

(Postprint version)

The End of Hypergamy: Global Trends and Implications¹

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The gender gap in education that has long favored men has reversed for young adults in almost all high and middle-income countries. In 2010, the proportion of women aged 25-29 with a college education was higher than that of men in more than 139 countries which altogether represent 86% of the world's population. According to recent population forecasts, women will have more education than men in nearly every country in the world by 2050, with the exception of only a few African and West Asian countries (KC et al. 2010). The reversal of the gender gap in education has major implications for the composition of marriage markets, assortative mating, gender equality, and marital outcomes such as divorce and childbearing (Van Bavel 2012). In this work, we focus on its implications for trends in assortative mating and, in particular, for educational hypergamy: the pattern in which husbands have more education than their wives. This represents a substantial update to previous studies (Esteve et al. 2012) in terms of the number of countries and years included in the analysis. We present findings from an almost comprehensive world-level analysis using census and survey microdata from 420 samples and 120 countries spanning from 1960 to 2011, which allow us to assert that the reversal of the gender gap in education is strongly associated with the end of hypergamy and increases in hypogamy (wives have more education than their husbands). We not only provide near universal evidence of this trend but extend our analysis to consider the implications of the end of hypergamy for family dynamics, outcomes and gender equality. We draw on European microdata to examine whether women are more likely to be the breadwinners when they marry men with lower education than themselves and discuss recent research regarding divorce risks among hypogamous couples. We close our analysis with an examination of attitudes about

¹ The research conducted by Albert Esteve and Iñaki Permanyer leading to these results has received funding from the European Research Council (ERC-2014-StG-637768 for the EQUALIZE project). The research conducted by Jan Van Bavel and Martin Klesment has received funding from the European Research Council as well (ERC-STG-312290 for the GENDERBALL project). The research at the University of Wisconsin-Madison was carried out using the facilities of the Center for Demography and Ecology (R24 HD047873).

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women earning more money than their husbands and about the implications for children when a woman works for pay.

The reversal of the gender gap in education

The expansion of education has not been gender neutral. Historically, men have accumulated more education than women and received the vast majority of college degrees. But all over the world, women's education has increased and, in many countries, the gender gap in education has reversed. The universality of such pattern is shown in Figure 1, which plots the proportion of a country's population aged 25-34 with some college against an indicator of women's educational advantage (WEA). WEA measures the probability that a randomly selected 25-34 years old woman's education exceeds a randomly selected man's of the same age given that they do not have the same education (Esteve et al. 2012). Probabilities above 0.5 indicate that women have higher attainment than men on average and, thus, that the gender gap in education favors women. Figure 1 includes data on 120 countries from different points in time from 1960 to 2011 combining various rounds of census and survey microdata samples: 420 samples in total. One hundred and eighty nine samples came from census samples from the Integrated Public Use of Microdata Series (IPUMS) International database of census microdata (Minnesota Population Center, 2015) the world's largest collection of population microdata - with supplementary use of Demographic Health Surveys (133 samples), European Labor Force Surveys (45), EU Statistics on Income and Living Conditions (27), Generations and Gender Surveys (18) and 5 South Korean census microdata samples. The final dataset amounts to over one-half billion person records representing 89% of the world's population. The solid lines in Figure 1 show country trends over time. Color indicates continent.

FIGURE 1 ABOUT HERE

Figure 1 shows just how dramatic and consistent changes in women's educational advantage have been as populations across the world have become more educated. Despite variability across countries, the positive relationship between the two dimensions is undeniable. As populations become more educated the likelihood that women acquire more education than men tends to increase. There is hardly any country with less than 10% of the population with some college in which women's educational attainment exceeds men's educational attainment. On the other end, rarely a country with more than 20% of population with college education shows women in educational disadvantage compared to men, quite the opposite is true. African countries (blue) have the lowest proportions of the population with college education and the lowest levels of women's education compared to men. Time trends indicate little progress in

