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THÈSE DE DOCTORAT
DE L'UNIVERSITÉ PSL

**From Household Production to Labor Marketization:
Women's Arduous Transition in Morocco**

* * *

Soutenue par

Sara LOUKILI

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**From Household Production to Labor
Marketization: Women's Arduous Transition in
Morocco**

Paris Dauphine University

SARA LOUKILI

"Women's empowerment and economic development are closely interrelated. While development itself will bring about women's empowerment, empowering women will bring about changes in decision making, which will have a direct impact on development. Contrary to what is claimed by some of the more optimistic policymakers, it is, however, not clear that a one-time impulsion of women's rights will spark a virtuous circle, with women's empowerment and development mutually reinforcing each other and women eventually being equal partners in richer societies."

- *Duflo, E. (2012). Women empowerment and economic development.*

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Preface

This essay is divided into three chapters, besides a general introduction, and conclusion. The introductory chapter sets the context and defines the research questions to be addressed. It describes the contributions of this research work, highlighting the motivation for each chapter and its contribution to the literature. The three chapters that make up the body of this thesis are original and unpublished works that address three research questions that are complementary but can be read independently of each other.

Summary

If demographic shifts occur concurrently with economic growth, shifts from home production to labor marketization should increase women's work at both the intensive and extensive margins, especially as economies transition from traditional labor intensive to human capital-intensive sectors. The puzzling low Female Labor Force Participation (FLFP) rate in Morocco can, theoretically, be traced back to the patterns of production in household markets, accounting for the uneven distribution of paid and unpaid labor between men and women, as well as economy-wide misallocations, explaining the rarity of 'women friendly' jobs. Without any oversimplifications, increases in female labor supply have been explained for the most part by growth of services which allow women to marketize their labor and buy substitutes for their home production in the markets. However, delayed reallocations or transitions to industrialization, which are in part attributed to low agricultural productivity, can in turn explain the slow growth in services where demand for women's labor is relatively higher. So, in spite the increase in female educational attainment, without a dynamic growth in service sector providing women with better quality employment opportunities and market produced substitutes to their home production, female labor supply will not follow. This dissertation builds on the large literature of new household economics and on growth and structural transformation, trying to address the issue of low female labor supply in Morocco. It attempts to enlarge the scope of existing knowledge on this issue. First, it examines the contribution of paid and unpaid work to the economy highlighting the demographic and gender dividends. The trade-offs between household markets and labor markets constitute a focus area for analysis. Second, it provides empirical examination of the collective labor supply model and the role of intra-household bargaining between spouses. Further, it examines the role of gender positive policies in balancing intra-household bargaining power and their incidence on women's labor supply.

The first chapter adopts a demography based approach to assess the contributions of men and women to the economy through paid and unpaid work and throughout the life-cycle. For this, the National Transfer Accounts, which measures production and consumption of paid work, and the National Time Transfer Accounts, which measures production and transfer of unpaid work, were used.

Chapter 2 delves deeper to the institution of households and examines the driving factors behind the low labor force participation of married women through an empirical test of the collective model. An important contribution of this chapter is the distinction made between working dual and single earning couples, and between urban and rural dwellings. It starts by considering existing occupational and wage differences in the labor market and in time allocations to market work and domestic work. It reports that the implications for spouses' time allocations are attributed to changes in wages, household income, and bargaining power induced by several mechanisms that can explain the low female labor force participation.

Chapter 3 investigates the effect of the introduction of unilateral divorce laws on women's labor outcomes using data from the Demographic and Health Survey (DHS) program that spans over decades and a quasi-experimental difference-in-differences design in three countries: Morocco, Egypt, and Jordan. Results highlight that no-fault divorce legislation was associated with a modest increase in labor outcomes, measured by current employment, a few years after the reform. These findings are likely induced by a power-shift and anticipatory effect that drive women into the labor force. However, when a longer time window is considered, 10 or more years after the reform, a negative effect of the reform is documented on women's labor outcomes in Morocco, and a positive effect in Egypt and Jordan. These differences can be attributed to a set of countervailing effects, including social norms, labor market dynamics and evolution of legislation itself, that make the derived utility from marriage, in some cases, more attractive than that of employment, and vice versa. These findings partially confirm previous research on the relation between no-fault divorce and women's agency and empowerment in the MENA region, but, at the same time, contrast with prominent perspectives on legislation that aims at reducing gender-based discrimination. Instead, they show that there might be unsought effects of legislation and provide a policy relevant discussion on that basis.

Field: Economics.

Keywords: Household economics, collective labor supply, intra-household bargaining, Divorce, Unpaid labor, life-cycle.

Résumé

Si les changements démographiques se produisent en même temps que la croissance économique, le passage de la production domestique à la commercialisation du travail devrait accroître le travail des femmes à la fois à la marge intensive et à la marge extensive, en particulier lorsque les économies passent de secteurs traditionnels à forte intensité de main-d'œuvre à des secteurs à forte intensité de capital humain. Le faible taux de participation des femmes au marché du travail au Maroc peut, en théorie, être attribué aux modes de production sur les marchés domestiques, ce qui explique la répartition inégale du travail rémunéré et non rémunéré entre les hommes et les femmes, ainsi qu'aux mauvaises affectations à l'échelle de l'économie, qui expliquent la rareté des emplois "favorables aux femmes". Sans simplifier à l'excès, l'augmentation de l'offre de main-d'œuvre féminine s'explique en grande partie par la croissance des services qui permettent aux femmes de commercialiser leur travail et d'acheter sur les marchés des substituts à leur production domestique. Toutefois, les retards de réaffectation ou de transition vers l'industrialisation, qui sont en partie attribués à la faible productivité agricole, peuvent à leur tour expliquer la faible croissance des services, où la demande de main-d'œuvre féminine est relativement plus élevée. Ainsi, malgré l'augmentation du niveau d'éducation des femmes, l'offre de main-d'œuvre féminine ne suivra pas sans une croissance dynamique du secteur des services offrant aux femmes des possibilités d'emploi de meilleure qualité et des substituts à leur production domestique produits sur le marché.

Cette thèse s'appuie sur la vaste littérature de la nouvelle économie des ménages et sur la croissance et la transformation structurelle, en essayant d'aborder la question de la faible offre de travail féminin au Maroc. Elle tente d'élargir le champ des connaissances existantes sur cette question. Tout d'abord, elle examine la contribution du travail rémunéré et non rémunéré à l'économie en mettant en évidence les dividendes démographiques et de genre. Les compromis entre les marchés des ménages et les marchés du travail constituent un domaine d'analyse privilégié. Deuxièmement, elle fournit un examen empirique du modèle d'offre collective de travail et du rôle de la négociation intra-ménage entre les conjoints. En outre, elle examine le rôle des politiques positives en matière de genre dans l'équilibre du pouvoir de négociation au sein du ménage et leur incidence sur l'offre de travail des femmes.

Le premier chapitre adopte une approche démographique pour évaluer les contributions des hommes et des femmes à l'économie par le biais du travail rémunéré et non rémunéré et tout au long du cycle de vie. Pour ce faire, les comptes nationaux de transfert, qui mesurent la production et la consommation du travail rémunéré, et les comptes nationaux de transfert de temps, qui mesurent la production et le transfert du travail non rémunéré, ont été utilisés.

Le chapitre 2 approfondit l'institution des ménages et examine les facteurs à l'origine de la faible participation des femmes mariées au marché du travail par le biais d'un test empirique du modèle collectif. Une contribution importante de ce chapitre est la distinction faite entre les couples biactifs

et les couples mono-actifs, ainsi qu'entre les logements urbains et ruraux. Il commence par examiner les différences professionnelles et salariales existantes sur le marché du travail et dans la répartition du temps entre le travail marchand et le travail domestique. Il indique que les implications pour la répartition du temps des conjoints sont attribuées à des changements dans les salaires, le revenu des ménages et le pouvoir de négociation induits par plusieurs mécanismes qui peuvent expliquer la faible participation des femmes au marché du travail.

Le chapitre 3 étudie l'effet de l'introduction de lois unilatérales sur le divorce sur les résultats des femmes en matière d'emploi en utilisant les données du programme d'enquête démographique et de santé (EDS) qui s'étend sur plusieurs décennies et un modèle quasi-expérimental de différence dans les différences dans trois pays : Maroc, Égypte et Jordanie. Les résultats soulignent que la législation sur le divorce sans faute a été associée à une augmentation modeste des résultats en matière de travail, mesurés par l'emploi actuel, quelques années après la réforme. Ces résultats sont probablement dus à un changement de pouvoir et à un effet d'anticipation qui poussent les femmes à entrer sur le marché du travail. Cependant, lorsque l'on considère une période plus longue, 10 ans ou plus après la réforme, un effet négatif de la réforme est documenté sur les résultats des femmes en matière d'emploi au Maroc, et un effet positif en Égypte et en Jordanie. Ces différences peuvent être attribuées à un ensemble d'effets compensatoires, y compris les normes sociales, la dynamique du marché du travail et l'évolution de la législation elle-même, qui rendent l'utilité dérivée du mariage, dans certains cas, plus attrayante que celle de l'emploi, et vice versa. Ces résultats confirment en partie les recherches antérieures sur la relation entre le divorce sans faute et l'action et l'autonomisation des femmes dans la région MENA, mais, en même temps, ils contrastent avec les perspectives prédominantes sur la législation qui vise à réduire la discrimination fondée sur le sexe. Ils montrent plutôt que la législation peut avoir des effets non recherchés et fournissent une discussion politique pertinente sur cette base.

Discipline : Économie.

Mots-clés : Économie des ménages, offre collective de travail, négociation intra-ménage, divorce, travail non rémunéré, cycle de vie.

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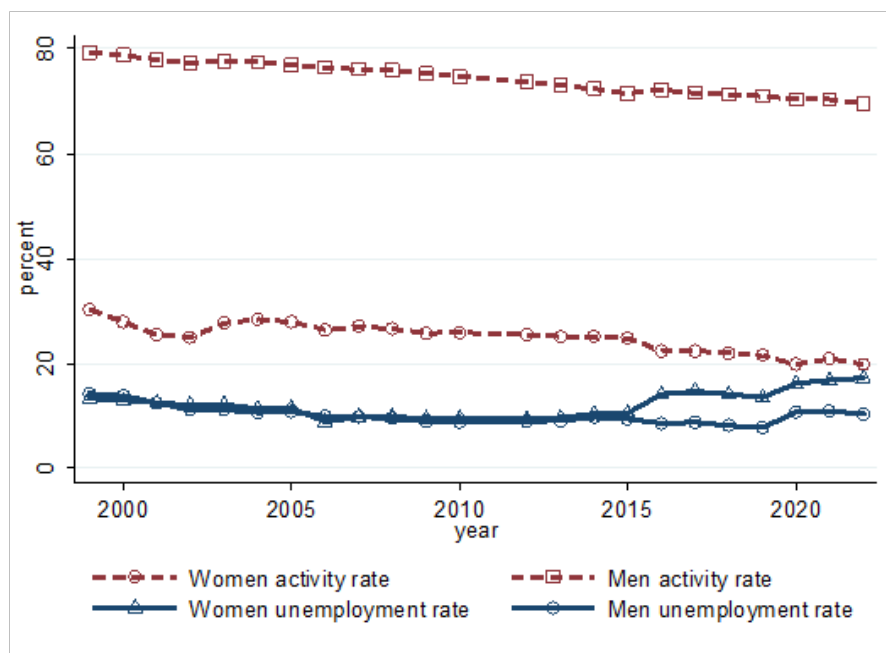
General Introduction

This thesis research project initially set out to carry a study of the impact of demographic transition on labor market dynamics in Morocco. Such an undertaking required a thorough investigation of labor market structures and forces that govern structural transformation and reallocations of economic activity among sectors and markets. As the work progressed, it became evident that the complex nature of labor market frictions hinders such overarching endeavor. The study of mechanisms behind the structural challenges in the Moroccan labor market has generated several research publications. Overall, the analytical and empirical work points to three main characteristics: high economic exclusion, especially of youth and women (Shaban et al., 1995; Assaad et al., 2020; Assaad, R., and Krafft, C., 2014), slow growth in job creation in the face of the influx of working-age population, and low quality of non-agricultural jobs, which are mostly informal (El Aoufi and Hanchane, 2016; Hanchane and Verdier, 2017; Lopez-Acevedo et al., 2021). This state of inertia in the dynamics of job creation, which is intrinsically linked to the fact that the key sectors of the economy remain traditional, labor intensive and concentrate unskilled labor, would explain the delays in the allocation of resources that would generate a sustained dynamic of structural change in favor of economic development. This complex process involves a close and simultaneous interaction of supply and demand factors that can improve income levels, resources allocations, the rate of growth of the market size, social policy, and regulatory measures.

Faced with the complexity of the task at hand, it was necessary to focus the scope of this research project on one issue pertaining to the Moroccan labor market to apprehend it with sufficient depth and perspective. The choice was thus to focus on analyzing the issue of women's economic exclusion, their paradoxical and persistent low labor force participation.

Female labor force participation can be defined as the decision to supply the working population measured by the labor force participation rate (LFPR), which is the share of active population (aged 15-64) actively engaged in the labor market either employed or unemployed. Higher FLFP rate can yield growth through an increase in labor supply, productivity and households living standards (income). It is considered crucial to alleviating extreme poverty due to direct income effects on women and children (Duflo, 2012). An extensive literature around the world has increasingly studied the stagnating, and sometimes decreasing, rates of FLFP in prime age (25 to 54) with an emphasis on the paradoxical progress made in terms of educational attainment (Klasen, 2019). At the macro level, the U-curve hypothesis is the most cited explanation for how FLFP declines at early stages of economic development, and at later stages of development it increases (Boserup, 1970; Goldin, 1990, 1996). Also widely cited is the assumption that closing the gender gap in education and low fertility rates are met with an increase in FLFP rates. However, empirical literature provides little support for these hypotheses (Gaddis, Klasen, 2014; Ganguli et al., 2014; Aaronson, 2017) with even more consensus

Figure 1: Evolution of activity and unemployment rates women vs. men (1990-2022)



Source: Author's calculations. HCP employment survey.

that country specific factors provide more accurate explanations for the FLFPR.

In Morocco, women's low labor force participation is observed against a backdrop of rising educational attainment, declining fertility and sustained economic growth. With the combination of these factors, one would expect an increase in female labor force supply. On the contrary, FLFP rate has been on a downward slope for the last two decades. Additionally, among all segments of the working population, women are the most concerned with issues pertaining to high rates of inactivity, high skilled labor unemployment, youth unemployment, and the NEETs phenomenon. Moreover, the fact that the issue of low FLFPR has already been extensively studied from other angles paradoxically adds to the difficulty of this thesis project. Thus, isolating the analysis of this question would contribute to an improved understanding of labor market issues and the complexity of the development process in Morocco.

To account for the complexity and multiple dimensions of the issue of women's participation in the labor market, I have chosen to adopt an approach that is itself multiple and based on data of equally diverse natures. This thesis seeks to provide a comprehensive understanding of the paradox of women's low labor force participation in Morocco without disconnecting it from the country's socio-economic environment. Each chapter addresses an issue related to one aspect of women's work and can be considered as a stand-alone article. In the remainder of this introductory chapter, I first present a broader setting linking structural transformations to women's labor, particularly through the driving force of

demography. I make mention of the current labor market issues, during the ongoing demographic transition, and how women's work is acutely related to each trend. Then, I provide a broad overview of empirical and theoretical findings in literature and compare them to stylized facts on the economic and social context in Morocco. Finally, I present a description of the content of each chapter in this dissertation and address the question of used data.

Demographic transition and labor market trends

The demographic transition is a process by which the population transitions from a phase marked by high fertility and mortality rates to a phase characterized by low fertility and mortality rates. The challenges posed by this transition in middle- and low-income countries can have profound implications for pension schemes, education programs, healthcare, labor market dynamics and economic growth (Lloyd-Sherlock, 2002; Shetty, 2012). These Demographic transition trends imply the necessity to adopt a set of public policies to accommodate the population challenges and pressures (Naja, Makhoul, Chehab, 2017). A country with a population increase should implement adequate policies to reap desired long-term economic growth potential. In fact, the lowering birthrate can contribute to escape the low-income trap and can allow for higher income and economic growth. This is defined as the "demographic dividend" which is when there is an increase in labor inputs as well as domestic savings (Mason, Lee, 2011).

Benefiting from this demographic dividend requires careful investments in education, labor market regulations and the overall social protection system. As most middle and low-income countries suffer from many labor market frictions, making these necessary investments becomes difficult early on. One prominent example of such hinders is the predominant low-skilled workforce, that can be an economic advantage at early stages of the demographic dividend. At later stages of the dividend, however, it becomes a burden mainly due to health care and annuity costs (Mason, Lee, 2013; Bloom et al., 2010; Sharpe, 2011; Walder and Döring, 2012). The most important question one might ask is not whether to make such structural reforms but how can these investments be made if several segments of the working population continue to be excluded from the labor market. A particular form of labor market exclusion that is of interest to this research is the low female labor market participation rate. The effect of demographic shifts on economic growth, is present in two strands of the literature. The first, associates population ageing with negative effects on economic growth as well as the additional private and public expenditures for old age income support and healthcare (Mackellar, 2000). This negative relation has been established between economic growth and government's social expenditures

(Bettendorf et al., 2012; Lugauer, 2012; Thiébaud et al., 2013), as well as fiscal policy (taxes) (Planes, 2010), and the financial sector (Narayana, 2011; Imam, 2013).

The second strand of literature includes empirical studies conducted by Mason and Lee (2013), Meijer et al. (2013), Kopecky (2011) and others, that demonstrate a positive relation between economic growth and ageing through a higher consumption and savings rates. An ageing population positively affects economic growth through higher consumption and savings, public social expenditures, and higher human capital. Following the consumption patterns of retirees (over 60) in the US between 1850 and 2000, Kopecky (2011) demonstrates a substantial increase in their expenditures on leisure activities upon retirement. Further, Nardi et al (2010) find a positive relation between survival rates and medical expenses concluding that the increase in life expectancy should, in turn, increase health expenditures and lower savings. This substantial rise in household expenditures could boost growth, over a certain period, in some economic sectors, such as health and housing. Overall, these findings on the impact of population ageing on economic growth highlight the need for thorough economic and social planning tailored to a country's specificities and challenges during the window of opportunity when the working age population surpasses the dependent one.

High investments, but poor outcomes: the gender participation gap in perspective

Any discussion on the structural underlying mechanisms and consequences of the low female labor force participation in Morocco is only relevant if it's put into perspective. The demographic and economic changes of the last few decades have had a significant impact on the Moroccan labor market. The HCP estimates that more than 9 million people are of working age today and that this number is expected to increase significantly in the coming years. Each year, an estimated 430,000 workers approximately will enter the labor market by 2030. Growing pressures on the labor market, driven primarily by the growth of the working-age population, will only increase if Morocco fails to find inclusive solutions aimed at, among other things, improving the access and position of women in the labor market.

Trend 1. A general and continuing decline in the participation rate. The labor force participation rate of Moroccans has been steadily declining, even though it is already significantly lower than other middle-income countries. To illustrate, between 2000 and 2014, the working-age population grew by an average of 383,000 people per year, 173,000 men and 210,000 women. In contrast, the labor force participation rate fell from 54.5 percent in 1999 to 45.8 percent in 2019. For young people aged 15 to 24, their labor force participation rate fell from 45.8 percent in 2000 to 32.2 percent in 2014, which

could be explained, in part, by these young people staying in education longer. This decline in labor force participation affects women more than men and across all age groups and qualifications. Morocco ranks below the average for lower-middle-income countries, where women's labor force participation rate averages 39 percent compared to 57 percent in upper-middle-income countries (World Bank).

This finding is even more worrying if we consider that women's access to higher education has increased considerably in recent decades. The HCP reports a net enrollment rate of 71.9 percent in 2020 at the preschool level, 66.8 percent at the secondary level and 37.5 percent at the qualifying secondary level. The gender parity index is 0.96 at the primary level, 0.92 at the secondary level, 1.1 at the qualifying secondary level and 1.025 at the higher level. Thus, while women are gaining access to education at all levels, this is not reflected by participation in the labor market. Evidently, Morocco is missing out on a significant potential for wealth creation and value added, beyond the social aspects involving greater autonomy for women.

Trend 2. High youth and graduate unemployment. In general terms, Morocco has high youth unemployment rates that are exacerbated by the increase in the labor force entering the labor market each year. In addition, unemployment among young graduates has only increased over the past decade, reflecting the low quality of created jobs. In parallel with the downward trend in women's participation in the labor market, young women graduates are more affected by unemployment. Although unemployment among graduates has generally increased over the past decade, women are more affected by the phenomenon and female unemployment is increasing at all levels of education.

Trend 3. The phenomenon of youth who are neither in school nor employed nor in training (NEET). Perhaps the most concerning labor market challenge in Morocco is the high rate of youth who are neither in employment, education, nor training (NEET). In 2017, the HCP estimates that approximately 29.3 percent of youth aged 15-24, nationally, are in this situation. Young women are more affected than young men as they represent about 79.3 percent of the total NEET population, making this phenomenon fundamentally feminine.

Trend 4. Horizontal and vertical gaps between women's and men's employment. Women face barriers to accessing the labor market combined with vertical and horizontal discrimination related to the types of jobs they hold and the positions to which they have access. The downward trend in women's participation, which has taken hold in recent years, finds explanation in economic and cultural considerations. All other things being equal, barriers persist for women who do participate and the preponderance of mobilization of their work in low value-added sectors undervalues their potential. As an additional source of inequality, women who do manage to enter the labor market are mainly in low-paying sectors: in the textile and clothing industry (46.4percent), community social services (46.2percent), personal and domestic services (37.3percent), and agriculture, forestry, and fishing (33.6percent). Furthermore,

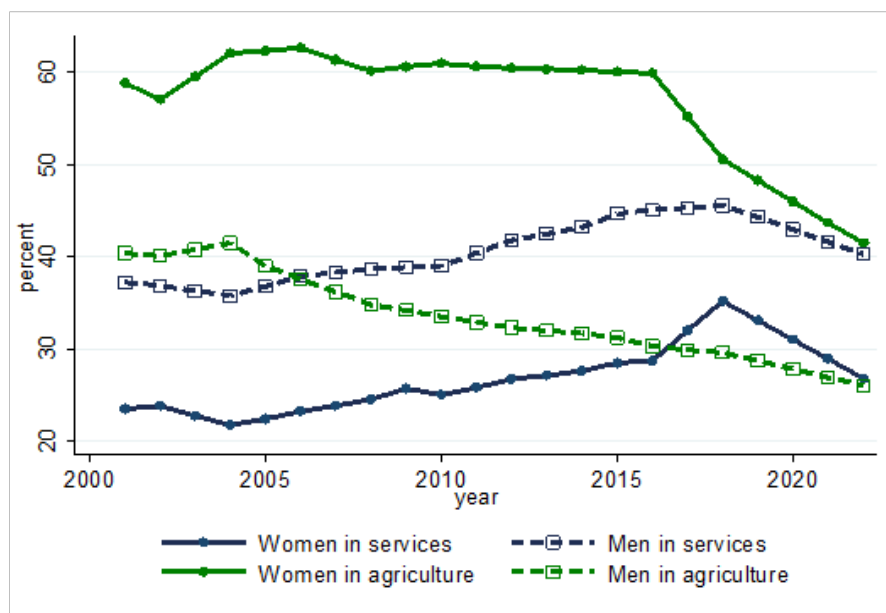
an analysis by geographic location reveals the existence of two types of labor markets for women: one in rural areas where employment and participation are higher for both sexes, but mainly in traditional low-value-added activities, and the other in urban areas where inactivity is extremely high for women (Lopez-Acevedo et al., 2021). In the latter market, the loss of earnings would be greater, due to the higher level of education of urban women.

Significant gender gaps also exist by employment status. Indeed, women represent more than 55 percent of domestic workers, nearly 20 percent of salaried employees and nearly 12 percent of self-employed workers. Women are also underrepresented in management positions and female entrepreneurship remains low. The low participation of women in the labor market is primarily related to high unemployment, the lack of decent jobs, mainly those that guarantee social insurance coverage, and the growing mismatch between trained skills and labor market needs.

From household production to marketization of labor: the arduous transition

If demographic shifts occur concurrently with economic growth (Mason, 1988; Bloom, 1998; Dennison and Ogilvie, 2014; 2016), shifts from home production to labor marketization increase women's work at both the intensive and extensive margins, especially as economies transition from traditional labor intensive to human capital-intensive sectors (Folbre, 1986; Parente et al., 2000; Gollin et al., 2002; Caselli, 2005; Song et al., 2011; Dinkelman and Ngai, 2021). The puzzling low FLFP rate in Morocco can, thus, be traced back to production in household markets, accounting for the uneven distribution of paid and unpaid labor between men and women, and economy-wide reallocations, explaining the rarity of 'women friendly' jobs (Klasen, 2019; Sarkar et al., 2019; Jayachandran, 2021; Klasen et al., 2021; Kruse et al., 2023). Without any oversimplifications, increases in female labor supply have been explained for the most part by growth of services (Buera et al., 2019) which allow women to marketize their labor and buy substitutes for their home production in the markets (Olivetti and Petrongolo, 2016; Ngai and Petrongolo, 2015; 2017). However, delayed reallocations or transitions to industrialization, which are in part attributed to low agricultural productivity (Gollin et al., 2002), can in turn explain the slow growth in services where demand for women's labor is relatively higher (Goldin 1990; 1995; 2006; Rendall 2018). So, in spite the increase in female educational attainment, without a dynamic growth in service sector providing women with better quality employment opportunities and market produced substitutes to their home production, female labor supply will not follow.

Figure 2: Evolution of the workforce by economic sector (agriculture vs. services)

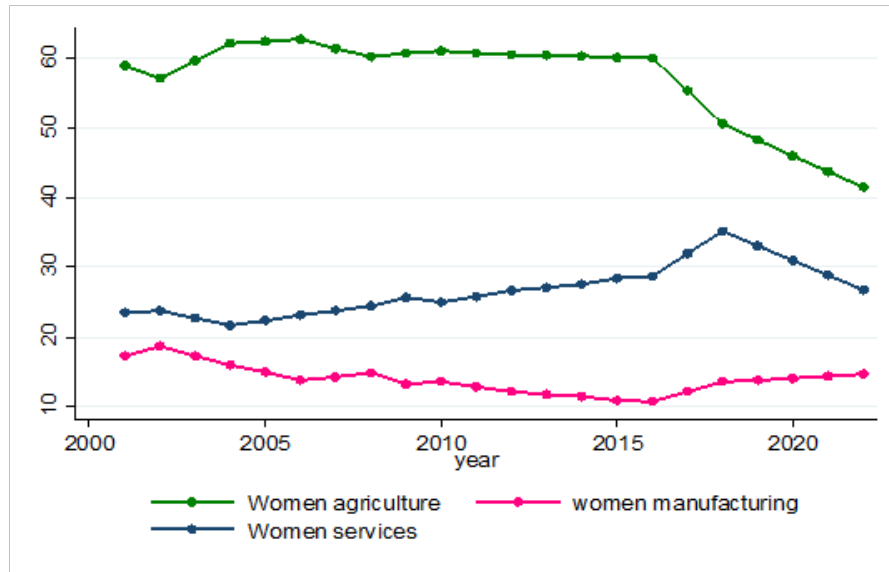


Source: Author's calculations. HCP employment survey.

Stylized facts from national employment data in Morocco first highlight sizeable decrease in labor participation of women relative to men as well as a disproportionate increase in their unemployment rate. Simultaneously, between 1999 and 2022, workforce gradually shifted from agriculture sectors to services albeit a significant decrease of women's labor in both agriculture and services suggesting that shifts described by literature are not straightforward. This is acutely intriguing if we consider that women's employment in manufacturing did compensate for shrinkage in services and agriculture.

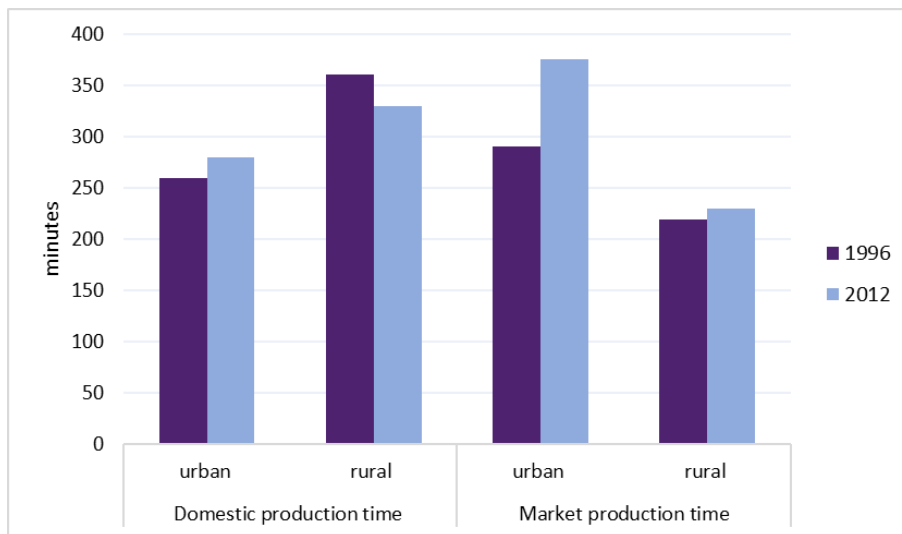
At the same time, if we consider that individuals and households allocate their resources, in terms of time available during the day, between domestic production, which uses inputs purchased in the market, and market production, which enables these inputs to be purchased, the analysis of labor supply will thus involve understanding the simultaneous allocation of time outside the market. Indeed, the opportunity cost of an individual's, or a household's, time has a direct impact on its consumption, which is also reflected in its purchasing power, and supply of market labor. In other words, the opportunity cost of more time allocated to market work and less time available for domestic work. Insofar as domestic work enables the production of goods and services essential to the survival and well-being of household members, it becomes essential to know whether there is a supply substituting domestic work, and what its cost would be. The existence, or not, of this substitute production constitutes a barrier to women's labor marketization and becomes, thus, important to understanding their labor supply behavior.

Figure 3: Evolution of women’s work by economic sector (agriculture vs. services vs. manufacturing)



Source: Author’s calculations. HCP employment survey.

Figure 4: Time devoted to market vs. domestic production by women (1996-2012)



Source: Author’s calculations. HCP time-use survey.

Considering that women trade-off between market and domestic time, and continuing with a structural analysis, evolution of time use behavior between 1996 and 2012 reveals interesting facts. In terms of domestic production, urban women seem to devote more time than rural ones, suggesting that there gains in well-being and utility of domestically produced goods and services happening nationwide, provided the initial levels in 1996. Another puzzling, stylized fact emerges: the increase at intensive margins of labor is simultaneously happening with a decrease at the extensive margin of labor supply, especially for urban women. This finding has not yet been documented by literature and, couple with the educational attainment paradox, suggests that there are other frictions, or barriers, behind the low female labor supply in Morocco. These frictions could equally be related to misallocations in labor markets, and economy-wide, and/or household markets. This thesis considers the coupling of barriers and inefficiencies in both markets to address the issue of low labor force participation in Morocco.

Contributions, used data and outline of the dissertation

This dissertation builds on the large literature of new household economics (Becker, 1965; Grossbard-Shechtman, 1984) and on growth and structural transformation (Escobar, 2011), trying to address the issue of low female labor supply in Morocco. It attempts to enlarge the scope of existing knowledge on this issue. First, it examines the contribution of paid and unpaid work to the economy highlighting the demographic and gender dividends. The trade-offs between household markets and labor markets constitute a focus area for analysis. Second, it provides empirical examination of the collective labor supply model and the role of intra-household bargaining between spouses. Further, it examines the role of gender positive policies in balancing intra-household bargaining power and their incidence on women's labor supply.

This dissertation relies on several complementary sources of data. Certainly, it was necessary to represent the different forms of work, both paid and unpaid, and to understand the role of family structures, social norms, and regulations in determining women's labor supply. Thus, the various primary data sources that were used allowed for these nuances to be represented. The choice of data sources is also motivated by other considerations, namely, their availability and accessibility. The main sources of data are the National Employment Survey, the National Time Use Survey, and the National Survey of Household Consumption and Expenditure conducted by the High Commission for Planning, the national statistics institute in Morocco. These surveys have the advantage of covering different topics on consumption and production of the Moroccan population and are based on large samples of households and individuals with a thorough geographic and regional representation of the country. As such,

this thesis is also connected to relevant questions in the public discourse on growth and development in Morocco connecting macro-level economic growth to micro-level household and individual behavior. It addresses several related issues pertaining to gendered and economic inequalities and the effect of gender positive public policies and legislation.

The first chapter adopts a demography-based approach to assess the contributions of men and women to the economy through paid and unpaid work and throughout the life-cycle. For this, the National Transfer Accounts, which measures production and consumption of paid work, and the National Time Transfer Accounts, which measures production and transfer of unpaid work, were used.

Chapter 2 delves deeper to the institution of households and examines the driving factors behind the low labor force participation of married women through an empirical test of the collective model. An important contribution of this chapter is the distinction made between working dual and single earning couples, and between urban and rural dwellings. It starts by considering existing occupational and wage differences in the labor market and in time allocations to market work and domestic work. It reports that the implications for spouses' time allocations are attributed to changes in wages, household income, and bargaining power induced by several mechanisms that can explain the low female labor force participation.

Chapter 3 investigates the effect of the introduction of unilateral divorce laws on women's labor outcomes using household level data that spans over decades and a quasi-experimental difference-in-differences design in three countries: Morocco, Egypt, and Jordan. Results show that no-fault divorce legislation was associated with a modest increase in labor outcomes a few years after the reform. These findings are likely induced by a power-shift effect that drives women into the labor force. However, when a longer time window is considered, 10 or more years after the reform, a negative effect of the reform is documented on women's labor outcomes in Morocco, and a positive effect in Egypt and Jordan. These differences can be attributed to a set of countervailing effects, including social norms, labor market dynamics and evolution of legislation itself, that make the derived utility from marriage, in some cases, more attractive than that of employment, and vice versa. These findings partially confirm previous research on the relation between no-fault divorce and women's agency and empowerment in the MENA region, but, at the same time, contrast with prominent perspectives on legislation that aims at reducing gender-based discrimination. Instead, they show that there might be unsought effects of legislation and provide a policy relevant discussion on that basis.

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Chapter 1

Market and Household Production and Consumption over the Life-cycle

1

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Abstract

How does low female labor force participation affect the economy? Where does women's production go? How can women's work be made visible? If population is one the most important resource of a country, where does women's production fit within the Generational Economy of Morocco (Lee et al., 2008; Mason, Lee, Tung et al., 2009; Mason, Lee, Donehower et al., 2009; Mason and Lee, 2011)? and how demographic changes affect the Moroccan economy? This chapter attempts to provide a birds view on the visible and invisible production of Moroccan population and the gendered differences with a generational framework. The dominant pattern that emerges is a male dominated market production and a female dominated home production which may be attributed to social norms, personal preferences, or perhaps, significant frictions in labor markets. Thus, narrowing the gender gap in labor force participation, without "transferring" women's home production to men, will require the provision of accessible substitutes to their home production in the market. Another important contribution of this chapter resides in the provision of a forward-looking analysis of demography induced changes in supply of household production over the lifecycle and for the next few decades. These results illustrate how demographic changes alone can induce significant changes to the volume of home production which compensates a significant chunk of goods and services needed by the dependent population. Perhaps the effect of a decreased supply in home production merely induced by population changes is hard to grasp fully in economic terms today. But, as population ages, and without any changes to the existing social protection system and safety nets, a care crisis may be looming in the horizon.

JEL Codes: D13, J22, O11, O12, O55.

Keywords: Unpaid work, Imputed wage incomes, National Transfer Accounts, National Time Transfer Accounts, Third-party criterion, Care-economy.

1.1 Introduction

How does low female labor force participation affect the economy? Where does women’s production go? How can women’s work be made visible? If population is one the most important resource of a country, where does women’s production fit within the Generational Economy of Morocco (Lee et al., 2008; Mason, Lee, Tung et al., 2009; Mason, Lee, Donehower et al., 2009; Mason and Lee, 2011)? and how demographic changes affect the Moroccan economy? This chapter attempts to provide a birds view on the visible and invisible production of Moroccan population and the gendered differences with a generational framework.

Morocco stands at a crucial stance in its demographic transition, with the highest proportion of young adults being at a working age – a phase that can generate demographic dividends. A decreasing “dependency ratio” with a rising active population can substantially alleviate the “support ratio”. Such population transformation can stimulate economic growth, a phenomenon known as demographic dividends (Lee, 2003). However, several obstacles stand before benefiting from these structural changes, namely, the low investments in human capital (education and health), low risk coverage for the informal sector, a gender gap regarding labor force participation and the subsequent outcomes in life-cycle wealth accumulation.

Leveraging the demographic transition for sustainable economic development entails seizing both the first and second demographic dividends (Lee, 2003). For the first dividend to arise and generate benefits to Moroccan economy, critical reforms must take place, primarily in education, labor markets and social protection schemes.

Although the country enjoys a stable economic growth amidst the region’s economies, the labor force participation does not surpass 54,2% while women register the low rate of 22% (HCP, 2023). Low female labor force participation hinders gains from the rising share of the working-age population. amongst the inactive population, more than 70% are women (HCP, 2023). Similarly, high youth unemployment also deters the yield of these benefits and may have long term implications for future productivity. Given that the second dividend, arises in response to population ageing and, hence, to wealth accumulation, it is subject to early-stage reforms and investment in Morocco’s health and education infrastructure. The current transformations in the Moroccan population age structure can stimulate an increase in the share of working-age population which can, temporarily, favor economic growth. Sustainable economic development, however, will hinge on seizing the opportunity offered by this “demographic window of opportunity” to put in place institutions and policies for the labor market and social protection. Thus, without including the full potential of the Moroccan working-age population, a sustainable economic growth dynamic is even further out-of-reach.

