Globalization, Gender, and the Family*

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Using population register data on all marriages, divorces and births together with employer-employee matched data from Denmark, we establish that rising import competition due to the removal of textile quotas on China had a significant impact on gender inequality through its effect on the family-market work balance. Generally, single workers exposed to import competition more frequently marry, have children, and take parental leave, while married workers do not divorce their spouses as often as similar non-exposed workers. Strikingly, even though the negative earnings impact at the initial job is comparable for men and women, the pro-family, pro-child adjustment is gender biased in the sense that it is primarily driven by women, and correspondingly, the negative long-run earnings impact of import competition on women is much higher than for men. The gender bias in the family-market work adjustment persists controlling for job, worker, and partner characteristics. Consistent with gender roles explaining these adjustment differences, it is especially exposed women with a small child or a spouse who works less that divorce less, whereas men under the same circumstances do not. The gender differential is due in good part to the choices made by relatively young workers, indicating that globalization shocks can have long-term consequences.

Keywords: Gender Inequality, Marriage, Divorce, Labor Earnings, Low-wage Country Competition, Fertility

JEL Classification: F16; F66; J12; J13; J16

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1 Introduction

Change for labor brought about by globalization has been deep and varied. New employment opportunities in the export sector due to access to foreign markets, specialization that speeds up structural change through task offshoring, as well as the displacement of workers through rising import competition are just some of the important issues that have been highlighted. Much less is known however on how globalization affects the long-term career paths and earnings of women compared to men. In this paper we employ information on workers in Denmark to examine in a quasi-experimental setting how gender shapes the response to rising import competition through the workers family versus market work decision.

Using central population register combined with longitudinal employee-employer matched data covering all workers in the textile and apparel sector from 1999-2007, we document a new finding regarding changes in labor market and family outcomes of men and women. In response to rising competition, workers tend to marry more, have additional children while at the same time divorcing less, and, strikingly, this pro-family, pro-child shift is primarily driven by women, who see their relative earnings fall as a result. Central to this are young women who make long-term changes to their career path, with planning and caring for children being the main motive. The paper identifies age as crucial to evaluate employment policies towards gender equality.

A large literature has documented the importance of rising import competition, especially from China, for labor markets in in high-income countries (Autor, Dorn, and Hanson 2013, Bloom, Draca, and van Reenen 2016, Pierce and Schott 2016a, Keller and Utar 2016).[1] A smaller but growing set of papers has studied the impact of Chinese import competition on gender ratios and health or mortality measures (Pierce and Schott 2016b, Autor, Dorn, and Hanson 2016b). This paper shifts the focus on gender differences in the effect of import competition, which we document

[1] See the survey by Autor, Dorn, and Hanson (2016a).

based on transitions between jobs and family statuses observed at the individual worker level.[2] We emphasize a new margin of inequality in this literature, that rising import competition increases gender inequality.

By employing the plausibly exogenous increase in Chinese exports as the country entered the WTO (2001), we are part of a small non-experimental literature on gender differences in labor market and family outcomes.[3] Related to our work on import competition are Huttunen and Kellokumpu (2016) and Del Bono, Weber, and Winter-Ebmer (2012), for example, who examine the effect of plant closings on certain family outcomes. By matching population register data on all births and marriages to employer-employee data on all firms and workers in a specific sector, we not only control for firm- and match-characteristics but we also identify age as a crucial factor affecting gender differences in labor market and family responses.

It is well-documented that the trend towards gender equality in labor market outcomes, fueled by labor-saving technological change in the household (see Bertrand 2010), birth control (Goldin and Katz 2002), and infant formula (Albanesi and Olivetti 2016), has stalled recently in many advanced countries.[4] We introduce rising import competition as an explanation for the recent non-convergence in male versus female labor market outcomes. Given the same negative globalization shock, women shift more strongly towards family than men do, thereby foregoing labor earnings that men make. As in Goldin (2014), children play a crucial role. Here, however, it is not the convexity of pay for the relatively skilled that is central to the gender differential due to inflexible work times. Rather, women appear to have more generally a greater concern for planning and

[2]Studies employing individual-worker data for other purposes include Autor, Dorn, Hanson, and Song (2014) and Utar (2017).

[3]Chinese textile exports increased due to the lifting of textile quotes the abolishment of the Multi-Fibre Agreement– that was negotiated long before with neither China nor Denmark playing a key role. Other non-experimental work on gender differences includes Acemoglu, Autor, and Lyle (2004) and Fernandez, Fogli, and Olivetti (2004), who employ variation in the male WWII draft across US states; see Bertrand (2010) for a survey.

[4]In the US, for example, the gender wage gap in 2012 was virtually the same as in 2002 (about 23%), while in stayed around 25% in Germany and 16% in Denmark between 2008 and 2016. See http://www.pay-equity.org/info-time.html for the US and http://ec.europa.eu/eurostat/statistics-explained/index.php/Gender$_{p}ay_{g}ap_{s}tatisticsforGermanyandDenmark$.

caring for children. Since relatively young workers are important for this gender difference, a plausible reason for it is the more restrictive biological fertility clock faced by women compared to men.

The remainder of the paper is as follows. [To be added.]

2 Data and Empirical Approach

2.1 Data

The main database used in this study is the Integrated Database for Labor Market Research of Statistics Denmark, which contains administrative records on individuals and firms in Denmark. We have annual information on all persons of age 15 to 70 residing in Denmark with a social security number, information on all establishments with at least one employee in the last week of November of each year, as well as information on all jobs that are active in that same week.

