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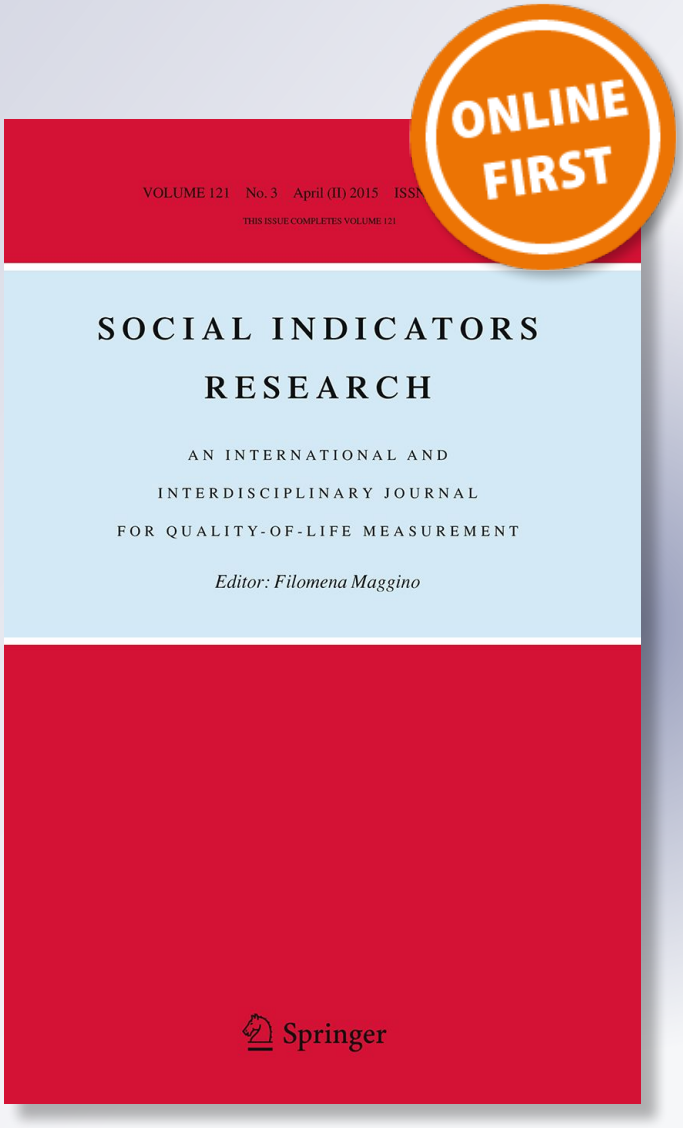

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Preferences or Patriarchy: Why Do Religious Women Work Less?

Lewis Davis[1] · **Jia Gao**[1]

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Abstract
Religious women work less than their non-religious counterparts. Is this because they want to work less or because patriarchal social norms limit their choices? To address this question, we estimate the *employment happiness premium*, which we define as the happiness gain associated with being employed, for men and women belonging to six world religions and for the non-religious. Our results indicate that the employment happiness premium is higher for men than for women for every world religion and that the gender gap in the employment happiness premium varies significantly across religions. Next, we ask whether the gender gap in the employment happiness premium can explain the gender gap in employment. That is, is it plausible that preferences explain employment patterns across religions and genders? We find that preferences plausibly explain the gender employment gap for Buddhists, Orthodox Christians, and the non-religious. In contrast, they explain less than half the observed gender employment gap for Hindus, Muslims, Catholics and Protestants. Our findings are consistent with a significant role for patriarchal social norms in constraining female employment in these religious traditions.

Keywords Happiness · Religion · Gender inequality · Employment · Gender division of labor · Subjective well-being · Patriarchy

JEL Classification D60 · I31 · Z12 · J20

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1 Introduction

Religion is strongly associated with gender inequality in key dimensions of life, including income, educational attainment, employment, professional and political leadership, and access to health care (Cooray and Potrafke 2011; Lehrer 2004; Seguino 2011, 2016).[1] The link between religion and female labor supply is particularly well established, with evidence from the US (Lehrer 1995), Germany (Heineck 2004), Australia (Foroutan 2008), and Turkey (Dildar 2015). Religion is further strongly associated with the prevalence of patriarchal attitudes, as indicated by support for gender inequality in employment, education, and politics, and by ascribing a higher value to women's roles as wives, mothers and caregivers relative to other pursuits (Algan and Cahuc 2003; Fortin 2005; Guiso et al. 2003; Inglehart and Norris 2003; Norris 2009; Seguino 2011).

Thus, to paraphrase Fernández (2011), it is clear that "religion matters" for women's lives. In a normative sense, however, it is less clear what to make of the relationships between religion, patriarchal attitudes and gender inequality. Perhaps the most natural and immediate interpretation of these relationships is that they reflect the subjugation and subordination of religious women. Hirschmann (2003, 192, cited in Marso 2015) cautions that context may both constrain a woman's choices and affect "whether the choosing subject can act on her choices". As Seguino (2011, p. 1309) explains, "Gender unequal attitudes act as a stealth factor, shaping everyday decisions. Employers' choices on whom to hire and whom to lay off are affected by norms regarding who in the gender hierarchy is most deserving of a job. Families make decisions on which family member should undertake paid labor or unpaid caring labor". In this account, gender inequality arises as an expression of the decisions of patriarchal families and firms. The values and desires of religious women are to some degree subordinate to these institutions and, therefore, are not fully expressed in women's lives.

However, it is also possible that the relationship between religion and gender inequality reflects, at least in part, the values and freely made choices of religious women. If women internalize religious teachings regarding the value and meaning ascribed to their roles as wives, mothers, and caregivers, then they may *choose* to allocate more time to these activities, and less time to employment outside the household. In this case, it may also be rational for religious women to choose lower levels of educational attainment, earlier marriage and larger, and to accept lower earning potential as one consequence of these choices. According to this line of reasoning, the observed relationships between religion and various dimensions of gender inequality may, at least in part, reflect the lives that religious women want to live and find personally meaningful and fulfilling.

To what degree does the gender inequality associated with religion reflect choice rather than subordination? This paper addresses this fundamental question. To make matters concrete, we focus on a single, prominent expression of gender inequality: differential labor force participation. To shed light on this issue, we utilize happiness regressions to elicit evidence regarding the role of religion in shaping the *subjective value* that men and women place on employment outside the home. We then ask to what degree differences in the subjective value of employment account for observed differences in employment outcomes across genders and major religious traditions.

[1] Religion is also closely associated with other dimensions of stratification and social economic inequality. See Keister and Sherkat (2014) for a broad discussion of religion and inequality.

The analysis proceeds in three parts. First, using individual-level data from the World Values Survey, we consider the relationship between religion and the gender employment gap, defined as the difference in the likelihood of otherwise similar men and women being employed, for six world religions. In assessing the role of religion, we distinguish between two channels of potential influence, an individual-level effect associated with an individual's religious affiliation and a social effect related to the dominant religious tradition of the society in which an individual lives. The individual effect of religion is at least potentially a function of personal values and preferences. In contrast, the social effect captures the influence of the dominant religious tradition on national level variables, including institutions, policies and social norms, that affect male and female employment.