Changing population dynamics and structures, also entails changes in behaviors and individual decision-

making processes that should be accounted for by policy makers. Individual life paths impact national economic outcomes, and vice versa. They also translate specific institutional practices, preferences, norms, and traditions that should be investigated and understood. As such, existing gender differentials layered on structural labor market issues, such as high youth unemployment and low activity rates, influence decision making, behavioral changes and outcomes over the life-cycle of individuals, households, and the economy. This chapter draws on conclusions from the National Transfer Accounts (NTA), which are consistent with the System of National Accounts (SNA), and the National Time Transfer Accounts to better understand the nature and underlying consequences of low female labor force participation. The NTA methodology enables us to carry out an in-depth analysis of economic flows considering different generational flows (D’Albis and Moosa, 2015) through based on inter-generational transfers. A thorough presentation of the methodology can be found in the NTA manual (UN, 2023) and publications (Lee and Mason, 2011) along with results from member countries around the world. The National Time Transfer Accounts (NTTA) extend the NTA framework to include invisible production within households (Donehower, 2018). To the best of our knowledge, there has not been any applications of the NTA or NTTA methodologies for the case of Morocco. This chapter is organized as follows. Section 1.2. presents the methodological framework and used data. Section 1.3. presents detailed results of age profiles of market and home production, and an estimation of the monetary value of home production. Section 1.4. concludes.

1.2 Methodological framework and Data

Over their lifetime, individuals produce, consume and transfer goods and services. These goods and services are produced using inputs of purchased goods and time in markets, where each service and good has a monetary equivalent, and/or in households. This distinction gives place to paid and unpaid work where the same goods and services that are produced within households are not quantified monetarily in comparison to those produced in markets. Gendered differences in terms of income and asset accumulations over the lifecycle thus happen because of specialization either in market or home production. To assess the structural consequences of this specialization, two distinct and complementary methodological frameworks are employed, the National Transfer Accounts and the National Time Transfer Accounts.

1.2.1 Methodological framework

National Transfer Accounts

The National Transfer Accounts methodology measures the age profiles of economic activities (labor income, consumption, public transfers, private transfers, and asset-based reallocations) at a national level to show how they vary across generations. The advantages of this approach are that it focuses on individuals instead of institutions, it includes all market transfers in generational economy, and it represents all three generations (children, youth/active population, and elderly/pensioners).

The life-cycle deficit is the concept at the heart of the NTA analysis and it measures the difference between the total value of goods and services consumed $C(a)$ and produced $Y(a)$ by each age group, such as: $LCD(a) = C(a) - Y(a)$

The age groups that have a positive life-cycle deficit ($LCD(a)$ is greater than 0) can support their consumption through age reallocation inflows. These are the independent age groups, working age groups, whose reallocations amount for the consumption of the dependent age groups.

a. Aggregate controls

In order to build the NTA accounts, consumption, for all goods and services, and labor income are aggregated across all age groups for a given calendar or fiscal year. The per capita age profiles are adjusted by an estimate of factor θ , such as:

$$\Theta = \sum_a x(a)N(a)$$

where,

$x(a)$: the per capita age profile

$N(a)$: the population

X : the aggregate control value

Therefore, the per capita profile and aggregate profiles are:

$$x'(a) = x(a)/\theta$$

$$X'(a) = x'(a)/N(a)$$

b. Aggregate controls

In order to build the Economic Life-cycle, the estimation of age profiles of consumption and labor

income follows three steps: (i) Estimating the per capita age profile using household survey data; (ii) Constructing age-profiles using population data; and (iii) Adjusting the per capita profiles to match aggregate controls.

Consumption profiles

It is the total value of goods and services consumed by individuals or households during a given calendar or fiscal year. The underlining assumption is that all consumption can be assigned to individuals. Using the household survey, consumption profiles account for all household expenditures or outflows. We distinguish three components of private consumption: education expenditure, health expenditure and other expenditures. Education and health expenditures are estimated separately since they vary significantly by age.

Private education consumption

Education expenditures are allocated by ages using a regression model where the household consumption of education is estimated such as:

$$(CEF_j) = \sum_a \alpha(a)E_j + \sum_a \beta(a)NE_j + e_j$$

where

(E_j) : the number of household j members enrolled in education aged (a)

(NE_j) : the number of household j members not enrolled in education aged (a)

The number of members not enrolled in education captures the education expenditures that are not part of formal educational system. If there are any negative coefficients for some age groups, with very low or no enrollment, these values are then replaced by zero. The estimates of the regression are used to allocate education consumption to each member i in household j, where, for example:

$$(CEF_{ij}(x)) = CEF_j \alpha(x) / \sum_a \alpha(a)E_j(a)$$

Private health consumption Using data from the household survey, we follow a similar model as education expenditures to estimate health consumption expenditures for each member of the household. Health expenditures (CFH_j) is estimated by regressing the number of outpatients and inpatient at each age (a) in each household, such as:

$$(CFH_j) = \sum_a \alpha(a)IN_j(a) + \sum_a \beta(a)OUT_j(a) + e_j$$

where,

IN_j : is the number of inpatients in household j aged (a)

OUT_j: is the number of outpatients in household j aged (a)

Other household consumptions All other household j consumption expenditures are proportional to a scale of 1 to adults aged 20 and above. This scale is linearly declining from 1 at age 20 to 0.4 for ages 4 and under. The formula of scale used is:

$$\alpha (a) = 1 - 0.6 * D(4 < a < 20) * ((20-a)/16) - 0.6 * D(a < 4)$$

where, D(x) is a dummy variable that is equal to 1 when the condition x is met, or else, 0.

Labor income profiles

We estimate the labor income through the compensations for all work efforts including employee salaries and independent earnings. The household survey data reports employee salaries that we classify based on the professional categories. As for independent income, it is reported for the household as a unit rather than the individuals in the survey. Thus, all self-employment earnings reported are allocated to family members that are self-employed. The self-employed income is estimated for each individual i in household j.

such as:

$$YLS_{ij}(x) = YLS_j \gamma(x)$$

$$\gamma(x) = w(x) SE_j(x) / \sum_a w(a) SE_j(a)$$

where,

x: the age of individual i in household j

SE_j: the number of self-employed individuals in household j

w(a): the average earning of employees

$\gamma(x)$: is the share of total household earnings from self-employment

c. Smoothing

The per capita age profiles are smoothed according to NTA guidelines using Friedman's Super-Smoother incorporating the number of collected observations. NTA research groups use a cross-validation smoother called Friedman's Super Smoother . It should be noted that the per capita education profile is not smoothed, so are the aggregated per capita profiles.

Friedman's super smoother is a non-parametric regression estimator based on local linear regression

with adaptive bandwidths (Friedman [1984]). The basic idea is to first estimate a number of fixed bandwidths smooths by local linear regression. The leave-one-out cross-validated residuals from each of those initial estimates are then smoothed using a constant bandwidth. Based on the smoothed residuals, the best bandwidths from the initial estimates are selected at each data point over the range of the predictor variable. Those local bandwidths are then smoothed with a constant bandwidth, and the two estimates from the initial estimates with closest bandwidth values to the smoothed bandwidths are selected, and the smoothed outcomes are linearly interpolated. The interpolated points are then smoothed again with a fixed bandwidth, resulting in the final estimate.

“supsmooth” is implemented as ado file, with computations being performed in Stata. The parameters of the local linear regressions are estimated by either using the updating algorithm proposed by Friedman [1984], or by fitting a least squares model in each window.

National Time Transfer Accounts

The National Time Transfer Accounts framework is an extension of the National Transfer Accounts that estimates patterns of time allocations to home production activities by gender and over the life-cycle. The estimated age profiles are focused on production and consumption of goods and services that are produced inside the household and for which substitutes are found in markets. For this, the time diary surveys are employed to generate the NTTA estimates and wages are then imputed to value unpaid work time in monetary units. Following the NTTA methodology, where gender and time use are incorporated into the NTA analysis, in what follows, we identify time spent on household production activities by age and sex and impute monetary value for the time spent on those activities.

a. Identifying NTTA activities

Time-use data are a rich source of comprehensive information on a variety of daily activities, both productive and non-productive. For instance, a typical diary includes market activities, home production activities, as well as a plethora of leisure, socializing, and self-care related activities. First, satellite activities that would be include in the home production category must be identified. For this, we opt for using the “third party criterion” definition to identify these activities: “one can pay someone else to do it and still receive the benefit from it (Reid, 1934)”. The activities to which we want to impute wages do not include personal activities such as education, sleep, eating...etc. The following table shows the groups of activities in NTTA :

Allowing for gender differences, four age profiles are constructed using the NTTA methodology:

Table 1.1: NTTA household production activities groups

Time Use Activity
1. Cleaning
2. Laundry (includes sewing and clothing repair)
3. Cooking (food and drink preparation)
4. Household maintenance and repair
5. Lawn and garden care
6. Household management (incl. finances, scheduling, coordinating, and related telephone calls)
7. Pet care (not veterinary care)
8. Purchasing goods and services
9. Travel (related to activities 1-8, 10-12)
10. Childcare Care for household children Care for non-household children
11. Care for adults and elders (these can be separated into two separate accounts if sufficient data are available) Care for household adults and elders Care for non-household adults and elders
12. Volunteering or other forms of care for community members (includes related travel)
13. Fetching wood or carrying water

Source: Donehower, 2018.

production, consumption, outflow transfers, and inflow transfers. A production profiles is estimated for a given activity as the average total time spent performing that activity for each age cohort. As for consumption, and since time-use data do not provide direct record of consumed home production, it is estimated indirectly. For activities that are homogeneously consumed by all members, such as cleaning and cooking, the total production of the household is evenly allocated between all members. Otherwise, for other activities, that are only consumed by specific household members, consumption is allocated using a regression approach where the dependent variable is the time budget spent on that activity and the independent variables are the number of household members that qualify to benefit from that production.

b. Imputing wages

Since the goal of NTTA is to compare production profiles with those of NTA, once the age profiles are constructed a monetary value is then imputed for each type of activity. The valuing of home production is useful in examining its magnitude relative to national production, namely as measured by the GDP. Since we consider that home production activities are defined as activities that one could pay someone else to perform and still draw the utility from it, i.e., substitutes, the replacement wage approach is used. Further, there are two replacement wage approaches: a generalist and a specialist wage replacement approach. While the first considers average wages of a wide range of workers engaged in market activities like home productions, the second considers average wages of workers that specialize in a sub-activity of home production, such as a chef's wage for cooking activities and a housekeeper's

wage for home cleaning activities, and so on. For the purpose of this analysis, and considering the lack of reliable detailed data on hourly wages by profession, the legal minimum wage rate is used.

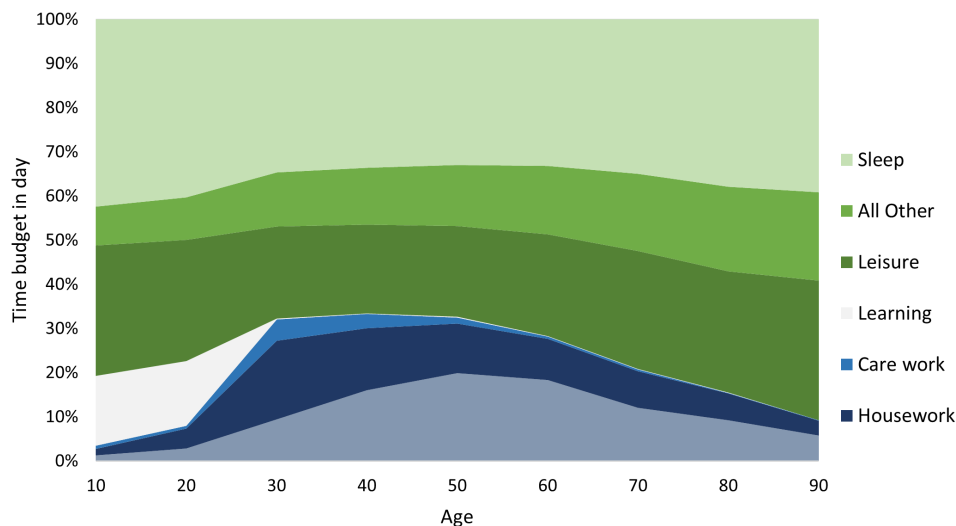
1.2.2 Employed data

Since the NTA age profiles represent estimates of the age distribution of economic flows per capita adjusted to match national accounts levels, three data sources are needed: demographic, national accounts, and age dis-aggregated economic flows. Being limited by the non-exhaustiveness of disposal data, this chapter will focus on the construction of the life-cycle account. To construct per capita age profiles, the starting point is the national survey on household income and expenditures by the High Commission for Planning collected in 2008 on nearly 7,200 households. By identifying the ages of the members, the granularity of the data from this survey allows to estimate the income and expenditure of each household member. A distinction is made between wage and farm income. This survey has the advantage of: (i) Being nationally representative, (ii) Allowing for the identification of the head of the household, (iii) Providing sufficient information on the age patterns of household members between 0 and 99 years old, their gender, and their professional/school status, and (iv) Providing information on household income (wage or self-employment), consumption and expenditures.

Where necessary any additional data was supplemented from other surveys of the same reference year. To scale the NTA age profiles, the national accounts data published by the HCP for the same reference year is used to construct the macro controls. These are also based on the system of SNA. Moreover, to also adjust the NTA age profiles to the actual population counts, the population estimates for the same year published by the HCP are used. These data are drawn from population counts by age between 0 and 99 years, they are representative of the entire population (regardless of their socio-professional status). An important distinction is that population estimates dis-aggregated by age and sex are used to draw conclusions for differences based on gender.

As for the NTTA estimated, the main data requirement is found in the National Time-Use survey, conducted in 2012, by the HCP, among a sample of 9,200 households, represented by one female and one male aged 15 years and older per sampled household. A sub-sample of about 3,000 children focuses on household members aged 7 to 14 (Appendix B.1. provides a description of the sampling frame). Because two sets of questionnaires are used, household and individual, I can identify individuals and assign them to a household, i.e., identify couples along with their subsequent individual and household characteristics. The Time Use Survey collects data on daily activities based on a detailed diary. This data allows to identify and conduct an in-depth measurement of all forms of work, paid and unpaid, in order comprehensively assess interactions between individual and household production.

Figure 1.1: Time Use Profiles by Age in Morocco

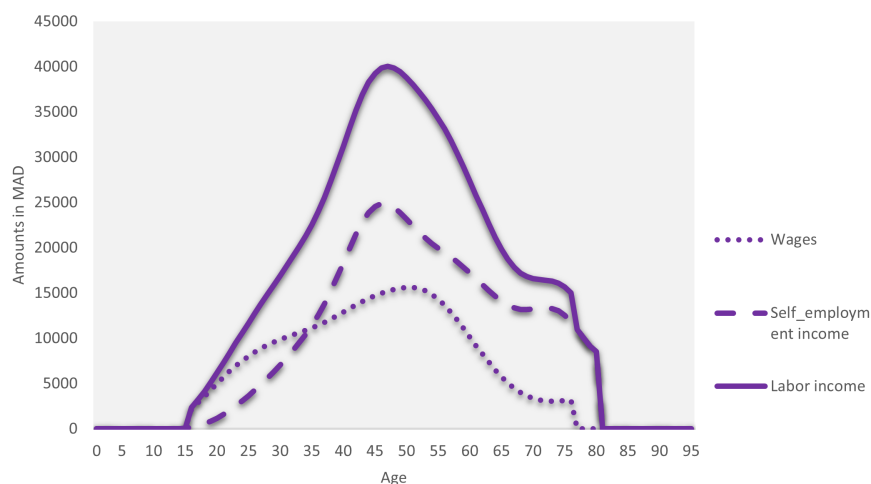


Source: Own calculations, National Time-Use survey, HCP, 2012. Notes: This figure plots the age profiles of time use during a 24hour time budget. Activities under “All Other” include self-care, mealtime, and religious practices. Activities under Housework, Care work, Market work include the time devoted to performing these activities as well as commuting and transportation time. Following the National Transfer Accounts methodology, only individuals aged 10 years or older can be considered as respondents to time use surveys.

1.3 Results

In constructing the National Transfer Accounts and the National Time Transfer Accounts, a distinction is made between market paid work and non-market unpaid work. The latter, household, or home, production includes all goods and services that are produced at home either using inputs purchased or not. It includes all produced goods and services that can be bought in markets and, thus, represents the opportunity cost of home production. Time-use profiles depict a more accurate picture of productive and unproductive activities carried out during a given day, including productive paid and unpaid work. The average pattern by age for seven categories of activities carried out during a typical day are presented in the following figure. Physiological, leisure, and social activities excluded, productive activities occupy about a third of the daytime budget. Housework production includes activities that are not care-related including cleaning, cooking, purchases of goods and services for the benefit of the household, and household maintenance. Among the main highlighted patterns, a concentration of education related activities around the ages of 10 to 25, around the age of schooling. Sleep and leisure occupy a significant portion of time among the youngest and oldest cohorts while market and home production occupy a higher proportion of the day of adults around the prime production ages.

Figure 1.2: Constructed labor income age profiles



Source: Own calculations, using household level data produced by the High Commission for Planning (2008). Notes: This figure plots the age profiles of labor income estimated using the National Transfer Accounts Methodology.

1.3.1 Labor income and consumption profiles over the life-cycle

Age specific profiles of labor and asset income, public and private transfers, consumption, and savings are presented using the National Transfer Accounts methodology. Gender differentials are analyzed for labor income, consumption and life-cycle deficit profiles highlighting inequalities found between the sexes over the life-cycle. NTA profiles depict general patterns within economies, and within the extent that behaviors differ by age, they then portray dis-aggregation of behavioral differences by age and gender. The average labor income profiles by 1-year age groups for the year 2008 are presented in the following figure with a distinction between labor income profiles for wage earners and the self-employed. Income for both categories start at age 15 and is higher for wage earners. The surplus between wage earners and the self-employed between ages of 15 to 35 is perhaps due to the prevalence of public sector employment in the Moroccan economy. The relatively steady increase in wages during the life-cycle followed by significant decrease around the legal age of retirement is an indication on that.

On the other hand, between the age profiles of 15 and 35, the lower values of self-employment income show that they are less human capital-intensive occupations. The self-employed are more likely to work in the agriculture sector and to have a legal status of “family aid and/or apprentice” (around 50% of the sample), while less than 3% of the self-employed are employers. Moreover, continued self-employment income beyond the legal age of retirement is indicative of the limited pension system coverage and, considering that self-employment activities are mainly traditional, like agriculture, highlights the prevalence of the informal sector.

Private consumption profiles in NTA accounts include total expenditures of households on health,

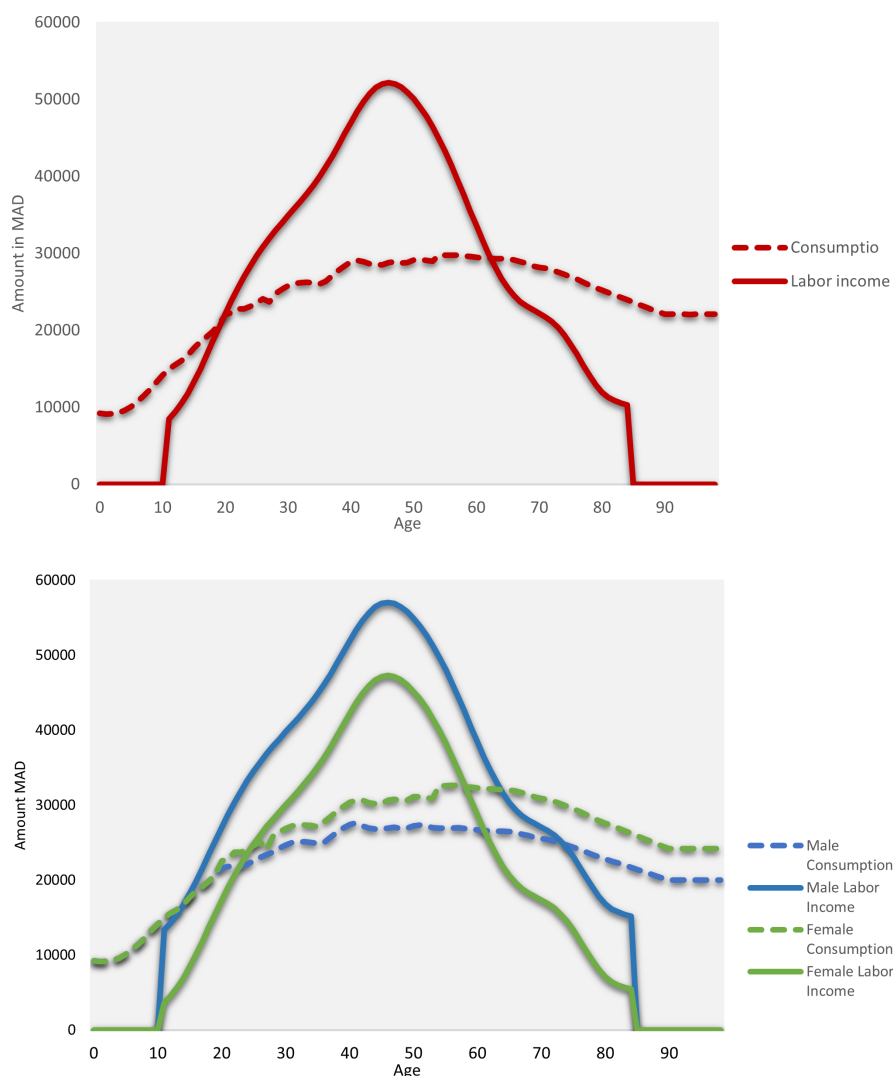
education, housing as well as other private consumption. Distinctions, such as owner and non-owner-occupied housing, depending on availability and granularity of data. Private consumption expenditures are derived from household consumption expenditure survey and, it's worth noting, that consumption that are unaccounted for, such as informal care services, be it childcare, domestic labor or caring for the sick, among many informal private consumption transactions, can result in potential biases in the estimates. Due to prevalence of these informal consumption channels, potential gender differentials could also go unnoticed as women will tend to buy, informally, care services to free up time for participating in paid labor.

Compensation and substitutions of public to private goods for health, affect households' standards of living and are the main manifestation of income inequalities that exist in Morocco. In fact, considerable shifts in private consumption in later stages of the life-cycle are mainly explained by out-of-pocket expenditures that households incur on health as they get older. Health expenditures found in the first year of life (birth occurred expenditures) and in later ages attest to the low coverage of the insurance regime, fragmentation and poor services provided by the public, free of charge, health care establishments. As individuals get older and develop more chronic diseases, their out-of-pocket health expenditures reach staggering amounts in comparison to younger ages.

Private out-of-pocket expenditures on health and education follow specific patterns over the life cycle. While education expenditures are mainly concentrated in the early years of life between 1 and 29, households still rely on consumption of public education. Education, as a risky asset, is intrinsically correlated with individuals' perception of occurred risk as opposed to their expected future employment and income situation (Hanchane and Touahri, 2004). Thus, household's investment in child's education might be strongly influenced by their perceptions of gender roles and future earning capabilities of daughters as opposed to sons. The results from the NTA estimations do not seem to suggest differentials in investments in children's education regarding their gender. Instead, they highlight households' heightened dependency on public transfers of education. Benaabdelaali, Hanchane and Kamal (2012), find that between 1950-2010 inequalities in educational attainment have reduced significantly in favor of younger cohorts aged between 15 and 24. The latter seem to have benefited from the reform of the educational system which translates to substantial gains in educational attainments thanks to public spending on education. Indeed, returns to investments for spending on education are higher for younger cohorts than older ones (Chauvet, Lavallée, Mesplé-Somps and Saint-Macary, 2019) suggesting that current gains in educational attainment might have transformational outcomes on the development trajectory of Morocco in coming decades provided, of course, that necessary shifts occur in the labor markets supported by reforms in social protection regimes.

Gender differentials in the labor market result in substantial differences over the life-cycle. The life-

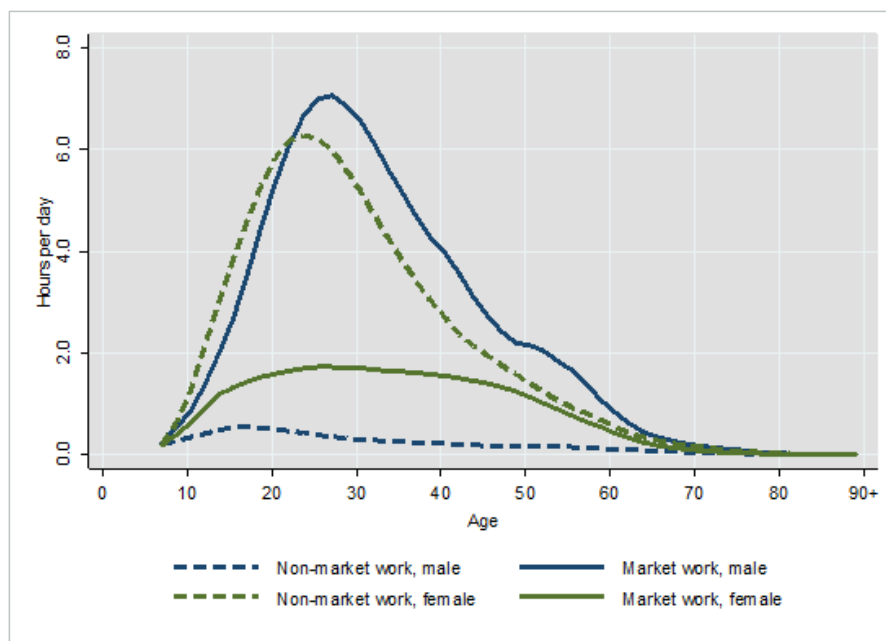
Figure 1.3: Labor Income and Consumption over the Lifecycle by Gender, 2008



Source: Own calculations, using household level data produced by the High Commission for Planning (2008). Notes: This figure plots the age profiles of labor income and consumption estimated using the National Transfer Accounts Methodology.

cycle surplus is for males is substantially larger than that of females and lasts longer. As women participate less, they accumulate less wealth than men and show deeper deficits in ages of dependence or inactivity. Out-of-pocket expenses in these later stages of life, mainly those pertaining to health conditions and chronic diseases, can be more heavily occurred by women than men. These gendered differences in market production highlight the importance of considering life-cycle profiles of unpaid production and consumption in order to illustrate a more accurate picture.

Figure 1.4: Allocation of Time over the Life-cycle by Gender, 2012



Source: Own calculations, using time-use data by the High Commission for Planning (2012).
 Notes: This figure plots the age profiles of time allocations to home production and market production estimated using the National Time Transfer Accounts Methodology.

1.3.2 Gendered differences in age profiles

Weighted home production age profiles show significant gendered differences across the life-cycle with women providing the bulk of unpaid home production in a similar scale to how men provide the bulk of paid market production. The unweighted age profiles provided in Appendix D, show how these differences continue well into old age, with women continuing to provide a significant chunk of unpaid work. The total unpaid production across the life-cycle is valued at close to 35% of the national GDP.

Allocation of Time over the Life-cycle

Gender specific differences in time allocation profiles over the life-cycle estimated using the NTTA methodology are presented in the following figure. The average age patterns follow the expected trends of increased production during late teenage years that then peaks for middle-aged cohorts, and then decreases around old age. However, the main gendered difference that emerges is that males' market production is just as important in significance and value as females' home production, and vice versa. In other words, women spend just as much time performing unpaid work during their lifetime as men spend doing paid work.

The second pattern that emerges is that males' and females' market work hours increase and peak at different ages, with men reaching their peak hours around the age of 28 and women around 25.

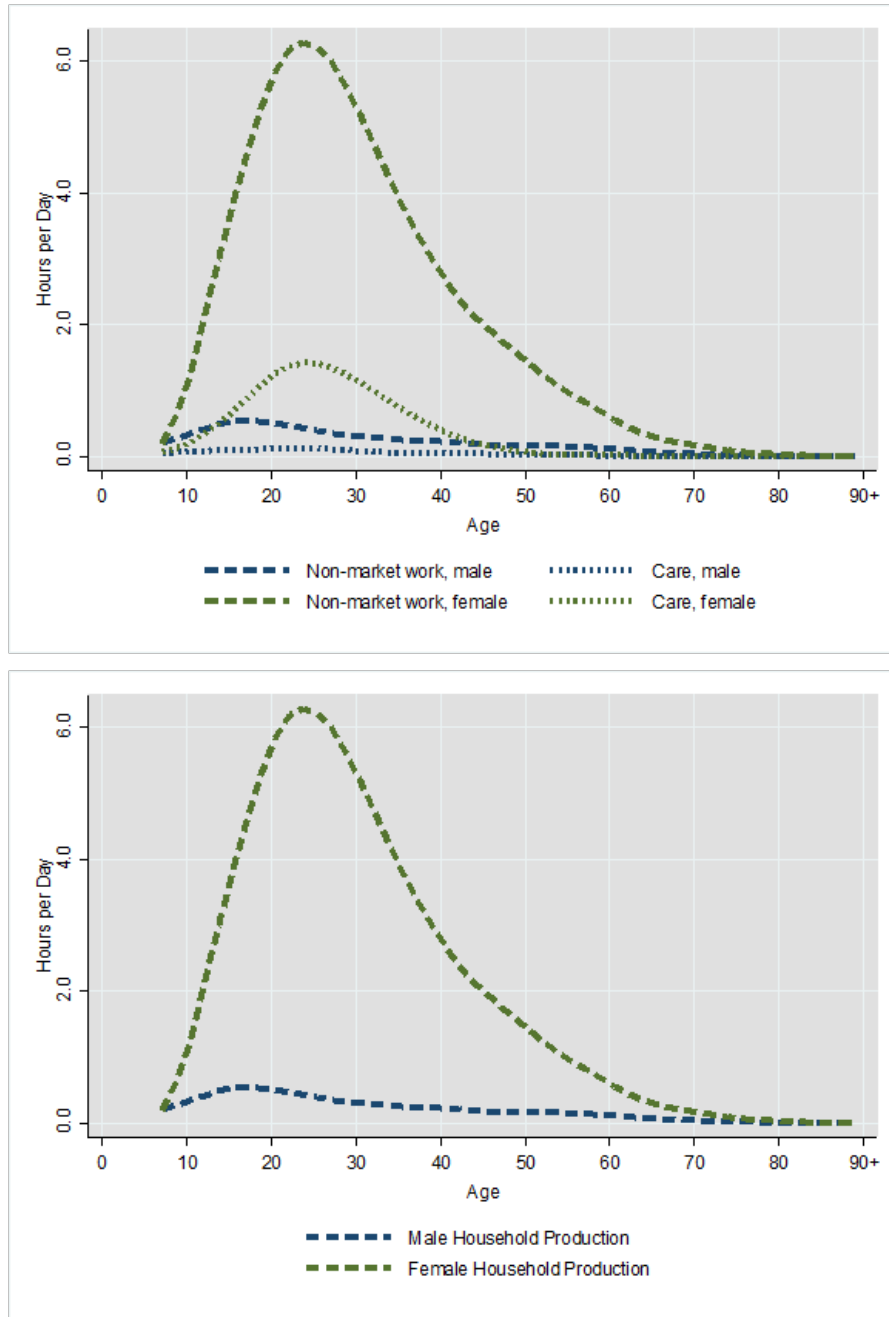
These peaks roughly coincide with the mean ages for marriage and childbearing. Additionally, while women's market work hours relatively plateau before they sharply decline around the age of 50 men's market hours reach a second peak before declining to 0 around the legal age of retirement. Overall, the gap in market hours between genders is significant and persistent and only ends around the age of 70.

As for home production hours, and besides women spending significantly more time performing them, men spend close to zero time across the life-cycle. Averaged across ages, women spend anywhere from 6.2 hours a day, in their peak ages, to close to zero in old age, suggesting that there are some transfers of home production from younger to older age groups intra-household. This is a prominent feature of countries with low social protection where older family members depend on their children as an old age safety net and it seems that this behavior extends from market to home production patterns. Further, while it seems that within household production activities, domestic chores, such as cooking and cleaning, occupy the bulk of non-market hours, care work is still relatively high with women providing the quasi-totality of it. Across all ages above 10, average care hours represent close to zero of men's non-market production while women provide around 45minutes of care work on average. Interestingly, women's care production reaches its peak between the age bracket of 20 to 30, which, again, coincides with the age of childbearing and confirm the leniency towards traditional gender roles. This, however, does not omit the existence of considerable care transfers to elderly within the household. Perhaps, considering the surplus of young population, the importance of unpaid care work provided intra-household will become more invisible as population ages.

Home production valued

In this section, the focus is geared toward providing a monetary value to home production. First, age profiles are separated into two categories. A Housework category which includes activities such as cleaning, cooking, laundry, purchases of goods and services, and household management. A Care work category which includes all care production benefiting all household members: children, adults, and elderly. This distinction is made for the purpose of positioning the analysis regarding the extend and weight of care work which may become more important as the population ages. Then, a monetary value is imputed to each production hour using the general framework of the legal minimum wage in the economy, which in 2012 was set to 12.24 Dirhams (around 1.42 USD). Thus, the monetary value calculated is estimated in relation to the 2012 national GDP of Morocco. Averaged by age group, the bulk of housework is produced by individuals aged between 40 and 59 years. Across all age groups, women produce an average of 3.4 hours of housework while men produce a mere 0.6 hours a day. Care

Figure 1.5: Household Production over the Life-cycle by Gender, 2012



Source: Own calculations, using time-use data by the High Commission for Planning (2012).
 Notes: This figure plots the age profiles of time allocations to home production by gender estimated using the National Time Transfer Accounts Methodology. The figure above illustrates the scale of care tasks in comparison to total household production. The figure below plots total household production in a day.

Table 1.2: Value of aggregate household production in a year relative to GDP, 2012

Category	Under 18 yrs	18-39 yrs	40-59 yrs	60 yrs plus	Male	Female	Total
Domestic Work							
Housework (<i>hours per day</i>)	0,9	2,3	2,5	1,8	0,6	3,4	7,4
Care (<i>hours per day</i>)	0,2	0,6	0,2	0,1	0,1	0,4	1,0
Household Production (<i>Total hours</i>)	1,0	2,9	2,7	1,9	0,7	3,8	8,5
Value of domestic work in year (<i>In sample</i>)							
Value in MAD	4509	13099	11851	8274	3039	16754	37733
Value of domestic work in year (<i>Whole economy</i>)							
Value in MAD (billions)	44,46	217,61	69,38	8,15	0,0110	286,59	286,61

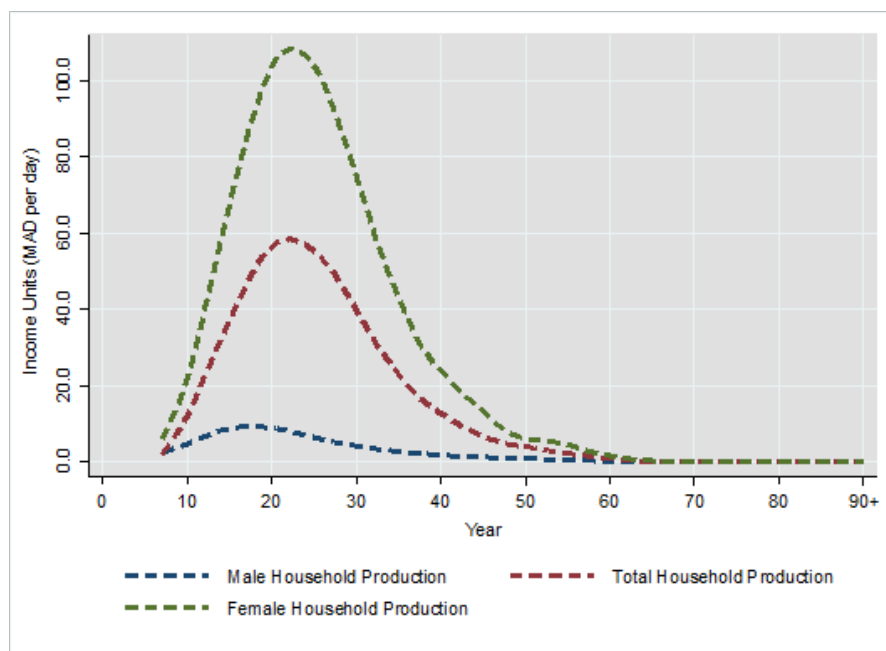
Source: Own calculations, using time-use data by the High Commission for Planning (2012). Notes: This table presents computations for yearly household production by age groups. Imputed wage corresponds to the national legal minimum hourly wage which corresponded to 12,24 MAD in 2012. demographic data by age are taken from the HCP's demography and population publications dating from the year 2012.

work, on the other hand, is mainly produced by individuals aged 18 to 39 years, with an overall average of 1 hour a day across all ages.

The average weighted daily opportunity wage of performing home production comes up to over 100MAD (around 12 USD) for women aged between 20 and 30 years, significantly higher than men of the same age group (a mere 10Dirhams or 1.16 USD). In terms of consumption of household production, women around the ages between 18 and 59 consume significantly more home production since they stay at home and participate less in the labor market. In other words, a significant chunk of women's consumption of goods and services produced in markets may be substituted by their own production inside homes which adds an additional layer to the income and purchase power inequalities. Still, the net transfers, calculated as total consumption minus total production of home-produced goods and services leaves a net opportunity wage varying between 10 MAD and 50 MAD at most daily (between 1.2 USD and 6 USD).