Marriage and divorce information for all residents come from the Central Population Register. We derive child birth information from the Fertility Database that provides parental information on every child born in Denmark. We complemented these data files with international transactions of firms (UHDI dataset) and information on domestic production (VARES dataset).

The worker information includes their annual salary, hourly wage, industry code of primary employment, education level, demographic characteristics (age, gender and immigration status), as well as occupation of primary employment. These are men and women workers with positive wage and who are at most 55 years old as of our initial sample period of 1999. As we focus on different aspects of family life we partition the sample for obvious reasons. For example, for analysis of divorce we only consider married men and women as of 1999. When we focus on marriage we

consider only single workers as of 1999.

2.2 Empirical Approach

We employ the exogenous shock of the dismantling of quotas on Chinese textile imports in conjunction with China's WTO accession and investigate the causal effect of trade on labor market and family outcomes in a quasi-experimental setting.[5] The sample consists of all full time workers of Denmark's textile and apparel industries as of the year 1999 (referred to as textile workers for short).

2.2.1 The Quasi-natural Experiment

Our definition of exposure to import competition exploits variation at the worker level due to a specific policy change, the removal of Multi-fibre Arrangement (MFA) quotas for China. The entry of China in December 2001 into the WTO meant the removal of binding quantitative restrictions on China's exports to countries of the European Union (EU); it triggered a surge in Chinese imports in Denmark (see Figure 1), and prices declined (Utar 2014). This increase in import competition is plausibly exogenous because Denmark did not play a major part in negotiating the quotas or their removal, which was managed at the EU level and finalized in the year 1995. Moreover, the sheer magnitude of the increase in imports after the quota removal was unexpected, and in part driven by the allocative efficiency gains in China (Khandelwal, Wei, and Schott 2013).

We implement this approach by identifying all firms that in 1999 produce narrowly defined goods (8-digit CN) in Denmark that are subject to the MFA quota removal for China. We then employ the employer-employee link provided by Statistics Denmark to identify workers that were employed in these firms. This is our treated or exposed group of workers. Within broad product categories the

[5] Our approach follows Utar (2014, 2016) to which we refer the reader for more details.

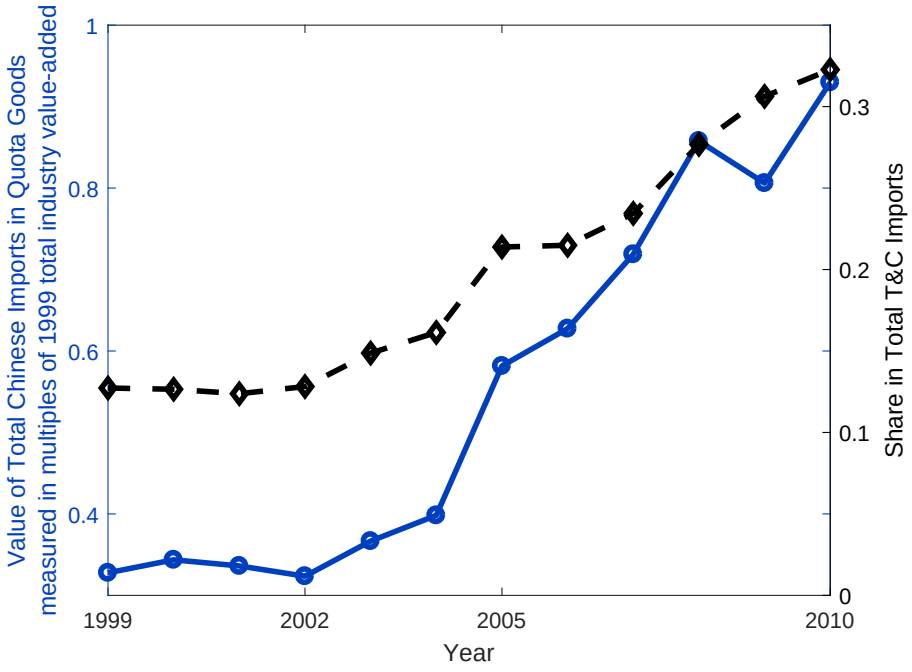

Figure 1: Evolution of Chinese Imports in Response to Quota Removal

quotas did not protect all goods. Workers who were employed in other textile and clothing manufacturers consist of our control group of workers. In 1999 about half of the textile and clothing workers are directly exposed to rising import competition in the sense that their firm were manufacturing a product that was protected from China via an import quota. A comparison of exposed and non-exposed workers using summary statistics shows that the groups of workers are similar. This setting affords us a powerful way to obtain causal evidence in a quasi-natural experimental setting.

3 Empirical Strategy

It is natural to begin the analysis of discrete, relatively rare divorce events with a probit regression. To measure differential family outcomes among workers under direct threat of increased competi-

tion through the quota removals in comparison to observationally similar other textile workers we use a simple difference-in-difference (DID) analysis as follows:

$$X_{it} = \alpha_0 + \alpha_1 CompExp_{i,99} * PostLib_t + W_{i,99} + \tau_t + \varepsilon_{it} \quad (1)$$

where $PostLib_t = 1$ when year $\geqslant 2002$ and 0 otherwise. X_{it} is worker i's family outcome, such as marriage event, divorce event, and child birth event in year t. $CompExp_{i,99}$ is the worker-level measure of exposure to competition. To limit any anticipation effects, the year 1999 is used to determine workers' subsequent exposure to the quota removal. The treatment variable, $CompExp_{i,99}$, takes the value of one if in 1999 worker i is employed in a firm that domestically manufactures a product that with China's entry into the WTO is subject to the abolishment of the MFA quotas for China, and zero otherwise. The aggregate trends in the industry and in the labor market are controlled for by using year fixed effects, τ_t. It is possible that workers employed by the exposed firms are different than the rest of the textile workers and these differences may be correlated with divorce or marriage hazards. $W_{i,99}$ is a vector of demographic, family, employer and spouse characteristics as of the initial year, 1999.