expanding college education in Africa but substantial progress in women's education that have successfully contributed to close the gender gap, which is still in favor of men though. Latin America countries (red) have undergone an important expansion of education in parallel with significant advances in women's education that are associated with the closing and reversal of the gender gap in education. Despite Latin America's low proportions of the population with college education, when compared to Europe, North America or some Asian countries, women hold the educational advantage over men in education in the majority of countries. Asian countries (pink) are at different stages regarding the proportion of the population with college education but all of them show a tight correlation between this variable and women's educational advantage. Middle Eastern countries (black) also show the same positive association. Europe (green) and North America (yellow) have by far the largest proportions of college populations and, in most cases, the highest values of WEA, typically above 0.5.

Global trends in hypergamy

Education is one of the main structuring dimensions of contemporary marriage markets. Men and women tend to marry within the same broad education groups. But among unions in which couples have different levels of education, the pattern in which husbands have more education than their wives (referred to as educational "hypergamy") has been one of the most enduring forms of gender inequality in heterosexual romantic relationships. The origins of hypergamy have been tied to patriarchal norms that characterize marriage practices around the world (Therborn, 2004). High educational attainment for men pays off both on the labor market (giving access to higher salaries) as well as on the marriage market (making them more attractive marriage partners). In addition, a common theory is that the rise of women's education increases their economic independence thereby reducing the need for marriage (Becker, 1973) and it also raises the standards for minimally acceptable matches with some accompanying risk of non-marriage (Oppenheimer, 1988; Van Bavel, 2012). However, the steady growth of women's education has the potential to powerfully alter the tendency for men to marry women with less education than themselves.

Our analyses suggests that traditional marriage practices in which men "marry down" in education do not persist for long once women have the educational advantage. Figure 2 demonstrates this, showing the relationship between women's educational advantage (WEA) on the *x*-axis and the proportion of couples in which women's education exceeds men's among couples who have different levels of education on the *y*-axis. These data include heterosexual married and cohabiting couples. Country points are connected by a line showing trends over time. The strength of the relationship is striking. Wives have more education than their husbands in countries where women in general have more education than men. This suggests

that historical marriage practices may perhaps persist while women have only a slight educational advantage, but as increasing proportions of women achieve more education than men, based on these data it appears very unlikely that husbands will retain their educational dominance in marriage. Trends over time within countries follow a similar pattern: increases in women's education are closely followed by increasing numbers of couples in which women's education exceeds men's. This occurs in countries as diverse as in Argentina, France, Indonesia, Kenya, South Korea or the United States. Agent-based models show that the shift from men "marrying down" to women "marrying down" in education could occur without any change in mating preferences. It could be explained simply by the reversal of the gender gap in education in combination with a preference for high income partners by women and men alike (Grow and Van Bavel, 2015). In short, the reversal of the gender gap in education in the population appears to move in near lock step with the reversal of the gender gap in education in marriage.

FIGURE 2 ABOUT HERE

Although our findings do not speak to the perceived difficulty of women's search for mates, they do strongly suggest that marriage patterns adapt to changing demographic realities and that men and women do indeed form partnerships in which wives have the educational advantage rather than cling to norms that husbands have more education than wives. Rather than widespread non-marriage among highly educated women, the dominant pattern is that the rise of women's education has translated relatively quickly into changes in marriage patterns and an increasing likelihood that women marry down.

Implications for family dynamics and outcomes

Will the trend toward the end of hypergamy ultimately result in an overall increase of gender equality? The concepts of gender equality and equity are at the heart of the most recent and influential theoretical debates about the future of the family and fertility, which hypothesize that gender egalitarianism will increase fertility and decrease divorce in the lowest-low fertility societies (McDonald, 2000; Esping-Andersen and Billari, 2015; Myrskylä, 2009; Goldscheider et al. 2015).

