

# The economic gap among women in time spent on housework in former West Germany and Sweden

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## ABSTRACT

The quantitative scholarship on domestic labor has documented the existence of a gender gap in its performance in all countries for which data are available. Only recently have researchers begun to analyze economic disparities *among* women in their time spent doing housework, and their studies have been largely limited to the U.S. We extend this line of inquiry using data from two European countries, the former West Germany and Sweden. We estimate the “economic gap” in women’s housework time, which we define as the difference between the time spent by women at the lowest and highest deciles of their own earnings. We expect this gap to be smaller in Sweden given its celebrated success at reducing both gender and income inequality. Though Swedish women do spend less time on domestic labor, however, and though there is indeed less earnings inequality among them, the economic gap in their housework is only a little smaller than among women in the former West Germany. In both places, a significant negative association between women’s individual earnings and their housework time translates into economic gaps of more than 2.5 hours per week. Moreover, in both countries, women at the highest earnings decile experience a gender gap in housework that is smaller by about 4 hours per week compared to their counterparts at the lowest decile.

Le fossé économique chez les femmes en ce qui concerne le temps consacré aux tâches ménagères dans l'ex-Allemagne de l'Ouest et en Suède

## RÉSUMÉ

La recherche quantitative sur le travail domestique a montré l'existence d'un écart entre les sexes dans tous les pays pour lesquels des données sont disponibles. C'est seulement depuis peu que les chercheurs ont commencé à analyser les disparités économiques chez les femmes en ce qui concerne leur temps consacré aux tâches ménagères, et leurs études ont été largement limitées aux États-Unis. Nous étendons cette recherche en utilisant les données de deux pays européens, l'ex-Allemagne de l'Ouest et la Suède. Nous évaluons le "fossé économique» du temps consacré aux tâches ménagères chez les femmes, que nous définissons comme la différence entre le temps consacré par les femmes avec les déciles de leurs propres revenus les plus faibles et les plus élevés. Nous nous attendons à ce que ce fossé soit plus petit en Suède étant donné son célèbre succès à réduire à la fois l'inégalité des sexes et des revenus. Bien que les femmes suédoises consacrent moins de temps aux tâches ménagères, et bien qu'il y ait en effet moins d'inégalités de revenus entre elles, cependant le fossé économique dans leurs tâches ménagères est

seulement un peu plus petit que chez les femmes dans l'ex-Allemagne de l'Ouest. Dans les deux pays, une association négative significative entre les revenus individuels des femmes et leur temps consacré aux tâches ménagères se traduit par des écarts économiques de plus de 2,5 heures par semaine. De plus, dans les deux pays, les femmes avec le décile de revenu le plus élevé connaissent un écart entre les sexes pour les tâches ménagères qui est plus petit d'environ 4 heures par semaine, comparativement aux femmes avec le décile de revenu le plus faible.

La brecha económica en el trabajo doméstico de las mujeres en la antigua Alemania Occidental y Suecia

## RESUMEN

La literatura cuantitativa sobre trabajo doméstico ha documentado la existencia de una brecha de género en este tipo de trabajo para todos los países en los cuales existe información disponible. Sin embargo, solo recientemente investigadores en esta área han empezado a analizar las disparidades económicas *entre* mujeres en términos del tiempo que ellas dedican a labores domésticas. Dichos estudios, a la vez, tienden a estar concentrados en los Estados Unidos. Nosotros extendemos esta línea de investigación usando información de dos países europeos, la antigua Alemania Occidental y Suecia. Para ello estimamos la “brecha económica” en el trabajo doméstico de las mujeres, la cual definimos como la diferencia entre el tiempo empleado en trabajo doméstico por las mujeres cuyos ingresos se ubican el decil más bajo y en el más alto en sus respectivos países. Prevemos que la mencionada brecha sea menor en Suecia debido a su reconocido éxito en términos de la reducción de desigualdad de género y de ingresos. Aunque las mujeres suecas de hecho emplean menos tiempo haciendo trabajo doméstico; y aunque sí hay menos desigualdad a nivel de ingresos entre ellas, la brecha económica en términos de trabajo doméstico que ellas experimentan es solo un poco menor a la brecha observada entre mujeres de la antigua Alemania Occidental. En ambos casos, una asociación negativa y significativa entre los ingresos individuales de las mujeres y el tiempo que ellas dedican al trabajo doméstico se traduce en brechas económicas de más de 2.5 horas por semana. Aún más, en ambos países, las mujeres en el decil de ingresos más alto experimentan una brecha de género en su trabajo doméstico que es más pequeña por cerca de 4 horas por semana comparada con la observada entre sus contrapartes ubicadas en el decil más bajo.

## INTRODUCTION

While the gender gap in the performance of housework has narrowed in many countries for which data are available, it remains universal and large (Sayer, 2010); not surprisingly, the quantitative research on domestic labor has emphasized its pervasiveness. Recently, however, researchers have begun to pay more attention to disparities in housework time *among* women, especially those related to economic inequality. Specifically, studies of the relationship between married and cohabiting women's earnings and time spent doing housework, which tended to emphasize women's economic resources relative to their male partners', has added a focus on women's *own* earnings. Employing representative data from the National Survey of Families and Households in the U.S. (NSFH), Gupta (2006, 2007) found that married and cohabiting women's individual earnings were negatively associated with the time they spent on everyday chores such as cooking and cleaning. Describing this relationship as "autonomy," Gupta speculated that it originated in women's use of their economic resources to purchase housework substitutes such as prepared meals and domestic help. Or perhaps women with higher earnings simply "opt out" of housework because substituting would violate gender norms ascribing to them the primary responsibility for its performance. (Killewald, 2011)

In contrast to most of the existing quantitative research emphasizing the gender gap in the performance of domestic labor, the autonomy model highlights the relationship of differences among women with disparities in their time spent doing housework. In particular it focuses on economic inequality—women with higher earnings are predicted to spend less time on housework than those with lower earnings. To examine its prevalence outside the U.S., we apply the autonomy model to two countries other than the U.S., namely the former West Germany and Sweden. Though these countries are broadly comparable to the U.S. as fellow "western" nations, they differ from it, and from each other, in key ways that are relevant to our test of the autonomy hypothesis. They are characterized by dissimilar levels of economic inequality, especially among women, and they feature quite distinct regimes of gender role norms and state policies that promote or inhibit women's labor force participation. We use individual level data to determine for each country the size of the "economic gap" among women in their housework time, which we define as the difference between the average number of hours spent on it by women at the highest and lowest deciles of their own earnings. Though we do not directly incorporate national measures of women's labor force participation, earnings inequality among women, or the cultural and policy dimensions relevant to the division of domestic labor into our models, these factors frame our expectations for each country as well as our interpretation of our findings.