Especially when we focus on labor market outcomes of workers, the panel structure of the data allows us also to control for unobservable worker characteristics. We do so by estimating the following difference-in-difference specification with worker fixed effects using OLS:

$$X_{it} = \alpha_0 + \alpha_1 CompExp_{i,99} * PostLib_t + \delta_i + \tau_t + \varepsilon_{it} \quad (2)$$

In this regression, all time-invariant differences across workers and across their 1999 workplaces are controlled for by worker fixed effects, δ_i. It is solely the within-worker changes that identify the effect of exposure to import competition in equation 2. We also allow for correlation within a

group of workers employed in the same firm and cluster standard errors for each worker's firm as of the year 1999.

In order to pin down the mechanisms of the import competition effect we form a triple difference equation:

$$X_{it} = \beta_0 + \beta_1 CompExp_i * PostWTO_t + \beta_2 PostLib_t * Char_i + \\ \beta_3 CompExp_i * PostLib_t * Char_{i,99} + \tau_t + \delta_i + \varepsilon_{it}, \tag{3}$$

The coefficient of interest, β_3, measures the variation in the outcome variable, X_{it}, of worker i particular to exposed workers with a specific worker, partner, and family characteristics as of the initial year 1999 (relative to exposed workers without such characteristic) in the period after the competition shock due to removal of quotas for China.

Many family outcomes such as divorce are relatively rare events. To address this, as well as econometric concerns highlighted by Bertrand, Duflo, and Mullainathan (2004), we divide the sample into pre- (1999-2001) and post- (2002-2007) liberalization periods and use the following baseline regression:

$$\tilde{X}_{is} = \beta_0 + \beta_1 CompExp_{i,99} * PostLib_s + \beta_2 PostLib_s + \delta_i + \varepsilon_{is}, \;\; s = 0, 1 \;, \tag{4}$$

where $s = 0$ indicates the pre-shock and $s = 1$ refers to the post-liberalization period. In this regression $\tilde{X}_{is}$ is the family outcome variable, say divorce event of worker i over the 1999-2001 ($s = 0$) and 2002-2007 ($s = 1$) periods.

As we are interested in the link between labor market and family outcomes, equation 4 allows us to focus on a family event such as divorce across different labor market positions of workers. We do

this by creating an indicator for family outcome separately depending on individual's labor market position, say an indicator for divorce while an individual is employed in a manufacturing industry or a divorce event while an individual is outside the labor market.

4 Gender Differences in the Labor Market Impact of Rising Import Competition

Central to our analysis is that individuals may alter their family-market work balance whenever net benefits of either market work or family work change. This section establishes that while rising import competition amounted to a negative labor demand shock for both male and female exposed workers, the subsequent adjustment differed dramatically by gender.

Table 1 presents estimation of equation 4 when the dependent variable cumulative labor earnings, cumulative hours worked, and cumulative unemployment. The sample includes all workers who were employed at textile firms in 1999. We are interested in whether between 1999 and 2007 exposed versus non-exposed workers had differential earnings and other labor market outcomes, and whether these effects vary by gender. Below we will also investigate whether exposed and non-exposed workers switch differentially to other firms or sectors.

We see that rising import competition has a negative albeit imprecisely estimated impact on labor earnings (column 1). The point estimate of -0.22 means that workers exposed to rising import competition earn on average 22% of the 1999 salary less compared to workers who are not exposed to rising import competition. This result accounts for any observed and unobserved differences affecting earnings across workers as long as they are largely fixed, by including worker fixed effects. We also control for changes in average earnings in the pre- (1999-2001) versus post- (2002-2007) period by including through period fixed effects. Column 2 shows that the negative

impact of import competition on labor earnings is entirely due to women, who lose about 44%, in contrast to men, whereas earnings of exposed and non-exposed workers are similar.

The following results show analogous specifications for hours worked and unemployment (columns 3 to 6). There are some interesting differences compared to earnings. First, trade exposure leads to significant hours losses and unemployment increases for the sample as a whole. Together with a negative point estimate for earnings (column 1), these results confirm that rising import competition from China has reduced the labor market opportunities of these workers by reducing labor demand. Second, while women tend to lose more hours than men the difference across gender is not significant (column 4), implying that exposed women who remain employed take disproportionately low-paid jobs in comparison to men. We also see that the impact of trade competition on unemployment does not strongly differ by gender (column 6). To summarize, earnings play the key role for gender differences caused by rising import competition, and in the following we will largely concentrate on earnings.

As women reduce their labor market activities they shift their attention to family work. One aspect of this is being in a marital union, and in the following section we will present evidence of the impact of rising import competition on divorce behavior.