One important indication of progress towards gender equality is whether couples in which women have the educational advantage are also those in which women earn more. Women's higher education and income has been linked to greater bargaining power in the home, children's health and well-being, life expectancy, fertility, marital stability, and a host of other advantageous outcomes (Duflo, 2012). We find that wives who have more education than their husbands are indeed more likely to be female breadwinners, at least in Europe, where the

reversal of the gender gap in education is well established. Figure 3 plots the proportion of couples where the wife earns more than half of the household income for 27 European countries using 2007 and 2011 data from the Statistics on Income and Living Conditions (EU-SILC, $N=95\,498$). While there are considerable country differences in how common female breadwinners are, the pattern is quite consistent: wives with more education than their husbands are more likely to be the main breadwinner of the family. In addition, while mothers are much less likely to outearn their husbands than non-mothers, this may be overruled if she has more education than he does (Klesment and Van Bavel, 2015).

FIGURE 3 ABOUT HERE

What about marital outcomes? In societies in which wives have more education or earn more than their husbands, do relationships suffer? Evidence from the United States speaks against these fears. Prior to the 1980s when men clearly had more education than women and hypergamy was normative, men who married women with more education were more likely to divorce. However, as the situation reversed and wives now have more education than their husbands, the association between wives' educational advantage and divorce has disappeared. Among marriages formed since the 1990s, wives with more education than their husbands are now no more likely to divorce than other couples (Schwartz and Han 2014). A similar trend is observed for couples in which women out-earn their husbands (Schwartz and Gonalons-Pons 2015). This evidence is consistent with the notion that, at least in the United States, couples have adapted to the changing realities of the marriage market and are no longer at increased risk of divorce when women have the educational or earnings advantage. A recent study for marriages formed in Belgium in the 1990s found that those where the husband has more education than the wife are more likely to dissolve than marriages in which the wife has the educational advantage. In line with the American findings, the same study also found that the latter type of marriage is relative more stable in regions and municipalities where they are more common (Theunis et al. 2015).

The implications of the growth of hypogamic unions for fertility are more difficult to establish as there is virtually no research that measures whether women who marry men with less education than themselves bear more, the same, or fewer children than women married to men with the same or more education than themselves. A recent European study showed that couples where women have as much or more education than men, if anything, tend to have higher fertility compared to couples in which men have more education than women (Nitsche et al. 2015). At the population level, the impact of declining hypergamy on fertility may be

determined by the extent to which the rise of female-advantaged couples translates into more gender egalitarian roles and attitudes as predicted by McDonald (2000).

FIGURE 4 ABOUT HERE

Will the reversal of the gender gap in education and reductions in hypergamy contribute to more gender egalitarian attitudes? Our data suggest that there is an association between the reversal of the gender gap in education and egalitarian attitudes, although it is unclear whether it is causal. Figure 4 shows the relationship between our measure of women educational advantage in countries and mean responses to two attitudinal questions from the 2010-2014 World Values Survey: the proportion of respondents disagreeing with the statement “If a woman earns more money than her husband it’s almost certain to cause problems” (Panel A) and “When a woman works for pay, the children suffer” (Panel B). Both panels show that countries in which women have more education relative to men are also those that have more gender egalitarian responses to these questions. We also know that attitudes about wives outearning their husbands have changed over time and across birth cohorts with the reversal of the gender gap in education. In the United States, just 41% of male college students said that “it wouldn’t bother me at all” if their female partners outearned them in 1980 and this increased to 60% in 1990 (Willinger 1993). Similarly, for most countries in the 2010-2014 World Values Survey, young people have more egalitarian attitudes regarding wives’ higher status than do older cohorts. The increase in disagreement to the statement “If a woman earns more money than her husband, it’s almost certain to cause problems” is statistically significant ($\bar{x}=.04$, $n=60$, $p < .001$) between respondents born in 1961 or before and those born between 1982 and 1993 across WVS countries. Given period trends toward egalitarianism, we would expect age patterns in this measure to underestimate the true extent of social change in egalitarianism on this measure.