Our results establish the key role of religion in determining the gender division of labor and highlight differences in the gender employment gap across major world religions. We find that three religious traditions are associated with statistically and economically significant social effects on the gender employment gap: relative to societies without a dominant religious tradition, the gender employment gap is 16.5 percentage points (pp) higher in Catholic societies, 23.8 pp higher in Muslim societies, and 24.9 pp higher in Hindu societies. The social effects of the other religious traditions are not statistically different from the social effect of societies without a dominant religious tradition. Controlling for the social effects of the dominant religious tradition, we find evidence of statistically significant individual effects of religion on the gender employment gap. The gender employment gap ranges from 11 pp and 12.5 pp for the non-religious and Protestants, at the low end, to 22 pp and 26 pp for Muslims and Hindus at the high end.[2]

Having established the role of religious affiliation in the gender employment gap, we turn our attention to the question of whether these gaps reflect differences in the value that religious men and women place on employment. To shed light on this question, we estimate the *employment happiness premium* (EHP), defined as the increase in happiness associated with being employed, for men and women belonging to each religious tradition. Our results indicate that the employment happiness premium varies significantly across genders and religions. Moreover, all six religious traditions are characterized by a statistically significant gender gap in the employment happiness premium, with the EHP being larger for men than women in every case. Another notable finding is that the EHP is not significantly different from zero for women belonging to Muslim, Hindu and Buddhist religious traditions.

In the third analytical section, we ask whether differences in employment preferences can explain the observed pattern of employment across genders and religions. In particular, we ask whether, for each religious tradition, the observed gender employment gap equals the *predicted gender employment gap*, defined as the gender employment gap predicted by the gender gap in the employment happiness premium. Our results indicate that we cannot reject the hypothesis that preferences explain the observed gender employment gap for individuals belonging to three groups, Buddhists, Orthodox Christians and the non-religious. For the remaining religious traditions, Protestantism, Catholicism, Islam and Hinduism, we reject the equality of predicted and observed gender employment gap at the 1%

[2] Forsythe and Korzeniewicz (2000) and Foroutan (2008) find that Islam and Hinduism are associated with particularly strong traditional gender roles. Relative to other religions, these two religions are also associated with higher fertility (McDonald 2000; Mishra 2004), lower female education (Cooray and Potrafke 2011; Dollar and Gatti 1999; Norton and Tomal 2009) and lower female employment (Foroutan 2007; Psacharopoulos and Tzannatos 1989).

level. In each case, preferences account for 25–45% of the observed gender employment gap, with residual gender employment gaps of 7 pp for Protestantism, 8 pp for Catholicism, 13.5 pp for Islam, and 18 pp for Hinduism. Thus, we find that for four of six world religions, the gender gap in employment preferences explains less than half of the observed gender employment gap. While it is possible that the unexplained, residual gender employment gap reflects a variety of factors, it is most natural to associate it with the subordination of women belonging to these religious traditions.

This paper makes a fundamental contribution to our understanding of the relationship between religion and gender inequality. While this literature has convincingly established links between religion and gender inequality, it is unclear a priori whether this link is associated with a decrease in the welfare of religion women. The key difficultly is that, like other dimensions of culture, there is abundant evidence that religion affects people's values, raising the possibility that religious women *live different lives* because they *want different lives*. A similar ambiguity exists for the literature on culture, gender inequality and gender roles.[3] The results presented here largely foreclose on this possibility, at least for gender differences in employment.

A second contribution lies in the empirical methodology employed here, which uses the results of happiness regressions as an input into employment regressions. We believe that this approach may be profitably adopted to a variety of situations in which there are legitimate questions over whether differences in outcomes associated with religion and culture are driven primarily by differences in individual values and preferences or by the influence of restrictive social norms.

We also contribute to the happiness literature, which tends to find that measures of subjective wellbeing are positively associated with being female, religious, and employed.[4] In general, this work does not consider, as we do here, how religion or gender affects the structure of an individual's preferences, as reflected in the happiness payoffs to employment and other outcomes. An exception to this, and a clear methodological predecessor to this paper, is Van Hoorn and Maseland (2013). They test for the existence of a Protestant work ethic by estimating the effect of unemployment on the subjective wellbeing of Protestant and non-Protestant individuals and societies, finding that unemployment decreases utility more for Protestants and people living in historically Protestant societies. We extend this work by estimating the employment happiness premium across genders and a range of world religions and, more importantly, by relating the structure of preferences to employment outcomes. Another methodologically related paper is Davis and Wu (2018), which considers the roles of a non-religious cultural variables, individualism and egalitarianism, in determining the happiness payoff to social status.

The reminder of this paper is structured as follows: Sect. 2 describes data and variables. Section 3 assesses the role of religion on gender employment gap and calculates the observed gender employment gap for each religion. Section 4 estimates and presents

[3] The literature on culture and gender inequality addresses, *inter alia*, the influence of inherited values (Fernández and Fogli 2009), historical plough use (Alesina et al. 2013), gendered language (Davis and Reynolds 2018; Gay et al. 2013, 2015; Hicks et al. 2014; Mavisakalyan 2015), and individualism (Davis and Williamson 2018).

[4] See, for example, Oswald and Powdthavee (2008), Alesina et al. (2004), and Louis and Zhao (2002) on gender, Cohen (2002), Clark and Lelkes (2005), and Helliwell (2003, 2006) on religious belief and participation, and Meier and Stutzer (2006), Weinzierl (2005), and Bardasi and Francesconi (2004) on employment. Stevenson and Wolfers (2009) find that the female happiness premium is declining in the US. Dolan et al. (2008) review the happiness literature.

evidence on the gender gap in the employment happiness premium. Section 5 calculates the predicted gender employment gap for each religion and investigates whether, for each religion, the gender gap in the employment happiness premium can explain the gender gap in employment. The last section concludes.

2 Data and Variables

The data used in this study is from the World Value Survey (WVS), which is one of the world's largest cross-country social surveys. The WVS consists of nationally representative samples of individuals from nearly 100 countries, which together account for over 90% of the world's population. Started in 1981, it has been carried out for six waves, and they are in the years of 1981–1984 (wave 1), 1990–1994 (wave 2), 1995–1998 (wave 3), 1999–2004 (wave 4), 2005–2009 (wave 5), and 2010–2014 (wave 6), increasing its territorial coverage with each wave. In the survey, respondents were asked questions on their demographics (such as age, gender, education, income, and health), as well as a wide range of economic and social values and attitudes, including religious affiliation, beliefs and attendance, which provides rich information for our study.

2.1 Dependent Variables

In this paper, we focus on two outcome variables: employment status and the subjective well-being. In the WVS, respondents are asked to choose their current employment status from the following categories: full-time, part-time, self-employed, retired/pensioned, housewife, student, and unemployed. We create a dichotomous variable to indicate the respondent's employment status, equal to 1 if full-time, part-time, or self-employed, and zero otherwise. Summary statistics are reported in Table 1. We restrict the sample to people aged 15–60 because they are more likely to stay in the labor force. As shown in Panel A, roughly 59% of respondents are employed, and females have a lower employment rate than males (47% vs. 73%). Panel B presents the simple differences in the likelihood of employment between males and females by religious affiliation. Across all major religions, the female employment rate is significantly lower than that for male, and the gap is particularly large for Hindus and Muslims.

The other dependent variable, the level of subjective wellbeing, is measured by life satisfaction in our paper. It is from the survey question: "All things considered, how satisfied are you with your life as a whole these days". Responses range from 1, completely dissatisfied, to 10, completely satisfied. The survey also asks respondents how happy they are. Here, we use life satisfaction rather than happiness as a measurement of the SBW for the reason that happiness is more likely to be influenced by emotions or feelings while life satisfaction involves a more cognitive construct (Nettle 2006). As shown in Table 1, the average satisfaction is 6.55 out of 10 for the whole sample and 6.60 for female, which is consistent with previous findings that women tend to report higher life satisfaction/happiness (for example, Alesina et al. 2004).

