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(E)Quality of Life: A Cross-National Analysis of the Effect of Gender Equality on Life Satisfaction

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Abstract

Several international organizations have recently prioritized promoting equal rights for men and women. Reflecting these priorities, many view gender equality as a means to promote societal well-being; yet still others suggest that it has deleterious effects on the enacting state. To test these pro-equality arguments, we examine the effect of four major indicators of gender (in)equality on life satisfaction: the Gender Empowerment Measure, Gender Development Index, Gender Inequality Index, and the Gender Gap Index (or Global Gender Gap). Utilizing survey data from the World Values Survey and Eurobarometer, we find strong and consistent evidence that promoting gender equality leads to greater subjective well-being. Furthermore, we demonstrate that policies promoting gender equality tend to improve the quality of life for everyone, not just direct beneficiaries of the policies (women). Indeed, men also see strong and significant gains in life satisfaction when the sexes are more equal. As a result, we suggest that scholars of subjective well-being expand research into determinants of quality of life to include equality and other social factors. We also suggest that the findings presented here have tangible implications for governments and policy workers who are tasked with promoting equality and well-being.

Keywords Gender · Equality · Subjective well-being · Happiness

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Gender equality is one of the worldwide objectives in the United Nation's Millennium Development Goals. It is also a central concern in the Sustainable Development Goals, which updated and replaced the Millennium Development Goals in 2016. As the goals were discussed and adopted by the international community, it was recognized that gender equality and women's rights were not only important in their own right, but that they were also fundamental to the accomplishment of other goals, such as promoting health, economic growth, and overall well-being (OECD 2013). Domestically, many governments (and political parties) have also explicitly adopted agendas that seek greater parity among the genders.

At the same time, some national and international leaders have opposed efforts to bring about gender equality, either through complacency under the status quo or active opposition to what some view as a dangerous ideology (Longwe 1995). Political and religious leaders who deprioritize gender equality suggest that mandating equal rights for women would detract from the rights of men, and at the same time end laws and customs that protect the special status and needs of women, with the added fear of economic instability that changes to established gender norms might entail. What is interesting from our perspectives as scholars of happiness is that in the end many of the arguments posed against (or perhaps even for) efforts to improve gender equality are not about the merits of the proposed changes themselves, but about the predicted overall consequences, good or bad, on human happiness and well-being. An obvious question, then, is the direction and strength, if any, of the connection between gender equality and satisfaction with life.

We are of course hardly the first to pose this question; it is indeed a truly perennial issue. That said, the literature within the happiness economics tradition on the subject is surprisingly sparse. While feminist scholars (e.g. Waring 1999) have made plausible theoretical arguments that greater equality for women, particularly the political empowerment of women, can have transformative effects for the lives of all, the empirical literature is less consistent. Schyns (1998) found a strong first-order correlation between a standard index of gender equality and happiness across a large sample of countries, but stressed that that the relationship completely disappeared when controlling for economic development. Tesch-Römer et al. (2008) found evidence "for a correlation between indicators of gender inequality on the country level and gender differences in SWB [subjective well-being]" in a labour market context, though again such connections were more muted when considering relevant control variables (p. 342). In another cross-national study, Bjørnskov et al. (2008) found that "gender discrimination" (the ratio of girls to boys in primary schools) adversely affected well-being, though apparently only for those with strong left- or right-wing political ideologies ("indicating that gender inequality may only matter for people with sufficient political interest to hold clear political opinions"—p. 159). York and Bell (2014) find that "people report the highest levels of life satisfaction in nations where women have greater political representation," but do not consider gender inequality more generally (p. 48). These limited and equivocal conclusions about the connection between gender equality and subjective well-being thus suggest the need for greater empirical attention to the issue.

1 Why Equality Leads to Well-Being

Throughout history and into the present times, global inequality in levels of human development has favored men over women. Women have been often treated as property, relegated to second-class citizenship, and been denied opportunities for advancement in

education, the workforce, politics, and society more generally (Dorius and Firebaugh 2010). However, in some places today, women are beginning to overcome these differences: women are increasingly reaching higher levels of educational attainment, succeeding in entrepreneurship and business, and achieving ever greater political representation. Although research on subjective well-being is limited to the contemporary period, women are ostensibly better off now than previously at any point in history. At the same time, as women advance in terms of their social status, levels of happiness do not always keep up: indeed, women in the United States reported being happier than men in the 1970s, but aggregate and comparative levels have reportedly declined since then (e.g. Stevenson and Wolfers 2009). On the other hand, other national and cross-national studies still suggest that women report being marginally happier than men (e.g. Meisenberg and Woodley 2015). This raises the question of the extent to which changes in social equality contribute to shifts subjective well-being of the population or gender-groups.