Discussion

The consequences of the reversal of the gender gap in education for family life have been under-researched. In this work we have highlighted the implications of trends in women’s relative education for assortative mating patterns on the basis of an extensive dataset of survey and census microdata that covers 120 countries from 1960 to 2011. Our data provided a rich source for visualizing the universal shift from male to female dominance in educational systems and its concomitant impact on educational assortative mating. The evidence suggests that young people adapt to new demographic realities by increasingly forming unions in which wives have

the educational advantage, leading to substantial declines in the historical hypergamic pattern. Across a range of different contexts (e.g. United States, France, India, South Korea, Kenya), the norms governing marriage markets have proven flexible enough to accommodate the increasing numbers of highly educated women and, as consequence, the numbers of women marrying down has increased steadily.

This work has gone one step beyond marriage markets' responses to the expansion of women's education to review evidence on how the new majority of couples in which women retain the educational dominance is transforming couples on dimensions like women's contribution to household income or union stability. Data for Europe has shown that wives with more education than their husbands are more likely to be the main breadwinner of the family. With respect to marital outcomes, as wives have more education or out-earn their husbands, the association between wives' educational or income advantage has declined, which reinforces the adaptive nature of couples to the changing realities of marriage markets. The reversal of the gender gap in education is also associated with more gender egalitarian attitudes. Countries in which women have more education relative to men are also those that are more tolerant and less worried about the "harmful" side effects of women's earnings on their families' well-being.

In a macro perspective, we have shown that the reversal of the gender gap in education is associated with change in couple relationship patterns and outcomes. These patterns may also be associated with greater gender equality, although whether greater gender equality is a cause or consequence (or both) of the rise of women's education remains to be ascertained. If participants of the gender equity-fertility theories are correct (Esping-Andersen and Billari, 2015; Goldscheider et al. 2015; McDonald 2000), the rise of gender egalitarianism may be an important spur for fertility in low fertility countries. But the reversal of the gender gap in education is taking place worldwide and its implications will depend to a large extent on the normative contexts in which these trends take place.