2.2 Independent Variables

The WVS provides a section on individual religious background and denomination. Our religion variables are constructed using the following survey questions: "Do you belong

Table 1 Descriptive statistics

Panel A

	All	Female		All	Female
Dependent variable					
Employed	0.591	0.465	Satisfaction	6.552	6.599
	(0.492)	(0.499)	(1–10)	(2.432)	(2.432)
Demographics					
Age	36.234	36.274	Education level	4.628	4.509
	(11.923)	(11.875)	(1–10)	(2.364)	(2.41)
Currently married	0.642	0.655	Num. of children	1.775	1.899
	(0.479)	(0.475)		(1.769)	(1.754)
Previously married	0.078	0.106	Female	0.509	
	(0.268)	(0.307)		(0.500)	
Religion					
Religious	0.822	0.840	*Live in a country with a historically dominant religion*		
	(0.377)	(0.361)			
Catholic	0.226	0.235	Live in a historically	0.224	0.224
	(0.413)	(0.418)	Catholic society	(0.417)	(0.417)
Protestant	0.147	0.155	Live in a historically	0.119	0.124
	(0.348)	(0.356)	Protestant society	(0.322)	(0.329)
Orthodox	0.110	0.120	Live in a historically	0.127	0.135
	(0.308)	(0.319)	Orthodox society	(0.328)	(0.336)
Muslim	0.275	0.268	Live in a historically	0.210	0.207
	(0.441)	(0.437)	Muslim society	(0.402)	(0.4)
Buddhist	0.029	0.029	Live in a historically	0.030	0.030
	(0.165)	(0.166)	Buddhist society	(0.18)	(0.18)
Hindu	0.035	0.032	Live in a historically	0.037	0.032
	(0.181)	(0.172)	Hindu society	(0.188)	(0.174)
Monthly	0.431	0.425			
	(0.496)	(0.495)			
Obs.	203,418	103,540			

Panel B: Gender employment gap by religion

% Employed	Female	Male	Diff	% Employed	Female	Male	Diff
All	0.47	0.73	− 0.26***	Orthodox	0.54	0.69	− 0.16***
	(0.50)	(0.45)			(0.50)	(0.46)	
Religious	0.44	0.72	− 0.28***	Muslim	0.29	0.71	− 0.42***
	(0.50)	(0.45)			(0.45)	(0.45)	
Catholic	0.48	0.74	− 0.25***	Buddhist	0.64	0.82	− 0.18***
	(0.50)	(0.44)			(0.48)	(0.38)	
Protestant	0.54	0.71	− 0.17***	Hindu	0.29	0.77	− 0.48***
	(0.50)	(0.45)			(0.45)	(0.42)	

Panel C: Distribution of population by religious denomination (1984–2014)

Country	Cath (%)	Prot (%)	Orth (%)	Musl (%)	Budd (%)	Hindu (%)	Other (%)	Non-religious (%)
Albania	32.60	9.23	10.23	35.41	0.30	0.65	4.51	7.07

Table 1 (continued)

Panel C: Distribution of population by religious denomination (1984–2014)

Country	Cath (%)	Prot (%)	Orth (%)	Musl (%)	Budd (%)	Hindu (%)	Other (%)	Non-religious (%)
Algeria	0.00	0.24	0.00	99.76	0.00	0.00	0.00	0.00
Argentina	75.77	2.04	0.44	0.08	1.16	0.17	4.96	15.37
Armenia	0.46	0.62	87.00	0.03	0.03	0.00	1.01	10.83
Australia	25.03	37.52	1.65	0.64	1.34	0.54	1.79	31.51
Azerbaijan	0.07	0.23	1.84	93.18	0.00	0.00	0.17	4.51
Bangladesh	0.56	0.07	0.03	88.84	0.33	10.00	0.03	0.13
Belarus	8.90	0.90	63.96	0.17	0.00	0.00	0.14	25.93
Bosnia	13.00	0.08	20.93	40.93	0.00	0.00	0.34	24.73
Brazil	63.94	17.24	2.38	0.07	0.22	0.00	3.05	13.12
Bulgaria	0.68	0.49	63.28	10.94	0.10	0.15	0.10	24.27
Burkina	31.18	7.91	0.20	53.92	0.00	0.07	5.67	1.05
Canada	41.47	21.34	0.74	0.96	0.52	0.25	7.17	27.55
Chile	64.03	9.30	2.46	0.00	0.02	0.11	2.27	21.81
China	0.49	2.88	0.00	1.22	5.12	0.02	0.54	89.74
Colombia	77.99	7.59	1.20	0.02	0.02	0.00	1.62	11.56
Cyprus	0.44	0.15	48.04	45.55	0.00	0.00	0.54	5.28
Czech Re	39.99	3.76	0.00	0.00	0.00	0.00	0.05	56.20
Dominica	59.90	13.45	0.00	0.00	0.00	0.00	2.69	23.96
Ecuador	62.70	12.99	0.00	0.00	0.00	0.00	0.83	23.48
Egypt	0.00	6.00	0.00	93.98	0.00	0.00	0.02	0.00
El Salvador	58.85	22.97	0.00	0.00	2.23	0.00	0.00	15.95
Estonia	1.32	8.53	20.92	0.24	0.24	0.00	0.76	68.00
Ethiopia	1.55	19.64	65.52	10.66	0.07	0.00	2.02	0.54
Finland	10.87	70.58	1.00	2.11	0.00	0.00	3.04	12.40
France	41.39	2.62	0.20	4.93	0.50	0.00	0.40	49.95
Georgia	1.28	0.66	90.83	3.53	0.04	0.02	0.32	3.32
Germany	20.68	30.45	0.58	1.44	0.08	0.03	0.79	45.93
Ghana	17.43	56.55	6.60	13.69	0.03	0.03	3.31	2.36
Great Br	10.46	32.18	0.39	3.95	0.49	0.79	2.76	48.96
Guatemala	56.34	30.99	0.00	0.20	0.10	0.00	3.32	9.05
Hungary	60.33	22.75	0.56	0.20	0.00	0.00	0.83	15.33
India	1.69	1.85	0.49	9.59	1.72	79.44	2.32	2.89
Indonesia	2.16	4.52	0.00	92.62	0.00	0.00	0.47	0.23
Iran	0.00	0.46	0.08	97.96	0.00	0.00	0.69	0.81
Iraq	0.26	0.37	0.15	99.23	0.00	0.00	0.00	0.00
Italy	87.54	0.00	0.00	0.00	0.20	0.10	0.20	11.97
Japan	0.61	0.84	1.40	0.00	39.66	0.04	3.49	53.95
Jordan	0.80	1.68	0.55	96.93	0.00	0.00	0.03	0.00
Kyrgyzstan	0.36	0.67	6.71	83.31	0.12	0.08	1.30	7.46
Latvia	19.70	20.67	19.25	0.35	0.09	0.00	0.27	39.66
Lithuania	79.63	2.05	4.30	0.10	0.20	0.10	0.10	13.51
Macedonia	0.49	0.25	53.35	24.85	0.00	0.00	0.30	20.77

Table 1 (continued)

Panel C: Distribution of population by religious denomination (1984–2014)

