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Feminization of occupations and its effect on gender wage gap in South Mediterranean Countries

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Feminization of occupations and its effect on gender wage gap in South Mediterranean Countries' *

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Executive summary

The issue of gender equality in the labour market is an important one not only for the wider norm of fairness but also more specifically for economic development and the efficient utilization of (human) resources in the economy. For countries in middle levels of development, such as those of the MENA economies, this issue is thus particularly important. For this region, however, the issue is additionally important due to the traditional role that women play in the economy and the cultural (including religious) beliefs that drive gender relations in these countries.

Gender inequality in the labour market can take different forms. From inequalities in access to employment and labour force participation, to inequalities in pay (gender wage gap) and in the way different workforce characteristics are rewarded in the job market (wage penalties), to differences in the occupational structure of employment (occupational shorting) and in career trajectories (glass ceilings and sticky floors).

These aspects often interact with each other, resulting in multiple and complex patterns of exclusion and inequality. For example, occupational crowding, the pattern of unequal access of one group of workers (females) to particular jobs, may result in both occupational shorting and feminization of some occupations (selection / over-representation of females into particular occupations) as well as to sizeable gender wage gaps (between male-dominated and other jobs).

Still, in countries with traditionally very high degrees of female labour market exclusion and low female labour force participation and employment, the feminization of occupations may have beneficial – as well as detrimental – effects. Feminisation of occupations creates exclaves of jobs which are more easily accessed by females, thus contributing to raising female employment and labour force participation. On the other hand, to the extent that 'female jobs' are rewarded less well than 'male jobs', feminization of occupations will tend to increase the observed gender wage gap in the economy, with the potential of 'discouraging' more females from participating into the labour market.

The first paper aimed to examine these issues for two MENA countries – Egypt and Jordan – for which good-quality micro-data are available (through the Labor Market Panel Surveys of Egypt and Jordan – ELMPS and JLMPS, respectively). In particular, the study examined gender differences – and their changes over time since the mid-1990s – in employment participation, employment, unemployment and wages, utilizing a range of measures and techniques. While differentials in employment participation and unemployment are examined descriptively, the feminisation of occupations (distribution of 'male' and 'female' jobs) is examined through the so-called Index of

Association (similar to the Sex Ratio index). The existence, size and determinants of gender wage gaps is examined in turn through the application of the Neuman-Oaxaca decomposition, which allows to explore the sources of the gender wage differentials along a number of dimensions: the endowment component (differences in characteristics), the coefficients component (differences in the shadow price of characteristics), the interaction component (the residual combined component of the two), and the selection component (differences that are due to the shorting/selection of individuals into, or out of, employment).

This approach follows largely the state-of-the-art in the applied labour economics literature, as it derives from the standard human capital theory of wage (and employment) determination. According to this, labour markets are generally in equilibrium and individual wages reflect the value of an individual's own characteristics, such as level of education, prior labour market experience, age, etc. To this, the analysis adds a series of 'non-marketable' characteristics such as gender, marital status, etc., which may affect an individual's wage for no obvious labour market reason. According to the human capital theory, systematic wage differentials linked to such variables – most importantly, gender – represent a disequilibrium condition which may reflect, at least in part, some degree of discrimination in the labour market.

The question of discrimination goes of course beyond human capital theory. Indeed, the early analysis of gender differentials in the labour market has its roots to Marxist analyses of exploitation, positing that deteriorate labour market outcomes for females reflect the fact that females are largely used in capitalist economies as a 'reserve army', with the implication that the probability of unemployment/inactivity is higher and their earnings from employment once employed (as well as employment status more generally) are lower. Feminist and institutionalist theories, departing in part from the Marxist idea of exploitation, place instead more emphasis on cultural and institutional factors driving discrimination and affecting labour market outcomes in a gendered way – from cultural norms guiding household divisions of labour to state-sponsored family policies, such as childcare provision and maternity leave/pay.

Whether driven by cultural norms, market discrimination, or institutional factors, female labour market outcomes in the two MENA countries of Egypt and Jordan appear to be significantly and persistently inferior to those of males. In both countries, female labour force participation is very low, at about 25% in Egypt and at about 20% (but rising quite fast from values nearer 15% in the 1990s) in Jordan. In both countries, female rates of unemployment are twice as high as those for males; while also significantly higher is the incidence of informal employment for females. Both countries – but particularly Egypt – score very low on the UNDP Gender Equality Index, ranking at 155 and 111 out of 159 places in 2015.

Concerning the question of feminization, both countries exhibit a notably gendered distribution of employment across occupations. In both countries, females are significantly over-represented in agricultural jobs, reflecting in part the role of family and tradition in female employment. Secondarily, female employment appears to be higher, in relative terms in Clerical and, less so, in Professional jobs – reflecting in turn a common pattern in the two countries, of significantly more favourable access for females to public sector employment. In both countries, gender imbalances in the occupational structure of employment have declined, with female shares increasing especially in the higher ranks of occupations – although an adverse development (towards feminization) is also observed for the case of Elementary occupations.

Concerning wage gaps, these are high in both countries. The raw wage differential (i.e., not accounting for various job and individual characteristics) in 2012 stood at about 21.5% in Egypt and a staggering 39.4% in Jordan. Interestingly, the main part of this differential is explained not by what happens inside the labour market (endowment and coefficients components) but by selection: controlling for selection (i.e., the factors affecting non-participation of females into employment) reduces the wage differential to 5.2% and 17% respectively. For the remaining differential, a common pattern is observed for both countries. Invariably, the endowment effect, showing the distribution of marketable and other characteristics of females, pushes in the direction of reducing the wage gap. The same applies to the coefficient effect for the main marketable characteristics (especially education), meaning that on the basis of their characteristics those females who are actually in employment (ought to) have been rewarded more favourable than males. In contrast, the observed wage gap is solely attributable to the coefficient effect non-marketable characteristics (such as marital status) and, importantly, the fixed effect for gender. In other words, the wage penalty observed for females in the two economies is not driven by labour quality weaknesses or indeed by a less favourable rewarding of skills (e.g., as captured by education) possessed by females. Rather, it is predominantly, if not exclusively, driven by factors that are outside the labour market and largely remain 'unexplained': the selection effect, the 'wage returns' to marital status, and the female 'fixed effect' (capturing factors not observed in our empirical analysis).

These findings have important implications for policy. Access of females to employment remains significantly limited; the occupational structure of employment remains generally gendered; and female earnings remain significantly inferior to those of males. The drivers of these, however, have to do more with the position of females in the societies of the two countries (e.g., as captured by the selection effect) than with the actual workings of their labour markets (e.g., returns to education). Both countries have implemented recently specific policies aiming at addressing the inferior position of women in the labour market. However, and despite some notable improvements (for example, the

rising female employment rates in Jordan), female labour market outcomes and opportunities remain limited. Policy solutions to these can come in two directions. On the one hand, addressing the cultural and wider societal barriers to female employment which may be giving unequal access to jobs and to particular types of jobs (both in occupational and in remuneration terms). On the other hand, developing enabling policies for increased female labour force participation, such as extension of childcare provision and especially maternity leave and pay (the latter linking in particular to the very large negative effect observed in this study for married females). At the same time, our study has unveiled how public-sector jobs offer a significant advantage (in relative terms) to females, both in terms of employment and in terms of wages. Although this may be favourable for females, it largely constitutes a 'temporary fix' and does not solve the problems observed in the private part of the economy. It follows that policy efforts should concentrate on the latter.

The second paper considers the estimation of gender-based wage differentials between the public and private sector labour market in Egypt prior to large scale privatization of public enterprises. Its point of departure from the existing literature on gender gaps in Egypt is that it does not assume that all occupational differences as justifiable. Instead, by endogenising occupational attainment behaviour in calculating the gender gap, the findings of this paper suggest that occupational segregation plays a large role in explaining gender gaps in both public enterprises and private sector in Egypt. As such it uncovers the origins of gendered wage practices that from some of the literature presented above may still be present and even intensified due to liberalization and privatization in Egypt. "The paper also examines differences in wage setting between the public and private sector from a different angle that is the incidence of gender-based differentials. In particular, it tests the hypothesis that gender wage differentials are more compressed in the public than in the private sector, and also tests whether after correcting for differences in characteristics or endowments, there is still evidence of gender based differentials either sector.

The empirical analysis in this paper proceeds in three main stages. First, wage equations were estimated separately for males and females for three sectors: government, public enterprise and private. From these, standard decomposition methods were applied to both the government and public enterprise wage premiums and to gender gaps in the three sectors. Second, a model of occupational attainment is estimated for males and females in the three sectors, and incorporated in applying an alternative gender decomposition gap formula which does not assume that gender differences in occupational distributions are all economically justifiable. Third, different quantiles of the conditional (log) wage distribution are estimated to gain further insight into forms of variation around the estimated public sector and gender based premia and their distribution across occupations.

In all three stages, wage equations are estimated separately for males and females across the three sectors. This allows for differences in wage setting in the three sectors and for differences in parameter estimates by gender.

Using earnings functions estimates and standard decomposition techniques, it was shown that both males and females have an earning disadvantage in the public enterprise and government sectors after correcting for a range of personal and job characteristics. If total rewards are considered (including non-pecuniary benefits), this disadvantage declines but is not eliminated for government workers. It declines even further or becomes non-existent for public enterprise males and turns into an advantage for female public enterprise employees.

Finally, the second paper considers the contribution of occupational segregation to the size of the gender wage gap using recently available Egypt Labor Market Panel survey (ELMPS) 2012. Not treating all occupational distribution as justifiable in the private sector shows that the gender gap is around 48% of female wages and most of this (30%) is due to intra occupational reasons (i.e. men and women are paid differently for doing the same job); but also there is a substantial part due to occupational segregation (18% of female wages). In the government sector, there is evidence of some small pay discrimination against women within occupation, but inter-occupational segregation in fact works for female pay so that the total unexplained gap is almost non-existent there. The results indicate that unless effort is made to reduce the extent of discrimination in the private sector, it is likely that the burden of privatisation and civil service downsizing may fall disproportionately on women and may negatively affect their already low participation rates in Egypt.

Sommaire exécutif

L'égalité des sexes sur le marché du travail est une question importante non seulement au sens le plus large de l'équité, mais aussi plus particulièrement au niveau du développement économique et l'utilisation efficace des ressources (humaines) dans l'économie. Pour les pays en développement tels ceux du MENA, cette question revêt alors une importance particulière. Toutefois, dans cette région, la question est d'autant importante en raison du rôle traditionnel que jouent les femmes dans l'économie et des croyances culturelles (y compris les croyances religieuses) qui gèrent les relations entre les sexes.

L'inégalité entre les sexes sur le marché du travail peut prendre plusieurs formes. Inégalités d'accès à l'emploi et de participation au marché du travail, inégalités de salaires (écart salarial entre les sexes) et de rétribution injuste pour différentes catégories de la main d'œuvre sur le marché du travail (pénalités salariales), différences en matière de structure de l'emploi (Liste restreinte au niveau professionnel) et des parcours professionnels (plafond de verre et plancher collant).

Ces aspects interagissent souvent les uns avec les autres, entraînant des schémas multiples et complexes d'exclusion et d'inégalité. A titre d'exemple, la ségrégation professionnelle, le modèle d'inégalité d'accès d'un groupe de travailleurs (femmes) à des emplois particuliers, peut mener, à la fois, à une sélection restreinte et à la féminisation de certaines professions (sélection / surreprésentation des femmes dans certaines professions) ainsi qu'à des écarts salariaux considérables entre hommes et femmes (dans les métiers masculins et les autres métiers).

Dans les pays où les femmes se trouvent traditionnellement fort exclues du marché du travail et où leur taux de participation au marché du travail est relativement faible, la féminisation des professions peut avoir des effets bénéfiques - mais aussi préjudiciables. D'un côté, la féminisation des professions crée des enclaves où les femmes peuvent accéder aisément aux emplois, contribuant ainsi à accroître leur participation au marché du travail. D'un autre côté, dans la mesure où les «emplois féminins» sont moins bien rémunérés que les «emplois masculins», la féminisation des professions tendra à accroître l'écart salarial observé en économie, avec un «découragement» potentiel de plus de femmes à participer au marché du travail.

Le premier papier visait à examiner ces problèmes dans deux pays du MENA - l'Égypte et la Jordanie – où des microdonnées de qualité sont disponibles (Via des enquêtes de panel sur le marché du travail en Égypte et en Jordanie – ci-après ELMPS et JLMPS, respectivement). L'étude a examiné, en particulier, les différences des sexes - et leurs changements au fil du temps dès le milieu des années 1990 – dans le domaine de participation au marché du travail, d'emploi, de chômage et de salaire, tout en utilisant une gamme de mesures et de techniques. Tandis que les différences de participation à l'emploi et de chômage sont examinées de manière descriptive, la féminisation des

professions (répartition des emplois par sexe) est examinée par ce qu'on appelle l'Indice d'Association (similaire à l'indice sex-ratio). L'écart salarial entre les sexes, sa taille et ses déterminants sont examinés, à leur tour, par l'application de la décomposition de Neuman-Oaxaca, qui permet d'explorer les causes des écarts salariaux entre les sexes en fonction de plusieurs dimensions: la dotation (différences de caractéristiques), les coefficients (différences du prix fictif des caractéristiques), l'interaction (la composante combinée résiduelle) et la sélection (différences dues aux liste restreintes ou à la sélection d'individus en ou hors emploi) .

Cette approche suit en grande partie l'état de l'art dans la littérature de l'économie du travail appliquée, car elle dérive de la théorie du capital humain concernant la détermination des salaires (et de l'emploi). C'est ainsi que les marchés du travail sont généralement en équilibre et les salaires individuels reflètent la valeur des caractéristiques individuelles de l'employé, telles que le niveau d'instruction, l'expérience antérieure sur le marché du travail, l'âge, etc. L'analyse ajoute une série des caractéristiques non négociables comme le sexe, l'état civil, etc. qui peuvent affecter le salaire d'un individu sans raison apparente liée au marché du travail. Selon la théorie du capital humain, les écarts de salaire systématiques liés à de telles variables – le plus important, le sexe - représentent un facteur de déséquilibre qui peut refléter, au moins en partie, un certain degré de discrimination sur le marché du travail.

La question de discrimination va bien au-delà de la théorie du capital humain. En fait, l'analyse précoce des différences entre les sexes sur le marché du travail trouve ses racines dans l'analyse marxiste de l'exploitation. Cette analyse suppose que, dans les économies capitalistes, les femmes sont largement considérées comme une «armée de réserve » avec une probabilité plus élevée de leur chômage / inactivité et plus faible de leurs revenus une fois employées (de même que le statut d'emploi plus généralement). Les théories féministes et institutionnalistes, partant en partie de l'idée marxiste d'exploitation, mettent plutôt l'accent sur les facteurs culturels et institutionnels qui conduisent à la discrimination et affectent les résultats du marché du travail de manière sexiste – Allant des normes culturelles contrôlant la division du travail domestique jusqu'aux politiques familiales comme garde des enfants et salaires des congés de maternité.

Qu'ils soient entraînés par des normes culturelles, des discriminations sur le marché du travail ou des facteurs institutionnels, les résultats sur le marché du travail des femmes dans les deux pays du MENA - L'Égypte et la Jordanie - semblent être significativement et constamment inférieurs à ceux des hommes. Dans les deux pays, la participation des femmes au marché du travail est très faible, soit de 25% en Egypte et d'environ 20% en Jordanie (mais en hausse assez rapide par rapport aux valeurs proches de 15% dans les années 90). Les taux de chômage des femmes y sont deux fois plus élevés que ceux des hommes. De plus, la participation de la femme au secteur informel est nettement plus

élevée. Les deux pays, -mais l'Égypte en particulier, marquent une mauvaise place au niveau de L'indice d'inégalité de genre mis au point par le PNUD, en occupant le 155éme rang et le 111éme places sur 159 places en 2015.

En ce qui concerne la féminisation, les deux pays affichent une répartition des emplois par sexe. Les femmes y sont nettement surreprésentées dans le secteur agricole, reflétant en partie le rôle de la famille et de la tradition dans l'emploi des femmes. En second lieu, l'emploi des femmes semble être, relativement, plus élevé dans les emplois administratifs et moins dans les emplois professionnels. Ceci montre un modèle commun dans les deux pays d'un accès nettement plus favorable des femmes aux emplois du secteur public. Dans les pays turbot, les déséquilibres entre les sexes dans la structure de l'emploi ont diminué, avec une participation féminine accrue en particulier dans les postes de haut niveau. Toutefois, un développement défavorable (vers la féminisation) est également observé au niveau des postes simples.

Les écarts salariaux sont élevés dans les deux pays. Le différentiel de salaire brut (c'est-à-dire ne pas tenir compte des diverses caractéristiques professionnelles et individuelles) en 2012 se situait à environ 21.5% en Égypte et à un pourcentage stupéfiant, soit de 39,4% en Jordanie. Force est de noter que la majeure partie de ce différentiel ne s'explique pas par ce qui se passe sur le marché du travail (dotation et coefficients) mais par la sélection: le contrôle de la sélection (c'est-à-dire les facteurs influant sur la non-participation des femmes à l'emploi) réduit le différentiel de salaire de 5,2% et de 17% respectivement. Pour le différentiel restant, un modèle commun est observé dans les deux pays. Invariablement, l'effet de dotation, qui montre la distribution des caractéristiques des femmes sur le marché du travail, pousse vers la réduction de l'écart salarial. Il en va de même pour l'effet de coefficient pour les principales caractéristiques (en particulier l'éducation). Cela signifie que sur la base de leurs caractéristiques, les femmes effectivement employées (devraient) ont été récompensées plus favorablement que les hommes. En revanche, l'écart salarial observé est uniquement attribué aux caractéristiques non négociables de l'effet coefficient (comme l'état civil) et, surtout, à l'effet fixe du genre. En d'autres termes, la pénalité salariale observée chez les femmes dans les deux économies n'est pas déterminée par des faiblesses de la qualité du travail ou par une récompense moins favorable des compétences des femmes (par exemple, comme pour l'éducation). Plutôt, elle est principalement, sinon exclusivement, déterminée par des facteurs extérieurs au marché du travail et reste largement «inexpliquée»: l'effet de sélection, les «bénéfices du salaire» de l'état civil et «l'effet fixe» des femmes (facteurs observés dans notre analyse empirique).

Ces résultats ont des implications importantes sur la politique. L'accès des femmes à l'emploi demeure limité de façon considérable; la structure de l'emploi se fait encore en fonction du sexe; et les gains des femmes restent, significativement, inférieurs à ceux des hommes. Cependant, les

facteurs déterminants en sont davantage liés à la place des femmes dans les sociétés des deux pays (tel que observé par l'effet de sélection) qu'aux fonctionnements réels de leur marché du travail (Par exemple les retours de l'éducation). Les deux pays ont, récemment, mis en œuvre des politiques spécifiques visant à remédier à la place inférieure des femmes sur le marché du travail. Toutefois et malgré quelques notables progrès (par exemple, l'augmentation du taux d'emploi des femmes en Jordanie), les résultats et les opportunités de participation des femmes sur le marché du travail restent limités. Les solutions politiques à ces problèmes peuvent avoir deux directions. D'une part, s'attaquer aux barrières culturelles et sociétales à l'emploi des femmes qui peuvent causer un accès inégal aux emplois et surtout à certains types d'emplois (Autant au niveau de professions que de rémunération). D'autre part, développer des politiques favorables à une participation accrue des femmes au marché du travail, telles que l'extension des services de garde d'enfants et surtout des salaires des congés de maternité (ces derniers étant liés notamment au grand effet négatif observé dans cette étude chez les femmes mariées). En même temps, notre étude a dévoilé l'avantage (relativement) significatif offert aux femmes dans le secteur public, tant en termes d'emploi que de salaires. Bien que cela puisse être favorable aux femmes, il constitue en grande partie une «solution temporaire» et ne résout pas les problèmes observés de point de vue économique. Il s'ensuit que les efforts politiques devraient se concentrer sur une solution permanente.

Le deuxième article examine l'estimation des écarts de salaires entre hommes et femmes dans le marché du travail en distinguant le secteur public du secteur privé en Égypte. Cette analyse est faite essentiellement avant la privatisation à grande échelle des entreprises publiques. Par rapport à la littérature existante sur les écarts entre les sexes en Égypte, ce travail ne suppose pas que toutes les différences professionnelles sont justifiables. Par contre, en introduisant les comportements de réussite professionnelle dans le calcul de l'écart entre les sexes, les résultats de cet article suggèrent que la ségrégation professionnelle joue un rôle important dans l'explication des écarts entre les sexes dans les entreprises publiques et le secteur privé en Égypte. Egalement, ce travail préente les origines de pratiques salariales différenciées selon le sexe qui, d'après la littérature présentée ci-dessus, pourraient encore être présentes et même intensifiées du fait de la libéralisation et de la privatisation en Égypte. Le document examine également les différences de fixation des salaires entre le secteur public et le secteur privé sous un angle différent, à savoir l'incidence des différences entre les sexes. En particulier, il vérifie l'hypothèse selon laquelle les écarts de salaire entre hommes et femmes sont plus compressés dans le secteur public que dans le secteur privé, et vérifie également si, après correction des différences de caractéristiques ou de dotations, des écarts entre les hommes et les femmes subsistent.

L'analyse empirique adoptée dans le présent document comporte trois étapes principales. Premièrement, les équations salariales ont été estimées séparément pour les hommes et les femmes pour trois secteurs: gouvernement, entreprises publiques et secteur privé. À partir de celles-ci, des méthodes de décomposition standards ont été appliquées aux primes salariales des gouvernements et des entreprises publiques et aux écarts de genre dans les trois secteurs. Deuxièmement, un modèle de réussite professionnelle est estimé pour les hommes et les femmes des trois secteurs et est incorporé dans l'application d'une autre formule d'écart de décomposition homme-femme qui ne suppose pas que les différences de répartition entre hommes et femmes soient économiquement justifiables. Troisièmement, différents quantiles de la distribution salariale conditionnelle (logarithmique) devraient permettre de mieux comprendre les formes de variation autour des primes estimées du secteur public et du genre, ainsi que de leur répartition entre les professions. Aux trois étapes, les équations salariales sont estimées séparément pour les hommes et les femmes dans les trois secteurs. Cette méthodologie tient compte des différences de fixation des salaires dans les trois secteurs et des différences d'estimation des paramètres par sexe. À l'aide d'estimations des fonctions de rémunération et de techniques de décomposition standard, et après avoir corrigé diverses caractéristiques personnelles et professionnelles, on peut noter que les hommes et les femmes sont désavantagés sur le plan des revenus dans les entreprises publiques et les secteurs publics. Si l'ensemble des avantages est pris en compte (y compris les avantages non pécuniaires), ce désavantage s'atténue mais n'est pas éliminé pour les fonctionnaires. Elle diminue encore ou devient inexistante pour les hommes des entreprises publiques et devient un avantage pour les employées des entreprises publiques.

