

# Labor Force Participation and Household Economies of Emigrant Couples

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## Abstract

We study the impact of international migration on labor force participation and household economies of couples, based on a survey of Danish emigrants. We find that migration is associated with reduced female labor force participation, especially among couples migrating to the United States. Most couples that had separate economies in Denmark have joint economies abroad. Usually, the male partner contributes more. Switching towards traditional male breadwinner model is particularly strong among couples with children and with the male being highly educated.

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# 1 Introduction

In this paper, we use a unique representative survey of Danish emigrants to study the impact of emigration on the household economies and labor force participation among emigrant couples. Denmark has higher female labor force participation rates than most other European countries (76.1%, OECD, 2011) and is a pioneer in gender equality (Klugman, 2011). Therefore, it is likely that household economies and labor force participation among Danish emigrants are more egalitarian compared to migrants from most other countries. This makes analyzing Denmark in our context particularly interesting: What happens to the household economies of couples emigrating from an egalitarian society to different destination countries? Being representative for emigrations from comparable societies our results are additionally informative on what to expect for other countries. In particular, countries in Eastern and Central Europe experience an increase in female labor force participation rates and in cross border labor mobility. Considered as an upper limit in terms of egalitarianism among migrant couples our findings also provide conclusions on emigrants from less equal societies.

We analyze couples that migrated together and stayed together after migration and had not returned to Denmark by the time of the survey in 2008. At that time the length of the emigration spells varied between 5 and 21 years. We find that female labor force participation among the couples was substantially lower in 2008 than before emigration. In our sample the share of women staying at home increased from 3.1% in Denmark to 24.3% in 2008 abroad. In contrast to this, almost all of the male partners worked in Denmark and also participated in the labor market in 2008.

The literature argues that family migration in the national context is often a response to the labor market opportunities of only one partner (Mincer, 1978, Mont, 1989, Guler et al. 2012). In dual career households, migration then means that the other partner has to sacrifice his or her job opportunities, and becomes a tied mover. Costa and Kahn (2000) show for the US that power couples, in which both partners have high earnings potential, locate in large metropolitan areas to reduce their co-location problems. Joint location constraints can be expected to be even more challenging in the context of international migration. For example, partners differ in their levels of destination country specific human capital, like

language proficiency (Chiswick et al., 2005). However, we are not aware of any empirical evidence on the household economies and changes in labor market outcomes of couples that have migrated across borders.

Previous literature on internal migration finds that family relocations often seem to be less beneficial for the female partner in terms of career opportunities. Frank (1978) reports significant over-qualification of married women after family migrations within the United States. Results by Lichter (1980) suggest that family migration seems to have a disruptive effect on employment for many wives if they had worked at the initial location. This is not the case, though, if the wife was the main income earner in the family. Even in the light of increased female labor force participation over the last decades and higher education levels of the female population in many countries (OECD, 2008), the more recent literature does not draw a different picture overall: Nivalainen (2004) analyzes internal migration in Finland and finds that migration of married couples still takes place mainly due to the demands of the husband's career, the wives becoming tied movers. Within the UK, Battu et al. (2007) find a transient employment penalty for females who migrated with their partner. For the US Tenn (2010) confirms that family relocations are mainly determined by the husband's private labor market returns. He suspects that it is too difficult to balance two careers for a couple and that women are still in a weaker position when it comes to potential labor market gains from migration.

Our data allows us to analyze the partners' labor force participation and changes in household economies in the context of international migration. We develop a model for household labor supply and analyze its implications in the context of emigrant couples. The data reveals that decreasing female labor force participation is the most relevant margin for household labor supply adjustments in the country abroad. Our model allows both, a gender neutral set-up and the possibility of gendered specialization in the household. The implications we derive, however, do not depend on who of the partners specializes on labor market activity and household production. We derive that relative labor supply of the partners depends positively on the own and negatively on the partner's earnings potential. Required child care decreases labor supply if provided privately and increases labor supply if bought on the market.

Relating these insights to the data on emigrant couples we analyze how labor supply adjustments and preferences for the division of labor are affected by characteristics of the partners, the family and the destination country. The reduction in the female labor force participation rate is most pronounced for couples in which the male partner has a relatively higher level of education. Even among female partners with high earnings potential we observe a reduction in labor force participation compared to the situation in Denmark. As predicted by our model the empirical results indicate that the presence of children play an important role for reduced female labor force participation abroad. Among couples with children, in particular pre-school-age children, we observe reduced female labor force participation. On top of this, the data reveals large differences between couples that migrated to different destination countries. We study separately couples that migrated to other Nordic countries, to the United States and to the rest of the world. The female partner stays at home in 6.5% of the couples that migrated to other Nordic countries, in 44.1% of those having migrated to the United States, and in 27.4% of those couples having migrated to the rest of the world.

Our empirical analysis further studies changes in the couples' household economies in more detail. We observe that income pooling becomes more common abroad. 12.6% of the couples had separate economies in Denmark while only 2.5% still have separate household economies in 2008. In joint household economies the male partner is more likely to contribute a higher share even if both partners work abroad. This is in particular the case among couples with a relatively highly educated male partner. The presence of young children is related to a higher male contribution in joint household economies even if both partners work. Again, we observe strong differences between the destination countries: In 22.9% of couples that migrated to other Nordic countries, the female is the main earner or the partners have separate economies, while this is only the case in 2.4% of couples that migrated to the United States.

We attribute the strong findings of differences in labor force participation and household economies between destinations to self selection and the labor supply adjustments to different labor markets and institutions: Policies like the provision of daycare services in the Nordic countries make it easier for both parents to work. In destination countries where

such services are not publicly provided couples might adopt more traditional gender roles even though they come from a country with high female labor force participation rates. Some studies, e.g. Antecol (2000), Fernandez and Fogli (2011) and Blau et al. (2011), argue that cultural background plays a major role for migrant families' labor supply decisions in the destination country. In particular, female labor force participation tends to be higher among families coming from countries with historically stronger female labor force attachment. However, our analysis shows that female labor force participation rates among families from the same cultural background can be very different depending on the destination country, its labor market and the social welfare system.

Our findings testify that traditional gender roles are surprisingly strong among the couples after migration. We observe decreased female labor force participation rates and a higher share of families with a male breadwinner after migration, in particular if only the male partner has a college degree. These findings are in line with the literature on internal migration. According to work by Gemici (2011) mobility of American households is to a large extent driven by earnings potential of the male partner. According to the study household mobility increases intra-household redistribution to the female partner but unequal gains from migration are also likely to impose a threat to marriage stability. LeClere and McLaughlin (1997) find that family relocations within the US are less beneficial for the female partner in terms of labor market outcomes, in particular, if the female partner is not college educated. Their results reveal reduced labor force participation as a main source for earnings penalties suffered by married women after migration. However, according to their analysis, the wives' labor force participation and earnings seem to catch up again after some years at the destination. In the context of international migration we analyze couples who stayed at least five years in the destination country. We do not observe significantly different labor market and household economy patterns for those couples that had stayed longer in the destination country.

