1908) and for the MA £9 16s. 6d., with an additional fee of 10s. for an MA testimonial. The scheme was halted, in part due to fears from Trinity that it reduced their comparative advantage in attracting high-potential Irish women; namely, the willingness to grant them degrees. During its three years, over 700 female Oxbridge alumnae used the scheme; a substantial number given the small cohort sizes at Newnham, Girton, and the other women's colleges. The rate of take-up from Cambridge alumnae was almost 20%.²⁶ The take-up evidences a high latent demand and willingness-to-pay for certification. Cambridge alumnae were identified as "steamboat ladies" (named for the mode of travel to Dublin) if either: (i) their ACAD entry stated that they earned a degree from Trinity College, Dublin, during the degree certification scheme's three-year run; or (ii) they were named in Volume III of *A Catalogue of Graduates of the University of Dublin*.

We compare the results from our alumni data to two other data sources. One is Eleanor Sidgwick's survey of Cambridge alumnae and their sisters (Sidgwick, 1890). The second is Tribe (2000)'s collation of degree class outcomes and rankings in economics for each college and year between 1903 (the year Marshall founded the economics Tripos) and 1955. Because colleges remained gender-segregated during this time period, we can use Tribe's data to compare male and female performance in the economics Tripos specifically, Newnham and Girton being the only two colleges to admit women during this period.²⁷

²⁶Our data does not include Oxford alumnae, so we cannot calculate the total number of women eligible for the scheme.

²⁷In Table 1 we report shares of first class degrees among students taking both Parts I and II of the economics Tripos (the full three-year degree as Marshall designed it). Some students took Part I or Part II only – we are unable to observe the reasons for this (e.g. a change in degree subject, dropping out of Cambridge). Among men who took Part II only 8.0% (68/848) achieved a first and 71.7% (608/848) a first or second, compared to 1.4% (2/139) of women who achieved a first and 69.1% (96/139) a first or second.

	Male alumni (%)	Female alumnae (%)		Alumnae's sisters (%)	
		All	Steamboat		Non-steamboat
Panel A (<i>N</i>)		(488)		(450)	
Married	–	12**	–	–	19
Education job	–	78***	–	–	37
Household job	–	25***	–	–	48
Panel B (<i>N</i>)	(14,172)	(2,047)	(398)	(1,608)	
First class	9***	11	17***	11	–
Married	13***	30	16***	34	–
Employed	77	77	96***	74	–
Edu. job (non-uni.)	14***	61	86***	55	–
Edu. job (uni.)	7***	17	29***	16	–
Religious job	27	–	–	–	–
Finance/law job	16	–	–	–	–
Gov't/military job	27	–	–	–	–
Women's activism	–	19	29***	14	–
Panel C (<i>N</i>)	(857)	(175)			
First class	6.5	6.3	–	–	–

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Table displays the percentages of different groups displaying different characteristics among female Cambridge alumnae, their sisters, and male Cambridge alumni. We use three different data sources to span multiple time periods. Panel A uses data from Sidgwick (1890), which surveyed female Cambridge alumnae who had matriculated prior between 1869 and 1887 and their sisters. We indicate significant differences between percent outcomes for alumnae and their sisters. Panel B uses data from ACAD, covering Cambridge alumni who matriculated between 1860 to 1900. The first two columns compare male alumni and female alumnae, with significant differences between percent outcomes for each group indicated with stars on the male column. The third and fourth columns compare women who used the Trinity College, Dublin, degree certification scheme (“Steamboat”), and those who did not, with significant differences between these two groups indicated with stars on the third column. For more information on ACAD and the identification of “steamboat ladies”, see Section 2.3. Panel C uses data from Tribe (2000), which aggregates information from the Cambridge Reporter class lists between 1903 and 1955.

Table 1: Summary Statistics on Cambridge Alumnae 1860-1955

Panel A of Table 1, which tracks alumni up to 1890, shows the earliest alumnae of Cambridge married at a significantly lower rate than their sisters and worked in formal labor at a significantly higher rate, concentrated almost entirely in the education sector. This could be driven by selection (women who were unable to marry invested in their education and worked to support themselves) or by women's preferences and the increase in economic power afforded by a higher education. In columns (1)-(2), Panel B we expand this sample of alumnae up to 1900 and include information on their lifetime outcomes. Compared to a sub-sample of male students, women continued to enjoy relatively high employment rates in education. Notably, however, those education jobs were concentrated almost entirely in the primary and secondary tiers. University work remained a rare opportunity. At Cambridge, women could work at female colleges such as Newnham, but not in the University more broadly. A lower share of male graduates enter the education sector as they benefitted from employment opportunities in other fast-growing services such as law, finance, and the civil service. This is despite women performing equal to or better than men (as measured by proportion receiving a first class degree) throughout this period and the next, as evident from Panels B and C.

In columns (3)-(4) of Panel B, we distinguish women in our data by whether they travelled to Trinity College, Dublin, to be awarded a degree under the 1904-1907 agreement ("steamboat ladies"). Recall that obtaining the Trinity degree required substantial costs in travel as well as a fee for obtaining the certificate. There were, however, potential gains in employment to being certified. Women may also have selected into the steamboat group if they felt more actively invested in the fight for gender equality. Indeed, Panel B is suggestive of this, demonstrating substantial differences in the lifetime outcomes between women who claimed the degree and those who did not. Women who claimed the degree were more likely to have achieved a first class, be employed in an education job (and one at a university), and involved in women's activism. For instance, the first woman to receive the degree of 'Doctor of Letters' under this scheme was the economic historian and Girton Lecturer Ellen McArthur (History Tripos 1885) who had organized the 1891 petition requesting equal access for female students to Cambridge Library. The steamboat ladies were substantially less likely to be married.