Le deuxième article ayant recours aux données récente sur le marché de travail en Égypte. l'article examine l'impact de la ségrégation professionnelle sur l'écart salarial entre hommes et femmes. Le fait de négliger toute la répartition professionnelle dans le secteur privé montre que l'écart entre homme et femme est environ 48% du salaire des femmes dont 30% sont expliquées par des raisons intraprofessionnelles (les hommes et les femmes sont payés différemment pour le même travail); mais il y a aussi une part importante due à la ségrégation professionnelle (18% du salaire des femmes). Dans le secteur gouvernemental, il existe des preuves d'une légère discrimination salariale à l'égard des femmes au sein de l'occupation, mais la ségrégation interprofessionnelle fonctionne en réalité pour la rémunération des femmes, de sorte que l'écart total inexpliqué y est pratiquement inexistant

Section one : Feminization of Occupation and Gender Segregation in Egypt and Jordan

By Doaa Salman, Marina Adel and Vassilis Monastiriotis

Abstract

The main aim of the project is dual. First is to analyze the effect of feminization of occupations on gender-occupational segregation in Egypt and Jordan. Second, is to identify the effect of feminization of occupations on the gender wage gap. In particular, the analysis will investigate the role of the feminization of occupations on boosting female labor force participation and on decreasing the gender wage gap and increasing the 'labor market effectiveness and inclusiveness'. Ultimately, the goal is to increase labor markets' efficiency that promotes living standards and thus manages migration to the EU countries.

Throughout this paper, we will explore how gender inequality affected growth in each of the two countries. Furthermore, the research will explain the policies adopted already by each country and also other recommendations for each country will be discussed.

1. Introduction:

The feminization of occupations may have beneficial effects, as it may help unblock female labor supply and reduce gender-based employer discrimination in hiring, thus contributing to channeling more women into productive employment. However, the feminization of occupations implies at the same time a strengthening of occupational sorting, which may increase discrimination in the labor market, at least in terms of earnings (Macpherson and Hirsch, 1995; Boeri and Van Ours, 2013).

Recent studies (for example, Budig, 2002; Murphy & Oesch, 2015) have shown that feminization of occupations is accompanied by an increase in the gender wage gap. This does not need happen only within occupations. Occupational segregation may also lead to disparate wage outcomes (and evolutions) for workers (both males and females) employed in male- versus female- dominated jobs, thus giving rise to forms of discrimination and inequality also across occupations within gender groups (Addison et al, 2015). Importantly, occupational gender segregation and inequality in earnings may also contribute to the decrease in the rate of female labor force participation (Gonzales et al. 2015), at least to the extent that these reflect phenomena of labor market discrimination, as has been shown to be the case in the MENA region (El-Haddad, 2009).

The study targets the examination of wage differentials and trajectories across gender composition types of occupations through raising some main questions which are: Are increases in female labor force participation in Egypt and Jordan linked to the feminization of particular occupations? And, if so, has this changed the structure of returns (occupational premia for both genders and female penalties within occupations) in the two labor markets? Are such developments equally discernible in the two labour markets and, if not, what accounts for the observed differences (e.g., institutions, differences in labour supply, etc)? Last, do these changes imply greater or smaller segregation? Or perhaps even an opposite move in segregation within versus across gender groups? To answer the provided research questions, the study will follow the decomposition method that has been prevailed since the early 1970s, where the gender wage differentials have been decomposed into a part that can be explained by differences in human capital endowments and an unexplained part that estimates for gender discrimination in the labor market, combined with more recently developed techniques that link occupational segregation to differences in returns.

A deep analysis to the existence of feminization of occupations phenomenon and answer the following questions. Does gender segregation in labor market exist? Does feminization of occupations has an effect on this inequality of opportunities among genders? Does feminization phenomenon really exist and become effective in the countries of interest (Egypt and Jordan)? This paper will mainly focus on the issue of gender segregation in Egypt and Jordan from 1990s till 2017.

The main aim of this study to discuss whether the gender segregation problem still exists and the policies needed to combat gender inequality in labor markets. In the first phase we explore the literature review, later, the methodology and data will be displayed which is basically the data collected and the main indicators that prove whether there is gender segregation in each of the three countries or not. Last but not least, the policy implications will be issued which are basically the policies adopted by each country to solve this gender segregation problem.

2. Literature review:

Feminization of occupations is operationally defined as occupations that hold more than 60 percent of women; where they move from male-dominant jobs to female-dominant jobs (Murphy & Oesch, 2015). This phenomenon is considered recent and more familiar in the western world; however, past economic theories did not capture this phenomenon but they tackled the issue of gender occupational segregation or gender inequality in the workplace and its effect on gender wage gap. Gender segregation appears in diversification in patterns of the appearance of men and women in political and public life, unpaid domestic work and caring, in young men's and women's choices of education and in the labor market. In absolute terms, it is considered the dominance of one sex in getting higher shares of something even more than what is expected to be given. So, for instance, a fair measurement of gender equality comes by measuring whether a sex or the other is in the superiority in an occupation or a workplace. Sometimes, gender segregation is argumentative. Some critics argue that this is considered an abuse of rights, capabilities and can be a cause of economic incompetence. However, some advocates argue that the segregation occurs due to some laws, religions, cultures, societies, histories and traditions. That's why gender segregation is always discussed in one of those three major approaches which are preferences, patriarchy and human capital. Some scientists believe that women empowerment may decrease gender segregation but that isn't true because some countries where women are empowered are still suffering from gender discrimination especially in the labor market and income (Brooks *et al.,* 2003).

2.1. Gender inequality in economic theories:

Gender discrimination exists in the past centuries and unfortunately it is still occurring till now even in some developed nations. This discrimination is not declining but even growing due to many reasons. But, from the past centuries gender equality and the women's empowerment was taken into consideration while developing theories. So, scholars throughout the time have attempted to tackle the discrimination problem and this led to the development of lots of theories mentioned below. There are a lot of major and important theories played a vital role in the empowerment of women and the development of their roles in the society in general but especially at work. The empowerment of women means that women is given the opportunity and the choice to participate in the society, the economy or even in politics and to have an equal chance just like men. Gender equality does not mean that the incomes of both genders are the same but it means that the interests and ideas of both genders have to be fully respected and recognized.

It is important to notice that the idea of feminization or de-feminization of labor markets is mainly extracted from the notion of "balance of powers" between sexes. Economic theories in this issue are

opposing to each other in the sense of looking at the number of males and females in the work place and its relation to gender- pay gap.

2.1.1 Marxist Feminism Theories and Gender Inequality

Marxist Feminism was born in the heart of the Marxist theory as a leading theory in introducing the notion of women's liberty at the end of the nineteenth century. The Marxist theory was first used to address gender equality by August Bebel (1879) and Fredrique Engels (1884) based on the idea of class conflict that explains the existence of conflict between two factions in the society (in this case two sexes) who are trying to reach the balance of powers. They figured out the necessity of engaging women into the process of development through advocating the idea of women getting rid of unpleasant and unnecessary type of work to be represented in the production process. Thus, alike most of the nineteenth century writers, women were first introduced as a partner in the production process with men rather than being entitled in the reproduction process only (Popa, 2003).

The idea of class conflict in gender equality was developed in the former Marxist labor segmentation theories and it becomes no longer the only reason behind gender segmentation. However, a new reason was highlighted which is the employer strategies of using cheap labor as they prefer labor that introduces work without demanding leaves or asking for more rights to fulfill other needs (reproduction process in case of females), thus they prefer men to women and gender inequality happens. Nevertheless, more developments on this idea were introduced by the radical feminism wave after around a century later. As, radical feminism was introduced and a new wave was adopted in the field of socialist feminism. This wave tried to provide solutions to gender segregation problem. Then, Radical feminists theories have started to rise in the 1970s in the USA. Historically, the radical feminism began with the assumption that men have more control over women. This theory asserts that all type of gender segregation exist due to the continuation of a system of patriarchal relations. So, the radical feminists claimed that this male controlled system is the main reason behind the oppression against women especially at work. Therefore, this system results in having the woman having a low status whether economically or socially (Ali, n.d.).[1] On the other hand, the radical feminist's theory was criticized because they exaggerated that the gender segregation is all because of the male controlled system and society. Also, the radical feminist theories did not emphasize the role of the capitalist system in resulting to have such inequalities. So, the dual system theories came in order to merge between the role of the capitalism and patriarchy in

[1] After that, another theory came to criticize both of the Marxist and the radical feminists a theory which was called the Dual systems theory. According to this theory, the Marxist only focused on the role of the capitalist systems in excluding women from entering jobs while they ignored the role of the patriarchal system in causing this type of segregation.

achieving gender segregation. Then, the post structural feminist's theories came in order to say that the gender segregation mainly happens due to the structural analysis in a society. This means that it happens based on who dominates the work whether male or female in this job. On the other side, this theory did not recognize the importance of women having lower wages and lower positions in jobs than men.[2]

2.1.2. Neo classical Theory and Gender Inequality

The neo-classical approach theories background concentrated more on the income discrimination between males and females inside the same workplace. The school also gave much importance to the gender inequality in the firm's occupations and employments. In the heart of this research stays a realistic person who wants to maximize the benefits by utilizing any resources in the best possible way. Labor markets generally have equal demand and supply but that equilibrium level is only achieved in the long-run. The neo-classical theory shows that there are some factors that can interrupt the achieved equilibrium in the labor market. However, these factors are only treated as temporary threats which mean that no matter what the market will get its way back to the equilibrium with full employment level. The neo-classical school considers the gender segregation and income inequality as some temporary threats to the labor market's equilibrium level (Gutierrez-Rodriguez, E., 2014).

2.1.3 Theory of human capital:

Furthermore, the human capital theory which is mainly from the neo-classical school rose and they claims that the workers education, training, and skills that will determine his position at his work. So, this theory states that women are less than men especially in receiving higher positions due to their lower skills and qualifications. The theory of human capital in 1962 mainly showed the gender discrimination in firms' wages. Generally, the differences on wages must be only based on differences in knowledge, abilities or skills owned by the worker or employee. Another difference on

[2] The Marxist theory was somehow a start for radicalism approach. The monopolistic business in capitalism is one of the most relevant reasons regarding the foundation of the analysis since these businesses are always in trials to maximize their profits. The capitalists take advantage of the market's discrimination in some sectors related to race or sex. By this way, the businesses disturb the working class, restrict the rise of the consciousness of the working level and decrease the chances of the possibility of their rise. The capitalists' main goal was to disturb the workers for them to prevent supportive demonstration. So, in order to achieve their goal, the capitalists give the best workers higher wages to avoid any solidarity with the others. When talking about gender discrimination, the employers take high advantage to conserve various labor opportunities and markets for males and females. The always tend to push the females to the so-called secondary markets which provides lower wages as well as low managerial hierarchical level. For them, there is also a benefit from the market's gender discrimination in the professions since the availability of females in the same jobs with males help decreasing the earnings of males and increase competition in the workplace for every gender to prove that they are better in their job. So, from the point of view of the employers, the presence of females is somehow beneficial for them (Maria, 2014).

wages can happens due to professional and educational differences between the workers since the professional or educational experiences help increase productivity and the performance of employees. It is believed that the difference in socialization between men and women even before entering the labor market creates differences in skills and abilities between males and females workers since women don't spend in human capital as much as men do. So, according to the theory, women aren't discriminated against in the labor market or rewarded less due to segregation causes but because the women own less human capital and less productivity then men in the labor market as well (Becker, 1962).[3]

The economics of discrimination that has been written in 1957 can be considered as the first trial to inspect the aftermath of discrimination in the labor market's context. However, the author focused more on race and ethnic discrimination but in general his analysis included some other kinds of discrimination including gender discrimination. Becker (1957) argues that the inequality in the wages arises from 3 types of racist preferences. The first one is the employees' preferences who don't prefer to work under a woman especially in a managerial hierarchy since there are some beliefs that women aren't as good as men. The second is the employers' preferences who don't always like to hire women due to prejudice reasons and the third is the customers' preferences who may not like to getting some services from women especially in physical works.

The previous theory was also criticized since the author wasn't able to provide an explanation and a clear interpretation of the existence of discrimination in the workplace and labor markets. The author considered the existence of discrimination as temporary and external shocks. Also, the theory was criticized that it didn't get the gender occupational discrimination that lead females and males to variable occupational area.

2.1.4. Institutional Ways of Discrimination

This approach is the provisional way of the organizations, given to which the diversity in salaries are not a reaction of diversifications in efficiency but are rather the consequence of institutional and communal belongings, such as the complexity and the operation of the working places, and the respective cost of careers in the community. Also, the uniform background in which the salaries are specified includes many aspects including the scheme of the salaries stability and the scheme of the

[3] This theory was criticized greatly since it concentrated mainly on the women's personal productivity and neglected that there can be many other factors that affect the latter. These factors can be technological aspects in the businesses, their share in the labor market, social functions that predict the differences on wags based on differences in professional specs and also the role of syndicates in some specific sectors.

cumulative bargaining that may have an effect in the wages pay gap. This kind of theories have appeared as a reflection to the theories of neoclassical that granted the sole characteristics and the individual choice as the sole influence that may cause differences in salaries (Grimshaw *et al.*, 2002). So, in order for the empowerment of women to occur then democracy has to be achieved through different institutions as these institutions help the women to have their rights heard. This theory calls for the role of the women in the political field such as parliament but due in comparison to men, women will face more difficulties.

2.2. Channels of gender wage gap / inequality:

The notion of gender and income inequality has mostly been viewed separately in the literature, while they interact via the following channels: *Inequality of economic outcomes*. Gender wage gaps directly linked to income inequality. Additionally, higher gaps in labor force participation rates between men and women are likely to upshot in inequality of earnings between sexes. This justified reasoned because women are more likely to work in the informal sector, in which earnings are lower, which increases the gender earnings gap and exacerbates income inequality. And *Inequality of opportunities;* inequality of opportunities, such as unequal access to education, health services, financial markets and resources as well differences in empowerment is strongly associated with income inequality (Mincer, 1958; Becker and Chiswick, 1966; Brunori, P, 2013). As well from the other channels is the unjustified depending on *defacto* or the main stereotype that is based on the culture of nations.

The relation between inequalities of opportunities is strongly associated with gender gaps in opportunities especially through the following channels: Education: Gender gaps in education still persist, leading to higher inequality in opportunity (when both boys and girls go to school, opportunities are more equal than if only boys go to school). If one segment of the population is excluded from educational opportunities, future income for this segment will be lower than for the other, resulting in higher income inequality. Financial access/inclusion: Women still, on average, have lower access to financial services than men, which makes it more difficult for them to start businesses or invest in education, exacerbating inequality of opportunity and therefore lowering wage and other income for women, worsening income inequality.

2.3. Empirical Studies

Gender segregation is occurring till now in lots of countries due to many reasons. First of all, the traditions or the culture of this country may be biased towards men and may have the thought of that men is better than women. Second reason this problem may exist due to the lack of education and lack of awareness of the majority of the population about the important role of the women in society.

So, this segregation also will definitely have an adverse effect on the economic growth of this country since women contribute to the increase in the production in different aspects. Gender segregation is mainly composed of two stages that can cause greater economic growth. The first stage and the most important are improving the equality in payment, health and education; this stage leads to the start of the second stage. The second stage includes empowering women in politics and enhancing their role in economic participation. Hence, in the long run it helps in achieving better economic performance by improving the equality between genders in Economic Participation and in Political Empowerment. Unfortunately, not many countries have reached this stage in the modern era despite the efforts spent on this topic. However, the relation between gender equality and economic performance need hard efforts to be measured and estimated (Cuberes, D., & Teignier-Baqué, M. (2012).

Most of the relevant studies have sought the alliance between gender inequality and economic performance. Gender inequality can occur in many sectors such as in Health, payment employment and education. For more elaboration, some ideologies have highlighted the negative effect of gender segregation on Economic Growth. However, some other constructive theories somehow find positive influence of gender inequality in Education on Economic Growth since that gives higher concentration on boys' education. Gender equality is divided into two somehow important stages that may be a reason of a greater and faster economic growth. The first stage and the most crucial happen by improving the equality in payment, health and education; this stage leads to the start of the second stage. The second stage includes empowering women in politics and enhancing their role in economic participation. Hence, in the long run it helps in achieving better economic performance by improving the equality between genders in Economic Participation and in Political Empowerment. Unfortunately, not many countries have reached this stage in the modern era despite the efforts spent on this topic. However, the relation between gender equality and economic performance urge for more measures (Kabeer, 2013).

According to Tzannatos (1999), a study that included 11 Latin American countries supposed that the relocation of the working capital to decrease the gender discrimination in professions in which females are jammed into a restricted amount of lower paid occupations may increase females' wages by about 50%. This increase will have insignificant effect on the wages of men and may increase the nation GDP by an average of 5% in a year. He found also that the removal of barriers in the females' working capital. The author also found that when women are given equal chances to access many different jobs; the effect of the poverty may decrease and will lead to an increase in average income in all the studied countries. However, the highest effects on the economic growth are more probably

about to happen in nations with considerable gender segregation in labor participation rates. The author argued that all this can happen by reducing the wage gap between the genders and by providing more balanced distribution of occupations.

An important authority that may be a pivotal action in politics and economy should surround outstanding and great talents and also social experiences as well. The shortfall of social training between females had to lead to a very low competence. Females have the highest number of Human Capital that may be needed to achieve higher economical growth. However it is really of very high importance to consume some part of the time along with males for obtaining adequate experience. Therefore, making the gender gap decreasing may happen one by one or otherwise by setting aside highly skilled males by highly skilled females. Economic performance will then be greatly affected and will decrease. While in the long run by developing female capital, economic performance will then achieve some favorable conditions which may cause a high increase in economic growth.

Recently, new aspects of segregation started to appear. In fact, sex favoritism in education, payment and wellbeing has been superseded by gender segregation in economic participation and political empowerment as well as budgetary cooperation. Those previously mentioned kinds of inequality are considered modern gender inequality. The vitality of human capital led to new idea of the nature of work energy At this element just can't clarify the effect about favoritism clinched alongside Political strengthening Also monetary investment looking into budgetary Growth, inasmuch as insufflate background may be the principle motivation behind about favoritism which may be also a regular element the middle of human money What's more social money. Education and furthermore experience are considered fundamental components of human capital that support the productivity of the labor in all the sectors (Ahang, 2014).

If the empowerment of women was achieved and women gained respect from all sectors in the society this will have a positive effect on the society as a whole. Since the women compose a huge percentage of the society in any country, if those are given the opportunity to be well educated and are given appropriate job opportunities then they will promote economic growth. The economic growth will be achieved since they will increase the employment rate, decrease inequalities and reduce poverty rates of the country. Also, empowerment of women will enhance the country also politically since they may be a part of political institutions, unions and syndicates. So, each and every member of the society will benefit if the woman is given the chance to participate in developing the economy as a whole. In the modern era, one may think that the gender segregation does no longer exist and that this problem is a thing from the past eras. The trends of feminization of occupations give a glance to the improvement of women status in the world. However, this is not the end of the

story, as a closer look should be given to the true economic opportunities distributed on both genders. The labor market doesn't provide the same wages or careers for both the two sexes and the female employment is still concentrated in a small range of jobs. There are no obvious signs to this situation improvement in the coming years, unless making the gender equality a central policy concern (Coré, 1999).

2.3.1 Occupational segregation as an explanation for the gender wage gap

Occupational segregation denotes females' assignment to jobs that are of low productivity and exclusion from other, male-dominated jobs. Polavieja (2008) tested the validity of different arguments in the literature to identify the reason for the relation between occupational gender-segregation and the gender wage gap. The study argued that the effect of occupational gender-segregation on wages could be explained by the relative input in domestic production and the job-specific human capital requirements of jobs that limit females to less productive occupations and hence, lower-paid jobs. However, this argument is not widely considered as valid, as some studies (El-Hamidi & Said, 2008; Biltagy, 2014) controlled for the differences in human capital between genders and also found that female-dominated occupations still suffer from low wages compared to male-dominated occupations. This drives our study to adopt the Oaxaca-Blinder decomposition technique as it estimates the difference between the wage differentials due to differences in human capital endowments and the wage gap due to the gender devaluation.

2.3.2 Female's expected earnings and individual characteristics as determinants of gender wage gaps

Scholars pointed to the association between a female's expected earnings and her participation in the labor force. When a female expects low earnings and occupational segregation, she may decide to stay at home. Kozel and Alderman (1990) in their study on Pakistan pointed out those women's labor participation increases with an increase in the expected earnings, as well as with their level of education. Sultana et al (2003) examined the determinants that affect female labor force participation. They confirmed that a woman's labor supply is positively affected by her wage rate relative to the predicted male's wage rate. Similarly, Aly and Quisi (1996) debated the socio-economic factors that determine females' decision to participate in the Kuwaiti labor market. The study found a positive relation between female labor force participation rate and females' wage rate as well as their level of education. Cipollone, Patacchini, and Vallanti (2013) investigated the changes in women's participation patterns across 15 EU countries over 20 years using data from the European Community Household Panel (ECHP) and the European Union Statistics on Income and Living Conditions (EU-SILC) databases. The results showed that some individual characteristics of

women have affected their supply of labor.

2.3.3 The role of institutions and Feminization of Jobs

Changes and reforms of labor market institutional settings have an important association on the labor market opportunities of women. Changes affected the quality of potential jobs available, the chances to re-enter the labor market and the opportunity costs of employment versus unemployment. El-Hamidi& Said (2008) used the Labor Force Sample Surveys (LFSS) to assess the association of liberalization measures and institutional changes in Egypt on gender wage inequality and occupational segregation. It is concluded that there was an observable increase in the private sector job opportunities for women in conjunction to the downsizing of the public sector. However, it is noticed that regardless of the sector of employment, women still earn less than men especially in the private sector which leads to worsen the situation of inequality in earnings due to privatization. El-Haddad (2009) examined the evolution of wage and job quality of both genders in the Egyptian labor market between year 1998 and 2006 covering the formal public and private sectors. The research concluded that there is pure discrimination against women in both sectors. In 2006 women have received 37% lower wages on account of an unjustified difference due to gender discrimination. Said, M. (2011), in support to El-Haddad (2009), revealed that gender-based pay discrimination exists in both the public and the private sector – whereby greater discrimination exists at lower level jobs of the public sector and at both the lower and higher posts (managerial and professional occupations) in the private sector. Moreover, trade reforms have been claimed to have massively contributed to changes in the labor markets. Later, Al Azzawi (2014) emphasized the impact of trade reform on the gender wage gap and on female employment. Results of this study showed that the gender wage gap, which is attributed to gender discrimination against women, increased dramatically over time.

Generally, gender wage gaps are found on all three occupational levels (blue-collar, white-collar and professionals). This notwithstanding, they are extremely pronounced in the private sector compared to the public sector and they are also relatively high for unskilled workers (low-wage workers) and technical and managerial posts (high-wage workers) especially in the MENA region. The Privatization and Structural Adjustment programs, adopted in the 1990s, exaggerated the problem of occupational segregation and gender wage gaps, due to widening the size of the private sector on the expense of the public sector that was characterized by a disproportionate presence of women. Consequently, public policies that tried to enhance the level of education and training of women in order to compete equally with men were insufficient. However, in recent decades, women witnessed a boost in occupying managerial, senior officials and legislators until the Arab Spring in 2011 (WDI, 2015).