The rest of the paper is organized as follows. Section 2 presents a theoretical model from which we derive hypotheses to be tested in our empirical analysis. We describe our data in section 3 and summarize stylized facts in section 4. Section 5 presents our econometric analysis. Section 6 concludes.

## 2 Theoretical Framework

Various considerations might play a role when partners decide on their labor supply. We can imagine that families divide work between labor market activity and the production of a household public good in a simple unitary household economy like that which is proposed by Becker (1974). According to such a framework the specialization on either household or labor market work arises due to either partner's comparative advantage. However, social conventions might have a large impact on the division of labor in the household as well (John and Shelton, 1996).

We consider a household consisting of two individuals. The time available is equal to one for each partner. Both partners can supply time to the labor market or to household production. We write the couple's utility in the Cobb-Douglas form with  $0 \leq \alpha \leq 1$  allowing the household to substitute consumption of market goods with output from household production. The partners take their decision on how much labor to supply in a unitary framework, i.e. they maximize joint household utility. Couples with children additionally enjoy utility  $\psi$  but have to provide daycare time  $\bar{D} \leq 1$  for the children. Couples can choose how much of the required daycare to buy on the market ( $D$ ,  $D \leq \bar{D}$ ) and how much to provide privately ( $\bar{D} - D$ ). The time spent on childcare is not available for other household production. For couples without children  $\psi = 0$ ,  $\bar{D} = 0$  and thus  $D = 0$ . The presence of children is given exogenously as we do not focus on fertility decisions in this analysis. On the labor market both partners can earn a wage  $w_a$  and  $w_b$ . Daycare can be bought for  $p_D$  per time unit. We write household utility as

$$u = c^\alpha (H_a + H_b - \bar{D} + D)^{1-\alpha} + \psi - \lambda I(H_a > 0 \wedge H_b < 1)$$

with

$$c = (1 - H_a)w_a + (1 - H_b)w_b - p_D D.$$

If the household does not have a preference for partner  $a$  specializing in the work in the labor market and  $b$  specializing in household production, independently of who earns more,  $\lambda = 0$ . In this case the partner with the higher wage specializes on labor market work and the partner with the lower wage on household production. We extend the model to the case in which partners may have a preference towards certain family model independent of

the partners' earnings potentials. If  $\lambda \gg 0$ , then partner  $a$  will always specialize in the labor market and  $b$  on household production. This can be interpreted as a preference for a traditional male breadwinner model, giving priority to male labor market opportunities even if  $w_a < w_b$  as long as  $\lambda$  is sufficiently large. In the following analysis we consider the case in which  $w_a \geq w_b$  and it is always optimal for  $a$  to specialize on working in the labor market. Restricting the analysis to  $w_a \geq w_b$  is without loss of generality, as the results would hold by reversing indices if  $w_b \geq w_a$ . If  $w_a < w_b$  the results would remain unchanged also with  $\lambda > 0$ . The solution for  $w_a < w_b$  while  $\lambda \gg 0$  is provided in the appendix.

We separately analyze household utility maximization under two mutually exclusive conditions. First, if  $w_b < p_D$ , the full amount of required daycare  $\bar{D}$  is produced privately. Second, if  $w_b \geq p_D$  all daycare  $D = \bar{D}$  is bought on the market. For couples without children daycare does not enter in the labor supply decision as  $\bar{D} = D = 0$ . Household utility maximization then yields the following optimal labor supply. The appendix provides further details on utility maximization in the model.

In case  $w_b < p_D$

$$\left\{ \begin{array}{ll} H_a^{*1} = 1 - 2\alpha + \alpha\bar{D}, H_b^{*1} = 1 & \text{if } \alpha < \frac{1}{2-\bar{D}} \\ H_a^{*1} = 0, H_b^{*1} = 1 & \text{if } \frac{1}{2-\bar{D}} \leq \alpha \leq \frac{w_a}{w_a+w_b-w_b\bar{D}} \\ H_a^{*1} = 0, H_b^{*1} = (1-\alpha)\left(\frac{w_a}{w_b} + 1\right) + \alpha\bar{D} & \text{if } \frac{w_a}{w_a+w_b-w_b\bar{D}} < \alpha \end{array} \right.$$

In case  $w_b \geq p_D$

$$\left\{ \begin{array}{ll} H_a^{*2} = 1 - 2\alpha - (1-\alpha)\frac{p_D}{w_a}\bar{D}, H_b^{*2} = 1 & \text{if } \alpha < \frac{w_a-p_D\bar{D}}{2w_a-p_D\bar{D}} \\ H_a^{*2} = 0, H_b^{*2} = 1 & \text{if } \frac{w_a-p_D\bar{D}}{2w_a-p_D\bar{D}} \leq \alpha \leq \frac{w_a-p_D\bar{D}}{w_a+w_b-p_D\bar{D}} \\ H_a^{*2} = 0, H_b^{*2} = (1-\alpha)\left(\frac{w_a}{w_b} + 1 - \frac{p_D}{w_b}\bar{D}\right) & \text{if } \frac{w_a-p_D\bar{D}}{w_a+w_b-p_D\bar{D}} < \alpha \end{array} \right.$$

As can be seen from  $H_b^{*1}$  and  $H_b^{*2}$  individual labor supply of partner  $b$  increases along the intensive margin with  $w_b$  and decreases with  $w_a$ . Additionally, the labor market participation threshold for  $b$  in terms of the couple's consumption share  $\alpha$  decreases with  $w_b$  and increases with  $w_a$ .

For couples with children, the threshold for which  $b$ 's labor supply equals zero also depends

on the amount of required daycare  $\bar{D}$ . Among parents providing  $D = \bar{D}$  of own time for daycare ( $w_b < p_D$ ), the participation threshold value increases with  $\bar{D}$ . Less time is available for household production generating relatively high marginal utility and the minimum relative wage for  $b$  to participate in the labor market increases. In families buying  $D = \bar{D}$  on the market ( $w_b \geq p_D$ ), the threshold for labor market participation of  $b$  decreases with  $\bar{D}$ . The relative wage of  $b$  needed for labor market participation is lower if required daycare increases because financing more daycare expenses makes additional labor supply necessary. These results also hold for the case that  $w_a < w_b$  while  $\lambda \gg 0$  (Appendix).

Figure 1 illustrates the relationship between the minimum relative wage for labor market participation of  $b$  and the required daycare time  $\bar{D}$  for different values of  $\alpha$ .