Before turning to a review of the theoretical reasons why we expect equality to be positively related to well-being, it may be useful to consider briefly the basic argument against inequality at the highest level of generality. Simplifying to its foundation, the most basic argument against inequality contends that what is that portrayed as the "empowerment" of women can be interpreted as actually hindering their agency, and certainly their well-being, insofar as changes in the traditional differentiation of gender roles (particularly if not supplemented by unrealistic compensatory changes in law and social structure) can leave women without the protections that tradition afforded their special roles as mothers or homemakers. Thus, it is argued, greater nominal equality may place a "double burden" on women, i.e. equality gives women freedom but at the same time it puts greater obligations and duties on them, which are disproportionally greater than the benefits of emancipation. Feminist scholars have termed such claims "benevolent sexism" and have widely addressed and sought to counter this narrative (for example, see Glick and Fiske 1996; Glick et al. 2000). The familiar contours of political opposition to the Equal Rights Amendment in the United States illustrate these concerns (see Mansbridge 1986).[1]

Turning to the arguments for a positive connection between equality and well-being, we come first and foremost to the literature demonstrating that improving an individual's freedom of choice generally improves that individual's level of well-being (e.g. Diener and Tay 2015; Inglehart et al. 2008; Ryan and Deci 2002; Verme 2009). Having personal autonomy and control over one's life, combined with greater social options, means that one can choose the life course that is most pleasing to oneself. Further, an individual that believes society treats them with equality is likely to be more satisfied with their life. In a given country, higher ratings in measurements of social equality do indeed correlate with higher subjective well-being scores (Diener et al. 1995). As such, equality and its benefits are likely to benefit women by giving them control over their life and perceiving the benefits of a society that regards them as equal with men.

Additionally, happiness research has demonstrated that personal benefits are not the only means to bring about greater aggregate well-being. The simplest explanation for this phenomenon is that happiness has a tendency to spread from person to person (Fowler

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[1] Skeptics of equality do of course suggest many other more specific—and less ideological or agenda-driven—concerns that are beyond the scope of this paper. One example is the burgeoning literature on "work-life balance," which finds that the traditional disadvantage that women face in division of domestic labor may actually be worse in societies characterized by greater gender equality (e.g. McGinnity and Whelan 2009). For an overview of additional arguments, see Longwe (1995).

and Christakis 2008). When someone is around individuals experiencing higher subjective well-being, their own measure of subjective well-being will rise to match through a contagion effect. Another possible explanation is that when a particular group sees a rise in freedom of choice and equality, all individuals not opposed to that group view this rise as a net increase in freedom and equality. For individuals who see net increases in freedom and equality as improvements to society, one might expect measures of subjective well-being to increase.

Further explanations for this phenomenon have largely taken a more economic bent. Having more women in the workplace and in positions of power increases the availability of qualified workers and managers, improving labor force quality and bolstering the economy (Cuberes and Teignier-Baqué 2011). Moreover, a stronger economy generally results in higher levels of subjective well-being (e.g. Frey and Stutzer 2002). Some evidence also specifically suggests that focusing on women in particular increases the prosperity of the country as a whole (for a review, see Coleman 2004). Thus, empowering women should foster a more vibrant economy, which should increase subjective well-being for all members of that economy, women as well as men.

Income, too, is another reason why providing opportunities for women may result in greater subjective well-being for all (Fleche et al. 2012). Although money does not buy happiness per se, money does enable other ways of improving one's subjective well-being. Having a higher income enables more autonomy, more freedom of choice, and allows one to divert attention from economic concerns to those of self-fulfillment. While having money cannot create self-esteem or healthy relationships, not having money can prevent people from achieving both. Indeed, lacking money, or the imminent threat of lacking money, promotes anxiety, stress, loss of confidence, and other mental costs that reduce one's ability to achieve other needs and improve one's well-being (e.g. Diener et al. 1999; Radcliff 2013).