## ARGUMENT

The quantitative literature on the relationship between women's earnings and housework in the U.S. has expanded over the last decade to include data from multiple countries. Like the earlier research on the U.S., however, it has tended to focus on women's earnings or income relative to their male partners'.<sup>i</sup> (Bittman et al, 2003—Australia; Evertsson and Neramo, 2004—Sweden; Geist, 2009—Germany) However, a new strand of inquiry challenges this focus on women's relative earnings by theorizing women's *individual* earnings as being associated with their time spent on housework. Using nationally representative data from the National Survey of Families and Households (NSFH), Gupta (2006) found that in the U.S., women's own earnings mattered more for their housework time than did their relative earnings. Gupta dubbed this negative relationship between women's own earnings and time spent on domestic labor the "autonomy" model. This model predicts that a woman with low individual earnings will spend more time doing housework than one with high earnings, even if their earnings relative to their male partners' are equal. (The model controls for employment hours to account for their correlation with earnings.) Gupta's results have been corroborated by Killewald and Gough (2010) using the Panel Study of Income Dynamics (PSID) but disputed by Schneider (2011) employing the American Time Use Survey.

Gupta (2007) speculated that one source of the economic gap among women was their use of market substitutes for housework, such as prepared meals and domestic help. The possibility that women deploy their own earnings to purchase such substitutes is supported by studies such as Phipps and Burton (1998) and Cohen (1998), who found that in the U.S., women's incomes, more than their husbands', were directly associated with household spending on eating out; Cohen showed that this was also the case for spending on housekeeping services. More recently, Treas and de Ruijter (2008) found that household spending on outsourcing routine housework in the U.S. was more strongly associated with women's earnings than with their partners'. The ethnographic literature also suggests that employing the services of women with low earnings is one strategy for defraying the housework burden in the U.S. (Ehrenreich, 2001; Romero, 1992) Yet the quantitative scholarship for the U.S. has not established market substitution for housework as a mechanism for the autonomy model, largely due to the absence of survey data that provide information simultaneously on earnings, time spent on housework and expenditures on substitutes for it. Killewald (2011) proposed another explanation for the negative association between women's earnings and time spent on housework, namely that women with higher earnings were simply doing less of it. She speculated that this "opting out" was due to the persistent expectation that women were primarily responsible for fulfilling the domestic labor

requirements of their households; it would be improper, therefore, for them to defray their housework time with purchased goods and services.

Whatever the reasons for its existence, a negative association between their earnings and time spent doing domestic labor implies that women with higher earnings spend less time than those with lower earnings. To put it slightly differently, earnings inequality among women is associated with disparities in their housework performance. Our interest here is in whether this is the case outside the U.S. In the sole existing study to date using individual-level data from a country other than the U.S., Baxter and Hewitt (2013) did not find a robust association between Australian women's own earnings and their housework hours. Suggestively, however, a recent study by Heisig (2011) found that across 33 countries, the difference between the average weekly housework hours of women in the highest and lowest deciles of household income generally increased with the level of income inequality. In particular Sweden, with a lower level of household income inequality than Germany's, also had a smaller disparity among women in their housework hours. The reasons for Sweden's lower levels of income inequality have been well documented in the comparative literature. The country is typically described as "social-democratic," with its aggressive taxes designed to reduce economic inequality and fund extensive social benefits. Germany's more "conservative" regime features lower levels of taxation and social benefits. (e.g. Hicks and Esping-Andersen 2005)

But Heisig's (2011) data permitted him to specify only household income rather than women's individual incomes, leading him to conclude that "[c]omparative studies analyzing men's and women's incomes separately would be natural extensions of the present analysis, but, at least for the moment, a focus on gender-specific incomes seems to imply a small-*N* design." (p. 94) Here we follow Heisig's suggestion and perform the first comparative application of the autonomy model to countries other than the U.S., namely the former West Germany and Sweden. (See Gupta et al. (2010) for a strictly descriptive account of disparities in women's housework time by earnings across these three countries.) We employ data from our two countries on women's earnings separate from their male partners', and separate from household income. We can therefore determine whether or not women's own earnings are related to their time spent on routine household chores in these two countries, as prior studies have found for the U.S. If the association does exist in either or both countries, it will correspond to an "economic gap" in the domestic labor of women there.

Heisig (2011) speculated that the costs of market substitution for housework, such as hiring paid domestic help, are lower in countries characterized by relatively high levels of income inequality, with their supply of low wage (and often migrant) workers. Following that reasoning, we hypothesize that the autonomy model applies to the former West Germany given its higher inequality in women's earnings; we do not expect it to apply to Sweden. Perhaps not coincidentally, using servants is more acceptable in countries like Germany than in the Nordic countries, where domestic service "contradicts the moral values of the middle classes" unless it is provided by municipal employees. (Pfau-Effinger, 2009) Such attitudes could matter: Baxter et al. (2009) found that in Australia, the ability to employ domestic help was mediated by beliefs regarding the appropriateness of doing so. The proportion of German households employing cleaning persons regularly was about 10 percent in 2002, while virtually no households reported doing so in Sweden in the year 2000 (Swedish Institute of Social Research, 2014). Because of relatively high labor costs in Germany, there is a considerable black market for domestic services, and the actual rates of their utilization may be higher than those reported (Schupp, 2002).<sup>ii</sup>

We therefore arrive at the following expectations for the two countries:

*Germany:* There is a negative association between women's own earnings and their time spent doing housework, as predicted by the autonomy model.

*Sweden:* The autonomy model does not apply—women's own earnings and their time spent doing housework are not negatively associated.

However, the two countries also differ along other substantive dimensions in ways that could invalidate or even reverse our expectations. In particular they have divergent "institutional and cultural expectations of a gendered division of paid and unpaid work" (Cooke and Baxter, 2010). Sweden is considerably more supportive than the former West Germany of women's paid employment. Its "dual earner" society provides substantial subsidies for childcare and other benefits in order to maximize the rates of women's employment, and of full time work among those employed. These policies are reflected in its higher rates of women's employment, and specifically of full time employment. By contrast Germany, with its high taxation of second incomes, limited state provision of childcare, and a strong normative orientation towards in-home maternal care for young children, is described in the literature as a "male breadwinner regime." (Aisenbrey et al., 2009; Cooke, 2011; Misra et al., 2007; Orloff, 2002) The two countries also diverge dramatically in their cultural norms regarding gender roles in (heterosexual) families. Budig et al. (2012) found that on multiple measures of attitudes regarding the

appropriateness and consequences of women's employment, the former West Germany is considerably more traditional than Sweden.