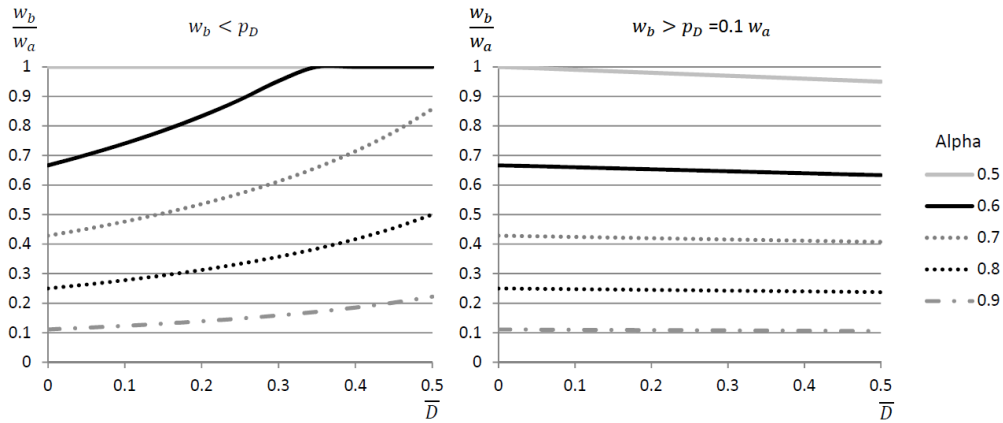


Figure 1: Daycare required and minimum relative wage for labor market participation of partner  $b$ .

The theory presents a mechanism relating each partner's earnings potential and required child care to labor supply decisions in the household. The decision on which of the partners specializes on the labor market could either be due to comparative advantage ( $\lambda = 0$ ) or due to other preferences ( $\lambda \gg 0$ ). In the data we observe that almost all male partners work full-time before as well as after migration and female labor supply and labor market participation varies to a larger extent. Given our data the subsequent analysis is going to study the implications of the model for the case that households adjust female labor supply and the male partner works full time in the labor market. Hence, we refer to partner  $a$  as the male and partner  $b$  as the female partner.



This paper focuses on household economies and labor supply decisions in the context of international migration. Migration goes along with changes in employment and the partners' income situation. In the light of our theoretical model we relate potential explanatory factors like the partners' earnings potentials, the family characteristics as well as destination particularities to outcomes in household economies and labor supply of Danish emigrant couples.

Denmark is one of the most redistributive welfare states in the world (Foerster and Whiteford, 2009). Labor market policies and a focus on income taxation on the individual, not household level, promote dual earner families and also reduce net earnings differentials between the partners (Dingeldey, 2001). Compared to other countries this increases the opportunity costs for specializing on household production.

An increase in earnings differentials between the partners after migration might then incentivize couples to deviate from the egalitarian family model promoted in Denmark. Borjas (1987) argues that emigrants from a country with relatively narrow income distribution like Denmark are selected from the upper end of the income distribution because they are more likely to have higher earnings gains abroad. In the family context Junge, Munk and Poutvaara (2014) find that emigration decisions of couples from Denmark are more responsive to the primary earner's income. They show that positive selection on the primary earner's income is even stronger than selection on individual income for emigrant single households. Even though Denmark has one of the highest share in female labor force participation rates, females more often work part-time compared to males (OECD 2011). In addition, in terms of hourly wages the OECD still reports an unconditional gender pay gap for Denmark of 11.8% in 2010. Thus, already before emigration in most couples the male partner earned more than the female and this gap is likely to increase abroad, in particular in destination countries with a wider income distribution, like the US.

Moreover, depending on the destination country the labor market environment changes substantially compared to Denmark. In particular, couples with children might not be able to find suitable and affordable child care opportunities abroad. Our model motivates the impact of daycare provision on female labor force participation. If provided privately, higher

required daycare increases the threshold for female labor force participation. The female partner is more likely not to work. On the other hand, if daycare is bought on the market the female is more likely to participate in the labor market. According to the theory the decision whether or not to purchase daycare services depends on its relative price. In Denmark and other Nordic countries, daycare services are heavily subsidized and comparatively cheap. This allows both partners to combine family and career plans. In many other countries childcare is less easily available and more costly than in Denmark (see European Commission (2009) for an overview). Thus, as predicted by our model time allocation of emigrant couples with children in these destination countries might be shifted towards household production as the opportunity costs for labor force participation increase. Our prior is that female labor force participation decreases if the couple has children abroad. We expect this pattern to be stronger if the youngest child is below school age. and we expect it to be less strong for the Nordic destination countries.

### 3 Data

We study household migration using unique survey data on Danish emigrants who had emigrated in 1987, 1988, 1992, 1993, 1997, 1998, 2001 or 2002, and had not returned to Denmark by 2007. The survey was planned by Munk and Poutvaara within the project "Danes Abroad: Economic and Social Motivations for Emigration and Return Migration", financed by the Danish Social Science Research Council. The survey was carried out by Statistics Denmark.

Statistics Denmark used full population registers to identify all Danish citizens who had emigrated, and had not returned by the end of 2007. Emigrants had to be aged 18 or more when they emigrated, and at most 59 in 2007. These restrictions yield a sample of 17,309 emigrants during the selected years. For 55% of those emigrants Statistics Denmark found contact information on relatives living in Denmark. They were asked to provide address, telephone number and email address of the person abroad. Statistics Denmark then tried to contact the target persons using this information. The link to the web-based questionnaire could finally be sent out by email to 6,984 emigrants with validated email addresses. When data collection was closed in August 2008 4,257 persons had answered the survey. This

makes an overall response rate of 61%.

We can link respondents with full population register data using a unique personal identifier, the social security number. Like other Nordic countries Denmark collects comprehensive data on residence, wages, tax payments, education and household composition for every individual in the country. Having a social security number is compulsory and necessary for everyday life activities, like visiting a doctor, enrolling at school or opening a bank account. Our main data source is the person-data register which contains information on age, gender, date of emigration and destination and eventual return migration, educational attainment and household composition in Denmark. Furthermore, we use income register data that contains the migrants' earnings before emigration.

Our survey data contains information on several pre-migration characteristics like education, household composition and work situation in Denmark. Survey respondents were asked also about their preferences for their own and for their partner's labor force participation. On top of this, they were asked to provide information about their current work and family situation as well as their household economies before migration in Denmark and currently abroad.

This paper focuses on long-term emigration of couples. We require that the partners are still together at the time of the survey in 2008. In the register data we cannot observe the emigrant population still living with the same partner abroad in 2008. This is why we are not able to report response rates for our specific target population. Furthermore, we restrict the analysis to respondents whose partners are Danish citizens and were born in Denmark. The reason for this restriction is that in international couples, emigration from Denmark might imply returning to the home country of the partner, making a migration decision qualitatively different. Our analysis indeed revealed that results on the subsample of respondents with a foreign partner are qualitatively similar but statistically less strong and thus will not be reported here. We furthermore require that the respondent and the partner lived together before emigration. The motivation for this restriction is that we focus on joint emigration. Moreover, for each respondent the register data reports the identifier of the cohabiting or married partner.<sup>1</sup> Using this information from the year before emigration

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<sup>1</sup>Cohabitation before or instead of marriage is a common phenomenon in the Scandinavian countries (Kiernan, 2004).

we are able to link the partnerships from the register data to our respondents. We can identify 60 couples in which both partners answered the survey. The remaining analysis is based on 522 respondents as well as their partners who satisfied all the restrictions mentioned above.

We did not ask the partner's gender in the survey, but asked whether the respondent was either married or in a registered partnership or cohabiting. We did not find any same-gender partnerships among our respondents in the register data. Therefore subsequent analysis refers to partners as male and female.