We can further look to the societal benefits of empowering women. When women are given more control of the household and a greater measure of power over income, spending for the benefit of children and family increase, leading to a more successful family unit (Duflo 2003; World Bank 2011). Empowering women also allows them to better educate and prepare their own children for the rigors of the world (World Bank 2011). When women are better educated, have more access to resources, are more likely to be respected, and have stronger feelings of autonomy, they are more prepared for any chosen life course, including the "traditional" domain of childrearing—a role which continues to be dominated by women, despite changing societal norms. Moreover, when women are empowered politically, opportunities for democracy and civil rights likewise improve (Kaplan 1997). Women's full and active participation in society leads to public policies that have a demonstrated effect on the well-being of society, such as environmentalism, healthcare spending, education, and a more robust welfare state (Ergas and York 2012; Norgaard and York 2005; Powley 2006; Wängnerud 2009). Thus, we may see direct and indirect effects on well-being, and these increases should result in better standards of living for women and the rest of society as well (York and Bell 2014).

When considering why women specifically benefit from empowerment, a final common paradigm for assessing well-being to consider is Maslow's hierarchy of needs. Maslow's hierarchy takes the shape of a pyramid, with psychological needs at the bottom, followed by safety needs a step above, then relationship needs, esteem needs, and finally self-actualization (Maslow 1943). The pyramid shape represents how each successive layer of the pyramid requires all layers below it before it can be achieved. For example, financial security cannot be effectively pursued before physiological needs

are met, and both of those must be accomplished before rewarding and sustainable relationship needs can be built. Important to the present line of inquiry, fulfilling the needs listed on the bottom of Maslow's hierarchy improves life-satisfaction outcomes (Tay and Deiner 2011).

The bottom two layers of Maslow's hierarchy are considered basic needs. The physiological needs portion covers requirements of food, water, sleep, warmth, and other physical requirements for human life. Safety needs refer to security for one's body, property, mind, and family. Both of these needs are substantially easier to meet when an individual has better access to positions of power, high-paying jobs, higher education, and when that individual experiences more respect for their own autonomy—all of the benefits of equality outlined above. However, women have historically been denied these rights in various forms. As women achieve greater parity and hold more opportunities, they can gain even more access to the ability to better fulfill their own basic needs as presented by Maslow, increasing their measures of subjective well-being.

The next two layers are belongingness needs and esteem needs, and the final layer of the pyramid is self-actualization. Belongingness needs, also known as relationship needs, cover the need for human contact with family, friends, and community. There is strong evidence to suggest that feelings of belonging and being involved with other people are both powerful determinants of subjective well-being (Leung et al. 2011). Gender equality provides additional social locations for building social capital and belonging to the broader community. Esteem needs cover the human need for feelings of prestige and accomplishment, and high self-esteem is correlated with subjective well-being (Diener and Diener 1995). However, these results do vary significantly when comparing individualistic cultures to collectivist ones (Yuki et al. 2013). The fifth and final layer of Maslow's hierarchy is self-actualization. Notably, there exists some criticism arguing that Maslow's fifth layer fails to adequately describe self-actualization for all women (e.g. Cullen 1994). However, it is clear that self-actualization occurs when an individual has the necessary opportunity to advance their own interests—opportunities that arise from relative equality in social and political relations. Thus, we suggest that equality (in all forms, but related to gender in the present analysis) leads to greater happiness and overall well-being at a fundamental level by allowing individuals to meet their basic as well as their higher-order needs and wants.

2 Measuring Gender Inequality

With changing gender norms in society comes an increasing interest in measuring the social and economic equality of the sexes (Permanyer 2010; Dijkstra 2002). However, gender inequality itself is complex and stems from a multitude of social, economic, and political factors, making it challenging to create a single index that correctly conceptualizes the issue (Permanyer 2010). Therefore, in order to ensure that our results are robust against choosing any single (and necessarily flawed) indicator, we utilize four of the most well-regarded measures of gender (in)equality (or empowerment) so as to most fully capture the unique aspects of equality as defined through different priorities/definitions. These include the Gender Empowerment Measure (GEM), the Gender Development Index (GDI), the Gender Inequality Index (GII), and the Gender Gap Index/Global Gender Gap (GGI or GGG), each of which we explain below.