Table 2 presents four logit regressions detailing the correlation between individual characteristics and the probability of employment – both overall and in the university sector specifically. For both genders and forms of employment, achieving a first class degree is correlated with a higher probability of employment. There is a clear difference, however, in the effect of marriage on employment prospects for men and women. For men, marriage is associated with better employment prospects, while for women it appears a penalty. In theory this could reflect preferences and matching on the marriage market; men with better employment prospects match with women, who would prefer not to work or wish to specialize in household labor. The evident desire for independence described for specific women above in contemplating marriage, and in the fight for degrees among Cambridge women more widely, lead us to believe this is unlikely to be the case.

Ultimately, women would have to wait until after the Second World War to be granted degrees from Cambridge. Oxford admitted women to degrees in 1920; Cambridge would reject a motion to do the same the following year. Change came only in 1948.

	Probability of...			
	Employment (Female)	Employment (Male)	Uni. Employment (Female)	Uni. Employment (Male)
Married	0.41*** (0.17, 0.64)	5.74*** (5.53, 5.95)	0.70** (0.39, 1.01)	1.96*** (1.75, 2.17)
First Class	4.41*** (3.63, 5.18)	3.73*** (3.51, 3.94)	3.55*** (3.18, 3.93)	12.22*** (12.06, 12.39)
Married × First Class	0.65 (−0.33, 1.64)	3.69 (1.71, 5.68)	0.95 (0.28, 1.62)	0.88 (0.51, 1.23)
Base Level Odds Ratios	4.07	2.61	0.19	0.04
Observations	1,944	13,723	1,944	13,723

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Logistic regression reporting odds ratios, with 95% confidence intervals in parentheses. Specifications include fixed effects for matriculation decade.

Table 2: Logit Regressions of Marriage and Degree Class on Employment Prospects

3 The Persistence of Separate Spheres

Far from being a relic, close cousins of the separate spheres ideology dominant in Marshall’s lifetime persist the world over, both in reported personal beliefs and institutions. We document this persistence, and show that the differential impact of marriage on male and female labor market outcomes continues. We then ask who benefits from gendered norms and institutions, and how this impacts channels of enforcement, before arguing for a need to better account for norms within the canonical collective choice household model.

3.1 How strong is support for gendered norms and laws today?

Using data from recent World Values Survey waves – including 77 countries surveyed between 2010 and 2020 – we document modern support for relevant norms. We focus on two statements which measure men’s perceived priority over women in the labor market and for tertiary education, respectively: “When jobs are scarce, men should have more right to a job than women” and “A university education is more important for a boy than for a girl.” Support for gender equality on both dimensions is positively correlated with country income, though less strongly for access to higher education. However, even in advanced economies like the US and Canada, over a quarter of respondents believe men have more of a right to a job. In other rich countries, like Japan and Korea, the majority agree.

In Table 3 we examine individual correlates of support for gender equality. Column (1) considers jobs and Column (2) education. We use country fixed effects to account for country-specific attributes like income and labor market conditions.²⁸ For both norm measures, women, especially those who are unmarried, are more progressive than men. For instance, a never-married woman is 15 percentage points more likely to favor job equality relative to a married

²⁸The question on importance of higher education could be interpreted in a non-normative sense. For example, in an economy with restrictions on women’s labor force participation, an individual might agree with the statement for pragmatic reasons. Country fixed effects go some way to accounting for this.

	Support for...	
	Equality in jobs	Equality in higher education
Female	0.119*** (8.39)	0.092*** (8.32)
Age 30+	0.018*** (3.50)	0.010* (1.70)
Never married	0.024*** (3.06)	0.002 (0.33)
Secondary+	0.066*** (7.43)	0.060*** (8.15)
Employed	0.029*** (4.49)	0.028*** (3.92)
Female × Age 30+	-0.043*** (-5.33)	-0.020*** (-3.14)
Female × Never married	0.031*** (2.77)	0.021** (2.45)
Female × Secondary+	0.012 (1.35)	0.005 (0.93)
Female × Employed	0.013 (1.42)	-0.007 (-0.89)
Country fixed effects	Yes	Yes
Observations	116,227	115,083
R^2	0.271	0.141
Base levels mean	0.322	0.472
Overall male mean	0.458	0.613
Overall female mean	0.559	0.686

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Table reports results from OLS regressions using data from the World Values Survey waves 6 and 7 (2010–2020). Standard errors are clustered at the country level. t -statistics are shown in parentheses. “Support for equality in {jobs, education}” is the mean Likert response, rescaled from 0 to 1, for agreement with the questions, “When jobs are scarce, men should have more right to a job than women,” and, “A university education is more important for a boy than for a girl.” The strongest disagreement was coded to 1 and the strongest agreement to 0, though the exact menu of 3, 4 or 5 possible responses differs between surveys. “Never married” is an indicator for being neither married nor living together as married. Those who are divorced, separated, and widowed are omitted from the regression. “Secondary+” is an indicator for secondary education or higher. “Employed” is an indicator for full-time, part-time, or self employment. Others are housewives and unemployed. Students and retirees are omitted.