Country	Cath (%)	Prot (%)	Orth (%)	Musl (%)	Budd (%)	Hindu (%)	Other (%)	Non-religious (%)
Malaysia	3.36	6.00	0.00	60.41	18.45	7.73	2.56	1.48
Mali	1.80	0.53	0.07	94.88	0.07	0.53	1.80	0.33
Mexico	73.97	7.71	0.36	0.05	0.07	0.03	1.57	16.25
Moldova	1.39	1.66	90.12	0.07	0.00	0.00	0.95	5.82
Morocco	0.05	0.03	0.03	99.59	0.00	0.08	0.22	0.00
Netherland	21.14	11.76	2.02	1.92	0.25	0.25	5.58	57.09
New Zeal	14.15	52.16	0.10	0.41	0.52	0.69	6.56	25.41
Nigeria	15.97	42.48	3.14	30.68	0.01	0.06	3.46	4.20
Norway	1.17	74.23	0.47	0.79	0.28	0.00	2.94	20.12
Pakistan	0.00	0.03	0.00	78.74	0.00	0.08	5.87	15.28
Peru	78.06	12.48	0.00	0.02	0.06	0.11	0.91	8.36
Philippi	75.47	5.23	0.00	3.51	0.00	0.00	8.71	7.07
Poland	94.30	0.87	1.00	0.00	0.03	0.00	0.42	3.37
Romania	5.76	5.49	87.67	0.20	0.07	0.00	0.22	0.58
Russia	0.22	0.67	49.93	4.38	0.26	0.02	1.67	42.85
Saudi Arabia	0.00	1.87	0.00	97.20	0.00	0.33	0.40	0.20
Singapore	6.61	9.49	0.00	25.81	22.74	9.20	10.52	15.64
Slovakia	74.18	9.57	0.19	0.00	0.00	0.00	0.51	15.54
South Africa	12.25	49.78	0.71	4.11	0.20	3.72	15.92	13.30
South Korea	15.22	20.86	0.36	0.11	23.99	0.04	2.89	36.53
Spain	80.62	0.59	0.14	0.11	0.16	0.03	0.91	17.43
Sweden	1.66	72.00	0.31	1.13	0.03	0.06	1.57	23.24
Switzerland	48.28	38.15	0.19	0.65	0.03	0.03	3.02	9.67
Taiwan	1.27	4.02	7.79	0.03	25.00	1.39	36.25	24.26
Tanzania	28.40	18.85	4.99	40.36	0.00	0.09	5.59	1.72
Thailand	0.26	0.07	0.00	2.38	96.70	0.04	0.29	0.26
Trinidad	20.42	42.97	0.40	6.17	0.25	21.99	1.42	6.37
Turkey	0.21	0.24	0.04	92.97	0.00	0.00	0.25	6.29
Uganda	36.56	44.16	0.40	16.98	0.00	0.10	0.70	1.10
Ukraine	6.98	1.00	64.08	0.35	0.14	0.08	0.33	27.04
United States	23.26	31.04	0.42	0.32	0.51	0.18	19.02	25.25
Uruguay	33.52	6.79	0.00	0.00	0.10	0.03	5.25	54.30
Venezuela	75.11	6.55	0.08	0.00	0.08	0.04	0.63	17.50
Viet Nam	6.06	1.04	0.04	0.04	15.38	0.04	46.53	30.87
Zambia	34.20	46.27	0.13	1.33	0.13	0.27	12.20	5.47
Zimbabwe	19.00	58.80	0.60	0.80	0.04	0.04	11.00	9.72

Panel D: Countries with historically dominant religions

Catholic	Protestant	Orthodox	Muslim	Buddhist	Hindu	No dominant
Argentina	Australia	Armenia	Albania	Japan	India	Bosnia

Table 1 (continued)

Panel D: Countries with historically dominant religions

Catholic	Protestant	Orthodox	Muslim	Buddhist	Hindu	No dominant
Brazil	Canada	Bulgaria	Algeria	Viet Nam		Ethiopia
Chile	Estonia	Belarus	Azerbaijan	Thailand		Ghana
Colombia	Finland	Cyprus	Bangladesh			Indonesia
Czech Rep.	Germany	Georgia	Iran			South Korea
Dominican Rep.	Netherlands	Moldova	Iraq			Latvia
Ecuador	New Zealand	Romania	Jordan			Malaysia
El Salvador	Norway	Russia	Kyrgyzstan			Mali
France	Sweden	Ukraine	Morocco			Nigeria
Guatemala	Switzerland	Macedonia	Pakistan			Singapore
Hungary	Great Britain		Saudi Arabia			South Africa
Italy			Turkey			Zimbabwe
Lithuania			Egypt			Trinidad and Tobago
Mexico						Uganda
Peru						Tanzania
Philippines						United States
Poland						Burkina Faso
Slovakia						Zambia
Spain						
Uruguay						
Venezuela						

Panel A: Reports summary statistics of the respondents aged 15–60. Standard deviations are in parenthesis. *Source*: World Value Surveys, Waves 1–6

Panel B: Summaries employment rates across religions and genders. Standard deviations are in parenthesis. *Significance at the 0.1 level. **Significance at the 0.05 level. ***Significance at the 0.01 level. *Source*: World Value Surveys, Waves 1–6

Panel C: *Source*: World Value Survey, Waves 1–6. Only observations with missing information on country or religion are excluded

Panel D: *Source*: Barro and McCleary (2003). A country's dominant religious tradition is identified as the religion to which a majority of its population adhered in 1900. We exclude countries which have a historically dominant religion other than the six religions listed above, such as China, in which Confucianism was historically dominant

to a religious denomination? If Yes, which one?" If the respondent doesn't have any religious denomination, he/she is considered as non-religious. We create six binary variables to indicate whether a person belongs to one of the six global religions: Catholic, Protestant, Orthodox Christian, Muslim, Buddhist, and Hindu.[5] Respondents are also asked how often they attend religious services. We summarize this information with a dummy variable, *Monthly*, that takes a value of one if a respondent reports attending religious services at least once per month. The main individual-level demographic controls include gender, age, education, marriage and the number of children. Education is a discontinuous variable with 10 categories based on total years of schooling received.

[5] Here, Orthodox refers to Orthodox Christian. People who believe in Orthodox are mainly from post-communist societies.

We delete people who have missing information and exclude respondents who belong to a religion other than the six major religions (less than 5% of the sample). Our final sample consists of 203,418 observations. As shown in Table 1, Panel A, the sample is almost evenly distributed by gender, and the average age is 36 years. Approximately 64.2% of respondents report "currently married or cohabitated," 7.8% report "previously married but currently divorced/separated/widowed," and 28% report "never married". The average number of children is close to 1.8, and the average levels of education are slightly less than 5. In our sample, more than 80% of the respondents are religious, and about half of them belong to one of the three major Christian groups. Specifically, 23% of the sample are Catholics, 15% are Protestants, and 11% are Orthodox. Muslims account for 28% of the sample, while Hindus and Buddhists in total are less than 5% of the sample. We document the distribution of population by religious denomination for each country in Panel C.[6] Our data on countries' historically dominant religion is from Barro and McCleary (2003), in which a country's dominant religious tradition is identified as the religion to which a majority of its population adhered in 1900. Panel D lists each country's historically dominant religion.

3 Religion and the Gender Employment Gap

We begin by considering the relationship between religion and the gender employment gap, which we define as the difference in the likelihood of employment between males and females. To explore this topic, we estimate the following OLS model:

$$\begin{aligned} Empy_{ijt} = \beta_0 + \beta_1 Female_{ijt} + \sum_R \beta_2^R Religion_{ijt}^R + \sum_R \beta_3^R Religion_{ijt}^R * Female_{ijt} \\ + \beta_4 Monthly_{ijt} + \beta_5 X_{ijt} + C_j + T_t + \epsilon_{ijt} \end{aligned} \tag{1}$$

where $Empy_{ijt}$ is a binary indicator of the employment status for individual i residing in country j surveyed in wave t; *Female* is a gender dummy, equal to 1 for female and 0 for male; *Monthly* captures the intensity of religious beliefs, indicating whether the respondent attends religious services at least once a month or not; X_{ijt} are individual-level characteristics; and C_j *and* T_t are country and wave fixed effects. $\sum_R Religion_{ijt}^R$ show an individual's religious affiliation; it consists of six dummy variables indicating whether respondents belong to one of these major religions: Catholic, Protestant, Orthodox Christian, Muslim, Buddhist, and Hindu, where R represents each religion. The reference religious affiliation is non-religious. The gender employment gap for each religion is measured by $\beta_1 + \beta_3^R$. To facilitate the ease of interpretation of results and also make the results comparable to the literature, we estimate a linear probability model instead of a Probit model.[7]

The country fixed effect, C_j, captures systematic differences in employment opportunities across countries, such as those resulting from national legal, policy and institutional

[6] To further confirm that our data are composed of national representative samples, we compare the dominant religion for each country in our sample with the one reported in the US Central Intelligence Agency (CIA) Factbook and find that they are the same.