2.3.4 Feminisation of occupations and the gender wage gap

As noted above, occupational segregation is considered broadly – both in the empirical and in the theoretical literature – as a key factor contributing to gender pay differentials. This operates via two mechanisms. One the one hand, with segregation, females are excluded from particular jobs or job-types, which may often command higher remuneration, both generally and via particular premia (e.g., higher returns to education). On the other hand, as a result of this, females 'crowd-in' into specific occupations, thus increasing disproportionately labour supply there and as a result putting downward pressures on wages in these particular occupations (Boeri and Van Ours, 2013).

The expectations concerning the effects of the *feminization* of occupations are less straightforward from a theoretical viewpoint. Empirically, a body of literature has examined this, in different contexts and time-periods. One of the early studies of this issue is the work by Tienda et al (1987), who examined how processes of industrial restructuring in the USA during the 1970s affected the sex-segregation of employment and subsequently the gender distribution of wages. The authors found that industrial restructuring led in part to *de-feminization*, as an increasing number of females were able to enter male-dominated jobs. This, however, did not lead to more wage equality, as the dynamics of industrial restructuring benefitted males more than females even in 'de-feminised' sectors. The opposite result has been found in the study of Lewis (1996), which focused on the employment situation in the USA federal civil service. According to his findings, the feminization of the sector led to a faster decline in the gender pay differential in that sector relative to the rest of the economy, suggesting that feminization is accompanied by subsiding pay discrimination. In contrast to these studies, Pocock and Alexander (1999) examined instead the impact of feminization on gender pay not within but across occupations. Analysing data from the 1995 Australian Workplace Industrial Relations Survey, they find that industry and occupation clusters which experience increased feminization have lower wages (for both genders), implying a de facto increase in gender pay gaps across the economy.

More recent studies have looked more closely into the question of the causal relation between feminization and pay. England et al (2007) used individual-level longitudinal data from the 1983–2001 waves of the US Current Population Survey to examine this. Their evidence shows that feminization of occupations has a very limited (but negative) effect of female wages; while the inverse causal relationship does not seem to hold as "no evidence [is found] that a fall in occupations' relative wages leads to feminization" (p.1237). A similar finding is found also by Levanon et al (2009). Drawing again from the USA and using a large dataset from the Integrated Public Use Microdata Series data covering the period 1970-2007, Mandel (2013) documented a

significantly negative effect of feminization of occupations on the gender wage gap within occupations, reflecting largely the results of Tienda et al (1987) discussed earlier: feminization allows more women to enter high-wage occupations, thus tending to reduce cross-occupational wage and employment gaps, but leads to a decline in relative wages for females within these occupations, thus intensifying the evidence of wage discrimination there. Evidence consistent with this has also been provided for the UK (Perales, 2013).

Reflecting on this literature, we expect that increasing feminization of occupations in Egypt and Jordan – and the feminization of employment more generally in the two countries – may have affected adversely the pay situation of women, at least in relative terms (relative to males). However, as there is no full agreement in the literature about the direction of the effects of feminization on female pay and as the processes underpinning female employment changes– especially in the region vis a vis cases such as the USA, the UK or Australia – are in any case particularly complex, in our empirical analysis we do not impose any priors and instead allow our results to direct us to the appropriate policy conclusions. Before proceeding to this empirical analysis, in the next section we review the descriptive evidence concerning female employment (feminization) and the evolution of gender wage gaps in the two countries.

3. Feminization of Occupations and Gender Segregation in Egypt and Jordan:

3.1. Stylized Facts

Regarding Egypt, the question here will be: Does Egypt suffers from gender segregation and in which aspects? The answer will be is that Gender segregation still exists although the situation is much better in 2006 than in 1998. First of all, there many forms of gender inequality that reflects gender wage gap which is basically the difference between the average weekly earnings between men and women. Under certain policies that were adopted in the Egyptian economy, Egypt was forced to achieve gender equality in each and every aspect whether cultural, political, social and economic. These policies also ensure the women participation in the political institutions to protect and call for the women's rights. Regarding the labor market, Women are completely being exposed to segregation since they compose very small percentage of the labor force. So, the empowerment of women in Egypt will lead to an increase in the productivity and an achievement of economic growth. According to the IMF, if the labor force participate rate of female increase by the same amount like male participate rate, the GDP will rise by 34% in 2015. Also, educating the women will lead to tremendous growth and will lead to a higher labor force participation rate so this will increase the employment rate (USAID, 2017).

The Central Agency for Public Mobilization and Statistics (CAPMAS), in the population of Egypt for 2017, stated that the percentage of males out of the total population of Egypt was 51.6%, compared to 48.4% of females. Taking into consideration the existence of a proportion of women bear full responsibility for living in so-called dependent women, the issue becomes more important. Especially that around 12.5% of the households headed by poor women's families and about 70% of the poor families headed by women are widows, 74% are illiterate, and 61% of the poor families headed by women are outside the Egyptian labor force and 15%. The presence of women in the labor market and their access to adequate income is the best way to deal effectively with the problems they face. Wages are the most effective way in which governments can ensure the minimum standard of living for a significant segment of the population in general and women in particular. Here, it must be emphasized that wages should not only be seen as a component of costs but should be considered as the primary source of income for this sector.

Last but not least, concerning Egypt there a lot that should be done in order to encourage the empowerment of women. First thing that should be done in to have an enabling regulatory environment. The legal system inside Egypt does not help to protect or to support the woman to enter the labor market. According to statistics, in June 2014 almost 71% of the women living in rural areas are working informally in unprotected jobs compared to 13% only in urban areas. Regarding the

incentives given to women, Egypt does not provide any of the following provisions: Tax deduction for childcare payments and credits applicable only to women Also, there are a lot of long and useless procedures that can have a negative impact on the women entering the labor market especially in the private sector (Ashmawy, 2016).

Basically, there are several solutions or recommendations that have to be considered in order to solve the problem of gender segregation in Egypt. First of all, there has to be diversification and enhancement of the economic trainings and social programs to women. Also, women have to work in a flexible system without having obstacles of barriers constraining her. Secondly is to have legislations and regulations promoting equal payment for both genders. Furthermore, if we apply affirmative actions towards women such as offering them to work half time or to leave early as they have to put into consideration their personal circumstances. Also, the labor unions and syndicates have to exert efforts to call for equal rights in the parliament- adopted laws have to assure no more wages discrimination against women (Bintabara, D *et al.,* 2015).

In case of Jordan, women also suffer from some sort of segregation like Egypt. In Jordan, the women lack the motivation and the incentives to work for the sake of themselves and to be successful. They rather work for the sake of their children or families or either to support them financially. On the contrary, women who were capable of having skills and high education levels also do not reach any high positions in their work as people think that women always judge things in an emotional way. Regarding the obstacles that the women might face in Jordan and it can constrain her success, there a lot to be considered. First of all, there are some cultural factors including religion. Due to some religious views, the Jordanian women are always viewed as being a good mother and take care of her family rather than thinking of opening a business for example. So, being married puts the woman under so much pressure since she cannot balance between the practical life and the personal life. So, they end up leaving most of their jobs and careers as they put their families as a first priority. Another obstacle that can restrain the Jordanian women is the training. Generally, women receive less amount of on the job training than men (Cooperation, 2015).

Recently, the government of Jordan begun to be aware of the problem of gender segregation and they admitted the existence of this issue. The government began to eliminate any barriers to enter the labor market or to open a business through offering benefits and incentives. Also, they gave privileges for the maternity women. But, these policies are still not enough since the application of these regulations may solve the demand side of the problem while the supply side problem still exists. Despite the government efforts but the cultural and the traditions believes still prohibit any success of a woman (Jaber, 2014).

World Bank proposed many recommendations for the Jordanian government to solve the gender inequality problem. First, adopting policies that will reduce the level of occupational segregation; secondly, the abolishment of any barriers that might prohibit the woman from entering any high productivity sectors. Also, making some education reforms to provide women with the right skills demanded in the labor market. One of the main things that should be done is the application of regulations that protects women from any cultural views or traditions that might restrain women's empowerment. Also, reforming the legal framework in the work to ensure having equality between both genders (World Bank, 2014). While in Egypt gender segregation occurs due to that on average 26% of women only are engaged to labor market during the last decade, but government works hardly in order to decrease gender inequality by adoption many policies which the gender gap and the government promoted the entrance of women into the political life by giving them seats on parliament and giving some women big positions in the society like to be ministers (Mohamed, 2015). In Jordon there are many barriers which lead to gender segregation. Firstly, job training such as women in Jordon receives less training than men, the fact the set woman to have lower skills than man. In addition, due to religious reasons in Jordon women are viewed as good wives to take care of children and housework which killed the ambition of the women in Jordon (Jaber, 2014). Furthermore in 2007 the participation rate of females in labor force reached 15% which is very low percentage compared to men (Galloway, D. 2014). Moreover, many studies proved the positive relation between increase in women participation and higher economic growth as this will produce a new generation which help in the country development (USAID, 2017).

3.1.1 Gender dimension in the labor market in Egypt and Jordan:

In Egypt the cultural resulted in patriarchal structure of the family and due to religious norms women are economically dependent on men. Since the 70s and the 80s many oil countries increase in revenue created more jobs for men. In concerns, females labor force in Egypt moves through various situations which attracts researchers to understand each situation. By starting with Nasser era highly educated people are promised by jobs in public sector and this lead many people especially women to wait for public sector jobs but by privatizing more of the firms many women started to shift to private sector jobs but a large percentage are still waiting for public sector jobs as they believe that after marriage they will not lose the public sector job and after 2011 revolution labor force of women started to decline as the labor force was totally affected by the economic situation that time. Moreover, the situation in Egypt started to change nowadays as many businesses realize the importance of women role in business (Hendy, 2015). Female unemployment ranges from 20 % to 25% during the period of the 1990s till 2017, the highest rate record 26.7% in 2003 and the lowest is

19% in 2007. While the male unemployment rate as % LF range from 5 % to 10 % and the highest unemployment rate exist 2013, see figure 1A.

Figure 1A: *Egypt GDP growth %, GDP per capita growth %, total unemployment and male and female unemployment rate (% labor force) from 1990 till year 2017*

Source: WDI, data base 2017

In Egypt, the unemployment rate was somehow similar to the Jordanian but it fluctuated for some different reasons. It used to increase remarkably until 2007 during the privatization period of Prime Minister Atef Ebeid during which jobs in the public sector decreased and the private sector couldn't handle the number of females who became unemployed during that time. However, by 2006 the unemployment rate decreased greatly with the rise of educational levels attained by females and the new ways of empowering Egyptian women by giving them confidence and encourage them to work after marriage. Unfortunately, these ways didn't last long and the unemployment started to increase again due to the rise of discrimination against women and the increase in the levels of harassment in the streets, workplaces and even in the metro and all the ways of transportation which led females to fear going out to the streets and go to their jobs (Hendy, 2015).

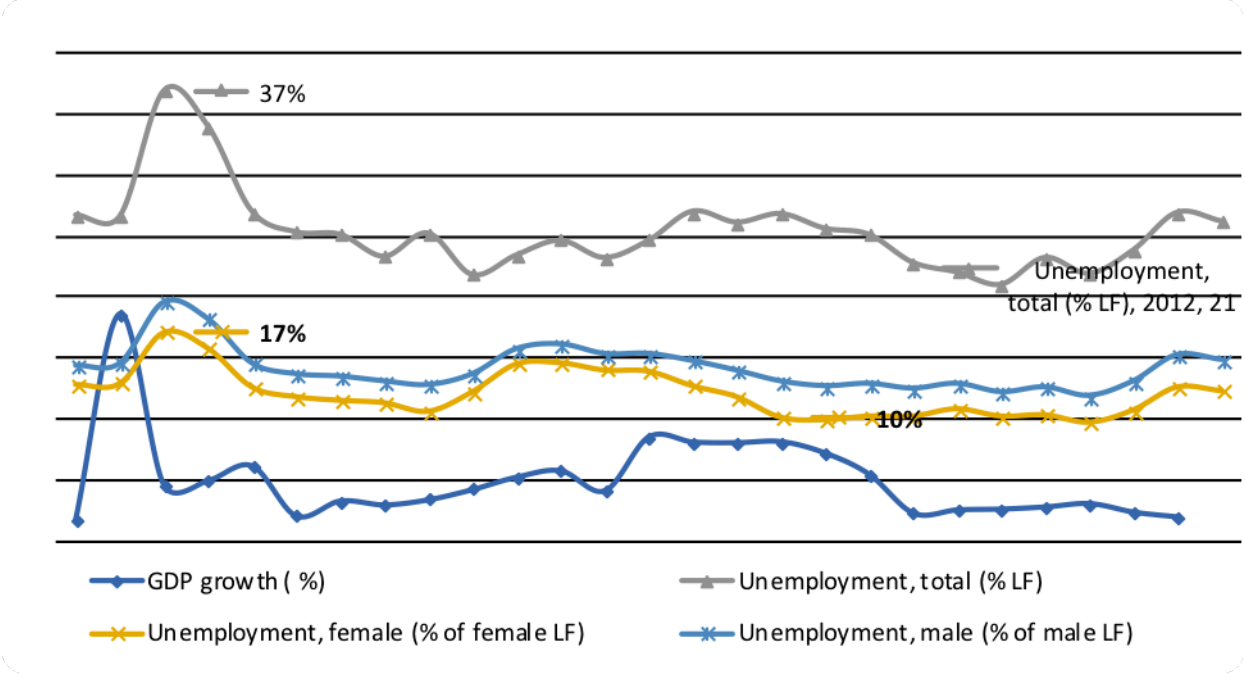

Figure 1B: *Jordan GDP growth %, GDP per capita growth %, total unemployment and male and female unemployment rate (% labor force) from 1990 till year 2017*

Source: WDI, data base 2017

In Jordan, the unemployment rate ranges from 21% to 37% during the same period, female unemployment range between 10% and 17%, while male unemployment rate range between 14% and 20%, see figure 1B. Female unemployment in Jordan reached its peak in 1995 with more than 26%% of women unable to find a job. The lowest percentage was 19% in 2005; average percentage throughout the 14 years was 21%. After the declaration of Queen Rania in 1999, she worked on increasing women participation in labor market, especially among minorities. At the same time, by 2003 six women took places at the parliament and they applied new laws to decrease discrimination against women which encouraged women to start working whether in the public, private or informal sector[4]. The unemployment started to decrease again with the enhancing of females' education and the empowering of women policies adopted lately.

Generally, many studies argue that women participation in Jordon appears as stagnant during the past decades and this situation occurs due to limitations of job opportunities to women in Jordon as most of opportunities to women were concerned into two sectors only which are education and health sector. Moreover, the diminishing in the public sector leads to an increase in females' unemployment rate and in private sector women quit work when the married which is totally different than work in public sector (Assad, R.*et al.* 2014)**.**

[4] Also, in the period of 2003-2004 only three women became ministers in the government which encouraged females more and more and led to a massive decrease in the unemployment rate of females

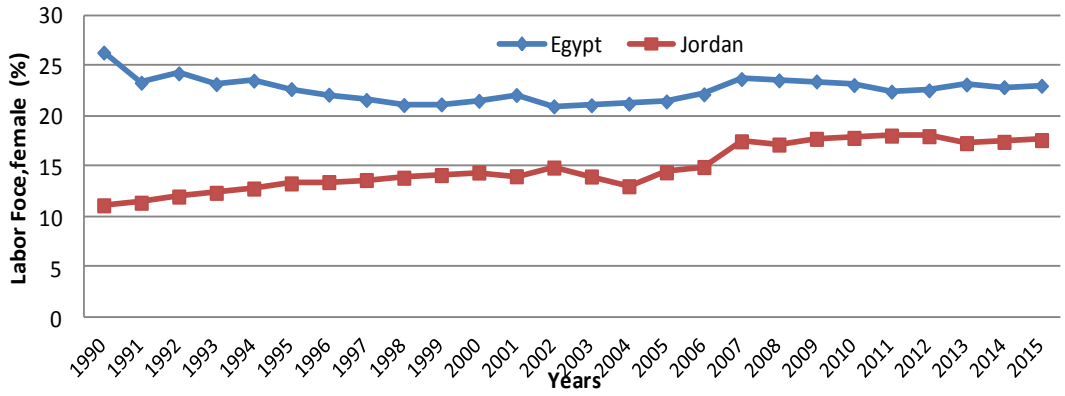

Figure 1C: *Labor force, Female (%of Total labor force) from 1990 till year 2014*

Source: WDI, data base 2017

From Figure 1c, it is obvious that the amount of the female participation in the labor markets was somehow constant over the past 25 years in Egypt and Jordan. Female percent of labor force faced a lot of fluctuation along the period of 1990 till 2016. In 1990 Egypt had the highest percentage of female in labor force with approximately 26.31%; however, it declined the following two years dramatically and remained almost stable reaching 22%. In 1993 female percentage dropped even more to 21%, but it returned back to the same percentage of 22% in 1994. The rate faced drastic decline the following 5 years to reach a minimum 91.1% in 2002. Then an improvement started to occur at the beginning of 2004 till 2016 reaching 22.5%. Average female percentage along the 26 year was 21.36%.

Jordan data record the lowest rate of female labor participation comparing to Egypt. However, Jordan has one of the lowest female participation rates in the workforce in the whole world. Before 2005, the participation rate was remarkably low and it reached the trough in 2004 before increasing to reach the peak in 2007. By 2007, the female anticipation rate in the labor market increased till 2014 due to the expansion of number of women who graduated from universities and the delay of marriage age as well. As well, the percentage increased referring to the early retirement of male employees at that period due to the increase of inflow of employees during the invasion of Iraq. This increase occurs in correspondence with the stage of the study in which a change in the inspection scheme of the employment and unemployment survey. The new scheme happened in the 2004 population head count and the establishment of a modern stratification system. It's then considered deeply possible that this scheme happens because of some diversity in the sampling approach. The information from after and before the scheme clearly shows that women labor force participation rate was somehow secured in Jordan during that decade. On the expectation that the recent sample

approach is a higher specified portrayal of the population in Jordan, we can expect that the more accurate expectation is nearer to 15% (Assad, R., *et al.* (2014).

In Egypt, the female labor force participation is somehow stable comparing to Jordan. However, it decreased in the period after 1988 to 2000 due to the decrease of public sector recruitment after Nasser period. During the period of Nasser, high school graduates and higher education graduates were always granted jobs in the public sector. After that, the public sector didn't employ a huge number of females between 1988 and 1998. At that time, females' participation in the private sector rose and many of the females did work in the informal sector. The marital status and the fertility ratios were somehow a factor in the employment of women. Women always quit their jobs in the private sector after they are getting married but in the public sector women were granted pensions after giving birth. Then by 2004, Prime Minister "Atef Ebbeid" started the privatization period which decreased public sector employment but then led to an increase in 2007 due to increased employment in private and informal sector. Then, by 2011 the employment rate decreased due to the revolution of 25th of January when firms fired many employees to decrease expenses and they fired more women than men during that period. After the revolution, the female participation rate increased again during the stabilization period after 2012 (Hendy, 2015).

It is noticeable that Egypt female participation rate is correlated with the education level they receive. But, on the contrary, the educational attainment for women has been increasing but the amount of women participating in the labor force is not increasing as it was expected. This is mainly due to the "Traditional gender paradigm" which is spread all over the Arab countries. The major characteristics of the traditional gender paradigm are categorizing women in familial roles, dominant gender norms that always think of men as the breadwinner and the social requirements imposed on women. Apart from these norms and traditions, there are also the public policies that prohibit the women from entering the workforce. These policies play a vital role in inhibiting the role of the woman in promoting productivity and achieving economic growth. In addition to the indirect policies that restrain the role of women, for example the urban planning policies that locate some of the new industries away from the people working in certain business. This policy hinders women to engage such jobs rather than men.

Regarding Jordan, the above graph displays that the female participation in the labor markets in Jordan began to increase in the previous couple of years. But before this period, there were some fluctuations in the rate of the female participation in the workforce but it was generally low. Also, the current statistics of the participation rate of female in Jordan is considered very low if it was compared with other countries around the world. Although the educational attainment of women is high but it the participation rate in labor force is low. The main reason behind this stagnant position

of women in the labor force in Jordan is due to the deterioration in the structure of the opportunities in the labor market especially for women. The majority of the females are working whether in the health or education sectors so mainly they are concentrated in the public sector. Regarding the private sector, most of the women engaged in the private sector tend to quit once they get married. So, the dilemma with the Jordanian market is the existence of the occupational and job segregation as women are concentrating on occupying certain jobs. Scholars proved that almost 61% of the women who were never been married were employed in the private sector compared to only 26% of the married women (Assad R. *et al.* 2012). There are a lot of other reasons led to the current position that Jordan is facing nowadays. One of these factors that resulted in that is the factors that are correlated to the skills supply through training and education. Other reasons are the reasons related to the working conditions and the structure and the nature of the jobs. Also, the behavior of the other employers towards women in such jobs plays an important role. The cause for the gap or the mismatch of the skills offered and available for women is due to the limitations in the quality and relevance of skills. This actually affects the youth females like fresh graduates and the females who have not been working for a long time. So, there is always a discrepancy between the skills taught at schools and universities and between the skills demanded in the jobs. Also, there is a limited concern about the application of such skills in the practical life. Another reason behind this divergence is the gender stereotyping and teaching methods.

Regarding the working conditions, the country does not offer enough job opportunities despite the increase in the GDP in the previous year's which increased from 2.3% in 2010 to 2.7% in 2012.Also, most of the jobs created are not meeting the demand of the people since they are low paid and low skilled jobs. Another point that might affect the female's employment is the public transportation services which are not very efficient. Also, if there is a women working somehow far from her home then she will pay a lot since the costs of transportation is high. In addition to the cultural and attitudinal conditions limits and discourages the women from having the interest to improve her career. Mihaylo M., 2016, concluded that the continuous expose to structural discrimination limits their improvement to higher positions or even given equal and high wages.

3.1.2 Gender Gap Index:

The global gender gap is introduced by world economic forum in 2006 to measure inequalities in four areas between men and women which are economic opportunity and participation, health, education, political improvement. The following graph examines the gender gap index which was published by the world economic forum in 2006.This index is mainly done to measure the level of gender equality in each country. The rank that each country has is mainly based on the gender gap between both genders in mainly four aspects which are: health, education, economy and politics.