Table 3: Individual covariates of support for gender equality

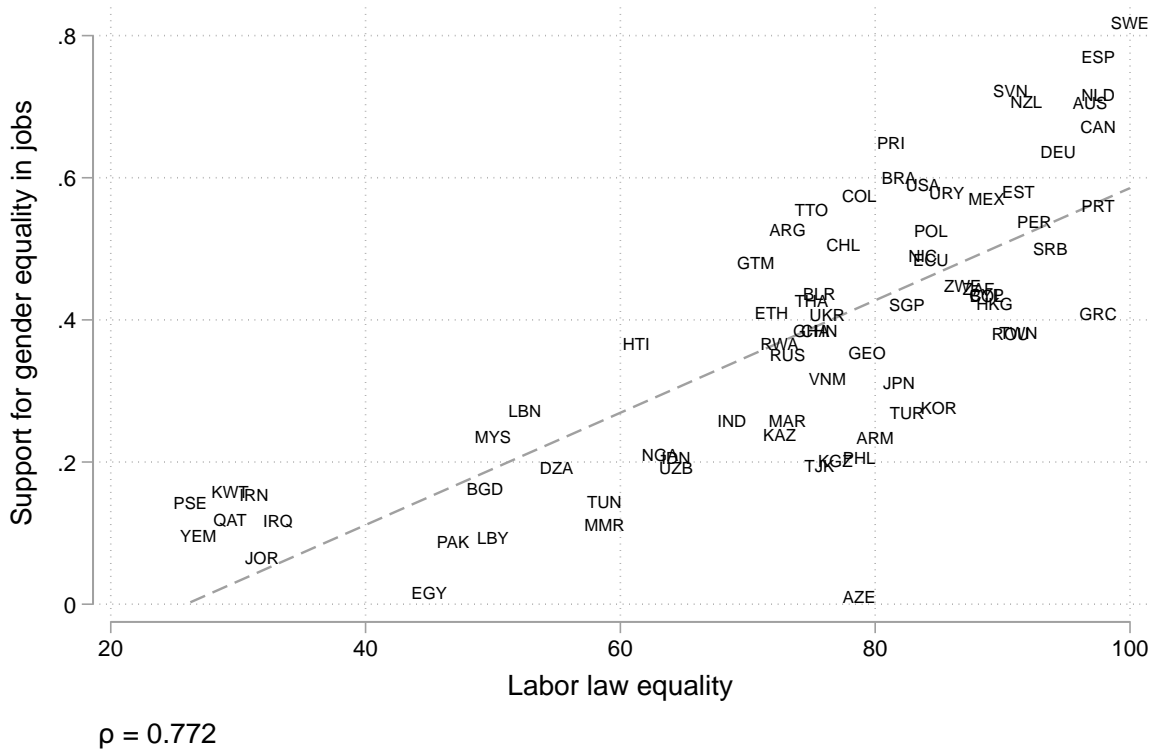


Figure 1: Support for Gender Equality in Access to Jobs and Equality in Labor Laws

Notes: Data on support for gender equality in access to jobs comes from the World Values Survey 2010-2020. The y -axis variable is a country fixed effect from a regression similar to that in Table 3, but with a slightly fuller specification of marital status, education level, and employment status. We interpret this value as a cultural norm. Data on labor laws comes from the World Bank Women, Business, and Laws Index.

man. Higher education makes individuals more progressive, but does not reduce the gender gap in norm support.

In the Victorian era, the separate spheres ideology and resulting gender norms manifested via increasingly gendered laws that restricted women’s participation in certain domains. We consider the Women, Business, and Law index (Hyland et al., 2020) to see if this complementary relationship between norms and institutions persists today. This index measures women’s economic inclusion by aggregating indicators on women’s rights throughout their careers related to, for example, ease of mobility, right to equal pay, marriage and rights within their household, and protection from discrimination due to pregnancy. In Figure 1 we observe a strong positive correlation between norms and laws.

Unsurprisingly, therefore, labor markets – across countries at all levels of economic development – continue to show substantial gender gaps in labor force participation and earnings. Figure 2 shows more pronounced gaps among married individuals. In all 107 countries with data, the prime-age labor force participation rate for married men exceeds that for married women. The same is not true for single women and men; though gender differences are still evident, labor force participation rates are closer to equal, and in some cases higher among single women. Importantly, this may not reflect women’s preferences. ILO and Gallup surveys conducted in 2017 asked women for their preference between working in paid jobs, care for

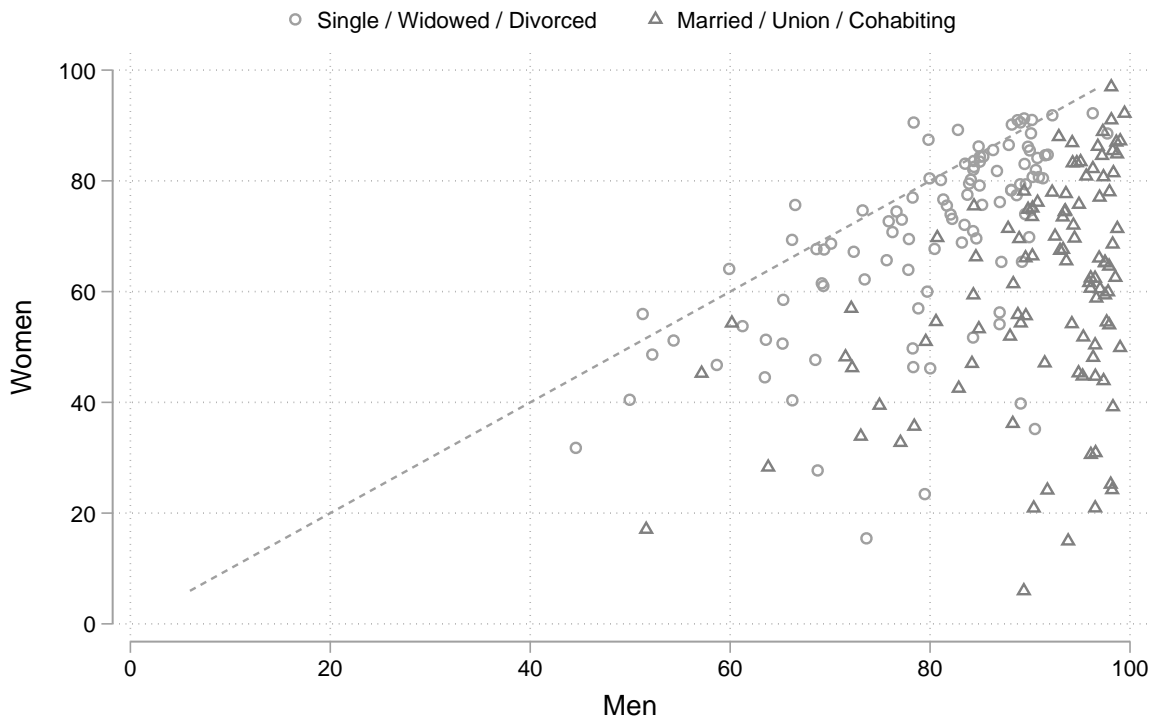


Figure 2: Labor Force Participation (LFP) Rates by Gender and Relationship Status