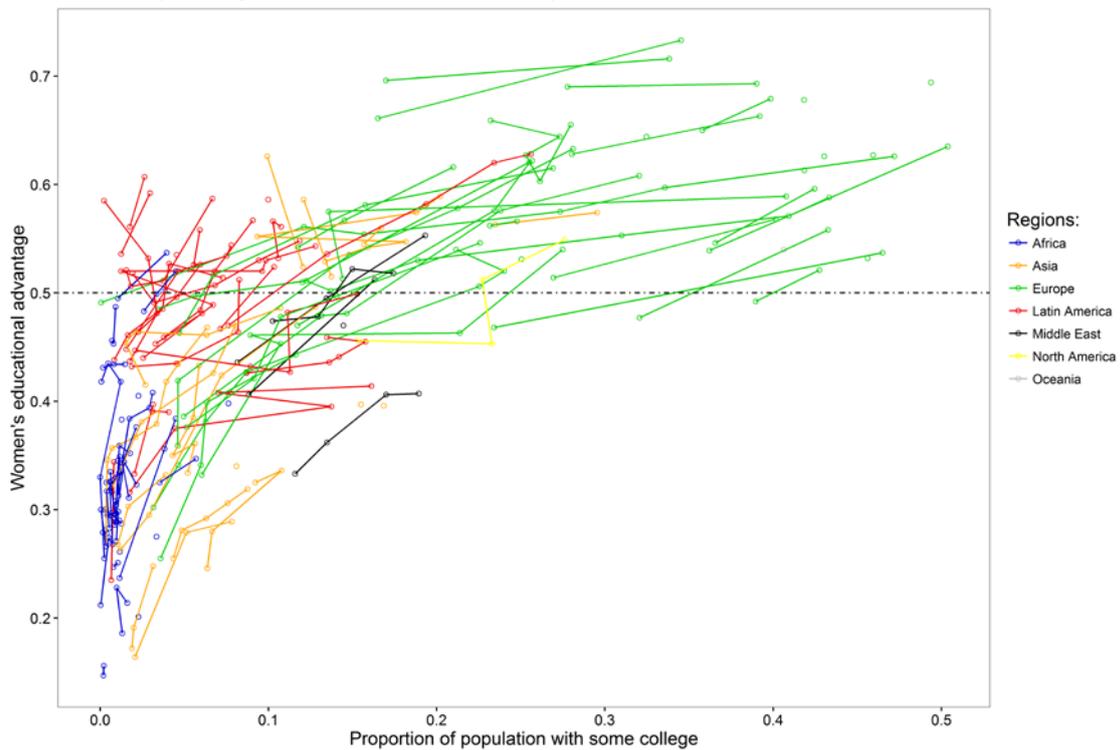
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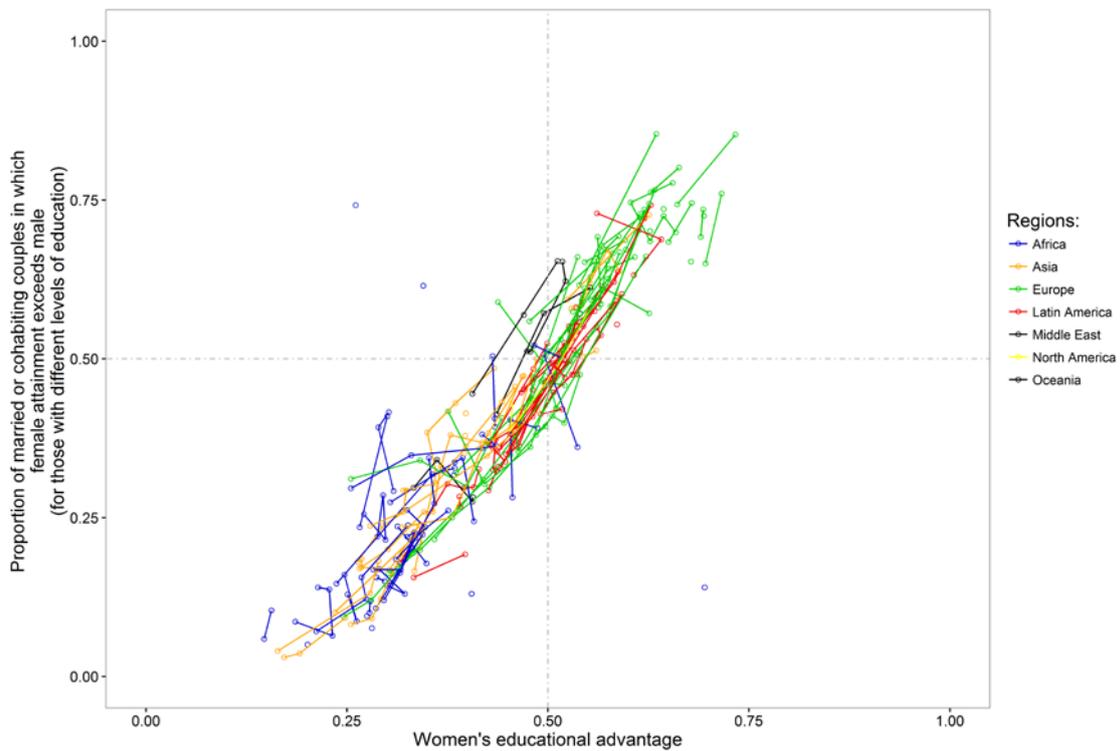
Figure 1. Women’s educational advantage and proportion of the population with some college: within country changes over the last decades by continent



Notes: Women’s educational advantage is measured as the probability that a randomly selected woman’s education exceeds a randomly selected man’s given that their educational attainments differ. Probabilities above 0.5 indicate that women have higher attainment than men (Esteve et al. 2012).