These differences in policies and norms may be related to specific outcomes for women at the individual level. Blumberg (1984) argued that women's political and economic resources at the societal level influence their ability to parlay their individual assets, such as earnings, into favorable household level outcomes like their housework time. This suggests that contrary to our expectations, it is easier for Swedish women with high earnings, compared to their counterparts in the former West Germany, to spend less time doing housework. For example, to the extent that the autonomy model might operate through market substitution for housework, the more conservative gender norms in the former West Germany could work against the use of substitutes.<sup>iii</sup> To summarize: our default expectation based on the former West Germany's much higher income inequality is that it offers more fertile ground for the autonomy model than does Sweden. However, the latter country is considerably more gender egalitarian in its norms and policies, and on that account may make it easier for women to translate higher earnings into less time doing housework.

## DATA & METHOD

### Sample

Our analytic samples for both countries consist of women in marital or cohabiting households with male partners. As is typical in the quantitative housework literature, we excluded women who were disabled or had disabled partners, as well those in prison, in the military or otherwise institutionalized. We also excluded women in each country with earnings higher than the 99<sup>th</sup> percentile of nonzero earnings because of their excessive influence on our regression coefficients, but including them did not substantively alter our findings (full results available upon request). Other features of the samples specific to each country are described below.

### *Former West Germany*

The German data are derived from the 1999 wave of the German Socio-Economic Panel (GSOEP), a nationally representative, longitudinal household survey. Data are collected annually. The GSOEP began in 1984, and since June 1990 has included residents of the former East Germany (GDR). Because important regional differences in Germany have persisted after unification (Geist, 2009), we restrict our sample to the former West Germany. It contains 1,372 married and cohabiting women living

in former West Germany who were not disabled or had disabled partners, and were not institutionalized. The women's ages range from 18 to 65. Our analytic sample consists of the 1,363 women with complete information on all the variables in our models.

### *Sweden*

The data for Sweden come from the Swedish Level of Living Survey (LNU) for the year 2000. The LNU is based on a random sample of 1/1000 of the Swedish population between 18-75 years of age. Data on annual earnings were gathered in a separate register. An important difference between these data and those from Germany is that about 55 percent of the information for the Swedish women was provided by their male partners, who were the "main" respondents selected by the LNU. To account for possible biases in their male partners' reports of their housework time, we identify these women with an indicator variable in the model for Sweden. (A separate model excluding these women entirely yields substantively comparable results to our main findings; see Appendix 2.) Another difference between the Swedish data and those from the other countries is that the minimum respondent age is 19 due to a parental permission requirement for individuals below that age. We excluded 19 women who reported working for pay more than 35 hours per week in the survey, but who had zero annual earnings according to the register data. This leaves us with 1420 women in the final sample whose ages range from 19 to 65.

### Measures

The dependent variable in all our analyses is the number of weekly hours women spent doing housework. This information was obtained in both countries using retrospective questions about time spent on housework during typical or actual recent days or weeks. Such questions are known to yield overestimates of time spent on housework compared to diary data which document the timing and duration of activities for an entire 24 hour period (e.g., Bianchi et al., 2000; Juster & Stafford, 1991). Since we are focusing on economic gaps among women in each country, however, this will not bias our results unless women at different percentiles of earnings overestimate their housework hours by different amounts. A more serious restriction of our data is that the questions involved different levels of detail in both countries, and therefore the housework measures are not quite comparable across them. For Germany the dependent variable measures the number of hours usually spent on washing, cooking, and cleaning on a typical weekday, Saturday and Sunday. We constructed our measure of weekly housework hours by multiplying the response for a typical weekday by 5 and adding the responses for the two weekend days. In the case of Sweden, we have the sum of weekly hours spent separately on

shopping, cooking, doing the dishes, laundry and cleaning. These differences in the data inhibit us from performing a formal test of differences in coefficients across our models for the two countries.

Our main independent variable is women’s individual, annual earnings, converted in both countries to U.S. dollars using exchange rates in mid-1999. In addition to specifying it as a continuous variable, we employ an indicator variable to capture the effect of having no earnings. This is because nearly one third of women in the German sample have zero earnings; the proportion for Sweden is much smaller but still appreciable at six percent. (Table 1) As with the housework measure, there are important differences in the earnings data from the two countries. For Germany we obtained the annual labor earnings and weekly employment hours of both partners from the GSOEP’s 2000 Cross-National Equivalent File, which lagged the main data by one year. By contrast the earnings measure in Sweden is contemporaneous and includes labor market earnings as well as compensation for loss of earnings due to sick leave and parental leave. Finally, like all previous studies of the autonomy hypothesis, we control for women’s weekly employment hours. This enables us to distinguish the association of women’s housework time with earnings from its negative relationship with their employment hours ( “time availability” ), and controls for the relationship between employment hours and earnings. We control also for their male partners’ earnings and employment hours. Following prior research we also control for the women’s years of education, age in years and whether or not they were in professional occupations, number of children and the presence of children less than 6 years of age. Table 1 presents descriptive statistics on all these variables.

[Table 1]

### Model

We express the relationship between women’s individual earnings and their time spent on housework in each country like this:

$$Y_i = \alpha_0 + \beta_E E_i + \beta_C C_i + \epsilon_i$$

Here  $Y_i$  is a woman’s housework time,  $E_i$  her own earnings and  $C_i$  the set of controls enumerated above. The error term  $\epsilon_i$  captures all other measured and unmeasured covariates of housework time. The coefficient  $\beta_E$  represents the association in the population between women’s earnings and time spent on domestic labor. Assuming it is negative, its size represents the housework decrement corresponding to a unit of women’s own earnings. As we stated earlier the literature has not established the mechanisms for such reductions, but it is plausible that the coefficient captures in part women’s deployment of their own

earnings for buying housework substitutes. Whatever its origin, we can use our sample estimate of its value to calculate the economic gap among women in their time spent on housework, which we define as the difference between the predicted values of housework for women at the lowest and highest deciles of their own earnings.<sup>iv</sup> If these values of earnings are denoted by  $p_{10}$  and  $p_{90}$  respectively, the economic gap is given by:

$$EG = b_E (p_{10} - p_{90})$$

Here  $b_E$ ,  $p_{10}$  and  $p_{90}$  are our sample estimates of their corresponding values in the underlying population. We obtain two sets of these values, one for each country. The size of the economic gap in a given country depends on the magnitudes of both the coefficient  $b_E$  and of the earnings gap ( $p_{90} - p_{10}$ ) there. Likewise we use the same model to estimate the intra-couple gender gap in housework time between women and their male partners at the lowest and highest deciles of the distribution of women's earnings. That is, we estimate:

$$D_i = \alpha_0 + \beta_E E_i + \beta_C C_i + \epsilon_i$$

where  $D_i$  is the difference between a woman's housework time and her male partner's. The independent variables in this model are the same as those employed in the model above for women's housework time. Using the results we estimate the gender gap in a manner analogous to the economic gap:

$$GG = b_E (p_{10} - p_{90})$$

## EVIDENCE

Figure 1 depicts the bivariate evidence in both countries for a negative association between women's earnings and time spent on housework. The dashed line represents a nonparametric Lowess fit that estimates many linear regressions in small windows of data which move successively from left to right on the horizontal axis. The solid line shows a standard least squares fit with a 95 percent confidence interval for the predicted values. Both methods reveal a negative relationship between women's earnings and housework in both countries. For most of the data in Germany, the linear regression line slightly underestimates the slope compared to the nonparametric Lowess fit but overestimates it for the small number of women with very high earnings. In Sweden the two methods yield similar slopes for most of the data, and again the linear fit overestimates the relationship for women with the highest earnings. We conclude that a linear regression model is adequate for the large majority of women in our samples; in both countries, the widening confidence intervals of the linear fit for women with high earnings show that predicted housework hours for those women have correspondingly larger standard errors. Accordingly, to increase the precision of our estimates for the vast majority of women, we exclude those with the highest 1 percent of earnings in each country from the multivariate model.

[Figure 1]

Table 2 shows our multivariate results. For both countries, we reject our null hypothesis that there is no association between women's own earnings and their housework time. The starkest manifestation of that relationship is the coefficient for women with zero earnings, who, compared to women with any earnings, are predicted to spend more than two additional hours on housework per week in Germany and more than four extra hours in Sweden. For women with any earnings, each additional 1,000 dollars correspond to five fewer minutes of housework per week in the former West Germany and about five and a half in Sweden. That is, the autonomy model works in both countries.<sup>v</sup> The implications of the negative relationship between women's earnings and housework time are shown in Figures 2 through 4. The first of these shows the predicted weekly housework hours from our multivariate model at the 10<sup>th</sup>, 50<sup>th</sup> and 90<sup>th</sup> percentiles of nonzero earnings, with all other independent variables set to their means. The predictions are accompanied by 95 percent confidence intervals. In both countries, the predictions for women at the 10<sup>th</sup> percentile of own earnings are significantly larger than for those at the 90<sup>th</sup> percentile, as indicated by the absence of overlap in their confidence intervals.

Figure 3 displays these differences—what we are calling the “economic gaps” among women in their housework time—along with 95 percent confidence intervals for them. This economic gap is significantly different from zero in both countries. It is just shy of 3 hours per week in former West Germany, or about 25 minutes per day. It is slightly smaller in Sweden at 2.5 hours per week or 23 minutes daily. Because the housework data are not fully comparable (see ‘Data and Method: Measures’), we refrain from performing a formal test of difference between these two predictions and the underlying coefficients, though the large overlap in their confidence intervals suggests they are not significantly different. The coefficients of the control variables are generally in line with previous research. In particular the negative association between women's housework time and their own earnings persists alongside its negative relationship with the critical control for their employment hours.

[Table 2]

[Figures 2 and 3]

Finally, Figure 4 shows how economic inequality among women is related to the well-known gender gap in housework. It depicts the adjusted gender gap, computed as the predicted difference between the housework hours of women and their male partners at the 10<sup>th</sup> and 90<sup>th</sup> percentiles of women's nonzero earnings, and based on the same multivariate models used for Figures 2 and 3. In both countries the gender gap is large and significantly different from zero even at the 90<sup>th</sup> percentile. In other words, high earnings do not eliminate the gender gap; in both countries, however, it is significantly

smaller for women at the highest decile of earnings, as indicated by the absence of overlap in the confidence intervals within each country. Simply put, women with higher earnings experience lower gender gaps in housework. In former West Germany, the gender gap for women at the highest earnings decile is 13.3 housework hours per week compared to 17.6 hours for their counterparts at the lowest decile. The corresponding predictions for Sweden are 7.0 and 11.2 hours for women at the highest and lowest deciles.

[Figure 4]

## DISCUSSION

We chose two European countries quite different from one another along key dimensions relevant to the relationship between women's earnings and time spent doing housework, as identified by previous research. Based on this existing scholarship we expected Sweden to be a less likely candidate for the autonomy model than the former West Germany. The latter country appears better suited for the model given its greater inequality in earnings—to the extent that the model may operate through women's use of market substitutes for housework, higher inequality could make it easier for women with relatively high earnings to purchase such replacements. There is also evidence that the use of certain substitutes like domestic service is more acceptable and prevalent there.

We find however that the autonomy hypothesis is validated even in Sweden. In both countries, the women's individual earnings are negatively associated with their housework time, just as some prior studies have found for the U.S. When combined with the earnings gap among women, this association implies that in both countries, women at the high end of the distribution of their individual earnings are predicted to spend about two and a half fewer hours on housework than their low-earning compatriots. Though we cannot establish why our expectation for Sweden is confounded, there are at least two possibilities. One, the level of income inequality there is sufficient for the operation of the autonomy hypothesis, even though it is considerably lower than in the former West Germany. Or perhaps its lower inequality is counteracted by its greater gender egalitarianism, especially its comprehensive support for women's labor force participation. This context may make it more acceptable for women with higher earnings to substitute market goods and services for their own housework, or conceivably to do less of it.

As with prior research for the U.S., we cannot establish the mechanism for the negative association between women's earnings and housework time in either of our two countries. Possibly it is

due in part to women's use of paid market substitutes for common domestic tasks. Such substitution may allow women with high earnings to reduce the time required to provide meals and a clean home, and perhaps thereby to "perform" their gender (West and Zimmerman 1987) with less direct effort. Alternatively, tacit standards of domestic labor may be more relaxed or flexible for women with higher earnings, allowing them to simply "opt out" of housework, as argued by Killewald (2011) for the U.S. This may also be the case in Sweden, where Evertsson et al. (2009) found that women at higher educational levels spent less time doing housework than did those at lower levels. That standards for women's housework can differ by class is demonstrated in Skeggs' (1997) study of the active promotion of housework in 19<sup>th</sup> century England as a way for working class women to achieve middle class respectability.