Notes: Data is from the ILO and is at the country level ($N = 107$), covering individuals age 25-54. We use the most recent observation available for each country. The time period spans 2002–2019, with 84% of the data post-2014.

families or both: 70% of women, regardless of employment status, stated they would like to work in paid-jobs (ILO, 2017). Further support comes from Indian labor force data where one-third of housewives state a preference to work; bringing these women into the labor force would double female labor force participation rates (Fletcher et al., 2018). The gaps also persist in many settings where the gender gap in college attendance and graduation has reversed, such as the US (Goldin et al., 2006).

3.2 Why do gendered norms and laws persist?

Understanding how gendered norms and laws endure is critical for designing policies that ameliorate gender inequalities. But several unanswered questions remain when it comes to the underlying economic and social factors that drive and maintain gendered norms and institutions. As a precursor to our positive analysis of policies in Section 4, we ask: can we know if norms reflect misguided beliefs or rather underlying preferences, who benefits from gender norms, and who enforces them?

Actual (injunctive) norms reflect average beliefs about what an individual should do. For instance: “It is not appropriate for a woman to work outside the house.” Perceived norms are second-order beliefs. For instance: “Most people in my community think a husband is a bad provider if his wife works.” These perceived norms can be just as effective in propagating gender inequalities, even if incorrect. Bursztyl et al. (2020) demonstrate such misperceptions contribute

to norm adherence in a Saudi Arabian context. Critically, correcting these misperceptions (a relatively low-cost intervention) lead men and women to adjust beliefs and move labor decisions away from the restrictive gender norm. In such situations, policies that promote role models who violate separate sphere gender norms can be powerful, either because they correct misperceptions or because they empower women to challenge stereotypes and reduce the individual costs of doing so. A growing body of literature shows that gender quotas in politics can create role models and can raise parental aspirations for daughters, reducing the gender gap in education (Beaman et al., 2009) and use of health services (Dupas and Jain, 2021).²⁹

But as Table 3 highlighted support for gender norms is not uniform within societies. Rather, we observe significantly higher male support of regressive norms. Does this reflect differences in the extent of misperceptions or rather differences in how much men and women value regressive norms? While men unequivocally benefit along some dimensions, their behavior and choices are just as restricted by gender norms along others. To generate gender-based norms, separate spheres ideologies have to contrast the genders, designating some behaviors as uniquely male or female. This restricts men from traditionally female roles and behaviors socially, creating psychological costs (Rice et al., 2021). The crux is that the benefits to men from existing gender norms tend to accrue along economic lines, leading to asymmetries in economic power between the genders. Does this inequality trump all others? How do men weigh their economic power, supported by current norms, against the social and cultural constraints on their behavior? Do these constraints impinge as strongly on male behavior as the analogous ones on female behavior, or does economic power buy freedom to reject gender norms, and face lower costs from violating them?

Identifying which men benefit from gender norms can help identify actors who are incentivized to maintain the unequal status quo. But this is hard to do and complicating matters is the fact that enforcement of gender norms need not coincide with direct extraction of rents, but may indirectly ensure rents accrue to the dominant gender. For example, a male manager may favor a male candidate over a more qualified female candidate, not because he directly gains rents from doing so, but because he gains rents when his male manager does the same. Maintaining the norm benefits his career prospects. A male doctor may push his wife to take on the bulk of household and childcare costs not just because it provides him with more time to dedicate to his career, but because supporting the norm that women shoulder the burden of household labor reduces competition from his female colleagues via their marriages.

The ways in which men might accrue rents from enforcing gender norm are therefore often subtle and indirect, making responsibility for norms nebulous and locations of enforcement hard to pin down. Are you automatically responsible for a system you benefit from? Marshall is a hard-to-miss target, practicing restrictive gender norms in his household and in the workplace very publicly, and benefiting from them at the same time. But what of a male economist who does not check if his equally qualified female colleague is paid the same amount as him? What of the male manager who chooses not to take more than a week's paternity leave because he genuinely prefers not to, and assumes his wife will decide in the same way? What if he works

²⁹Jayachandran (2021) reviews social norms as a barrier to female labor force participation in developing countries.

in a firm that offers him only two weeks, and his female colleague six months? Should he move workplace? Insist on a change in company policy? If he does not, is he enforcing gender norms?

The multitude of relevant interactions between individuals, households, and institutions, makes it clear that gender norms are enforced at a systemic level. Although norms present in any structure or institution may have been encoded initially by individual members of the population, those norms can become embedded via the persistence of institutions themselves (through, for example, bureaucracy, codes of conduct, hiring standards), lasting even when individuals may no longer support them and rising above the level at which any one individual member of a group can engage. But, as the political philosopher Amia Srinivasan writes, “to say that a problem is structural does not absolve us from thinking about how we, as individuals, are implicated in it, or what we should do about it” (Srinivasan, 2021).

Ultimately enforcement occurs in the public and private spheres, both via norms and institutions. In the public sphere, this might include enabling gendered labor legislation, but also overt labor market discrimination against women. On supporting gendered labor legislation, Edlund and Pande (2002) show that the partisan gender gap in the US varies in a way consistent with the economic benefits offered to each gender – as marriage became more tenuous (due to introduction of unilateral divorce laws), women increased support of Democrats (with a more progressive stance on gender equality), while men became more likely to favor Republicans. On discrimination, Folke and Rickne (2021) use nationally representative survey data from Sweden to show that women experience higher harassment rates than men in male-dominated and mixed-gender workplaces. A hypothetical choice experiment shows that information about potential harassment in a prospective workplace decreases high-risk applicants’ probability of choosing the workplace by the same amount as if the job had a 17% lower wage. Administrative data shows that women face a higher risk of harassment in high-paying workplaces, meaning the costs they are paying to avoid such harassment are potentially substantial. Harassment victims are more likely to drop out of the workplace, increasing gender segregation and exacerbating the gender pay gap.