Table 1: **Labor Market Outcomes of Rising Import Competition**

Dep. Var.	(1)	(2)	(3)	(4)	(5)	(6)
	Labor Earnings		**Hours Worked**		**Unemployment**	
Import Comp	-0.224	0.089	-0.347**	-0.214	1.057**	0.810*
	(0.163)	(0.248)	(0.102)	(0.135)	(0.326)	(0.406)
Imp Comp x Female		-0.527*		-0.208		-0.0012
		(0.265)		(0.150)		(0.406)
Worker Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	19,482	19,482	19,482	19,482	19,482	19,482

Notes: Estimation of equation 4. Sample is all workers employed in textile manufacturing in the year 1999. Dependent variable in columns (1)-(2) is the cumulative labor earnings measured relative to 1999 earnings. Dependent variable in columns (3)-(4) is the cumulative hours worked, measured relative to 1999 hours worked. Dependent variable in columns (5)-(6) is the cumulative unemployment spells, measured in months. **/*/+ means significance at the 1% / 5% / 10% level.

The following Table 2 distinguishes the impact of trade exposure at the initial textile job from that in the services sector. Generally, upon a negative labor market shock due to trade exposure at their 1999 employer workers workers will often change their labor market status, not only by exiting the labor force or becoming unemployed but also by switching to another firm. However, we also observe workers who remain with their original 1999 textile firm. We compare the earnings loss through exposure at the original firm between men and women as the impact effect of trade. In contrast, the effect of trade exposure on earnings in service jobs provides information on how well the worker adjusts to the negative trade shock. In Denmark as in other advanced countries, the service sector has been an important destination for manufacturing workers displaced by rising import competition (Utar 2016).

We begin by re-stating the overall earnings effect of trade exposure (Table 2, columns 1 and 2). The following specification shows that the typical woman's earnings at the original 1999 firm are

about 70% lower as a consequence to trade exposure, compared to 90% for men (columns 3 and 4). These results are due both to the intensive margin (trade exposure leads to lower earnings at the original firm) and extensive margin (exposed workers leave the original firm earlier than non-exposed workers). Importantly, even though only women suffer a significant overall earnings loss from rising import competition (columns 1 and 2), there is no evidence that womens' earnings losses on impact–at the original firm–are larger than those of men. Thus, it does not appear to be the case that the reduction in earnings of women relative to men is due to women being unlucky, or 'at the wrong place at the wrong time'.

That the gender differential in earnings is due to the worker adjustment, not the impact effect in the original position is confirmed by the impact of trade exposure on earnings from jobs in the services sector (columns 5 and 6). The coefficient for women is positive but relatively small. Given that the services sector is the main job opportunity for workers displaced by rising import competition, the fact that exposed and not-exposed workers have comparable earnings in service jobs means that exposed female workers do not significantly more strongly switch into services than non-exposed workers, that exposed women do switch into services but are not paid well, or a combination of the two.

This stands in marked contrast to men, where exposed workers have service earnings that are significantly above those of non-exposed workers. Quantitatively, the differential in this structural change effect of rising import competition–the extent to which exposed textile workers have subsequently higher services earnings–is on the order to 3:1 between men and women. It is apparent from these results that the gender differential in earnings due to rising import competition is more due to worker adjustment than to trade exposure's effect on impact. As we will see below, the labor market-family work dimension is a key part of this differential worker adjustment.

Table 2: **Earnings by Gender: Impact versus Adjustment**

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var.	**All Employment**		**Initial Employer**		**Service Jobs**	
	Women	Men	Women	Men	Women	Men
Imp Comp	-0.438*	0.089	-0.712**	-0.903**	0.244	0.799**
	(0.186)	(0.248)	(0.202)	(0.291)	(0.206)	(0.230)
Worker Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	10,928	8,554	10,928	8,554	10,928	8,554

Notes: Estimation of equation 4. Sample is all workers employed in textile manufacturing in the year 1999. Dependent variable in columns (1)-(2) is the cumulative labor earnings measured relative to 1999 earnings. Dependent variable in columns (3)-(4) is the cumulative labor earnings obtained at the 1999 employer. Dependent variable in columns (5)-(6) is the cumulative labor earnings obtained at subsequent service jobs. Standard errors, clustered for initial employer, are in parentheses. **/*/+ means significance at the 1% / 5% / 10% level.

We now turn to the factors that shape the gender earnings differential due rising import competition in more detail; see Table 3 for the results. Column 1 repeats our earlier result that women had a significant overall earnings loss due to rising import competition, in contrast to men. Notice the female interaction coefficient is about -0.53. If we focus on workers who are forty years or younger in the year 1999, the gender earnings differential more than doubles (column 2). Furthermore, there is a striking bifurcation of earnings for even younger workers (those below thirty in the year 1999). If female they see on average an earnings reduction due to trade exposure of about 90%, while if they are male trade exposure leads to higher earnings of an imprecisely estimated 100%! While only about one quarter of all workers are this young, the fact that the gender differential increases the younger workers are suggests that globalization affects the long-run choices of workers at least as much as their short-term outcomes.

Why are younger workers more affected than older workers? Taking as given for the moment that men and women adjust differently to the globalization shock, that it affects more strongly younger than older women can be explained by human capital specificity. In the present context

of a negative market demand shock workers consider moving into a different career path, namely family work. Human capital specificity manifests itself as younger workers not having built up as much labor-market specific human capital as older ones, and correspondingly the former have lower costs of shifting into family-centered activities. Additionally, younger individuals have more years over which to spread any fixed costs of learning about family work. Both of these effects imply a higher incentive of younger workers to move from market to family activities.