## 4 Descriptive Statistics

Following Costa and Kahn (2000) we distinguish different "power" types of couples in our analysis according to the partners' levels of education. In power couples both partners have at least a college education. We refer to male or female power couples if only one partner holds a college degree. In low power couples neither partner has completed a college education.<sup>2</sup> Table 1 presents the educational composition of our sample.

	Male respondents	Female respondents	All respondents
Low power couples	16.4	16.6	16.5
Female power couples	8.6	11.9	10.2
Male power couples	21.2	17.4	19.4
Power couples	53.9	54.2	54.0
Observations	269	253	522

Source: Survey data

Table 1: Distribution of power types among couples in the sample.

With 54.0% power couples are the biggest group among all respondents while there are 19.4% male power couples and only 10.2% female power couples.

We asked respondents whether they had separate economies or joint economies before migration as well as at the time of the survey in 2008. In separate economies the partners

<sup>2</sup>As a cutoff for at least college education we consider medium tertiary education; however, most of our results also hold when using a university bachelor's degree as minimum requirement for college education.

	Low power couples	Female power couples	Male power couples	Power couples	Total
<b>A: Household economy before emigration</b>					
Separate economies	11.6	15.1	9.9	13.5	12.6
Joint economies, the man brings in more money	59.3	56.6	74.3	61.4	63.0
Joint economies, the woman brings in more money	8.1	17.0	4.0	7.1	7.7
Joint economies, equal contributions	11.6	7.6	8.9	14.9	12.5
Man brings in all money, woman stays home	7.0	1.9	2.0	2.5	3.1
Woman brings in all money, man stays home	0.0	0.0	0.0	0.7	0.4
No answer	2.3	1.9	1.0	0.0	0.8
<b>B: Household economy in 2008</b>					
Separate economies	2.3	1.9	1.0	3.2	2.5
Joint economies, the man brings in more money	43.0	49.1	54.5	55.0	52.3
Joint economies, the woman brings in more money	19.8	17.0	3.0	8.9	10.3
Joint economies, equal contributions	10.5	11.3	3.0	9.9	8.8
Man brings in all money, woman stays home	20.9	15.1	36.6	22.7	24.3
Woman brings in all money, man stays home	2.3	5.7	0.0	0.4	1.2
No answer	1.2	0.0	2.0	0.0	0.6
<b>Observations</b>	86	53	101	282	522
Source: Survey data					

Table 2: Percentage shares of household economies before migration and in 2008, by power type.

dispose of their own incomes and share only common expenses while couples with joint economies pool at least part of their individual incomes also when individual consumption decisions are considered. In contrast to separate economies, intra-family redistribution is an important aspect of joint household economies. Table 2 reports the couples' types of household economies and provides information in case of joint household economies on which of the partners contributes more. The survey questions were referring to the situation before migration (Panel A) and in 2008 (Panel B). We further present the distribution of responses separately by power type as we suspect the educational composition and thus the partners' earnings potentials to be related to the organization of household economies.

Before migration most couples live in joint household economies to which, in most cases, both partners contribute labor market income. Table 2 also reveals a considerable fraction of separate household economies in Denmark. These are most frequent among female power couples, while their share is lowest for male power couples. In the majority of cases the couples have joint household economies to which the male partner contributes a larger income share, in particular among male power couples. A larger female income contribution to joint household economies, on the other hand, is most likely among female power couples. The

fraction of joint economies with equal contributions is highest among power couples.

For 2008 we observe that the overall share of joint household economies is considerably higher and separate economies are less frequent compared to the situation in Denmark. Also, the share of household economies to which both partners contribute equally decreases which suggests that labor market gains from migration diverge among the partners. In general, we observe more couples in which the male partner is the main income earner. While only 3.1% of the female partners stayed out of the labor market in Denmark, this share increased to 24.3% in 2008 abroad. On the other hand, the increase in the fraction of male partners staying at home is negligible.

The patterns of changes in the couples' household economies vary considerably by power types. In particular, among male power couples many female partners do not participate in the labor market abroad. However, even in female power couples the share of females who stay at home increases considerably.

Overall, the increase in male contribution to joint household economies is strongest among male power couples. The fraction of couples where the female contributes the major share is considerably lower. This share increases for low and female power couples. For male power couples and power couples the changes are less pronounced.

Table 3 presents descriptive evidence on the role of children and their impact on the couples' household economies. Having children abroad seems to reduce female labor force participation considerably. However, Table 3 reports a considerable decrease in female labor force participation after migration even among couples without children.

We divide our sample in four groups for subsequent analysis: First, couples without children before migration as well as in 2008; second, couples having no children in Denmark but having children abroad; third, couples having children in Denmark but not abroad and fourth, couples having children at both points in time. Table 3 shows that the current presence of children is strongly related to the partners' labor market participation and to their household economies.

	No child in DK, no child in 2008	No child in DK, children in 2008	Children in DK, no child 2008	Children in DK, children in 2008
<b>A: Household economy before emigration</b>				
Separate economies	18.4	25.5	3.7	3.6
Joint economies, man brings in more money	51.7	48.4	63.0	76.1
Joint economies, woman brings in more money	11.5	11.5	0.0	4.8
Joint economies, equal contributions	12.6	12.7	25.9	10.8
Man brings in all money, woman stays home	4.6	0.0	3.7	4.4
Woman brings in all money, man stays home	0.0	0.6	0.0	0.4
No answer	1.2	1.3	3.7	0.0
<b>B: Household economy in 2008</b>				
Separate economies	8.1	1.9	3.7	0.8
Joint economies, man brings in more money	33.3	52.2	40.7	60.2
Joint economies, woman brings in more money	20.7	10.2	7.4	7.2
Joint economies, equal contributions	18.4	7.6	29.6	4.0
Man brings in all money, woman stays home	16.1	26.1	14.8	27.1
Woman brings in all money, man stays home	3.5	0.6	0.0	0.8
No answer	0.0	1.3	3.7	0.0
Observations	87	157	27	251
Source: Survey data				

Table 3: Percentage shares of household economies before migration and in 2008, by children in the household.

While both partners worked among almost all couples with children in Denmark, female labor force participation is considerably lower among couples having children in the household abroad in 2008. Table 3 also shows that equal contributions to joint household economies in 2008 are less likely if the couple has children abroad. The decrease in the share of separate economies is most pronounced among couples that have children in 2008 but no children in Denmark before emigration. The share of separate economies in 2008 is highest among couples without children at any point in time. Moreover, among these couples the share of females contributing more to joint household economies increased compared to Denmark and is considerably higher than for the other groups. For couples without children in 2008 there is no need to arrange childcare and higher costs for daycare services do not affect their labor supply decisions.