An exchange between Alfred Marshall and Beatrice Webb provides an early description of how men may enforce norms in the private sphere. Marshall stated: “If you compete with us, we shan’t marry you.” To mitigate this risk, a woman “must not develop her faculties in a way unpleasant to the man ... strength, courage, independence were not attractive in women ... rivalry in men’s pursuits was positively unpleasant [and] ... masculine ability in women must be firmly trampled on and boycotted” (Webb, 1971). Present day counterparts to this argument are documented by Bertrand et al. (2015), who show that women who outperform their husbands in the labor market are more likely to see their marriage end. In fact, in couples where the wife’s potential income likely exceeds the husband’s, the wife is less likely to be in the labor force *at all*, and earns less than her potential if she does work. When there is an unusual (by traditional gender norms) earnings asymmetry, separate sphere gender roles in the household appear to be enforced *more* strongly: when a wife earns more than her husband, the wife spends more time on household chores. Flèche et al. (2020) document a similar pattern in the United Kingdom and Germany. Schneider (2012) shows using the US National Survey of Family and Households and American Time Use Survey that when women and men work

in occupations are that are stereotypical of the opposite gender, they appear to neutralize this deviation from gender norms by performing more gender-traditional household chores. Folke and Rickne (2020) find a predictable gender asymmetry in how promotions to top jobs affect the probability of divorce: when a woman is promoted to a political leadership position or CEO, the baseline probability of divorce doubles, but there is no similar effect among men in the same position. This effect is concentrated in more gender traditional couples. Bursztyn et al. (2017) show that, recognizing these norms, single high-skilled women underplay career ambitions in MBA classrooms when men are present. For lower income countries like India, recent papers provide direct evidence that separate sphere gender norms are used by family members to limit work by married women (Bernhardt et al., 2018; McKelway, 2021).

And the pervasiveness of gender norms across public and private interactions means that enforcement in the two spheres can compensate for each other. When norms are weakened on one front, they can be made stronger on the other. Wheaton (2020) shows how men may use their power in the private sphere to react against changes in the public sphere. He demonstrates that state-level Equal Rights Amendments (ERAs) in the US led to a sharp backlash among men, who expressed more negative attitudes toward gender equality immediately after the amendments. While women moved towards preferring fewer children after the amendment – possibly because of the implied improvement in labor market opportunities – men moved towards preferring more. Fertility increased, suggesting an influence of this male backlash on joint decisions within the household.

How does enforcement of gender norms link to the discussion of taste-based and statistical discrimination within economics? Some people, such as Marshall, fundamentally dislike women or believe they are inferior to men. They are liable to be taste-based discriminators, and the producers or proponents of gender-based ideologies, such as separate spheres for the genders. As detailed above, these ideologies can shape restrictive gender norms if they are actually or perceived to be supported by people in positions of power or the majority of people. If biased gatekeepers successfully exclude women from large sections of the labor market, then others might accept group stereotypes based on the seeming confirmation of the underlying ideology; effectively attributing norm adherence, perhaps due to the high social costs of violation, to women's true underlying preferences. Marshall's peers, for example, might have inferred from the prevailing actions of women at the time that women preferred not to work in traditionally male fields, and felt more naturally drawn to household duties.

Thus, under a system of restrictive gender norms formed from a gender-based ideology, a few powerful taste discriminators could enable widespread statistical discrimination; by denying women equal labor market opportunities and imposing costs on those who fought for them, they could reinforce the belief that women did not want these opportunities. Consistent with our discussion at the start of this section, in theory, with some initial violations of gender norms (e.g., the women educated at Cambridge) or other information interventions revealing preferences unconstrained from norms, statistical discrimination should decrease as the assumptions of and support for the underlying gender ideology are refuted. This may be one reason that taste-based discriminators, such as Marshall, worked so hard to keep women from these breakthrough roles.

But still, such norm violations often only wear norms down slowly. It could be that the continued presence of taste-based discriminators enable norms to persist, both by incentivizing adherence and by facilitating statistical discrimination. If taste-based discriminators occupy positions of power, the social costs of norms violation are higher, and opportunities to see these norms violated are minimised. Commensurately, information shocks revealing a lack of support or truth to the underlying gender ideology will be fewer.

3.3 How should labor and marriage models account for gender norms?

Starting with Becker (1981), modelling of household's maximization problem has often assumed that women have a comparative advantage in household tasks. Given this, increasing returns to specific human capital investment encourages a division of labor, or specialization, within the household. Relative to her husband, a woman will be less likely to work outside the home. Turning to the role of her personal preferences, in the canonical collective household model, partner traits (such as relative male to female earning power) impact a household member's bargaining power and, therefore, the weight given to his or her preferences in the household's maximization problem. There is no explicit role for gender norms to impact male and female preferences over women's work. As a result, higher relative bargaining power – for instance due to a rise in unearned income (e.g. access to conditional cash transfers) – increases a woman's share of household income/consumption. As long as she values leisure, she will respond by further reducing her work engagement. Put differently, there is no space in these models for her to use greater bargaining power to challenge extant norms.

The prediction that women respond to increases in bargaining power by reducing labor supply, however, does not always hold: married women often respond to more egalitarian labor market conditions by *increasing* labor supply. For instance, Heath and Tan (2020) found that strengthening Indian women's property rights increased a woman's labor supply by between 3.8 and 6.1 percentage points, particularly in high-paying jobs. Similarly, Field et al. (2021) show that strengthening a woman's financial control over her earnings increases female labor supply, especially among those who were previously not working.