Turning to the level of education, we see the womens' relative earnings loss is smaller the higher are the education levels (columns 4 to 6). In particular, among workers with no more than high school education, the relative reduction in womens' earnings is about twice that of all workers. In line with these results, we find that the gender earnings differential is lower for high-paying occupations than for medium- and low-paying occupations (columns 7 and 8). Furthermore, we show that the gender differential is highest for operator and clerk occupations (see Table A1 in the Appendix). Exposed women who worked in 1999 in high-paying jobs such as managers and professionals do not have lower labor earnings compared to men exposed to rising import competition.

Summing up our first set of results on the labor market performance of men versus women , it is primarily young, low-educated women in lower-paying occupation that account for the lower earnings of women versus men in the face of rising import competition.

Table 3: **Gender Earnings Differential: The Roles of Age, Education, and Occupation**

	(1) All	(2) < 40 Yrs	(3) < 30 Yrs	(4) College	(5) Vocational	(6) High School	(7) High Pay Occ	(8) Medium/ Low Pay Occ
Imp Comp	0.0892	0.407	1.012	-0.302	-0.090	-0.006	-0.326	0.029
	(0.248)	(0.393)	(0.669)	(0.852)	(0.305)	(0.432)	(0.463)	(0.336)
Imp Comp	-0.527*	-1.137*	-1.896+	-0.318	-0.628	-1.046*	-0.349	-0.948*
x Female	(0.265)	(0.558)	(1.067)	(1.124)	(0.565)	(0.525)	(0.822)	(0.403)
Worker FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	19,476	10,953	4,475	2,305	7,021	9,690	4,027	15,971

Notes: Estimation of equation 4. Dependent variable in columns (1)-(8) is the cumulative labor earnings measured in terms of initial annual earnings. Standard errors, clustered for 1999 employer, are in parentheses. **/*/+ means significance at the 1% / 5% / 10% level.

5 Rising Import Competition and Family

5.1 The Decision to Marry

In this section we show that rising import competition has affected the workers' decision to marry. The sample consists of all full-time workers that were not married in the year 1999. Given the trend in many countries towards more co-habitation before marriage, it is important that the data allows us to separate co-habitating from truly single workers. Table 4 shows the results.

Given the discrete nature of marriage events it is natural to begin with probit specifications. We see that trade exposure raises the probability of women to marry, in contrast to men whose marriage response is essentially flat (column 1). The coefficient on the female interaction is about -0.17, and the probability to marry for a trade-exposed women is about 15 percentage points higher than for a non-exposed women. To reduce the concern that this gender difference is driven by heterogeneity

in the job or workplace, we control for a number of key firm characteristics, but the results do not change much (column 2). Furthermore, for workers who are in a relationship with a co-habitating person, the labor market position and other characteristics of that person may be correlated with the marriage decision independent of trade exposure. However, we find that including a whole set of partner characteristics does not change the finding that trade exposure raises the probability that women, but not men, marry.

Instead of probit specifications we present OLS results that include worker fixed effects, which capture any (time-invariant) heterogeneity across workers, in columns 4 to 6. The pooled specification has a positive female interaction point estimate, as in column 1, although now it is somewhat less precisely estimated (column 4). Once we perform separate regressions for men and women, the significant impact of trade exposure for women's marriage probability re-emerges, while men do not change their marriage behavior depending on trade exposure (columns 5 and 6).

Above we have seen that the gender differential in labor earnings tends to be higher the younger the worker. If the primary reason for the decline in young womens' labor earnings is a shift to family activities including marriage, one would expect that the gender marriage differential is also higher for relatively young workers. A focus on younger workers, those in their fertile years, also yields information on the extent to which the shift towards family is related to the desire to have children.[6].

Column 7 shows that the marriage gender differential is somewhat larger for workers in their fertile years. Interestingly, it is particularly women who do not (yet) live in a co-habitating relationship who decide to marry as a consequence of rising import competition (column 8). Thus, it is not age per se but the station-of-life that a worker is in. Over the typical human life-cycle, the marriage decision of a single woman is a larger step than if trade caused primarily marriage of women that already were living in a co-habitating relationship. This provides initial evidence that rising import

[6]We take the fertile age of our workers to be ages until 36 for women and 45 for men (as of the initial year, 1999)

Table 4: **Marriage and Import Competition**

	(1)	(2)	(3)	(4)	(5) Women	(6) Men	(7) Fertile Age	(8) Fertile Age Single
Import Competition	-0.022	-0.018	-0.020	-0.008	0.045^{+}	-0.008	-0.034	-0.028
	(0.094)	(0.094)	(0.094)	(0.026)	(0.026)	(0.026)	(0.098)	(0.156)
ImpComp x Female	0.168^{+}	0.151^{+}	0.153^{+}	0.053			0.181^{+}	0.256^{+}
	(0.091)	(0.091)	(0.092)	(0.036)			(0.102)	(0.148)
Individual characteristics	Yes	Yes	Yes	-	-	-	Yes	Yes
Firm characteristics	No	Yes	Yes	-	-	-	Yes	Yes
Partner characteristics	No	No	Yes	-	-	-	Yes	-
Worker FEs	-	-	-	Yes	Yes	Yes	-	-
Period FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	8,217	8,163	8,163	8,210	4,336	3,874	6,313	3,516

Notes: Standard errors, clustered for 1999 employer, are in parentheses. **/*/+ means significance at the 1% / 5% / 10% level.

competition leads to long-term (not short-term, e.g. of workers close to retirement) changes in workers' labor market-family work balance. That it is early-stage (and younger) workers who are driving the marriage differential result makes sense both because they have not yet acquired that much market-work related human capital and they have more years if they were to choose to focus on family activities for the remainder of their working lives.