2.1 Gender Empowerment Measure (GEM)

The United Nations Development Programme (UNDP) developed the Gender Empowerment Measure (GEM) to measure female empowerment regarding economic and political power and to include gender in the growing discussion on development indicators (Dijkstra 2002; Klasen 2006). Because the GEM measures empowerment, lower scores correlate with more gender inequality, higher scores correlate with less gender inequality.

The GEM factors include: seats in parliament held by women (% of total), female legislators/senior officials/and managers (% of total), women in ministerial positions (% of total), ratio of estimated female to male earned income, and the year women received the right to vote/stand for election/preside over parliament in of one of its houses (United Nations Development Programme 2009).[2] The percentages are combined into an "equally distributed equivalent percentages" measure (EDEPs), which rewards equality and penalizes inequality. The final GEM value is the unweighted average of each of the indicators' EDEPs.

The GEM is praised for its inclusion of female share in a professional capacity, as it is thought to accurately measure not only women's access to economic opportunities and growth, but also women's ability to seize positions of power in society (Dijkstra 2002). In addition, this factor is "less sensitive to statistical conventions" than other indices factor on relative labor market participation (Dijkstra 2002). The GEM also includes the female share in parliamentary seats, demonstrating both women's leadership positions and autonomy in the home (Dijkstra 2002). Lastly, because the GEM is popular among academics and for general consumption because it is easy to understand, has a relatable focus in economics and politics, is internationally comparable, and covers a wide geographic area (Permanyer 2010; Dijkstra 2002).

While the GEM is widely used, it also has a number of limitations. Although the measure of female share in parliamentary seats is certainly valuable, some scholars recommend studying female representation in local government, as this would assess women's interests, organizational skills, and power level in a more intimate fashion. However, the most debated disadvantage of the GEM is its population-weighted harmonic to arrive at its EDEPs (Dijkstra 2002). This means that the GEM is not a direct measure of gender equality; on the other hand, not all the indicators within it are discounted in this manner. It should also be noted that this form of measuring gender inequality lessens the scores for countries regardless of whether female aggregate scores are higher or lower than their male counterparts (Dijkstra 2002, see also Dijkstra and Hanmer 2000). Furthermore, the GEM does not weight its factors, despite the gap in income accounting for 85% of the total gender gap (Bardhan and Klasen 1999; discussed in Dijkstra 2002). These methodological limitations perhaps confirm the need for robustness checks in terms of the other measures available.

2.2 Gender Development Index (GDI)

The UNDP also created a partner index to the GEM: the Gender Development Index (United Nations Development Programme 2016). This index is effectively a gender-related human development index. Its three dimensions—health, knowledge, and living

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[2] Figures outlining the components of each indicator are available in the online supplementary material.

standards—draw from the same component indicators in the HDI and complement the GEM. These include: life expectancy, years of schooling, and estimated earned income (United Nations Development Programme 2016). Once the HDI for each gender is calculated, a simple ratio of the female to male HDI value is calculated to reach the final GDI value for the country (United Nations Development Programme 2016).

The GDI again has advantages and disadvantages. The GDI is well known and respected for its correspondence with the HDI, gaining credibility in its data and clarity (Dijkstra 2002). However, also like the GEM, the GDI uses the same population-weighted harmonic means (Dijkstra 2002). The GDI and the GEM are meant to be analyzed together to study gender-related development and female empowerment, respectively, to gain a better understanding of gender equality in various countries. However, the UNDP put its energy into establishing the GII in 2010 in response to criticism of the two measures.

2.3 Gender Inequality Index (GII)

The UNDP's Gender Inequality Index (GII), a composite index assessing the loss of achievement in specific countries because of gender inequality. Because of the focus on gender *inequality* as opposed to gender *equality*, it is important to note that the measure is coded oppositely to the other measures, such that higher scores mean that there is more *inequality* within a country. The GII was created to solve limitations previously discussed regarding the GEM and the GDI (Buvinic et al. 2014).