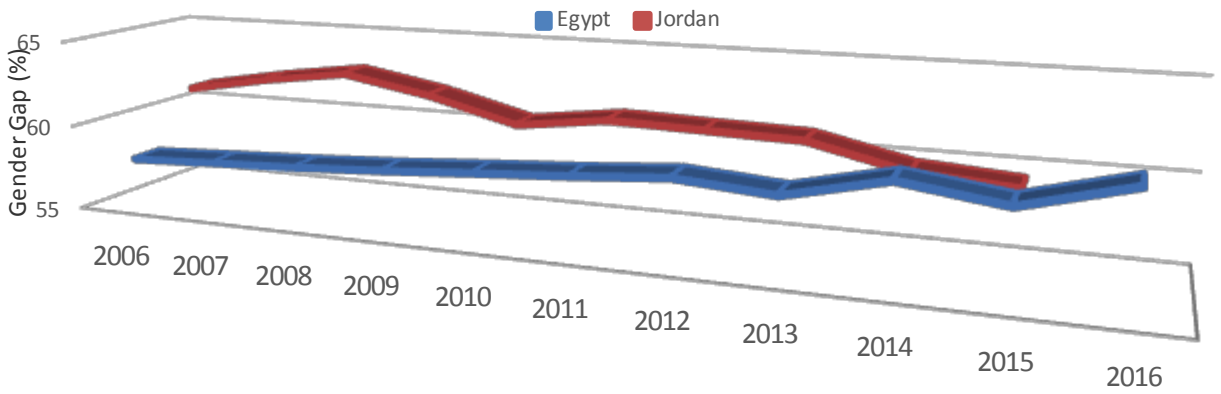

Figure 2: *Gender pay Gap index from 2006 till 2016*

Source: world economic Forum, 2016

While in Egypt there was a rise in cash for women more than men in public sector as according to higher education attained by women their cash wages increased to 1161 L.E., while men wages were 1008 L.E. And this means that women earn more than men by 15.18%. By taking into consideration the private sector we found that men were totally earn more than women by 20.8% which means that overall men earn more than women and this helped in widening the gap between both sectors. In 2008, Gender pay gap decreased due to sharp decline in labor force due to the world financial crisis (Mohamed, 2015). In 2003, Jordon the labor force of both genders increased [(5)].

Reviewing the Gender Gap index of Egypt, the rank of Egypt is very low, it was even lower than Oman and Saudi Arabia according to the ranks of 2015.The top and the highest rankings were for Iceland, Finland and Norway. Also, the best ranking in the Middle East region were of Kuwait and UAE.As mentioned above, this ranking is mainly based on four aspects which they are: educational attainment, political empowerment, economic opportunities and health. Regarding Egypt, Egypt was poor and there was a huge divergence between men and women in most of these indicators. Women compose only a limited portion of the workforce and they mainly work informally. Also, when it comes to education, the difference can be seen as almost 82% of the men being literate in 2015 while only 65% of women are literate. When it comes politically, there is an obvious lag behind in the participation of women in Egypt as they have very minor contributions in the past 50 years (Behary, 2015).

Concerning Jordan, the Global Gender Gap in Jordan had some fluctuations and volatility. So, regarding the economic opportunities, it was declining dramatically as it composed only 28% of the

[5] In 2003, the invasion of Iraq was one of the most important events in this period and this event leads to an increase in the aid for Iraq in the first decades but later the they realized how it costs Jordon to help Iraq so it withdrew its aid to Iraq (Lasensky, 2006).

global gender gap score in 2015.Regarding Education, the Jordanian females are considered the highest educated people in the Middle East region and North Africa. Despite all of this, they are excluded from the labor markets as less than 16% of the females are employed in 2014. Jordan does not lack the laws that promote gender equality but the constitution itself fails to prohibit this segregation (Dokhi F.(2016).

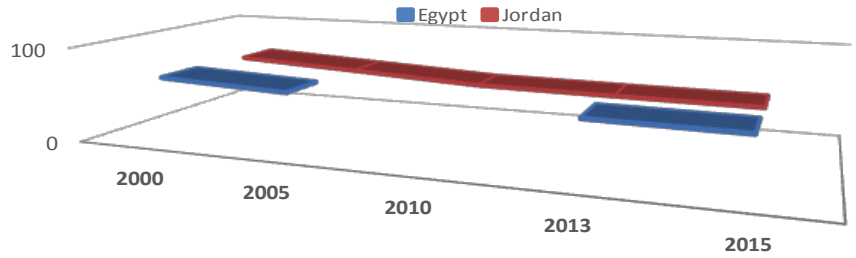

Figure 3: *Gender Inequality Index from 2000-2015*

Source UNDP 2016

According to the UNDP, Egypt ranks 131 on the GII (Gender Inequality Index) out of 155 countries. In 2015, women now are more politically powerful since they occupied almost 89 seats in the parliament which is considered the highest in the history of Egypt. Also, 44% of the female are now receiving secondary education (Human Development Report, 2015). In Jordan, the situation is getting much better and the amount of gender segregation is beginning to decline as the GII (Gender Inequality Index) of Jordan is being reduced year after year. So, the empowerment and the respect for women are starting to rise. According to the UNDP, Jordan in 2015 is considered one of the countries with high human development. Regarding this index, Jordan ranks 111 out of the 159 countries in 2015 index. This is a good indication as women in Jordan began to have a say in politics and to occupy parliamentary seats as they accounted for 11.6% of these seats. Also, more than 78% in Jordan were able to finish their secondary education. But, Jordan is still considered lagging behind in terms of gender segregation (UNDP, 2016).

3.1.3 Wage gap in Jordan and Egypt

When we compare the two countries we can find that the lowest wage gap is in Jordan followed by Egypt comes. This means that the Jordanian women's wages are not much lower than the men unlike Egypt where the women are paid much lower than the men. Some data shows that the monthly wage gap between men and women in Jordan during 2000 to 2010 wasn't enormous. Men were paid 403 JD in average when women were paid 359 JD in average which means that females were paid 44

JD less than males or 89% of the males earnings (Sweidan, O. D. (2011). The graph shows the wage gap between males and females in the two countries. The ratio is affected by discrimination, job choices, socialization and culture. The country with the highest ratio in the wage gap is Egypt which means that it has the smaller wage gap of the three countries. Egypt is ranked the 19th comparing to the world followed by Jordan that is ranked 78th. The discrimination also includes other benefits such as paid expenses and health insurance. Also, women are not always granted maternity leave which forces women to leave their jobs and take a long break which leads them to fall behind in promotions and wages as well. This inequality led women to start running informal businesses from home which gives negative effect on the economics of Jordan since these businesses are not taxed. The author also mentioned that during the period of 2000 to 2009 6 women were granted seats at the parliament and 3 women became ministers in the government which encouraged females to participate in the labor force and led firms to increase wages since there was voice that talk for females in the government (World Bank, 2014).

In the Egyptian labor market, there were many laws that were passed to enhance the equality in the treatment of men and women in the workplace. Article 11 in the constitution of the state forces the country to enhance gender equality in the political, civilian, cultural and social rights. It also forces the state to defend females against any form of discrimination. The inequality is more available in the private sector but its amount is variable due to some economic activities. These laws unfortunately didn't affect the private sector's wages but did affect the public sector greatly. Wage and salaried workers (employees) are those workers who hold the type of jobs defined as "paid employment jobs," where the incumbents hold explicit (written or oral) or implicit employment contracts that give them a basic remuneration that is not directly dependent upon the revenue of the unit for which they work.

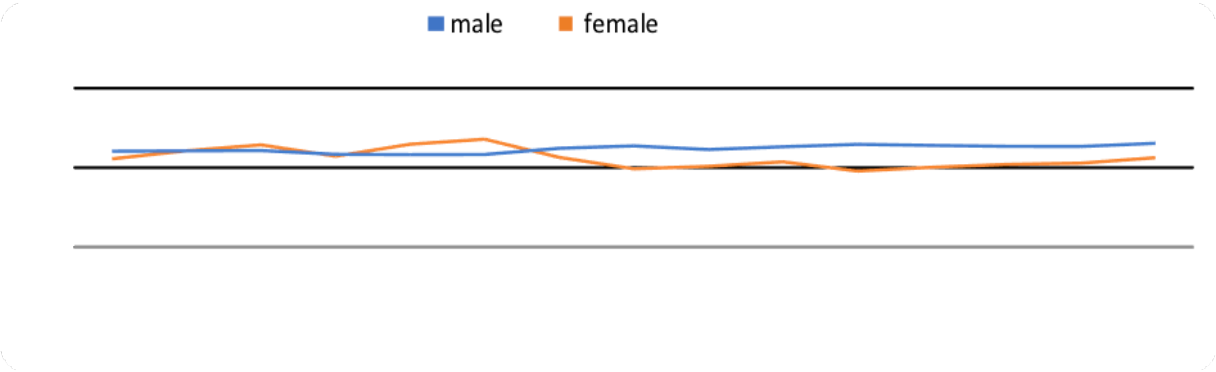

Figure 4: *Wage and salaried workers of female and male employment in Egypt and Jordan from the period 1999 to 2015.*
Source: International labour Organization, ILO STAT database.

In 1999, male had higher wages than women by almost 5% then the next year both genders an equal wage pay. In 2001, women were receiving higher salaries than men by almost 3% while in 2002 male received higher wages. In 2003 and 2004 women started to receive higher wages than men with a percentage of 6% and 9% respectively. However, this changed in the following 10 years as men started to receive higher wage and the gap kept rising to hit the highest the point in the last 16 years of wage gap in 2010 to reach 17%. While the highest point for female higher wage was in 2004. Both genders received equal pay in 2000. By 2004, the wages for women increased dramatically in the public sector that females earned about 15% more than males see figure 4. In 2015, Mohamed, A. K. A. argue that at the same time wages in the private sector were much less for females than for males especially during the financial crisis of 2008 in which wages in general decreased due to hard financial situations to the Egyptian business specifically the international activities..

3.2. Analysis of Labor Markets: Using JLMPS and ELMPS

3.2.1 The Egyptian Labor Market

Gender segregation in access to economic opportunities in turn reinforces gender differences in time use and in access to inputs, and perpetuates market and institutional failures. In this section, we analyze the features of the Egyptian labor market using the Egypt Labor Market Panel Survey (ELMPS)[6]. The ELMPS is composed of three rounds which are: the first round ELMPS (1998), the second round ELMPS (2006), and the third round ELMPS (2012). The ELMS (1998) is the first round of the survey which was obtained using a sample of 4,816 households containing 23,997 individuals selected from 200 primary sampling units (PSUs) across Egypt. The first round of the survey was carried out to be comparable to the Egyptian Labor force Survey attained in 1988 (LFSS 1988). The ELMPS (2006) is the second round of the survey that is composed of a total of 8,351 households containing 37,140 individuals. It was carried out as an intension to be a longitudinal survey that represents the labor market and demographic characteristics of persons interviewed in the first round.

The ELMPS (2006) consists of 3,684 households from the ELMS (1998), adding to them 2,168 new households originated as a result of splits from the original households, in addition to new

[6]The Egypt Labor Market Panel Survey (ELMPS) is carried out by the Economic Research Forum (ERF) in cooperation with Egypt's Central Agency for Public Mobilization and Statistics (CAPMAS). The ELMPS is a representative panel survey that covers a wide range of topics that include standard labor market topics such as: labor force participation, employment, unemployment, and earnings; in addition to topics such as: parental background, education, housing, access to services, residential mobility, migration and remittances, time use, marriage patterns and costs, fertility, women's decision making and empowerment, savings and borrowing behavior, and the operation of household enterprises and farms.

refresher sample of 2,498 households selected from an additional 100 PSUs randomly selected from a sample prepared by the Central Agency of Public Mobilization and Statistics (CAPMAS) (Abdel Mowla, 2009). The third round of the survey is the ELMPS (2012). It was obtained also from the sample interviewed in ELMPS 2006 in addition to a refresher sample. The ELMPS (2012) is composed of 12,060 households, consisting of 6,752 households from the ELMPS (2006) sample, 3,308 new households that emerged from these households as a result of splits, and a refresher sample of 2,000 households selected from an additional 200 PSUs extracted from an updated CAPMAS master sample. Thus, the ELMPS (2012) sample includes 20,416 new individuals adding up to a total of 49,186 individuals (Assad, R., & Krafft, C. (2013).

The Egyptian labor markets reveal some disparities among different groups. It exhibits segmentation. The early 2000s saw the fast growing role of the private sector and the contraction of the public sector. Then the formal sector has been segmented to a public and private sectors while a new sector was developed and grew, namely the informal sector. This showed a lot of implication on the labor market gender composition. According to ELMPS (2012), table 1 shows that around 41 percent (37.66% + 3.51%) of the working-age sample are engaged in the labor force, while the other 59 percent are out of the labor force. The percentage of the employed persons is approximately 38 percent, where the majority of them are males. Females suffer from unemployment rate higher than males in addition to that the former are more likely to be placed out of the labor force.

Table 1: Work Status Classified by Gender, 2012

Gender Work Status	Male	Female	Total
Employed	81.24	18.76	100
	61.46	14.07	37.66
Unemployed	35.45	64.55	100
	2.5	4.51	3.51
out of Labor Force	30.51	69.49	100
	36.04	81.42	58.83
total	100	100	100

If we look at the reported reasons reported for being out of the labor force, table 2 shows that around 66 percent of the female sample are reported being out of the labor force due to being a housewife. Staying out of the labor force is mainly the choice taken by females in Egypt to fulfill their responsibilities regarding family care work, which is unpaid. That's why a lot of efforts have been made to open the access of women to economic opportunities. It is obvious that women are more likely than men to work in jobs that offer flexible working arrangements (such as part-time or informal jobs) so that they can combine work with care responsibilities.

Table 2: Reported Reasons for staying out of the labor force, 2012

Reason out of the labor force	Gender_12 Male	female	Total
Housewife	-	3,355	3,355
Full time student	1,001	1,094	2,095
Less than 15 years old	8	3	11
Does not want to work	34	28	62
Retired (less than 65	189	66	255
Temporarily disabled	47	12	59
Unpaid leave for a year	-	8	8
65 years or above	401	482	883
Permanently disabled	91	37	128
other	212	22	234
Total	1,983	5,107	7,090

In figure 5 we can find that the average number of market working hours per week is about 49 hours for males and 38 hours for females. This lower number of working hours leads to a high concentration of women in lower-paying jobs, thus weakens the incentives to participate in market work and reinforces the specialization in nonmarket (including care) work.

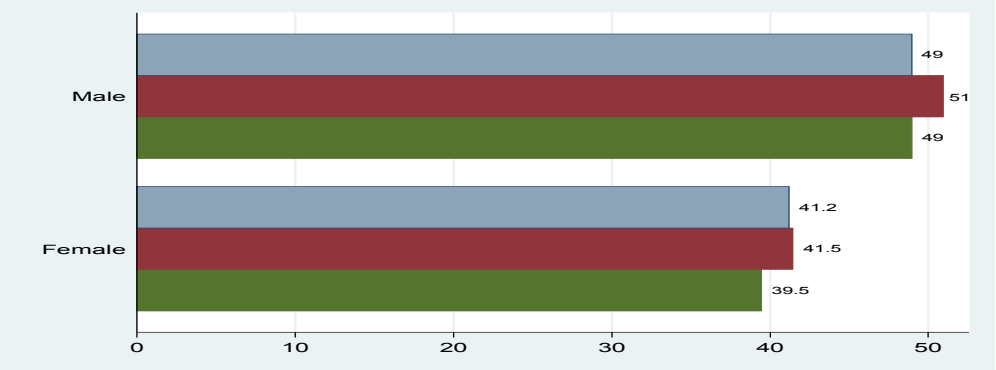

Figure 5: *Egypt average number of working hours per week (market definition) classified by gender, 1998, 2006 and 2012*

Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, ELMPS 2012

Surprisingly, gender inequality is not limited to assigning occupations to men rather than women due to the lower working hours provided by the latter. Even women who are engaged in the same occupation as men suffer from gender wage segregation. Before exploring the differences among genders, this study adopted the definition of ISCO88 of the labor market occupations. Table 3 shows the main characteristics of each occupation combined along all genders, different economic activities and sectors. This introduces the whole picture of the Egyptian labor market's characteristics of occupations. As well, it shows that below intermediate occupation such as service, sales, plant and

machinery are from the highest working hours per week. And the higher the education levels the lower the working hours per week.

Table 3: Main Characteristics of Occupations in the Egyptian Labor Market, 2012

Occupations	Education Attainment	Mean wage	Working hours per week
Managers	Intermediate	2266.29	51.00
Professionals	University	1317.22	40.00
Technicians	Intermediate	1156.25	43.00
Clerical support	Intermediate	1104.97	43.00
Service and sales	Below Inter	971.45	54.50
Skilled agriculture	Below Inter.	852.85	43.00
Craft &related services	Below Inter.	976.06	47.00
Plant and machinery	Below Inter.	1119.05	53.00
Elementary occup.	Below Inter.	795.23	50.00
Total	Intermediate	1173.26	47.17

Source: Authors' calculations based on ELMPS 2012

To analyze the gender differences across occupations, table 4 shows that the mean monthly wage along all the occupations are lower for women compared to men. There was an observable increase in the private sector job opportunities for women in conjunction to the downsizing of the public sector. However, it is noticed that regardless of the sector of employment, occupation or position, women still earn less than men which leads to worsen the situation of inequality in earnings. Changes and reforms of labor market institutional settings have an important association on the labor market opportunities of women. Changes affected the quality of potential jobs available, the chances to re-enter the labor market and the opportunity costs of employment versus unemployment. Nevertheless, these changes did little job regarding removing discrimination among genders in the same workplace.

Table 4: Mean Monthly Wage classified by genders and occupations, 2012

Occupations Attainment	Mean male wage	Mean Female wage
Managers | Intermediate	2621.544	1762.233
Professionals | University	1529.55	1047.926
Technicians | Intermediate	1354.972	976.4379
Clerical support | Intermediate	1123.12	1050.972
Service and sales | Below Inter	1041.422	643.7305
Skilled agriculture | Below Inter.	803.3426	731.9706
Craft and related services| Below Inter.	1024.45	857.5536
Plant and machinery | Below Inter.	1149.445	709.6577
Elementary occup. | Below Inter.	841.7488	579.1227

Source: Authors' calculations based on ELMPS 2012

This gender gap drives the argument to explore the developments conducted on female employment status. It is worth mentioning that the structure of female employment has been changed during the period 1998-2012. It is commonly noticed that the employment status of females in 2012 has deteriorated compared to their status in 2006 due to the effect of the 25th of January revolution. Table 5 shows that high percentage of females is concentrated either in the services occupations (Professionals, Technicians and Clerical support workers) or as skilled agricultural workers. This grasps the attention to take into account the value of the unpaid work provided by Egyptian women in the agricultural sector.

Table 5: Egyptian Women Distribution among occupations in years 1998-2012

Occupations	Percentage of females 1998	Percentage of females 2006	Percentage of females 2012
Managers	16.42	20.08	15.96
Professionals	42.13	37.25	43.09
Technicians and associate professionals	28.28	35.58	37.02
Clerical Support workers	43.41	43.11	36.05
Service and Sales	17.57	17.76	15.98
Skilled agricultural, forestry and fishery workers	70.05	63.03	51.1
Craft and related trades workers	8.31	11.04	2.1
Plant and machinery	2.1	8.5	5.52
Elementary occupations	8.77	5.71	8.78

Source: Authors' calculations based on ELMPS 2012

Arguments have been raised to advocate the process of feminization of occupations that has been taking place in the developed countries. Recent studies assume that the process of feminization tends to empower women and let them access economic opportunities. Since trend was channeled to developing countries, despite not being ripped it begins to take place. This raises a question of whether the process of feminization takes the path that it ought to take and whether this process is really meant to remove gender disparities in the labor market. Taking a look to the increase in the percentage of females across occupations in the Egyptian labor market, table 6 shows that the high-occupations that are highly paid examine de-feminization (male dominance) across years, while moving to low-skill and less-paid jobs the degree of feminization increases until reaching elementary occupations that experience a percentage of feminization that is higher than that of the de-feminization.

Table (6): Percentage of Unchanged feminized and de-feminized occupations, 1998-2012.

Occupations	No change	Feminized	Defeminized	Total
Managers | Intermediate	119	1	444	564
percent	21.1%	0.2%	78.7%	100%
Professionals | University	340	16	577	933
percent	36.4%	1.7%	61.8%	100%
Technicians | Intermediate	82	55	406	543
percent	15.1%	10.1%	74.8%	100%
Clerical support | Intermediate	57	25	90	172
percent	33%	15%	52%	100%
Service and sales | Below Inter	101	50	550	701
percent	14%	7%	78%	100%
Skilled agriculture | Below Inter.	549	49	680	1278
percent	43%	4%	53%	100%
Craft and related services| Below Inter.	240	131	581	952
percent	25%	14%	61%	100%
Plant and machinery | Below Inter.	92	128	305	525
percent	18%	24%	58%	100%
Elementary occup. | Below Inter.	29	186	161	376
percent	8%	49%	43%	100%

Source: Authors' calculations based on ELMPS98, 2006 and 2012

In conclusion, women in Egypt suffer from inequality in the labor market within and across occupations. They suffer from wage gap despite their number increase in some jobs. This can be initially justified by their increase in low-skill and low-income jobs, while they lack the access to high-income jobs. This drives the argument to be investigated deeper using econometric analysis.

4. Model Specifications and Estimation

4.1 Index of Association (IA), ELMPS 2012, JLMPS2016

The study is interested in measuring the across-occupation segregation. There has been a good deal of debate about the appropriate measure to use for the horizontal segregation. The study rests crucially on how the feminization of occupations could intensify or remove gender wage gaps. The estimation is divided into two parts: first estimating the degree of horizontal segregation using Index of Association (IA), then examining the determinants of horizontal segregation. Second, the study explores the reasons for gender wage gap across occupations. Both parts will lead us to conclude whether the countries of interest suffer from true gender segregation across occupations and what are its determinants. Then examining the determinants of gender wage gap will let us conclude whether the feminization of occupations affected the most crucial gender inequality phenomenon in the labor market, namely gender wage gap.

The study differentiates between occupations that are sex-segregated vertically and horizontally. Horizontal segregation, namely, across-occupation segregation occurs when discrimination happens between men and women who work in different types of occupations; while the vertical type, namely within-occupation segregation happens when men are occupying higher grades and women in lower grades within the same job. The study is interested in measuring the across-occupation segregation. There is a lot of controversial debate about the appropriate measure to use for the horizontal segregation. The Index of Association (IA) that has been developed by Charles and Grusky (2004) to overcome the shortcoming of the previously developed two methods of measurement: the index of sex-ratio and the Index of Dissimilarity (ID). It reflects the extent to which gender ratios within different categories of occupations deviate from the mean of ratios calculated across all categories of occupations. Therefore, the study will depend on the IA to measure the degree of segregation and estimate the degree of feminization of occupations. The IA is given by the following equation:

$$IA = \exp\left(\left(\frac{1}{J}\right) * \sum_{j=1}^{J}\left\{\ln\left(\frac{F_j}{M_j}\right) - \left[\frac{1}{J} * \sum_{j=1}^{J}\ln\left(\frac{F_j}{M_j}\right)\right]\right\}^2\right)^{\frac{1}{2}} \quad (1)$$

Where, J= Number of occupations

M_j = Number of men in j^{th} occupation

F_j = Number of women in j^{th} occupation

M= Number of men in the labor force

F= Number of women in the labor force

This allows differentiating between three gender-composition categories of occupations which are: female-dominant, male-dominant and gender-balanced occupations. The analysis will classify occupations according to the upsurge that happened to females' share in each occupation across time. In other words, an occupation is classified as female-dominant or male-dominant if the Index of Association (IA) approaches 1, while the occupation is said to be gender-balanced if the IA approaches 0. The dynamic analysis of the IA will contribute to identifying the recently feminized occupations across time from 1998 to 2012. This methodology has already been used in related studies by Keane et al. (2017), Charles and Grusky (2004) and Blackburn, R. M., & Jarman, J. (2006). In terms of the definition of occupations, the study will adopt the one-digit definition of occupations that is based on the ISCO88. This implies categorizing occupations into 9 categories: Managers, Professionals, Technicians and associate professionals, Clerical support workers, Service and sales workers, Skilled agricultural, forestry and fish, Craft and related trades workers, Plant and machine operators, and Elementary occupations.