Table 4 provides insights into the couples' household economies abroad for different destinations. We distinguish couples that migrated to the Nordic countries, the UK, rest of Western Europe, the United States and the rest of the world. For all destinations the share of couples with separate economies is lower in 2008 compared to before migration. Female

	Nordic countries	UK	Other Western Europe	US	Rest of the world
<b>A: Household economy before emigration</b>					
Separate economies	15.6	10.3	14.5	10.7	9.5
Joint economies, the man brings in more money	54.1	63.2	57.2	75.0	72.6
Joint economies, the woman brings in more money	11.0	5.9	8.4	1.2	9.5
Joint economies, equal contributions	11.9	13.2	16.3	10.7	7.4
Man brings in all money, woman stays home	6.4	5.9	2.4	1.2	0.0
Woman brings in all money, man stays home	0.0	0.0	0.6	1.2	0.0
No answer	0.9	1.5	0.6	0.0	1.1
<b>B: Household economy in 2008</b>					
Separate economies	7.3	2.9	1.8	0.0	0.0
Joint economies, the man brings in more money	47.7	51.5	54.8	47.6	57.9
Joint economies, the woman brings in more money	22.9	7.4	9.0	2.4	7.4
Joint economies, equal contributions	14.7	10.3	8.4	6.0	4.2
Man brings in all money, woman stays home	5.5	26.5	24.1	44.1	27.4
Woman brings in all money, man stays home	1.8	0.0	1.2	0.0	2.1
No answer	0.0	1.5	0.6	0.0	1.1
Observations	109	68	166	84	95
Source: Survey data					

Table 4: Percentage shares of household economies before migration and in 2008, by country of residence.

labor market participation is also lower in 2008 for all destinations except the Nordic countries. Considerable differences can be observed, in particular, between the destinations US and Nordic countries for the partners' household economies and female labor force participation. There is not much difference in household economy patterns among the couples that migrated to the UK and other western European countries compared to other countries in the world.

Among the migrant couples in the Nordic countries female labor force participation in 2008 is much higher than in the other groups. In the US, on the other hand, female labor force participation is lowest among the migrant couples: The female stays at home after migration in 44.1% of the couples that migrated to the US compared to 5.5% of the couples that migrated to the Nordic countries. None of the couples in the US has separate economies or the male partner staying at home. The fraction of separate economies abroad is highest among couples having migrated to other Nordic countries. Moreover, in 22.9% of the couples in the Nordic countries the female partner contributes more to joint family income. The corresponding share is considerably lower for the other destinations.



Even among the couples in the Nordic countries the division of labor seems to become stronger after migration: We observe a decreased number of separate household economies abroad. In contrast to the US, however, we see less inequality between the partners in terms of labor force participation after migration. Moreover, changes in the household economy patterns for those having moved to a Nordic country seem to be more gender equal: There is an increase in the share of household economies with higher female income contribution. Also, the higher share of separate economies in the Nordic countries compared to the other destinations points into the direction of higher independence of the partners in these couples. In particular among the couples in the US, on the other hand, the female partner seems to be more often in a weaker labor market position. This could reflect preferences for labor force participation as well as work restrictions for accompanying spouses.

Table 4 also shows that different types of couples already self-select into the destination countries: For example, a stronger female contribution to joint household economies was already more frequent in Denmark among those couples that migrated to Nordic countries. They had a higher share of separate household economies in Denmark compared to the other destination groups. On the other hand, a household economy with a "male breadwinner" was more common in Denmark, among couples that migrated to the US, in particular.

The different destination countries attract migrant couples with certain characteristics and preferences but also induce different adjustments in the partners' labor supply. As motivated in section 2 daycare services in the destination country might have a considerable impact on the couples' labor supply decisions. Public child care is cheaper and more easily available in the Nordic countries than in most other countries. This makes it easier and more attractive for both partners to participate in the labor market even when having children. These services are not provided publicly in the US, for example. As argued above, a wider distribution of the returns to skill in the US might additionally foster specialization patterns among the partners abroad.

In general, a potential concern related to our results might be that household economy dynamics are driven by a time effect which is unrelated to migration. The changes we describe would then be driven by those households for which the time span between migration and

the current situation in the survey year 2008 is particularly large. Moreover, selection into different destinations and fertility decisions might also be correlated with years since migration and, thus, differ by emigration cohort. Table A2 addresses these issues and alleviates our concerns: We present separately the household economies for couples that emigrated before 1999 and in 2001/2002. We do not observe qualitative differences among the cohorts in terms of changes in household economies. The decrease in the share of separate household economies among the 2000/2001 emigration cohorts is almost as high as for the couples that left Denmark in earlier years. Moreover, the composition of the cohorts in terms of destination countries does not vary substantially over the years of emigration (Table A3).

Altogether, our findings suggest that emigration induces changes in the partners' relative labor market returns, their household economies and labor supply decisions. Our data shows that inequality increases after emigration among the partners in terms of their household economies. Female labor market outcomes abroad seem to be more often negatively affected than male outcomes. At a first glance, this points into the direction of higher labor market gains for the male partner. Many women, thus, become dependent on the "male breadwinner" and rely on intra-family transfers abroad. This pattern can be observed for all educational groups. Referring to this, our findings are in line with literature on internal migration within the US: Lichter (1980) documents lower labor force participation rates of married women after migration. Tenn (2010) and Gemici (2011) also argue that family migration decisions within the US still reflect mostly male job opportunities.

However, household economy patterns abroad are related to the partners' educational backgrounds and the presence of children in the household at the destination. In particular, a relatively weaker position of the female partner in terms of family income is more frequent among couples where the female has a relatively lower level of education, among couples with children or among those couples that migrated to the US. An increasing share of joint household economies additionally suggests that partners pool their incomes and intra-family income transfers compensate the partner with potential individual earnings losses from migration.

## 5 Econometric Analysis

### Female Labor Force Participation

We use a linear probability regression framework to jointly assess the importance of various characteristics for female labor force participation among the emigrated couples. Our goal is to shed more light on the variation of female labor force participation within our sample. For the subsequent analysis we exclude retirees and students as well as respondents who did not answer the survey questions related to their own or their partner's current labor force participation.

The first three specifications in Table 5 include all destination countries in the sample. The results confirm that female partners in male power couples are less likely to be in the labor force. Female partners with relatively lower education and, presumably, lower earnings potential are less likely to participate in the labor force abroad. As indicated by our theory, for these couples the opportunity costs for the female not participating in the labor market are relatively low. However, females in female power couples are not significantly more likely to participate in the labor force abroad than females in low power couples.

The presence of children affects female labor force participation negatively. This is in particular the case for young children until the age of 7. Analyzing Nordic destinations (column 4) separately from the remaining countries (column 5) we find very different effects: Estimation results show almost no effect of the presence of young children among couples having migrated to the Nordic countries while there are strong negative effects for the remaining destinations of children aged 0 to 2 and 3 to 6 on female labor force participation.

Moreover, the estimation results for non-Nordic destination countries show that the female partner is more likely to be in the labor force the more time the couple has spent abroad. An explanation for this may be the time needed to acquire country specific human capital (Chiswick et al., 2005) and integrate into the destination country's labor market (Blau et al. (2011)). In particular, if the male partner initiated the move it may take some time for the female partner to find a job. Additionally, we find destination country effects already described above: The female partner is more likely to work in a Nordic destination country

and less likely to work in the US compared to the remaining destinations.

We also include an indicator for the work status of the female in Denmark before migration. If the female worked before migration, we estimate a significantly higher probability for actual labor force participation abroad.