The GII includes measures of reproductive health, empowerment, and the labor market, in part to spur policy changes and advocacy efforts on these issues (Buvinic et al. 2014). The index composition includes: maternal mortality, adolescent fertility rates (births per 1000 women ages 15–19), seats in national parliament (percentage female), percentage of the adult female population with at least a secondary education, and gendered labor force participation rates (Buvinic et al. 2014, United Nations Development Programme 2016). The GII addresses some of the methodological concerns with the GEM and the GDI outlined above; however, its indicators are not as easily interpretable as its predecessors (Buvinic et al. 2014). Additionally, the GII has been critiqued for its own faults, such as failing to include informal work (e.g. unpaid domestic or care work) in its measures (Buvinic et al. 2014).

2.4 Gender Gap Index (Global Gender Gap)

The World Economic Forum (WEF) has created a composite index known as the WEF Global Gender Gap (GGG) indicator, which ranks countries "on their gender gaps, not on their development level" (World Economic Forum 2016). Indeed, the GGG highlights the progress of countries with smaller gaps between the genders' access to resources, regardless of the country's overall level of resources.

The GGG focuses on economic participation and opportunity, educational attainment, health and survival, and political empowerment (World Economic Forum 2016). The economic indicators include the difference between men and women in labor force participation rates, while the ratio of estimated female-to-male earned income and a qualitative indicator from the World Economic Forum's Executive Opinion Survey include measures of the remuneration gap. Also included are the ratio of women to men among senior officials and managers, and the ratio of women to men among technical and professional workers. These factors determine any advancement gaps (World Economic Forum 2016). Education

	Mean	St. Dev.	Min	Max
GEM	0.78	0.10	0.53	0.91
GDI	0.98	0.02	0.94	1.01
GII	0.14	0.06	0.05	0.30
GGG	0.74	0.05	0.65	0.83

attainment is established by calculating the ratios of women to men in primary, secondary, and tertiary levels of education as well as the ratio of female to male literacy rate (World Economic Forum 2016). Additionally, health and survival factors include sex ratios at birth and life expectancy (Buvinic et al. 2014). Lastly, political empowerment is calculated from the ratio of females to males with seats in parliament, at the ministerial level, and years with a female head of state of government in the last 50 years (Buvinic et al. 2014).

Because of its multidimensional understanding of gender inequality and how it could manifest, the GGG has become widely used to rank countries on gender equality in recent years. However, the index is newer than other gender-related indices, so the data does not extend as far back in history. Additionally, certain variables—such as number of years a female has been head of the state—are thought to only focus on female attainment as opposed to any "gap" between men and women, causing some scholars to suggest a name change to the "Status of Women Index" (Permanyer 2010). Nonetheless, this measure offers an important alternative to the other measures employed in our analyses.

Descriptive statistics for the four gender variables are provided in Table 1.

3 Data and Method

We estimate the effect of the level of gender inequality on subjective well-being in the traditional fashion within the happiness economics literature: by creating statistical models in which the mean level of life satisfaction is regressed on a measure of inequality and a set of theoretically derived control variables. Our basic data—the measure of subjective well-being—is taken from the pooled World Values Surveys (1995–2014), perhaps the most commonly used dataset in research on subjective well-being across nations. Our method is pooled time series cross-sectional (TSCS), i.e. we pool representative cross-sectional data for countries over time. Our sample thus consists of the mean level of life satisfaction for country "C" at time "T," with values computed from the different waves of the WVS.

In order to ensure that the countries being considered are comparable, we focus on the relatively prosperous, democratic, peaceful, and affluent set of countries usually denoted as the industrial democracies of Western Europe, the USA and Canada, Australian, New Zealand, and Japan.[3] We utilize data on the mean level of life satisfaction for each country-year

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[3] The countries included are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the UK, and the US. The number of countries in each model varies slightly due to missing data in the gender measures. The temporal range included is also dictated by the availability of the gender indicators (GII from 1995, GDI from 2000, GEM from 2001, GGG from 2006).

for which data are available.[4] To account for the pooled structure of the data, we fit random effects for countries, which is appropriate given the modest number of observations per country.

Our models are specified so include control variables adequate to account for other important structural predictors of cross-national analyses of subjective well-being (e.g. Pacek 2009; Flavin et al. 2014). These include a measure of the individualism (vs. collectivism) of natural culture, originally proposed by Triandis (1989), which has consistently proven to be a strong predictor of cross-national rates of satisfaction (e.g. Diener et al. 1995; Radcliff 2013). We also control for the level of economic development, as represented by real GDP per capita in purchasing power parity, given the enormous evidence that development strongly affects life satisfaction (e.g. Frey and Stutzer 2002). We also follow the literature by including controls for the unemployment rate and the rate of economic growth for the given year (e.g. Pacek and Radcliff 2008; Frey and Stutzer 2002).[5]

In a second analysis to provide further, more robust evidence for our hypotheses, we employ time serial data from the Eurobarometer public opinion surveys. These data, described in more detail in a proceeding section, complement the estimations described above.