4.2 Determinants of the IA

Tobit model - Type one: $Y^*_i = x'_i \beta + \varepsilon_i$ wiht $\varepsilon i \sim N(0, \sigma^2)$

The error term εi is independently and normally distributed with mean 0 and variance σ2. The distribution of yi given xi is therefore also normal: $y* i |xi \sim N(x i\beta,\sigma2)$. The expected value of the latent variable is $Ey*_i = x_i \beta$.

Tobit model - Type two : Consider a model with two latent variables Y^*_i and d^*_i which linearly depend on observable independent variables x_i and z_i, respectively:

$d^*_i = z'_I \gamma + \nu_i$

$y^*_i = x'_I \beta + \varepsilon_i$

The error terms ε_i and ν_i are independently (across observations) and jointly normally distributed with covariance $\rho \sigma_\varepsilon$. Note that the variance of ν_i is set to unity as it is not identified in the estimation.

4.3 Egypt's' Results of the IA determinants: The extent to which gender ratio within different category of occupation deviate from the mean of ratios calculated across all categories of occupation in Egypt. To get the result of the determinants of the Egyptian IA, we run the Tobit model type two and we find no selection biased in the model so we returned to apply type one. We applied type one Tobit model with the dependent variable as IA score and set of independent variables that includes: region, age, age – squared, marital status, household wealth score, educational attainment and economic sector of the job, job stability, incident of social insurance, work contract, medical insurance, paid leave and sick leave. In addition to other variables such as the formality of the job, skill level, number of working hours per week and real monthly wage. We tested for homoskedasticity of the model using Breuch-Pagan model that shows that there is a degree of heteroskedasticity that requires robust regression.

According to robust regression results shows that the determinants are the wealth , education attainment, economic sector of the job, incident of social insurance and work contract and skill level (with different significant level). It is worth mentioning that being located in upper urban region positively affects IA. Furthermore the wealth variable affect the (IA) positively, being less than intermediate educational attainment affects negatively the IA score while being intermediately or above affects positively, the IA, which reflects the dominance of one gender over the other. The employer in the less than intermediate education becomes indifferent in appointing male or female employee. While the economic sector of the job (public, foreign, joint venture or private, etc) is negatively related to the IA compared to the government sector as it shows the working in the government is done via public advertisement and usually female applicants prefer to work despite the

low wages rate because of the family friendly policy presented by the government sector while in the other sectors in depends on other factors.

Referring to the social insurance and work contract, in case of absence of social insurance then occupation become gender dominant on the other hand the non existence of work contract negatively affects the IA score (greater equality), see table e in the appendix. Thus the tendency toward the informal sector exhibit greater gender equality while having barriers to enter the labor market leads to gender inequality across occupation of the Egyptian labor market. Concerning the level of skills, results show that the occupation that require low skill level tends to have less discrimination against one gender over the other, in other words the more the experience needed for a certain occupation the higher the gender discrimination.

The Egyptian labor market is characterized by a high unemployment rate, segmentation, rigidity, increased size of the informal sector and a low females' participation rate (Zaki, 2011). It is noteworthy that labor market segmentation became more critical since the downsizing of the public sector. The early 2000s saw the fast growing role of the private sector and the contraction of the public sector. The private investment rate increased and was substantial enough to create economic expansion in the period 2004-2008. Nevertheless, the scope for employment growth was rather limited. In this period, the labor productivity growth rate declined by 0.1 percent behind the MENA region median growth rate of labor productivity. This modest rate reflected the inadequacy and insufficiency of human capital investment to align with the demands of the private sector on one hand (USAID, 2008). On the other hand, industry was Egypt's most productive sector; however, industry's share of the labor force has declined while its share of output has risen, suggesting that industrial labor was increasingly more productive. The services sector remained stagnant in this period and the agriculture sector's productivity remained low (USAID, 2008). According to El-Megharbel, 2007, this process generated notable sector shifts, importantly, the growing size of the informal sector.

A key feature of Egypt's labor market is the role of the government and public sectors, as compared to the private sector, in providing employment opportunities despite the deliberate attempt to reduce excessive employment in the public sector. Together, the government and public sectors deliver more than one-quarter of total jobs (23 percent and 3.7 percent, respectively) (Barsoum et al. 2014). Noteworthy that public and government sectors represent the highest preference among female job seekers due to its egalitarian way of treating both genders in all employment aspects. In the year 2012, about 42.7 percent of the total female employment is attached to the public and government sectors' employment. However, they compile a modest rate of absorption for the new entrants each year, where only 35 percent of the female new entrants are employed in both sectors (Assaad, 2015).

According to table (7), the data shows the progress in females' and males' shares across occupations. In the period 1998-2006, a noticeable improvement took place in females' share in the occupations of "Managers and Professionals. As managers, females' share increased from 9 percent to 20 percent, while females' as professionals increased from 26.4 percent to 37.3 percent. It is noteworthy that the improvement in females' share reflects equal decrease in males' share in such occupations. This indicates a way towards gender balanced occupations as Egypt is characterized by male-dominant labor force participation. Concerning white collar and service occupations (include Technicians and associate professionals, clerical support workers and service and sales workers) witnessed obvious increase in females' employment share. Female technicians and associate professionals are doubled in the period 1998-2006, their share increased from 16.5 percent to 25.6 percent. However, a slight increase in females' share as clerical support workers took place, as it improved by only 3.4 percent. Service and sales female workers increased their share in employment from 10 percent to 17.4 percent. Blue collar occupations (include Skilled agricultural, forestry and fishery workers, Craft and related trades workers and Plant and machine operators, and assemblers) were found to exhibit lower increase in females' employment share and lower female employment share compared to white collar jobs. For instance, skilled agricultural, forestry and fishery workers witnessed an increase in females' employment share from 57.6 percent to 62.6 percent. Similarly, Craft and related trades female workers increased their share from 4.26 percent to 10.7 percent, while plant and machine female operators and assemblers increased from 0.8 percent to 8.5 percent. A slight change in female employment share took place in elementary occupations in the period 1998-2006, as the percentage declined from 5.6 percent to 5.4 percent. This low female employment share in blue collar and elementary occupations may reflect the social dogma that limits females to certain occupations.

In the period 2006-2012, females' share in managerial positions declined while their share as professionals increased to 39 percent. As white collars, females' share as technicians, social professionals and clerical support workers decreased to 33 percent and 40 percent respectively; however, their share as service and sales workers increased to 18.3 percent. Blue collar occupations witnessed a decline in females' employment share during the period 2006-2012. However, females' share in elementary occupations increased from 5.4 percent to 9.4 percent. In general during the whole period 1998-2012, we can find that females' share increased in all occupations except clerical support jobs that stayed the same and skilled agricultural, forestry and fishery jobs that declined from 57.6 percent to 56 percent. Nevertheless, the gender distribution across occupations should be analyzed using a measure of inequality to differentiate between male-dominated, female-dominated and gender balanced occupations. The Index of Association scores give an indication of what occupations that have been feminized, de-feminized or balanced.

Table (7): Employment share by gender across occupations in Egypt, 1998-2012

Occupations	Men			Women			Male Share (%)			Female Share (%)		
	1998	2006	2012	1998	2006	2012	1998	2006	2012	1998	2006	2012
Managers	690	428	3039	67	106	585	91	80	84	9	20	16
Professionals	730	434	3580	252	258	2263	73.6	62.7	61	26.4	37.3	39
Technicians and associate professionals	288	306	2052	57	169	1019	83.5	64.4	67	16.5	35.6	33
Clerical support workers	304	129	1107	136	99	734	60	56.6	60	40	43.4	40
Service and sales workers	746	598	4267	82	126	958	90	82.6	81.7	10	17.4	18.3
Skilled agricultural, forestry and fishery workers	933	719	7693	1268	1205	9674	42.4	37.4	44	57.6	62.6	56
Craft and related trades workers	1169	805	6862	52	96	587	95.74	89.3	92	4.26	10.7	8
Plant and machine operators, and assemblers	373	313	2757	3	29	198	99.2	91.5	93	0.8	8.5	7
Elementary occupations	202	139	1627	12	8	168	94.4	94.6	90.6	5.6	5.4	9.4

Source: Authors' calculations based on ELMPS98, 2006 and 2012

As mentioned before the closer the score of IA to 1 the more balanced the occupation is. However, one drawback in this index is that it does not take into consideration the dynamics of scores. In other words, the rate of change of IA scores may exhibit an indication of feminization while the score itself reveals a move toward a more balanced occupation. For instance, table (8a) shows that all occupations seem to exhibit male-domination except skilled agricultural, forestry and fishery workers as females' share in employment in such occupations exceeds half of their total employment. Females in Egypt are much involved in unpaid work in the agricultural sector, while they suffer from glass ceiling effect that curb them from participation in managerial positions (El-Haddad, 2011) as it is obvious in the IA score of "Managers" (below 0.5, hence approaches zero). Hence, unpaid

agricultural occupations have been feminized along the period 1998-2012. An inclination to having gender balanced occupations is clear in professionals, technicians and associate professionals and clerical support workers occupations.

Table (8a): Index of Association Scores in Egypt, 1998-2012

Occupations	Index of Association Scores (IA)		
	1998	2006	2012
Managers	0.30	0.49	0.43
Professionals	0.59	0.77	0.79
Technicians and associate professionals	0.44	0.74	0.70
Clerical support workers	0.67	0.88	0.813
Service and sales workers	0.32	0.45	0.47
Skilled agricultural, forestry and fishery workers	1.17	1.29	1.12
Craft and related trades workers	0.2	0.34	0.28
Plant and machine operators, and assemblers	0.08	0.29	0.26
Elementary occupations	0.23	0.23	0.31

Source: Authors' calculations based on ELMPS98, 2006 and 2012

Figure (6) sheds light on an important notification which is the low IA scores in 2012 compared to 2006. Managerial occupations, white collar and service occupations in addition to blue collars are found to exhibit lower IA scores in 2012 compared to 2006 which indicates an inclination toward male-dominance. This is a general case in the Egyptian labor market except for professionals and service and sales workers that exhibit higher IA score in 2012 compared to 2006.

Generally speaking, occupations in the Egyptian labor market still exhibit male-domination except for the "Skilled agricultural, forestry and fishery workers". However, the bright side appears in three occupations: "Professionals", "Technicians and associate professionals" and "Clerical support workers"; as they have been moving toward a gender-balanced situation through the increase in the hare of female employment.

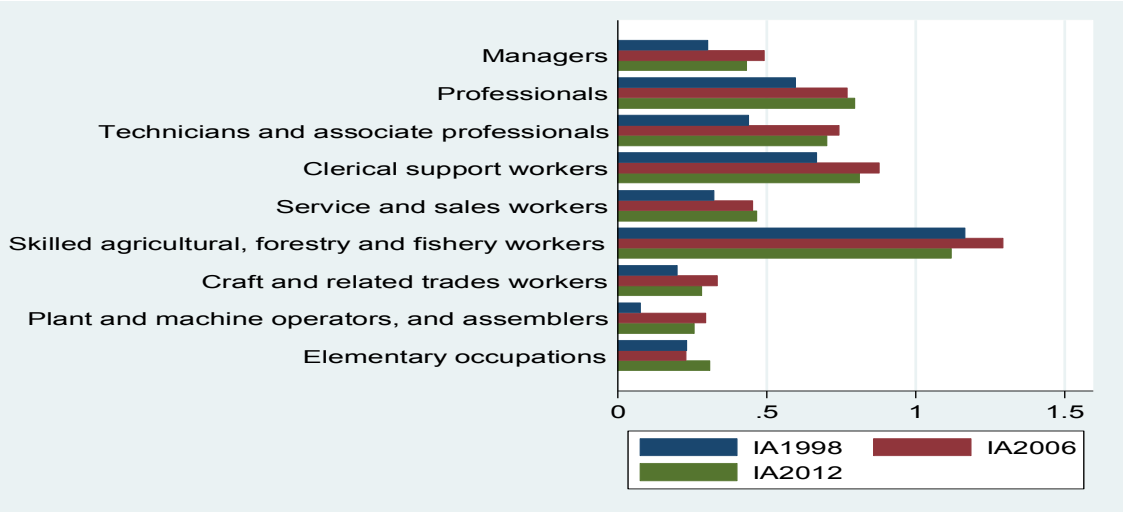

Figure (6): *Index of Association Score Dispersion among occupations in Egypt, 1998-2012*

Source: Authors' calculations based on ELMPS98, 2006 and 2012

Overall, then the Egyptian labour market has exhibited a strong pattern of feminization in the early 2006 but with a relative regression between 2006 and 2012. Of the fourt major occupations that can be considered as female-dominated during the period, in the sense of having higher shares of females relative to the total economy, two experienced increased feminization (Professionals; and Technicians and associate professionals) and two experienced declining feminization (Clerical support workers; Skilled agricultural, forestry and fishery workers). On the other hand, all sectors that were previously male-dominated experienced increased feminization. These patterns are summarized in Table (8b).

Table (8b): Summary results – Egypt

Female dominated	Feminised	
	Yes	No
Yes	Professionals; Technicians and associate professionals	Clerical support workers; Skilled agricultural, forestry and fishery workers
No	Managers; Service and sales workers; Craft and related trades workers; Plant and machine operators, and assemblers; Elementary occupations	

4.4 Jordan Results of IA Determinants:

Outcome of the IA determinants (the extent to which gender ratio within different category of occupation deviate from the mean of ratios calculated across all categories of occupation) in Jordan. To get the result of the determinants of the Jordanian IA, we run the Tobit model type two and we find no selection biasness in the model so we returned to apply type one. We applied the same methodology used in Egypt analysis by using type one Tobit model with the dependent variable as IA score and set of independent variables that includes: region, age, age – squares, marital status, housed hold wealth score, educational attainment, economic sector of the job, job stability, incident of social insurance, work contract, medical insurance. In addition to the other variables such as: the formality of the job, number of working hours per week and real monthly wage. We tested for homoskedasticity of the model using Breusch-Pagan model that shows that there is a degree of heteroskedasticity that requires robust regression.

Female labor force participation in Jordan faces the barriers from prevailing social norms about women's mobility and the sorts of jobs that are considered acceptable for them from a side in addition to the discrimination they face in the private sector from the other side (Miles 2002; Peebles et al. 2007& Kalimat and Al-Talafha 2011). Hence, Jordanian women exhibit less probability of employment compared to their male counterparts (Assaad et al. 2012). In the 1970s and 1980s, women participation in the labor force was reliant on government job. However, since mid1980s, the share of government jobs offered to females fell dramatically until the 2000s. Then it was recovered slightly to absorb new male entrants rather than females. This led to curb hiring female entrants & direct them to the informal sector then lately to the temporary wage employment in the private sector. These two sectors (the informal sector & the temporary private sector) composed about half of the female employment until 2010 (Assaad et al. 2012).

It is worth mentioning that the limited government employment to females resulted in a high level of gender segregation in the Jordanian labor market. It is not the government jobs itself but the prevailed norms about the kind of employment that is generally accepted for females. Thus the discrimination against women labor is socially made rather than introduced by employers. From this discussion we can conclude that the Jordanian labor market has witnessed a phase of gender segregation across occupations since 2010. As mentioned above, the increase in females' educational attainment has contributed to their share in high occupations. For instance, in table (9) it is noticeable that there is an increase in females' share in holding managerial positions throughout the period 2010-2016 (24 percent in 2010 versus 40.5 percent in 2016).Despite the slight drop in their share as professionals (43.4 percent in 2010 versus 41.4 percent in 2016), females' share as professionals exceeds their

share in other occupations' employment in 2010 and 2016. Females' prevalence in white collar and service occupations (Technicians & associate professionals, clerical support workers and service & sales workers) is much less than their prevalence in "Managers and Professionals" occupations.

Table (9): Employment share by gender across occupations in Jordan, 2010-2016

Occupations	Men		Women		Male Share (%)		Female Share (%)	
	2010	2016	2010	2016	2010	2016	2010	2016
Managers	64	25	20	17	76	59.5	24	40.5
Professionals	602	752	461	531	56.6	58.6	43.4	41.4
Technicians and associate professionals	294	274	109	101	73	73	27	27
Clerical support workers	399	300	133	68	75	81.5	25	18.5
Service and sales workers	1609	1668	106	98	93.8	94.5	6.2	5.5
Skilled agricultural, forestry and fishery workers	151	242	26	106	85	69.5	15	30.5
Craft and related trades workers	844	844	54	57	94	93.7	6	6.3
Plant and machine operators, and assemblers	629	577	9	9	98.6	98.5	1.4	1.5
Elementary occupations	349	367	101	95	77.6	79.4	22.4	20.6

Source: Authors' calculations based on JLMPS98, 2006 and 2012

Nevertheless, females share in white collars and service occupations in the period 2010-2016 seemed to be stable. Their share is technicians kept the same percentage (27 percent) while their prevalence as clerical support workers was lessened by 7.5 percent. Service and sales workers contributes by the least share of female employment as white collars and kept decreasing throughout the period 2010-2016 (6.2 percent versus 5.5 percent). Blue collar occupations (skilled workers, craft & trades workers and plant and machine operators and assemblers) witnessed some changes in females' employment. Surprisingly, females' employment in skilled agricultural, forestry and fishery positions was doubled in the period 2010-2016 which may reveal some feminization in this occupation beside the managerial positions mentioned above. However, an incremental move in females' share of

employment in the other two blue collar positions took place in 2010-2016. Finally, females' share in elementary occupations decreased from 22.4 percent in 2010 to 20.6 percent in 2016 which reflects the tendency of females to move toward higher levels of occupation due to their increased educational attainment. In summary, we can deduce that occupations of managers and skilled agricultural, forestry and fishery workers have witnessed great developments toward feminization. But it is worth mentioning that the gender distribution across occupations should be analyzed using the indices of equality. Our study depends on the Index of Association (IA) to capture the occupations that are feminized, de-feminized or balanced.

According to table (10a), the IA score of managerial occupations in 2016 got closer to 1 which reveals a gender-balanced level of occupations; however, looking at male and female shares in this occupations that witnessed a double increase from 2010-2016 pointing to a tendency toward feminizing such occupation. Also, skilled agricultural, forestry and fishery workers scored 0.41 in 2010 and 0.66 in 2016 which is still far from being balanced & still fluctuating about being male dominated (around 0.5) despite doubling females' employment share during same period.

Table (10a): Index of Association Scores in Jordan, 2010-2016

Occupations	Index of Association Scores (IA)	
	2010	2016
Managers	0.55	0.82
Professionals	0.88	0.84
Technicians and associate professionals	0.61	0.60
Clerical support workers	0.57	0.47
Service and sales workers	0.25	0.23
Skilled agricultural, forestry and fishery workers	0.41	0.66
Craft and related trades workers	0.24	0.25
Plant and machine operators, and assemblers	0.11	0.11
Elementary occupations	0.53	0.50

Source: Authors' calculations based on JLMPS98, 2006 and 2012

Generally, the great dispersion between the IA scores in 2010 and 2016 in the two occupations that is obvious in figure (7) (managers and skilled agricultural, forestry & fishery workers) refers to a great tendency of both occupations to move toward feminization in the future. However, for the time being and in the period of the study 2010-2016, the IA scores show that occupations "Managers and

Professionals" are about gender balanced. On the other hand "White collar and service occupations" & "Blue collar occupations" are still male-dominated occupations.

Figure (7): *Index of Association Score Dispersion among occupations in Jordan, 2010-2016*

Source: Authors' calculations based on JLMPS98, 2006 and 2012

Summarising, as for the case of Egypt, the results for the case of Jordan, we observe the following (Table (10b)). Feminization of employment has proceeded in Jordan more slowly than in Egypt and concerned specifically two main occupational groups (Managers and Skilled agricultural workers). Interestingly, the first of these groups was already a female-dominated one (owing to the positive gender-bias of the public sector) while the second became female-dominated owing to the substantial increase in female employment there. A number of female-dominated occupations, however experienced de-feminization: these were both at the high-end of the occupational ladder (e.g., professionals) and at the lower-end (e.g., elementary occupations). A number of occupations also saw increased feminization (Craft and related trades workers; Plant and machine operators and assemblers), although they remained on the whole male-dominated.

Table (10b): Summary results – Jordan

Female dominated	Feminised	
	Yes	No
Yes	Managers; Skilled agricultural, forestry and fishery workers	Professionals; Technicians and associate professionals; Clerical support workers; Elementary occupations
No	Craft and related trades workers; Plant and machine operators, and assemblers	Service and sales workers

Overall, feminization of occupations in both the Egyptian and Jordanian labor markets did not exist in its operational meaning; however, noteworthy occupations that require high educational attainment witnessed an increase in females' employment share during the period of study. As a result of the non-existence of the phenomenon of feminization of occupations in the countries of interest, the study found that the next step would be testing the existence of gender wage gap in both countries rather than examining the effect of feminization of occupations. So, the study conducts Oaxaca-Blinder technique to capture whether the existence of discrimination happens due to differences in capabilities or due to gender discrimination. This would pave the way for future studies to understand the characteristics of both labor markets (Egyptian and Jordanian) before the phenomenon of feminization takes place.

4.5 Decomposition model is estimated as follows:

The gender wage gap of the classified occupations will be analyzed using Oaxaca-Blinder decomposition technique. Where, the gap between the estimated log wages of males and females are provided using econometric analysis. This econometric methodology will depend mainly on the longitudinal data of the Egypt labor market panel survey (ELMPS) 2012 and the Jordan labor market panel survey (JLMPS) 2010. Decomposition will be obtained using the dynamic probit models to analyze gender wage gap across occupations over time. The Oaxaca-Blinder model the earnings functions for males and females are,

$$\ln W_{mi} = b_o + b_1 S_{mi} + b_2 T_{mi} + b_3 T_{mi}^2 + b_4 M_{mi} + b_5 N_{mi} + b_6 E_{mi} + b_7 I_{mi} + u \quad (2)$$

$$\ln W_{fi} = \beta_o + \beta_1 S_{fi} + \beta_2 T_{fi} + \beta_3 T_{fi}^2 + \beta_4 M_{fi} + \beta_5 N_{fi} + \beta_6 E_{fi} + \beta_7 I_{fi} + u_{fi} \quad (3)$$

Where W represents the monthly wage of an individual, S reflects his/her years of schooling, the T represents the number of years of experience, M refers to marital status, N refers to the number of working hours, E for the economic activity (industry) and I indicates the skill level. The study included more control variables than the original technique to explain the wage rate determination in a manner that accounts for all the characteristics sharing in the determination of the wage rate. The two functions are estimated at each type of job composition (female-dominated, gender balanced and male-dominated). The wage gap is estimated as: $\Delta \ln W = \ln W_m - \ln W_f \quad (4)$

According to the Blinder-Oaxaca technique, the wage gap is represented by either some explained factors like the differences in skills, education, years of experience...etc. or unexplained factors represented by gender discrimination. Oaxaca-Blinder equation is represented by:

$\ln W_m - \ln W_f = (\bar{X}m - \bar{X}_f)B_m + (B_m - B_f)\bar{X}_f + (\theta_m\lambda_m - \theta_f\lambda_f) + BZ.$ (5)

Where,

$(\bar{X}_m - \bar{X}_f)B_m$ *refers to the differences in characteristics between males and females*

$(B_m - B_f)\bar{X}_f$ *refers to gender discrimination effect*

$(\theta_m\lambda_m - \theta_f\lambda_f)$ *refers to the selection bias* (The bias that occurs due to preferences of both genders to be occupied in the elected occupation)

Z is a vector of characteristics such as geographical location, marital status, and industry.