[7] For all the regressions on employment, we estimate Probit models as well for a robustness check. We find that our OLS results are in large consistent with the results from Logit models: the variables of our interest are still significant at 5% level and the sign is the same.

environment. The wave fixed effect, T_t, controls for the unique characteristics of each wave that may affect employment for all individuals in a similar way, such as the overall worldwide economic situation. We also control for marital status and the number of children, which are likely jointly determined with employment. Similarly, educational attainment may be influenced by expected employment. Holding these variables constant will tend to lead to underestimates of the impact of religion on female employment, however, in doing so we may be more confident in having estimated the direct effects of religion on employment. For all the regressions, we cluster robust standard errors at the country level to address the concern that model errors for respondents living in the same country are very likely to be correlated with each other which can lead to an overestimate of standard errors.[8]

The gender division of labor may not only be affected by individual religious affiliation but also be influenced by the society's dominant religion. For example, the gender employment gap might be different between a Catholic living in a Catholic traditional society and a Catholic living in an Islam society. Controlling for the dominant religion in an individual's society allows us to distinguish between the impact of religion on individual values and beliefs and its impact on a society's institutions and social norms. While country fixed effects included in Eq. (1) have already captured the effect of a country's dominant religion on employment, they assumed this effect is uniform across genders. Here, we want to consider the possibility that a given religious tradition affects male and female employment differently. To account for this possibility, we include an interaction term between the historically dominant religion and the female dummy variable.

The model is estimated as follows:

$$\begin{aligned} Empy_{ijt} =& \beta_0 + \beta_1 Female_{ijt} + \sum_R \beta_2^R Religion_{ijt}^R + \sum_R \beta_3^R Religion_{ijt}^R * Female_{ijt} \\ &+ \sum_R \beta_4^R Female_{ijt} * Dom\_Religion_j^R + \beta_5 Monthly_{ijt} + \beta_6 X_{ijt} + C_j + T_t + \epsilon_{ijt} \end{aligned} \tag{2}$$

where $Dom\_Religion_j^R$ indicates the dominant religious tradition of country j in which the individual i lives; it consists six dummies reflecting whether the society's dominant religion is Catholicism, Protestantism, Orthodoxy, Islam, Hinduism or Buddhism. All the other variables are defined in a similar way as Eq. (1). The gender employment gap for non-religious people living in a society without a dominant religion is captured by β_1. The coefficient β_3^R reflects the role of individual religious affiliation on the gender employment gap, while β_4^R measures the impact of a society's dominant religion on the gender employment gap.[9]

[8] Cameron and Miller (2015) provide a guideline on how to cluster standard errors for empirical studies. The authors argue that it is necessary to cluster standard error when the model errors for observations within the same cluster are correlated, but cross clusters are not correlated. In practice, generally, standard errors are clustered at a higher geographical level. They also recommend to use cluster-robust standard errors when the number of clusters is large.

[9] Note that the coefficients on individual religious affiliation should be interpreted as capturing the average employment effect of a given religious affiliation across countries, reflecting, for example, average religious values and beliefs for that religion for individuals in our global sample. In particular, our empirical approach will not identify international variation in the values and beliefs of adherents to a particular religion, such as Roy (2004) and Foroutan (2015) argue exist for Muslims in Western and Arab countries.

Table 2 Regression on employment

Outcome	(1) Employed	(2) Employed
Female	− 0.170***	− 0.111***
	(0.015)	(0.018)
Catholic	0.035***	0.006
	(0.010)	(0.010)
Protestant	− 0.002	0.006
	(0.016)	(0.016)
Orthodox	0.006	0.026**
	(0.012)	(0.011)
Muslim	0.063***	0.005
	(0.022)	(0.017)
Buddhist	− 0.020	− 0.008
	(0.021)	(0.017)
Hindu	0.091***	0.021
	(0.017)	(0.021)
Fe * Catholic	− 0.089***	− 0.034***
	(0.018)	(0.012)
Fe * Protestant	− 0.003	− 0.015
	(0.020)	(0.016)
Fe * Orthodox	− 0.001	− 0.048***
	(0.020)	(0.017)
Fe * Muslim	− 0.234***	− 0.112***
	(0.036)	(0.022)
Fe * Buddhist	− 0.001	− 0.023
	(0.034)	(0.028)
Fe * Hindu	− 0.296***	− 0.147***
	(0.029)	(0.041)
Fe_domcath		− 0.165***
		(0.025)
Fe_domprot		− 0.001
		(0.022)
Fe_domorth		− 0.005
		(0.023)
Fe_dommusl		− 0.238***
		(0.054)
Fe_dombudd		− 0.027
		(0.054)
Fe_domhind		− 0.249***
		(0.038)
Monthly	− 0.001	− 0.006
	(0.005)	(0.005)
Currently married	0.068***	0.068***
	(0.010)	(0.010)
Previously married	0.076***	0.075***
	(0.012)	(0.012)
Age	0.074***	0.073***

Table 2 (continued)

Outcome	(1) Employed	(2) Employed
	(0.002)	(0.002)
Age squared	− 0.001***	− 0.001***
	(0.000)	(0.000)
Educ	0.024***	0.023***
	(0.002)	(0.002)
# of children	− 0.018***	− 0.019***
	(0.002)	(0.002)
Constant	− 0.717***	− 0.604***
	(0.044)	(0.055)
Observations	203,418	203,418
R-squared	0.245	0.250

Robust standard errors clustered at country level are in parenthesis

*Significance at the 0.1 level. **Significance at the 0.05 level. ***Significance at the 0.01 level

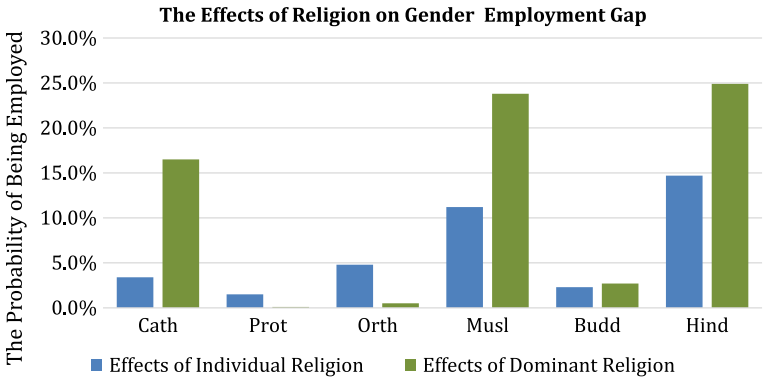

Fig. 1 The effect of religion on gender employment gap. *Notes* This figure summarizes the individual and social effects of religion on the gender employment gap. The estimates are obtained from Table 2, Column (2). The reference group is the gender employment gap for non-religious people living a society without a dominant religion (11.1 percentage point)

Table 2 presents results for Eqs. (1) and (2). As shown in Column (1), the impact of religious affiliation on employment and the gender division of labor differs significantly across world religions. The gender gap in employment is 17 percentage points for non-religious respondents. The gap increases to 25.9 pp (0.170 + 0.089 = 0.259 or 25.9 pp) for Catholics, 40.4 pp for Muslims, and 46.6 pp for Hindus. In contrast, the gender employment gap for Protestants, Orthodox Christians and Buddhists is not significantly different from that for the non-religious. We notice that the three religions which we find have a significant effect on gender employment gap are the same that Mavisakalyan (2015) found to be associated with greater gender inequality in unemployment. Cooray and Potrafke (2011) also provide evidence that these three religions are associated with

higher gender inequality in education. While education and employment gaps reflect different dimensions of gender inequality, we believe this correspondence lends credence to our results.