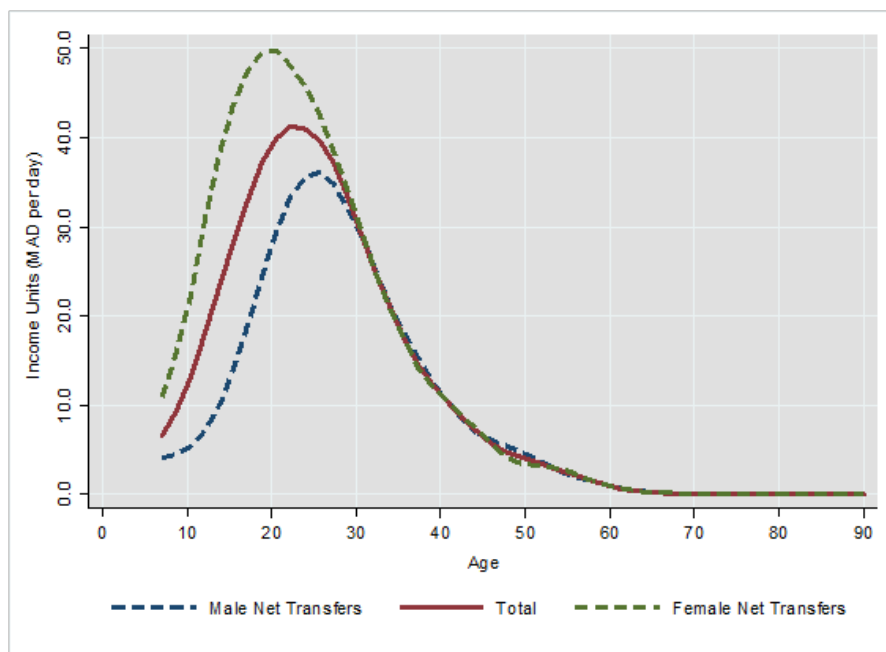
These daily values are scaled to yearly production with the assumption that no breaks can be identified for home production during the year or, at least, in a similar way for market production. After inputting the wage for each hour, the total home production hours in a year come up to an average of 37,733 MAD per individual (around 4388 USD) and across all age groups. Middle age groups, aged between 18 and 39 year and between 40 and 59 years, produce respectfully 35% and 31% of that and women, as expected make up the bulk of this production. As such, the general shape of home production profiles resembles a bell with a steep peak with youth produce the bulk of home production for the economy. Moreover, these average results are also scaled to the population count

Figure 1.6: Value of Household Production and transfers over the Life-cycle in a day by Gender, 2012



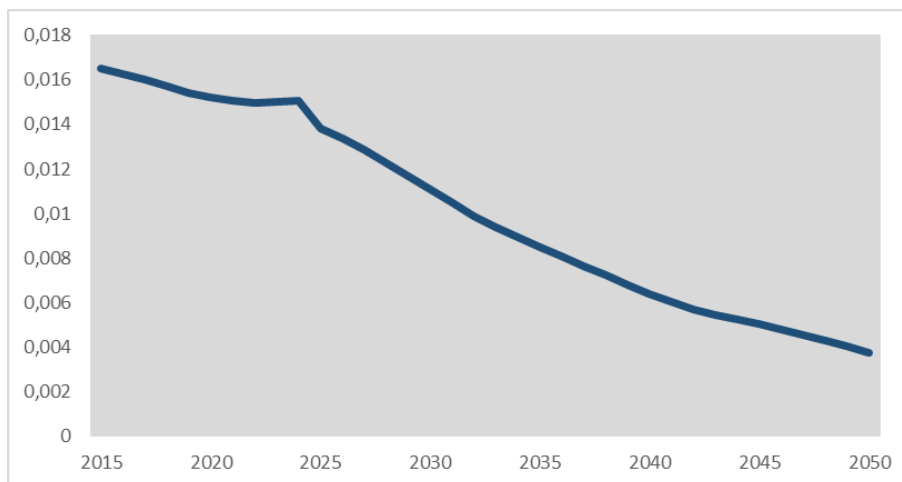
Source: Own calculations, using time-use data by the High Commission for Planning (2012).
 Notes: This figure plots the age profiles of valued time allocations to home production by gender estimated using the National Time Transfer Accounts Methodology.

Figure 1.7: Value of Net Transfers over the Life-cycle in a day by Gender, 2012



Source: Own calculations, using time-use data by the High Commission for Planning (2012).
 Notes: This figure plots the age profiles of valued Net transfers, calculated as total Consumption minus Production per age per gender.

Figure 1.8: Impact of Demography-Induced Changes in Supply of Household Production, 2012



Source: Own calculations, using time-use data by the High Commission for Planning (2012).
 Notes: This figure plots the impact of demography induced changes in supply of household production estimated using age profiles from 2012 as a baseline. The population data by age are from the HCP population projections.

per age per gender to provide an accurate representation of home production value economy wide measured in billions of Moroccan Dirhams. Considering population structure, youth, aged 18 to 39 years produce a whopping 76% of home production economy wide which is equivalent to more than 217 billion MAD (USD25 billions) and close to 30% of the national GDP for the year 2012. The total household production for the same year across all age groups comes up to over 286 billion MAD (USD33.25 billions) which equivalent to more than 35% of the national GDP, and women across all age groups make up a staggering 99% of that production. These results match those estimated by the High Commission for Planning that estimated total national home production at over 285 billion Dirhams which is equivalent to 34.5% of the national GDP in 2012.

The preceding analysis informs on existing gendered age profiles in market and home production for the year 2012. Taking the existing demographic structure and age profiles of 2012 as a reference and using population projections by the HCP from 2014 to 2050, total home production in hours is scaled to age counts by year. Then, the variation of total home production economy wide by 1 year up until 2050 is estimated by population count for each age. Without factoring in any other changes to home production at the extensive or intensive margins, the results plotted in figure 8 showcase a steady decrease of the volume of home production hours. This decrease is moderate between 2015 and 2025 which is consistent with a relative increase in the size of female population relative to total population. Moreso, a slight increase in home production peaks between 2024 and 2025 simultaneously with a projected decrease in youth population growth, before it continues a steep downward until 2050. These results illustrate how demographic changes alone can induce significant changes to the volume of home production which compensates a significant chunk of goods and services needed

by the dependent population. Perhaps the effect of a decreased supply in home production merely induced by population changes is hard to grasp fully in economic terms today. But, as population ages, and without any changes to the existing social protection system and safety nets, a care crisis may be looming in the horizon. Heightened demand of care by the elderly means that either women will have to take on more home production than they already do, especially if they are within the circumference of extended families, or that more and more elderly will suffer from old age poverty and neglect. Women play an important role on the visible and invisible care economy and shoulder already disproportionate share of unpaid home production and care work which, as the previous results have shown, match or even exceed the volume of daily hours for a full-time job. Policy interventions should thus target the issue of women economic participation, since they primarily occupy jobs related to market produced home production substitutes, and social insurance and safety nets that alleviate their burden inside households. Beyond structural reforms to social protection systems, that seem too daunting and require substantial investments, immediate action that seeks to increase the efficiency and capacity of existing care facilities and services and even conditional transfers to family caretakers and home producers can contribute to alleviating some of this burden and decrease the effect of gendered differences in unpaid work.

1.4 Concluding remarks

This chapter bridges between two seemingly separate views of production over the life-cycle using the National Transfer Accounts, which measures age profiles of consumption and production in markets, and the National Time Transfer Accounts, which estimates age profiles of unpaid home production. Further, it provided a monetary measure of home production which was estimated to be the equivalent of more than 35% of the national GDP of 2012. Gendered differences in paid and unpaid work over the life-cycle show that women shoulder an disproportional burden of domestic and care work within households and make up for the quasi-totality of unpaid home producers. After cross-referencing the results from NTA with NTTA, the dominant pattern that emerges is a male dominated market production and a female dominated home production which may be attributed to social norms, personal preferences, or perhaps, significant frictions in labor markets. Thus, narrowing the gender gap in labor force participation, without “transferring” women’s home production to men, will require the provision of accessible substitutes to their home production in the market. Creating a market that is suitable to the transfer of home production activities is a crucial prerequisite to increasing women’s labor marketization (Reid, 1934) and is intrinsically related to the process of economic transformation

and growth (Bridgman et al., 2018).

Besides providing a comprehensive analysis of the intersections between home and market production, another important contribution of this chapter resides in the provision of a forward-looking analysis of demography induced changes in supply of household production over the life-cycle and for the next few decades. These results illustrate how demographic changes alone can induce significant changes to the volume of home production which compensates a significant chunk of goods and services needed by the dependent population. Perhaps the effect of a decreased supply in home production merely induced by population changes is hard to grasp fully in economic terms today. But, as population ages, and without any changes to the existing social protection system and safety nets, a care crisis may be looming in the horizon.

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Appendix for Chapter 1

Table 1.3: Appendix-Budgetary coefficients by groups of goods and services

Groups of goods and services	Rural	Urban	Total
Food	49,3	36,8	40,6
Clothing	3,1	3,5	3,4
Housing and energy	18,3	21,1	20,3
Household equipment	3,6	3,7	3,6
Hygiene and medical care	6,2	7,6	7,2
Transport and communications	9	12,8	11,6
Education, culture and leisure	2,5	5,2	4,4
Other expenses of goods and services	5,7	6	5,9
Expenses non-intended for consumption	2,3	3,3	3
Total	100,0	100,0	100,0

Source: household consumption and expenditures survey data produced by the High Commission for Planning (2008).

Table 1.4: Appendix-Average time (in minutes per day) of the population aged 15 and over by detailed activities, place of residence and sex

Activity	Male - urban	Male - rural	Male - total	Female - urban	Female - rural	Female - total
Physiological time	617	615	616	665	639	655
Sleep	488	487	487	519	506	514
Meal	81	84	82	94	93	93
Personal care	48	44	47	52	40	48
Professional work	312	344	325	69	100	81
Training and education	40	24	33	36	6	25
Housework and care of other household members	39	50	43	278	333	300
Housework	32	45	37	241	302	265
Care of household members	7	5	6	38	30	35
Free time (leisure, sociability and religious practices)	432	407	422	391	362	379
Hobbies	308	268	292	263	235	252
Socializing	54	67	59	78	79	79
Religious practices	70	72	71	50	47	49

Source: household time use survey data produced by the High Commission for Planning (2012).

Figure 1.9: Smoothed Care production profiles

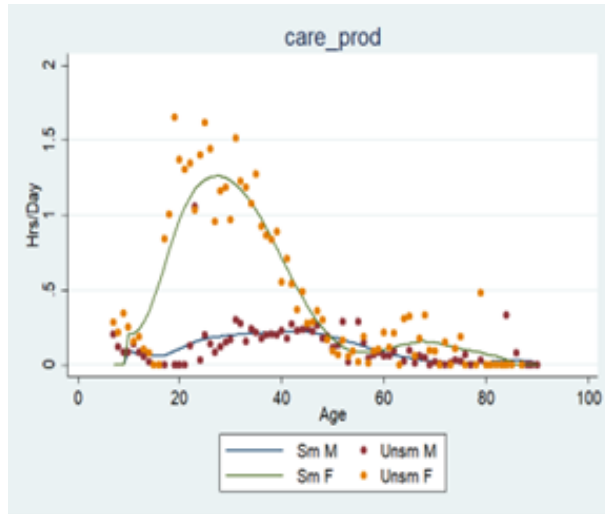


Figure 1.10: Smoothed Cleaning production profiles

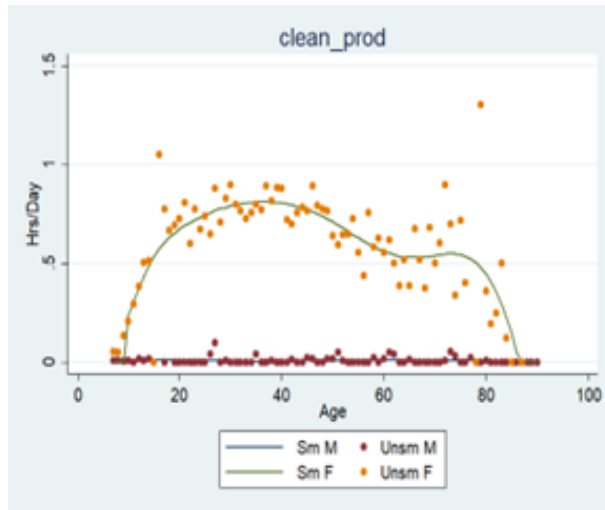


Figure 1.11: Smoothed Cooking production profiles

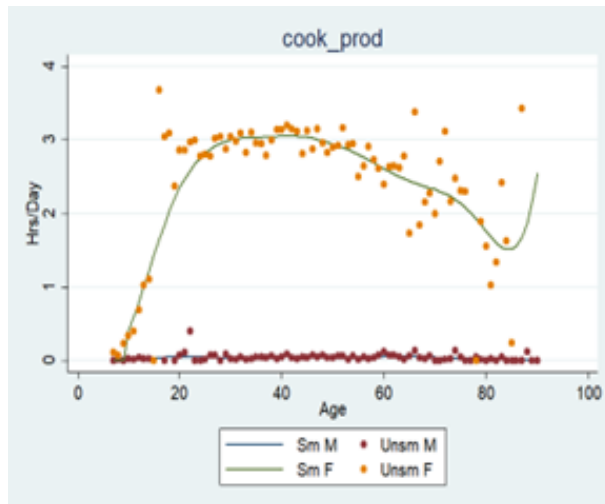


Figure 1.12: Smoothed Household maintenance production profiles

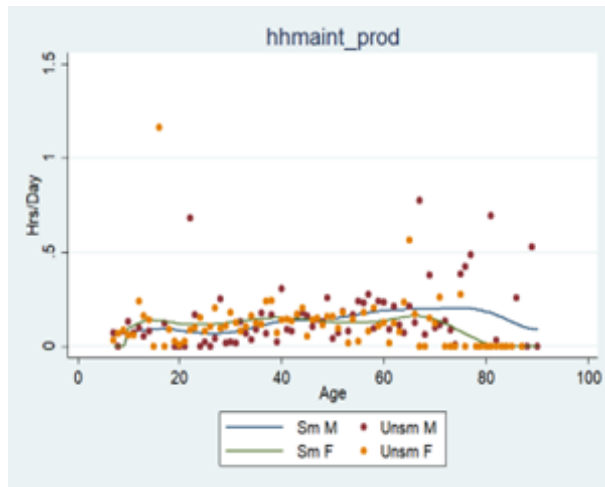


Figure 1.13: Smoothed Laundry production profiles

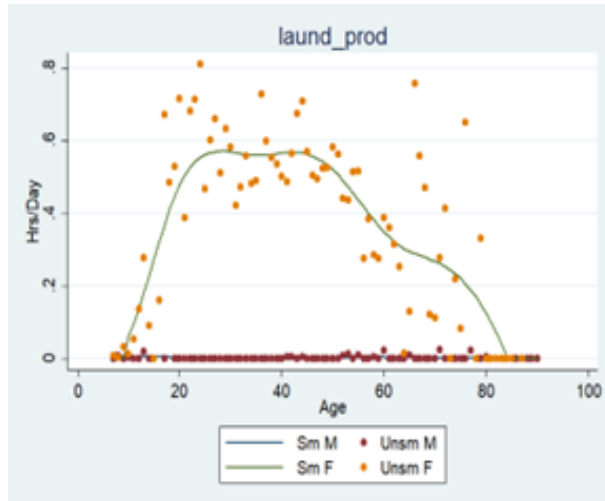


Figure 1.14: Smoothed Purchasing production profiles

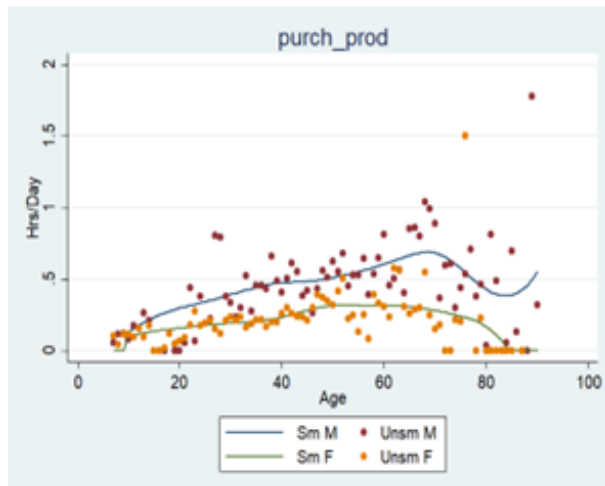


Figure 1.15: Smoothed Care consumption profiles

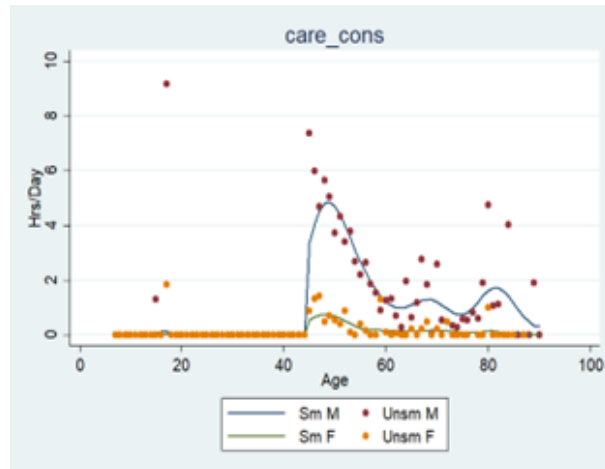


Figure 1.16: Smoothed Cleaning consumption profiles

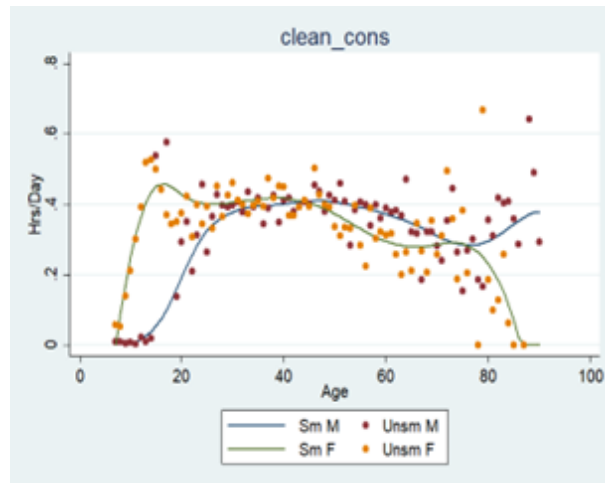


Figure 1.17: Smoothed Cooking consumption profiles

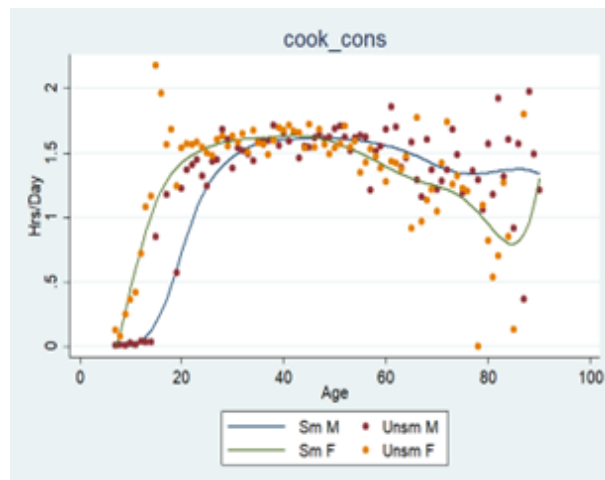


Figure 1.18: Smoothed Household maintenance consumption profiles

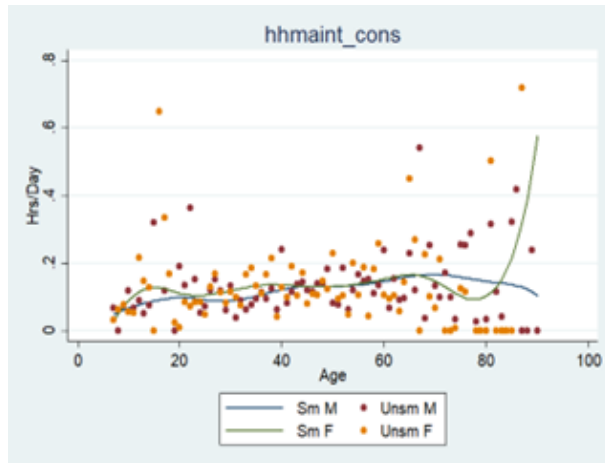


Figure 1.19: Smoothed Laundry consumption profiles

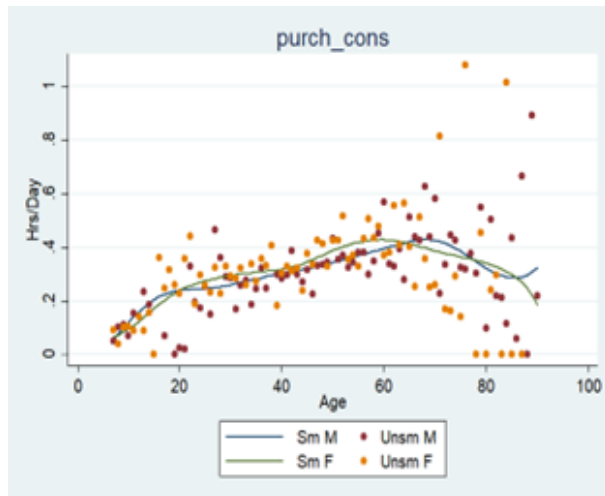


Figure 1.20: Smoothed Purchasing consumption profiles

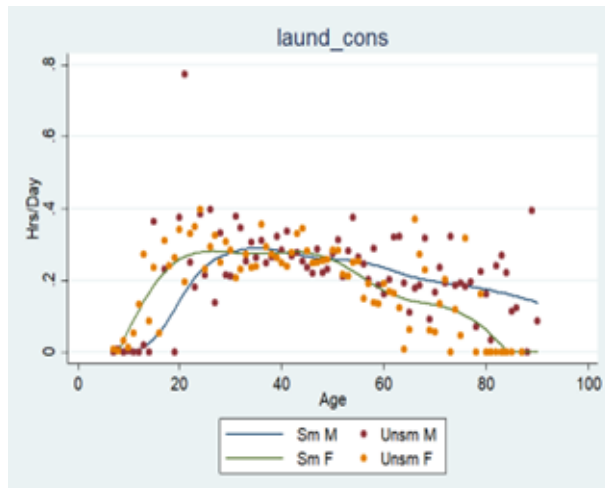
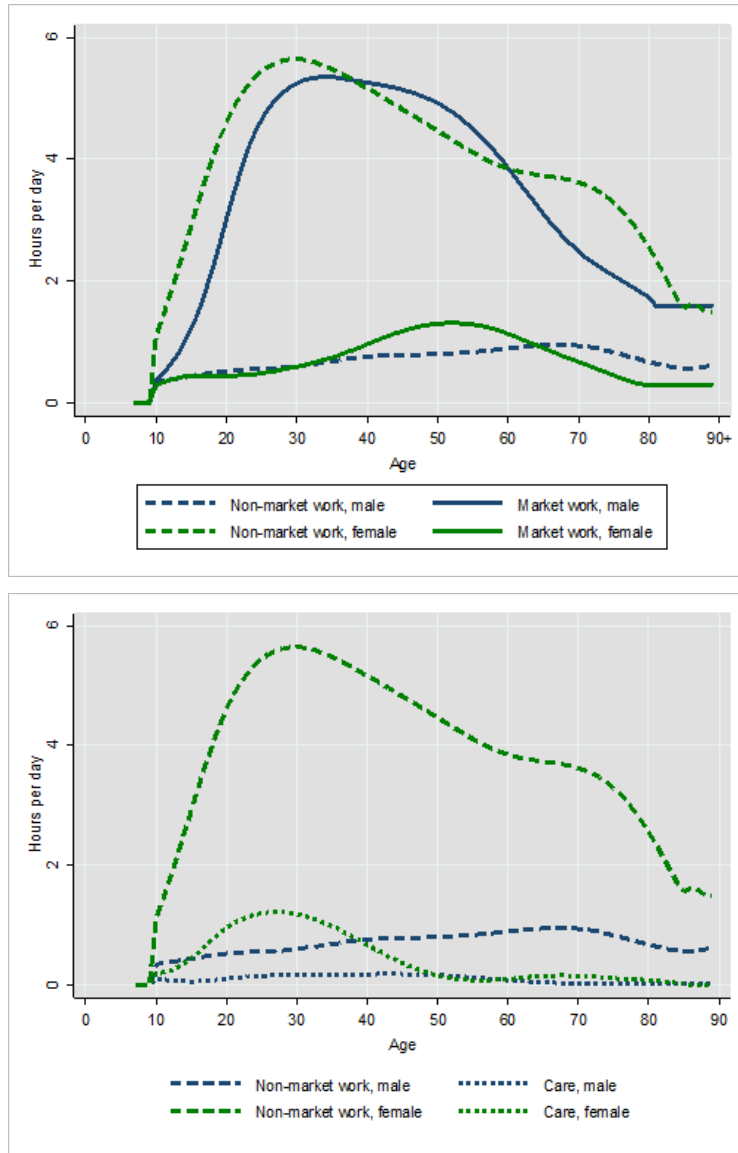


Figure 1.21: Household Production over the Lifecycle by Gender, 2012



Source: Own calculations, using time-use data by the High Commission for Planning (2012).
 Notes: This figure plots the age profiles of time allocations to home production by gender estimated using the National Time Transfer Accounts Methodology. The figure above illustrates the scale of care tasks in comparison to total household production. The figure below plots total household production in a day.

Figure 1.22: Total Household Production over the Lifecycle by Gender, 2012

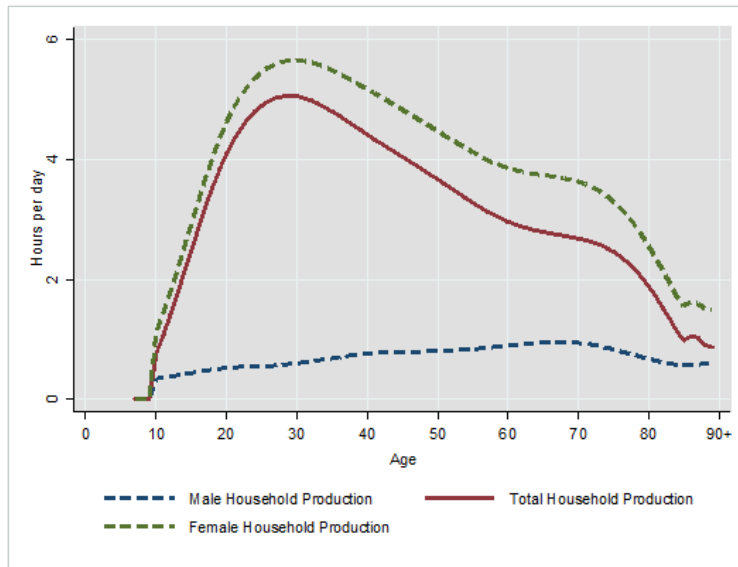
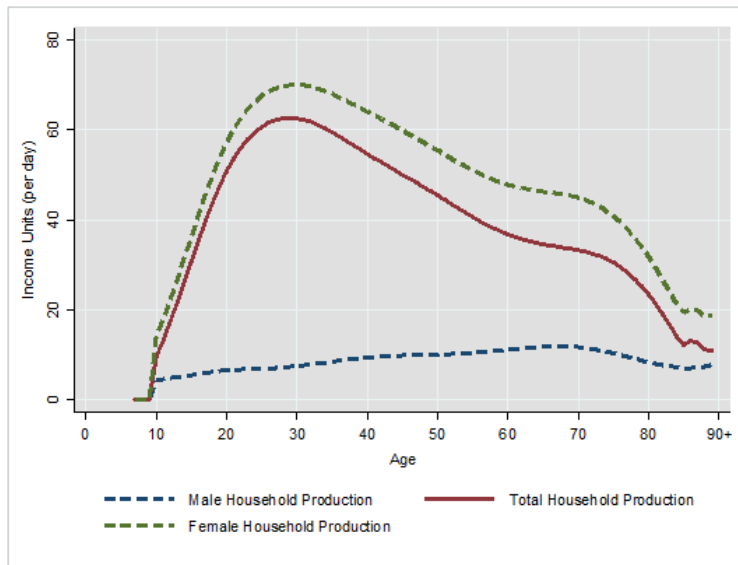


Figure 1.23: Value of Household Production and transfers over the Lifecycle in a day by Gender, 2012



Source: Own calculations, using time-use data by the High Commission for Planning (2012).
 Notes: This first figure plots the age profiles of valued time allocations to home production by gender estimated using the National Time Transfer Accounts Methodology. Net transfers, in the second figure, are calculated as total production minus consumption per age per gender.

Chapter 2

Wages, Bargaining Power and Household Time Allocation: an Incomplete Transition to Female Labor Marketization

Abstract

This chapter examines the driving factors behind the low labor force participation of married women in Morocco through an empirical test of the collective model. considering differences between working dual and single earning couples, and between urban and rural dwellings. It starts by considering existing occupational and wage differences in the labor market and in time allocations to market work and domestic work. The implications for spouses' time allocations are attributed to changes in wages, household income, and bargaining power induced by several mechanisms that can explain the low female labor force participation in Morocco.

JEL Codes: D13 · J22

Keywords: Collective model, Labor supply, Intrahousehold bargaining power, Morocco.

2.1 Introduction

How does the intrahousehold distribution of bargaining power affect spouses' time allocation to paid and unpaid labor? Do wages and household income affect preferences and time allocations? Can differences between dual earning and single earning couples explain the low female labor participation rate in Morocco? To address these questions, this chapter proposes an empirical test of the collective model, considering differences between working dual and single earning couples, and between urban and rural dwellings. It starts by considering existing gendered occupational and wage differences in the labor market and in time allocations to market work and domestic work. The main contribution of this chapter is to provide the first analysis, to my knowledge, that highlights the existence of multiple barriers equally imposed by traditional gender roles, within the marriage, and a weak job creation dynamic in the labor market. The implications for spouses' time allocations are attributed to changes in wages, household income, and bargaining power induced by several mechanisms that can explain the low female labor force participation in Morocco.

Although prior research has alluded to the relationship between domestic workload and allocated time to market work, by considering the interactions between marriage and children, said analyses have not explicitly included intra-household dynamics. In this regard, Assaad and Zouari (2002) find that, contrary to expectations, marriage does not affect women's participation in the labor market in Morocco. Similarly, Verme et al. (2016) conclude that Morocco's low economic and employment growth, and gender norms simultaneously affect women's level of labor supply. They argue that this is most apparent for women with a medium level of education whom, in the scarcity of employment opportunities, prefer to make the rational choice to marry rather than supply the market. They also argue that in economies with higher proportions of informal to formal jobs, such as Morocco, income exerts a less important role on the labor supply decision (Verme, et al., 2016).

These studies, and others on the case of Morocco, have not directly addressed the characteristics and attributes of other household members, particularly the couple, which would also influence women's labor supply decision as well as the time allocated to paid market work. To better apprehend these relations, I propose to empirically verify the labor supply function through time-use functions including different forms of paid and unpaid work. Analyzing time allocations allows to apprehend the labor supply function at both its intensive and extensive margins. I make an important conceptual differentiation between time allocated to paid work, unpaid work, and non-work, based on an extensive literature that finds its origins in seminal work by Mincer (1962), Becker (1965) and Gronau (1977). Paid work refers to the traditional definition of work that follows a market-based demand and supply curve. Unpaid work refers to forms of work that are supplied and demanded within the household and for which substitutes can be found in the labor market, such as cooking, cleaning, and care services.

Non-work refers to time that is devoted to neither form of work, mainly leisure and personal care time. I document non-negligible differences between and within genders and between rural and urban settings. The main difference is found in the fact that working women still devote a considerable chunk of their waking hours to unpaid domestic and care work, which translates to incomplete transitions to service-based economies (Dinkelman and Ngai, 2022) and non-negligible labor mismatches. Thus, I argue that the gendered nature of domestic work prescribes that time allocated by women to paid work does not subtract from a mandatory minimum of unpaid work inside the household giving place to an “incomplete transition” to female labor marketization.

This chapter relies on two datasets that are separate but complementary to the analysis. The first being the National Employment Survey (NES), which is the reference for information on the labor market. It’s caveat, as all traditional employment surveys, is that it does not or inadequately measures different forms of unpaid work and non-work activities. The second dataset is the National Time Use Survey, which was last conducted in 2012, is a time-budget survey (diary) that provides detailed records of daily activities (see Appendix B). Since the later does not contain information on wages and employment conditions in the labor market, I use the (NES) for the same year (2012) to estimate and input wages. The remainder of the chapter is organized as follows. Section 2 presents data and the working samples, with detailed descriptive statistics. Section 3 provides empirical evidence of wage differentials by gender and geographic location of residence that must be taken into consideration. Section 4 describes the empirical facts behind time allocation differences. Section 5 presents the theoretical and empirical setting. Section 6 presents results while section 7 concludes.

2.2 Employed Data

I use two databases collected by the High Commission for Planning (HCP, the national institute of statistics in Morocco). The first survey-based dataset is from the National Time Use Survey (NTUS), conducted among a sample of 9,200 households, represented by one female and one male aged 15 years and older per sampled household. A subsample of about 3,000 children focuses on household members aged 7 to 14 (Appendix B.1. provides a description of the sampling frame). Because two sets of questionnaires are used, household and individual, I can identify individuals and assign them to a household, i.e., identify couples along with their subsequent individual and household characteristics. The Time Use Survey collects data on daily activities based on a detailed diary. This data allows me to identify and conduct an in-depth measurement of all forms of work, paid and unpaid, in order comprehensively assess interactions between individual and household production. Moreover,

Table 2.1: Major sample descriptive statistics: married couples

	Urban		Rural	
	Men	Women	Men	Women
% University education	0,17	0,11	0,11	0,05
% Working	0,73	0,16	0,85	0,55
Domestic work time	38,03	288,75	55,69	342,38
Market work time	525,58	390,5	481,75	186,46
Hourly wage rate	18,96	20,99	11,92	7,83
Number of kids	2		2,2	
Observations	2139		1255	

Source: Author. The National Time Use Survey (NTUS) and National Employment Survey (NES). Notes: The table shows major sample descriptive statistics from the sample of couples in the NTUS. % University education is defined as any obtained degree above high school (equivalent to 12th grade). % Working is defined as the proportion of those working in the sample. Hourly wage rates and market time are presented only for those working and all monetary values are expressed in 2012 Moroccan Dirhams (MAD). To account for differences in urban and rural labor market, all descriptive statistics are calculated for urban and rural households separately

wages and household income constitute the main indicators of intra-household distribution factors of bargaining power. Since the NTUS database does not provide a detailed account on individual income and wages, I complement it with that of the National Employment Survey (NES) for the same year. The NES is the main source of information on the labor market conditions in Morocco as it provides detailed account on demographic and cultural characteristics of the active population and its various components, namely the employed, unemployed, and underemployed populations (Appendix B.2. provides a description of the sampling frame and some additional information on the employed sample). Thus, wages are estimated in the NES and later imputed to the NTUS based on socio-professional and demographic characteristics.

2.2.1 The National Time Use Survey

To analyze how time allocation decisions are made intra-households, I use the NTUS-2012 which has the notable advantage of providing demographic and socio-professional indicators on the individual and household level (gender, age, region of residence, occupation status, education, structure of the household...etc.), that I use to identify and impute wages. In the analysis presented in sections hereafter, I use diary entries for a ‘typical/ordinary day’ avoiding ‘atypical’ or ‘noisy’ diary entries that may be made on holidays or special occasions. This is also an advantage of the dataset. In my working samples, I select dual and single income couples, belonging to the same household, in urban (Group A) and rural dwellings (Group B) and aged less than 60 years. On average, they are aged 38 and 43 years for women and men respectively in both groups, with higher probability of having young children and living in extended family households for rural couples than urban ones. The later hold higher degrees

on average with women having the advantage within both urban and rural couples, with about 6% to 8% more than men. I also inspect intra-gender differences in household structures, education, and time allocations between working and non-working women.

2.2.2 The National Employment Survey

For the estimation of wages, I use the NES for the reference year of 2012. I first apply a cutoff for the age of individuals, keeping women and men aged between 14 and 60 years, provided the legal retirement age was 60 in 2012. Although the legal retirement age is not mandatory, and despite having a large informal sector, where many continue to work well into old age, I argue that this cutoff is still useful to harmonize my working sample and focus on the median ages of the first entry to the labor market. Retaining the 60 years age cutoff is particularly relevant to the discussion on intra-household bargaining power since we frame it around marriage, childbearing, and labor force participation prime years.

The NES-2012 sample is stratified by region with detailed individual and household socio-professional, demographic characteristics, and the sampling frame of the survey considers a stratification by geographic location of residence, i.e., urban, rural and region. Since both my data sets are collected in 2012, I don't have to take into consideration either the new territorial division that was introduced shortly thereafter, in 2013, nor the retirement age reform that began to take shape in 2016 (which stipulates the gradual increase of the retirement age to 63 over a period of 6 years: 60 years and six months in 2017, 61 years in 2018, so on and so forth up to reaching 63 years in 2022). The geographic dimension is also critical to our analysis, as there are significant differences in participation, employment, and unemployment rates between rural and urban areas. While women in urban areas participate much less and have higher unemployment rates than men, women in rural areas have the lowest unemployment rates and almost the same participation rate as men (Lopez-Acevedo et al., 2021). Also, the prevalence of traditional sectors of employment in rural areas is an important determining factor of wages differences between and within the gender groups. I provide a supplementary analysis on this in Appendix B.3. Since I am focusing on wages of active and employed individuals, I also reserve additional information of salient features of the labor market including unemployment and inactivity for the supplementary analysis in appendices.