Importantly, the study will correct for the selection bias using the two-step Heckman estimation procedure and maximum likelihood methodology (Neuman and Oaxaca, 2003) through introducing the term (λ), which is an estimate of the mean Inverse Mills Ratio (IMR) and reflects the unadjusted differential that is expressed in a non-linear function in terms of the index function ($H'_1\ \gamma$).

The central tendency of the IMR is given by: $\lambda = \phi\ (\bar{H}\ \gamma)/\Phi\ (\bar{H}\ \gamma)$ (6)

Where, $\bar{H}$ is the vector of mean values that includes the determinants of occupational assignment for those who are in each occupation. In keeping our adoption of the male (dominant group) wage structure as the standard, we pursue an exact decomposition of the gender difference in the conditional mean error terms:

$$\bar{E}\ (\mu_m|\varepsilon_m\ >\ -H_m\gamma_m) - \bar{E}\ (\mu_f|\varepsilon_f\ >\ -H_f\gamma_f) = \theta_m\lambda_m - \theta_f\lambda_f \qquad (7)$$

4.5.1 Oaxaca-Blinder Decomposition Analysis of Gender Pay Gap:

Generally, Oaxaca-Blinder decomposition technique analyzes the differences between two groups that we are interested in capturing the gap between them. This decomposition analysis is divided into four parts (Fortin et al. 2010). First, the differential part shows the linear estimation of structural wage functions for the two groups (males and females) and the difference between their estimated values. This difference is composed of two main components: the composition effect (represented by endowments) and the wage structure effect (represented by the coefficients). Importantly, the study will correct for the so-called selection bias by using the two-step Heckman methodology and maximum likelihood estimation procedure (Neuman and Oaxaca, 2004). Selection bias arises by individuals choosing (or being chosen into) jobs based on observables characteristics that directly affect their labour market outcomes (here, their wages). If such selection is present, application of the simple decomposition without

controlling for selection will lead to biased results, mistakenly identifying pure discrimination (an "adjusted" wage gap) when in reality there is none. Empirically, selection is controlled for through introducing in the final regressions the term (λ), which is an estimate of the mean Inverse Mills Ratio (IMR) and reflects the unadjusted differential that is expressed in a non-linear function in terms of the index function (Ḥ'$_1$ γ). Thus, the final regression after adjustment is represented as:

$$\ln W_m - \ln W_f = (\bar{X}m - \bar{X}_f)B_m + (B_m - B_f)\bar{X}_f + (\theta_m\lambda_m - \theta_f\lambda_f) + BZ.$$

Where,

$(\bar{X}_m - \bar{X}_f)B_m$ *refers to the differences in characteristics between males and females*

$(B_m - B_f)\bar{X}_f$ *refers to gender discrimination effect*

$(\theta_m\lambda_m - \theta_f\lambda_f)$ *refers to the selection bias* (The bias that occurs due to preferences of both genders to be occupied in the elected occupation)

Z is a vector of characteristics such as geographical location, marital status, and industry.

4.5.1 .1 Oaxaca-Blinder Decomposition Analysis of Gender Pay Gap- Egypt

After introducing the adjustment for the selection bias, the model will be able to capture the decomposition of the earnings gap by splitting it into the above-mentioned two components as explained by the simple Oaxaca (1973) and Blinder (1973) decomposition technique after accounting for the effect of selectivity (Biltagy, 2014).

Table 11: Statistical Description of real monthly wage by gender in Egypt, 2012

For those whose age (15-64) and wage workers

Variable	Obs.	Mean	Std. Dev.	Min	Max
			Males		
Real Hourly wage	8261	6.44	12.54	0.21	807.69
ln real hourly wage	8261	1.55	0.71	-1.54	6.69
Real month wage	8261	1202.11	1366.44	13.24	35000.00
ln real month wage	8261	6.82	0.71	2.58	10.46
			Females		
Real Hourly wage	1780	6.42	8.74	0.41	230.77
ln real hourly wage	1780	1.55	0.77	-0.89	5.44
Real month wage	1780	989.32	850.96	80.00	20000.00
ln real month wage	1780	6.64	0.72	4.38	9.90

Source: Authors' calculations based on ELMPS 2012

According to table 11, it is noticeable that the mean hourly wage of males and females is approximately the same (around 6.4 L.E.); however the real monthly wage differs with an upward bias toward males (1202 L.E. for males versus 989.32). This result reflects the fact that women in Egypt are less likely to work large number of working hours due to their preference toward domestic and family care work. The fact of presence of unpaid and domestic work for women, maternity leaves and care work leads women to maintain less working hours and thus less monthly payment.

Table (12): Results of the Neuman-Oaxaca wage decomposition with categories of marital status
Panel 1: Pooled data

VARIABLES	(1) Differential	(2) Endowments	(3) Coefficients	(4) Interaction
Exp		0.188***	-0.134***	-0.044***
		(0.015)	(0.045)	(0.015)
exp_sqr		-0.075***	-0.005	-0.003
		(0.015)	(0.025)	(0.015)
marital==never married		-0.002	0.130***	0.003
		(0.002)	(0.018)	(0.004)
marital==married		-0.003	0.224***	0.018***
		(0.004)	(0.047)	(0.005)
marital==divorced		0.005	0.033***	-0.029***
		(0.006)	(0.008)	(0.007)
Total		0.113***	0.364***	-0.055***
		(0.008)	(0.030)	(0.008)
Prediction_1	1.466***			
	(0.005)			
Prediction_2	1.394***			
	(0.011)			
Difference	0.072***			
	(0.012)			
Adjusted	0.421***			
	(0.030)			
Constant			0.116*	
			(0.065)	
Observations	27,284	27,284	27,284	27,284

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

The results of adjusted Oaxaca-Blinder decomposition analysis (Neuman-Oaxaca wage decomposition) show the components of the difference in structural wage functions between the two groups in the second and third part of table (9-b). The endowments part encompasses the composition effect term that reflects the effect of differences in the gender distribution of characteristics. The coefficients exhibit the wage structure term that reveals the unexplained differences between the two

structural functions of wages. In the last part, the decomposition analysis shows the joint effect of the composition term and the wage structure term. In other words, the interaction part indicates the difference between the two groups that results from the complication of the presence of two overlapping effects: the wage structure effect (unexplained differences) and the composition effect (explained differences due to dissimilar characteristics) (O'Donnell et al. 2008). It is estimated that the endowments or characteristics effect is 11.3%; that is, differences in human capital characteristics tend to increase the earnings gap between the two genders by 11.3%. Nevertheless, the gender discrimination part (represented by the coefficients) tends to increase the gender wage gap by 36.4%.

In Egypt, using the pooled data of ELMPS 2012, the gender wage gap is obvious and significant as represented by the difference coefficient in the first part of the analysis (differential part) and is reflected by the adjustment against selection biasness by 42.1%. The estimated values of mean male real wage function and mean female real wage function exhibit a gap between them at a significance level 1%. The coefficient of aggregate decomposition adjusted difference is approximately 0.421 which reflects a 42.1% difference between the two groups where, men exhibit higher mean wage level compared to females (i.e. sex=1 represents males and sex=2 represents females); this gap is justified by some explained and unexplained reasons. The implication of the first part of the decomposition analysis shows a significant gender wage gap that reflects a misspecification of resources in the Egyptian labor market. It is worth mentioning that each mean wage structure function is explained by variables that represent the determinants of wage level according to labor market theories. The explanatory variables are: experience, experience squared and marital status.

Difference in **endowments** indicates that men are found to be superior in terms of years of experience as females are more likely sacrifice participating in the labor force in order to participate in domestic care work; however, this difference's effect diminishes across time. Difference in characteristics between the two groups arises by the variable experience only as it is found to be significant at 1% level of significance. The endowments part shows that human capital endowments increases the gap between the two genders by 17.1% as it works in favor of males.

Difference due to unexplained factors captures a major part of the interest of this study to imply the wage gap due to gender discrimination in the Egyptian labor market. The **coefficients part** of the analysis reflects the discrimination effect in terms of coefficients and a constant term. The total effect of the unexplained part of gender pay gap is represented by its coefficient which is approximately 36.4%. This indicates that 36.4% of the differences in mean wage structural functions among the two groups are explained by gender discrimination at 1% significance level. Clearly, all the explanatory variables are contributing to widening the wage pay gap between genders, as a positive relation is

exhibited either in experience or marital status (never-married, married and/or divorced) at 1% level of significance.

Table (12-A): Results of the Neuman-Oaxaca wage decomposition with categories of marital status
Panel 1: 1998

VARIABLES	(1) Differential	(2) Endowments	(3) Coefficients	(4) Interaction
Exp		0.252***	-0.061	-0.025
		(0.036)	(0.086)	(0.036)
exp_sqr		-0.081**	-0.046	-0.040
		(0.038)	(0.046)	(0.040)
marital==never married		-0.001	0.051	0.006
		(0.004)	(0.034)	(0.005)
marital==married		0.001	0.014	0.000
		(0.002)	(0.089)	(0.001)
marital==divorced		-0.000	0.011	-0.009
		(0.008)	(0.013)	(0.011)
Total		0.171***	0.256***	-0.068***
		(0.021)	(0.063)	(0.019)
Prediction_1	1.280***			
	(0.011)			
Prediction_2	1.238***			
	(0.023)			
Difference	0.042*			
	(0.025)			
Adjusted	0.359***			
	(0.062)			
Constant			0.287**	
			(0.117)	
Observations	4,841	4,841	4,841	4,841

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

In Egypt, using ELMPS data round 1998, the gender wage gap is obvious and significant as represented by the adjusted difference coefficient in the first part of the analysis (differential part). The estimated values of mean male real wage function and mean female real wage function exhibit a gap between them at a significance level 1%. The coefficient of adjusted aggregate decomposition difference is approximately 0.359 which reflects a 35.9% difference between the two groups where, men exhibit higher mean wage level compared to females (i.e. sex=1 represents males and sex=2 represents females); this gap is justified by some explained and unexplained reasons. The implication of the first part of the decomposition analysis shows a significant gender wage gap that reflects a misspecification of resources in the Egyptian labor market. It is worth mentioning that each mean wage structure function is explained by variables that represent the determinants of wage level

according to labor market theories. The explanatory variables are: experience, experience squared and marital status.

Difference in **endowments** indicates that men are found to be superior in terms of years of experience as females are more likely sacrifice participating in the labor force in order to participate in domestic care work; however, this difference's effect diminishes across time. Difference in characteristics between the two groups arises by all the explanatory variables as all of them are found to be significant. As experience is shown to be significant at 1%; while marital status is found to be insignificant. The endowments part shows that human capital endowments increases the gap between the two genders by 17.1% as it works in favor of males.

Difference due to unexplained factors captures a major part of the interest of this study to imply the wage gap due to gender discrimination in the Egyptian labor market. The **coefficients part** of the analysis reflects the discrimination effect in terms of coefficients and a constant term. The total effect of the unexplained part of gender pay gap is represented by its coefficient which is approximately 25.6%. This indicates that 25.6% of the differences in mean wage structural functions among the two groups are explained by gender discrimination at 1% significance level. The main significant factor that depicts gender discrimination is marital status only at 10% level of significance. Notably, both explanatory variables (experience and marital status) are found to be insignificant. That indicates discrimination takes place due to different reasons rather than years of experience and marital status.

Table (12-B): Results of the Neuman-Oaxaca wage decomposition with categories of marital status
Panel 2: 2006

VARIABLES	(1) Differential	(2) Endowments	(3) Coefficients	(4) Interaction
Exp		0.170***	-0.214**	-0.052**
		(0.025)	(0.092)	(0.023)
exp_sqr		-0.071***	0.015	0.007
		(0.025)	(0.052)	(0.026)
marital==never married		-0.002	0.160***	0.002
		(0.006)	(0.044)	(0.008)
marital==married		-0.010	0.263**	0.024**
		(0.010)	(0.108)	(0.011)
marital==divorced		0.014	0.035**	-0.032**
		(0.013)	(0.018)	(0.016)
Total		0.102***	0.400***	-0.050***
		(0.016)	(0.059)	(0.015)
Prediction_1	1.472***			
	(0.010)			
Prediction_2	1.374***			
	(0.021)			
Difference	0.099***			
	(0.023)			
Adjusted	0.451***			
	(0.059)			
Constant			0.141	
			(0.158)	
Observations	7,643	7,643	7,643	7,643

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

According to the data reflects ELMPS 2006, the gender wage gap is obvious and significant as represented by the difference coefficient in the first part of the analysis (differential part) and is reflected by the adjustment against selection biasness by 45.1%. The estimated values of mean male real wage function and mean female real wage function exhibit a gap between them at a significance level 1%. The coefficient of aggregate decomposition adjusted difference is approximately 0.451 which reflects a 45.1% difference between the two groups where, men exhibit higher mean wage level compared to females (i.e. sex=1 represents males and sex=2 represents females); this gap is justified by some explained and unexplained reasons. The implication of the first part of the decomposition analysis shows a significant gender wage gap that reflects a misspecification of resources in the Egyptian labor market. It is worth mentioning that each mean wage structure function is explained by variables that represent the determinants of wage level according to labor market theories. The explanatory variables are: experience, experience squared and marital status.

Difference in **endowments** indicates that men are found to be superior in terms of years of experience as females are more likely sacrifice participating in the labor force in order to participate in domestic care work; however, this difference's effect diminishes across time. Difference in characteristics between the two groups arises by the variable experience only as it is found to be significant at 1% level of significance. The endowments part shows that human capital endowments increases the gap between the two genders by 10.2% as it works in favor of males.

Difference due to unexplained factors captures a major part of the interest of this study to imply the wage gap due to gender discrimination in the Egyptian labor market. The **coefficients part** of the analysis reflects the discrimination effect in terms of coefficients and a constant term. The total effect of the unexplained part of gender pay gap is represented by its coefficient which is approximately 40%. This indicates that 40% of the differences in mean wage structural functions among the two groups are explained by gender discrimination at 1% significance level. Clearly, all the explanatory variables are contributing to widening the wage pay gap between genders, as a positive relation is exhibited either in marital status (never-married, married and/or divorced); however, the degree of significance of having single employees is found to be higher as it is significant at 1% while being married or divorced is significant at 5% which indicates that even single males are more preferred than single females at occupations. This can be interpreted by the preference of males in all ways expecting that females are going to get married at a certain time and hence their degree of absenteeism will get higher.

Table (12-c): Results of the Neuman-Oaxaca wage decomposition with categories of marital status Panel 3: 2012

VARIABLES	(1) Differential	(2) Endowments	(3) Coefficients	(4) Interaction
Exp		0.092***	-0.125	-0.027
		(0.019)	(0.085)	(0.019)
exp_sqr		-0.016	-0.027	-0.010
		(0.017)	(0.050)	(0.018)
marital==never married		-0.014	0.069	0.016
		(0.015)	(0.063)	(0.015)
marital==married		-0.005	0.179	0.010
		(0.014)	(0.246)	(0.014)
marital==divorced		0.008	0.030	-0.028
		(0.033)	(0.038)	(0.035)
Total		0.065***	0.414***	-0.039***
		(0.013)	(0.059)	(0.014)
Prediction_1	1.526***			
	(0.008)			
Prediction_2	1.539***			
	(0.018)			
Difference	-0.013			
	(0.020)			
Adjusted	0.440***			
	(0.059)			
Constant			0.288	
			(0.343)	
Observations	10,304	10,304	10,304	10,304

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Using ELMPS round 2012, the gender wage gap is obvious and significant as represented by the difference coefficient in the first part of the analysis (differential part) and is reflected by the adjustment against selection biasness by 44%. The estimated values of mean male real wage function and mean female real wage function exhibit a gap between them at a significance level 1%. The coefficient of aggregate decomposition adjusted difference is approximately 0.44 which reflects a 44% difference between the two groups where, men exhibit higher mean wage level compared to females (i.e. sex=1 represents males and sex=2 represents females); this gap is justified by some explained and unexplained reasons. The implication of the first part of the decomposition analysis shows a significant gender wage gap that reflects a misspecification of resources in the Egyptian labor market. It is worth mentioning that each mean wage structure function is explained by variables that represent the determinants of wage level according to labor market theories. The explanatory variables are: experience, experience squared and marital status.

Difference in **endowments** indicates that men are found to be superior in terms of years of experience as females are more likely sacrifice participating in the labor force in order to participate in domestic care work; however, this difference's effect diminishes across time. Difference in characteristics between the two groups arises by the variable experience only as it is found to be significant at 1% level of significance. The endowments part shows that human capital endowments increases the gap between the two genders by 6.5% as it works in favor of males.

Difference due to unexplained factors captures a major part of the interest of this study to imply the wage gap due to gender discrimination in the Egyptian labor market. The **coefficients part** of the analysis reflects the discrimination effect in terms of coefficients and a constant term. The total effect of the unexplained part of gender pay gap is represented by its coefficient which is approximately 41.4%. This indicates that 41.4% of the differences in mean wage structural functions among the two groups are explained by gender discrimination at 1% significance level. Notably, both explanatory variables (experience and marital status) are found to be insignificant. That indicates discrimination takes place due to different reasons rather than years of experience and marital status.

4.5.1 2 Oaxaca-Blinder Decomposition Analysis of Gender Pay Gap- Jordan

The statistical description of the gender wage gap is represented in (table 13). It is noticeable that the mean hourly wage of males and females is approximately the same (around 5 L.E.); however, unlike Egypt, the real monthly wage differs with an upward bias toward females (410 L.E. for males versus 428) while this difference is considered small compared to the difference exhibited in Egypt. This result reflects the fact that women in Jordan are more likely to exert more effort in their Jobs when they decide to enter the labor market. As women in Jordan, unlike Egypt, are less likely to enter the labor market and are most probably concentrated in certain highly paid jobs.

Table 13: Statistical Description of real monthly wage by gender in Jordan, 2016

For those whose age (15-64) and wage workers

Variable	Obs.	Mean	Std. Dev.	Min	Max
			Males		
Real Hourly wage	4145	5.06	15.24	0.03	180.00
ln real hourly wage	4145	0.66	1.01	-3.59	5.19
Real month wage	4145	410.22	639.46	1.60	19150.00
ln real month wage	4145	5.75	0.70	0.47	9.86
			Females		
Real Hourly wage	925	5.36	17.07	0.09	161.54
ln real hourly wage	925	0.72	0.97	-2.40	5.08
Real month wage	925	428.42	788.33	13.00	12184.62
ln real month wage	925	5.78	0.62	2.56	9.41

This calls for the decomposition analysis of gender wage gap to capture the reasons for having this gap. The results of adjusted Oaxaca-Blinder decomposition analysis (Neuman-Oaxaca wage decomposition) show the components of the difference in structural wage functions between the two groups.

In Jordan, the gender wage gap is obvious and significant as represented by the difference coefficient in the first part of the analysis (differential part). The estimated values of mean male real wage function and mean female real wage function exhibit a gap between them at a significance level 1%. This gap is justified by some explained and unexplained reasons. The implication of the first part of the decomposition analysis shows a significant gender wage gap that reflects a misspecification of resources in the Jordanian labor market. It is worth mentioning that each mean wage structure function is explained by variables that represent the determinants of wage level according to labor market theories. The explanatory variables are: years of schooling, experience, experience squared and marital status.

Table (14-A): Results of the Neuman-Oaxaca wage decomposition, Jordan

Panel 1: Pooled

VARIABLES	(1) Differential	(2) Endowments	(3) Coefficients	(4) Interaction
Exp		13.006***	-14.003**	-6.743**
		(2.877)	(6.441)	(3.117)
exp_sqr		-3.759	0.168	0.158
		(3.024)	(3.383)	(3.184)
marital==Married		1.648***	0.445	0.078
		(0.460)	(2.748)	(0.479)
marital==Divorced/ separated		-0.481	-0.495	0.427
		(0.357)	(0.666)	(0.575)
marital==Widow(er)		-0.279	0.328	-0.315
		(0.243)	(0.659)	(0.634)
Total		10.134***	43.365***	-6.396***
		(1.341)	(8.495)	(1.523)
Prediction_1	65.502***			
	(0.997)			
Prediction_2	71.179***			
	(2.098)			
Difference	-5.677**			
	(2.323)			
Adjusted	47.103***			
	(8.435)			
Constant			56.922***	
			(9.371)	
Observations	10,057	10,057	10,057	10,057

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Difference in **endowments** indicates that females suffer lower potential of years of experience compared to males, see table 14. Notwithstanding men are found to be superior in terms of years of experience as females are more likely to sacrifice participating in the labor force in order to participate in domestic care work; however, this difference's effect diminishes across time. However, the overall endowment effect shows that females are better endowed in terms of overall human capital characteristics as the significance of male superiority in experience exhibit lower significance. Difference in characteristics between the two groups arises by all the explanatory variables as all of them are found to be significant at 1% level of significance. Increasing the level of experience and/or being married widen the gender wage gap.

Difference due to unexplained factors captures a major part of the interest of this study to imply the wage gap due to gender discrimination in the Jordanian labor market. The **coefficients part** of the analysis reflects the discrimination effect in terms of coefficients and a constant term. The total effect

of the unexplained part of gender pay gap. The main significant factor that depicts gender discrimination is the years of experience at 5% levels of significance. Years of experience variable is found to be negatively related to the gender wage gap. This means that when the number of years of experience increases for both genders, the gender discrimination effect on wage gap decreases.

Table (14-B): Results of the Neuman-Oaxaca wage decomposition, Jordan

Panel 2: 2010

VARIABLES	(1) Differential	(2) Endowments	(3) Coefficients	(4) Interaction
exp		7.380	3.589	1.683
		(4.739)	(11.239)	(5.272)
exp_sqr		2.508	-6.826	-6.323
		(4.915)	(5.636)	(5.229)
marital==Married		1.920***	-3.036	-0.534
		(0.699)	(4.013)	(0.714)
marital==Divorced/separated		-0.181	-0.289	0.254
		(0.497)	(0.934)	(0.821)
marital==Widow(er)		-0.519	1.215	-1.180
		(0.405)	(1.180)	(1.149)
Total		11.108***	28.034**	-6.101**
		(2.077)	(12.818)	(2.436)
Prediction_1	57.234***			
	(1.453)			
Prediction_2	68.336***			
	(3.158)			
Difference	-11.103***			
	(3.476)			
Adjusted	33.042***			
	(12.666)			
Constant			33.380**	
			(14.497)	
Observations	4,871	4,871	4,871	4,871

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In Jordan, using JLMPS 2010, the gender wage gap is obvious and significant as represented by the difference coefficient in the first part of the analysis (differential part). The estimated values of mean male real wage function and mean female real wage function exhibit a gap between them at a significance level 1%. This gap is justified by some explained and unexplained reasons. The implication of the first part of the decomposition analysis shows a significant gender wage gap that reflects a misspecification of resources in the Jordanian labor market. It is worth mentioning that each mean wage structure function is explained by variables that represent the determinants of wage level

according to labor market theories. The explanatory variables are: experience, experience squared and marital status.