To summarize, we find that trade exposure increases the probability that women marry, especially women that do not live with somebody. It is also interesting to note that although men respond differently there is no evidence that rising import competition lowers their marriage rates either.

We turn to workers' fertility responses next.

5.2 Rising Import Competition and Babies

Probit results for having a new child due to rising import competition are shown in Table 5. The mens' point estimate for the impact of trade exposure is positive although not significantly different from zero (column 1). For women, our estimate is also positive, several times the size of the mens' coefficient, and also imprecisely estimated. Qualitatively the same results are obtained with worker fixed effects (column 2). We conclude that rising import competition does not lower fertility. If income effects would dominate one might have expected that lower labor earnings lead to lower fertility because of trade exposure. Our results show that this is not the case in our sample.

Table 5 on the right shows analogous results for the subset of single workers. While male fertility is essentially unrelated to trade exposure, female singles exposed to rising import competition have significantly more babies than other single women. These findings are highly consistent with our marriage findings in the previous section, in that they suggest that single women who are subjected to a negative labor demand shock through rising import competition disproportionately decide to marry and have babies. Exposed men, in contrast, neither marry more nor do they have more

babies. It is worth keeping in mind that there is no mechanical reason why men and women would have to exhibit the same marriage and fertility responses, because many single textile workers will not marry other textile workers. Our parallel findings on marriage and fertility suggest, perhaps unsurprisingly, that one of the motives for marriage appears to be to have additional children.

Table 5: **Fertility and Import Competition**

	(1)	(2)	(3)	(4)
	Probit	OLS	Probit	OLS
	Fertile Age Workers		Fertile Age Single	
Imp Comp	0.013	0.009	-0.004	-0.018
	(0.074)	(0.022)	(0.131)	(0.030)
Imp Comp x Female	0.079	0.033	0.321*	0.150^{+}
	(0.083)	(0.031)	(0.139)	(0.053)
Individual characteristics	Yes	-	Yes	-
Firm characteristics	Yes	-	Yes	-
Partner characteristics	Yes	-	-	-
Worker FEs	-	Yes	-	Yes
Period FEs	Yes	Yes	Yes	Yes
N	11,494	10,908	3,516	3,300

Notes: Standard errors, clustered for 1999 employer, are in parentheses. **/*/+ means significance at the 1% / 5% / 10% level.

5.3 Rising Import Competition and Parental Leave

As we have just shown, exposed younger women react more strongly towards having additional children than men. Another important child-related activity that is less discrete is parental leave. In Denmark, female workers can take up to 14 weeks leave associated with child birth. In addition to that, workers can take a total of 32 weeks leave for each child until the child is age 9. This

leave period can be shared between mother and father-it is leave per child. Most parents are entitled to the leave, irrespective of membership in unemployment insurance, employment, etc, with compensation during this period of typically around 60% of the previous earnings.[7]

The following analysis examines whether rising import competition has affected the taking of parental leave of male and female workers. Table 6 shows the results.

Our first probit specification shows that trade exposure tends to lead to more parental-leave taking; the point estimate for women is considerably larger than for men although neither is significant at standard levels (column 1). Running separate regressions for men and women shows that exposed women are taking significantly more leave than non-exposed women, which is not the case for men even though point estimates are similar (columns 2 and 3). Quantitatively, the coefficient in column 2 means that rising import competition accounts for X percent of all children in our sample.

Comparing the pooled with the by-gender results suggests that factors not included in the regression could be important. To address this we show results that control for worker fixed effects in columns 4 and 5. The results confirm that trade exposure leads to women taking more parental leave, while this effect is smaller and insignificant for men.

Given the importance of single women for the gender differential in fertility we return to this subsample also in our analysis of parental leave responses. Our findings are fully in line with the fertility findings. Trade exposure causes single women to take up parental leave responsibilities, in contrast to the effect of trade exposure on single men, and furthermore, the gender differential for single workers is substantially larger than for all workers.

To summarize, first, the gender differential on trade-induced parental leave is stronger than for new births. This shows that the discreteness of the fertility decision if anything moderates the difference in the behavior of men and women–it does not explain it. Second, both fertility and

[7]During the brief period of 1999-2002 there existed two weeks of father quotas, a period that mothers could not utilize.

parental leave responses to trade exposure underline the key role that single (and relatively young) workers play for the difference in the shift to family when faced with rising import competition. This indicates that the consequences of trade exposure for gender inequality in labor earnings are at least partially long-term effects. In the following section we examine family responses of workers who are further along in their stage-of-life planning, namely the divorce decisions of workers who were married before the onset of rising import competition.