My working sample consists of four sub-samples that allow me to consider differentials between rural and urban labor markets, female and male employment and wages. From over 20,000 active individuals, 9,063 are men residing in urban dwellings and 6,452 are men residing in a rural dwelling. They are on average 25 years of age, no more than 12% hold a university degree in urban areas where

Table 2.2: Major sample descriptive statistics: married couples

Variable	Urban Women		Urban Men		Rural Women		Rural Men	
	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Age	27,99	17,05	26,68	17,50	25,50	16,95	24,34	17,26
Marital status								
Married	0,43	0,49	0,36	0,48	0,44	0,50	0,36	0,48
Divorced/Seperated/ Widowed	0,06	0,24	0,01	0,08	0,04	0,20	0,00	0,06
Education								
Primary	0,35	0,48	0,39	0,49	0,20	0,40	0,30	0,46
Middle school	0,06	0,23	0,06	0,24	0,01	0,09	0,02	0,13
High school	0,02	0,14	0,05	0,22	0,00	0,04	0,01	0,11
University	0,10	0,29	0,12	0,33	0,01	0,09	0,02	0,13
Work and wages								
Hourly wage	21,84	34,19	18,98	28,41	12,66	21,14	12,69	9,07
Log Hourly wage	0,14	0,63	0,48	1,06	0,03	0,26	0,38	0,89
Weekly worked hours	42,92	12,37	51,33	12,69	29,67	12,63	47,37	13,13
Employment sector								
Agriculture	0,01	0,08	0,02	0,15	0,19	0,39	0,32	0,47
Industry	0,03	0,17	0,08	0,27	0,01	0,08	0,03	0,16
Construction	0,00	0,04	0,08	0,27	0,00	0,01	0,07	0,25
Services	0,08	0,27	0,29	0,46	0,01	0,10	0,10	0,30
Occupation status								
High Skill White Collar	0,03	0,18	0,05	0,22	0,00	0,06	0,00	0,07
Low Skill White Collar	0,03	0,17	0,14	0,35	0,00	0,06	0,05	0,22
High Skill Blue Collar	0,02	0,15	0,14	0,35	0,04	0,19	0,21	0,41
Low Skill Blue Collar	0,03	0,17	0,14	0,35	0,00	0,06	0,05	0,22
Geographic region of residence								
Tanger	0,10	0,30	0,11	0,31	0,10	0,30	0,12	0,33
Oriental	0,08	0,28	0,08	0,27	0,06	0,24	0,07	0,25
Fes-Meknes	0,12	0,32	0,11	0,32	0,12	0,33	0,12	0,32
Rabat	0,15	0,35	0,14	0,35	0,10	0,30	0,11	0,31
Beni Mellal	0,06	0,25	0,06	0,23	0,10	0,30	0,09	0,28
Marrakech	0,09	0,29	0,10	0,30	0,20	0,40	0,19	0,40
Daraa	0,03	0,17	0,03	0,16	0,08	0,27	0,07	0,25
Casa	0,24	0,43	0,24	0,43	0,14	0,34	0,14	0,34
Sud	0,04	0,20	0,04	0,21	0,01	0,11	0,01	0,11
Observations	2 207		9 063		2 716		6 452	

Source: Author's calculations from the National Employment Survey 2012 (reference year) Notes: Unweighted statistics. The sample is restricted to individuals aged 14 to 60 years (with 60 being the legal age of retirement in 2012). The first two columns report means and standard deviation for the sample women residing in an urban dwelling, columns (3) and (4) for men in an urban dwelling, so on and so forth.

29% of men's employment is in services as opposed to 2% university degree holders in rural dwellings where the third of men's jobs are found in agriculture. On the other hand, the sample comprises about 2,200 urban women and just above 2,700 rural women aged on average 26 years, 10% and just about 1% of them hold a university degree respectively. The hourly wage differentials between rural and urban employment are staggering; while the average urban hour wage is around 20 it is a mere 12 dirhams in rural dwellings. This is precisely why my main empirical analysis exploiting the NES dataset focuses on analyzing wage determinants and differentials between geographic areas and genders.

2.3 Gendered differences in wages and occupations

Figure 2 plots the raw histogram of wages around the legal minimum hourly wage value¹: it shows that wages are rather pulled down, with lower paying occupations being the most dominant in the sample. Figure 3 displays the weighted means of wage differences by gender, marital status, geographic location (rural vs. urban), and sector of employment. It illustrates staggering differences between urban and rural hourly wages and between services and other sectors of employment. The gendered differences in hourly wages are mainly driven by urban women's employment, who are mostly employed in the service sector. Means of hourly wages by gender and sector of activity are illustrated in Figure 4. It shows that while considerable wage differences exist between men and women in the sectors of construction, industry and agriculture, wages in services sector barely show any differences between genders. In of itself, this observation highlights women's selectivity about entering the labor market. Wages may be a key determinant of women's labor supply decision for two reasons: middle-skilled women find it more difficult to enter the labor market due to weak job creation dynamics (Verme et al., 2016), and in the absence of decent job opportunities, women prefer to make the rational choice to marry. Furthermore, this suggests that highly educated women entering the labor market are on equal footing with men with similar qualifications in urban labor markets. On the other hand, while rural women are relatively more active than urban women, they make less due to their involvement in jobs at the lower end of the wage spectrum mainly traditional sectors, such as agriculture. As for figures 5 and 6 they highlight those workers working longer hours are at the lowest end of the wage spectrum as well. This is yet another indication of vulnerable employment conditions in the form of preponderant unpaid or informal work, especially for women (Lopez-Acevedo et al., 2021).

¹In 2012, the hourly minimum wage is set at 12.24 dirhams in the commercial, industrial and liberal activities sectors and 60.63 dirhams per day in the agricultural sector

2.3.1 Estimating wages and salaries

Assessing labor supply responsiveness within the couple depends on estimating and inputting values for personal and spousal wages that correspond to the time-use diaries, considering gender and labor market differences. For this, my baseline estimates look at determinants of wages. Both the human capital model introduced by Becker in 1962 and Mincer's wage equation (Mincer, 1974) laid the foundation for analysis of supply side determinants of wages. Mincer's model, which includes education, measured in years, and a quadratic function of experience, has since been extended to include many more variables. Indeed, relatively recent studies have unanimously concluded that overall returns to human capital are higher for men than for women (Light and Ureta, 1995; Munasinghe, Reif, and Henriques, 2008; Orłowski, 2010). Literature also gradually evolved beyond the inclusion of individual worker characteristics, as most of the inconclusive and counter-intuitive results stemmed from personal heterogeneity and sample selection bias. Workers have heterogeneous behavior that can be encouraged either by the labor market or by firm-specific conditions, the labor market, and individual preferences related to lifestyle and work-leaving preferences, among others (Weiss, 1995). I estimate different versions of the following Mincer-type regression:

$$\ln(\text{hourly wage})_i = \alpha + \beta_1 \text{age}_i + \beta_2 \text{age}_i^2 + \sum_k \delta_k D_{ik} + \varepsilon_i$$

where,

$\ln(\text{hourly wage})_i$ is the log of hourly wage of individual i ;

age_i is individual i 's age which I use as a proxy for potential experience;

age_i^2 is the square term of one's age;

D_{ik} is a set of control variables, including personal characteristics such as household structure and labor market information;

β_1 , β_2 and δ_k are parameters;

ε_i is an error term and α is a constant.

Selection bias can arise when unreported or under-reported wages are excluded from the sample. To correct the sample selection bias, determinants of workers' hourly wages are examined with a Heckman two-step estimation model based in Heckman (1979), Heckman (1990) and Vella (1998).

2.3.2 Characterizing wages and labor market differentials

The inverse Mills ratio is positive and statistically significant for urban and rural wages, except for wages earned by urban men. The measured correction should thus be taken into consideration when

inputting wages for time use.

Age as proxy for experience – I use age of the worker as a proxy for experience in the labor market for several reason. First, because there is a preponderance to informal employment gauging a factual measure of experience is difficult. This choice is also motivated by the need to identify corresponding indicators in the time-use dataset to accurately input wages. Age is both significant and positive for all types of employment, across genders and geographic locations. It indicates that workers are more likely to see their wages increase with age and experience. Its effect is however hump shaped, meaning it begins to decline as the worker ages. Two plausible explanations are related to (i) prevalence of informality where income is not protected and many, if not all, informal workers do not benefit from social insurance or a pension scheme. A second, but complementary explanation can be traced back to (ii) women’s hump shaped LFP noted by Verme et al. (2016) which coincides with marriage age: meaning that as women marry, they leave the workforce but may come back later when their children are older (also, Verme, 2015). This explanation is also consistent with the literature showing that an increase in the return to potential experience for women increases with her age (e.g., Light and Ureta, 1995; Blau and Kahn, 2017; Card and Hyslop, 2021). However, workforce interruptions, which are more frequent for women than men, contribution to human capital depreciation further lowering their wages and increase labor mismatch upon their return (Golding, 2014).

From educational qualifications to occupational skills – Next, I include two sets of indicators for human capital determinants of wages, education, and occupational skills. In the case of education, and compared to uneducated workers, earning increase dramatically with educational attainment for men and women alike. There seems, however, to be an exception for rural men, for whom educational attainment but slightly affects earnings. Occupational skills on the other hand illustrate a different story. There are substantial differences in earnings between white-collar and blue-collar occupations, with women suffering the most drawbacks to their wages. Interestingly, higher skilled white-collar occupations exhibit similar wage endowments for both men and women, placing them at an almost equal footing. Further wage decomposition analysis is provided in appendices.

2.4 Salient features on time allocations

In this section, salient features about married women’s and men’s time allocations are presented. Focus is drawn to gendered differences in time allocations to paid work and domestic work over the lifetime. Additionally, and backing-up the hypothesis of different labor markets in urban and rural Morocco (Lopez-Acevedo et al., 2021), differences are drawn within and between genders by geographic area of

Table 2.3: Characteristics of wages by gender and area of dwelling

	(a)	(b)	(c)	(d)
Variable	Urban Women	Urban Men	Rural Women	Rural Men
Log Hourly wage				
Age	0.0341** (2.98)	0.0417*** (8.81)	0.0604** (2.92)	0.0261*** (5.48)
Age squared	-0.000297* (-2.10)	-0.000391*** (-7.21)	-0.000627* (-2.53)	-0.000277*** (-5.30)
Diploma (no education as benchmark)	0.103* (1.95)	0.147*** (7.19)	0.236* (1.68)	-0.0148 (-0.57)
Primary				
Middle school	0.294** (2.84)	0.375*** (7.87)	1.476*** (4.35)	0.0794 (0.76)
High School	0.298** (3.07)	0.370*** (9.83)	- -	0.0684 (0.68)
University	0.671*** (8.72)	0.573*** (15.28)	0.857*** (3.69)	0.160* (1.73)
Household				
Married	0.205*** (5.02)	0.138*** (5.69)	-0.102 (-1.18)	0.0189 (0.61)
Children 6 to 17 in household	0.0219 (0.31)	0.00938 (0.26)	0.161 (0.70)	-0.0632 (-0.92)
Occupation (low skill blue collar as benchmark)				
High Skill White Collar	0.609*** (7.21)	0.924*** (20.44)	0.718** (3.01)	1.451*** (11.97)
High Skill Blue Collar	-0.286*** (-4.36)	0.0601* (2.38)	-0.837*** (-6.50)	0.150*** (5.22)
Low Skill White Collar	-0.156* (-2.47)	0.0467* (2.03)	-0.492** (-2.60)	0.116** (3.06)
Constant	1.103*** (4.72)	1.310*** (13.23)	0.414 (0.81)	1.768*** (15.00)
Inverse Mills Ratio	0.405*** (5.36)	-0.0518 (-1.51)	0.234*** (3.38)	0.0813** (2.70)
Number of observations	2 207	9 063	2 716	6 452
Censored observations	1 051	5 371	2 555	4 538
Uncensored observations	1 156	3 692	161	1 914

Source: Author's calculations from the National Employment Survey 2012 (reference year) Note: ***, **, and * denote statistical significance from zero at the 1%, 5%, and 10% levels, respectively

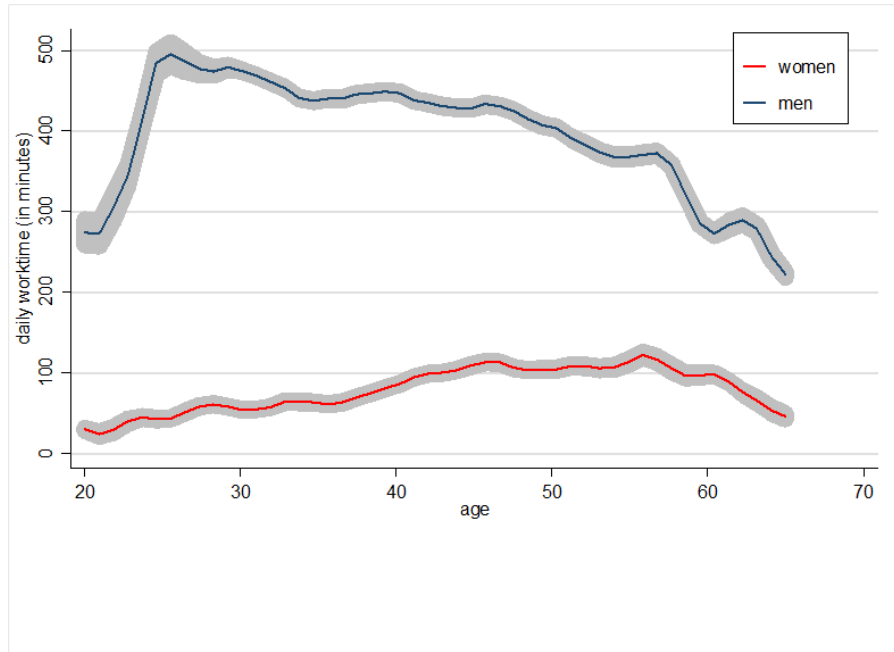
residence.

2.4.1 Gendered differences in time allocations

Figure 1 plots unconditional average market time for men and women in the full sample of married couples, workers, and non-workers. It highlights several striking differences in time allocations. First, women allocate significantly less time to paid labor than men throughout their lifetime. Second, men's market time sharply increases around their mid-twenties from an average of 4 to 8 hours daily, then, it remains flat and only begins to decrease around the age of retirement. This is consistent with an important presence of qualified male labor that tends to be employed in formal jobs entering the labor market around the age of completion of university degrees and exiting around the mandated age of retirement. Women's market hours, on the other hand, remain relatively modest in comparison and, interestingly, begin to increase after the age of 40 and peak around mid-fifties signaling that women increase their supplied labor on average after the age of childbearing and rearing.

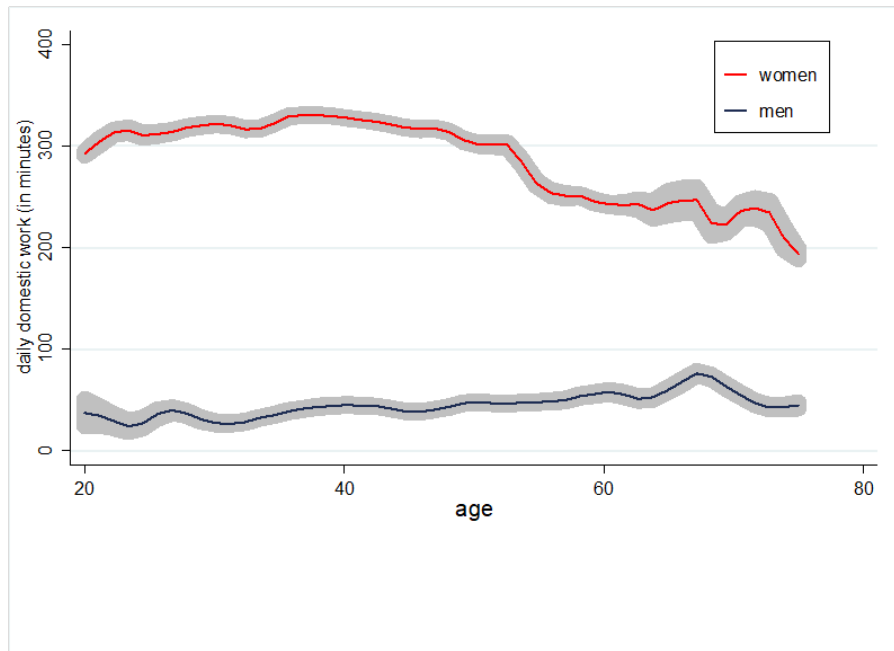
To better understand these trends, figure 2 plots the average domestic work time in minutes per day which encompasses work inside and around the household such as cooking, cleaning, and including care provided for children and the elderly. In other words, tasks that can be substituted in the market. First, women provide lion's share of domestic work throughout their lifetime. Compared to figure 1, the pattern shifts dramatically with women devoting the bulk of their daily hours to home production and in a similar fashion to how men devote time to market work. The second feature of the home production hours highlights a considerable drop of women's home production around the age of 50 suggesting transfers of home production from other members of the household or simply put, disappearance of some tasks such as childcare. Men's home production seems to slightly increase after the age of 65, supporting the hypothesis of some intra-household home production transfers.

Figure 2.1: Average daily market work time (in minutes)



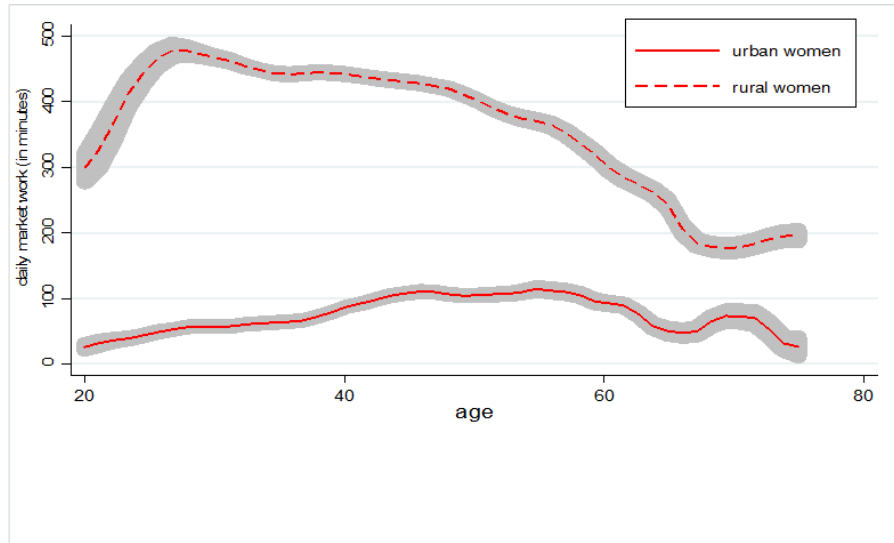
Source: Author. The National Time Use Survey (HCP). Note: This figure plots average daily market work time for married men and women by age. A 95% confidence interval appears in gray shade.

Figure 2.2: Average daily domestic work time (in minutes)



Source: Author. The National Time Use Survey (HCP). Note: This figure plots average daily domestic work time for married men and women by age. A 95% confidence interval appears in gray shade.

Figure 2.3: Average daily market work time for women by geographic area of residence (in minutes)

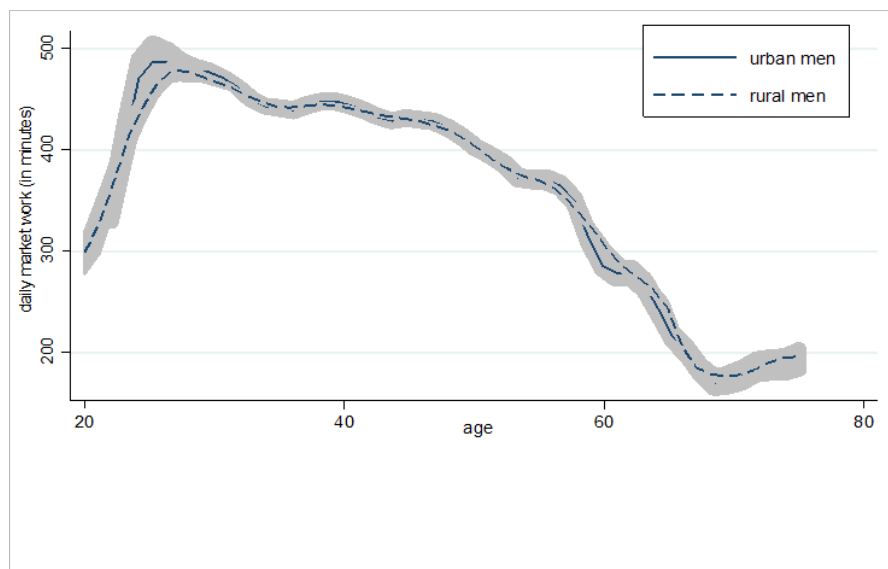


Source: Author. The National Time Use Survey (HCP). Note: This figure plots average daily market work time for married women by age and geographic area of residence. A 95% confidence interval appears in gray shade.

2.4.2 Intra-gender differences in time allocations

A careful look at distributions of average daily market and homework by gender and geographic area of residence flags up striking differences. Compared to women residing in urban settings, rural women participate significantly more in the labor market throughout their lifetime. This finding backs up the hypothesis that there are distinct labor markets between rural and urban Morocco. This is equally backed by the fact that women's employment in rural areas is concentrated in low capital intensive and traditional sectors. Whereas employed women in urban settings tend to prefer white collar service jobs.

Figure 2.4: Average daily market work time for men by geographic area of residence (in minutes)



Source: Author. The National Time Use Survey (HCP). Note: This figure plots average daily market work time for married men by age and geographic area of residence. A 95% confidence interval appears in gray shade.

Table 2.4: Extensive summary statistics – The Morocco National Time Use Survey 2012 (NTUS)

***	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Group A. Urban couples			Urban. Intra-gender differences			Group B. Urban couples			Rural. Intra-gender differences		
	Wife	Husb.	Diff.	Non-work women	Work women	Diff.	Wife	Husb.	Diff.	Non-work women	Work women	Diff.
Demographic												
Own age	38,13	43,85	5,72***	37,64	40,62	-2,98***	38,04	43,27	5,23***	35,58	40,15	-4,57***
Has children 6 to 17	0,56	0,58	0,03	0,55	0,63	-0,08	0,65	0,67	0,02	0,59	0,69	-0,09
Elderly in the household	0,15	0,052	-0,10	0,147	0,145	0,002	0,21	0,10	-0,10	0,16	0,25	-0,08
Size of household	3,60	3,56	-0,04	3,58	3,67	-0,09	4,16	4,13	-0,03	3,73	4,52	-0,78
Education												
No diploma	0,38	0,22	-0,15***	0,385	0,34	0,04***	0,78	0,56	-0,21***	0,69	0,85	-0,15***
Primary	0,21	0,28	0,07***	0,22	0,11	0,10***	0,14	0,28	0,13***	0,19	0,10	0,09**
Middle school	0,16	0,15	-0,01	0,17	0,09	0,08***	0,04	0,09	0,05***	0,05	0,02	0,02
High school	0,14	0,15	0,01	0,12	0,17	-0,04***	0,02	0,04	0,019*	0,04	0,008	0,03**
University	0,11	0,17	0,067***	0,0765	0,272	-0,19**	0,005	0,013	0,008*	0,005	0,004	0,0002
Time allocation (minutes)												
Paid work	63,9	419,6	355,77***	0	390,2	-	99,8	426,6	326,8***	0	185,3	-
Unpaid domestic work	262,5	34,6	-227,9***	311,5	195,5	116,02***	352,3	55,5	-296,8***	362,12	343,9	18,2**
Unpaid care work	61,47	40,34	-21,1***	66,4	35,8	30,6***	45,61	8,23	-37,38***	61,65	31,89	29,76**
Self-care and leisure	297,63	177,8	-119,83*	318,32	192,02	126,3***	247,83	266,5	18,67*	283,22	217,53	65,69
Labor market												
Works in public sector		0,607			0,627			0,462			0,35	
Self-employed		0,285			0,293			0,4858			0,883	
Hourly wages		14,75			21,05			10,51			7,94	
Observations	2015	1815		1685	330		1162	1027		536	626	

Source: Author's calculations from the Morocco National Time Budget Survey 2012. Notes: Unweighted statistics. The sample is restricted to individuals aged 14 to 60 years (with 60 being the legal age of retirement in 2012).

2.5 Intrahousehold Bargaining Power and time allocations: An Empirical Test of the Collective Model

2.5.1 Theoretical Framework

While many theoretical and empirical research on labor supply have the disadvantage of assuming that time outside the labor market is entirely allocated to leisure, Gary Becker's economic theory of marriage presented the basis for a body of literature explaining micro-level household decision-making based on the rational choice theory (on rational decision-making see Becker, 1973; 1981). Becker's market models of marriage introduced concepts such as sex ratios' influence on marital output and income. Since then, the canonical collective model has evolved. Since then, the general collective model framework evolved both theoretically and in terms of empirical applications (Browning et al., 1994; Haddad and Hoddinott, 1994; Browning and Chiappori, 1998; Duflo, 2000; Barmby and Smith, 2001; Chiappori et al., 2002; Quisumbing and Maluccio, 2003; Vermeulen, 2006; Blundell et al., 2007; Chau et al., 2007; Donni, 2007; Kalugina et al., 2009; Rapoport et al., 2011; Lyssiotou 2017; Molina et al., 2018). In this section, I provide a description of the theoretical framework based on the collective model of labor supply with distribution factors proposed by Chiappori et al., (2002).

Theoretical setting – In a household comprised of two spouses $i=f,m$ that have distinct utility functions $U^i = U^i(1 - C^i, h^i, z)$, where C represents private consumption of a Hicksian good, h represents paid work time of spouses such as private leisure is none other than $(1 - h^i)$, and z is a vector of preference. The collective labor supply model assumes that intra-household decisions are Pareto efficient meaning that spouses know each other's preferences and individual preferences are defined by own vectors of goods and time as well as the vectors of the other spouse. The utility functions are strictly quasi-concave, increasing and twice continuously differentiable. Under these assumptions, intra-household resource allocations are determined by a bargaining process whose only requirement is that it must yield Pareto efficient assignments. This unobserved Pareto weight depends on observed individual and household factors $u = u(w_f, w_m, y, z, s) \in (0, 1)$, such that the household solves the following program:

$$\max \{h^f, h^m, C^f, C^m\} uU^1 + (1 - u)U^2$$

Subject to a budget constraint:

$$w_f h^f + w_m h^m + y = C^f + C^m$$

Where w_f and w_m represent spouses' wages, h^f and h^m total hours allocated to paid work, y is the household non-labor income, C^f and C^m represent private consumption, and s is a vector of intra-household distribution factors affecting decisions and the Pareto weights (Chiappori et al., 2002;

Rapoport et al., 2011; Browning et al., 2014). The bargaining power u , thus, depends on spouses' individual wages (w_m, w_f), the household non-labor income (y), a set of household characteristics (z), and distribution factors (s). Assuming an inner-solution, Pareto-efficient decisions can be expressed in the following leisure demand functions:

$$l^f(w_f, w_m, y, z, s) = L^f[w_f, w_m, y, z, u(w_f, w_m, y, z, s)] \quad (2.1)$$

$$l^m(w_f, w_m, y, z, s) = L^m[w_f, w_m, y, z, u(w_f, w_m, y, z, s)] \quad (2.2)$$

The labor supply of each spouse h^i is considered as the difference between total time and leisure time $h^i (i = f, m)$. The optimization problem of the labor supply of household members gives rise to Marshallian demands on labor supply, such as $h^i(w_f, w_m, y, z, s) = L^i[w_f, w_m, y, z, u(w_f, w_m, y, z, s)]$. The main parameter of interest in this theoretical setting is the sharing rule characterized based on the second theorem of the second fundamental welfare theorem in terms of a two-stage decision process. First, household income is allocated based on a sharing rule $= (u)$ such that spouse m receives $\phi_m = \phi$ and spouse f receives $\phi_f = y - \phi$ (Chiappori, 1992). Then, each spouse solves an individual program defined as:

$$\max \{h^i, C^i\} U^i(1 - h^i, C^i, z)$$

subject to a budget constraint:

$$w_i h^i + \phi_i(u) = C^i$$

Assuming the labor supply functions of spouses are distinct and that there are no corner solutions, spouses' labor supply equations can be expressed as:

$$h^f(w_f, w_m, y, z, s) = H^f[w_f, \phi(w_f, w_m, y, z, s)]$$

$$h^m(w_f, w_m, y, z, s) = H^m[w_m, \phi(w_f, w_m, y, z, s)]$$

where, H^m and H^f are the individual Marshallian demands from which a series of conditions functioning as Slutsky restrictions can be derived and constitute a set of partial derivatives. The partial derivatives of the sharing rule can be obtained through a function of the first partial derivatives of labor supply.

Parametric estimation – To estimate the collective model of labor supply, first, a semi-logarithmic model of time allocation to paid work is estimated through the following equations:

$$h^f = f_0 + f_1 \log w_f + f_2 \log w_m + f_3 \log w_f \log w_m + f_4 y + f_5 s_f + f_6 s_m + f_4 z \quad (2.3)$$

$$h^m = m_0 + m_1 \log w_f + m_2 \log w_m + m_3 \log w_f \log w_m + m_4 y + m_5 s_f + m_6 s_m + m_4 z \quad (2.4)$$

Assuming $m_5/f_5 \neq m_3/f_3$, then this functional form of labor supply equations satisfies a set of desirable

properties, among which a set of partial derivatives of the sharing rule can be defined by the following expression if $m_4/f_4 = m_5/f_5 = m_6/f_6$:

$$\phi = 1m1f4logwm + f2m4logwf + f3m4y + f4m4logwmlogwf + m4f5s + K(z) \quad (2.5)$$

where $= f3m4 - f4m30$ and $\partial(z)$ is an integrating constant that cannot be identified since it's affecting the individual and household preferences and the sharing rule.

Provided that spouses cooperate to find Pareto-efficient decisions on allocations of resources, and considering time, wages, and non-labor income as resources of the household, then the model is recast into a two-stage individual process characterizing each spouse's labor supply individually. Two sets of solutions are produced for each spouse which can be combined to characterize how spouses allocate resources within the household and, thus, their relative bargaining power. The theoretically derived parameters can help explain the unobserved relations defining intra-household allocations of resources including labor supply of married couples. As such, the main objective of this section is to characterize labor supply behavior of married working couples through a test of the general collective labor supply model. Since corner solutions are not allowed, additional analysis including single and dual income households is provided in the following section 6.

2.5.2 Distribution factors

The theoretical framework of the general collective model highlights how "distribution factors" contribute to the sharing rule (bargaining power) of partners within marriage. If distribution factors influence the bargaining power of individuals within a marriage, then, the labor supply decision is based on an efficient production function based on the intra-household distribution of resources. Both the husband and wife make distinctive decisions on allocations of leisure, domestic and market consumption based on their own budget constraint. When labor force participation decisions become contingent upon solving an in-marriage conflict, distribution factors exert a sharing rule effect with one partner gaining more from the outcome than the other. The measurement of the bargaining weight is a focal point for measuring intra-household inequality of distribution of bargaining power. In literature, it often involves the choice of an instrumental variable that is affecting bargaining weights but, at the same time, is excluded from individual preferences and from the household budget constraint (Bourguignon et al., 2009). Consequently, two widely used distribution factors in literature are considered for the case of Morocco: the sex ratio and the share of wife's income over husband's income (Chiappori et al., 2002; Choo and Siow (2006); Becker (2009); Bourguignon et al. (2009); Browning

et al., 2014; Campana et al., 2018; Lise and Yamada (2019)).

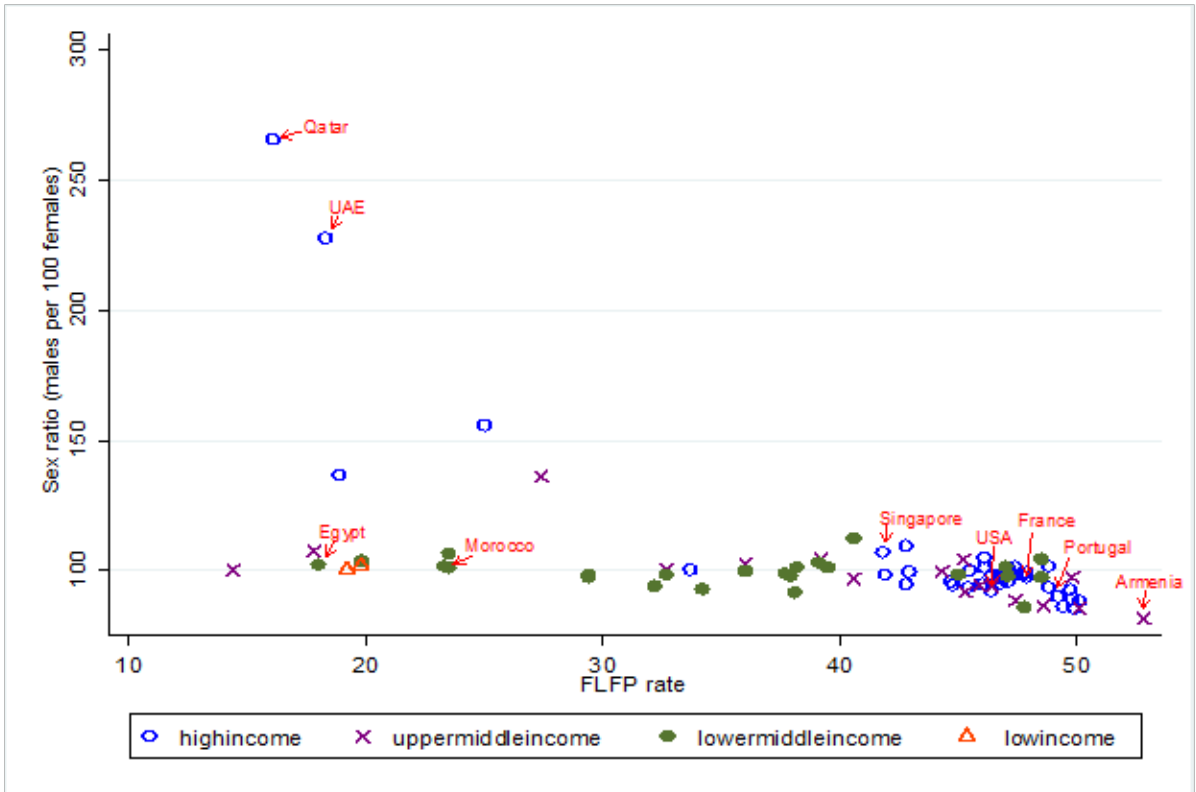
The sex ratio can be defined as a factor that shifts the intra-household bargaining power in favor of the scarcer sex and is, thus, a proxy for relative supply and demand of the sexes in marriage markets (Browning et al., 1994; Chiappori et al., 2002). It can affect marriage, labor supply, childbearing among other social and economic outcomes; A higher sex ratio, holding every other factor constant, increases scarcity of women in marriage markets. As a result, wives attract a larger fraction of household resources (i.e., income) resulting in an increase in Pareto weight and, thus, the division of labor. Arguably, higher sex ratios decrease women’s labor force participation rate as opposed to lower sex ratios that push more women to the workforce as is the case of Europe and the US post World War II (Abramitzky, et al., 2011). However, the pattern illustrated in the figure below contradicts this popular assumption of the general collective model showing that the relationship is not straightforward. Sex ratio may be a valid distribution factor in some countries but not in others as it tends to be confounded with local gender norms which affect preferences of spouses (Hwang and Nguyen, 2023) and may lead to assortative matching (Schwartz, 2013). Indeed, this instrument must be considered with caution and while keeping in mind the potential effect of socio-normative factors.

The first sex ratio considered weights cohort sizes by the proportion of men in the population to women of the same age which reflects the preference for spouses of the same age. Additionally, and taking into consideration the average age differences between spouses, a sex ratio weighing cohort sizes by proportion of men who prefer to marry women born in a different cohort is considered – typically men derive more benefit from marrying 2 years or more younger (Choo and Siow, 2006). Surprisingly, similar results are recorded in both cases.

2.5.3 A constructed bargaining power proxy

Decision making power is an important proxy to bargaining power within the household (Ewerling et al., 2017) and reflects the Pareto weight u of the wife in the model. Using multiple dimensions on decision making inside the household, a bargaining power proxy was constructed for wives in the sample using principal component analysis. After compiling responses for several questions from the decision-making module of the time use survey, six dimensions are kept. They include decision-making power on household budget, on housing arrangements, purchases of expensive items and durable goods, family planning, which in turn reflects also control over own health and body, decisions over children’s affairs, and last word over the household investment projects. Results and additional description on these dimensions are presented in appendices.

Figure 2.5: Sex ratio to Female Labor Force Participation rate relation around the world



Source: Author. Note: Used data on the population sex ratio comes from the latest available from World Population Review (2023). The sex ratio, also called gender ratio, is defined as a measure of the number of males within a given group of people (such as a country's populace) compared to the number of females within that same group. The ratio represents the number of males per 100 females. Data for female labor force participation rates come from the World Bank (2023). Are included 85 countries that are classified by high-income, upper-middle-income, lower-middle-income and low-income groups based on the latest World Bank country classifications by income (2022-2023). Additional plots are provided in the appendices by income classification.

2.6 Results

This section first examines results from the sample of working couples. It draws conclusions separately for urban and rural settings to verify the existence of differences between labor markets. Spouses' hours are estimated simultaneously and to deal with endogeneity bias Seemingly unrelated equations and three stage least squares (3SLS) procedure are used. Following previous literature (Chiappori et al., 2002, Rapoport et al., 2011; and Lyssioutou, 2017; Lise and Yamada 2019), instruments included are wages, non-labor income, and share of wife's income using a second-order polynomial in age and years of education, occupational categories, regions, and areas of residence.

2.6.1 Wages, income, and time allocations of married couples

Columns 1 and 2 report results for the parametric estimations of the system of equations with SUR for the sub-sample of urban working couples, whereas columns 3 and 4 for rural working couples. They highlight an overall positive relation of own hourly wages to time allocated to market work for both men and women and in rural and urban labor markets. Columns 5 through 8, report results using 3SLS procedure.