Column (2) presents estimates for Eq. (2), which accounts for the effect of a society's historical religious tradition on the gender employment gap. As shown, the gender employment gap is 11.1 percentage points for non-religious people living in societies without a historically dominant religion. Individual religious affiliation unanimously intensifies this gender employment gap, ranging in size from a 1.5 pp increase for Protestants to a 14.7 pp increase for Hindus. At the national level, similarly, living in a society with a dominant religion is also associated with a larger gender employment gap: 16.5 pp, 23.8 pp, and 24.9 pp increase for a historically Catholic, Muslim and Hindu society respectively, although the effect for Protestant, Orthodox and Buddhist societies is not statistically different from zero. Figure 1 summarizes the individual and social effects of religion on the gender employment gap, estimates obtained from Table 1, Column (2). The reference group is the gender employment gap for non-religious people living a society without a dominant religion (11.1 pp).

To sum up, this section investigates the relationship between religion and the intensity of gender roles, as indicated by the gender gap in employment. We find evidence of a significant role for religion at both individual and social levels in determining the gender employment gap. We also find evidence of significant differences across religions in the size of these effects.

4 Religion, Gender, and the Employment Happiness Premium

Having explored the role of religion in the gender employment gap, we move on to examine how preferences over employment vary across religions and genders. To do so, we estimate a set of happiness regressions across subsamples defined by individual religious affiliation. The model below demonstrates our specification:

$$SWB_{ijt} = \alpha_0^R + \alpha_1^R Female_{ijt} + \alpha_2^R Empy_{ijt} + \alpha_3^R Female_{ijt} * Empy_{ijt} + \alpha_4^R Female_{ijt} * Empy_{ijt} * Dom\_R_j + \alpha_5^R Monthly_{ijt} + \alpha_6^R X_{ijt} + C_j + T_t + \epsilon_{ijt} \quad (3)$$

where SWB_{ijt} is a measure of life satisfaction, and Dom_R_j indicates the country j's historically dominant religion (for example, in the regression using subsample of Catholics, Dom_R_j indicates whether the country is a historically Catholic society). The definitions of other variables are similar to those in Eq. (1). The "R" subscripts on the coefficients in Eq. (3) indicate that these coefficients are estimated separately for each religious tradition.

This specification allows the relationship between employment and happiness to vary across men and women and across individuals living in societies in which their religious tradition was historically dominant. These regressions provide information about the utility payoff to employment in the form of the average difference in happiness between employed and unemployed individuals belonging to different religions and genders. We call this value the *employment happiness premium* and use it as a measure of individual preferences over employment for men and women belonging to different religions.

In this specification, the key variables of interest are *employment* and its interaction with *female*. Using regression on Catholic as an example, the coefficient α_2^R captures the *employment happiness premium* for Catholic men. The *employment happiness premium* for

Catholic females is given by $\alpha_2^R + \alpha_3^R$, and the coefficient of the *female-employed* interaction term, α_3^R, measures the gender gap in the EHP for Catholics. The country's historical dominant religion is controlled by using a three-way interaction term, *female-employed-dominant religion,* so that we can distinguish between the individual and social effects of Catholicism on the female employment happiness premium. In the absence of this variable, our estimate of α_3^R might be biased, since it will pick up the social effect of Catholicism for those Catholic women who live in historically Catholic societies.[10]

In conducting these empirical exercises, we interpret the employment happiness premia as an approximation of the subjective value of employment to individuals belonging to different genders and religious traditions. This interpretation is subject to an important caveat: it is likely that the employment happiness premium reflects the influence of both *individual* religious values and *collective* religious social norms. For example, if religious individuals tend to socialize with their coreligionists, then an individual's employment happiness premium may reflect the social support or disapproval for a gender division of labor within this group, as well as the value that the individual places on employment. However, it is likely that patriarchal social norms will tend to bias the estimated EHP downward for women and upward for men, increasing both the estimated gender gap in the EHP and our estimate of the predicted gender employment gap. As such, our estimate of the predicted gender employment gap should be interpreted as an upper bound on gender employment gap that would be consistent with individual preferences. Thus, if anything, our approach will tend to *underestimate* the residual gender employment gap associated with different religious traditions.

Our results are presented in Table 3. As shown, the employment happiness premium varies significantly across genders and religions. We highlight several particular findings. First, for men the EHP are positive for all religions, but it also varies significantly across religions. It is highest for Orthodox Christians and the non-religious and lowest for Hindus and Muslims. Second, we find evidence of a statistically significant gender gap in the EHP for all religions and for the non-religious, as indicated by the statistically significant negative coefficient on the *female-employed* interaction term. The gender gap in the EHP also varies significantly across religions. In particular, this gap is roughly half of the male EHP for the three Christian traditions and 60% of the male EHP for the non-religious, resulting in a positive female EHP for these traditions. In contrast, for Muslims, Buddhists and Hindus, the gender gap in the EHP exceeds the male EHP, resulting in negative point estimates for the female EHP for these religions. While Wald tests indicate that the female EHP for these religions is not significantly different from zero, we believe this is a significant finding for the literature on religion and gender inequality. Figure 2 illustrates the employment happiness premium for men and women, and the gender gap in the employment happiness premium, for each religious tradition.

[10] For a robustness check, we also estimate another specification in which we control for a full set of *female-employed-dominant religion* interactions. Therefore, we end up with six interactions and each indicates a different religious society. In such specification, we differentiate the EHP for Catholic women living a Muslim society from that for Catholic women living in a Protestant society. We find that the results on EHP are quite similar to results obtained from Eq. (3) and thus we didn't present them here.

Table 3 Regression on life satisfaction: by individual religious affiliation

Outcome	(1) Life sat.	(2) Life sat.	(3) Life sat.	(4) Life sat.	(5) Life sat.	(6) Life sat.	(7) Life sat.
Sample	Catholic	Protestant	Orthodox	Muslim	Buddhist	Hindu	Non-religious
Female	0.186***	0.248***	0.332***	0.364***	0.500***	0.311***	0.329***
	(0.042)	(0.050)	(0.060)	(0.090)	(0.157)	(0.035)	(0.053)
Employed	0.368***	0.329***	0.602***	0.171***	0.423***	0.193***	0.525***
	(0.055)	(0.102)	(0.104)	(0.041)	(0.131)	(0.040)	(0.061)
Empy_female	− 0.171**	− 0.162**	− 0.316***	− 0.253***	− 0.442***	− 0.212**	− 0.318***
	(0.067)	(0.065)	(0.101)	(0.073)	(0.144)	(0.088)	(0.062)
Empy_fe_domcath	− 0.081						
	(0.054)						
Empy_fe_domprot		0.086					
		(0.082)					
Empy_fe_domorth			− 0.049				
			(0.092)				
Empy_fe_dommusl				0.001			
				(0.076)			
Empy_fe_dombudd					− 0.140***		
					(0.052)		
Empy_fe_domhind						0.093	
						(0.098)	
Empy_fe_nodom							0.059
							(0.145)
Monthly	0.240***	0.259***	0.101***	0.016	0.064	0.347***	0.204***
	(0.030)	(0.055)	(0.035)	(0.064)	(0.068)	(0.020)	(0.062)
Currently married	0.316***	0.486***	0.231***	0.241***	0.219**	0.181	0.510***
	(0.038)	(0.087)	(0.063)	(0.068)	(0.109)	(0.153)	(0.048)
Previously married	− 0.319***	− 0.240**	− 0.456***	− 0.334***	− 0.460***	− 0.532***	− 0.256***
	(0.059)	(0.092)	(0.068)	(0.102)	(0.101)	(0.119)	(0.054)
Age	− 0.081***	− 0.102***	− 0.138***	− 0.074***	− 0.041**	− 0.014	− 0.119***
	(0.009)	(0.012)	(0.014)	(0.012)	(0.019)	(0.024)	(0.011)
Age squared	0.001***	0.001***	0.001***	0.001***	0.000**	0.000	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Educ	0.081***	0.132***	0.127***	0.101***	0.066***	0.120***	0.100***
	(0.012)	(0.033)	(0.025)	(0.013)	(0.021)	(0.007)	(0.011)