Table 6: **Parental Leave and Import Competition**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Spec.	Probit			OLS		Probit	OLS
Sample	Fertile Age Workers					Fertile Age Workers	
		Women	Men	Women	Men	Single	
Imp Comp	0.016	0.130^{+}	0.133	0.044^{+}	0.024	-0.099	-0.021
	(0.074)	(0.077)	(0.088)	(0.026)	(0.019)	(0.137)	(0.026)
Imp Comp x Female	0.088					0.321*	0.144*
	(0.085)					(0.139)	(0.049)
Individual characteristics	Yes	Yes	Yes	-	-	Yes	-
Firm characteristics	Yes	Yes	Yes	-	-	Yes	-
Partner characteristics	Yes	Yes	Yes	-	-	-	-
Worker FEs	-	-	-	Yes	Yes	-	Yes
Period FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	11,494	6,006	5,488	4,872	6,036	3,516	3,300

Notes: Standard errors, clustered for 1999 employer, are in parentheses. **/*/+ means significance at the 1% / 5% / 10% level.

5.4 Rising Import Competition and the Stability of Marriage

We now examine divorce responses to rising import competition. All workers in our sample for this section are married in the initial year of the analysis, which is 1999. Being married, a negative

labor demand shock may put additional strains on the relationship, in form of financial as well as health (including stress) factors, which could exacerbate existing problems and thereby raise divorce probabilities. At the same time, insurance motives might push individuals in tough labor market times towards riding out marital problems so that divorce rates decline. In addition, a whole range of other mechanisms might be at work as well. We summarize a number of major factors with the results shown in Tables 7a and 7b in the Appendix.

First, the results indicate that workers exposed to rising import competition tend to divorce less than comparable unexposed workers, especially women (Table 7a, column 1). In fact, trade exposure significantly reduces divorce rates for the sample as a whole, and this effect is mostly due to the choices of women (columns 2 and 3, respectively). Thus, trade exposure increases the stability of existing marriages in our sample, in addition to leading to new marriages as we have shown above. Our divorce results are additional evidence that trade exposed workers shift from labor market to family activities. The main driving force of the shift towards family in form of lower divorce rates is women.

The incentive to stay together for insurance reasons may be stronger for older workers, both because they have typically more difficulties finding new jobs if they were to be laid off and because it may be harder for older workers to find a new partner than for younger workers. However, we see from column 4 that it is younger, not older workers that are behind the lower divorce effect, and it is for those workers that the gender differential in trade-induced change in divorce behavior is particularly large. Instead, these findings suggest that long-term family planning, including a focus on children, might be more central to the decline in divorce.

The remaining specifications in Table 7a begin to evaluate this hypothesis by asking whether trade-exposed married women have significantly more babies and take parental leave than non-exposed women, in comparison to married men. This turns out to be not the case. This confirms our results in the previous section that it is primarily single women who are behind the increase in fertility

and parental leave as a consequence of rising import competition. Put differently, both younger (single) and older (married) women shift towards family disproportionately (compared to men) in the face of rising import competition, with the former entering marriage, having children, and taking parental leave, in contrast to the latter who do not break up their existing marriage.

Does this mean that long-term family planning and children do not play a role for our marriage results? We begin to address this question with the results shown in Table 7b. The import competition indicator is interacted with a number of individual-level characteristics, with the baseline results without interaction variables shown in columns 1 and 2. First, notice that if the age difference between the exposed worker and the spouse is large, this strengthens the tendency for women to stay in marriage, but not for men (columns 3 and 4). Age, especially when the woman is relatively young, has been shown to matter for several of the gender differentials in marriage shown in previous sections.

Second, notice that if a female exposed worker has a child in the initial year of 1999, she tends to be less likely to divorce her spouse, suggesting that she assumes at least in part a care-taking role (columns 5 and 6).[8] In contrast, when if an exposed married man has a child this significantly increases divorce rates. Finally, in the presence of a baby aged 1 to 3 years old exposed women have a much lower divorce rate than non-exposed women, whereas for men if anything the presence of a baby increases the probability of divorce.

Overall, these results indicate that no matter the stage-of-life (and age) of women, central to their stronger shift away from labor market work to family, with its impact of rising gender earnings inequality, appear to be child-related family planning and insurance motives.

We can provide additional evidence on this hypothesis by returning to the labor market consequences of rising import competition. If trade exposure has caused indeed a shift from labor market to family work because the net benefit of market work was reduced (more for women), labor

[8]We have confirmed that this result is not limited to one but also more existing children as of 1999

market and family outcomes should be the flip sides of the same coin. In the following section we examine whether we can identify the women who are responsible for the increase in marriage, birth, parental leave, and marital stability in terms of their lower labor market earnings.

We now turn to a number of concluding observations.

6 Concluding Remarks

Using population register data on all marriages, divorces and births together with employer-employee matched data from Denmark, we have shown that rising import competition due to the removal of textile quotas on China had a significant impact on gender inequality through its effect on the family-market work balance. Generally, single workers exposed to import competition more frequently marry, have children, and take parental leave, while married workers do not divorce their spouses as often as similar non-exposed workers. Strikingly, even though the negative earnings impact at the initial job is comparable for men and women, the pro-family, pro-child adjustment is gender biased in the sense that it is primarily driven by women, and correspondingly, the negative long-run earnings impact of import competition on women is much higher than for men.

We have also documented that the gender bias in the family-market work adjustment persists controlling for job, worker, and partner characteristics. Consistent with gender roles explaining these adjustment differences, it is especially exposed women with a small child or a spouse who works less that divorce less, whereas men under the same circumstances do not. Women can shift towards family more strongly than men because they are disproportionately unemployed, especially after switching to the service industry. We show that these results carry broadly over to the Danish economy at large.