Household income and wages – in the case of urban couples, women and men simultaneously increase their labor supply at both the intensive and extensive margins (Blundell et al., 2011) of each other's wage increases. They show, however, a hump-shaped behavior suggesting that while women and men's employment in urban labor markets has similar characteristics, the couple, collectively, has a threshold of time that can be allocated to paid labor. The 3SLS estimates, however, show that men's labor supply, measured in daily market minutes, decreases with own wage increases and increases because of the interaction with the wife's income. There are two implications for this finding. The first, suggests that there might be evidence of assortative matching, at least for the highest dual earning couples who increase their labor supply simultaneously with total household income increases. In this regard, Eckstein, et al, (2019) proposed a model where the mechanisms determining marriage are based on couples' selectivity. According to the later, individuals with higher earning capacity will tend to prefer a spouse with proportionally similar earning capacity. They explain this by (i) a preference to maintain the same standard of living after marriage, and (ii) a better bargaining capacity that would be attributed to the spouses with higher earning capacity, which allows them to be more selective in the marriage market. These mechanisms contribute to generate assortative matching which, at least in the case of high earning urban couples, is keenly like that of European or North American couples' behavior. The second implication, on the other hand, indicates that these assortative matching be-

haviors may favor women more than men for two reasons. First, the existence of a non-labor income source for the household has adverse effects on men and women's work time, emphasis on the later, i.e., the couple may jointly decide to allocate a portion of this non-labor income to buy a substitute for woman's domestic work, especially since men and women's domestic and care work time are not perfect substitutes. Similarly, women's market time increases as their wages increase proportionally to their husbands', i.e., urban husbands decrease their market time when their wives earn more which may signal small, but considerable, transfers from wives to increase husbands' domestic time.

A specific case of sex ratio effects – Lets first recall how Becker's models show that sex ratios effects directly women's bargaining power within the marriage, namely use of marital income, collective, and personal consumption (Becker, 1973, 1981). The extension of these models to the analysis of the labor supply decision revealed that higher sex ratios increase women's value in the household market, thus raising their opportunity cost of supplying the labor market. In a nutshell, the higher the sex ratio the less likely are married women to participate in the work force (Grossbard and Amuedo-Dorantes, 2007; Chiappori et al., 2002; and others). In all the estimates, however, the sex ratio has an adverse effect on women's labor supply: it increases it instead of decreasing it. Going back to descriptive statistics in table 2, it's evident that differences in time allocations between working and non-working women are, in fact, trivial. That is, working women still allocate substantial proportions of their time to unpaid domestic time. Non-working women, on the other hand, allocate more time to leisure which means that those who supply the workforce simply reduce leisure time to compensate for domestic work. Hence, it can be deduced that sex ratios may increase women's value in marriage markets giving them higher bargaining power to choose to supply the labor market while still holding the obligations of fulfilling their minimum quota of traditional gender roles. One noticeable difference between all the specifications, is that estimates are higher and more statistically significant for urban households, especially urban women, confirming the hypothesis of existence of separate labor markets in rural and urban Morocco (Lopez-Acevedo et al., 2021) and suggesting that women are in fact exposed to a set of factors that simultaneously influence their decision to supply the labor market. I recon I can reservedly name three based on these results: (i) the sex ratio, related to the effects of tradition and social gender roles, (ii) spouse's education and income, related to their believes on family structures and women's work, and (iii) the economic conditions, related to access and availability of desired jobs by women, especially the highly educated ones (Klasen, 2019).

Table 2.5: Collective labor supply estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Worktime	Results from SUR				Results from 3SLS			
	Rural		Urban		Rural		Urban	
Variables	Wife	Husb.	Wife	Husb.	Wife	Husb.	Wife	Men
Wife log hour-wage	1.59*** (5.51)	2.88*** (10.40)	2.01*** (7.43)	3.43*** (13.38)	1.99*** (3.86)	-2.16*** (-5.80)	1.76** (3.05)	-2.54*** (-4.25)
Husband log hour-wage	0.94** (2.95)	2.91*** (7.86)	0.77*** (4.18)	0.78 (1.17)	0.24 (0.59)	-1.36*** (-4.04)	-0.26 (-0.76)	-2.10*** (-7.45)
Wife log wage x husband log wage	-0.30** (-3.01)	-1.09*** (-9.03)	-0.27 (-1.28)	-0.32 (-1.20)	0.07 (0.51)	0.58*** (5.64)	0.09 (0.35)	0.96*** (3.62)
Non labor income (household)	-0.04 (-0.09)	-0.58 (-1.19)	0.19 (0.75)	0.21 (0.64)	-0.007 (-0.02)	-0.68 (-1.38)	0.07 (0.26)	0.033 (0.09)
Sexe ratio	0.10* (0.48)	-0.12 (-0.54)	0.18* (1.47)	0.05 (0.32)	0.10* (1.26)	-0.01* (-0.20)	-0.0001 (-0.00)	0.06 (1.09)
Wife share of couple's income	1.81* (2.49)	-1.16 (-1.62)	-1.72 (-1.31)	0.62 (0.97)	0.22 (0.27)	-1.57* (-2.07)	-2.47* (-1.77)	-1.44 (-0.86)
Education (High school as benchmark)								
No diploma	0.29 (1.22)	0.43* (1.72)	0.38* (1.76)	0.66* (2.28)	-0.51 (-0.38)	1.06 (1.39)	-0.59 (-0.35)	0.002 (0.01)
Primary	0.16 (0.64)	0.44 (1.63)	0.12 (0.54)	0.310 (0.98)	-0.04 (-0.11)	0.47 (1.38)	-0.92*** (-3.82)	-0.21 (-0.94)
University	-0.64* (-2.40)	-0.029 (-0.10)	0.86 (1.04)	-1.63 (-1.57)	-2.76** (-3.22)	-1.53*** (-4.45)	-0.53 (-0.43)	-1.64 (-1.25)
Demographic structure								
Children 6 to 17 in household	0.11 (0.51)	-0.12 (-0.53)	-0.09 (-0.73)	-0.02 (-0.13)	0.19 (0.97)	-0.08 (-0.42)	-0.08 (-0.66)	0.10 (0.65)
Size of household	-0.20* (-2.56)	-0.06 (-0.68)	-0.02 (-0.66)	0.0008 (0.02)	-0.18* (-2.46)	-0.05 (-0.68)	-0.01 (-0.39)	-0.005 (-0.15)
Geographic characteristics								
Casablanca-Rabat axis	0.81*** (4.35)	0.46* (2.40)	-0.23 (-1.09)	-0.10 (-0.36)	0.83 (0.78)	-0.18 (-0.17)	0.49 (1.05)	1.24* (2.05)
Intercept	-2.39 (-0.97)	3.37 (1.25)	-3.67* (-2.40)	-0.84 (-0.41)	-0.69 (-0.39)	9.74*** (7.38)	1.04 (1.11)	6.05*** (9.19)
Economy FE			YES				YES	
Controls Em-employment Sector			YES				YES	
Observations		510		1190		510		1190
Mean of outcome variable	6,40	8,57	3,10	7,73	6,40	8,57	3,10	7,73
R-sq	0,76	0,83	0,44	0,75	0,76	0,83	0,41	0,72
RMSE	1,85	1,93	1,78	2,29	0,03	0,03	1,80	2,39

Notes: Robust standard errors in parentheses. The sample has been restricted to working married spouses (rural and urban). The dependent variables are log-daily work hours. Instruments used: dummies for self-employment and public-sector employment, Man's age (polynomial equation, 4th degree) and education (polynomial equation, 2nd degree), Woman's age (polynomial equation, 4th degree) and education (polynomial equation, 2nd degree). *p<0.05. **p<0.01. ***p<0.001.

Household structure – Upon careful inspection, it can be argued that these results are proof that there is no straightforward correspondence between the sex ratio and women’s labor force participation (Nathanson, 1984; Harris and Watson, 1987; Ferber and Berg, 1991; Grossbard, 2015; Lise and Yamada, 2023). There are also reportedly several pieces of evidence that the effect of the sex ratio on labor market participation varies in importance depending on the level of economic development (Berik and Bilginsoy, 2000; Fernández, 2014; Jayachandran, 2015). Where consensus is more ought to be found is in the conclusion that gender norms are persistent on the long run (Alesina et al., 2013) and sticky on the short run (Fernández et al., 2004; Fernández and Fogli, 2009; Abrevaya, 2009). Women’s labor supply decision is thus more likely to be preference motivated and by traditional gender norms. Arguably, where gender norms are more ought to be safeguarded is within extended family structures (Ebenstein 2014), that practice patrilocality. This explains why women’s labor supply significantly decreases as family size increases, even if unpaid domestic work time decreases simultaneously.

Economic growth- Beyond this logic, there are reasons to wonder whether the ”marriage and child squeeze” assumptions are simply adjuncts to a more fundamental explanation that finds its rationality in the nature and speed of economic growth – thus, the availability of jobs in both quantity and quality. In fact, development improves women’s labor productivity by increasing their advantage through technological advances, even in traditional sectors such as agriculture (Qian, 2008; Carranza, 2014). In this regard, Lopez-Acevedo et al. (2021) argue that women’s low labor force participation in Morocco today can be explained by a U-shaped relationship with development documented by Goldin (1995) and Mammen and Paxson (2000). Although it is too early to decide whether this relationship can be proven for the Moroccan case, the undeniable polarization of women’s employment toward either clerical or traditional jobs may support the hypothesis of an eminent transition. Moreover, estimates examined here suggest that women’s labor force participation is likely to be more sustained in the Casablanca-Rabat axis, where a higher concentration of human capital-intensive jobs is found – occupations that are preferred by educated women.

2.6.2 Measuring labor supply with truncated hours

Beyond characterizations of behaviors of working couples, and in a context where low female labor force participation prevails, studying household labor supply at the extensive and intensive margins in Morocco requires the inclusion of non-working wives. In this section I allow for the truncation of the wife’s market work hours and husband’s domestic work hours at zero. The inclusion of truncated observations will likely result in bias in the estimated parameters without correction. Similar to the previous estimates, I extend the Seemingly Unrelated Regression (SUR) analysis to a Bivariate Tobit

Table 2.6: Wives' sharing rule and bargaining power

Variables	Sharing rule of family income		Constructed Pareto weights	
	(1) Urban	(2) Rural	(3) Urban	(4) Rural
Wife log hour-wage	0.035*** (0.000)	0.031*** (0.000)	0.063* (0.025)	0.026*** (0.063)
Husband log hour-wage	-0.009* (0.033)	-0.018*** (0.001)	0.05** (0.018)	0.049* (0.023)
Non labor income (household)	-0.00012 (0.988)	0.0011 (0.793)	-0.018 (0.018)	-0.009 (0.036)
Sexe ratio	0.0017 (0.206)	0.001 (0.277)	-0.0009 (0.0034)	-0.006 (0.005)
Wife share of couple's income	-0.026* (0.039)	-0.041* (0.077)	0.063 (0.123)	0.037 (0.152)
Observations	510	1190	510	1190

Notes: The sub-samples are restricted to urban and rural working couples. P-values in parentheses in columns (1) and (2). Robust standard errors in parentheses in columns (3) and (4). Coefficients in columns (1) and (2) are derived from estimates in columns (5) and (7) in table 5. Coefficients in columns (2) and (4) are based on the constructed bargaining power as a dependent variables.

approach. The assumption that the number of hours allocated to domestic and market production by spouses is determined through an agreement reached by a bargaining or negotiation process is maintained (Chiappori, 1997; Apps et Rees, 1997; Rapoport, Sofer et Solaz 2003; Fortin et Lacroix, 2002; Perez-Castillo, 2003). Under this assumption the number of hours allocated by spouses to each production will be a function of characteristics that affect their bargaining power within the household and reaction to their spouse's time allocation decisions.

The model is estimated for allocated hours to market and domestic work controlling for age, educational attainment, employment status and sector, and the geographic area of residence. Following the canonical theory of time allocation (Becker, 1965), controls for the demographic structure of the household capture varying effects on allocated time to care for children and elderly and the intra-household distribution of domestic work tasks, such as transfer of care time from grandmothers, and contribution of young-adult daughters to domestic work. Additionally, to capture the distribution of bargaining power within the household, controls for wages, wife's share of couple's wages, the sex ratio, and non-labor income of the household are used as proxies for varying degrees of bargaining power. As opposed to the previous estimates, these results explain low female labor force participation more than they characterize women's work.

First, they highlight that husband's wage and household non-labor income contribute to a statistically significant increase in the wife's market hours, further confirming the hypothesis of selective matching. Moreover, there is indication of transfers from husband's market hours to either leisure or home pro-

Table 2.7: Wages, bargaining power and Household Time Allocation

Variables	Model 1 - Market work		Model 2 - Domestic work	
	(1) Wife	(2) Husban	(3) Wife	(4) Husband
Wife log hour-wage	-7.48** (2.77)	1.18*** (0.116)	-4.60*** (0.40)	0.52*** (0.054)
Husband log hour-wage	2.48*** (0.13)	-7.66*** (0.266)	2.06*** (0.043)	-1.88*** (0.16)
Non labor income (household)	0.308* (0.648)	-3.88*** (0.56)	0.59* (0.24)	-0.10 (0.25)
Sexe ratio	0.102 (0.48)	-1.10*** (-0.54)	0.23* (0.12)	-0.24** (0.13)
Wife's share of couple's income	19.4* (7.68)	11.8*** (2.80)	10.32*** (1.64)	0.98 (1.62)
Education (High school as benchmark)				
No education	1.22** (0.412)	-0.71* (0.312)	1.42*** (0.14)	-0.53** (0.14)
Primary	-1.19* (0.494)	0.66* (0.31)	0.095 (0.16)	-0.20 (0.15)
University	3.93*** (0.54)	-1.99** (0.415)	-0.81*** (0.22)	0.51** (0.19)
Demographic structure of household				
Children 6 to 17 in household	0.56* (0.34)	0.55* (0.277)	0.12* (0.15)	-0.16 (0.12)
Size of household	0.17 (0.108)	-0.047 (0.096)	0.07 (0.04)	-0.020 (0.045)
Elderly in the household	1.67*** (0.38)	-4.19*** (0.375)	1.82*** (0.15)	-0.56*** (0.17)
Geographic characteristics				
Casablanca-Rabat axis	0.815*** (4.35)	0.231 (0.77)	0.62* (0.35)	-0.26 (0.35)
Urban	-4.38*** (0.351)	-0.408 (0.274)	-0.11*** (0.12)	-0.117 (0.12)
Intercept	-11.75 (-1.63)	17.14*** (3.40)	-4.19* (2.32)	-0.30 (2.26)
Regional economy FE	Yes	Yes	Yes	Yes
Employment sector controls	Yes	Yes	Yes	Yes
Observations		6 132		6 132
Mean of outcome variable	0.680	3.30	2.75	0.33
lns1		1.868*** (70.20)		1.24*** (0.013)
lns2		1.873*** (115.76)		1.02*** (0.022)
arho		-0.863*** (-8.71)		-1.71*** (0.28)

Notes: marginal effects. The economy fixed effects include annual regional GDP growth rate and unemployment rate; employment sector controls include growth rate of the sector. The sample includes all married dual and single income couples in rural and urban Morocco.

duction. Higher sex ratio, interestingly, has adverse effects on spouses' market hours, but, at the same time, contributes to increasing women's participation and, thus, likely bargaining power. However, sex ratio is also correlated with sticky gender role attitudes, increasing wives' domestic production even when controlling for preference shifting variables, thus, confirming the hypothesis of gender performing behaviors. The later hypothesis implies that women that are involved in full-time employment tend to spend more time doing housework as a form of "gender performing". This may partly explain the puzzling difference in time allocated to housework (table 2.4) between working and non-working women as well as the strictly gendered structure of housework between spouses. This behavior is as much related to women's refusal to relinquish housework tasks as it is related to their identity and distribution of power within households (Cahn, 1999).

Looking at household demographic structures, there is equally significant evidence of intra-household transfers favoring women's market time, likely from the grandmother or young adult daughter. Inter-generational transfers of time, mainly to child-care, is found to encourage mothers' employment, at the extensive and intensive margins, in both developing and developed economies (Maurer-Fazio et al. 2008; Aparicio-Fenoll and Vidal-Fernandez 2014; Liao and Paweenawat 2020). Finally, these results reinforce the hypothesis of preferences as they show opposing effects on husbands who, especially in extended family structures where gender role attitudes are stricter, dedicate less time to paid work when their wives enter the labor market but do not necessarily increase their domestic production. These results are surprisingly more straight forward as they highlight more clearly the stickiness of social norms.

2.6.3 Robustness checks

Additional robustness checks are conducted using alternative definition of the sex ratio which accounts for age difference preferences between spouses. The results remain similar in the case of the sub-sample of working couples and the full sample of couples.

2.7 Concluding remarks

This chapter examined the driving factors behind low labor force participation of married women in Morocco through an empirical test of the collective model. considering differences between working dual and single earning couples, and between urban and rural dwellings. It started by considering existing occupational and wage differences in the labor market and in time allocations to market work and domestic work. The implications for spouses' time allocations are attributed to changes in wages, household income, and bargaining power induced by three main mechanisms that can explain the low female labor force participation in Morocco.

Wages and occupations – higher female wages do not seem to render higher labor supply participation more attractive, especially so for urban women. Instead, a hump-shaped relationship exists between working wives' wages and their relative market time. This finding supports the hypothesis of educated women's preference to work white collar service-based jobs (Verme et al., 2016; Klasen, 2019; Assaad et al., 2020; Jayachandran, 2021; Cavapozzi et al., 2021). This is primarily explained by educated women's preference for decent working conditions and, specifically, for flexible working hours that allow them to balance their high domestic work hours. Further supporting this preference-based time allocation is the fact that higher earning husbands, who are more likely to be university educated, see their wives' market time increase.

Women's dual roles inside the household and in labor markets, lead them to place a higher value on jobs that allow them temporal flexibility (Goldin, 2014; Cha and Weeden, 2014; Cortés and Pan, 2019). As such, the sharing rule, thus, results in women choosing more flexible and stable jobs, such as working in the public sector, to accommodate for their domestic workload. This translates into labor mismatch in the market as women will tend to compete for the same jobs at all levels of education or not participate in the labor market for lack of desired jobs.

Assortative mating and female labor force participation – the results also support the hypothesis of assortative mating, especially for the case of urban and highly educated couples. Under the collective model couples make decisions with endogenous bargaining power (Mazzocco et al., 2013; Voena, 2015), they share risks, economies of scale, and intra-household resources based on their simultaneous preferences. The bottom line is, the decision to supply and remain in the labor market can equally be motivated by spouses beliefs and preferences which, in the case of highly educated urban individuals, can be influenced by progressive views on women's' rights and social position. As such these marital sorting patterns and intrahousehold behaviors are not representative of other couples. A broader implication of this finding is that the decrease of intrahousehold income inequalities, because of higher wages and market hours of wives in dual earning urban couples, can translate broader economy-wide inequalities. As for rural dwelling couples, results are on part with the hypothesis of

an added worker effect (Lundberg, 1985), especially since rural labor markets tend to be seasonal and in low human capital traditional sectors. In this regard, a desirable extension for future research can explore the implications of such temporary increases in labor supply of married women.

Substitution vs. marketization – another broad implication of the findings relates to the non-substituability of spouses' domestic work since there are only modest transfers of domestic work from husbands, induced by an increase in wives' income. The transition to market work is thus incomplete since domestic and care work burden remain incumbent on working women. This is a characteristic of transitioning economies and more so confirmation of stickiness of gender norms and preferences.

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Appendix for Chapter 2

1.The National Time Use Survey

Sampling Frame

The surveyed population is made up of two subgroups: adults aged 15 years and over, and children aged 7 to 14 years. The sampling frame consists of the list of primary units of the 2005 master sample, developed based on data from the 2004 general population and housing census to conduct a survey program during the post-census period. These are geographic areas, each with easily identifiable boundaries in the field, and containing an average of about 600 households. Each primary unit is divided into secondary units of 50 households each, i.e. 12 secondary units on average for each primary unit. For each survey, a sample of clusters is selected in accordance with the adopted sample design. The elements used to determine the sample size are as follows: (i) the sample must be representative by region and area of residence for the population aged 15 and over and by area of residence for people aged 7 to 14; (ii) this representation should be ensured knowing that two adults aged 15 and over will be selected per household and one child aged 7 to 14 per five households; (iii) based on these considerations, the sample size at the national level that allowed us to provide estimates at the regional level for the population aged 15 and over and by area of residence for children aged 7 to 14 is 9,200 households.

Time allocations in the National time-use survey

The following table provides an overview of time allocations for the population aged 15 years and more in the Time Use Survey dataset.

Table 2.8: Appendix-Average time (in minutes per day) of the population aged 15 years and older by detailed activities, place of residence and gender

Activity	All population			Men			Women		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Food	49,3	36,8	40,6						
Physiological time	642	627	636	617	615	616	665	639	655
Sleep	504	497	501	488	487	487	519	506	514
Meals	87	89	88	81	84	82	94	93	93
Personal care	50	42	47	48	44	47	52	40	48
Professional work	187	219	200	312	344	325	69	100	81
Training and education	38	15	29	40	24	33	36	6	25
Housework and care for other household members	162	195	175	39	50	43	278	333	300
Household work	139	176	154	32	45	37	241	302	265
Care for household members	23	18	21	7	5	6	38	30	35
Free time (leisure, social and religious practices)	411	384	400	432	407	422	391	362	379
Leisure time	285	251	272	308	268	292	263	235	252
Sociability	67	73	69	54	67	59	78	79	79
Religious practices	59	59	59	70	72	71	50	47	49

Source: Time use survey results (HCP).

2. The National Employment Survey

Sampling frame

The sampling frame for the national employment survey is designed according to the principles of stratified three-stage random sampling with a renewal rate of one third. The main features of the survey's sampling frame are as follows:

Stratification - The survey is preceded by a stratification of the various sampling units used, to improve the precision of the estimates sought and to ensure a certain representation for the various administrative subdivisions. In order to avoid the vagaries of sampling, a first dichotomous stratification is introduced in Moroccan surveys, distinguishing between urban and rural areas, insofar as the socio-economic phenomena do not manifest themselves in the same way. The diversity of these two environments is often the reason for a specific survey design for each of them. The criteria for stratifying the survey units differ according to the environment. For urban units, the criteria used are the administrative division into regions, provinces, type of city, and the type of housing, which is divided into five categories: luxury, modern, new medina, old medina, clandestine or precarious.

Master sample - It is generally defined as a pool of survey units that is set up for a given period and to conduct an established survey program. It is, in a sense, a reduced sampling frame, representative of the original sampling frame. Thus, the term "master sample" refers to a set of geographic areas or "primary units" (PUs) from which samples may be selected to conduct the various household sur-

Table 2.9: Appendix-Economy indicators for reference year (2012)

	Region GDP (millions MAD)	Structure (%)	GDP per capita——
Sud	36797	4.4	35770
Souss - Massa – Daraâ	61676	7.5	17427
Gharb - Chrarda - Béni Hssen	33874	4.1	18778
Chaouia – Ouardigha	68148	8.2	39107
Marrakech - Tensift - Al Haouz	69192	8.4	20666
Oriental	39829	4.8	19759
Grand Casablanca	171404	20.7	43375
Rabat - Salé - Zemmour – Zaer	101216	12.2	38124
Doukala – Abda	50631	6.1	24234
Tadla - Azilal	22603	2.7	14910
Meknès – Tafilalet	45557	5.5	20389
Fès – Boulemane	34450	4.2	19480
Taza - Al Hoceïma – Taounate	25040	3.0	13367
Tanger – Tétouan	65718	7.9	21682
Extra-territorial enclosures	1363	0.2	
Total	827497	100	25386

Source: National Accounts, 2012 (HCP).

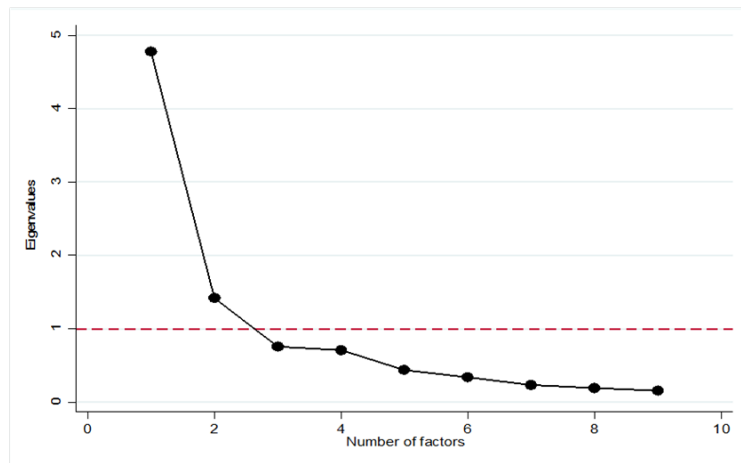
veys. Prior to the drawing of the PUs for the master sample, the national territory was divided into segments, and consisted of the formation of homogeneous and adjacent "drawing areas" containing an average of 1,500 households and grouping a whole number of PUs. To do this, the methodology adopted consisted of taking as a primary unit (PU) a set of 2 to 3 contiguous census districts (CDs). In other words, a primary unit is defined as a geographic area with an average size of 300 households and with clear boundaries that allow for unambiguous location in the field. Since the master sample is used for all post-census surveys, it was considered desirable to take about 20% of the PUs in the sampling frame as first stage units. Such a sampling fraction would ensure sampling efficiency, provide better coverage of the country's geographic division (regions, provinces or groups of provinces that are important in terms of population), avoid household fatigue and better meet the sampling needs of the planned survey program. Thus, within each sampling area, a PU was drawn with a probability proportional to its size (in terms of households) to form the master sample. In total, 4,500 PUs (3,000 urban and 1,500 rural) were selected to form the first-stage sampling units of the master sample..

Sampling scheme - The sampling scheme follows the principles of a spatial and temporal survey. The annual sample is about 90,000 households (including 30,000 rural households), representative of the different socioeconomic groups and regions of the country.

Table 2.10: Appendix-Constructed bargaining power

Variables	Loadings
1. Decision-making on household budget	0.5238
2. Decision-making on housing	0.1837
3. Decision-making on durable goods and furniture	0.1295
4. Decision-making on family planning	0.0702
5. Decision-making on children's needs	0.0595
6. Decision-making on investment projects	0.0332
Kaiser-Meyer-Olkin measure of sampling adequacy	0.7762
Observations	6132

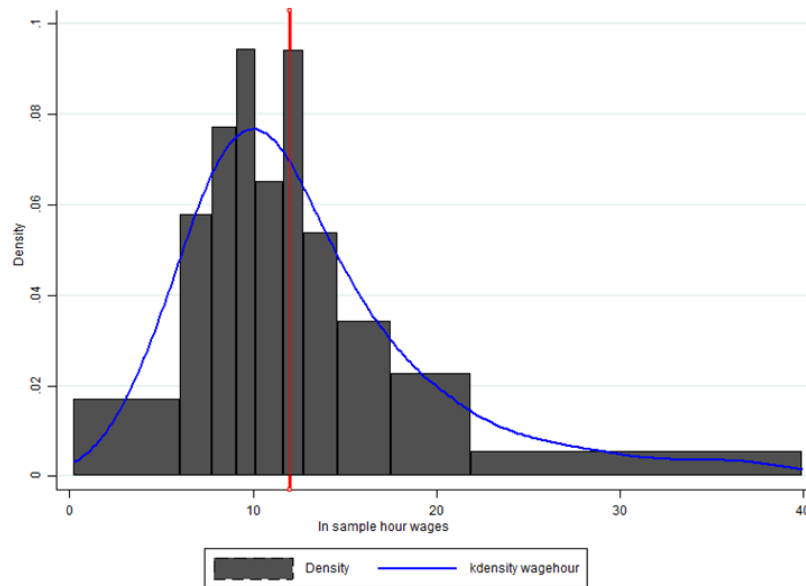
Figure 2.6: Scree plot of eigenvalues



Source: TUS data (HCP). Note: The sample module includes all married couples working and non-working spouses.

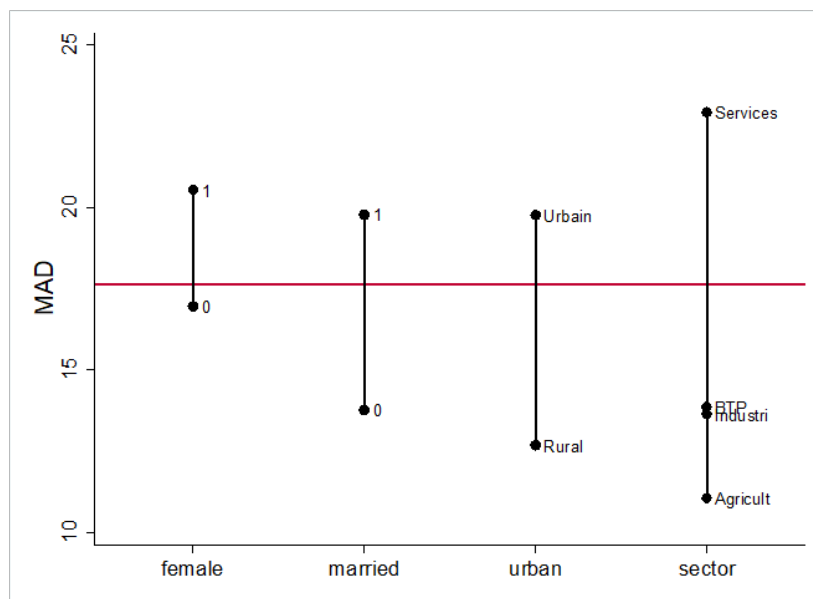
3.In Sample Salient Features

Figure 2.7: In sample hourly wages distribution



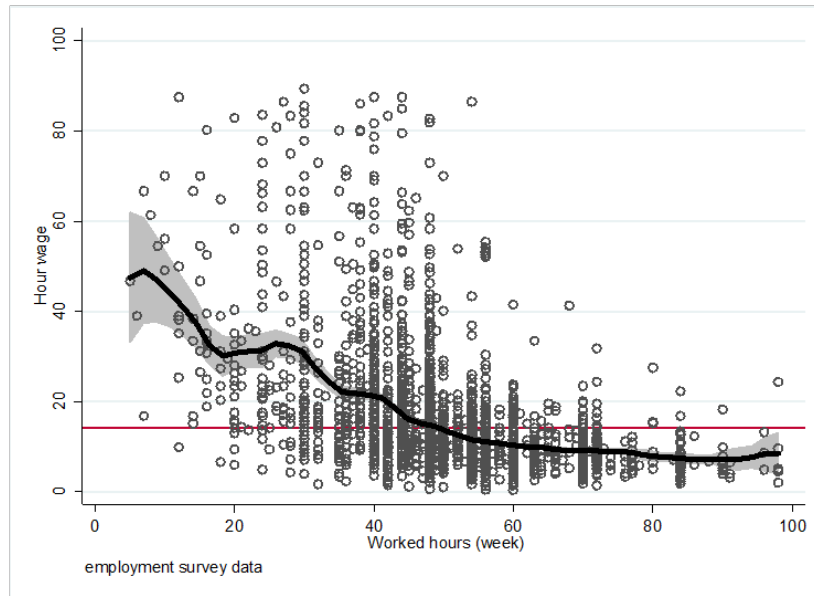
Source: NES data (HCP). Note: This graph plots the raw density of hourly wages for the sample of workers aged 14 to 60 with the blue line representing the kernel density. The red line representing the legal minimum wage for one hour of work.

Figure 2.8: Mean wages differentials



Source: NES data (HCP). Note: This graph plots differentials in mean hourly wages by gender, marital status, geographic location of residence, and sector of employment for workers in the sample. The red line representing the national standard minimum hourly wage.

Figure 2.9: Smoothed distribution of hourly wages by total worked hours (Male)



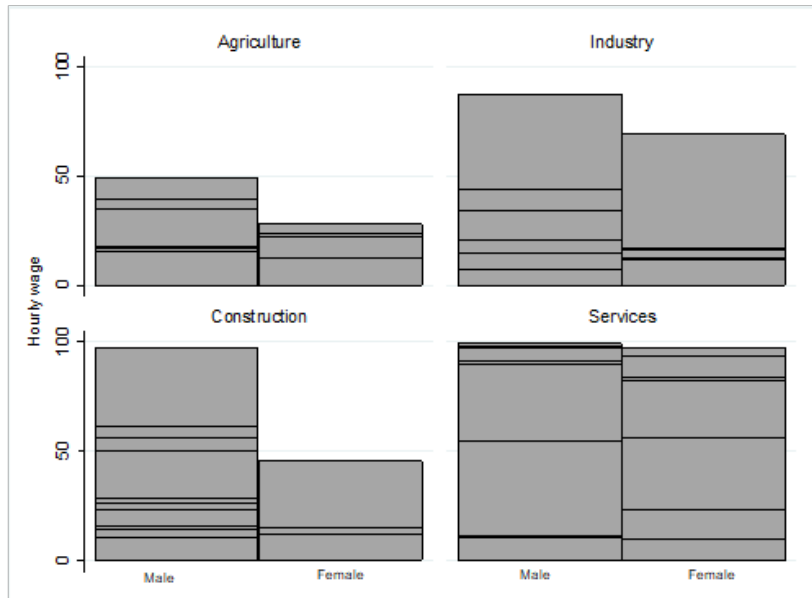
Source: NES data (HCP). Note: This graph plots the smoothed distribution of hourly wages by total worked hours (weekly) for the sample of male workers aged 14 to 60. The red line references the mean income value in the sample.

Figure 2.10: Smoothed distribution of hourly wages by total worked hours (Female)



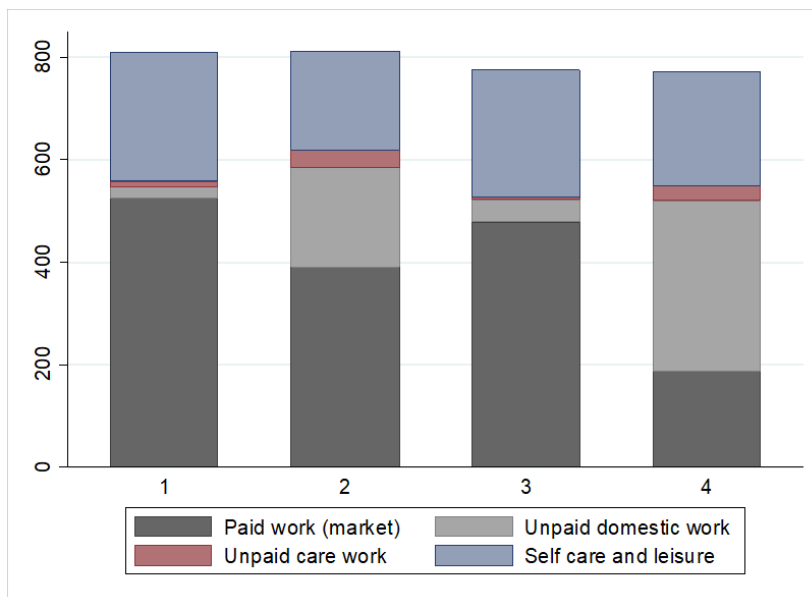
Source: NES data (HCP). Note: This graph plots the smoothed distribution of hourly wages by total worked hours (weekly) for the sample of female workers aged 14 to 60. The red line references the mean income value in the sample.

Figure 2.11: In sample mean wages by gender and sector



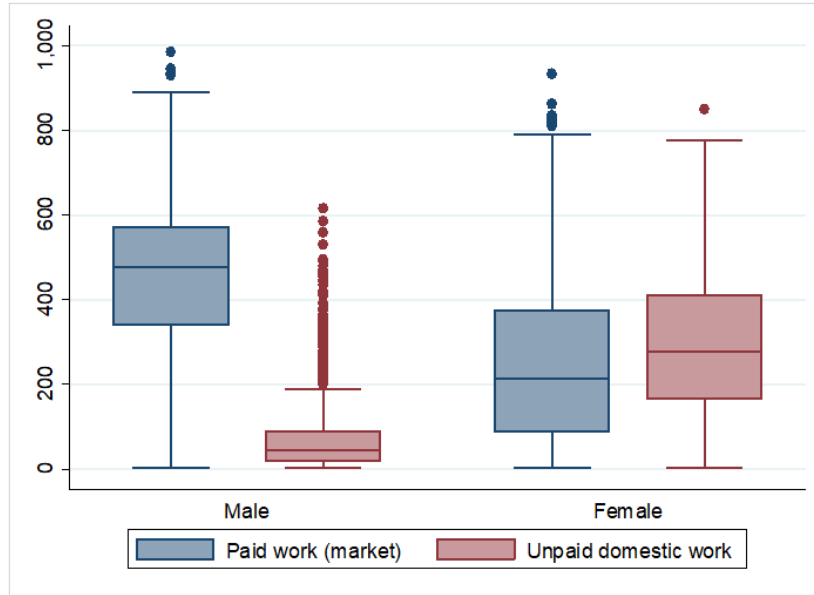
Source: NES data (HCP). Note: This graph plots the raw means of hourly wages for the sample of workers aged 14 to 60 segregated by gender and economic sector of activity.

Figure 2.12: Time allocations by gender and geographic location



Source: TUS data (HCP). Note: This graph plots the mean values of total time allocated to paid work, unpaid domestic work, unpaid care work, and self-care and leisure (day diary) by gender and geographic location of residence.

Figure 2.13: Time allocations by gender and geographic location



Source: TUS data (HCP). Note: This graph plots the mean values of total time allocated to paid work and unpaid domestic work by gender for active and employed workers.