	All destinations		Nordic destination	Other destinations	
Power couple	0.0131 (0.0545)	-0.0127 (0.0535)	0.00730 (0.0502)	-0.0157 (0.0222)	0.0469 (0.0670)
Female power couple	0.0690 (0.0692)	0.0454 (0.0695)	0.0168 (0.0649)	0.0390 (0.0386)	0.0452 (0.0935)
Male power couple	-0.196*** (0.0694)	-0.215*** (0.0685)	-0.161** (0.0684)	-0.359** (0.170)	-0.116 (0.0792)
Youngest child 0-2	-0.258*** (0.0665)	-0.241*** (0.0675)	-0.216*** (0.0626)	0.00433 (0.0286)	-0.292*** (0.0825)
Youngest child 3-6	-0.267*** (0.0610)	-0.248*** (0.0607)	-0.225*** (0.0586)	-0.0985** (0.0465)	-0.274*** (0.0754)
Youngest child 7+	-0.134*** (0.0452)	-0.128*** (0.0444)	-0.0973** (0.0437)	-0.0348 (0.0413)	-0.124** (0.0557)
Female worked in DK		0.369*** (0.126)	0.365*** (0.129)	0.640** (0.261)	0.299** (0.144)
Years since migration		0.00612 (0.00437)	0.00837* (0.00434)	-0.000273 (0.00401)	0.0112** (0.00535)
US destination			-0.149** (0.0613)	-0.151** (0.0613)	
Nordic destination			0.250*** (0.0347)		
R-squared	0.080	0.101	0.172	0.410	0.108
Observations	505	505	505	105	400

Notes: OLS estimation. Constant included. Robust standard errors in parentheses.

\*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

\* Significant at the 10 percent level.

Table 5: Linear probability regressions: Female labor force participation abroad in 2008.

Table 6 stresses that the estimated relationships do not only reflect actual labor force participation but also preferred labor market choices of the couples. Respondents in the survey were asked about their preferred division of labor in the household. From their answers we recoded a dummy variable being equal to one if the respondent had positive attitudes towards female labor force participation. A potential concern might be that respondents gave self-serving answers concerning preferences on their partner's labor force participation.

Using register data, we were able to identify among our respondents 60 couples in which both the male and the female answered our survey. Given this subsample of couples we can confirm that the responses do not depend on which of the partners answered the survey. The responses are in most cases mutually consistent among both partners as Table A1 shows. This alleviates our concerns. In a clear majority of cases, the partners agreed that either both should work, or that the male should work and female should stay at home.

	All destinations			Nordic destination	Other destinations
Power couple	0.0745 (0.0577)	0.0440 (0.0557)	0.0599 (0.0531)	0.0393 (0.0718)	0.0844 (0.0672)
Female power couple	0.000839 (0.0812)	-0.0248 (0.0818)	-0.0495 (0.0787)	0.0475 (0.0912)	-0.0769 (0.107)
Male power couple	-0.173** (0.0742)	-0.191*** (0.0721)	-0.144** (0.0719)	-0.348* (0.201)	-0.108 (0.0801)
Youngest child 0-2	-0.273*** (0.0661)	-0.256*** (0.0667)	-0.224*** (0.0670)	-0.0645 (0.0951)	-0.274*** (0.0848)
Youngest child 3-6	-0.243*** (0.0619)	-0.223*** (0.0608)	-0.194*** (0.0571)	0.0420 (0.0379)	-0.273*** (0.0735)
Youngest child 7+	-0.225*** (0.0471)	-0.218*** (0.0464)	-0.186*** (0.0459)	-0.0893 (0.0728)	-0.223*** (0.0558)
Female worked in DK		0.449*** (0.123)	0.442*** (0.131)	0.591** (0.287)	0.420*** (0.147)
Years since migration		0.00526 (0.00470)	0.00762* (0.00457)	0.00981* (0.00532)	0.00804 (0.00577)
US destination			-0.227*** (0.0628)		-0.227*** (0.0629)
Nordic destination			0.193*** (0.0394)		
R-squared	0.083	0.112	0.184	0.288	0.138
Observations	467	467	467	97	370

Notes: OLS estimation. Constant included. Robust standard errors in parentheses.

\*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

\* Significant at the 10 percent level.

Table 6: Linear probability regressions: Preference for female labor force participation.

In a similar framework as in Table 5 we estimate the determinants for positive attitudes towards female labor force participation. We include the same control variables as before when analyzing actual labor force participation of the female partner abroad. Results are reported in Table 6. Positive attitudes towards female labor force participation are less likely in male power couples. In general, most coefficient estimates are similar in sign and size to the specifications in Table 5.

As we would expect, the presence of children is negatively correlated with positive attitudes towards female labor force participation. Again, this relationship is weak and statistically insignificant for the Nordic destination countries. For the remaining destination countries we observe a statistically significantly negative relationship between positive attitudes towards female labor force participation and children of any age in the household.

The estimated coefficient signs for the dummy variables Nordic destination and US destination are the same as in Table 5. Female labor force attachment in Denmark yields the same estimated signs of the coefficients as before. The estimated coefficients of the destination dummy variables indicate that the labor market situation in the destination country has an impact on actual (Table 5) as well as preferred (Table 6) labor force participation of the female partner. We interpret this as evidence that the destination differences reflect actual preferences and are to a less extent driven by legal work restrictions for family migrants, in particular in the US.

The estimation results with respect to the relative earnings potential of the partners and the impact of children are in line with the hypotheses provided by our theoretical framework. As discussed above, the differences between the Nordic countries and the remaining destinations may be related to various explanatory channels. Labor market and social policies shape self-selection and labor supply decisions of the emigrant couples. For example, fiscal incentives in many Nordic countries promote dual earner family models (Abrahamson and Wehner, 2006). Moreover, child care programs in the Nordic countries are far more generous compared to the US, for example. This would explain why very young children are not an impediment to female labor force participation among couples having migrated to other Nordic countries. However, other non-institutional factors might as well explain differences in labor force participation and preferences of couples at different destinations.

## **Relative Contributions to Household Economies**

We observed in our descriptive analysis that the relative contribution of the male partner increases after migration even among couples in which both partners participate in the labor force abroad. We restrict our analysis to couples in which both partners work to analyze

the determinants for their relative household economy contribution in more detail.

Table 7 reports estimation results for a linear regression model referring to the household economy of a couple in 2008 in the country of residence. The explained variable is equal to one if the couple has a joint household economy and the male partner contributes more to family income than the female.