Difference in **endowments** indicates that females suffer lower potential of years of experience compared to males. Notwithstanding men are found to be superior in terms of years of experience as females are more likely to sacrifice participating in the labor force in order to participate in domestic care work; however, this difference's effect diminishes across time. However, the overall endowment effect shows that females are better endowed in terms of overall human capital characteristics as the significance of male superiority in experience exhibit lower significance. Difference in characteristics between the two groups arises by being married only at 1% level of significance. As, increasing the number of persons who got married widen the gender wage gap.

Difference due to unexplained factors captures a major part of the interest of this study to imply the wage gap due to gender discrimination in the Jordanian labor market. The **coefficients part** of the analysis reflects the discrimination effect in terms of coefficients and a constant term. No significant explanatory variables are found in the part that justifies gender wage discrimination. This indicates that gender pay discrimination due to reasons other than human capital endowments is justified by factors rather than years of experience and marital status.

Table (14-C): Results of the Neuman-Oaxaca wage decomposition, Jordan

Panel 3: 2016

VARIABLES	(1) Differential	(2) Endowments	(3) Coefficients	(4) Interaction
exp		19.356***	-18.349**	-9.264**
		(3.971)	(8.056)	(4.113)
exp_sqr		-10.119**	4.101	4.017
		(4.277)	(4.495)	(4.408)
marital==Married		1.122*	-3.007	-0.514
		(0.594)	(3.869)	(0.667)
marital==Divorced/separated		-0.603	-1.190	1.013
		(0.504)	(0.955)	(0.818)
marital==Widow(er)		-0.050	-0.366	0.347
		(0.289)	(0.757)	(0.719)
Total		9.706***	42.404***	-4.400**
		(1.857)	(11.258)	(2.019)
Prediction_1	73.220***			
	(1.360)			
Prediction_2	73.921***			
	(2.784)			
Difference	-0.701			
	(3.098)			
Adjusted	47.710***			
	(11.206)			
Constant			61.215***	
			(12.298)	
Observations	5,186	5,186	5,186	5,186

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

In Jordan, using JLMPS 2016, the gender wage gap is obvious and significant as represented by the difference coefficient in the first part of the analysis (differential part). The estimated values of mean male real wage function and mean female real wage function exhibit a gap between them at a significance level 1%, see table 14-c. This gap is justified by some explained and unexplained reasons. The implication of the first part of the decomposition analysis shows a significant gender wage gap that reflects a misspecification of resources in the Jordanian labor market. It is worth mentioning that each mean wage structure function is explained by variables that represent the determinants of wage level according to labor market theories. The explanatory variables are: experience, experience squared and marital status.

Difference in **endowments** indicates that females suffer lower potential of years of experience compared to males. Notwithstanding men are found to be superior in terms of years of experience as females are more likely to sacrifice participating in the labor force in order to participate in domestic

care work; however, this difference's effect diminishes across time. However, the overall endowment effect shows that females are better endowed in terms of overall human capital characteristics as the significance of male superiority in experience exhibit lower significance. Difference in characteristics between the two groups arises by years of experience and being married at 1% and 10% levels of significance, respectively. As, increasing the number of persons who got married widen the gender wage gap and increasing years of experience also widens the gap until a certain level where the gender pay gap starts to diminish as years of experience increase. Difference due to unexplained factors captures a major part of the interest of this study to imply the wage gap due to gender discrimination in the Jordanian labor market. The **coefficients part** of the analysis reflects the discrimination effect in terms of coefficients and a constant term. Only years of experience is found to be significant at 5% level of significance which indicates that gender discrimination takes place when years of experience gets higher.

4.6 Discussion of findings

As we saw, female employment has expanded in both countries over the period of analysis. Feminization of employment has been stronger in Egypt, especially in the 1998-2006 period, but on the whole female employment increased in both countries – marginally in Jordan and much more substantially in Egypt. Within occupations, feminization occurred in Jordan in the groups of Managers; Skilled agricultural, forestry and fishery workers; Craft and related trades workers; and Plant and machine operators, and assemblers. In Egypt feminization of ocupations was more extensive and it increased in all occupations with the exception of only two (Clerical support workers; and Skilled agricultural, forestry and fishery workers) which were already highly feminized (female-dominated).

Contemporaneously with these developments, both countries experienced notably rises in gender wage gaps, both in absolute terms and with regard to the 'unexplained' component which captures labour market discrimination. In Egypt, the trend parallels very closely that seen for feminization, with the adjusted wage gap increasing by some 25% between 1998 and 2006 and declining only marginally (by 2.4%) between 2006 and 2012 (so that between 1998 and 2012 it registered an increase of some 22.5%). In Jordan the increase was much more substantial, with the estimated adjusted wage gap rising by over 40%. In all cases, the endowment component declined over time, suggesting that feminization was not accompanied by entry of less qualified females into the labour market but was rather, presumably, enabled by an improvement in the marketable characteristics of females in the two countries. In contrast, the unexplained component increased significantly, in both

countries. It increased by 50% between 2010 and 2016 in Jordan; and by 56% between 1998 and 2006 and 62% between 1998 and 2012 in Egypt.

Our analysis does not allow us to draw definitive conclusions about the causal link between these two trends (increase in feminization of employment/occupations and rise in wage discrimination against females). On the basis of the severity of the observed trends, however, and in light of our earlier discussion of the international literature on the topic, we are inclined to conclude that feminization of occupations, while it contributed to higher female participation in the labour market and indeed in a reduction of employment barriers for females in male-dominated jobs, at the same time had an adverse effect, raising the female wage penalties and the degree of wage discrimination against females in the labour market. This pattern is consistent with findings in the USA and UK literatures (Tienda et al, 1987; Mandel, 2013; Perales, 2013).

5. Conclusion:

The importance of eliminating wage & occupational segregation while understanding the problems that arise from high female unemployment rates socially, economically and politically. It is also vital to understand the significance level behind the enhanced policymaking, and overall better economic welfare each of the three countries could experience. We urge reader to grasp the severity of the situation, if women present half of the total population and it just participate with less that 50 % of the global female labor force participation. We can imagine how the world will be if women participate equally in the economy then the global GDP will double and we will able to eradicate poverty, hunger and provide sustainability.

Egypt and Jordan offer different determinants of FLFP and different trends in female employment. We found that in countries such as the MED region, cultural and religious norms have had substantially high effects on the decision making or job hunting that females perform. In conclusion, Gender segregation is global and crucial issue that had to be discussed and to be put into consideration. Many theories came over the past centuries and years and talked about the importance of the role of women in participating in many sectors in the society whether economically or politically. Regarding this paper, the paper as mentioned throughout it, focuses on Egypt and Jordan. To conclude, Egypt and Jordan was almost very similar to each other in terms of having gender segregation. Both of these countries in terms of the indicators discussed in the paper, had a low percentage of the women participating in the labor force and had moderate Gender Gap Index.

But, by time and over the previous years, things are getting better in Egypt and the role of woman is starting to be recognized in the country. This can be due to the policies that were adopted in order

to solve the segregation problem. Apart from that, Jordan despite it's being considered one of the countries with high gender inequality but when it comes to the Gender Gap Index and Gender Inequality index, both of them are increasing and improving. This may be due to the implementation of the policies that were suggested by the World Bank. Finally, gender segregation exists and will continue since it is mainly based on the cultures and the mentality of the people living in this society. But, things can be better by the widespread of awareness to people and improving the education also in order for people to have respect to people different than them. Also, the government can collaborate with international institutions and organizations to promote more equality by reducing the gender pay gap between men and women or by applying reforms which enhances the role of women in society.

At last, the study answered the main research questions raised in the beginning. First, the study has proved that the phenomenon of feminization of occupations has not been started yet in the South Mediterranean countries of study and the idea of gender segregation is the most prominent in Eastern countries due to low female labor participation rate. Despite the fact that some occupations that require high educational attainment are found to witness an increase in females' employment share but they are still male-dominant occupations. Second, the study has proved that gender wage gap exists despite the non-existence of feminization of occupations and both labor markets witness wage discrimination against women even against those who exhibit the same skills and education of men.

6. Recommendations:

Although all the countries mentioned in this paper have already made some achievements regarding women empowerment, but unfortunately still segregation prevails. First of all, regarding Egypt, in order for the country to fill the gap between men and women, there are some aspects that should be considered. First thing that should be done is to increase the demand for labor especially women in the markets that have been hospitable to women before. So, in Egypt especially women are mostly engaged in the export-oriented manufacturing sector. What the government should do is to encourage women to engage and maintain in such sectors in order to have a stable economy through having a stable not volatile exchange rate, reducing any barriers in the face of exporters, and promoting diversified products in the Egyptian market.

Another thing that an Egyptian woman suffers from is the opportunity to work in medium or large enterprises. Nowadays, there are lots of barriers that constraints the growth of such enterprises such as the enforcement of useless laws and regulations, insufficient information about the markets and lack of finance. So, policies promoting rights for women to engage in such businesses have to be

adopted. There is another policy that should be taken into consideration is to enable safety and security for women in the workplace through facilitating her travel to work through safety means of transportation.

Finally, another important policy that should be adopted is to prohibit the private employers from providing disincentives for women to work. They are always exposed to segregation especially in the private sector for several reasons. One of the reasons is that the employers are not welcoming women to work since they require on the job training and teaching them skills which are all considered costly from the employer's perspective. Another reason is that the employer is always unwilling to bear the costs of women's reproductive roles such as providing them with paid maternity leave. Concerning Jordan, the country already adopted lots of policies and implemented lots of projects and programs to achieve in women empowerment and reduce the segregation problem. On the other hand, there are some recommendations that the country still should take into consideration. First recommendation is the improvement of skill supply due to the mismatch between the education and market skills available. Although the government already achieved a reform agenda decade ago but the problem still prevails. The second policy than can be taken into consideration is building bridges for transition from vocational education and training which means providing women with training and improvement in her skills. This can be done through ensuring having anti-discrimination provisions on the work to provide women with equal opportunities with men. Also, this can be done if the private sector were given fiscal incentives to recruit women. Furthermore, the transition can be achieved if Jordanian society succeeded in increasing raising the awareness of the people of the role of women participation in inclusive growth.

Importantly, some defacto policies should take place in both countries in order to combat gender segregation in the workplace. First, the main obstacle toward combating gender segregation in the work place is the claim on women to exert more working hours in care work, so, the availability of publicly-subsidized child care. Thus, applying article (96) in the Egyptian labor law (12) for the year 2003, by providing publicly-subsidized nursery schools for each working place (private, public or government) and applying this law on the Jordanian labor market too would equalize the working hours available between males and females. Second, an important arrangement that would allow for the flexibility of working hours for both males and females is the availability of part-time arrangements. This would widen the basket of work choices for both males and females and thus lessen gender segregation (Riad, 2016).

7. What Policies were adopted in each country to empower women?

Egypt and Jordan are still not considered as countries that respect and appreciate the role of women in the society and in the economy, then there are many policies that can be implemented to solve the segregation issue. There are already some actions taken by Egypt to promote gender equality. Actually, these actions or programs are implemented by UNDP (United Nations Development Program), UN women and UNFPA (United Nations Population Fund).The policies adopted by such programs aimed to fight and combat all sorts of violence and discrimination against women. Also, these programs aim at calling for the rights of women to have an advanced status in the society.

Furthermore, these policies make sure that the Egyptian government is quickly responsive to the demands of women and also adopt policies to encourage their SMEs (Small medium enterprises).Apart from work and labor markets, these programs are also concerned with providing women with fair access to justice through family courts by having a transparent legal system. Finally, they are also truly concerned about poor women so these programs try to increase their access to services through achieving economic empowerment and citizens' rights. Apart from Egypt, Jordan did some already some policies to try to solve the gender segregation problems. There are some legislations and policies that took place in the Jordanian economy. One of which is "The National Agenda" which took place from 2006 till 2015.This agenda was aiming at improving the standards of living of people in general. Also, the agenda's main objectives are to reduce the unemployment generally to be 6.2% by 2017, empowerment of women and increase their participation in the economy, reforms concerning the higher education and training and last thing reforming the transportation services (Mihaylo Milovanovitch, 2016).

Furthermore, Jordan did not adopt only policies and regulations to promote gender equality but also there were some national projects done for the same reason. There are a lot of active measures of the labor market which are under the supervision of the ministry of labor. These measures include providing women with better skills, on the job training, internships and provide their employers with subsides to advocate for hiring women. Another initiative which is established by ILO is the pay equity. They introduced some amendments in the labor law in order to reduce the wage segregation between women and men. Last but not least, another program adopted was the maternity fund which was established by the Jordanian national commission for women along with some of the women's organizations. The fund tends to cover all the costs of working women if they took maternity leave.

Finally we provide a policy framework that is extracted from the countries understudy to achieve inclusive growth and effective labor market. We divided the frame work into four pillars: First,

Education, Public education system urgently needs to be altered with clear employment incentives behind placement tests. Then policy maker need to promote for more female entrepreneurial activities as the labor market is promising because of the high quality private sector jobs when education attainment. Second, Health: develop health care for maternity, enhancement of overall health care system for women through increasing female health awareness in rural areas. In Jordan, they need to maintain on the applied system as it is very efficient. Third, prohibit discrimination in pay for all public and private firms to eliminate high levels of existing sex discrimination. Provide social Insurance legislation that treats women as dependents rather than independent workers. Fourth: using media to emphasis of the important role women is providing in inclusive growth to overcome the culture and tradition believes.

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Section two: Occupational Segregation and the Evolution of the Gender Wage Gap in Egypt: Evidence from Egypt Labor Panel Surveys

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Abstract

The paper considers the contribution of occupational segregation to the size of the gender wage gap using recently available Egypt Labor Market Panel survey (ELMPS) 2012. Not treating all occupational distribution as justifiable in the private sector shows that the gender gap is around 48% of female wages and most of this (30%) is due to intra occupational reasons (i.e. men and women are paid differently for doing the same job); but also there is a substantial part due to occupational segregation (18% of female wages). In the government sector, there is evidence of some small pay discrimination against women within occupation, but inter-occupational segregation in fact works for female pay so that the total unexplained gap is almost non-existent there. The results indicate that unless effort is made to reduce the extent of discrimination in the private sector, it is likely that the burden of privatisation and civil service downsizing may fall disproportionately on women and may negatively affect their already low participation rates in Egypt.

1. Introduction

The size of the gender wage gap varies considerably across countries, and in previous studies for Egypt depending on definitions of the gap, and selection–correction mechanism used (Oostendorp, 2011 and El-Hamidi and Said 2008 for Egypt). Preliminary estimates based on the Egypt labor Sample survey show relative stability of a gap of 40 % in the private sector over the period 2006-2012. These are based on conventional Oxaca-Blinder methods estimate which takes occupational distribution for granted, whereas in fact women face entry barriers to certain occupations and hence the gap is much larger if we consider occupational segregation. Moreover since female labor force participation has declined over this period due to deteriorating conditions in the labor market, it is quite likely that women who remain in the labor market are at the higher end of the wage distribution, hence standard estimates of the unexplained gender gap would underestimate it. This paper attempts to address the above shortcomings by taking occupational distribution into account, and correcting for selection into different states of economic activity for men and women,

This paper considers the estimation of gender-based wage differentials between the public and private sector labour market in Egypt prior to large scale privatization of public enterprises. Its point of departure from the existing literature on gender gaps in Egypt is that it does not assume that all occupational differences as justifiable. Instead, by endogenising occupational attainment behaviour in calculating the gender gap, the findings of this paper suggest that occupational segregation plays a large role in explaining gender gaps in both public enterprises and private sector in Egypt. As such it uncovers the origins of gendered wage practices that from some of the literature presented above may still be present and even intensified due to liberalization and privatization in Egypt. "The paper also examines differences in wage setting between the public and private sector from a different angle that is the incidence of gender-based differentials. In particular, it tests the hypothesis that gender wage differentials are more compressed in the public than in the private sector, and also tests whether after correcting for differences in characteristics or endowments, there is still evidence of gender based differentials either sector.

In examining whether gender pay gaps reflect discrimination two separate issues are usually dealt with in the literature.[7] One is pay discrimination, which is a situation whereby women are paid less than equally qualified men in the same job. The second is job discrimination or inter-occupational segregation, which is a situation where-by qualified women are kept out of higher paying jobs. In absence of information on tastes and preferences of women to certain jobs, we can only compare men and women on basis of

measurable characteristics such as experience, tenure, education and job characteristics. We then can infer whether there is a remaining component that is 'unexplained' by such differences and suggest that it provides a rough or upper estimate on gender based discrimination. Thus, in what follows, 'unjustified' premia will refer to the component of the male-female wage differential that cannot be explained in measurable qualifications terms. See Gunderson (1989), Cain (1987) and Altonji and Blank (1999) for comprehensive literature reviews of measures of gender-based discrimination. Brown et al. (1980) and Gindling (1992) discuss, in particular, the empirical and conceptual issues involved in distinguishing job and wage discrimination. In the literature on occupational segregation and gender-pay discrimination, there is a controversy on whether these factors should be eliminated from calculations of the gender gap as they themselves can reflect the accumulation of a history of discrimination in the labour market (See Lissenburgh, 1995 for a review of such literature).

Job segregation and wage discrimination play a major role in discouraging women in the MENA region as well as other regions across the globe. Although, in the MENA region, this problem is also often combined with social norms which reinforce the segregation of women in a few "suitable occupations" that also tend to be low-waged. This also affects the reservation wage, which is the cut-off point at which individuals decide that work is preferable than other ways to use their time (World Bank, 2004). Women now comprise about one third of all industrial sector workers in developing countries (Joekes 1995).

Previous studies of gender-based wage differentials in the Middle East and North Africa region remain limited in number and mostly relied on decomposition methods into explained and unexplained coefficients. For the case of Egypt Assaad and Arntz (2005) emphasized that rewarding females for their attributes is key to narrowing gender wage gaps in Egypt. Said (2002) presents evidence that such gender inequalities have increased in the 1990s. Using ELMPS data, this study gives an insight as to how women earn a lot less than men with differences in education and experience across sectors and occupations taken in to account. Assaad and Barsoum (2007) point attention to women's restricted geographic mobility, and have described working conditions in some occupations of the private sector as dissuading for women to pursue them. Thus, the opportunities in the private sector are highly segmented across gender lines. Assaad and Arntz (2005) identify a total of just nine job types constituting 95 percent of female nongovernmental paid work. Furthermore, such an overcrowding of female employment in a limited number of work fields also causes a downward pressure of wages. Therefore, it is of great concern to learn to what extent the treatment of women in the Egyptian private labor market has evolved and if occupational segregation has affected gender wage gaps in the newly transformed Egyptian economy.

The rest of this paper is organized as follows. Section II presents a brief review of the literature on gender wage gaps globally, in MENA and in Egypt. Section III outlines the estimation strategy and the wage-determination model(s) employed in the paper to study wage differentials. Section III describes the data set and uses it to estimate ordinary least square (weighted by sampling weights) and selectivity corrected wage equations for males and females in the public and private sector. The main questions posed above are then tackled in Section IV, by presenting decompositions of the gender wage gap, which isolate explained and discriminatory components, inter-occupational and intra-occupational components. Section VII concludes by summarizing the results and outlining some of their policy implications.

2. Estimation model

The empirical analysis in this paper proceeds in three main stages. First, wage equations were estimated separately for males and females for three sectors: government, public enterprise and private. From these, standard decomposition methods were applied to both the government and public enterprise wage premiums and to gender gaps in the three sectors. Second, a model of occupational attainment is estimated for males and females in the three sectors, and incorporated in applying an alternative gender decomposition gap formula which does not assume that gender differences in occupational distributions are all economically justifiable. Third, different quantiles of the conditional (log) wage distribution are estimated to gain further insight into forms of variation around the estimated public sector and gender based premia and their distribution across occupations. In all three stages, wage equations are estimated separately for males and females across the three sectors. This allows for differences in wage setting in the three sectors and for differences in parameter estimates by gender.

In the first stage, ordinary least squares (weighted by sampling weights, described below) were used to estimate separate wage equations for workers in the government (g), public enterprise (p) and private (r) sectors as follows

$$\text{Ln}\,(w_{is}) = X_{is}\,\beta_s + u_s \qquad (s = g, p, r) \qquad (1)$$

Where Ln (w_{is}) is log hourly wages of individual i in sector s and X is the vector of individual and job related characteristics seen to be of relevance for wage determination. This was estimated twice, once for males and once for females which yields a system of six equations.

These are then compared to selectivity corrected wage estimates, where selection terms were derived from a model of sectoral choice of government or public enterprise employment relative to private employment. The model underlying this estimation is based on the extension by Lee (1982 and 1983) of

Heckman's selection model to the multinomial case and is summarised in the appendix. First, a sectoral allocation equation system (consisting of two equations for the probability of sector selection in the government and public enterprise sector, relative to the private sector) is estimated using multinomial logit maximum likelihood methods (equation A.1 in Appendix A). From this, predicted probabilities of sectoral selection are used to calculate sample selection terms (λ's) . Second, the system of six wage equations (1) above is reestimated consistently by least square regression on the same vector X of individual and job-related attributes as well as on the sample selection terms (λ's).

$$\text{Ln}\,(w_{si}) = \beta_s X + \sigma_s \lambda_s + e_s \qquad (s = g, p, r) \tag{2}$$

Given the parameter estimates from (1), Public-Private wage differentials can be evaluated at the mean of the sample, using the following decomposition formula: [8]

$$D_s = \overline{\ln(w_s)} - \overline{\ln(w_r)} = \frac{(\beta_s + \beta_r)(\bar{X}_s - \bar{X}_i)}{2} + \frac{(\beta_s - \beta_r)(\bar{X}_s + \bar{X}_i)}{2} \qquad (s = g, p) \tag{3}$$

D_s refers to the wage differential between sector s and the private sector, $\overline{\ln(w)}$ refers to the mean of Ln wages.

The formula decomposes the wage differential into two main components. The first term, which is the 'explained one', is the part of the differential attributable to differences in observed characteristics of workers (X's). The second term, which is the "unexplained one", is the part of the differential resulting from differences in the pay structure, or in returns to the characteristics. Note that the unexplained component also includes the differential in base wage (the constant term) which can be interpreted as a premium or pure rent from attachment to a particular sector.[9] Similarly the same formula can be used to decompose the male-female wage gap as follows:

$$D_f = \overline{\ln(w_m)} - \overline{\ln(w_f)} = \frac{(\beta_m + \beta_f)(\bar{X}_m - \bar{X}_f)}{2} + \frac{(\beta_m - \beta_f)(\bar{X}_m + \bar{X}_f)}{2} \tag{4}$$

Here the unexplained component (second term on the right hand side) is broadly taken to refer to gender-based discrimination.

[8] This is Oaxaca's (1973) classical decomposition presented originally to analyse gender gaps.

[9] As Terrell (1993) noted, it is common practice in studies of wage differentials to combine the coefficient on the constant term with the other parameters (β's) in the decomposition and refer to this as the effect that is due to differences in 'returns'. She suggested isolating the differential in the constant term in the calculation in order not to hide valuable information on the extent of payment of a "pure-rent" component in a sector.