Figure 2.14: Relationship sex ratios and FLFP - High income countries

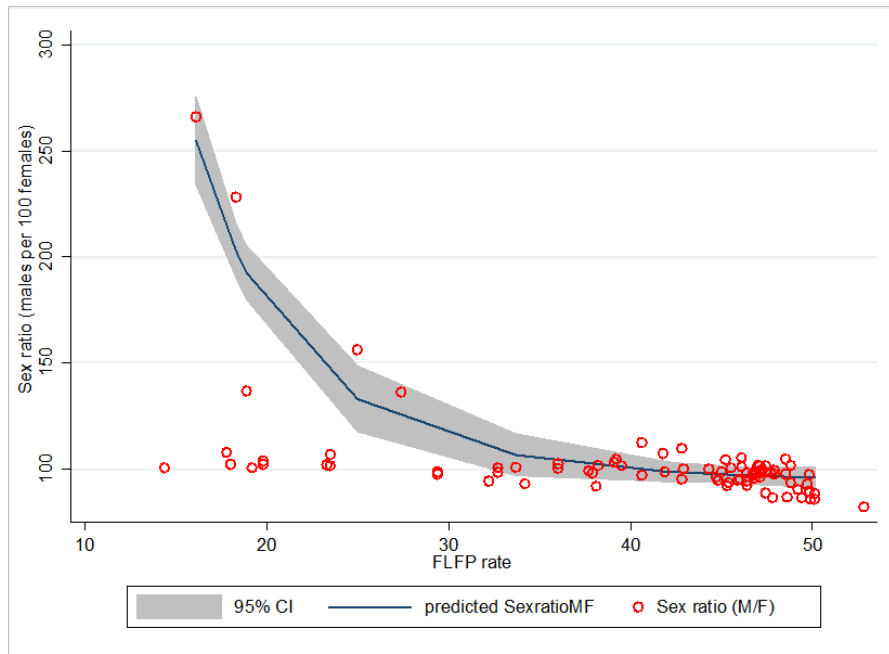
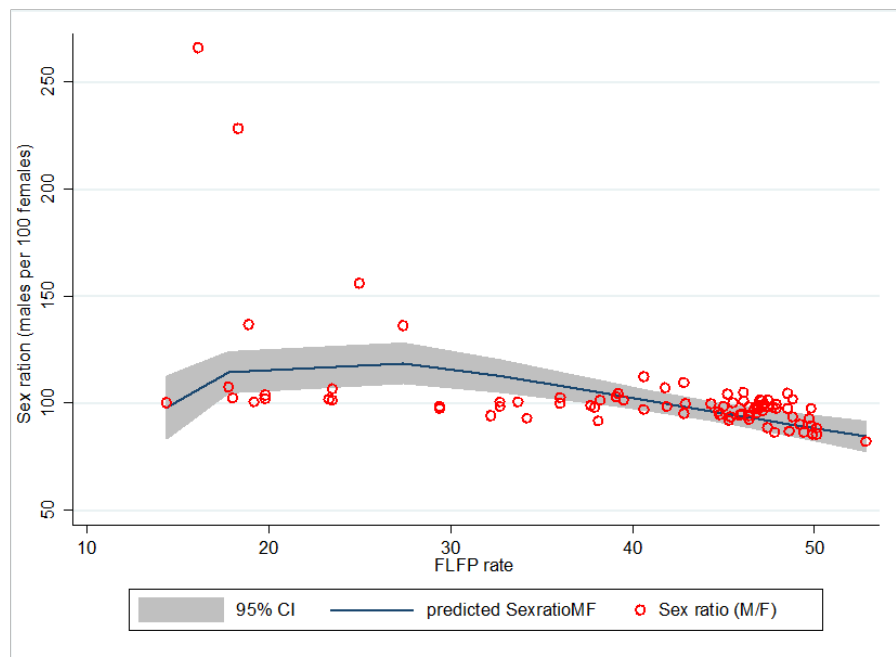


Figure 2.15: Relationship sex ratios and FLFP - Middle-to-low income countries



Chapter 3

For Labor or for Divorce?

Unilateral Divorce Laws and Women's Labor Outcomes

1

¹This research project was jointly conducted with Najat El Mekkaoui, Yeganeh Fourouheshfar, and Nada Eissa. It was supported by the MENA Chief Economist Office under the Labor and Gender Research Programs (TTLs: Nelly Elmallakh and Nazmul Chaudhury). It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are available at <http://www.worldbank.org/prwp>. The authors are grateful and thank Nelly Elmallakh, Nazmul Chaudhury and Daniel Halim for their helpful suggestions and comments.

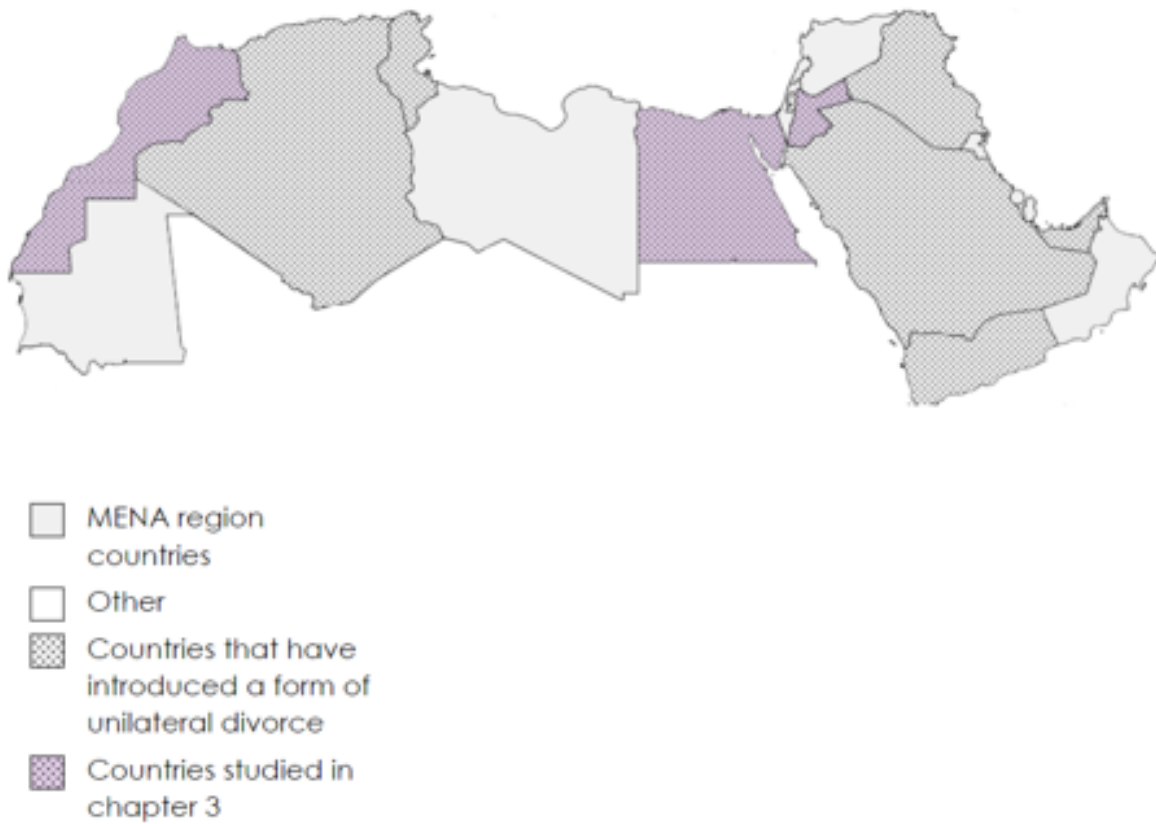
Abstract

Despite substantial progress in closing the gender gap, women's labor force participation in the Middle East and North Africa (MENA region) remains one of the lowest globally, at a mere 18 percent (WB, 2021). This chapter investigates the effect of the introduction of unilateral divorce laws on women's labor outcomes using data from the Demographic and Health Survey (DHS) program that spans over decades and a quasi-experimental difference-in-differences design in three countries: Morocco, Egypt, and Jordan. Results highlight that no-fault divorce legislation was associated with a modest increase in labor outcomes, measured by current employment, a few years after the reform. These findings are likely induced by a power-shift and anticipatory effect that drive women into the labor force. However, when a longer time window is considered, 10 or more years after the reform, a negative effect of the reform is documented on women's labor outcomes in Morocco, and a positive effect in Egypt and Jordan. These differences can be attributed to a set of countervailing effects, including social norms, labor market dynamics and evolution of legislation itself, that make the derived utility from marriage, in some cases, more attractive than that of employment, and vice versa. These findings partially confirm previous research on the relation between no-fault divorce and women's agency and empowerment in the MENA region, but, at the same time, contrast with prominent perspectives on legislation that aims at reducing gender-based discrimination. Instead, they show that there might be unsought effects of legislation and provide a policy relevant discussion on that basis.

JEL-Codes : J12 ; J22 ; D10 ; D13 ; K36.

Keywords: Unilateral divorce, Labor force participation, MENA region, Morocco, Jordan, Egypt, Mothers, Intra-household bargaining.

Figure 3.1: Middle East and North Africa countries covered by Chapter 3



3.1 Introduction

One of the most persistent and salient features of labor markets in the MENA region is that women participate significantly less than men despite substantial reduction of the gender education gap (As-saad et al., 2020) – a mere 18 percent is the average female labor force participation rate in the region (WDI, World Bank, 2021). For example, in Morocco only 23 percent of women participate in the labor market and this rate is even lower for countries like Jordan where it did not exceed 13 percent in 2021. Under the canonical collective household model, marriage markets and legislations governing divorce influence labor supply of spouses and the intrahousehold decision process (Chiappori et al., 2002; Fernandez and Wong, 2014; Field et al., 2021). While a large body of literature has studied the consequences of the introduction of more liberal divorce laws on intrahousehold distribution of bargaining power and labor supply within the collective household labor supply framework (Chiappori, 1988; 1992; Apps and Rees, 1988), less is known about MENA region countries in this regard. Particularly, in circumstances where traditional gender roles prevail as social norms and where women possess limited influence or bargaining power within the marriage, their choices regarding work may not be adequately acknowledged or facilitated (Alesina, 2013; Qian, 2008; Jensen, 2012; Heath and Mobarak, 2015; Jayachandran, 2015; 2021). An institutional environment favorable to women, such as no-fault divorce laws, coupled with increased chances of success in marriage markets² or the possibility of accessing the labor market in the event of a divorce, would influence intrahousehold decision-making processes, even if a divorce does not ultimately occur (Duflo, 2012). Hence, divorce and marriage legislation can exert a substantial influence on these power dynamics and effectively boost women’s participation in the labor force.

In this chapter, the effects of divorce legislation reforms on women’s labor outcomes in three MENA region countries are examined: Morocco, Egypt, and Jordan. At varying dates during the late 1990s and early 2000s, MENA region countries consecutively introduced different forms of unilateral divorce and child custody legislation reforms (Welchman, 2007). These reforms allowed women to easily access divorce without having to prove fault nor require consent of spouse. In past research, Hassani-Nezhad and Sjögren (2014) investigated a similar question using cross-country variation in the timing of introduction of unilateral divorce between eighteen MENA countries using aggregate data and focusing on younger women’s labor force participation in comparison to relatively older age groups of women. They showed that the entry into force of unilateral divorce laws, effectively increased labor force participation of younger women. Here, a different empirical strategy employing individual panel data is

²Marriage markets in countries of the Middle East and North Africa differ from other countries where most research on the canonical collective household labor supply is developed and can be characterized by underdevelopment and missing markets (Anukriti and Dasgupta, 2017). Marriage rates are substantially higher, mate selection often involves family arrangements, divorce legislation is limiting to women and social norms about gender roles tend to determine spousal relations.

used to investigate the effects of unilateral divorce and custody legislation reforms on women's labor outcomes by exploring differences between women that are more or less affected by the reform. Instead of exploiting cross-country variations, estimates are purposefully isolated for each country at a time to test for how context-dependent the findings can be. In fact, a growing body of literature has shown that the relationship between intrahousehold distribution of bargaining power, social norms on gender roles, and labor supply is context-dependent, especially as far as developing countries are concerned (Duflo and Udry, 2004; Ashraf et al., 2009; 2014; 2016; Bau, 2016; Heath and Tan, 2020; Field et al., 2021). Moreover, by using micro data, pathways between micro-level gender-based discrimination and inequalities and macro-level outcomes can be explored adding to the growing micro-founded literature that relates gender inequalities to macroeconomic growth and development outcomes (Seguino, 2010; 2013; 2020; Santos Silva and Klasen, 2021).

This research question is important because women face several barriers to enter the labor force, including discriminatory labor laws, inadequate maternity leave policies, and very limited legal social protection against workplace harassment and gender-based violence (World Bank, 2021). Cultural factors also play a significant role, as traditional gender roles and societal expectations often discourage women from pursuing careers and limit their mobility (Jayachandran, 2015; Heath and Tan, 2020; Field et al., 2021). As such, deeply ingrained stereotypes, and biases, still highly present in the MENA region, perpetuate the belief that women are primarily responsible for household chores and child-rearing, creating an unequal burden of unpaid work and limiting their ability to engage in paid employment. On a macroeconomic level, and throughout the economic literature, the U-shaped labor force participation curve hypothesis is a stylized depiction of the relationship between female labor force participation and economic development (Goldin, 1995). Although this hypothesis is widely spread in cross-country analysis of the subject, some studies such as Gaddis et. al (2013) or Eastin and Prakash (2013) find no or weak evidence of this relationship. They conclude that an S-shaped relationship is more likely to exist and that through this paradigm, the "dangers of the middle phase" should urge to put in place new norms and new institutions promoting women in the workforce (Eastin and Prakash, 2013). Thus, at a macro-level, economic and institutional barriers combine to create a complex web of challenges that impede female labor force participation, exacerbating gender inequalities and hindering economic growth and development as whole.

At a micro-level (individuals and households), women's labor force participation is found to have an inverse U-shaped function of bargaining power (Moeeni, 2019). Accordingly, the importance of intrahousehold bargaining power dynamics to female labor force participation decisions can be explained by the not-so-rare men's opposition to the labor participation of their spouses. Asaad and al. (2017) show that women's employment in the MENA region is affected by early marriage and find that mar-

riage by the median age reduces the probability of working for women. In this regard, the reform of legislation on divorce can constitute a strong shock to the risk of divorce making it easier and, subsequently, altering the perceived risk of marital dissolution which alters intrahousehold relations and decisions (Stevenson and Wolfers, 2006; Stevenson, 2007; Alesina and Giuliano, 2007). Literature suggests that enhancing the overall legal framework potentially increases women’s bargaining power within the household, making their divorce threats more credible in case of conflict. Moreover, altered marriage contracts arguably provide women with incentive to supply labor and remain in the labor market through many channels. Chiappori et al. (2002) find evidence of a shift to higher female bargaining power intra-household and El Lahga and Moreau (2007) suggest lower degrees of specialization in domestic production. Drawing on this strand of literature, the central hypothesis is that divorce legislation reform should increase women’s bargaining power within the marriage, potentially, allowing more women into the labor market.

To test this argument, a pseudo-panel of women is construct and women are assigned to treatment and control groups based on the ages of their youngest child. Using data from the Demographic and Health Survey (DHS) program that spans over decades and a quasi-experimental difference-in-differences design, this chapter assesses how the implementation of the right to unilateral divorce influenced women’s labor outcomes in Morocco, Egypt, and Jordan. Cohorts of “treated” mothers are followed for several periods before and after the reform, thus, including the short-term and long-term effects of legislative reforms on women’s socio-economic position. Findings suggest that there are two main mechanisms: a power-shift effect and an anticipatory effect. The power-shift effect is found to be the most prevalent affecting mainly married mothers of children aged below the legal age-cutoff for custody, and for whom divorce is less costly. However, this effect can be offset by higher costs in the labor market that remain barriers to women’s labor marketization, including search cost and child-care costs. This chapter contributes to the literature on the effects of divorce, child custody and alimony legislation on women’s labor outcomes (Parkman, 1992; Gray, 1998; Bremmer and Kesselring, 2004; Genadek et al., 2007; Stevenson, 2008; Bargain et al., 2012; Hassani-Nezhad and Sjögren, 2014; Fernández-Kranz, 2022; Corradini and Buccione, 2023). Additionally, it shows how the effects of legislation are heavily dependent on context, be it social or economic. The following section briefly summarizes the institutional and legal background of the reform in Morocco, Egypt, and Jordan. The third section then presents the conceptual framework behind the adopted empirical strategy. As for section four, it describes the empirical strategy and used data, while section five summarizes results and provides a discussion, and section 6 concludes.

3.2 Institutional background

Divorce legislation in the Middle East and North Africa region is a part of a broader Family Code that covers issues including inheritance, marriage, divorce, alimony, child custody and child-support, among other personal status dispositions. Family structures in these countries are characterized by a prevalence of patrilineality, and social order is thus based on the superiority of men in terms of rights and power. This system of kinship and the important place reserved for the code of honor have cemented the family and are one of the possible explanations for the persistence of certain customs and traditions favoring the traditional role of women to their participation in the workforce. Subsequently, family laws in these countries treat women and men separately with often unequal dispositions, such as access to divorce. In this framework, the introduction of unilateral divorce provisions fundamentally changed one side of the relational balance between the sexes, by granting women a right that was previously available only to men (Welchman, 2007; Engelcke, 2019). They additionally, empower women to exercise greater control over their marital status, seek divorce on their terms, and secure their economic well-being after divorce. For reference, figure 1, Appendix A shows a timeline of introduction of unilateral divorce reforms in select MENA countries as well as child custody dispositions and age cutoffs related to child custody alimony. Additionally, figure 2. Appendix A shows the evolution of divorce rates in Egypt, Morocco, and Jordan, which are relatively more stable after the reforms than in the years preceding the increase of child custody age in all three countries. Additional discussion on the relevance of this observation is provided in section 3 on the conceptual framework.

Egypt. The reform of family laws in Egypt, in 2000, introduced significant changes that integrated new rights for women within the family (Welchman, 2007). One of the key advancements was the establishment of the "khul" divorce provision. This provision allows women to initiate divorce by returning their dowries or financial compensation to their husbands, without having to prove fault or seek their consent. Moreover, the reform addressed the issue of financial support for women after divorce. It introduced the concept of "nafaqa," which refers to the right of divorced women to receive financial maintenance from their ex-husbands for a specified period. This provision ensures that women are not left financially vulnerable after divorce and helps to protect their economic well-being. Additionally, the reform emphasized the importance of child custody. It recognized the mother's right to custody of her children, particularly for younger children, unless it is determined to be against their best interests. In case of a divorce, the mother obtains custody of a male child up to the age of 10, and of a female child up to the age of 12 years (article 20). An amendment to this article in 2005 raised the age of custody to 15 for girls and boys without distinction. Throughout the duration of custody, the non-custodial parent (father) must pay a pension to the guardian mother to compensate her for the care given to the children.

Morocco. In 2004, Morocco introduced a new family law³ that expanded women's rights and responsibilities. The law received positive international coverage and aligned with Morocco's international commitments, namely the CEDAW (see Charrad, 2012; Sadiqi, 2013). The new Family Code enshrined equal rights and duties for both spouses. The rule of "the wife's obedience to her husband" is abandoned, women no longer need a matrimonial guardian, the age of marriage is set to eighteen for both spouses instead of fifteen for the wife in the old text, and polygamy is subject to such conditions that it is made very difficult. This enshrinement of the principle of equality between spouses is emphasized on several occasions, apart from a few provisions that remain somewhat ambiguous. For example, both during marriage and after divorce, the legal guardianship of minor children still belongs to the father, while the wife's remarriage is still a cause for forfeiture of custody. In terms of divorce proceedings, the Code introduced a form of unilateral divorce that is on grounds of discord and open to both spouses (Chikak). This provision empowers women to dissolve their marriages based on their own wishes. In the event of marital dissolution, even under the 'Chikak', custody of the children reverts first to the mother, then to the father, then to the maternal grandmother. Custody must be guaranteed by decent housing and pension by the non-custodial parent (articles 163 et 167) and lasts until the child reaches the age of legal majority, whether male or female. Then, the child may, at the age of fifteen, choose which of his or her parents will assume custody (article 166). Overall, the introduced reforms of family laws in Morocco in 2004 marked a significant advancement in women's rights within the family.

Jordan. Despite social and political resistance⁴, a first amendment of the Personal Status Law, in 2001, by royal decree, introduced notable changes including raising the minimum marriage age, restricting polygamy, enhancing custody rights for women, and granting them equal access to unilateral divorce. The later provision was deemed rather conservative since it still required women to relinquish some or all their financial rights. The amendment still failed to pass in parliament in 2004 and it wasn't until 2010 that unilateral divorce was passed under 'tafriq lil iftida' or 'iftida' but remained subject to payment of a "ransom" by the wife in exchange for marriage dissolution (Jordanian Personal Status Law, section 4, Article 114). Still, under the new PSL, mothers are entitled to child custody until the age of 15 (article 126-127) while fathers remain sole legal guardians. No distinctions are made between female and male children in terms of custody, alimony, and visitations. Child support, in the event of divorce, must remain compatible with the financial responsibility of the father during the marriage with the additional provision for the accommodation of the custodial parent (mother) (Articles 63, 189 and 179).

³Family Code of February 5, 2004.

⁴Harris, Kelli M. M. (2015): Personal Status Code Reform in Jordan: State Negotiations and Women's Rights in the Code. Washington: Georgetown University.

3.3 Conceptual framework

The introduction of the right to unilateral divorce is conceptualized as a tool to increase women’s bargaining power within and outside marriage. It affects their welfare at the time of divorce as well as the division of labor within the course of a marriage. Such State-level intervention, by the legislator, can reduce uncertainty related to personal and financial security of women and their children, in the event of a divorce, and increases their bargaining power within the marriage (Stevenson, 2008). It can, thus, potentially shape an important feature of women’s empowerment and agency: labor force participation. In the context of the MENA region, the introduction of no-fault divorce laws explicitly targeted women since men had the right to ‘unilaterally’ divorce prior (Welchman, 2007; Hassani-Nezhad, and Sjögren, 2014), whereas a woman seeking a divorce had to obtain her husband’s consent, making it a suitable setting to conduct a difference-in-differences analysis. This section presents the conceptual setting behind the empirical strategy.

3.3.1 Unilateral divorce laws and the formation of labor supply decisions

Laws can influence the decision-making process of individuals (Basu, 1998; Posner, 2002; Duflo, 2012; Bau, 2016; Acemoglu and Jackson, 2017). Divorce legislation, specifically, can alter marriage formation, dissolution (divorce) and bargaining within the marriage (Stevenson, 2008). In the event of a divorce, they affect the income levels and property rights of ex-spouses. Within the course of the marriage, they influence relative distribution of bargaining power, at least insofar as divorce remains a viable and credible threat benefiting the spouse who has higher gains from exiting the marriage. As such, legislative dispositions on alimony, child support and property division can redistribute power within marriage. Rasul (2006) underlines that the analysis of unilateral divorce laws’ effects must distinguish between ‘*pipeline effects*’, which concern the stock of couples married before the introduction of the right to unilateral divorce, and ‘*selection effects*’, which concern the matching outcomes of couples married after the reform. In this framework, the unilateral divorce reform’s ability to influence women’s labor outcomes is captured by the *pipeline effects*. For this, the analysis is restricted to behavior changes of women that were married and had children prior to the reform.

Let’s consider that the introduction of the right to unilateral divorce can affect women’s labor outcomes through two distinct mechanisms: *a power-shift effect and an anticipatory effect*. *Power-shift effects* consist of changes in bargaining power in favor of women and within the framework of the marriage contract. This shift in marital bargaining power affects intra-household behaviors and can increase women’s decision-making power on different dimensions including children’s education, well-being, sav-

ings, and labor supply (Heggeness, 2019; Garcia-Ramos, 2021). Stevenson (2007, 2008) posits that the decision to increase own (woman’s) labor supply comes due to decreased investments (specialization) in marriage-specific capital (Stevenson, 2007; Bonnet et al., 2021). The power-shift effect is among the most covered by literature documented by collective labor supply models (Chiappori, 1988; 1992; Apps and Rees, 1988; Voena, 2015; and others). *Anticipatory effects*, on the other hand, contribute to an increase in women’s labor supply in anticipation of marriage dissolution. Bargain et al., (2012), for instance, argue that if employment contributes to securing women’s outside financial options, an anticipation of marriage dissolution (divorce), due to marital conflict, can lead women to increase their labor supply. They find an acceleration in marital dissolution and, as a response to increased risk of divorce, they point out convincing evidence that women’s labor supply in Ireland increased following the introduction of the right to no-fault divorce in 1996. Thus, following the introduction of the right to unilateral divorce laws in the studied countries, Morocco, Egypt, and Jordan, the first hypotheses find basis in both a *power-shift and anticipatory effects*:

- **Hypothesis 1a:** *All else being equal, the introduction of the right to unilateral divorce increases women’s bargaining power which they use to increase their labor supply, among other potential decisions (power-shift effect).*
- **Hypothesis 1b:** *All else being equal, women’s labor supply increases upon the introduction of the right to unilateral divorce in anticipation of eminent divorce (anticipatory effect).*

These two hypotheses consider divorce as a viable outside option that is more likely, than not, to happen in the event of a threat-point. In other terms, they can be traced back to literature on non-cooperative bargaining models of marriage where spouses may have higher preference for self-enforcing, self-serving agreements, such as the Nash equilibrium (Manser and Brown, 1980; McElroy, 1990; Lundberg and Pollak, 1994). Both hypotheses stem from a *power-shift* dynamic that favors higher female labor supply, but while the first (1a) posits women stay married, the second (1b) is more linked to marital dissolution.

3.3.2 Unilateral divorce laws and distribution of bargaining power within the marriage

Within the setting of MENA region countries, there are potential countervailing mechanisms which may offset the *power-shift* and *anticipatory effects*, such as social norms limiting prevalence of divorce, women’s labor supply (Jayachandran, 2021; Heath and Tan, 2020; Field et al., 2021), and placing higher value on their traditional roles.

- **Hypothesis 2a:** *All else being equal, women's labor outcomes do not change in the period post-introduction of the right to Unilateral divorce.*

Consider a simple collective labor supply setting where a household is composed of two spouses, woman f and man m and each one maximizes a utility function composed of consumption C_i and leisure l_i under a utility cost y_i , or social constraint, derived from the wife's access to labor market. The utility cost of increased autonomy derived from a woman's access to the labor market can take form of household conflict or even violence by the husband whom, in the context of conservative social norms on gender roles, sees his utility decrease (Eswaran and Malhotra, 2011). Assume that the wife and husband allocate their time between market work and leisure only; the household allocation problem is given by maximized weighted sum of individual utilities:

$$\max_{c_m, c_f, h_m, h_f} u(z) [u_f(c_f, 1 - h_f) - y_f h_f] + (1 - u(z)) [u_m(c_m, 1 - h_m) - y_m h_f] \quad (3.1)$$

subject to

$$p_f c_f + p_m x_m \leq w_f h_f + w_m h_m + \Gamma$$

where h_f and h_m respectively denote the wife's and husband's market labor, Γ is the household non-labor income, $u(z)$ is denoting the Pareto weights, a function of distribution factors z which are the unilateral divorce legislation. If there are no social norms constraints on the wife's labor, then $y_f = y_m = 0$, the model can be reduced to the original collective labor supply model (Chiappori, 1992). Since the effect of social norms is considered in this setting, the labor supply of the woman is characterized by either y_f or y_m are greater than zero, thus, there are social constraints on married women's work. The husband's utility can be separately re-arranged to $u_m(c_m, 1 - h_m)$ and the wife's to $[u_f(c_f, 1 - h_f) - y_f h_f] - \frac{1-u}{u} y_m h_f$; such as the wife internalizes $u(z)$ the distribution factor in her own utility function.

The household problem is separated into two stages where, in the first stage, household resources, time and income, are optimally allocated between spouses, and, in the second stage, spouses maximize own utility subject to a budget and hour constraints. The wife's maximization problem becomes:

$$\max_{c_f, h_f} u_f(c_f, 1 - h_f) - y_f h_f - \frac{1 - u(z)}{u(z)} y_m h_f \quad (3.2)$$

subject to

$$p_f c_f \leq w_f h_f + \Delta(z)$$

where $\Delta(z)$ is the net transfer the wife receives from her husband. Under the case where husband's $y_m > 0$ is greater than zero, the wife may place higher weights on her husband's preferences, the net

transfers she receives from him, and, thus, stray away from entering the labor force.

A woman's deterrence from the labor market could also be a result of higher utility cost derived from working. In this case where a woman faces more constraints in the labor market pertaining to job search costs, restrictive labor legislation, and absent or limited offer in childcare markets, among other constraints that are not subject to advancements on legislation pertaining to divorce per se.

- **Hypothesis 2b:** *All else being equal, women's labor outcomes increase during the early stages of the law reform, as bargaining power increases within household, but eventually revert (dissipate) as women are deterred by high utility costs in the labor markets.*

The first countervailing force is related to the idea that women can internalize long-standing social norms that place lower value on women's work (Akerlof and Kranton, 2000). Despite having outside options, women may choose to halt their labor supply to stay in the marriage. Thus, having divorce as a viable option can enhance a woman's position and bargaining power within the marriage without leading her to participate in the labor market, especially when marriage is preferred to labor for social or economic reasons. Additionally, as family laws and legislation on divorce enhance their position within the marriage, women may prefer marriage to labor participation, especially should the later result in divorce. Moreover, the passing of legislative dispositions that grant women and their children more rights in case of marriage dissolution do not guarantee that they will be reinforced. In fact, although no-fault divorce procedures are less costly, time-wise, and financially, women may prefer to stay in the marriage to labor participation, namely in the case where they fear they will not receive alimony from ex-spouse. Finally, there are also equally higher costs related to loss of economies of scale and risk sharing opportunities, in case of marriage dissolution, and to job search which may increase the utility cost of labor supply, especially for highly educated women that can abstain from labor in case of mismatch in labor markets (Veona, 2015; Klasen, 2019).

- **Hypothesis 3:** *All else being equal, women's labor supply is affected by structural frictions economy wide.*

Still, the effect of legislation on women's labor outcomes is only relevant if it is considered within the framework of structural transformations that occur economy wide. As economies develop and transition from traditional to service-based sectors, women's labor supply is affected at both the intensive and extensive margins (Goldin, 1995; Herrendorf et al., 2014; Ngai et al., 2017; 2021; Dinkelman and Ngai, 2021). That is women can marketize their home production and increase both their labor supply and time spent doing paid labor. Moreover, legislative, and socio-normative progress that favors

women's agency and bargaining power is only relevant if economic structures are developed enough to reallocate labor from the least productive sectors, such as agriculture, to more human capital-intensive sectors, such as services (Maddison, 1980; Ngai and Pissarides 2008; Rogerson 2008), where women tend to have an advantage in both high-skilled and low-skilled labor (Bridgman et al., 2018). As such, legislative reforms cannot directly address labor and time misallocations that exist in the economy, and, thus, increase employment creation in sectors and occupations that are suitable, and even favorable to women. In a way, they contribute to countervailing the power-shift and anticipatory effect dynamics, presented earlier, by increasing the utility cost of labor participation, as opposed to that of marriage, especially when economies don't provide employment opportunities suitable for educated women. In fact, as women increase their educational attainment, their utility cost of engaging in low-skilled occupations rises as well (Olsen and Mehta, 2006; Klasen and Pieters, 2015). This is particularly relevant if economic growth is concentrated in male-dominated sectors, such as construction and transport, or traditional sectors, such as agriculture. Although this chapter does not directly address the role of structural transformations and sectoral reallocations in increasing the number of women in the labor market, the fact that the period studied spans over at least 20 years means that there are underlying economy-wide factors that have changed and may be responsible for a significant proportion of the observed effects. Failure to take these into account when interpreting the results risks over-qualifying the role of legislation.

3.4 Empirical strategy

Unilateral divorce laws gave women the right to file for divorce without needing to prove fault, which was not possible prior in Morocco, Egypt, and Jordan. Their effects, however, are not necessarily akin to all women. In case of marriage dissolution, mothers of young children aged below an age cutoff set by legislators, are usually primarily assigned custody of their children, and guaranteed a legal right to child support from the non-custodial parent, even if the mother was to forfeit some of her financial rights to obtain the divorce. By contrast, mothers of children above the age custody cutoff run the risk of losing custody of their children along with any financial support that may have come with it. This setting is thus exploited to conduct a quasi-experimental difference-in-differences strategy comparing the effect of unilateral divorce reform on mothers that are more or less affected by the reform.

3.4.1 Empirical setting and assignment to treatment

Periods before and after the introduction of the right to unilateral divorce in Morocco, Egypt, and Jordan are examined. For this, the change in labor outcomes between mothers of children younger than the age custody cutoff is compared to that of mothers of children older than the same age cutoff, and whom should be less favored by the reform. Are assigned to treatment women for whom the age of the youngest child is below the legal age custody cutoff in each country. In Morocco, this age cutoff is set to 15⁵ for both boys and girls, in Egypt, it was first set to 10 for boys and 12 for girls in 2000 and then raised to 15 for both in 2005⁶, and in Jordan it is set to 15⁷ as well. Mothers, whose youngest child is older than the age custody cutoff are assigned to control groups.

$$Y_{it} = \alpha_i + \theta_t + \delta_j(post_t.treated_i) + \beta X_{it} + \tau_i.t + \varepsilon_{it} \quad (3.3)$$

where Y_{it} is the outcome variable, a binary variable of a woman being currently employed, $post_t$ is a variable indicating whether the examined period is before or after the year of the reform, and $treated_i$ indicates whether the woman was exposed to treatment at the time of the introduction of the reform. Each specification includes an interaction of these two terms along with a set of control variables X_{it} , including the woman's own and partner's educational attainment, age, age at first marriage, and number of children, and vectors of individual (α_i) and year (θ_i) fixed effects. Some specifications include additional control variables, as well as age and age at first marriage time trends that interact the current age and age at first marriage of the woman with the $post_t$ indicator. Additional control variables on micro and macro levels are later included to account for variations in household structures, social and legal norms. To address concerns about serial correlation resulting in downwardly biased errors and over-rejection of the null hypotheses (Bertrand et al., 2004), the wild bootstrap approach is employed and reported for all estimations (Cameron et al., 2008).

Figures 3 and 4 plot basic trend inspections for divorce rates and labor outcomes for women who would have been assigned to either treatment or control groups in the sample. In terms of divorce rates, 'treated' groups show relatively higher divorce rates that continue to rise after the introduction of the reform. For Jordanian women sample, there is a trend reversal after the introduction of the divorce and child custody reforms in 2001 between the 'treated' and 'control' groups, attesting to the existence of a strong 'pipeline effect' predicted in the conceptual framework. In terms of labor outcomes, the trend inspections illustrate a reduction in the gap between the 'control' and 'treatment' groups in the cases of Jordan and Egypt with an interesting drop for 'treated' women in the case of

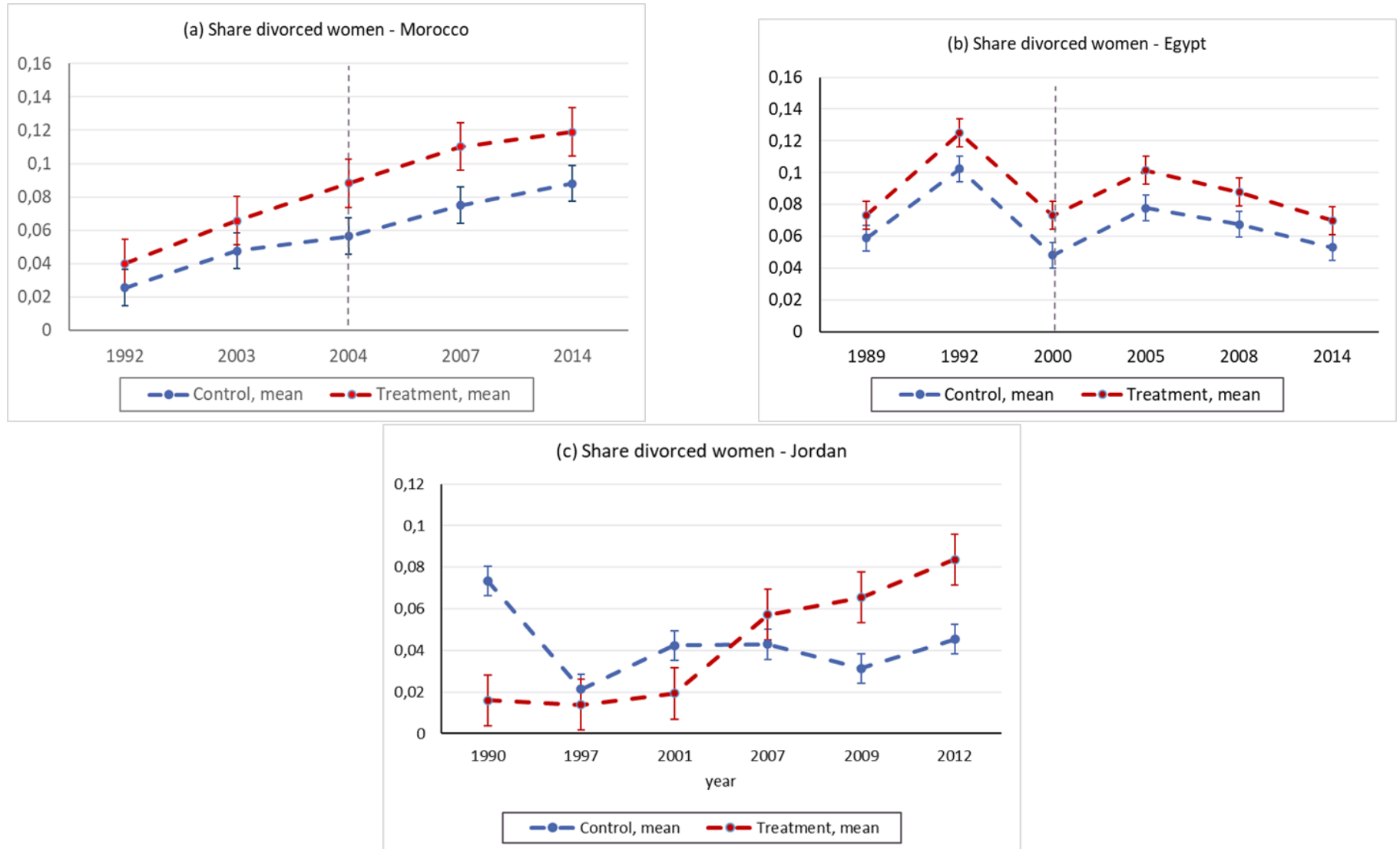
⁵Article 166 the Moroccan family code (Moudawana) of February 5, 2004

⁶Amendment to the law No. 25 of 1929 in 2005. (Art. 1 of Law No. 4). See Bernard-Maugiron, 2022.