4 Results

Initial results assessing the connection between gender equality and subjective well-being are provided in Table 2. The results are quite clear: all four models suggest that greater equality (or less inequality) is associated with higher aggregate levels of subjective well-being, given that the gender equality variables are all significant and correctly signed. Further, the magnitude of the effect of inequality is quite pronounced, meaning that changes in the level of inequality are associated with substantively meaningful changes in the level of well-being.

To see why, consider the substantive impact of gender inequality by considering the predicated change in life satisfaction when moving across the range of the GEM measure from the least to the most equal country-years. Thus, if we move from the country-year with the value suggesting the least equality, Japan 2005, to the country-year with the highest equality, Norway 2008, the data suggests a 1.6 standard deviation change in life satisfaction. The same calculations for the other variables suggest changes of 1.2 standard deviations for GDI (reflecting the difference between Sweden 2006 or Finland 2009 to Austria 2008), 1.67 standard deviations for GII (moving from the Netherlands 2012 or Sweden 2011 to United States 1999) and 1.92 standard deviations for GGG (moving from Japan 2006 to Finland 2009).

These are clearly substantial effects—by any standard, improvements in the status of women appear to be associated with large improvements in the overall quality of life within a nation. The conclusion is fairly straightforward: across our different measures of the relative empowerment of women, the data suggest that society is happier

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[4] Using the national mean of the standard question "All things considered, how satisfied are you with your life as a whole these days?" Higher values (on the 1-10 response scale) represent greater satisfaction.

[5] The GDP variable is scaled by division by 1000 for easier interpretation of its coefficient. Unless otherwise noted, data for control variables are from the Penn World Table and Quality of Government Institute database.

Table 2 Effect of gender inequality measures on life satisfaction

	Gender inequality measure			
	GEM	GDI	GII	GGG
GEM	1.87* (1.00)			
GDI		7.66* (4.58)		
GII			−3.17*** (0.94)	
GGG				3.80*** (1.23)
GDP (per capita)	0.02* (0.01)	0.01 (0.01)	0.01* (0.00)	0.00* (0.00)
Unemployment	−0.03 (0.05)	−0.02 (0.02)	−0.04*** (0.01)	−0.06** (0.02)
Growth	−0.57 (2.43)	2.13 (2.20)	−2.00 (1.64)	−0.77 (2.02)
Individualism of culture	−0.01 (−0.06)	0.10* (0.06)	0.12*** (0.04)	0.03 (0.06)
Constant	5.24*** (0.95)	−0.82 (4.47)	6.64*** (0.45)	4.39*** (1.07)
R^2	0.57	0.54	0.64	0.66
N	31	45	72	35

Dependent variable is mean life satisfaction

$*p<0.05$, $**p<0.01$, $***p<0.001$

as women achieve greater equality. While we wish to avoid making any strong causal claims given the quasi-experimental nature of the study, the analysis does indicate that greater gender equality is associated with higher levels of well-being.

However strongly gender inequality is associated with satisfaction in the general population, it remains possible that there are important differences between women and men. In particular, it could be that any improvements in the well-being of women produces a corresponding reduction in satisfaction among men, as if quality of life is a zero-sum game in which improvement for some means a diminution for others. Alternatively, and more consistent with our theoretical expectations, building a more equal—and presumably, thus, a more just society—may improve quality of life for everyone, not just the women who are the most direct and immediate beneficiaries of equality policies. In this latter scenario we might, to be sure, still expect to see some difference between genders: women are likely to benefit at least marginally more than men from the lessening their level of cultural and economic subordination precisely because their benefits might be direct and immediate, whereas the benefits to men, however real, are more diffuse and indirect. We next test these hypotheses by dividing the sample by gender group and repeating the prior analysis.