Early theories of gender inequalities, including Marshall and Becker's, often show such blindspots to the power and incidence of system-wide gender norms. A growing empirical literature – some of which we touch on below – is beginning to challenge these assumed links between preferences, ability and labor market outcomes for men and women. But, as detailed in Section 3.2, there is much to incorporate, not least the potential rents to men from the gender norms that impact the labor market and household jointly, even if such norms appear to apply only to one sphere.

The endurance of separate sphere norms in workplace and household favor men on multiple fronts. First, it limits labor market competition by restricting women's entry. For example, Besley et al. (2017) develop a model where party leaders select political candidates of varying competence by trading off electoral success against the leaders' own political survival. They posit that collusion between 'mediocre' male candidates and male party leaders restricts competition, allowing both to enjoy rents. Using data on the earnings of the Swedish population between 1982

and 2014, they measure politicians' competence. In 1993, a "zipper quota" required local parties to alternate women and men on the ballot. Far from impairing the meritocratic selection of candidates, the quota forced male politicians to compete with female ones, rather than colluding among themselves, raising the competence of male politicians where female representation increased the most.

Second, separate spheres ideology encourages background support of men's careers from the household, leading to a premium for married men in the workplace. Recent PhD economist surveys show that female graduates who marry prior to PhD completion face a wage penalty, while their male counterparts enjoy a marriage premium (Stock and Siegfried, 2014). More broadly, US data suggests that married men earn 10% to 40% more than single men, but married women who work earn significantly less than unmarried women with similar human capital (Juhn and McCue, 2016). The earnings gap is particularly large when considering married women with children, largely due to the outsize burden women carry in household labor, including child-rearing. Women the world over shoulder a disproportionate amount of childcare within households, leading to substantial opportunity costs in the labor force.³⁰ Critically, this is not just a feature of the biological costs (though high) or consequences of having a child. Evidence from Sweden shows that penalties are identical in biological and adoptive families (Kleven et al., 2021). Moreover, as a comparison group, same-sex couples – who are not subject to traditional gender roles *within* the household in the same way that opposite-sex couples are – have consistently been found to divide housework more equally than opposite-sex couples (Black et al., 2007; Antecol and Steinberger, 2011; Giddings et al., 2014). Using data from Norway, Andresen and Nix (2021) estimate "child penalties" for men and women in heterosexual and same-sex female couples, as well as non-adopting and adopting couples. They rule out giving birth and a father's relative advantage in the labor market as mechanisms behind the "child penalty" for mothers. Instead, preferences, norms, and discrimination are primary causes and this is costly: women in heterosexual couples experience a 23% drop in income following birth of their first child, a change that persists for at least five years after birth. This drop in the mother's income translates to a persistent reduction in overall household income of approximately 10%. Same-sex female couples, by contrast, see a similar initial drop in income for the birth mother, but the partner also experiences an income drop (unlike fathers) and the reduction is equal for both mothers after three years.

How might we integrate such considerations into models of the household? Field et al. (2021) outline a collective household model where norm costs directly enter male and female utility functions. If men adhere to norms to a greater degree than women, then intra-household bargaining will exacerbate the impact of restrictive gender norms on women's work. Targeting either side of this asymmetry (men's incentives to uphold gender norms, or women's incentives to violate them) can impact relative bargaining power within marriage, and ultimately loosen norms-based constraints on female labor supply. Thus, separate spheres norms can create a vicious circle: by limiting a woman's access to labor markets from the workplace and the house-

³⁰See, for example, Sasser (2005) on US physicians, Bertrand et al. (2010) on US MBAs, Kim and Moser (2021) on American scientists, and Bertrand (2020) for a review of the evidence. More recently, Talamas (2021) shows that the death of grandmothers (a primary source of childcare in Mexico) reduces mothers' employment rates by 12 percentage points, but has no effect on fathers' labor force participation.

hold, norms reduce her outside option and economic bargaining power within the household further, weakening her ability to challenge the same norms and enter work.

4 Looking Forwards

Too often norms are packaged into the cultural history of a context, especially in the case of today's lower income economies. Doing so avoids the need to shine a light on the petty and strategic considerations that often support restrictive gender norms. As we have done for the United Kingdom of Marshall's time, a contextual reading that relates political and labor movements to a country's economic circumstances can yield new (or, at least, explicit) considerations as to who opposes and who benefits from the status quo. Such readings offers several areas for future research and highlights important areas for policy work.

Could such an exercise offer a new interpretation of the U-shaped pattern of female labor force participation against GDP per capita, first highlighted by Goldin (1995)? The canonical explanation for this pattern is that as economies embark on processes of structural transformation and households become wealthier, women opt out of the labor force, only re-entering when non-agricultural wage rates rise sufficiently to incentivize labor over leisure and home production. But, as in Victorian Britain, the point when jobs outside agriculture start expanding is also when high-skilled jobs (and access to education to qualify for them) begin to emerge, but initially remain scarce. Indeed, starting with Kuznets (1955), a significant body of evidence documents how the initial stages of rising employment opportunities outside agriculture are often marked by greater labor market inequality, as returns from rationed high-skill jobs in manufacturing and services begin to dominate wage returns in agriculture (Herrendorf and Schoellman, 2018). In *Women's Role in Development*, Boserup (1970) noted that points of structural transformation in an economy are often points for female marginalization in the labor force. A recent case in point is India, where high economic growth rates have, to a large extent, been driven by rises in service sector productivity and growing wage inequality. Despite significant latent demand for work among women, India's female labor force participation has declined from 32% in 2005 to 21% in 2018, one of the lowest rates in the world (ILO, 2020; Fletcher et al., 2018). Does reinforcing or maintaining restrictive gender norms allow some to capture the returns from structural changes in the economy? If such norms are enforced via institutions, does this entrench gender inequalities, increasing rents dynamically?