⁷Article 170, 173 of the Personal Status Law.

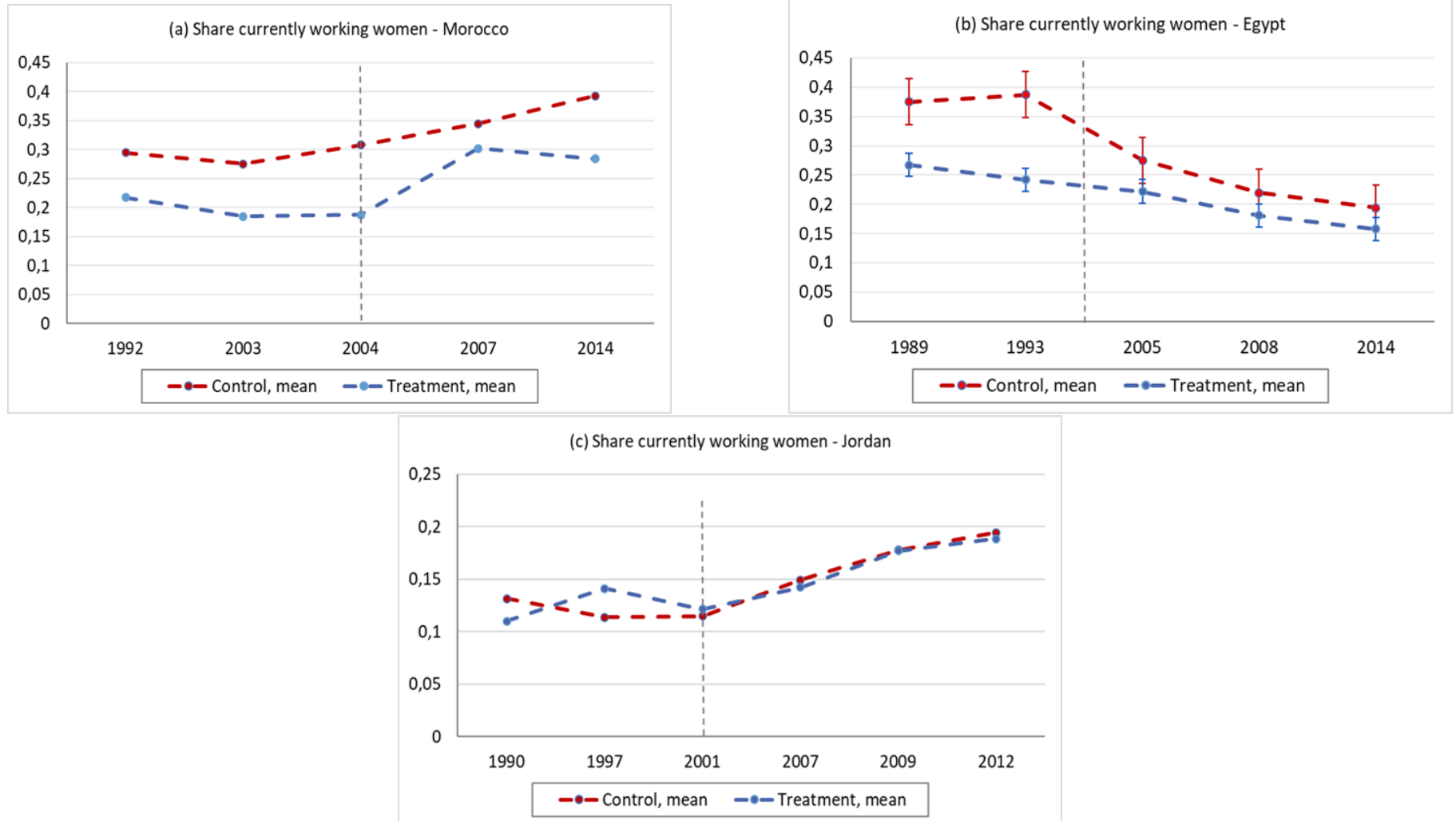
Morocco. Moreover, the used empirical specification yields a difference-in-differences design, which still requires an assumption of parallel-trends to imply causal-inference. In this framework, the parallel-trends assumption implies that the average change in labor outcomes for “treated” women in absence of the reform would have been equal to the counterfactual average change in labor outcomes for the “control” group. Since an accurate test for a parallel-trends assumption cannot be provided with this data, a more testable “common trends” assumption is adopted for the moment (Blundell et al., 2004; Mora and Reggio, 2017, Roth et al., 2023) and this issue is addressed later.

Figure 3.2: Trend inspection of raw divorce rates among treatment and control groups



Source: author's calculations. Note: the sample here includes women that can potentially be assigned to treatment or control group. For the empirical specification, I later decompose estimates for married, main specification, and divorced mothers in the sensitivity checks to account for the 'power-shift' and 'anticipatory' effects.

Figure 3.3: Trend inspection of raw labor rates among treatment and control groups



Source: author's calculations. Note: the sample here includes women that can potentially be assigned to treatment or control group. For the empirical specification, I later decompose estimates for married, main specification, and divorced mothers in the sensitivity checks to account for the 'power-shift' and 'anticipatory' effects.

Table 3.1: Data Source used per country

Data Sources	Before reform	After reform—
Morocco	DHS 1992 and 2003	HCP Household survey 2007 and 2014
Egypt	DHS 1988, 1992, 1996	DHS 2003, 2005, 2008, 2014
Jordan	DHS 1990, 1997	DHS 2002, 2007, 2009, 2012, 2017

3.4.2 Data and working samples

The main source of data is repeated cross sections of nationally representative household and individual surveys for the period 1987-2017 from the Demographic and Health Surveys (DHS). Additionally, two cross-sectional data from the Household Consumption Expenditure Survey by the High Commission for Planning (HCP) are used in the case of Morocco, where the DHS survey was not conducted (for 2007 and 2014, the latest available waves of the survey).

The used sample is restricted to women aged 15 years and older. In analyzing women’s labor outcomes, only responses to the question “are you currently working” is considered. This question does not just measure labor force participation but, rather, also occupation in a ‘paid labor’ position. This means that any bias of having high unemployment in the estimations is avoided and the results are limited to the effective employment outcome of mothers for a given year.

In the case of Morocco, the DHS survey data are completed by equally nationally representative data for the years 2007 and 2014 from the High Commission for Planning (HCP). To harmonize the DHS data and HCP Household Consumption Expenditure Survey, as in the latter information on the births by women are not available, variables on children based on the age of the youngest member of the household were constructed. Like DHS data only married, widowed, or divorced women are considered.

Next, to study longitudinal effects of unilateral divorce reforms on women’s labor outcomes, a pseudo-panel is constructed based on repeated cross-sectional surveys for several periods before and after the date of the reform. Cohorts of women that share two time-invariant characteristics, namely gender and year of birth, are followed making sure that each cohort is large enough to reduce measurement errors (see Verbeek and Nijman, 1992, 1993; Deaton and Paxson, 1994; Gardes et al., 2005). The sample is also restricted to women between the ages of 18 and 49, based on the demographic trends for prime ages for marriage, childbearing, and entrance to the labor market (Dhillon, and Yousef, 2011; Assaad et al., 2022; Gilbert and Ben Brik, 2022). To account for potential endogenous fertility choices post-reform period, specifically women choosing to have more children to extend child custody period, the sample is systematically restricted to married women who stopped having children one year before the reform (the pipeline effect, (Rasul, 2006)). The analysis spans over sufficiently long time periods (over 20 years

Table 3.2: Descriptive statistics of full and working sample pre and post Chikak reform in Morocco

	Mean	Pre-reform	Post-reform	Control(post-reform)	Treatment(post-reform)
	(1)	(2)	(3)	(4)	(5)
Marital status					
Married	0.89	0.87	0.90	1	1
Divorced/separated	0.07	0.09	0.04	0	0
Demographics					
Age	35.13	35.01	35.21	36.13	36.17
Age at first marriage	19.52	19.39	20.1	20.56	20
Number of children	2.61	3.31	2.14	1.39	2.53
Number of children under 5	0.85	0.87	0.72	0	0.93
Number of household members	4.79	5.36	4.4	2.8	4.8
Educational attainment					
No Education	0.56	0.65	0.49	0.51	0.48
Primary	0.20	0.15	0.24	0.21	0.26
Secondary	0.17	0.15	0.18	0.17	0.15
Higher	0.05	0.03	0.06	0.07	0.06
Outcome variables					
Currently working	0.26	0.21	0.28	0.28	0.26
N	19024	7645	11379	1239	5790

Source: Author's Calculations – Demographic and Health Survey (DHS): Morocco (1992,2004) and HCP Household survey (2007 and 2014).

Note: This table displays full and working sample means for several variables both pre and post Chikak divorce reform in Morocco. For the first three columns, we present full sample means pre and post reform. The remaining columns present working sample means for treatment and control groups. While the table shows means values for treatment and control groups post “treatment”, the empirical analysis employs a quasi-experimental framework that takes into consideration values for pre and post reform.

for each country) to apprehend the effect of unilateral divorce legislation on spouses' behavior (Jolls et al., 1997; Chiappori et al., 2002) with at least two periods before and two after the year of the reform.

Tables (3.2), (3.3) and (3.4) display instructive descriptive statistics on the periods prior and post the introduction of the right to unilateral divorce. The main outcome variable is a dummy variable “currently working” which takes the value of 1 if the woman is employed and/or has worked in the 3 months prior to the interview, and 0 if none of the previous is true. This variable is the most accurate representation of women's labor market position. Between the pre and post reform periods the crude mean of women that declared being currently employed stagnated for Egypt but increased relatively for the samples of Moroccan and Jordanian women. Between the groups assigned to treatment and control, however, higher employment rates are noted for control groups in Morocco.

The similarities in demographic and educational attainment characteristics between cohorts of women assigned to treatment and control groups are also noteworthy. Interestingly, advancements in educational attainment over the studied periods for all three countries are similar between control and treatment groups attesting to the MENA paradox hypothesis (Assaad et al., 2020). Also, similar

Table 3.3: Descriptive statistics of full and working sample pre and post Khul' reform in Egypt

	Mean	Pre-reform	Post-reform	Control(post-reform)	Treatment(post-reform)
	(1)	(2)	(3)	(4)	(5)
Marital status					
Married	0.95	0.94	0.95	1	1
Divorced/separated	0.31	0.04	0.02	0	0
Demographics					
Age	33.64	33.9	33.5	36.16	35.22
Age at first marriage	19.8	18.8	20	20.46	19.71
Number of children	2.93	3.5	2.77	1.80	3.27
Number of children under 5	0.88	1.03	0.84	0	0.71
Number of household members	4.93	5.53	4.76	3.76	5.28
Educational attainment					
No Education	0.29	0.43	0.25	0.28	0.30
Primary	0.16	0.30	0.12	0.14	0.13
Secondary	0.42	0.19	0.48	0.42	0.44
Higher	0.12	0.06	0.13	0.14	0.11
Outcome variables					
Currently working	0.19	0.19	0.19	0.22	0.22
N	54829	12096	42733	7359	16115

Source: Author's calculations – Demographic and Health Survey (DHS) – Egypt (1988, 1992, 1993, 2005, 2008, 2014). Note: This table displays full and working sample means for several variables both pre and post Khul' divorce reform in Egypt. For the first three columns, we present full sample means pre and post reform. The remaining columns present working sample means for treatment and control groups. While the table shows means values for treatment and control groups post "treatment", the empirical analysis employs a quasi-experimental framework that takes into consideration values for pre and post reform.

Table 3.4: Descriptive statistics of full and working sample pre and post Iftida' reform in Jordan

	Mean	Pre-reform	Post-reform	Control(post-reform)	Treatment(post-reform)
	(1)	(2)	(3)	(4)	(5)
Marital status					
Married	0.97	0.98	0.96	1	1
Divorced/separated	0.019	0.018	0.19	0	0
Demographics					
Age	33.9	32.8	34.12	37.88	33.18
Age at first marriage	20.74	19.3	21.02	20.12	22.4
Number of children	3.77	4.66	3.59	4.69	1.14
Number of children under 5	1.18	1.53	1.11	0	0.07
Number of household members	5.77	6.66	5.59	6.64	3.17
Educational attainment					
No Education	0.06	0.17	0.04	0.07	0.05
Primary	0.10	0.17	0.07	0.11	0.08
Secondary	0.54	0.47	0.55	0.54	0.50
Higher	0.29	0.17	0.32	0.26	0.36
Outcome variables					
Currently working	0.15	0.12	15.72	0.14	0.156
N	52070	8695	43375	6088	4719

Source: Author's Calculations - Demographic and Health Survey (DHS): Jordan (1990, 1997, 2002, 2007, 2009, 2012, 2017). Note: This table displays full and working sample means for several variables both pre and post Iftida' divorce reform in Jordan. For the first three columns, we present full sample means pre and post reform. The remaining columns present working sample means for treatment and control groups. While the table shows means values for treatment and control groups post "treatment", the empirical analysis employs a quasi-experimental framework that takes into consideration values for pre and post reform.

fertility patterns in all three countries are noted between the two periods. To assess the effect of the legislation reform on women's labor outcome, an analysis over two period windows is considered: the first probing the "immediate" effect of the reform and the second probing the "lagged" effect on women's labor outcomes.

3.5 Effect of unilateral divorce legislation on women’s employment

This section presents evidence on the complex relation between legislative reforms and women’s employment in MENA countries. Tables 4, 5 and 6 present regression results over two period windows with “currently working” as dependent variable. While these results only capture correlations between the outcome variable, control variables, taking the influence of fixed effects into account, they still provide valuable insight. The control variables are selected based on data availability and relevant literature on the determinants of labor force participation. The connections to the legislation reform are further discussed below.

3.5.1 The immediate effect of the reform is limited as opposed to a lagged ‘structural’ effect

Columns 1, 2 and 3 in each table present results restricted to the first window period capturing the “immediate” effect of the reform on women’s employment. In Morocco, over the first period spanning between 1992 and 2007, an increase in women’s employment is found, but that is not statistically significant. Moreover, column 3 displays an estimate from a specification that includes age and age at first marriage time trends which allows to address concerns about nonparallel trends. This specification yields positive coefficients that are higher in magnitude and statistically significant than the baseline specification. Further, the impact of adding controls that pertain to two additional dimensions of social and legal changes are considered (Klasen, 2019). The first being the effect of fertility and family structures (the transition from extended to nuclear families) changes on women’s employment outcome.

3.5.2 A set of legislation that targets several areas of gender-based discriminations reduces cultural norms’ stickiness inching towards desired outcomes

As for the second control, it captures the set of legislative advancements aimed at reducing the legal gender discrimination in these countries. For this, data from the World Bank’s Women, Business, and the Law Index (WBL) (1971 – 2021) are used. The scores are based on the average of a country’s scores each year for 8 topics pertaining to mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets, and pension. Admittedly, while the passing of laws does not guarantee desired outcomes,

Table 3.5: Labor market outcomes of Chikak reform in Morocco

Outcome: Currently working	Chikak' effect window 1 : 1992 to 2007			Chikak effect window 2 : 1992 to 2014		
	(1)	(2)	(3)	(4)	(5)	(6)
Post x treated	0.012 (1.36)	0.011 (1.35)	0.038* (2.33)	0.023** (2.71)	0.023** (2.70)	-0.024** (-3.18)
Household Size		-0.00284 (-0.37)	-0.00398 (-0.53)		0.0242*** (3.55)	0.00724 (1.00)
WBLaw Index			-0.00560 (-1.85)			0.00658*** (17.51)
Observations	8184	8184	8184	17012	17012	17012
Mean of outcome variable	0.214	0.214	0.214	0.259	0.259	0.259
WB p-value	0.002	0.002	0.738	0.57	0.742	0.002
N cohorts	44	44	44	54	54	54
Time trends	No	No	Yes	No	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Source: Author's Calculations - Demographic and Health Survey (DHS): Morocco (1992, 2003) and HCP Household survey data for 2007 and 2014). Notes: The dependent variable is a binary indicator for whether the interviewed woman is currently working. Columns 1 to 3 report results for a restricted period representing 15 years around the reform year between 1992 and 2007. Columns 4 to 6 report results for the full covered period between 1992 and 2014. The estimation samples are restricted to married women whose youngest child's age is around 5 years window around the custody cutoff and whom did not have children after the reform. Wild bootstrap (WB) p-value using one thousand replications. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

namely that they will be reinforced, a set of legislative reforms that target several areas of gender discrimination may help create a more favorable environment as they are actionable in the short run compared to social norms and traditions, which take longer to change (Kahan, 2000; Alesina et al., 2013; Hyland et al., 2020). Moreover, there are documented cases of unintended results of a single gender positive legislation reform on women's labor outcomes (Uribe et al., 2019). Figure B.2. illustrates the relationship between legal gender discrimination, measured by the World Bank Women, Business, and the Law index (WBL), and female labor force participation rate around the (a) World and in (b) MENA region countries. While in figure (a) this relationship is upward sloping (higher WBL index score has a positive relationship with FLFP rate), this relationship resembles an inverted U curve for MENA countries (figure. b), This finding is consistent with literature investigating the effect of increasing mandated maternity leave on the employment and wage penalty women pay (Pettit and Hook, 2005; Akgunduz and Plantenga, 2013; Budig, Misra, and Boeckmann, 2012). As such, the unintended results of reducing legal gender discrimination are explained by cultural resistance, particularly from husbands that see their utility cost increase from their wives' labor, but also by the wage costs employers occur (Espino and Salvador, 2014). This further reinforces the argument that passing legislation targeting several areas of gender-based discriminations increases the chances of changing cultural norms and inching towards desired outcomes. Thus, to include a more accurate and context specific dimension for legislative effects, the variable *WBLawindex* is introduced taking the value of

Table 3.6: Labor market outcomes of Khul' reform in Egypt

Outcome: Currently working	Khul' effect window 1 : 1992 to 2005			Khul' effect window 2 : 1992 to 2014		
	(1)	(2)	(3)	(4)	(5)	(6)
Post x treated	0.0604*** (6.82)	0.0603*** (6.80)	0.0177 (1.43)	0.0479*** (8.50)	0.0479*** (8.48)	0.0271** (3.04)
Household Size		-0.00755 (-0.99)	-0.00566 (-0.78)		-0.00119 (-0.21)	-0.000743 (-0.13)
WBLaw Index			0.0701*** (6.12)			0.00470 (0.61)
Observations	18838	18838	18838	29589	29589	29589
Mean of outcome variable	0.23	0.23	0.23	0.22	0.22	0.22
WB p-value	0.002	0.002	0.396	0.006	0.0140	0.006
N cohorts	45	45	45	58	58	58
Time trends	No	No	Yes	No	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Source: Author's calculations – Demographic and Health Survey (DHS) – Egypt 1992, 1993, 2005, 2008, 2014. Notes: The dependent variable is a binary indicator for whether the interviewed woman is currently working. Columns 1 to 3 report results for a restricted period representing 13 years around the reform year between 1992 and 2005. Columns 4 to 6 report results for the full covered period between 1992 and 2014. The estimation samples are restricted to married women whose youngest child's age is around 5 years window around the custody cutoff and whom did not have children after the reform. The custody cutoffs are set to 10 for the first window (1992 to 2005), and to 15 for the second window to account for the custody. Wild bootstrap (WB) p-value using one thousand replications. *p<0.10, **p<0.05, ***p<0.01.

the calculated score of the World Bank's Women, Business, and the Law Index for corresponding year observations in the samples.

The third and sixth columns of tables (3.5), (3.6), and (3.7) report coefficient estimates from specifications that include these controls as well as the above-mentioned time trends. As for the case of Morocco, positive and statistically significant results are found in the first period (1992 to 2007) but negative effects of the legislation are documented in the second period (1992 to 2014). This result may be backed by the existence two mechanisms. The first pertains to what Klasen (2019) described as the combination of strong stigma from educated women against working jobs below white collar services and stagnant health and education sectors. The second, on the other hand, completes the first with an added layer of transfer of bargaining power to women (Stevenson and Wolfers, 2007) favoring their position within the marriage. Consequently, if labor market conditions are not favorable, especially to educated women, marriage can become a more desired option (Verme et al., 2016). Considering these results, it is safe to argue that while the legislation reform might have had a positive effect on women's labor outcomes initially, as was measured by Hassani-Nezhad and Sjögren (2014), this effect might have dissipated over time. Moreover, figure 2 in Appendix A illustrates how Morocco has had the highest increase in the WBLaw index over the full studied period, which corroborates observed results. The widely cited literature on collective labor supply models generally explains this type of

decline in women's employment by a shift in bargaining power within the household in favor of women (Chiappori et al., 2002; Lise and Seitz 2011; Voena, 2015; Corradini and Buccione, 2023). In these models, women do not switch completely to employment if the utility cost of domestic work is as high as that of the labor market.

In the case of Egypt, in the first post-reform window period, between 1992 and 2005, the effect is positive for the sample of married mothers of children aged below the custody cutoff of 10 years for boys and 12 for girls, but it's not statistically significant. While multiple controls for age, time trends and socio-economic position of the woman and her spouse are included, it seems that the variable corresponding to the World Bank's *WBLaw_iindex* has the most positive effect during this first period. These results are also in line with Hassani-Nezhad and Sjögren (2014). The increase in women's labor outcomes likely happened through a power-shift effect (described above), meaning that married women sought their employment increase thanks to gaining higher bargaining-power (Stevenson, 2008). A sensitivity test of this result is run by restricting the same sample to divorced mothers and a negative effect during the same period is reported. These results show that in Egypt an overall enhancement to the legal environment favoring women's rights during the same time that the Khul' reform was introduced has contributed to increasing women's labor supply.

The results presented here depart from Hassani-Nezhad and Sjögren since they include a longer time window, up until 2014. Curiously enough, the estimates for the full observed period, spanning from 1992 to 2014, all show a positive effect of Khul' reform on women's labor outcomes in Egypt (Table 6, columns (4), (5), and (6)). It can be argued that these results illustrate the longer time needed for laws to alter behaviors and choices and, in this sense, the results also corroborate Corradini and Buccione (2023), who show that the reform's effect on labor outcomes begin to kick-in only 12 years after the legislation was passed. Their results are different during the first-time window mainly because they use the variable "worked in past year" while "currently working" is used here. In this sense their estimates reflect a lagged effect of the reform while a current effect on women's labor outcomes is being measured at this juncture. Additionally, the significantly more positive effect of the reform during the second window can be explained by the fact that Egypt passed the law in 2000 with a low child age custody cutoff and later increased it in 2005, after which a higher and more significant effect is recorded. The power-shift effect is found to be the main mechanism behind these results.

Table 3.7: Labor market outcomes of Iftida' reform in Jordan

Outcome: Currently working	Iftida' effect window 1: 1997 to 2007			Iftida' effect window 2: 1992 to 2017		
	(1)	(2)	(3)	(4)	(5)	(6)
Post x treated	-0.00134 (0.1077)	-0.00123 (-0.11)	0.166 (0.0125)	0.0000315 (0.00)	0.0000466 (0.00)	0.0195* (1.75)
Household Size		0.00193 (0.23)	-0.0033 (0.0087)		0.000380 (0.06)	-0.00167 (-0.27)
WBLaw Index			0.0534***** (0.0174)			0.0189** (6.40)
Observations	10124	10124	10124	19295	19295	19295
Mean of outcome variable	0.135	0.135	0.135	0.137	0.137	0.137
WB p-value	0.368	0.336	0.314	0.372	0.398	0.0940
N cohorts	42	42	42	59	59	59
Time trends	No	No	Yes	No	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Source: Authors Calculations - Demographic and Health Survey (DHS): Jordan (1990, 1997, 2002, 2007, 2009, 2012). Notes: The dependent variable is a binary indicator for whether the interviewed woman is currently working. Columns 1 to 3 report results for a restricted period representing 10 years around the reform year between 1997 and 2007. Columns 4 to 6 report results for the full covered period between 1992 and 2017. The estimation samples are restricted to married women whose youngest child's age is around 5 years window around the custody cutoff and whom did not have children after the reform. Wild bootstrap (WB) p-value using one thousand replications. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.5.3 Political and cultural resistance dampens and delays the effect of legislative reforms on women's bargaining power and labor outcomes

Results for Jordan, on the other hand, tell a different story. For both periods, specifications that include controls for family size, legislation evolution, and time trends illustrate a positive effect of the reform on women's labor outcomes, that is still modest. However, the main effect seems to kick-in during the second period, from 1992 to 2017. Like Egypt, Jordan too introduced the unilateral divorce reform over two periods 2001 and 2010. The latter period, beginning in 2010, arguably might have had granted higher bargaining power to women within the marriage and in case of its dissolution (Sonbol, 2003; Engelcke, 2018). In comparison to the cases of Morocco and Egypt, the results for Jordan attest to the negative relationship between restrictions on women's rights within the household and labor outcomes (Gonzales et al. 2015, Hyland et al., 2020). They show how a positive and sizeable effect was only recorded when there was reinforcement to legislative dispositions granting women more options outside the marriage in 2010. Additionally, a test for the effect on a sample of divorced women is provided. Interestingly, the results hint that the anticipatory effect (Bargain, et al., 2012) might be equally as important as the power-shift effect in the case of Jordan. This said, on the long run, there seem to be structural adjustment effects that favor the power-shift mechanism leading more married mothers to the labor market.

Jordanian divorce laws have undergone significant changes in recent years, driven by ongoing discus-

sions and reform efforts. El Muhtaseb, Brown, and Kayyali (2016) highlight the existence of disconnected spheres within the discourse on family law in Jordan, where different stakeholders hold varying views on divorce. However, despite these challenges, reforms have been able to address gender issues and promote women's empowerment within the existing legal framework. Supporting our results, from a qualitative point of view, Engelcke (2018) emphasizes the complex process of law-making and the obstacles faced in reforming divorce laws in Jordan. Perhaps, this complex process explains why positive results were only felt after 2010. Indeed, Jordan's example shows how political considerations and resistance to change can result in slow progress.

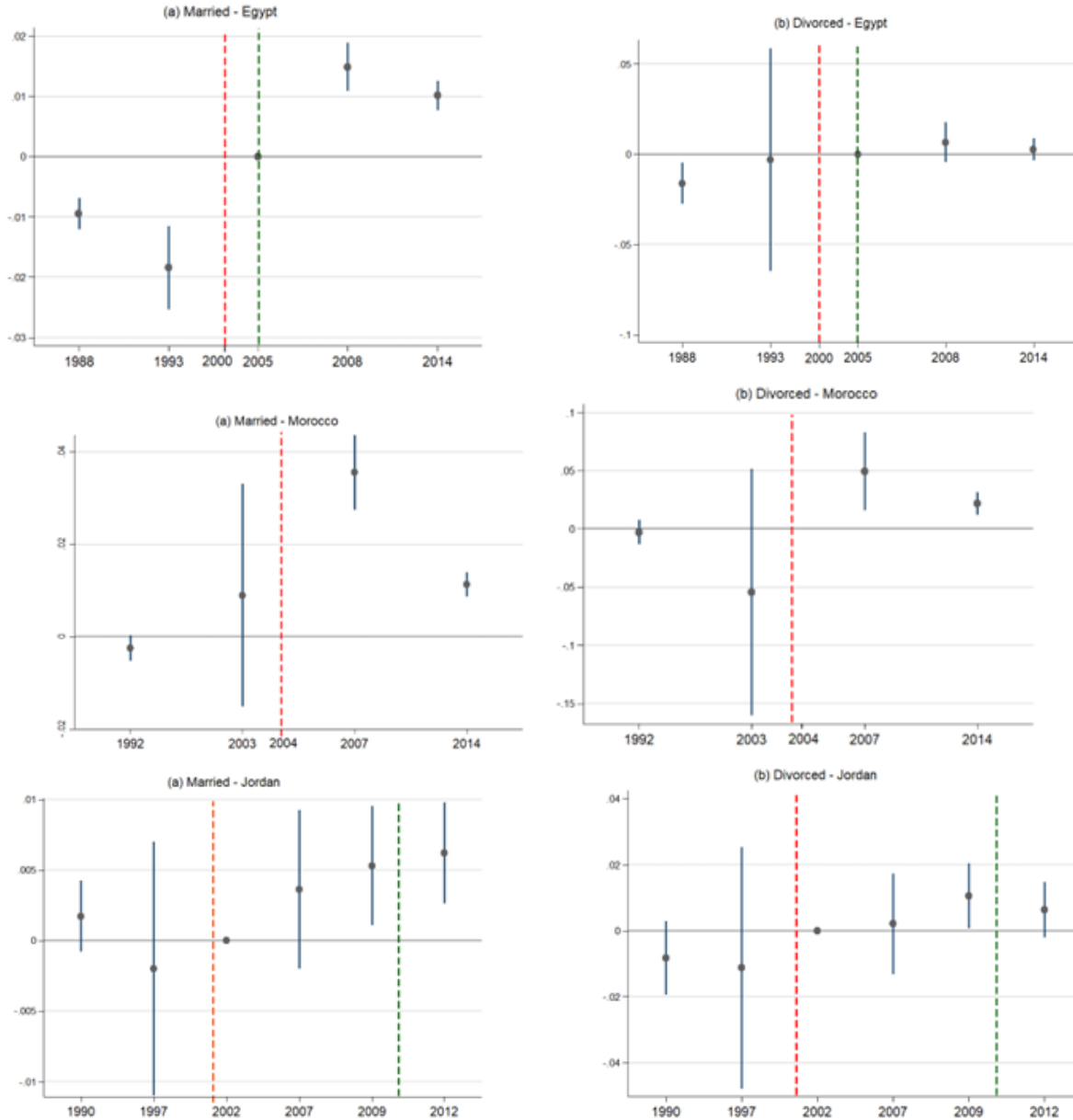
3.5.4 Addressing parallel trends

To explicitly track differential trends that underly correlation between the right to unilateral divorce and women’s labor outcomes, we use an event study. This procedure allows to formally verify departure from parallel trends in the pre-reform periods. Consider $H(t)$ a function mapping a given year t from the covered study period such as the event-study specification presents as follows:

$$Y_{it} = \sum_{\tau=-L}^{-1} \beta_{\tau}(1H(t) = \tau \times post_i) + \sum_{\tau=1}^K \beta_{\tau}(1H(t) = \tau \times post_i) + \alpha_i + \theta_t + \varepsilon_{it} \quad (3.4)$$

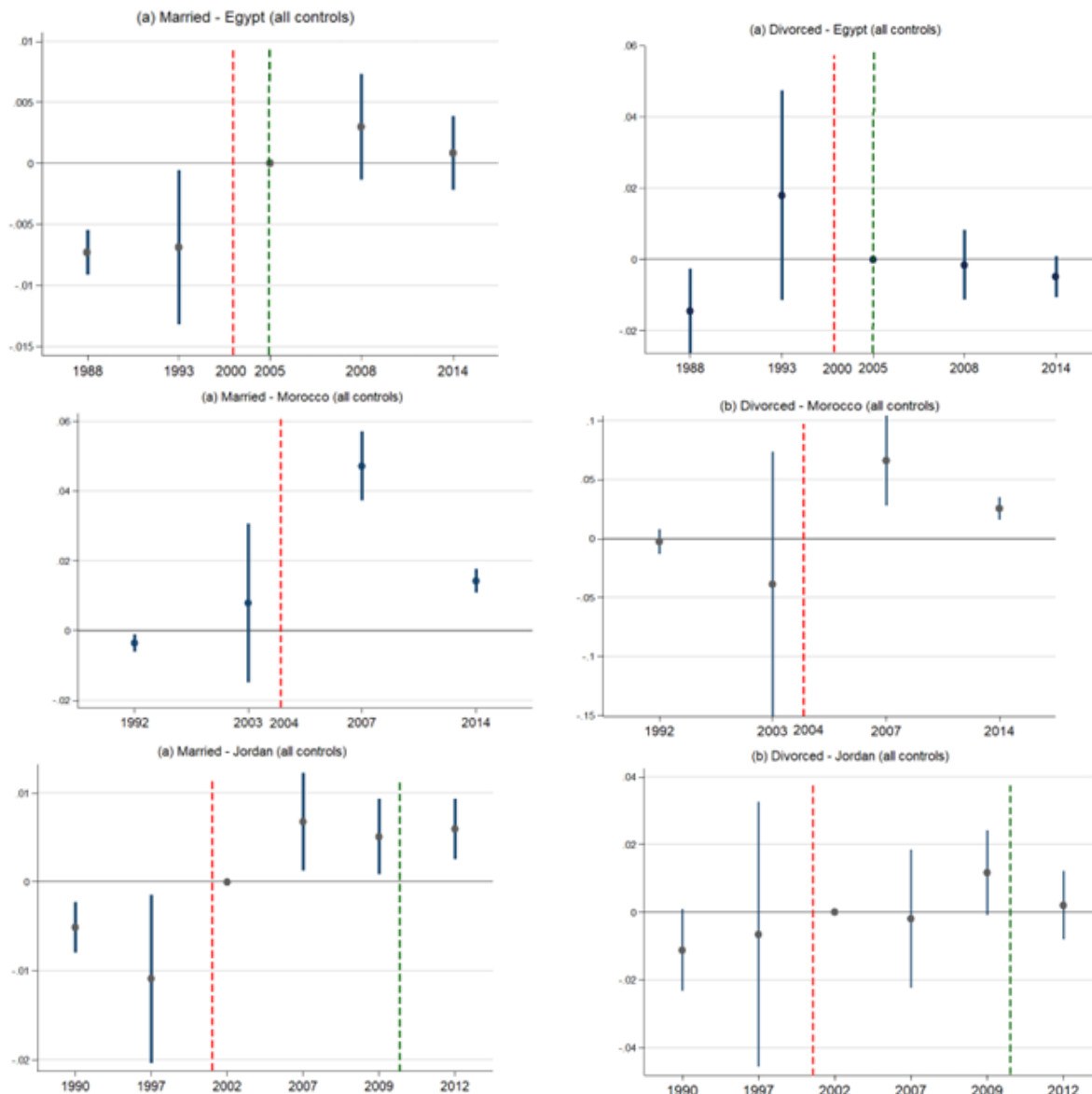
where K and L are the total number of pre-reform and post-reform periods. The year of unilateral divorce legislation is normalized to 0. Note that this equation is still similar to (equation (3.3)) in the sense that it considers a single interaction term ‘post’ for post-reform periods. Each coefficient term β the difference in women’s labor outcome, which we consider the event-study coefficients. The estimates of β_{τ} (where $\tau < 0$) are used to test for pre-reform parallel trends. Our estimates for the pre-reform period are different than 0 and significant suggesting that differences in average labor outcomes were smaller than the latter periods. F-tests of the null hypothesis that pre-reform coefficients are equal to zero result in a p-value of 0.000 for the baseline model, restricted to married women, which is strong indication of nonparallel trends in the pre-legislation reform periods. We also test the sensitivity of our results for a sample of divorced women. This is to test the hypothesis 1.b., about women increasing their labor supply in expectancy of divorce. Note that for all three countries, the coefficients of the event-study for divorced women sample are close to zero with little variations between the pre and post -reform periods compared to the samples of married “treated” women. That said, the parallel -trends assumption underlying a causal-inference results interpretation is more conservative than the previous one.

Figure 3.4: Women’s labor outcome event study (baseline controls)



Source: Author’s calculations. Note: Event study estimates of the effect of unilateral divorce legislation on women’s employment status from estimates obtained with the baseline set of covariates. On the left, results for the sample of married women. Red dash line represents the first year of introduction of the legislation reform. Green dash line represents the year of introduction of complementary reforms if applicable. On the right, results on a sample of divorced women as a sensitivity check to our baseline estimates. F-tests p-value for periods before reform take the values of: “0.000” (married) and “0.502” (divorced) for the case of Morocco, “0.000” (married) and “0.015” (divorced) for Egypt, and “0.000” (married) and “0.51” (divorced) for Jordan.

Figure 3.5: Women’s labor outcome event study (all controls)

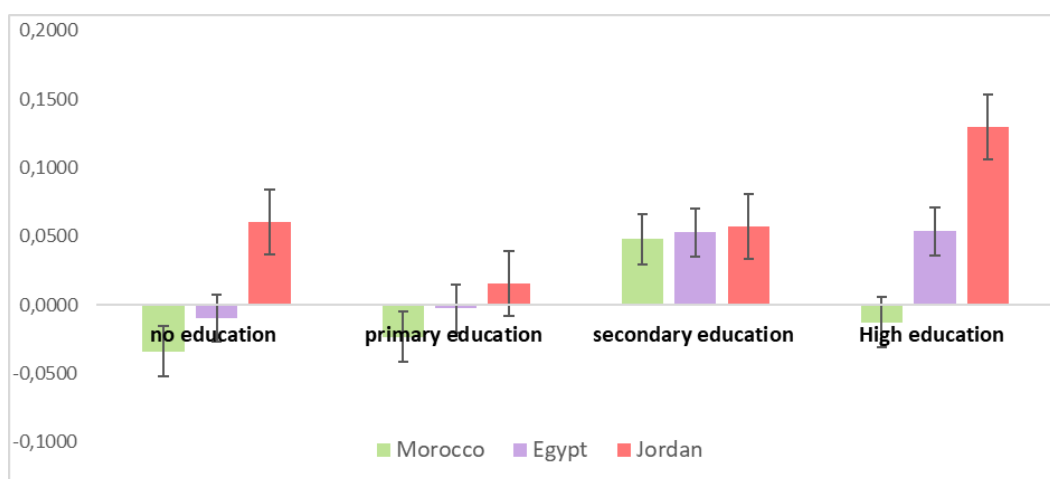


Source: Author’s calculations. Note: Event study estimates of the effect of unilateral divorce legislation on women’s employment status from estimates obtained with the baseline set of covariates. On the left, results for the sample of married women. Red dash line represents the first year of introduction of the legislation reform. Green dash line represents the year of introduction of complementary reforms if applicable. On the right, results on a sample of divorced women as a sensitivity check to our baseline estimates. F-tests p-value for periods before reform take the values of: “0.000” (married) and “0.502” (divorced) for the case of Morocco, “0.000” (married) and “0.015” (divorced) for Egypt, and “0.000” (married) and “0.51” (divorced) for Jordan.