Whatever the explanation for our results, they suggest the economic gap in women's housework associated with disparities in their earnings may be commonplace across nations. We find also that this economic gap is related to the gender gap, the universality of which the quantitative scholarship on domestic labor to date has demonstrated powerfully; in both countries, the gender gap is meaningfully smaller for women with high earnings. That this is the case even in Sweden, with its history of concerted reductions of both economic and gender inequality, leads us to suspect that the economic gap in housework among women is widespread. Prior research has documented its existence in the U.S. and our study adds two more countries as loci for its operation. On the other hand Baxter and Hewitt (2013) do not find evidence for it in Australia; future studies on other countries are therefore necessary to assess its prevalence. Moreover, if the economic gap is associated with the substitution of housework with goods and services, its study can illuminate domestic labor as a concrete site for the complex interplay among nation, market and household.

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Appendix 1a: Models including women's relative earnings: Germany

	<b>Own and</b>			
	<b>relative</b>		<b>Relative only</b>	
	b	SE	b	SE
Woman has zero earnings (=1)	1.484	0.955	1.255	0.930
Woman's own earnings	-0.041	0.040		
Woman's share of couple's total earnings	-1.046	0.581	-1.457	0.437 ***
Woman's share, squared	0.385	0.447	0.528	0.391
Couple's total earnings			-0.018	0.012
<i>Controls</i>				
Woman's weekly employment hours	-0.141	0.025 ***	-0.143	0.024 ***
Male partner's weekly employment hours	0.045	0.021 *	0.050	0.022 *
Woman's age (years)	0.220	0.034 ***	0.225	0.034 ***
Woman's years of education	-0.261	0.114 *	-0.264	0.114 *
Male partner's years of education	-0.158	0.097	-0.130	0.100
Woman's occupation (professional=1)	-1.565	0.801	-1.539	0.800
Male partner's occupation (professional=1)	-1.103	0.618	-1.013	0.624
No. of children	2.553	0.336 ***	2.583	0.336 ***
Child under 6 (=1)	0.073	0.813	0.047	0.811
Cohabiting (=1)	-0.912	0.832	-0.911	0.832
Constant	16.474	2.286 ***	16.072	2.311 ***
<i>N</i> <sup>a</sup>	1,307		1,307	

*R-squared*

0.349

0.350

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\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

<sup>a</sup> The sample is smaller than the one in Table 2 because women with zero own and partner earnings, whose relative earnings are therefore undefined, are excluded.

Appendix 1b: Models including women's relative earnings: Sweden

	<b>Own and relative</b>			<b>Relative only</b>		
	b	SE		b	SE	
Woman has zero earnings (=1)	4.514	1.247	***	3.824	1.231	**
Woman's own earnings	-0.090	0.033	**			
Woman's share of couple's total earnings	-0.029	0.428		-0.768	0.349	*
Woman's share, squared	0.017	0.330		0.422	0.292	
Couple's total earnings				-0.007	0.010	
<i>Controls</i>						
Woman's weekly employment hours	-0.049	0.021	*	-0.061	0.020	**
Male partner's weekly employment hours	0.017	0.021		0.008	0.020	
Woman's age (years)	0.102	0.025	***	0.093	0.025	**
						*
Woman's years of education	-0.161	0.088		-0.185	0.088	*
Male partner's years of education	-0.158	0.088		-0.170	0.088	
Woman's occupation (professional=1)	-0.740	0.686		-1.229	0.663	
Male partner's occupation (professional=1)	0.265	0.570		0.132	0.583	
No. of children	2.549	0.202	***	2.540	0.202	**
						*
Child under 6 (=1)	-0.265	0.591		-0.220	0.592	
Cohabiting (=1)	-1.262	0.534	*	-1.286	0.536	*

Sex of respondent (Sweden only)	0.077	0.400		0.032	0.401
Constant	15.096	2.136	***	15.680	2.134 ***
<i>N</i> <sup>a</sup>	1,397			1,397	
<i>R-squared</i>	0.229			0.225	

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<sup>a</sup> The sample is smaller than the one in Table 2 because women with zero own and partner earnings, whose relative earnings are therefore undefined, are excluded.

Appendix 2: Model excluding data supplied by male partners, Sweden

<b>SWEDEN</b>		
	b	SE
Woman has zero earnings (=1)	4.441	1.405 **
Woman's earnings	-0.088	0.037 *
Male partner's earnings	-0.023	0.019
<i>Controls</i>		
Woman's weekly employment hours	-0.044	0.028
Male partner's weekly employment hours	0.045	0.025
Woman's age (years)	0.045	0.035
Woman's years of education	-0.268	0.114 *
Male partner's years of education	-0.135	0.118
Woman's occupation (professional=1)	-1.417	0.964
Male partner's occupation (professional=1)	1.385	0.839
No. of children	2.286	0.274 ***
Child under 6 (=1)	0.809	0.815
Cohabiting (=1)	-1.842	0.738 *
Constant	18.22	2.718 ***
<i>N</i>	623	
<i>R-squared</i>	0.287	

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

## Endnotes

<sup>1</sup> This literature is based on the micro level models of “economic dependence” and “gender display.” The first proposes that the more money individuals make compared to their partners, the greater negotiating power they have in housework negotiations, and the less time they spend on housework. The display hypothesis predicts that women with unusually high relative earnings will do more housework than other women in order to deflect the threat posed to their gender identity by their gender-atypical relative earnings. (e.g. Brines 1994:655-657)

<sup>2</sup> In recent years, tax incentives in Germany and Sweden for purchasing household services from registered firms have likely led to increases in the use of domestic services in both countries, though this period is not captured in our data. In the case of Sweden, the introduction of these incentives triggered a rancorous public debate about the ethics of employing poor and migrant women to perform domestic labor. (Bowman and Cole, 2009)

<sup>3</sup> Though no study to date has established an individual-level link between attitudes and housework performance in either Germany or Sweden, Baxter et al. (2009) found that Australian women’s propensity to employ domestic help increased with household income but was mediated by their views on the acceptability of its use.

<sup>4</sup> Comparisons between the top and bottom deciles are commonplace in the literature on income inequality. (McCall and Percheski, 2010)

<sup>5</sup> Upon controlling for women’s relative earnings, the measure employed by prior research, we find that the autonomy model works as well or better than the models based on relative earnings. In the former West Germany the high collinearity of the own and relative earnings measures results in lack of statistical significance for any of them, but the more parsimonious model with own earnings fits the data as well as the one employing relative earnings. In the case of Sweden, own earnings remain statistically significant upon the addition of relative earnings, which are not themselves significant. (Appendix 1) Accordingly we focus our discussion on the model employing own earnings only.