Table 3 (continued)

Outcome	(1) Life sat.	(2) Life sat.	(3) Life sat.	(4) Life sat.	(5) Life sat.	(6) Life sat.	(7) Life sat.
Sample	Catholic	Protestant	Orthodox	Muslim	Buddhist	Hindu	Non-religious
# of children	− 0.013	− 0.026	− 0.008	0.001	0.030	− 0.027***	− 0.006
	(0.010)	(0.019)	(0.023)	(0.014)	(0.031)	(0.007)	(0.012)
Constant	5.887***	6.147***	8.376***	5.802***	8.784***	7.920***	6.375***
	(0.255)	(0.231)	(0.365)	(0.594)	(0.434)	(0.362)	(0.288)
Observations	45,898	31,847	21,264	53,297	6358	7860	36,894
R-squared	0.161	0.147	0.183	0.095	0.099	0.121	0.193

Robust standard errors clustered at the country level are in parenthesis

*Significance at the 0.1 level. **Significance at the 0.05 level. ***Significance at the 0.01 level

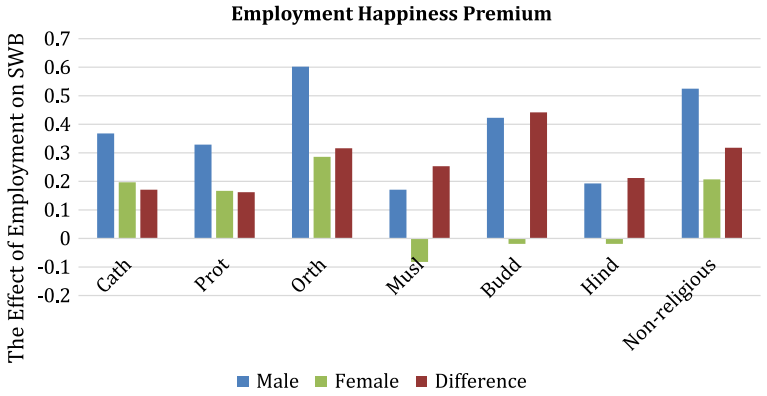

Fig. 2 Employment happiness premium: by individual religious affiliation. Notes: This figure summarizes the employment happiness premium for males and females across six religions and non-religious groups, estimates obtained from Table 3

5 The Gender Employment Gap and the Employment Happiness Premium

The preceding results highlight the role of religion in determining the gender gaps in employment and the employment happiness premium. The critical question we address here is whether observed differences the gender employment gap reflect differences in the employment preferences of religious men and women or effective restrictions on the employment decisions of women who belong to patriarchal religious traditions. That is, do religious women work less because they *choose* to work less perhaps due to valuing other activities more, or do they work less because they have fewer or less attractive opportunities, receive less social support related to work outside the home, etc. To address this question, we ask to what degree the observed gender employment gap for

a given religion is explained by the gender gap in employment happiness premium. If employment outcomes for religious women reflect their preferences, we expect to find that the gender employment gap is completely explained by gender gap in the employment happiness premium. If, in contrast, the observed gender employment gap exceeds that predicted by the gap in the employment happiness premium for some religious tradition, this outcome would be consistent with the existence of patriarchal constraints on women's employment decisions or the subordination of women's employment preferences to other concerns.

Here we focus on calculating the portion of gender employment gap that can be explained by the gender gap in EHP. To attain this goal, we estimate a model which investigates how much the likelihood of employment can be explained by the employment happiness premium. The specification we use is identical to Eq. (2) with the exception that instead of considering the effect of an individual's religion and gender on employment decisions, we replace these variables with the employment happiness premium associated with each religion and gender. The new model is:

$$Empy_{ijt} = \gamma_0 + \gamma_1 \widehat{EHP_{rg}} + \sum_R \gamma_2^R Female_{ijt} * Dom\_Religion_j^R + \gamma_3 Monthly_{ijt} + \gamma_4 X_{ijt} + C_j + T_t + \epsilon_{ijt} \tag{4}$$

where the $\widehat{EHP_{rg}}$ is the employment happiness premium for individuals with religion r and gender g, which is predicted by Eq. (3). For males, it is the estimate of α_2^R, and for females it is the estimate of $\alpha_2^R + \alpha_3^R$, both varying by religion R.

While OLS will yield a consistent estimate of γ_1, it underestimates the standard error of γ_1 because the imputed regressor $\widehat{EHP_{rg}}$ is measured with sampling errors, e.g. Pagan (1984) and Murphy and Topel (1985). To conduct a correct statistical inference with a generated regressor, we use a two-step bootstrapping method to compute the standard errors, as in Ashraf and Galor (2013). In the first step, we randomly select a sample with replacement to estimate Eq. (3) and obtain an estimate of *EHP* for each religion and gender. In the second step, we use the predicted *EHP* to estimate Eq. (4) with the exact same sample randomly drawn in the first step, and then we store the estimate of γ_1. This process of sampling and two-stage estimation was repeated 1000 times and then we generate 1000 values for $\hat{\gamma}_1$. With the sample distribution of the coefficient γ_1, the standard deviation of these 1000 $\hat{\gamma}_1$ is the bootstrap standard error.

Table 4 presents our results. The significant positive effect on employment happiness premium indicates that the more happiness one receives from employment, the more likely a person is being employed. The bootstrap standard error indicates that the coefficient on the EHP is significant at the 1% level. Thus, the happiness associated with employment matters for employment decisions.

In Table 5, we summarize our findings regarding the gender employment gap for each religion and the non-religious. The first row presents the observed gender employment gap, which is obtained from results in Table 2, Column 2, and equals $\hat{\beta}_1 + \hat{\beta}_3^R$. For example, for Catholics, the observed gender employment gap is $0.111 + 0.034 = 0.145$ or 14.5 percentage points. The second row of Table 5 presents the *explained gender employment gap* for each religion, which we define as the gender gap in the employment happiness premium multiplied by the effect of the *EHP* on employment outcomes:

$$Explained\ GEG^R = \widehat{\alpha_2^R} * \hat{\gamma}_1 \tag{5}$$

Table 4 Regression on employment: the role of EHP

Variables	Employed
Employment happiness premium	0.346***
	(0.038)
Monthly	− 0.001
	(0.003)
Fe_domcath	− 0.231***
	(0.017)
Fe_domprot	− 0.047***
	(0.015)
Fe_domorth	− 0.055***
	(0.029)
Fe_dommusl	− 0.366***
	(0.020)
Fe_dombudd	− 0.021
	(0.026)
Fe_domhind	− 0.416***
	(0.040)
Currently married	0.065***
	(0.003)
Previously married	0.067***
	(0.004)
Age	0.074***
	(0.000)
Age squared	− 0.001***
	(0.000)
Educ	0.023***
	(0.000)
# of children	− 0.019***
	(0.000)
Constant	− 0.700***
	(0.022)
Observations	203,418
R-squared	0.244