3.5.5 Educational attainment, labor mismatch and structural transformation

An additional set of heterogeneity analysis is presented in figure (3.6). The estimated effect of the introduction of unilateral divorce laws in Morocco, Egypt, and Jordan is further decomposed by education level. The samples remain the same as all baseline estimates, where only married women are kept, and treatment effects are considered during the full observed period for each country.

Figure 3.6: Sensitivity checks for labor outcomes of unilateral divorce reform by level of education



Source: Author's Calculations. Demographic and Health Survey (DHS). Notes: The dependent variable is a binary indicator for whether the interviewed woman is currently working. The estimation samples are restricted to married women whose youngest child's age is around 5 years window around the custody cutoff and whom did not have children after the reform and cover the full estimation period window for each country. The estimates cover the full period.

For Moroccan women, the results highlight an overall negative effect of no-fault divorce laws for those without a formal education and with only primary level education, which can be considered in line with the countervailing effects described above. Among these countervailing effects, two different cases can be emphasized. For women with secondary education, they seem to benefit the most from the new legislative setting, while women with university degrees have experienced a negative effect. This juxtaposition of results confirms the preference of highly educated women to work in white collar jobs presented by Klasen (2019) and how the decrease in the number of government jobs over the years deterred many of them from the labor market. It also illustrates how labor mismatch can increase the utility cost of labor participation at the extreme ends of qualification levels (low education and high education).

A similar dynamic is equally present for the case of Egypt, where women with lower levels of education also had a negative treatment effect over the full analyzed period, whereas those with a secondary education considerably increased their employment. It is noteworthy that for all three countries, sec-

ondary education levels have close coefficients. This result underlines how labor markets in the MENA region have limited job creation dynamic as most employments are likely concentrated in medium qualification jobs. Thus, leading us to conclude that these markets are still in a transition phase from traditional to more human capital-intensive production sectors. A transition that is costly due to sizeable talent misallocations in the labor market (Hseih et al., 2019). Finally, these results also conform with the idea that the introduction of the reforms over two stages, that happened in the cases of Egypt and Jordan, had a lagged effect on women who hold higher degrees. With the introduction of dispositions that are more in favor of women, such as increasing the age of child custody, the derived utility of entering the labor market at the extensive margins increased for highly educated women during the second time window, likely through the same power-shift dynamic discussed earlier.

3.6 Concluding remarks

The impact of unilateral divorce legislation on women's employment outcomes has drawn considerable attention in recent years, especially since a robust interaction between legislation that reduces gender-based discrimination and female labor force participation is observed around the world. This chapter offers new evidence on the effect of the introduction of unilateral divorce laws on women's labor outcomes in three MENA region countries; Morocco, Egypt, and Jordan.

By exploiting differences in the age cutoffs for child custody, the results highlight that woman who stayed married benefited the most from the introduction of the right to unilateral divorce, suggesting that a power-shift mechanism was the most important. There is little to no discernible impact of the anticipatory effect on women's employment. Still, the initial increase in women's labor outcomes, caused by the power-shift effect, can be offset by a slower dynamic in the labor market where women, arguably, still occur higher costs. Such is the case of Morocco, where increasing women's bargaining power within the marriage does not ensure their transition to the labor market. Moreover, if women occur higher costs in the labor market, such as search costs or lack of descent working conditions, then marriage continues to be a better option, insofar as divorce also remains a viable outside option that balances power dynamics within the marriage.

These findings complete previous studies by Hassani-Nezhad, and Sjögren (2014) and Corradini and Buccione (2023) and offer two key policy implications. First, the enhancement of legislation that targets gender-based discrimination in MENA countries reflects a shifting paradigm regarding gender equality. While challenges and limitations persist, these reforms symbolize a significant stride towards establishing more equitable and inclusive laws that empower women and advance gender equality in the region. Second, they highlight the importance of understanding the interactions between gender-based discrimination and labor market mismatch. By enacting progressive legislation that ensures equal rights and opportunities within family, countries can enhance women's empowerment, promote their labor force participation, and foster inclusive economic growth. But the effect of existing legislation may still be limited. This analysis reveals that the transition to the labor market may still be costlier to women, especially mothers of young children (Anukriti et al., 2023; Halim et al, 2023). As such closing the childcare policy gap should be at the forefront of policy makers agendas. Despite notable progress in this regard, policies extending coverage of childcare services, including early childhood care, and paid parental leave, are direly needed. In fact, the limited access to childcare or lack thereof explains to a considerable extent the stagnant and even declining gender labor participation rate.

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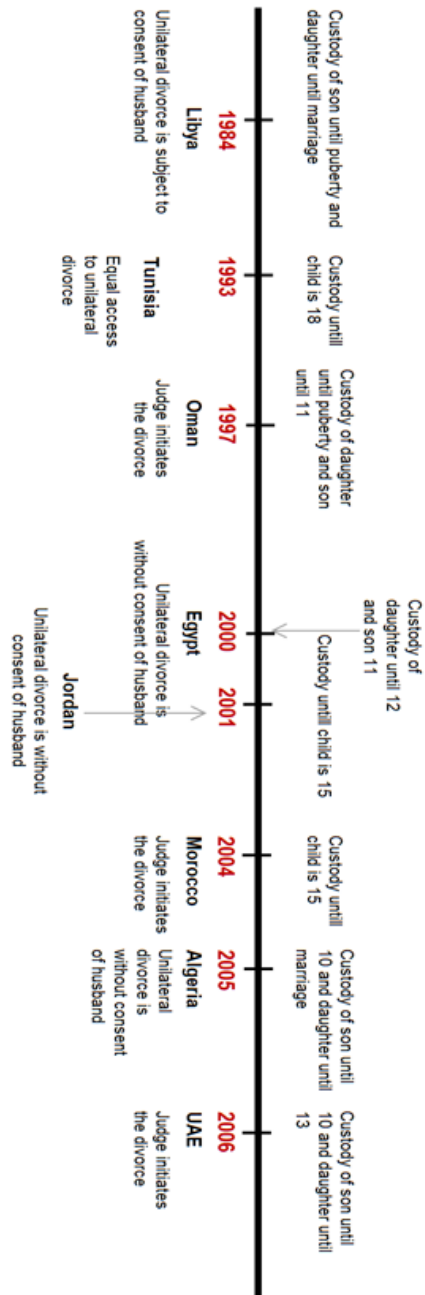
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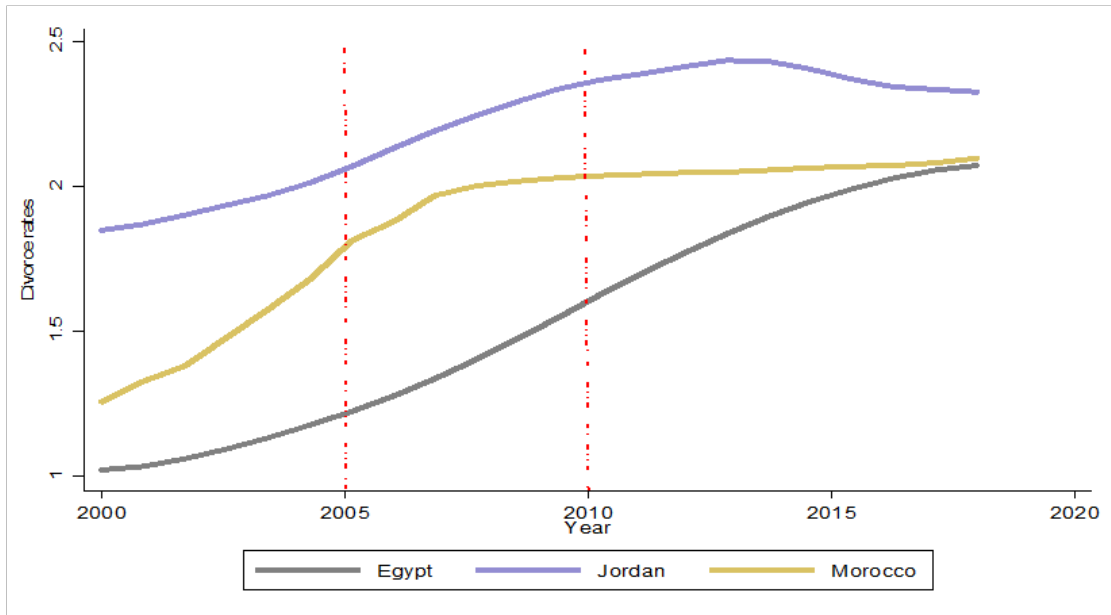
Appendix for Chapter 3

Figure 3.7: Appendix - Timeline of introduction of unilateral divorce legislation in MENA countries



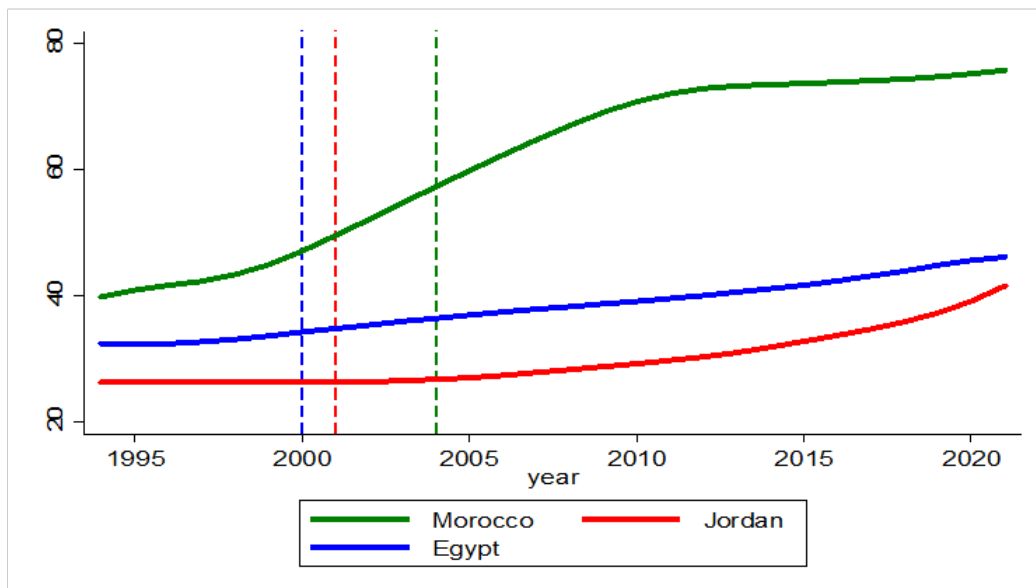
Source: Author's elaboration. Note: This diagram illustrates a timeline of family code reforms in eight countries in the MENA region (Libya, Tunisia, Oman, Egypt, Jordan, Morocco, Algeria, and the UAE). Each country passed a reform that introduced a form of unilateral divorce law granting, thus, varying degrees of bargaining power (see Welchman, 2007). Additionally, the diagram describes the dispositions on child custody introduced by each family law reform.

Figure 3.8: Appendix - Evolution of divorce rates in Morocco, Egypt, and Jordan



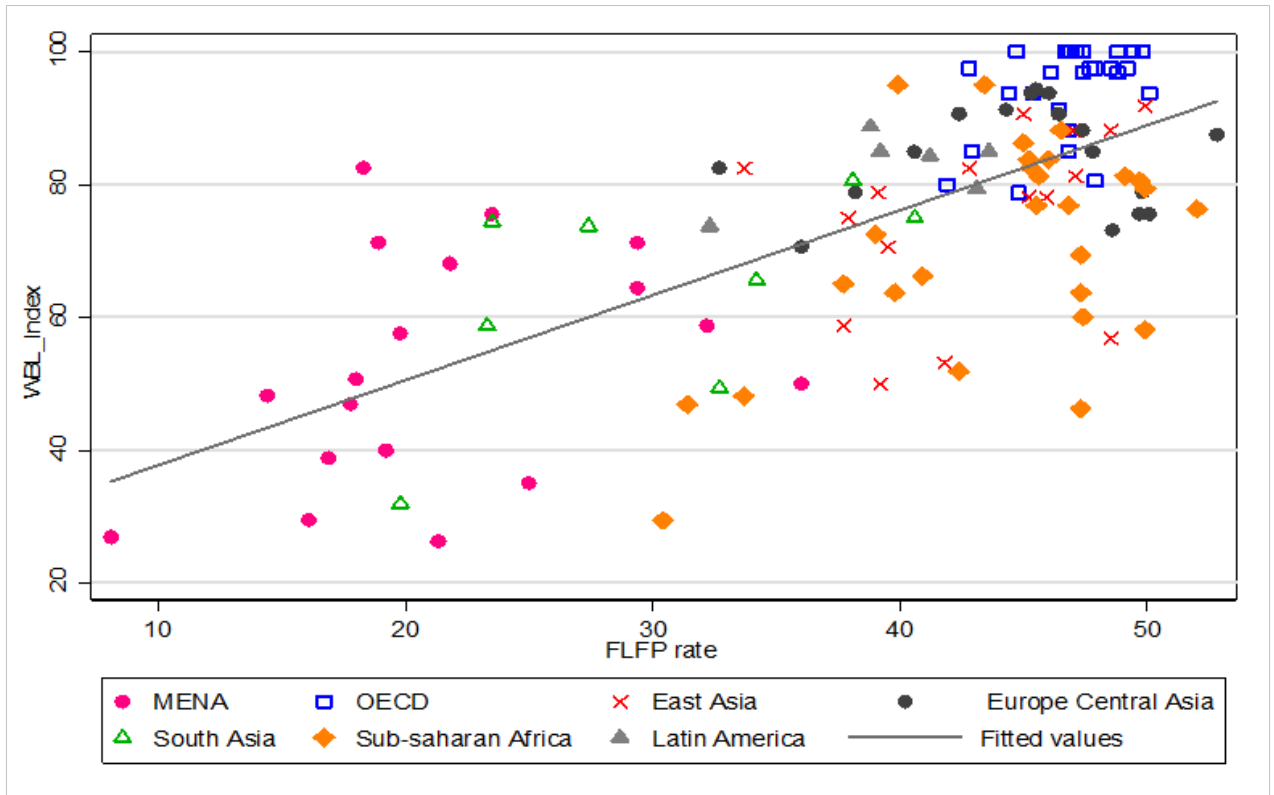
Source: Author's elaboration. Note: The figure illustrates the evolution of divorce rates in the three studied countries, Egypt, Jordan, and Morocco. Data cross-checked between national institutions of each country, UNDP and ESCWA open data portals. Unilateral divorce reforms were introduced in Egypt in 2000, in Jordan in 2001, and in Morocco in 2004. The red dotted lines represent the years that Egypt and Jordan introduced additional reforms to dispositions on child custody in their respective Family Codes.

Figure 3.9: Appendix - Evolution of the World Bank Index of Laws in Morocco, Egypt, and Jordan



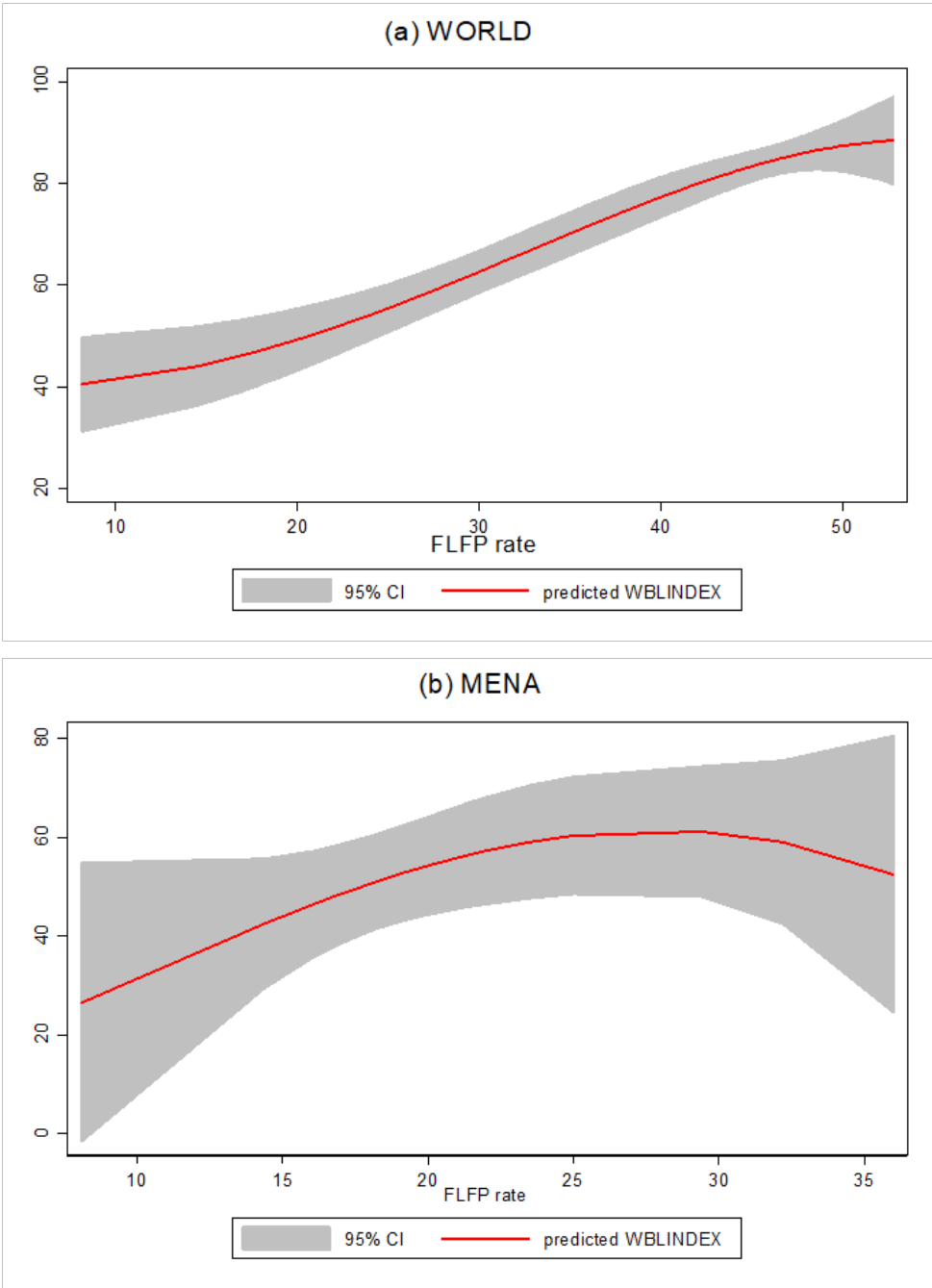
Source: Author's elaboration from World Bank, Women, Business, and the Law (2023) database. Note: Used data comes from the World Bank's time series on Women Business and the Law index (1971-2023) for 122 countries belonging to the MENA, OECD high-income, South Asia, Latin America, East Asia, Sub-Saharan Africa, and Europe and Central Asia regions. The latest year, 2023, is considered. The index scores are based on the average of each economy's scores for the 8 topics included in the aggregate score: mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets, and pension. The index scores range between 0 and 100 and a higher score indicates more gender equal laws.

Figure 3.10: Appendix - Relationship between gender progressive laws and FLFP by Country



Source: Author's elaboration from World Bank, Women, Business, and the Law (2023) database. Note: Used data comes from the World Bank's time series on Women Business and the Law index (1971-2023) for 122 countries belonging to the MENA, OECD high-income, South Asia, Latin America, East Asia, Sub-Saharan Africa, and Europe and Central Asia regions. The latest year, 2023, is considered. The index scores are based on the average of each economy's scores for the 8 topics included in the aggregate score: mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets, and pension. The index scores range between 0 and 100 and a higher score indicates more gender equal laws. The corresponding values for female labor force participation rate for each country are from the World Bank, World Development Indicators database.

Figure 3.11: Appendix - Relationship between gender progressive laws and FLFP – World vs. MENA region



Source: Author’s elaboration from World Bank, Women, Business, and the Law (2023) database. Note: Used data comes from the World Bank’s time series on Women Business and the Law index (1971-2023) for 122 countries belonging to the MENA, OECD high-income, South Asia, Latin America, East Asia, Sub-Saharan Africa, and Europe and Central Asia regions. The latest year, 2023, is considered. The index scores are based on the average of each economy’s scores for the 8 topics included in the aggregate score: mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets, and pension. The index scores range between 0 and 100 and a higher score indicates more gender equal laws. The corresponding values for female labor force participation rate for each country are from the World Bank, World Development Indicators database. The WORLD sample includes all countries in the World Bank, Women, Business, and the Law database. The MENA region sample includes Algeria, Bahrain, Djibouti, Egypt Arab Republic, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates, West Bank and Gaza, and Yemen.

Supplementary analysis

The motherhood penalty: empirical evidence from fertility shocks

Literature converges on the fact that women's labor supply elasticity is higher than men's, particularly when they are in couples and have young children. Their chances of being in the labor market are lower, and once employed, they are more likely to hold part-time jobs and have lower wage incomes (Korenman and Neumark [1992]; Waldfogel [1998]; Blundell, Bozio and Laroque [2013]). This lesser presence of women, mothers particularly, on the labor market results in part from an asymmetrical distribution of time between spouses intrahousehold. The time women can devote to paid work competes with the time they must devote to unpaid domestic work (Brousse, 2015; Champagne et al, 2015). Thus, women's employment declines with the number of children, and even more so the younger they are (Minni and Moschion, 2010), while men with children are often more employed than men without children, are two familiar conclusions from the literature.

My empirical setting in this chapter assumes that women disproportionately take on the responsibilities associated with domestic work and, more specifically, with motherhood and child-rearing. The under-representation of women is not due to their gender per se but rather attributed to a negative relationship with the presence of children (Waldfogel, 1998; Piras and Ripani, 2005). To ensure the validity of my identification strategy, I must take into consideration the endogeneity of this relationship with fertility (Bronars and Grogger, 1994; Jacobsen et al., 1999; Angrist et al., 1998; Cruces and Galiani, 2007). Indeed, the number of children a woman has may be influenced by preferences and it is likely that there are other omitted factors that influence both this choice and that of labor force participation (such as ambition or talent). Thus, the observed relationship between the existence of children and women's work may be misleading. For this reason, I use an instrumental variable estimation approach with an alternative exogenous source of variation in family size, based on infertility shocks, to determine the causal effect of children's presence on women's labor force participation. The choice of infertility as an identifying variable is primarily motivated by the fact that it is random – comparable to a natural experiment. This empirical strategy will help me justify the assignment to treatment and control groups as well as provide robustness and sensitivity tests studying the differential labor supply decisions between women with children and women without children. Thus, the identification of the causal effect of children and marital disruption on women's labor force participation would be more robust.

Conveniently the DHS survey data used in chapter 3 includes a set of health-related questions including fertility status of the woman. To assess the effect of the child penalty on mothers' labor force participation, I use infertility as an instrumental variable for the number of children. The main specification

is given by:

$$LFP_i = \alpha + \beta K_i + \sum_j \gamma_j age_{ij} + \delta X'_i + \varepsilon_i$$

Where LFP_i is binary outcome variable equal to 1 if the woman is employed and zero otherwise, K_i represents the of children and X'_i includes a set of control variables.

Tables (3.8), (3.9), and (3.10) present descriptive statistics from the DHS survey data by fertility status (fertile vs. infertile) for a sample of population from a single survey round in Morocco, Egypt, and Jordan. For the purpose of this analysis, only married women are considered. The number of observed children in the descriptive statistics represent all the children present in the same household as the women, including her own if applicable. Aside from their fertility status, there are no sticking differences between the two groups of women in terms socioeconomics (age at first marriage, own and partner's educational attainment).

Table (3.11) present summary results from the estimates. Columns (1), (3) and (5) present OLS estimates of the relationship between the number of children and the woman's work outcome (measured by the same variable used in chapter 3: "currently working"). For all three countries and in panels A, B and C, the presence of children reduces the probability of women being involved in paid work. This is not the case in columns (2), (4) and (6) after correcting for endogeneity using the woman's infertility as an instrument. Surprisingly, estimates from Panel B, in which information on the number of household members is introduced, show that there is no systematic relationship between family size and the woman's labor outcome. These two results are essential for the conceptual framework of chapter 3, as they show that children, especially when young, reduce the likelihood of mother's involvement in paid work, and that there is no substitution for mother's care, even in extended families. These findings have important implications for understanding the relationship between women's labor force participation, family structures and fertility choices. This framework could serve as a basis for future research on childcare policies, demographic projections and labor market dynamics.

Table 3.8: Appendix - Women's characteristics by fertility status - Morocco

	Infertile (1)	Fertile (2)	Difference— (3)——
Marital status			
Married	1	0,88	0,12
Divorced/separated	0	0,06	-0,061
Demographics			
Age	39,17	34,11	5,058
Age at first marriage	18,73	18,86	-0,126
Number of children	0	3,68	-3,685
Number of children under 5	0	1,08	-1,079
Number of household members	5,10	5,75	-0,649
Own educational attainment			
no education	0,80	0,72	0,076
primary	0,10	0,13	-0,033
secondary	0,08	0,12	-0,035
higher	0,02	0,02	-0,008
Partner's educational attainment			
No education	0,65	0,56	0,088
Primary	0,17	0,18	-0,011
Secondary	0,13	0,16	-0,024
University	0,03	0,04	-0,005
Outcome variable			
Currently working	0,17	0,23	-0,017
N	149	3100	

Source: Authors Calculations - Demographic and Health Survey (DHS).

Table 3.9: Appendix - Women's characteristics by fertility status - Egypt

	Infertile (1)	Fertile (2)	Difference— (3)——
Marital status			
Married	1	0,96	0,04
Divorced/separated	0	0,02	-0,02
Demographics			
Age	42,72	32,78	9,94
Age at first marriage	20,98	20,40	0,59
Number of children	0	2,59	-2,59
Number of children under 5	0	0,91	-0,91
Number of household members	4,40	4,59	-0,19
Own educational attainment			
No education	0,29	0,20	0,10
Primary	0,12	0,09	0,03
Secondary	0,47	0,55	-0,08
University	0,12	0,16	-0,04
Partner's educational attainment			
No education	0,23	0,15	0,09
Primary	0,17	0,13	0,04
Secondary	0,43	0,54	-0,12
University	0,17	0,18	-0,01
Outcome variable			
Currently working	0,22	0,16	0,05
N	349	17236	

Source: Authors Calculations - Demographic and Health Survey (DHS).

Table 3.10: Appendix - Women's characteristics by fertility status – Jordan

	Infertile (1)	Fertile (2)	Difference (3)
Marital status			
Married	1	0,97	0,030
Divorced/separated	0	0,02	-0,018
Demographics			
Age	43,2	34,2	8,979
Age at first marriage	22,6	21,2	1,441
Number of children	0	3,6	-3,62
Number of children under 5	0	1,2	-1,170
Number of household members	5,6	5,6	-0,002
Own educational attainment			
no education	0,0	0,0	0,018
primary	0,18	0,069	0,111
secondary	0,44	0,55	-0,110
higher	0,31	0,34	-0,030
Partner's educational attainment			
no education	0,1	0,02	0,044
primary	0,16	0,10	0,059
secondary	0,51	0,63	-0,123
higher	0,27	0,23	0,037
Outcome variable			
Currently working	0,18	0,19	-0,010
N	209	9186	

Source: Authors Calculations - Demographic and Health Survey (DHS).

Table 3.11: Appendix - Children's effects on women's labor outcomes

	Egypt		Morocco		Jordan	
	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)
Panel A. Includes controls for women's own characteristics						
<i>Number of children</i>	-0,012*** (0,002)	0,018* (0,019)	-0,012*** (0,003)	0,014** (0,010)	-0,016*** (0,002)	0,029* (0,169)
R-squared	0,137	0,271	0,074	0,275	0,199	0,318
Kleibergen-Paap F-Statistic		134,426		527,664		69,302
Cragg-Donald Wald F statistic)		242,789		320,823		123,895
Hansen J statistic (over-identification test of all instruments)		0,000		0,000		0,000
Panel B. Includes controls for household characteristics						
<i>Number of children</i>	-0,005* (0,007)	0,329** (0,232)	-0,004** (0,009)	0,028*** (0,016)	-0,010* (0,009)	0,550** (0,248)
R-squared	0,137	0,188	0,075	0,289	0,199	0,128
Kleibergen-Paap F-Statistic		12,022		129,073		10,962
Cragg-Donald Wald F statistic)		23,296		1403,077		22,846
Hansen J statistic (over-identification test of all instruments)		0,000		0,000		0,000
Panel C. Includes controls for partner's characteristics						
<i>Number of children</i>	-0,005* (0,007)	0,329*** (0,231)	-0,004** (0,009)	0,027*** (0,016)	-0,010* (0,009)	0,566*** (0,255)
R-squared	0,138	0,189	0,081	0,294	0,201	0,117
Kleibergen-Paap F-Statistic		11,869		129,674		11,023
Cragg-Donald Wald F statistic)		23,654		1405,941		22,104
Hansen J statistic (over-identification test of all instruments)		0,000		0,000		0,000
N	17585	17585	3249	3249	9395	9395
Mean of dep.	0,165	0,165	0,233	0,233	0,190	0,190

Source: Authors Calculations - Demographic and Health Survey (DHS). Notes: The reported estimates are based on the analytical samples of women aged between 18 and 49 and restricted to a single reference survey year. *p<0.10, **p<0.05, ***p<0.01.

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General Conclusion

This thesis research attempted to enlarge the scope of existing knowledge on the issue of low female labor supply in Morocco. Building on the large literature of new household economics (Becker, 1965; Grossbard-Shechtman, 1984) and on growth and structural transformation (Escobar, 2011) it examined the contribution of paid and unpaid work to the economy highlighting the demographic and gender dividends and the trade-offs between household markets and labor markets. Then, it provided an empirical examination of the collective labor supply model and the role of intra-household bargaining in determining the decision of wife's labor force participation. Further, it examined the role of gender positive policies, namely divorce legislation, in balancing intra-household bargaining power and their incidence on women's labor outcomes.

The first chapter bridged between two seemingly separate views of production over the life-cycle using the National Transfer Accounts, which measures age profiles of consumption and production in markets, and the National Time Transfer Accounts, which estimates age profiles of unpaid home production. Further, it provided a monetary measure of home production which was estimated to be the equivalent of more than 35% of the national GDP of 2012. Gendered differences in paid and unpaid work over the life-cycle show that women shoulder an disproportional burden of domestic and care work within households and make up for the quasi-totality of unpaid home producers. After cross-referencing the results from NTA with NTTA, the dominant pattern that emerges is a male dominated market production and a female dominated home production which may be attributed to social norms, personal preferences, or perhaps, significant frictions in labor markets. Thus, narrowing the gender gap in labor force participation, without "transferring" women's home production to men, will require the provision of accessible substitutes to their home production in the market. Creating a market that is suitable to the transfer of home production activities is a crucial prerequisite to increasing women's labor marketization (Reid, 1934) and is intrinsically related to the process of economic transformation and growth (Bridgman et al., 2018).

Besides providing a comprehensive analysis of the intersections between home and market production, another important contribution of this chapter resides in the provision of a forward-looking analysis of demography induced changes in supply of household production over the life-cycle and for the next few decades. These results illustrate how demographic changes alone can induce significant changes to the volume of home production which compensates a significant chunk of goods and services needed by the dependent population. Perhaps the effect of a decreased supply in home production merely induced by population changes is hard to grasp fully in economic terms today. But, as population ages, and without any changes to the existing social protection system and safety nets, a care crisis may be looming in the horizon.

The second chapter examined the driving factors behind low labor force participation of married women

in Morocco through an empirical test of the collective model. considering differences between working dual and single earning couples, and between urban and rural dwellings. It started by considering existing occupational and wage differences in the labor market and in time allocations to market work and domestic work. The implications for spouses' time allocations are attributed to changes in wages, household income, and bargaining power induced by three main mechanisms that can explain the low female labor force participation in Morocco.

Higher female wages do not seem to render higher labor supply participation more attractive, especially so for urban women. Instead, a hump-shaped relationship exists between working wives' wages and their relative market time. This finding supports the hypothesis of educated women's preference to work white collar service-based jobs (Verme et al., 2016; Klasen, 2019; Assaad et al., 2020; Jayachandran, 2021; Cavapozzi et al., 2021). This is primarily explained by educated women's preference for decent working conditions and, specifically, for flexible working hours that allow them to balance their high domestic work hours. Further supporting this preference-based time allocation is the fact that higher earning husbands, who are more likely to be university educated, see their wives' market time increase.

Women's dual roles inside the household and in labor markets, lead them to place a higher value on jobs that allow them temporal flexibility (Goldin, 2014; Cha and Weeden, 2014; Cortés and Pan, 2019). As such, the sharing rule, thus, results in women choosing more flexible and stable jobs, such as working in the public sector, to accommodate for their domestic workload. This translates into labor mismatch in the market as women will tend to compete for the same jobs at all levels of education or not participate in the labor market for lack of desired jobs.

The results also support the hypothesis of assortative mating, especially for the case of urban and highly educated couples. Under the collective model couples make decisions with endogenous bargaining power (Mazzocco et al., 2013; Voena, 2015), they share risks, economies of scale, and intra-household resources based on their simultaneous preferences. The bottom line is, the decision to supply and remain in the labor market can equally be motivated by spouses believes and preferences which, in the case of highly educated urban individuals, can be influenced by progressive views on women's' rights and social position. As such these martial sorting patterns and intrahousehold behaviors are not representative of other couples. A broader implication of this finding is that the decrease of intrahousehold income inequalities, because of higher wages and market hours of wives in dual earning urban couples, can translate broader economy-wide inequalities. As for rural dwelling couples, results are on part with the hypothesis of an added worker effect (Lundberg, 1985), especially since rural labor markets tend to be seasonal and in low human capital traditional sectors. In this regard, a desirable extension for future research can explore the implications of such temporary increases in labor supply of married

women.

Another broad implication of the findings relates to the non-substitutability of spouses' domestic work since there are only modest transfers of domestic work from husbands, induced by an increase in wives' income. The transition to market work is thus incomplete since domestic and care work burden remain incumbent on working women. This is a characteristic of transitioning economies and more so confirmation of stickiness of gender norms and preferences.

The third chapter then examined the effect of unilateral divorce legislation on women's employment outcomes has drawn considerable attention in recent years, especially since a robust interaction between legislation that reduces gender-based discrimination and female labor force participation is observed around the world. This chapter offers new evidence on the effect of the introduction of unilateral divorce laws on women's labor outcomes in three MENA region countries; Morocco, Egypt, and Jordan. By exploiting differences in the age cutoffs for child custody, the results highlight that woman who stayed married benefited the most from the introduction of the right to unilateral divorce, suggesting that a power-shift mechanism was the most important. There is little to no discernible impact of the anticipatory effect on women's employment. Still, the initial increase in women's labor outcomes, caused by the power-shift effect, can be offset by a slower dynamic in the labor market where women, arguably, still occur higher costs. Such is the case of Morocco, where increasing women's bargaining power within the marriage does not ensure their transition to the labor market. Moreover, if women occur higher costs in the labor market, such as search costs or lack of decent working conditions, then marriage continues to be a better option, insofar as divorce also remains a viable outside option that balances power dynamics within the marriage.

These findings complete previous studies by Hassani-Nezhad, and Sjögren (2014) and Corradini and Buccione (2023) and offer two key policy implications. First, the enhancement of legislation that targets gender-based discrimination in MENA countries reflects a shifting paradigm regarding gender equality. While challenges and limitations persist, these reforms symbolize a significant stride towards establishing more equitable and inclusive laws that empower women and advance gender equality in the region. Second, they highlight the importance of understanding the interactions between gender-based discrimination and labor market mismatch. By enacting progressive legislation that ensures equal rights and opportunities within family, countries can enhance women's empowerment, promote their labor force participation, and foster inclusive economic growth. But the effect of existing legislation may still be limited. This analysis reveals that the transition to the labor market may still be costlier to women, especially mothers of young children (Anukriti et al., 2023; Halim et al., 2023). As such closing the childcare policy gap should be at the forefront of policy makers agendas. Despite notable progress in this regard, policies extending coverage of childcare services, including early childhood

care, and paid parental leave, are direly needed. In fact, the limited access to childcare or lack thereof explains to a considerable extent the stagnant and even declining gender labor participation rate.

RÉSUMÉ

Cette thèse s'appuie sur la vaste littérature de la nouvelle économie des ménages et sur la croissance et la transformation structurelle, en essayant d'aborder la question de la faible offre de travail féminin au Maroc. Elle tente d'élargir le champ des connaissances existantes sur cette question. Tout d'abord, elle examine la contribution du travail rémunéré et non rémunéré à l'économie en mettant en évidence les dividendes démographiques et de genre. Les compromis entre les marchés des ménages et les marchés du travail constituent un domaine d'analyse privilégié. Deuxièmement, elle fournit un examen empirique du modèle d'offre collective de travail et du rôle de la négociation intra-ménage entre les conjoints. En outre, elle examine le rôle des politiques positives en matière de genre dans l'équilibre du pouvoir de négociation au sein du ménage et leur incidence sur l'offre de travail des femmes.

MOTS CLÉS

Économie des ménages, offre collective de travail, négociation intra-ménage, divorce, travail non rémunéré, cycle de vie.

ABSTRACT

This dissertation builds on the large literature of new household economics and on growth and structural transformation, trying to address the issue of low female labor supply in Morocco. It attempts to enlarge the scope of existing knowledge on this issue. First, it examines the contribution of paid and unpaid work to the economy highlighting the demographic and gender dividends. The tradeoffs between household markets and labor markets constitute a focus area for analysis. Second, it provides empirical examination of the collective labor supply model and the role of intra-household bargaining between spouses. Further, it examines the role of gender positive policies in balancing intra-household bargaining power and their incidence on women's labor supply.

KEYWORDS

Household economics, collective labor supply, intra-household bargaining, Divorce, Unpaid labor, life cycle.