Sources: Author’s calculations based on the most recent and available harmonized census and survey microdata samples from: Integrated Public Use of Microdata Series (IPUMS) International project, European Labor Force Survey – EUROSTAT, Generations and Gender Survey, Demographic and Health Survey, Survey of Income and Living Conditions – EUROSTAT. It covers the period from 1960 to 2010.

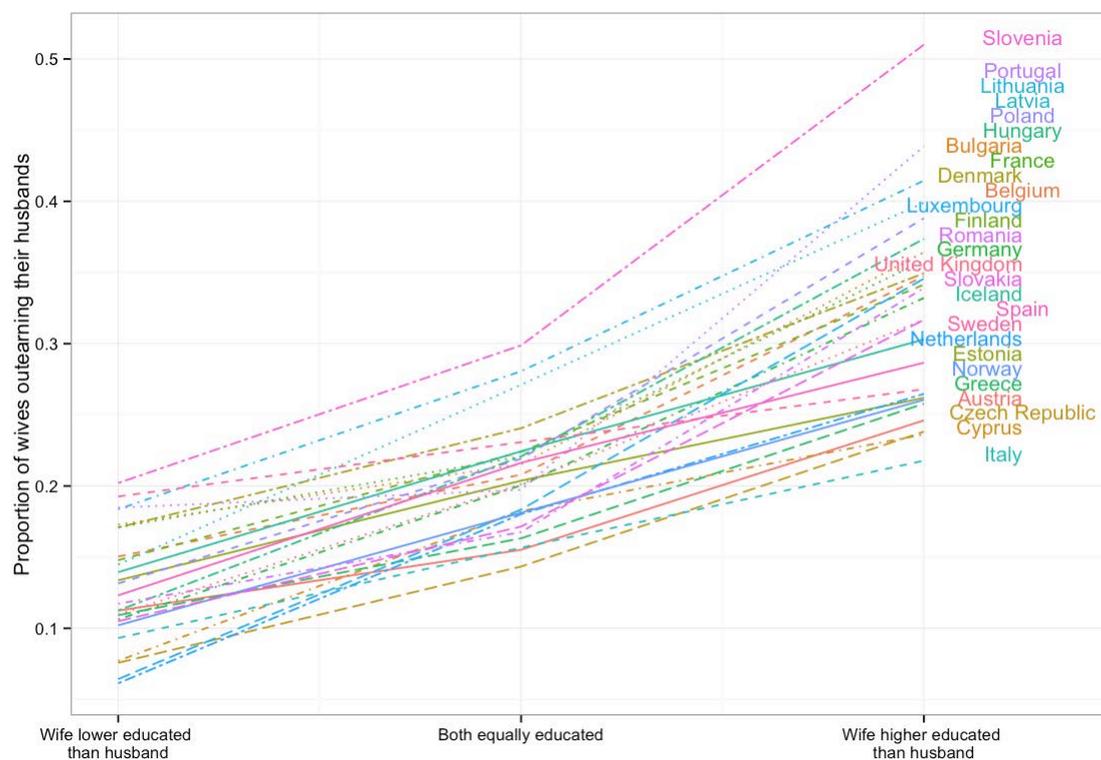
Figure 2. Women’s educational advantage and proportion of married or cohabiting couples in which female attainment exceeds male (for those with different levels of education)



Notes: Women’s educational advantage is measured as the probability that a randomly selected woman’s education exceeds a randomly selected man’s given that their educational attainments differ. Probabilities above 0.5 indicate that women have higher attainment than men (Esteve et al. 2012).

Sources: Author’s calculations based on the most recent and available harmonized census and survey microdata samples from: Integrated Public Use of Microdata Series (IPUMS) International project, European Labor Force Survey – EUROSTAT, Generations and Gender Survey, Demographic and Health Survey, Survey of Income and Living Conditions – EUROSTAT. It covers the period from 1960 to 2010.