Could this logic extend to periods of employment turmoil, or when institutions initiate progressive change? Differential impacts on male and female labor in the COVID-19 pandemic has evidenced that separate sphere norms can manifest in vastly different economic outcomes at times of employment shocks (Alon et al., 2020). Boring and Moroni (2021) use the European Values Survey to evidence that the COVID-19 pandemic contributed to re-adherence to separate spheres norms in France (agreeing with the statement "A man's job is to earn money; a woman's job is to look after home and family."). This effect was driven primarily by men who were the most time-constrained during lockdown: those with young children living in the household. Even before COVID-19, there was suggestive evidence of a "revival" of conservative gender norms in the US and beyond (Bertrand, 2020). Could this be symptomatic of rising inequality,

economic precarity, and structural transformation? To summarize, at moments of widespread economic transformation – the Industrial Revolution in the United Kingdom, India’s economic transformation, rising global inequality and economies stressed by the burden of climate change – where change might otherwise be an opportunity for adapting norms, gender norms are often reasserted. This entrenches gender disparities, allows gender norms to persist and gives men a compound advantage in the transformed economy.

The case studies and evidence we detail point to one clear lesson: norms that suppress women’s full and free choice to participate in the labor market are enforced on multiple fronts. Most significantly, the connection of choices in the marital household and the workplace via gender norms require a commensurately orchestrated approach to dismantling them. How can we work towards this, as policymakers and economists? We have argued that to do so we need to better incorporate norms into our models of individual and household labor market decisions. Doing so will also help us understand why and by whom norms are supported and enforced, and so design policies that can dismantle them. We now discuss recent empirical work that evaluates policies that aim to do so.

Policies to improve equality of opportunity for both genders in the workplace must be accompanied by measures that improve women’s bargaining power and status within the private sphere. These might include, for instance, making it easier for women to keep control of their earnings within the household. Field et al. (2021) show that enabling a direct deposit of women’s wages into their own account and training them in its use drew rural Indian women into the labor force. The intervention also liberalized women’s own work-related norms and shifted perceptions of community norms, with effects persisting three years later. Strengthening opportunities for female peer networks can act through a similar mechanism, improving women’s opportunities outside the home (Field et al., 2016). Legislating for women’s rights in the personal sphere is critical as well. Stevenson and Wolfers (2006), for example, find that US states that introduced unilateral divorce laws – transferring bargaining power to an abused spouse – saw a reduction in female suicide, domestic violence incidents, and the number of women murdered by their partners. The welfare state also has an important role in this domain. Low et al. (2020) study a 1996 US welfare reform that introduced time limits on years of welfare receipt. The reform raised employment among single mothers and reduced divorce. These effects generated a loss in utility for women that was only partially offset by the government revenue saved. Even after imposing revenue neutrality and redistributing the resulting tax cut among low-educated women and men, the time limit decreases women’s utility by the equivalent of 0.5% to 0.7% of their lifetime consumption. The effect on the utility of men, however, was minimal: the loss in benefit eligibility when married was offset by gains in intra-household allocations and lower taxes.

Norms that restrict one gender restrict the other by corollary. We can improve gender inequalities, and freedom of choice more generally, via policies that reduce the incidence of gender norms on male household and labor choices. This is particularly evident in the domain of paternity leave. When expressing preferences over the division of household work, women and men express greater preference for an egalitarian split when institutional constraints are relaxed; for example, via more equal family leave options (Pedulla and Thebaud, 2015). But

such constraints and norms remain near-ubiquitous in most workplaces. Surveys show men are reluctant to take paternity leave, for fear it will hurt their careers, in large part because take-up is low among other men. Bygren and Duvander (2006) show in Sweden that men's decision to take parental leave is influenced by the decisions of other men in their workplace, and not by women's use of parental leave. Barigozzi et al. (2018) model childcare and labor choices under gender-biased social norms, and show that a couple's norms-adhering decisions carries externalities for other couples.

A policy of *laissez-faire* – relying on individual responses to more flexible parental leave policies – is therefore unlikely to be effective. Removing the norm of low take-up of paternity leave will require both generous paternity leave policies and coordinated adoption of them, allowing men to be equal partners at home without facing different costs to women. Providing paternity leave alongside existing gender norms likely means that fewer men will take it up, but the appearance of equality in choice (to take parental leave) may lead people to unfairly compare men and women who, because of these norms, split childcare in unequal ways. Antecol et al. (2018) use data on the universe of assistant professor hires at top-50 economics departments from 1985-2004 to document such an outcome. The adoption of gender-neutral tenure clock stopping policies substantially reduced female tenure rates while substantially increasing male tenure rates. Kim and Moser (2021) use the biographies, patents and publications of 83,000 US scientists to show that female scientists who become mothers experience their maximum productivity *after* their mid-thirties – the time when other scientists are most productive. Differences in the timing of maximal productivity have important implications for promotion; women who become mothers are far less likely to achieve tenure after the first six years of their career.

The benefits of policies that engage men in the private sphere go beyond improving workplace outcomes for women. Greater involvement in the household can cause men to make better informed decisions. Farré and González (2019) found that men who were eligible for and took paternity leave in Spain reported lower desired fertility afterwards. Couples delayed additional children and women saw higher labour force attachment. This could reflect increased male awareness of the costs of child rearing. Doepke and Kinderman (2019) document that women are more likely to be opposed to having another child than men, especially in countries where women shoulder a larger burden of childcare. It is not just the overall costs and benefits of children matter for fertility, but the distribution of costs and benefits within the household. Correcting this information gap is critical but challenging. Ashraf et al. (2020) show that when a man and woman are in conflict over having another child (with the man preferring to have one), it can prevent effective communication of the risks incurred by women. Evidence from an information intervention in Zambia shows husbands have lower knowledge of maternal health risk and do not update their beliefs in response to information unless it is delivered directly to them (and not their wives). In a similar vein, Fernández et al. (2004) finds the sons of working women were more likely to marry working women. This could reflect different preferences among men with working mothers, or better information over the benefits of women's labor force participation. Interventions in this area appear even more important as the burden of care-giving increases; from remote schooling during COVID to increasingly aging populations over the coming decades.