**TABLE 1: Descriptive statistics by country (weighted)**

	<b>GERMANY</b>		<b>SWEDEN</b>	
	Mean	SD	Mean	SD
Weekly housework hours	20.9	12.2	15.1	8.5
<i>Earnings</i>				
Woman has zero earnings (=1)	0.30		0.06	
Woman's (annual, USD thousands)	13.5	14.7	19.0	11.3
Male partner's (annual, USD thousands)	40.0	27.4	31.6	24.1
<i>Controls</i>				
Woman's weekly employment hours	18.8	17.9	30.2	14.4
Male partner's weekly employment hours	37.3	17.9	35.5	12.9
Woman's age (years)	41.6	11.1	41.1	10.9
Woman's years of education	12.0	2.9	12.7	2.8
Male partner's years of education	12.9	3.5	12.4	2.9
Woman's occupation (professional=1)	0.14		0.13	
Male partner's occupation (professional=1)	0.33		0.22	
No. of children	0.76	1.0	1.0	1.2
Child under 6 (=1)	0.22		0.20	
Cohabiting (=1)	0.20		0.31	
<i>N</i>	1363		1420	

**TABLE 2: Multivariate results by country<sup>a</sup>**

	GERMANY			SWEDEN		
	b	SE		b	SE	
Woman has zero earnings (=1)	2.148	0.747	**	4.293	1.014	***
Woman's earnings <sup>b</sup>	-0.084	0.029	**	-0.094	0.026	***
Male partner's earnings	0.000	0.013		0.010	0.010	
<i>Controls</i>						
Woman's weekly employment hours	-0.149	0.025	***	-0.049	0.020	*
Male partner's weekly employment hours	0.065	0.019	***	0.020	0.017	
Woman's age (years)	0.216	0.033	***	0.099	0.025	***
Woman's years of education	-0.277	0.112	*	-0.178	0.087	*
Male partner's years of education	-0.123	0.098		-0.145	0.087	
Woman's occupation (professional=1)	-1.540	0.795		-0.706	0.677	
Male partner's occupation (professional=1)	-0.934	0.619		0.008	0.578	
No. of children	2.670	0.333	***	2.562	0.200	***
Child under 6 (=1)	0.027	0.800		-0.404	0.587	
Cohabiting (=1)	-1.169	0.815		-1.275	0.533	*
Sex of respondent (Sweden only) <sup>c</sup>				0.070	0.399	
Constant	16.374	2.253	***	14.972	2.076	***
<i>N</i>	1363			1420		

*R-squared*

0.346

0.240

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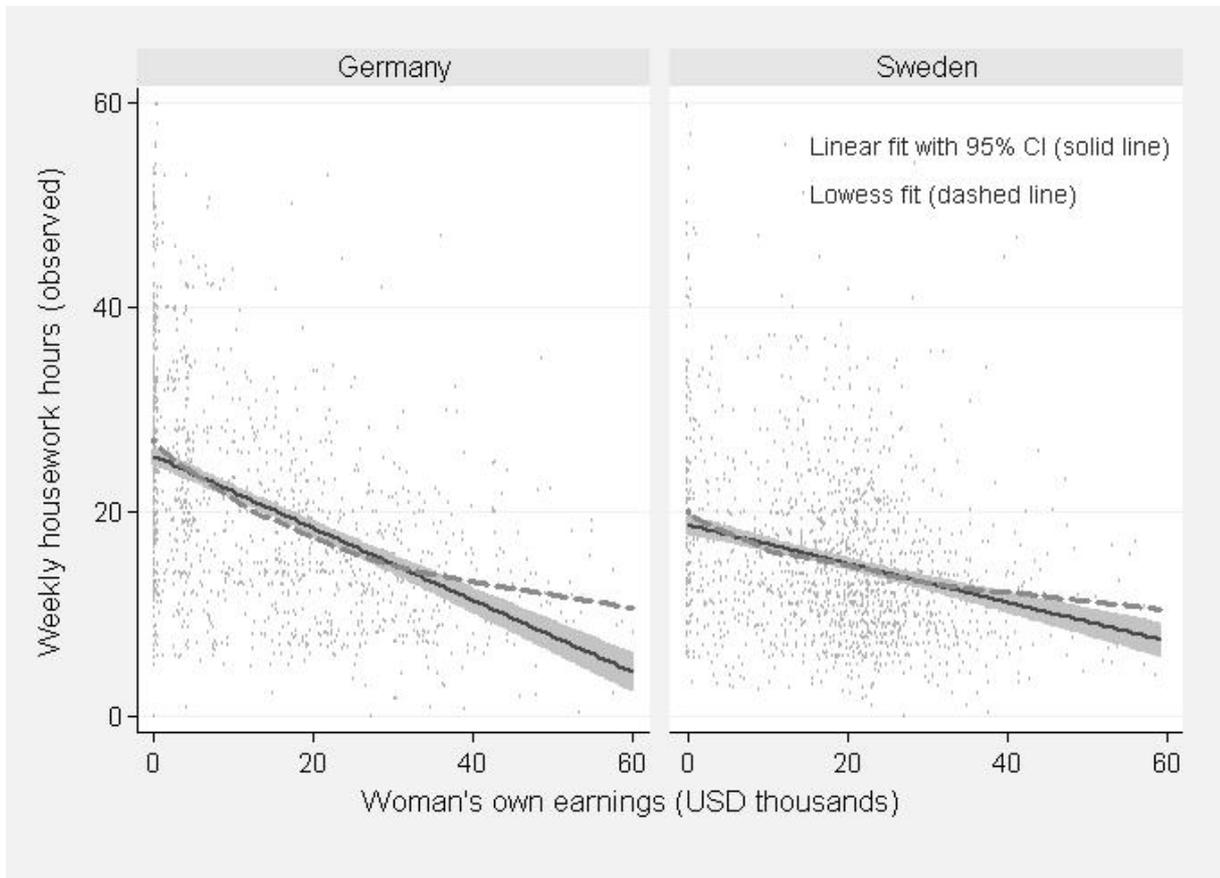
\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

<sup>a</sup> Women in both countries with the highest 1 percent of earnings are excluded; see ‘Evidence’ for details.

<sup>b</sup> Because we are controlling separately for zero earnings, this coefficient applies to women with any nonzero earnings.