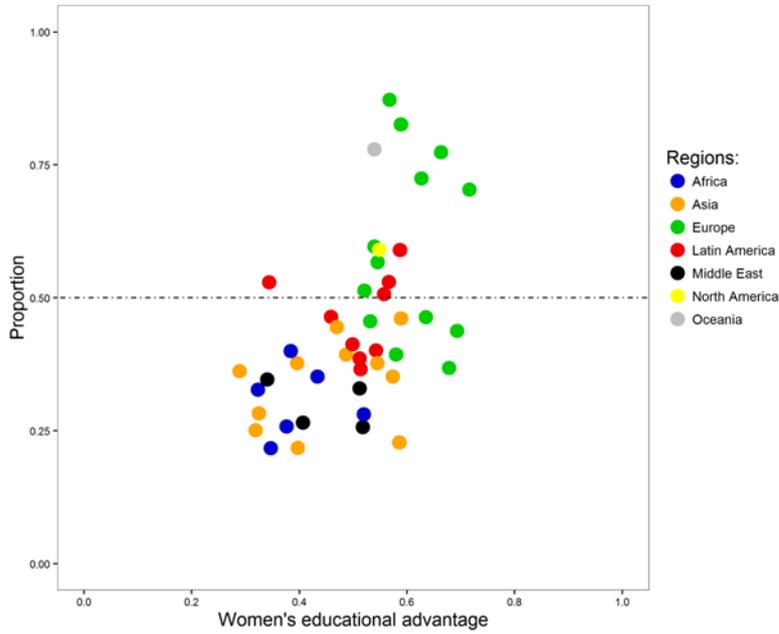
Figure 3. Proportion of wives earning more than half of total household income, by relative education of husband and wife, 27 European countries



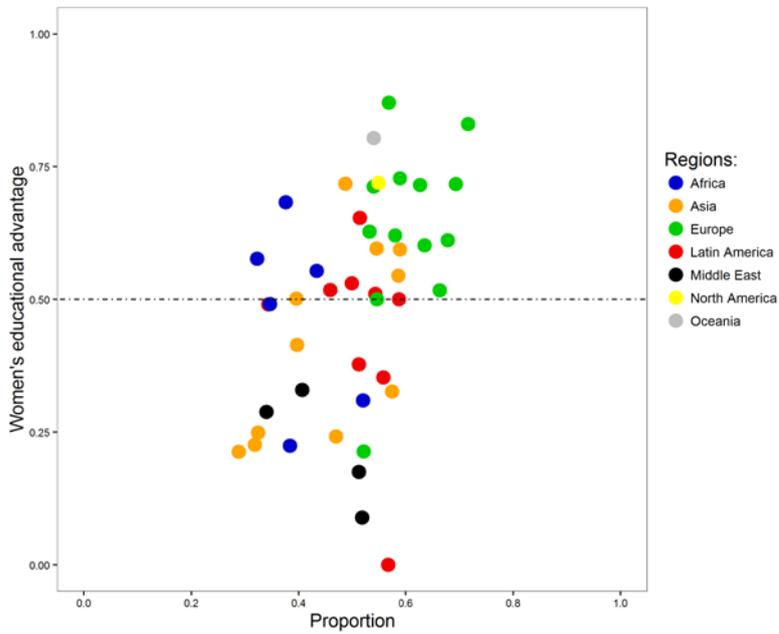
Source: Author's calculations based on EU-SILC 2007 and 2011, reflecting 2006 and 2010 incomes. Observations include married as well as unmarried cohabiting couples where at least one of both partners earns some income and the woman is 25 to 45 years old; see Klesment and Van Bavel (2015) for details.

Figure 4. Women's Educational Advantage and Gender Egalitarian Attitudes by Country

Panel A. Proportion Disagreeing with the Statement "If a Woman Earns More Money than Her Husband It's Almost Certain to Cause Problems"



Panel B. Proportion Disagreeing with the Statement "When a Woman Works for Pay, the Children Suffer"



Note: Weighted estimates calculated for respondents aged 25-34.

Source: World Values Survey 2010-2014.