As Tables 3 and 4 show, for both men and women, gender equality would seem to lead to greater life satisfaction regardless of the measure used. This is the essential point: both genders benefit from greater gender equality. A secondary conclusion emerges when we compare the magnitude of the coefficients: in each instance, the effect for women is greater than that for men, though the differences are modest. This is in

Table 3 Effect of gender inequality measures on life satisfaction (female)

| | Gender inequality measure | | | |
	GEM	GDI	GII	GGG
GEM	1.99* (1.11)			
GDI		9.16* (5.17)		
GII			− 3.36** (1.11)	
GGG				4.31*** (1.35)
GDP (per capita)	0.03* (0.01)	0.01 (0.01)	0.01* (0.00)	0.01* (0.00)
Unemployment	− 0.03 (0.05)	− 0.02 (0.03)	− 0.04** (0.02)	− 0.07** (0.03)
Growth	− 0.41 (2.66)	2.25 (2.42)	− 1.78 (1.73)	− 1.09 (2.21)
Individualism of culture	− 0.01 (0.07)	0.12* (0.07)	0.13*** (0.04)	0.06 (0.06)
Constant	4.87*** (1.05)	− 2.28 (5.04)	6.72*** (0.50)	3.91*** (1.18)
R^2	0.57	0.49	0.60	0.65
N	31	45	72	35

Dependent variable is mean life satisfaction (women)

$*p < 0.05$, $**p < 0.01$, $***p < 0.001$

keeping with the common sense prediction expressed previously: making women more equal benefits women more than men, but only marginally.

5 Pooled Time Series Analysis with Eurobarometer Data

While the data utilized are pooled cross-sectional time series data, the number of observations per country is quite small. In that sense, the over-time component of the data is limited, as is thus the ability to confirm causal interpretations of the results. In an effort to provide greater confidence in the basic contention that changes over time in the level of gender inequality affect the overall level of life satisfaction within a country, we turn to data which will allow a better estimate of change within, rather than between, countries. By mixing Eurobarometer data on satisfaction and the gender index that is available over the longest period of time—the GII—we can consider data for 16 EU countries over (for most countries) a 17 year time period (1995–2012).[6]

To further increase confidence in the results, we set a high econometric bar by adapting two demanding methodological choices. First, we fit a first order autocorrelation (ar1) process, to account for the serial correlation in the dependent variable. Second, and more

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[6] The countries included are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the UK.

Table 4 Effect of gender inequality measures on life satisfaction (male)

	Gender inequality measure			
	GEM	GDI	GII	GGG
GEM	1.79* (0.91)			
GDI		6.90* (4.04)		
GII			−2.94*** (0.78)	
GGG				3.17** (1.17)
GDP (per capita)	0.02 (0.02)	0.01* (0.00)	0.01** (0.00)	0.01** (0.00)
Unemployment	0.04 (0.04)	−0.03 (0.02)	−0.03** (0.01)	−0.06** (0.02)
Growth	−0.43 (2.25)	1.96 (2.11)	−2.33 (1.71)	−0.10 (1.96)
Individualism of culture	−0.01 (0.06)	0.08 (0.05)	0.11*** (0.03)	−0.00 (0.06)
Constant	5.64*** (0.87)	0.23 (3.93)	6.37*** (0.42)	4.97*** (1.04)
R^2	0.57	0.58	0.68	0.67
N	31	45	72	35

Dependent variable is mean life satisfaction (men)

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

importantly, we take advantage of the fact that (unlike in the prior models) we here have a rich enough dataset (i.e. a large enough number of observations per country over time) to also fit fixed-effects for countries (i.e. we include dummy variables for each nation, excepting a reference category). By using fixed-effects we are fitting separate intercepts for each country, such that the estimated coefficients reflect change within countries over time (not variation between countries). For this reason the fixed effects approach is called the "within" estimator in pooled time series analysis, in that again the results reflect only change within the spatial units over time. This is precisely the kind of evidence that is most ideal for moving towards a causal explanation.

As an aside, we would also note that the country-dummies have another advantage, which acts as a further check on robustness: they are the best possible solution to any (potential) omitted variable problem, in that the dummies account for the enduring level-differences in satisfaction across countries, whatever their source. These variables thus account for the fact that, say, life satisfaction is higher in Sweden than in Italy, without having to specify what accounts for that consistent difference.