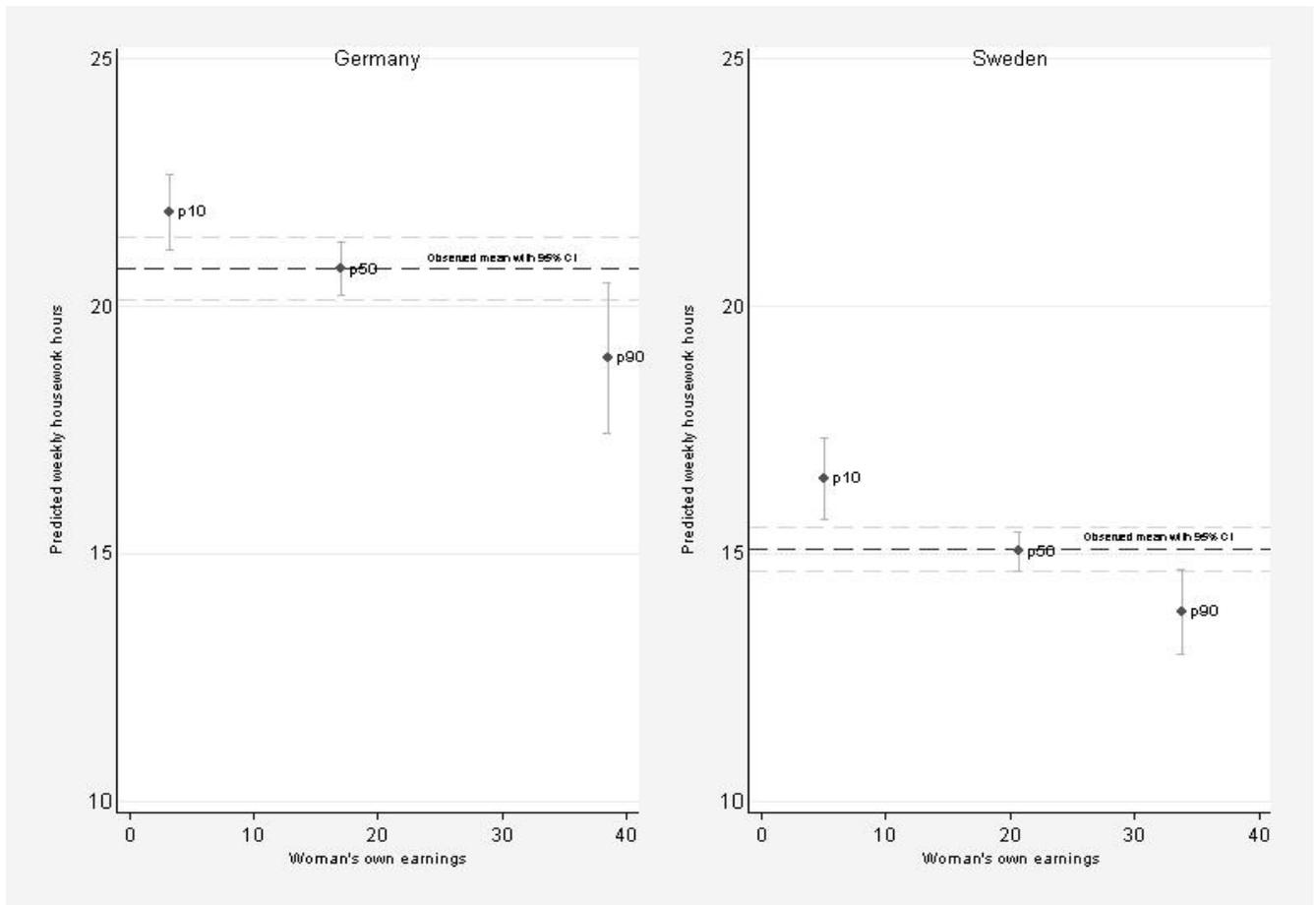
<sup>c</sup> A separate test shows that interactions between this variable and women’s earnings were not statistically significant.

FIGURE 1: Bivariate associations between women's weekly housework hours and own earnings



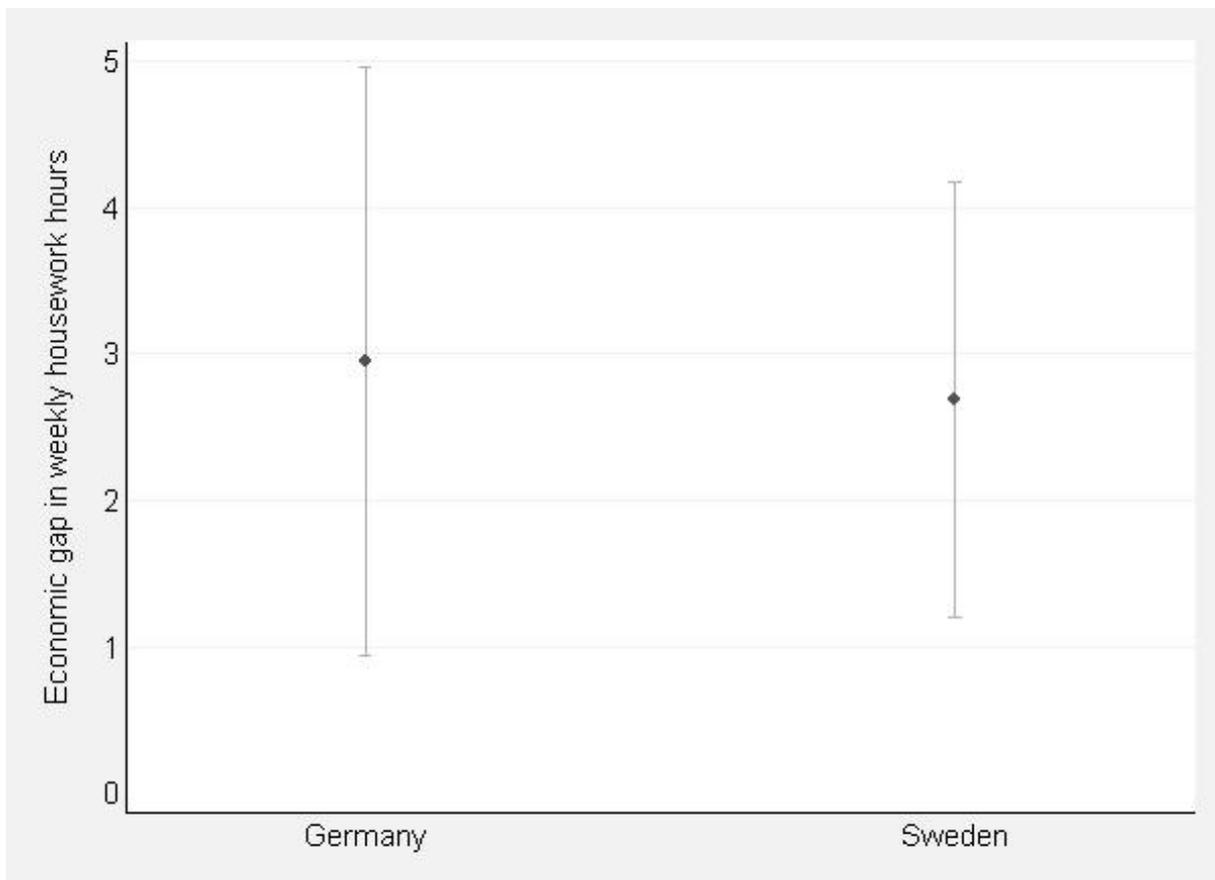
Women with the highest 1 percent of housework hours and earnings are excluded to maximize the area of the plot devoted to data. See 'Evidence' for explanations of the two lines.