	All destinations			Nordic destination	Other destinations
Power couple	0.0657 (0.0683)	0.0775 (0.0655)	0.0682 (0.0648)	-0.0119 (0.134)	0.0988 (0.0802)
Female power couple	0.00593 (0.0934)	0.0134 (0.0928)	0.0380 (0.0926)	0.0205 (0.169)	0.0218 (0.113)
Male power couple	0.246*** (0.0722)	0.231*** (0.0682)	0.199*** (0.0689)	0.325** (0.153)	0.203** (0.0818)
Youngest child 0-2	0.190** (0.0901)	0.213** (0.0893)	0.216** (0.0850)	0.0718 (0.143)	0.302*** (0.103)
Youngest child 3-6	0.364*** (0.0700)	0.358*** (0.0682)	0.353*** (0.0683)	0.386*** (0.121)	0.329*** (0.0858)
Youngest child 7+	0.373*** (0.0607)	0.315*** (0.0609)	0.294*** (0.0615)	0.206 (0.133)	0.321*** (0.0718)
Male contributed more in DK		0.228*** (0.0492)	0.222*** (0.0491)	0.290*** (0.109)	0.180*** (0.0586)
Years since migration		0.00471 (0.00470)	0.00290 (0.00474)	0.0218* (0.0120)	-0.00188 (0.00515)
US destination			0.0338 (0.0534)		0.0415 (0.0528)
Nordic destination			-0.178*** (0.0550)		
R-squared	0.163	0.219	0.249	0.254	0.218
Observations	379	379	379	99	280

Notes: OLS estimation. Constant included. Robust standard errors in parentheses.

\*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

\* Significant at the 10 percent level.

Table 7: Linear probability regressions: Male partner contributes more to joint household economy in 2008.

In Table 7 we only consider couples in which both male and female work abroad. We estimate the probability for the couple having a joint household economy and the male being the main income earner in the family abroad. We include similar regressors as before in Tables 5 and 6.

The estimated effect for male power couples is statistically significantly positive. Child pres-

ence has a strong positive effect on the likelihood of a joint household economy with a higher male income share. If the male partner already contributed more to joint family income in Denmark this is significantly more likely to still be the case in 2008 abroad. In general, these estimation results also confirm our findings from the descriptive statistics in section 4.

Again, we estimate a difference for other Nordic and US destinations compared to the rest. Dual earner couples in the Nordic countries are less likely to have joint household economies where the male partner contributes more. Dual earner couples in the US are slightly more likely have joint household economies where the male partner contributes more, although the effect is not statistically significant. A separate estimation for the Nordic destination countries reveals that the dummy variable for the presence of young children does not have explanatory power like before when analyzing female labor market participation in Tables 5 and 6. This indicates once more that young children in the household do not seem to hamper female labor force participation in the other Nordic countries unlike in the remaining destinations.

## 6 Conclusion

We analyzed household economies and labor force participation abroad among Danish couples that jointly emigrated from Denmark between 1987 and 2002 and have stayed abroad at least until 2008. Denmark is one of the most gender-equal countries worldwide, with a high female labor force participation rate. Despite this, we found that Danish emigrant couples quite often adopt a model with more traditional roles abroad with a male breadwinner and the female staying at home. Almost all couples pool their incomes at the destination country while in Denmark separate household economies were quite common. In the majority of cases, it seems that the male partner gains more from migration compared to the female in terms of labor market opportunities.

We find that the likelihood for the female partner not participating in the labor force increases with a relatively higher level of education of the male partner. This is in line with our theoretical model. In couples where the female did not work before migration, female labor force participation abroad is particularly low, too. One explanation for the observed



pattern can be an increase in the partners' earnings differentials after migration. With the male partner being the primary earner, the female partner allocates more time to household production depending on the relative earnings potential of the partners.

Children in the family seem to affect female labor force participation significantly. In particular, the presence of before-school-age children in the household reduces female labor force participation abroad. Moreover, we observed low female labor force participation in particular among couples that migrated to the US, while participation was higher in Nordic destination countries. We found that the presence of children younger than three in the household does not reduce female labor force participation in the Nordic countries. In the remaining destination countries, however, female labor force participation is particularly low among families with young children. Our theoretical framework provides an explanation for this. Higher prices for daycare services abroad might incentivize the female partner to stay at home for childcare, in particular, if opportunity costs for labor market participation are relatively high.

Further estimation results provide valuable insights on the couples' preferred division of labor: Couples in the US had less positive attitudes towards female labor force participation than couples that moved to a Nordic country. We conclude that the labor market environment shapes the couples' labor supply decisions and attracts families which already have certain preference for the division of labor. Moreover, our results indicate that actual labor force participation of the partners in the destination country is mostly in line with the respondents' preferences for the division of labor in the household.

We also looked at couples in which both partners are in the labor force abroad. Joint household economies abroad where the male is bringing in more money are more frequent among male power couples and among couples with children. They are less likely among couples having migrated to other Nordic countries compared to the remaining destination countries.

Our study provides first results on emigrant families' labor market outcomes and changes in household economies in the context of international migration from a welfare state. Still, further research has to be conducted to sharpen our understanding of the role of family ties

in the context of international migration.

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## Appendix

### Household utility maximization in the model

Consider an expression of the form

$$(c_1\alpha)^\alpha(c_2(1-\alpha))^{1-\alpha}$$

with  $c_1 > 1$ ,  $c_2 = \frac{c_1}{c_1-1}$  and  $0 \leq \alpha \leq 1$  we show that

$$(c_1\alpha)^\alpha(c_2(1-\alpha))^{1-\alpha} \geq 1. \text{ Therefore we set}$$

$$\frac{d}{d\alpha}[(c_1\alpha)^\alpha(c_2(1-\alpha))^{1-\alpha}] = 0$$

$$\Rightarrow \alpha = \frac{c_2}{c_1+c_2}$$

$$\text{At this point, } (c_1\alpha)^\alpha(c_2(1-\alpha))^{1-\alpha} = 1.$$

For  $\alpha = 1$  the original expression is equal to  $c_1 > 1$  and for  $\alpha = 0$  it is  $c_2 > 1$ .

Therefore it must attain its minimum at  $\alpha = \frac{c_2}{c_1+c_2}$ , and is strictly greater than 1 for all  $\alpha \neq \frac{c_2}{c_1+c_2}$ .

We now consider household utility maximization using the utility function presented in section 2 with  $0 \leq H_a \leq 1$ ,  $0 \leq H_b \leq 1$ ,  $0 \leq \bar{D} \leq 1$ ,  $w_a > 0$ ,  $w_b > 0$  and  $P_D > 0$ .

We show that full specialization with  $H_a = 0$ ,  $H_b = 1$  of the partners never yields higher utility than a less specialized solution  $H_a^*$ ,  $H_b = 1$  or  $H_a = 0$ ,  $H_b^*$ . We obtain  $H_a^*$  and  $H_b^*$  from maximizing the utility function with respect to  $H_a$  (holding  $H_b = 1$ ), and with respect to  $H_b$  (holding  $H_a = 0$ ).

If  $w_b < P_D$ ,

$$U(H_a^*, H_b = 1) \geq U(H_a = 0, H_b = 1)$$

$$\Rightarrow ((2 - \bar{D})\alpha w_a)^\alpha ((2 - \bar{D})(1 - \alpha))^{1-\alpha} \geq w_a^\alpha (1 - \bar{D})^{1-\alpha}$$

which is strictly greater for all  $\alpha \neq \frac{1}{2-\bar{D}}$ , and

$$U(H_a = 0, H_b^*) \geq U(H_a = 0, H_b = 1)$$

$$\Rightarrow (\alpha(w_a + w_b - \bar{D}w_b))^\alpha ((1 - \alpha)(\frac{w_a}{w_b} + 1 - \bar{D}))^{1-\alpha} \geq w_a^\alpha (1 - \bar{D})^{1-\alpha}$$

which is strictly greater for all  $\alpha \neq \frac{w_a}{w_a + w_b - w_b \bar{D}}$ .