Table 5 presents the results. Given the inclusion of country fixed-effects, we drop from the model culture and economic development variables (as literal and de facto constants for countries over time, respectively), retaining as controls unemployment and short term rate of economic growth. In the first column we use—as a yet another robustness check—a slight variant on the dependent variable, using the proportion of individuals with the highest levels of life satisfaction. As is apparent, the coefficient of GII is statistically significant

Table 5 Gender equality and life satisfaction (time serial)	Highest life satisfaction	Mean life satisfaction
GII	− 0.94***	− 1.64*
	(0.29)	(0.65)
Unemployment	− 0.00**	− 0.02***
	(0.00)	(0.00)
Growth	0.01	0.02
	(0.06)	(0.13)
Constant	0.43***	3.42***
	(0.02)	(0.03)
R^2	0.42	0.53
rho	0.64	0.66
N	251	251

Data are pooled time serial Eurobarometer data 1995–2013

Standard errors include ar1 autocorrelation correction

Country dummy variables are included in the analysis but omitted from the table

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

and of the expected sign.[7] In the second column we return to using the national mean level of satisfaction, with the same substantive implication: as gender inequality increases, satisfaction declines. Put another way, subjective appreciation of life increases as gender inequality declines.

Note that the Eurobarometer satisfaction variable is coded on a 1–4 scale (with higher values representing greater satisfaction), unlike the WVS question which had a 1–10 response scale. Consequently the coefficients in Table 5 are smaller in absolute value than in the base results in Table 2, but the substantive impact, taking into account the change in measurement scale, is similar, even when using country dummies and the correction for autocorrelation.

6 Conclusion

The scholarship examining cross-national levels of subjective well-being is large and growing. We hope to contribute to our understanding of the national causes of well-being by highlighting the importance of gender equality as a major determinant of life satisfaction. For women, who make up more than half of the world's population, quality of life can be greatly impacted by how much equality is available to them. But this effect is not limited to women as the presumed direct beneficiaries of policies promoting equality: men, too, are happier when women have greater access to resources and opportunities, including representation in economic, political, and social spheres.

The results shown here offer reasonably strong support for the United Nations' and other international organizations' focus on promoting gender equality. To the extent that governments wish to promote the happiness and well-being of their citizens, it may be sensible to

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[7] Adding economic development to the model reduces the efficiency of the estimates, as one would expect, but the gender variable remains significant and correctly signed.

prioritize equality. Indeed, the fact that greater equality among the sexes seems to increase aggregate happiness, including that of men, points to our fundamental conclusion: equality is good for all.

As discussed above, the evidence presented here is robust to a number of different model specifications and is fairly consistent and conclusive in terms of the outcomes. However, there are a number of limitations which present additional avenues for further research. First, due to the availability of data and comparability issues across countries, our analysis focuses solely on gender equality in "developed" countries. We make no claim that our results are generalizable to other contexts, but instead suggest equivalent research on other parts of the world as an obvious extension of the present analysis.

Second, as we are dealing with aggregate analyses, it is not clear that the benefits of gender equality are equally distributed within subpopulations within any given country. The intersection of gender with other identity characteristics also presents unique challenges for measuring life satisfaction: do women (or men) from minority groups, or different social classes, benefit equally from a state's policies on gender? This is beyond the scope of the present analysis, but these limitations demonstrate the need for further research on the role of gender and social equality on individuals' subjective well-being.

A final, practical question presents itself: if in fact gender equality promotes the general welfare, what factors promote the kind of changes that would move societies from lesser to greater levels of gender inequality, so as to produce that general increase in quality of human life? On one level, to answer this question is clearly beyond the limitations of the present paper—to explain why the gender equality varies across societies warrants its own study. On a more mundane level, though, our measures of inequality do themselves point toward the mechanisms that (by definition) increase the level of equality. Thus, if, say, changes in the GEM are associated with greater well-being, that would imply well-being improves when we increase the component elements that make up the GEM—that is, when we raise the women's share of parliamentary and cabinet seats, when more women are managers in the private sector, and when we increase women's share of national income. How to achieve some of these goals (such as altering the gender distribution of income) clearly do warrant their own research programs, and are likely to be difficult to achieve—whereas others, such as improving women's political representation, are readily achievable (e.g. via the gender quotas on party lists that some countries already use). The present analysis thus highlights both avenues for future research, and practical political steps through which a better life for men and women might be realized.

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