Bootstrap standard errors are in parenthesis

*Significance at the 0.1 level. **Significance at the 0.05 level. ***Significance at the 0.01 level

where $\widehat{\alpha_2^R}$ is the estimate obtained from Eq. (3), and $\hat{\gamma}_1$ is the estimate from Eq. (4). For example, for Catholics, the explained gender employment gap is 5.99 percentage points: 0.171 * 0.346 = 0.0599 or 5.99 percentage points. We further vividly illustrate the observed GEG and explained GEG in Fig. 3 using data from the first two rows of Table 5. To facilitate the comparison of the first two rows in Table 5, the third row displays the percentage of gender employment gap that is explained by the gap in employment happiness premium, which is calculated as using the second row divided by the first row. The explained portion of the gender employment gap varies from under 30% for Hindus to slightly over 100%

Table 5 The observed GEG and explained GEG

	Cath	Prot	Orth	Musl	Budd	Hind	Non-rel
Observed GEG	14.50 pp	12.60 pp	15.90 pp	22.30 pp	13.40 pp	25.80 pp	11.00 pp
Explained GEG	5.99 pp	5.67 pp	11.06 pp	8.86 pp	15.47 pp	7.42 pp	11.13 pp
% Explained by EHP	41.28%	45.00%	69.56%	39.71%	115.45%	28.76%	101.18%
Wald test statistics	7.92***	5.22**	2.41	15.4***	0.56	12.17***	0.56
Share of replications with H_0 rejected at the 5% level	0.59	0.45	0.09	0.96	0.04	0.73	0.06

The Wald test statistics are the average test statistics from 1000 bootstrap replications. The upper-tail critical value for Chi square distribution with one degree of freedom is 6.635, 3.841, and 2.706 at 1%, 5% and 10% level of significance, respectively

*Significance at the 0.1 level. **Significance at the 0.05 level. ***Significance at the 0.01 level

for Buddhists and non-religious. For Muslims, Catholics and Protestants, the portion of gender employment gap that can be explained is slightly higher than that for Hindus, about 40–45%.

To formally examine whether observed gender employment gap for each religion can be fully explained by the gender difference in the employment happiness premium, we conduct a Wald test.[11] The null hypothesis is

$$H_0 : \widehat{\alpha_2^R} * \hat{\gamma_1} \geq \hat{\beta}_1 + \widehat{\beta_3^R}.$$

If we cannot reject the null hypothesis for a given religious tradition, we may conclude that the differences in the employment preferences of men and women belonging to this tradition have completely explained the differences in employment outcomes. In other words, women belonging to a certain tradition working less is because they want to work less. However, if we reject the null hypothesis for a particular tradition, there must be some portion of the observed gender employment gap that cannot be explained by the preferences of men and women belonging to that tradition. This outcome would be consistent with the argument that patriarchal religious social norms reduce female employment outcomes.

Results for the Wald test are shown in the final two rows of Table 5. In Row 4 we report the average test statistics in 1000 bootstrap replications and indicate whether they are significant at the 1%, 5% and 10% levels. Row 5 shows the share of replications that we reject

[11] As we discussed earlier, γ_1 is estimated using a two-step generated regressor approach and its OLS standard error is biased. As a result, our Wald test statistics will be biased if we use the variance–covariance matrix obtained from the OLS estimation. To conduct a valid Wald test, ideally, we would like to replace the OLS standard error with bootstrap standard error when calculating the test statistics. However, empirically, it is difficult to manually conduct the test by replacing the variance–covariance matrix. Therefore, in practice we use the bootstrap simulation to compute the p value for our statistical inference. We randomly draw a sample with replacement and compute a Chi square statistics and repeat this process 1,000 times. Then we obtain a distribution of the test statistics. We compare each statistic with the critical values of the chi-square distribution at a 5% significance level (Since we conduct a two-tailed test, it is 2.5% level of significance on each tail). The p value is equal to the number of times that our test statistics are greater than the critical value out of 1,000 replications.

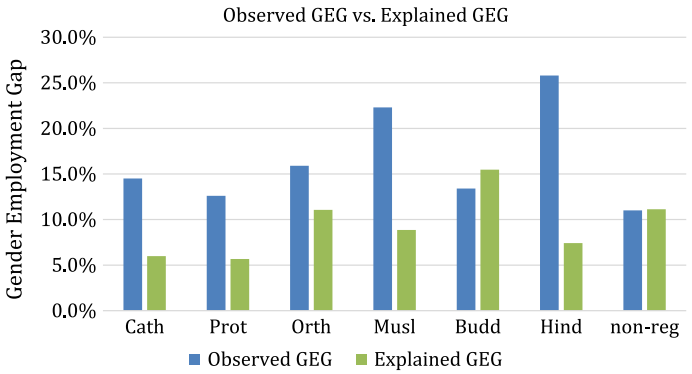

Fig. 3 The observed GEG versus explained GEG. *Notes* This figure compares the observed gender employment gap with the gender employment gap that is explained by the gap in employment happiness premium for each individual religious affiliation. The estimates of the explained gender employment gap are from Table 5

the null hypothesis that the explained gender employment is greater than or equal to the observed gender employment gap at the 5% level.

As the Wald test results shown, we cannot reject the null hypothesis for Orthodox Christianity, Buddhism and the non-religious, indicating that the observed gender employment gap largely reflects the differences in the employment preferences of men and women belonging to these groups. In contrast, we reject the null hypothesis for four world religions, Hinduism, Islam, Catholicism, and Protestantism. The observed gender employment gap for each of these four religions is significantly larger than the gender employment gap predicted by happiness associated with employment. In these cases, our findings are consistent with a significant role for patriarchal religious norms in constraining employment outcomes for women. It is worth noting that three of these religions, Hinduism, Islam, and Catholicism, are also those for which we found a significant social effect of religion on the gender employment gap, which is consistent with the adoption of patriarchal institutions and policies that reduce women's employment opportunities relative to those for men. Our findings are consistent with the idea that Protestantism supports patriarchal social norms that reduce female employment but not to the adoption of patriarchal policies and institutions.

6 Conclusion

The world's major religions are associated with significant gap in the employment of men and women. In this paper, we seek to understand to what degree these gender employment gaps reflect differences in the employment preferences of men and women belonging to these religious traditions, and to what degree they reflect the influence of patriarchal religious social norms that constrain the employment outcomes of religious women.

We begin by estimating the gender employment gap for six world religions and the non-religious. We find that individual religious affiliation plays a significant role in the gender employment gap, which is lowest for Protestants, Buddhists and the non-religious, and

highest for Hindus and Muslims. In addition, we find evidence of significant social effects of religion on the gender employment gap, as indicated by a society's dominant historical religious tradition. In particular, living in a society with a Catholic, Muslim, or Hindu historical religious tradition is associated with a significant increase in the gender employment gap, relative to living in a society without a dominant religion.

To address the role of religion in shaping preferences over employment for men and women, we estimate a series of happiness regressions, which provide estimates of the increase in life satisfaction associated with employment for each gender and religion. Importantly, we find evidence of a statistically significant gender gap in the employment happiness premium for each world religion. In addition, we find that the female employment happiness premium is positive for Christian traditions and the non-religious, but it is not significantly different from zero for other world religions. Evidence of significant gender gap in the employment happiness premium by religion raises the possibility that the religious gender employment gap does, in fact, reflect differences in preferences for employment.

Finally, we estimate the impact of the employment happiness premium on employment outcomes. This allows us to determine whether the observed gender employment gap can be explained by the gender gap in preferences over employment. Our findings suggest that the observed gender employment gap is consistent with the gender differences in preferences over employment for three groups: Buddhists, Orthodox Christians, and the non-religious. However, for Protestants, Catholics, Muslims and Hindus, preferences only explain 30–45% of the observed gender employment gap. It remains to be seen what accounts for the residual gender employment gap for these religions, but our results are consistent with a significant role for patriarchal religious traditions in constraining the employment outcomes for women.

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