Note that in case  $H_a = H_a^*$ ,  $H_b = 1$  it has to hold  $\alpha \leq \frac{1}{2-\bar{D}}$  as  $0 \leq H_a \leq 1$ , and in case  $H_a = 0$ ,  $H_b = H_b^*$  it has to hold  $\alpha \geq \frac{w_a}{w_a + w_b - w_b \bar{D}}$  as  $0 \leq H_b \leq 1$ .

Hence, for  $w_a > w_b$  and  $w_b < P_D$  full specialization with  $H_a = 1$  and  $H_b = 0$  can only be

optimal in case  $\frac{1}{2-\bar{D}} < \alpha < \frac{w_a}{w_a+w_b-w_b\bar{D}}$  where  $H_a = H_a^*$ ,  $H_b = 1$  or  $H_a = 0$ ,  $H_b = H_b^*$  is not feasible.

If  $w_b > P_D$ ,

$$U(H_a^*, H_b = 1) \geq U(H_a = 0, H_b = 1)$$

$$\Rightarrow (\alpha(2w_a - p_D\bar{D})^\alpha \left(2 - \frac{p_D}{w_a}\bar{D}\right)(1-\alpha))^{1-\alpha} \geq (w_a - p_D\bar{D})^\alpha$$

which is strictly greater for all  $\alpha \neq \frac{w_a - p_D\bar{D}}{2w_a - p_D\bar{D}}$ ,

$$U(H_a = 0, H_b^*) \geq U(H_a = 0, H_b = 1)$$

$$\Rightarrow (\alpha(w_a + w_b - p_D\bar{D}))^\alpha \left(\frac{1}{w_b}(w_a + w_b - p_D\bar{D})\right)(1-\alpha))^{1-\alpha} \geq (w_a - p_D\bar{D})^\alpha$$

which is strictly greater for all  $\alpha \neq \frac{w_a - p_D\bar{D}}{w_a + w_b - p_D\bar{D}}$ .

Note that in case  $H_a = H_a^*$ ,  $H_b = 1$  it has to hold  $\alpha \leq \frac{w_a - p_D\bar{D}}{2w_a - p_D\bar{D}}$  as  $0 \leq H_a \leq 1$ , and in case  $H_a = 0$ ,  $H_b = H_b^*$  it has to hold  $\alpha \geq \frac{w_a - p_D\bar{D}}{w_a + w_b - p_D\bar{D}}$  as  $0 \leq H_b \leq 1$ .

Hence, for  $w_a > w_b$  and  $w_b > P_D$  full specialization with  $H_a = 1$  and  $H_b = 0$  can only be optimal in case  $\frac{w_a - p_D\bar{D}}{2w_a - p_D\bar{D}} < \alpha < \frac{w_a - p_D\bar{D}}{w_a + w_b - p_D\bar{D}}$  where  $H_a = H_a^*$ ,  $H_b = 1$  or  $H_a = 0$ ,  $H_b = H_b^*$  is not feasible.

**Model solution for  $w_a < w_b$  and  $\lambda \gg 0$**

If  $w_a < w_b$  and  $\frac{w_a}{w_a+w_b} < \alpha < \frac{1}{2}$  full specialization is never optimal. Either  $H_a = H_a^*$ ,  $H_b = 1$  or  $H_a = 0$ ,  $H_b = H_b^*$  are feasible solutions. The optimal division of labor and the threshold above which  $b$  participates in the labor market is now:

In case  $w_b < p_D$

$$\begin{cases} H_a^{*1} = 1 - 2\alpha + \alpha\bar{D}, H_b^{*1} = 1 & \text{if } \alpha < \frac{\ln(\frac{w_a+w_b-w_b\bar{D}}{(2-D)w_b})}{\ln(\frac{w_a}{w_b})} \\ H_a^{*1} = 0, H_b^{*1} = (1-\alpha)\left(\frac{w_a}{w_b} + 1\right) + \alpha\bar{D} & \text{if } \frac{\ln(\frac{w_a+w_b-w_b\bar{D}}{(2-D)w_b})}{\ln(\frac{w_a}{w_b})} < \alpha \end{cases}$$

In case  $w_b \geq p_D$

$$\begin{cases} H_a^{*2} = 1 - 2\alpha - (1-\alpha)\frac{p_D}{w_a}\bar{D}, H_b^{*2} = 1 & \text{if } \alpha < \frac{\ln(\frac{w_a+w_b-p_D\bar{D}}{2w_a+p_D\bar{D}})}{\ln(\frac{w_a}{w_b})} \\ H_a^{*2} = 0, H_b^{*2} = (1-\alpha)\left(\frac{w_a}{w_b} + 1 - \frac{p_D}{w_b}\bar{D}\right) & \text{if } \frac{\ln(\frac{w_a+w_b-p_D\bar{D}}{2w_a+p_D\bar{D}})}{\ln(\frac{w_a}{w_b})} < \alpha \end{cases}$$

Differentiating the threshold value for labor market participation with respect to  $w_a$ ,  $w_b$  and  $\bar{D}$  yields similar results as for the case  $w_a > w_b$  described in section 2.

		Male preferences				
		Both work	Female stays at home	Male stays at home	Both stay at home	No answer
Female preferences	Both work	30	5		3	
	Female stays at home	7	7			2
	Male stays at home	1				
	Both stay at home					
	No answer	5				

Source: Survey data.

Table A1: Respondents' answers towards labor market participation preferences for couples in which both partners answered the survey.

<b>Household economy before emigration</b>	Emigration 1987-1998	Emigration 2001, 2002
Separate economies	12.6	12.8
Joint economies, the man brings in more money	63.1	63.0
Joint economies, the woman brings in more money	8.1	7.2
Joint economies, both partners bring in the same amount	12.2	12.8
Man brings in all money, woman stays home	2.2	4.0
Woman brings in all money, man stays home	0.4	0.4
No answer	1.5	0.0
<b>Household economy in 2008</b>		
Separate economies	1.5	3.6
Joint economies, the man brings in more money	56.1	48.2
Joint economies, the woman brings in more money	10.0	10.8
Joint economies, both partners bring in the same amount	9.2	8.4
Man brings in all money, woman stays home	21.0	27.9
Woman brings in all money, man stays home	1.1	1.2
No answer	1.1	0.0
Total observations	271	251

Source: Survey data

Table A2: Percentage shares of household economies before migration and 2008 by year of emigration.



	1987/1988	1992/1993	1997/1998	2001/2002
Nordic countries	23.3	14.5	14.5	26.3
US	18.7	16.0	20.1	13.2
Rest of the world	58.1	69.6	65.4	60.6
Observations	43	69	159	251

Source: Survey data

Table A3: Percentage shares of destination countries by emigration years.