FIGURE 2: Adjusted weekly housework hours with 95 percent confidence intervals for women at the 10<sup>th</sup> (p10), 50<sup>th</sup> (p50) and 90<sup>th</sup> (p90) percentiles of nonzero earnings



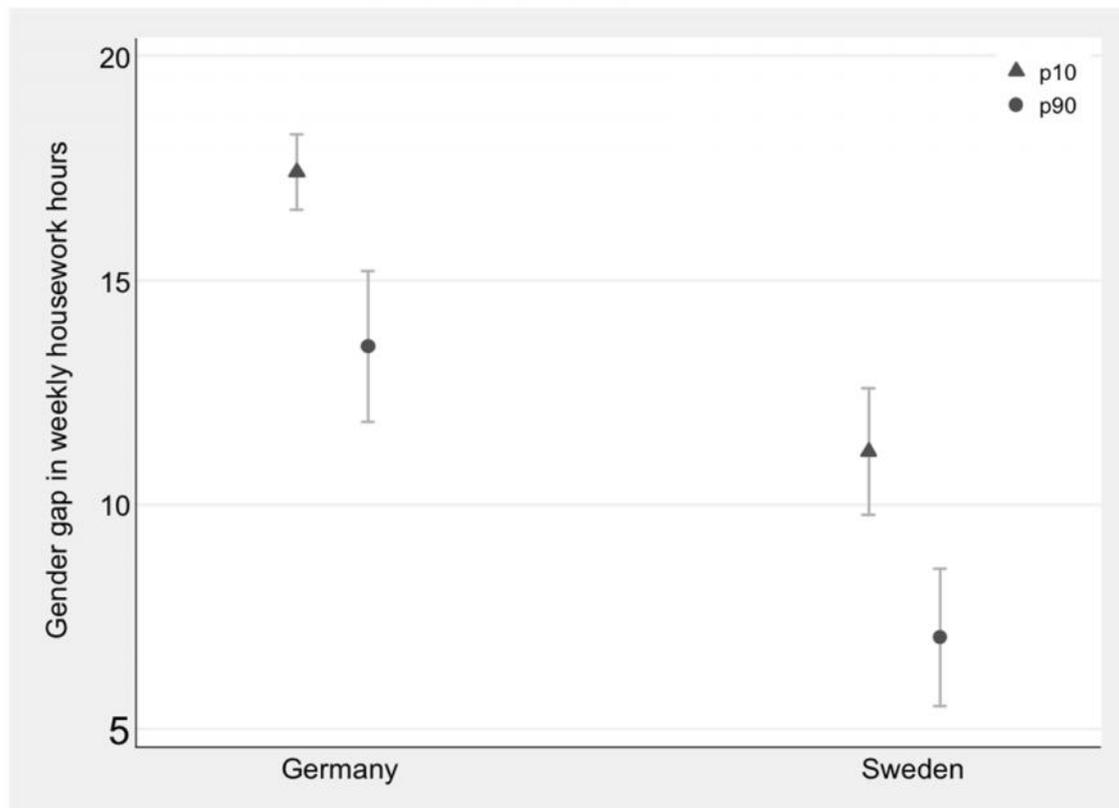
Predictions were obtained from the multivariate model shown in Table 3, with the values of all variables except housework hours and earnings held constant at their means. See 'Data & Method: Model' for details.

FIGURE 3: Adjusted “economic gaps” with 95% confidence intervals in women’s weekly housework hours between women at the 10<sup>th</sup> and 90<sup>th</sup> percentiles of nonzero earnings



The economic gaps are computed as the differences between the predicted values for the 10<sup>th</sup> and 90<sup>th</sup> percentiles of women’s earnings shown in Figure 2, under the same conditions listed in the note for that figure. Standard errors are then computed for these differences and used to construct the 95 percent confidence intervals shown. See ‘Data & Method: Model’ for details.

FIGURE 4: Adjusted gender gaps with 95% confidence intervals in women's weekly housework hours for women at the 10<sup>th</sup> and 90<sup>th</sup> percentiles of nonzero earnings



The observed gender gap is computed as the difference between the observed women's and male partners' weekly housework hours. The predicted gender gap is computed by applying to this variable the same multivariate model described in the note for Figure 2 and under the same conditions. Because the male respondents in the Swedish data may be overstating their own housework hours, we restrict this figure to women respondents only. See 'Data & Method: Model' for details.

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<sup>i</sup> This literature is based on the micro level models of “economic dependence” and “gender display.” The first proposes that the more money individuals make compared to their partners, the greater negotiating power they have in housework negotiations, and the less time they spend on housework. The display hypothesis predicts that women with unusually high relative earnings will do more housework than other women in order to deflect the threat posed to their gender identity by their gender-atypical relative earnings. (e.g. Brines 1994:655-657)

<sup>ii</sup> In recent years, tax incentives in Germany and Sweden for purchasing household services from registered firms have likely led to increases in the use of domestic services in both countries, though this period is not captured in our data. In the case of Sweden, the introduction of these incentives triggered a rancorous public debate about the ethics of employing poor and migrant women to perform domestic labor. (Bowman and Cole, 2009)

<sup>iii</sup> Though no study to date has established an individual-level link between attitudes and housework performance in either Germany or Sweden, Baxter et al. (2009) found that Australian women’s propensity to employ domestic help increased with household income but was mediated by their views on the acceptability of its use.

<sup>iv</sup> Comparisons between the top and bottom deciles are commonplace in the literature on income inequality. (McCall and Percheski, 2010)

<sup>v</sup> Upon controlling for women’s relative earnings, the measure employed by prior research, we find that the autonomy model works as well or better than the models based on relative earnings. In the former West Germany the high collinearity of the own and relative earnings measures results in lack of statistical significance for any of them, but the more parsimonious model with own earnings fits the data as well as the one employing relative earnings. In the case of Sweden, own earnings remain statistically significant upon the addition of relative earnings, which are not themselves significant. (Appendix 1) Accordingly we focus our discussion on the model employing own earnings only.