This paper has provided evidence that globalization can have a strong impact on earnings inequality because women and men do not substitute family work for market work in the same way even when they face the same labor market shock. According to our results this family margin is significant even in advanced countries with a substantial amount of family-oriented support system, such as generous parental leave and availability of childcare. There is clearly a need for future work on the importance of gender roles in adjusting to structural change in the (market) work place.

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Appendix

Table 1: Summary Statistics

Unmarried Workers: Characteristics in Year 1999

	Exposed		Not Exposed		All	
	Mean	Stand. Dev.	Mean	Stand. Dev.	Mean	Stand. Dev.
Age	34.25	9.82	34.76	9.88	34.52	9.86
Immigrant	0.03	0.17	0.03	0.18	0.03	0.18
Earnings (ln)	12.05	0.64	12.08	0.70	12.07	0.67
Hourly Wage	145.11	65.66	152.03	58.34	146.86	61.88
Single w/ Kid	0.17	0.37	0.19	0.40	0.18	0.39
N	1,880		2,228		4,108	

Unmarried Female Workers: Characteristics in Year 1999

	Exposed		Not Exposed		All	
	Mean	Stand. Dev.	Mean	Stand. Dev.	Mean	Stand. Dev.
Age	34.64	10.08	35.05	10.23	34.83	10.15
Immigrant	0.03	0.17	0.03	0.17	0.03	0.17
Earnings (ln)	11.97	0.62	11.89	0.74	11.94	0.68
Hourly Wage	133.02	43.04	132.95	39.98	132.99	41.66
Single w/ Kid	0.20	0.40	0.25	0.43	0.22	0.42
N	1,180		990		2,170	

Married Workers: Characteristics in Year 1999

	Exposed		Not Exposed		All	
	Mean	Stand. Dev.	Mean	Stand. Dev.	Mean	Stand. Dev.
Age	42.46	8.71	42.52	8.67	42.49	8.69
Immigrant	0.07	0.25	0.11	0.31	0.09	0.28
Earnings (ln)	12.24	0.55	12.21	0.65	12.22	0.60
Hourly Wage	160.16	87.22	164.01	80.12	162.14	83.66
Married & Kid	0.90	0.30	0.91	0.29	0.90	0.30
N	2,863		3,027		5,890	

Married Female Workers: Characteristics in Year 1999

	Exposed		Not Exposed		All	
	Mean	Stand. Dev.	Mean	Stand. Dev.	Mean	Stand. Dev.
Age	42.18	8.81	41.90	8.94	42.05	8.87
Immigrant	0.06	0.24	0.12	0.33	0.09	0.29
Earnings (ln)	12.10	0.46	11.97	0.64	12.04	0.56
Hourly Wage	136.02	45.07	135.14	45.21	135.62	45.13
Married & Kid	0.90	0.30	0.90	0.30	0.90	0.30
N	1,889		1,534		3,423	

Table 7a: Import competition and Divorce

Dep. Var.	Divorce				Birth		Parental Leave	
	All Married Workers			Married 20-40 Yrs	Women < 36 Yrs	Men < 45 Yrs	Women < 36 Yrs	Men < 45 Yrs
	Probit			OLS Worker FE				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Imp Comp	-0.103	-0.025*	-0.011	-0.020	-0.016	-0.005	0.003	0.021
	(0.113)	(0.009)	(0.013)	(0.025)	(0.042)	(0.023)	(0.040)	(0.023)
Imp Comp x Female	-0.185*		-0.027+	-0.067*				
	(0.098)		(0.016)	(0.032)				
N	11,703	11,780	11,780	4,966	2,184	2,774	2,184	2,774

Notes: Dependent variable noted in table header. Sample is married workers or subsets thereof. All specifications Include period fixed effects. Probit specifications include individual, firm, and partner characteristics. Observations clustered by workplace. **/*/+ significant at 1%/5%/10% level.

Table 7b: Divorce Mechanisms

	Women	Men	Women	Men	Women	Men	Women	Men
Import Comp	-0.039**	-0.011	-0.031**	-0.012	-0.031	-0.121*	-0.033**	-0.018
	(0.011)	(0.013)	(0.011)	(0.013)	(0.042)	(0.047)	(0.010)	(0.016)
Imp Comp x Baby			-0.070*	0.010				
			(0.035)	(0.043)				
Imp Comp x Child					-0.008	0.120*		
					(0.043)	(0.049)		
Imp Comp x Age Difference							-0.016+	0.003
							(0.008)	(0.005)

Notes: Dependent variable is divorce. Estimation by OLS with period and worker fixed effects. Sample is all married workers. *Baby*: lives with baby between 1 and 3 years in 1999. *Child*: Has a child in 1999. *Age Difference*: (age of worker – age of spouse). Observations clustered by workplace. **/*/+ significant at 1%/5%/10% level.

Table A1: Labor Earnings by Occupation

	Managers	Professional & Technician	Clerks	Crafts	Operators	Labourers
Import Competition	-0.694 (0.538)	0.232 (0.854)	2.831+ (1.152)	-0.825+ (0.473)	0.281 (0.622)	0.426 (0.881)
Import Competition x Female	0.337 (0.990)	0.819 (0.985)	-2.976* (1.166)	0.265 (0.824)	-1.478* (0.677)	-1.751 (1.862)
N	1,064	2,870	2,464	1,690	8,592	1,590

Notes: Dependent variable: cumulative labor earnings from all jobs 1999 to 2007. Estimation by OLS with period and worker fixed effects. Observations clustered by workplace. **/*/+ significant at the 1%/5%/10% level.