5 Conclusion

With the comfort of distance and hindsight, it is easy to relax into the notion that the ideology and norms Alfred Marshall endorsed and practiced are irrelevant. The contrary is true: the idea of separate spheres lives on today in many of our norms, institutions, and behaviors. More than that, the separate spheres ideology and accompanying norms influenced the evolution of economics itself.

We need to recognise the contribution of many figures, including those who spent their lives working in relative obscurity, to advance women's position in the field. Female economists in Marshall's era were among the first to question tenets of his vision of neoclassical economics, formalising important concepts we still use today. Beatrice Webb made a series of important contributions on worker cooperatives and defined the notion of collective bargaining. Marshall objected to Webb studying cooperation on the grounds that women should not deal with "purely economic" questions, instead working on questions related to women only. Webb described Marshall's reaction in her diary: "A book by you on the Co-operative Movement I may get my wife to read to me in the evening to while away the time, but I shan't pay any attention to it" (Webb, 1971). During her half-century career at Cambridge, the economist Joan Robinson frequently interacted with Alfred and Mary Paley Marshall. She begins the preface of the second edition of *The Economics of Imperfect Competition* with the line, "Marshall's view of competition was not very precise." The book goes on to make precise the many ways in which labor markets are anti-competitive, including developing the theory of monopsony.

Paley's circumspect memoir reveals little of her decision to marry Marshall, but her history of their early relationship paints a picture of a collaborative couple with shared goals and respect for each other's work. His later actions are diametrically opposed to that image. Upon publication of his *Principles*, Marshall took his and Paley's book out of print. Keynes said his father, John Neville, always felt "there was something ungenerous in Marshall's distaste for this book, which was originally hers, but was allowed to go out of print without a murmur of complaint from her when there was still a strong demand for it" (Keynes, 1944). Marshall also dropped their analysis of the gender pay gap from his work, beyond asserting that employing women was "a great gain in so far as it tends to develop their faculties; but an injury in so far as it tempts them to neglect their duty of building up a true home, and of investing their efforts in the personal capital of their children's characters and abilities." To Marshall, economics applied only to men and was the domain only of men. In his *Principles*, Marshall defined our field as "the study of men as they live and move and think in the ordinary business of life."

Challenging such norms is necessary, but may face considerable opposition, as evidenced by the decades-long, tireless work of women and men at Cambridge. Keynes – a relative champion of women in economics – fought against this within the British Academy (to considerable reticence among other fellows) throughout his tenure there (Winch, 2014). In 1931 he suggested the nomination of Beatrice Webb, and later made multiple attempts to secure Joan Robinson a position (she would not be accepted until 1958, and no female economist was made a fellow between Webb's nomination and Robinson's). Alongside historical evidence, a growing literature paints a picture of systemic bias within economics today. Women are less likely to get credit for

coauthored work relative to male counterparts (Sarsons, 2017; Sarsons et al., 2021), less likely to be cited (Koffi, 2021), and for most of the twentieth century were less likely to be elected to elite economist groups, such as the Econometric Society (Card et al., 2021). Women are also more likely to face patronizing or hostile questions during economics seminars, even after controlling for fields, seminar series, and topics (Dupas et al., 2021), and are more likely to be spoken about online with reference to their physical appearance or personal information (Wu, 2018). In the United Kingdom, the Royal Economic Society has shown that women remain chronically underrepresented at every stage of the economics profession and are paid less than their male counterparts (Bateman et al., 2021; Gamage et al., 2020). Female academic economists are more likely to be employed at lower academic ranks, on a fixed-term basis and in non-traditional posts (such as research- or teaching-only). At no point between 2012 and 2018 was a Black female professor of economics employed anywhere in the United Kingdom.

Marshall married a woman equal on education, potential, and intellect. Why he regressed to support separate spheres for women and men in academia, with arguments that flew in the face of much immediate evidence – including the achievements of his wife – is open only to speculation. Neither Paley nor Marshall directly addressed the impact that the growing women’s suffrage movement and related debates had on their marriage. Some have conjectured that Marshall’s long period of illness during and after his tenure at Bristol, his and Paley’s lack of children, or his insecurity stemming from social disapproval of Paley’s independence (intellectual and otherwise) while at Bristol grated on him over many years (McWilliams Tullberg, 1991). Could it be that, realising the rents to be gained from gender norms in his own life, Marshall turned sides strategically, or by motivated reasoning? None of this can be substantiated by historical record. What is recorded, however, is the confusion of their contemporaries and a sense of sadness at the apparent disjuncture between Paley’s potential and her life with a husband who appropriated her labor for himself. Austin Robinson wrote in a review of Paley’s memoir: “Why indeed (as Keynes felt bound to ask) did Alfred make a slave of this great woman and not a colleague” (Robinson, 1948). In contrast to direct evidence on how Marshall’s obduracy harmed female economists who were his contemporaries, only indirectly are there hints of Paley’s position towards women in economics. Writing to Joan Robinson (who chose Paley as godmother to her daughter) after the publication of *The Economics of Imperfect Competition*, nearly a decade after Marshall died, Paley wrote: “thank you for helping lift off the reproach cast on the Economic Woman!”³¹

³¹Letter from Mary Paley Marshall to Joan Robinson, 11 June 1933. Available in: Letters from Mary Paley Marshall to Joan Robinson, 1932 - 1939, GBR/0272/JVR/7/281. Archive Centre, King’s College, Cambridge. Accessed on 09/27/2021.

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