As mentioned above this methodology, as well as any other based on the estimation of earnings functions, may lead to inaccurate measures of discrimination. It is not clear, however, whether it yields an under-estimate or over-estimate of the magnitude of actual discrimination. On one hand, it has been pointed out that there is a problem of omitted variables, including attachment to the labour force, lack of specific training, tastes, personality and interrupted careers whose impact will also be captured in the "unexplained" component.[10] In other words, one does not, in the calculation of this measure, control for a range of pre-market and extra-market factors that may result in payment of higher wages to males. It, therefore, would be more accurate to describe this component as only providing an upper bound estimate on gender-based discrimination by employers.

On the other hand, the inclusion of different job characteristics, especially occupations, in wage regressions treats the distribution across jobs by gender as if it is all justifiable. This ignores the literature on occupational attainment, which suggests that occupational distribution may derive in part from discriminatory factors. In particular, several studies have much of the discrimination against women (or other minority groups) is due to the crowding of these groups into a small number of occupations were wages and chances for promotion are low.[11] Thus the above measure may, in fact, underestimate the true magnitude of overall discrimination that women face in the labour market.

To arrive at a measure of job discrimination, one would need to fully incorporate the process of occupational attainment in the calculation of gender-based wage differentials. Thus, in the second stage of the empirical analysis in this paper, a behavioural model of occupational attainment is estimated which allows for predicting the distribution of females across occupations if they were treated in the same manner as males. This facilitates decomposing the gender gap into justifiable (in terms of productivity related differences) and unjustifiable components. And to further decompose these into intra-occupational and inter-occupational components.

Moreover, in order to be able to make statements about vertical mobility across occupations, the ordered probit model is used to estimate the pattern of occupational attainment.[12] According to this model, the conditional probability that an individual will be observed in occupation j is given by:

$$\hat{p}_{ij} = \Phi(\hat{\mu}_j - \hat{a}V_i) - \Phi(\hat{\mu}_{j-1} - \hat{a}V_i) \qquad (5)$$

[10] As filer (1983) noted such a measure becomes not only a of discrimination, but also of our ignorance.

[11] This may, in turn, stem from earlier sex-role socialisation that shapes preferences for certain jobs and/or discrimination prior to entry to the labour market in form of lack of access to schooling and training.

[12] The ordered probit model has the desirable feature of utilizing prior information of a ranking (say according to average income) among occupations, whereas unordered models (such as the multinomial logit ones) ignore this information. It also yields a more tractable likelihood function and a smaller set of parameter estimates than thiose derived from unordered models (Miller and Volker, 1985, p. 200-201).

Where Φ represents that standard normal cumulative density function, $\hat{a}$ the estimated coefficients and μ are the estimated separation points and V is the vector of individual level characteristics that are seen to be determinants of occupational choice.

Separate wage equations for males and females for each occupation group (j) are then estimated across the three sectors:

$$\text{Ln}\,(w_{ij}) = X_{ij}\,\beta_j + u_{ij} \qquad (j=1..k) \qquad (6)$$

Predictions from equation (5) combined with parameter estimates from equation (6) can then be used in a modified decomposition of the gender gap which expresses it as the sum of intra-occupational and inter-occupational wage components, as follows:[13]

Intraoccupational =

$$\sum_i p_i^f (\beta_i^m \bar{X}_i^m - \beta_i^f \bar{X}_i^f) = \sum_i p_i^f \beta_i^m (\bar{X}_i^m - \bar{X}_i^f) + \sum_i p_i^f (\beta_i^m - \beta_i^f) \bar{X}_i^f \qquad (7a)$$

(J) (D)

Interoccupational =

$$\sum_j \hat{\beta}_j^m \bar{X}_j^m (p_j^m - p_j^f) = \sum_j \hat{\beta}_j^m \bar{X}_j^m (p_j^m - \hat{p}_j^f) + \sum_j \hat{\beta}_j^m \bar{X}_j^m (\hat{p}_j^f - p_j^f)$$

(J) (D) (7b)

Where P_j^m (P_j^f) is the proportion of male (female) workforce employed in the jth occupation. $\hat{P}_j^f$ denotes the simulated distribution of females across occupations using the male coefficients.

The formula allows for a further decomposition of both intra and inter-occupational components into those that can be viewed as either justifiable wage differences (i.e. due to differences in wage-related attributes) (J) or discriminatory wage factors (D). Note that these decompositions by occupation contain an arbitrary component, in that results depend on the fineness of occupational classifications and if estimation is conducted at broad level of say one or two-digit classifications, occupational segregation within an occupational category is ignored. Moreover, although we may arrive at a better measure by incorporating occupational segregation, we are still unable to account for pre-labour market and extra-

[13] This decomposition is an extension of the conventional one, in equation (3), proposed by Brown et al (1980) and Miller (1987).

labour market factors (such as delayed or interrupted participation and women's tastes for non-pecuniary aspects for jobs).[14]

3. Data and Variable Specification

3.1 The Egyptian Labor Market Panel Surveys

To estimate wage differentials employing the above model, this chapter makes use of four rich nationwide labor market surveys (ELMS): the 1988 Labor Force Sample Survey (LFSS88); the 1998 Egypt labor Market Survey (ELMS98), and the 2006 and 2012 Egypt Labor Market Panel Survey (ELMPS06-12). Both the ELMPS 06-2012 and ELMS 98 were conducted by the Economic Research Forum (ERF) in cooperation with CAPMAS. Together these four surveys provide detailed information on the household members' education, employment status, time allocation, job mobility, earnings and household enterprises. This paper utilizes ELMPS 2012, in comparison to 3 previous surveys such that it is considered the third round of a periodic longitudinal survey that tracks the labor market and demographic characteristics of households and individuals interviewed in 2006 and 1998, in addition to a refresher sample in each round to ensure that the data continues to be nationally representative.

3.2. Variable Specification

For the purpose of this study, several variables are extracted that affect the choice of employment status, levels of education, age, age squared, experience, experience squared, regional dummies, parental education, and hourly wages (in logs). Five regional dummies were used in Egypt. The sample for wage estimation is limited to wage workers who are between the age of 16 and 64, amounting to 7558 in 2006 and 10,160 in 2012 in Egypt. In addition, the work-status selection model uses also other non-wage, unemployed and non-participating individuals within the working age sample which increases the sample of estimation of the sector selection equations. Additional household level and family background variables were also used to identify the sector selection equation from the wage equation. These include number of preschool children, children above 6 years, mother's level of education, father's level of education (a dummy for holding an intermediate or above degree; and a dummy for holding less than an intermediate degree), and father's employment status (whether he is a self-employed or an employer at

[14] It is debatable, however, that even if we are able to account for these factors, they should be included in the 'explained' components of the differential. For example, interrupted careers are taken to be indicative of lack of accumulation of skills in the human capital model. This however may be a restrictive (even sexist) interpretation as it ignores the skills acquired by women in the process of performing domestic labour (Dex, 1985 and Wilkinson, 1991). Moreover, the preference and tastes of women for certain jobs, or accepting a tradeoff between pecuniary and non-pecuniary aspects of jobs, is seen in orthodox literature as a product of free choice. A feminist standpoint theorist , however, would interpret it as the "cumulative moulding ogf behavioural response, produced by a history of difference and discrimination" (Humphries, 1994, p. 8).

the time the individual entered the labor force). Parental background variables can also be interpreted as proxies for household socioeconomic status.. In addition, a measure of non-labor income (total monthly earnings of male members of the household) as well as another variable that aggregates different sources of nonlabor income are used in the male and female work status equation.

The two surveys used very detailed set of earnings structures. As a consequence, data on monetary earnings are fairly reliable. However, the quality of non-pecuniary benefits data is likely to be poor in quality. Therefore, only monetary earnings are included in the wage equation. Log real hourly wage is used as a dependent variable which is computed by dividing the monetary net earnings by the number of hours worked per year and all wages are expressed in 2012 prices. Log hourly wage is used (instead of hourly wage) to reduce the effects of wages outliers.

In the occupational attainment model at the dependent variable is an ordered occupation variable at the one-digit level, in which the occupations appear in the following order: managers and professionals, technicians and associate professionals, clerical support workers, service craft and plant workers and finally, agriculture and plant workers.

Together these surveys provide detailed information on the household members' education, employment status, time allocation, job mobility, earnings and household enterprises. This paper utilizes data on earnings structure mainly from ELMPS 2012, which is considered the third round of a periodic longitudinal survey in comparison to previous rounds. As such, it tracks the labor market and demographic characteristics of households and individuals interviewed in 2006 and 1998, in addition to a refresher sample in each round to ensure that the data continues to be nationally representative.

4. Empirical Results

4.1 Descriptive Analysis

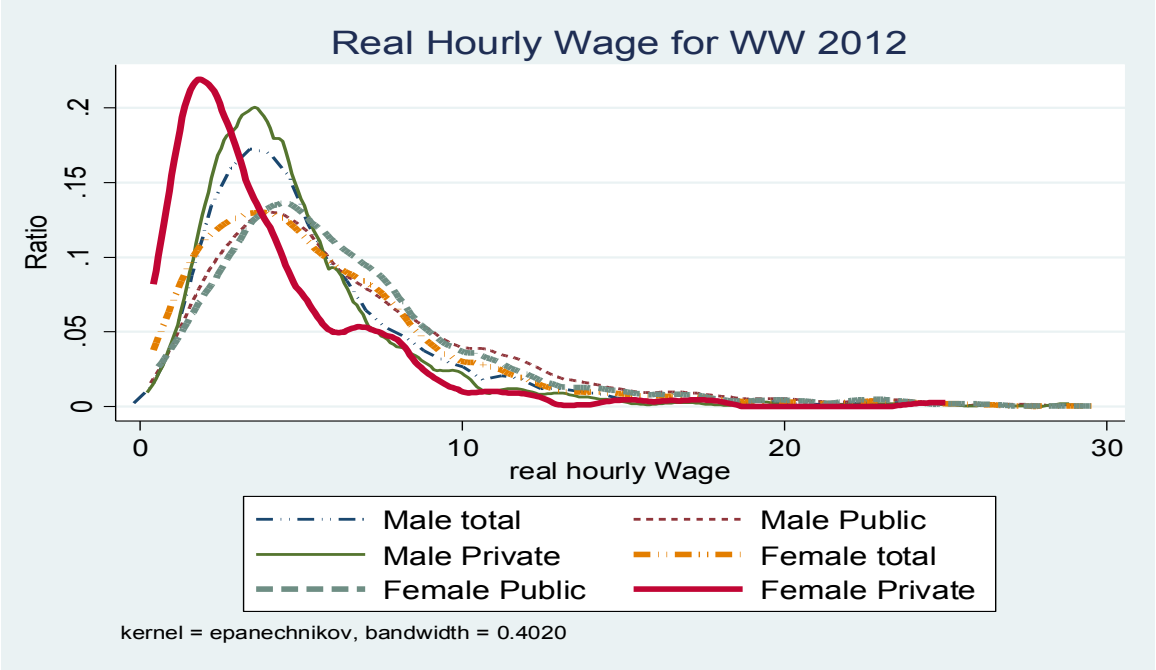
Before embarking on the estimation of the empirical models above Table 1 shows rends in real hourly wages for males and females in Egypt 1998-2012. Previous studies have shown that real wages in Egypt have gone through two phases decompression and erosion till 1998 and then rising levels and inequality afterwards (Said, 2012). This pattern is shown in the table, whereby the increase in hourly wages was even more pronounced for females than males (increase by 26% as oppose to 18% for males between 1998-2006 and by 19% for females as oppose to 10% for males from 2006-

2012)[15]. The relative stability in hourly wage inequality hides two opposing trends, where wage inequality for females has declined but has increase for males. This is also clearly seen in figure 1 showing the Kernel density distribution for hourly wages for males and females, which shows that hourly wage distribution, is positively skewed for both. This gives a visual inspection of the gender gap that shows that it is not constant across the wage distribution. Figure 2 shows a similar pattern using the cumulative density function for real hourly wages for males and females. In both cases it is clear that development at the median or mean of the distribution is very different from the rest of the distribution. For the above reasons the developments also intrude gender wage gaps (Figure 2 may also give a mistaken picture of developments in the relative position of women wage workers relative to that of men over the period under study).

Table (1): Trends in Real Hourly Wages For Males and Females in Egypt, 1988-2012

	Median real hourly wages by group				
	Level			***percentage change***	
	1998	2006	2012	*1998-2006*	2006-2012
Total	3.42	4.10	4.58	20	12
Male	3.46	4.10	4.50	18	10
Female	3.25	4.08	4.86	26	19
	Decile ratio of real hourly wages by group				
	Level			***percentage change***	
	1998	2006	2012	*1998-2006*	2006-2012
Total	4.99	5.55	5.50	11	-1
Male	4.80	5.00	5.32	4	6
Female	6.59	7.33	6.86	11	-6

[15] It is worth noting that as hours of work declined, monthly earnings actually dropped for both males and females (between 2006 and 2012). This is more consistent with the expectation of worsening labor market outcomes after the financial crisis and revolution.



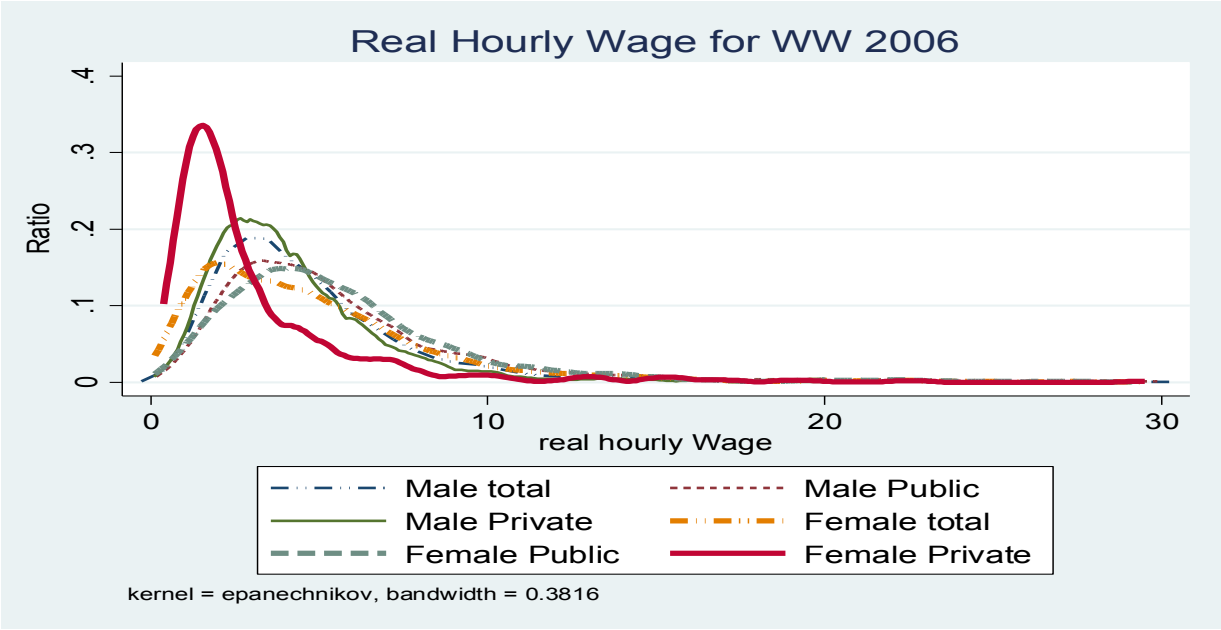
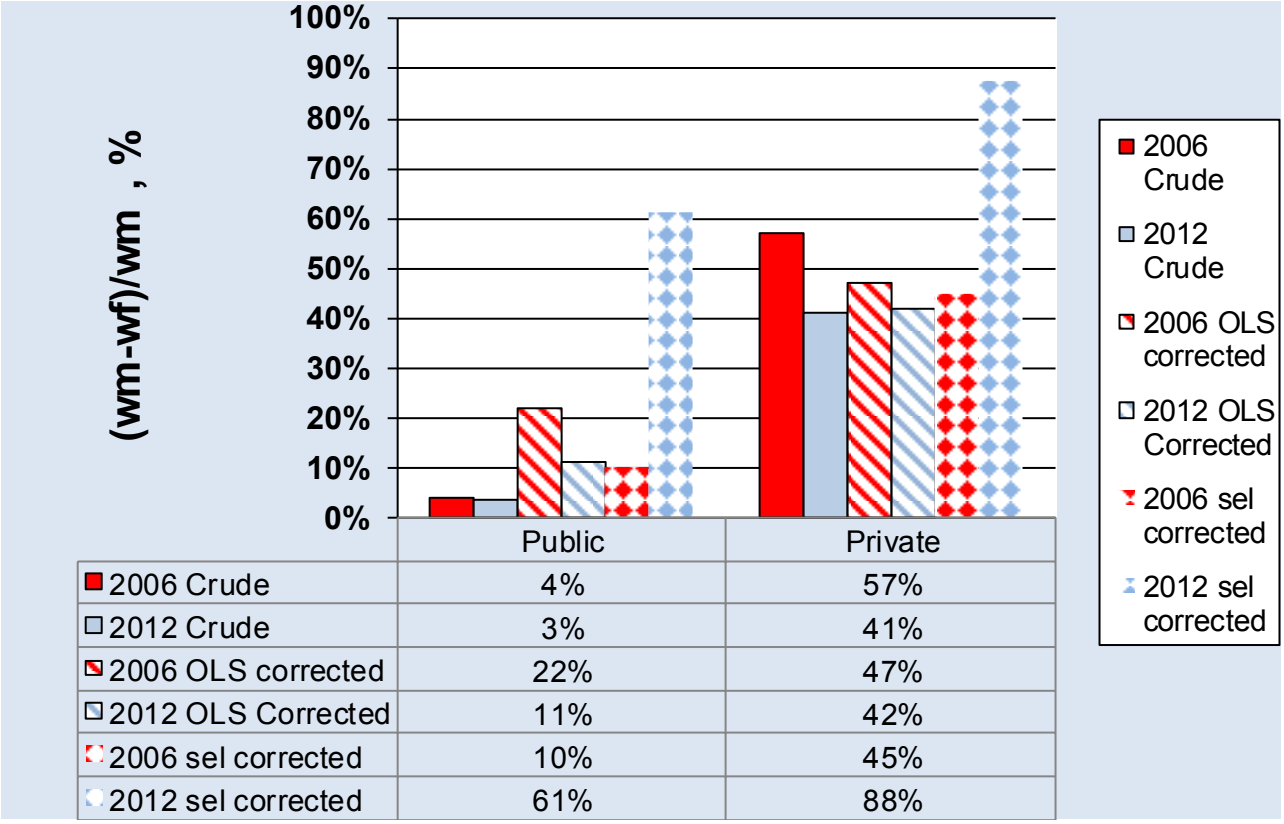


Figure (1): *Kernel Density Functions for Real Hourly Wages by Gender, 2006-2012*



	Public	Private
2006 Crude	4%	57%
2012 Crude	3%	41%
2006 OLS corrected	22%	47%
2012 OLS Corrected	11%	42%
2006 sel corrected	10%	45%
2012 sel corrected	61%	88%

Figure (2): *Crude vs OLS and Selectivity Corrected Gender Wage Differentials by Sector of Ownership, 2006 and 2012*

A second issue of concern in estimating gender wage gaps is that of occupational distribution, Table 2 shows that there is evidence of increasing occupational segregation as measure by the duncan index of dissimilarity of occupational distribution where it increased by 11% between 2006-2012. This is also the case for increasing index of segregation by a sector of economic activity where it increases by 19% over the same period and by employment status where it increase by 24% (see Table A.1.).

Table 2: Measure of Gender Occupational Segregation, 1988-2012

Sectors	Total	Men	Women	Mi	Fi	|fi-mi|
			1988			
Tech.& Scient	1841769	1246229	595540	0.125	0.100	0.025
Manag.	196790	151785	45005	0.015	0.008	0.008
Clerical	960766	550266	410500	0.055	0.069	0.014
Sales	1254564	917057	337507	0.092	0.057	0.035
Serv	978121	846588	131533	0.085	0.022	0.063
Agri	7591300	3655613	3935687	0.366	0.662	0.296
Prod	3105264	2617625	487639	0.262	0.082	0.180
	15928574	9985163	5943411		**DI**	**0.310**
			1998			
Tech.& Scient	3017577	1980849	1036728	0.152	0.123	0.029
Manag.	300135	250718	49417	0.019	0.006	0.013
Clerical	1548654	947198	601456	0.073	0.071	0.002
Sales	2006548	1573222	433326	0.121	0.051	0.070
Serv	1460276	1307829	152447	0.101	0.018	0.083
Agri	8916250	2997500	5918750	0.231	0.703	0.472
Prod	4166108	3933099	233009	0.303	0.028	0.275
	21415548	12990415	8425133		**DI**	**0.472**
			2006			
Tech.& Scient	4682541	3033731	1648810	0.176	0.161	0.015
Manag.	1851443	1455601	395842	0.085	0.039	0.046
Clerical	841221	514880	326341	0.030	0.032	0.002
Sales	1384730	959529	425201	0.056	0.042	0.014
Serv	1769633	1579400	190233	0.092	0.019	0.073
Agri	10900616	4306044	6594572	0.250	0.645	0.395
Prod	5985978	5348524	637454	0.311	0.062	0.249
	27416162	17197709	10218453		**DI**	**0.397**
			2012			
Tech.& Scient	5642618	3493255	2149363	0.185	0.284	0.099
Manag.	1888603	1600195	288408	0.085	0.038	0.046
Clerical	629695	422311	207384	0.022	0.027	0.005
Sales	1667058	1267883	399175	0.067	0.053	0.014
Serv	973977	913057	60920	0.048	0.008	0.040
Agri	7870653	3809521	4061132	0.201	0.536	0.335
Prod	7839557	7427207	412350	0.392	0.054	0.338
	26512161	18933429	7578732		**DI**	**0.439**
Percentage change in Dissimilarity Index from 2006 to 2012						**11%**

To estimate wage differentials that correct for differences in such characteristics, log hourly wage regressions for Egypt 2006 and 2012 were estimated. For each country, four regressions are estimated for the following: males in the private sector, males in public sector, females in the private sector, and females in the public sector, and those are also repeated using selectivity corrected methods.

4.2 Determinants of Work Status Choice: Multinomial Logit Model

To correct wage estimates for selectivity, in the first stage, four multinomial logistic regressions are estimated to study selection into non-participation, unemployment, non-wage work, non-government work, and government wage work in comparison to non-participation by gender. In each equation, the dependent variable is a categorical variable represented by the five different work status states mentioned above. The identification variables (affect participation but not wages) are represented by household-related variables that determine participation in the labor force which consequently affects the choice of the employment status. Parameter estimates are then used to compute the four selection variables or inverse (λ) Mill's ratios to correct for selectivity bias, which are subsequently included as regressors in the selectivity corrected wage equations.

Table A4 shows the parameter estimates of the sector-gender-round specific selection equations. The reference category is an illiterate and non-participant person living in greater. The results show that education increases a male's probability to be wage workers in the government sector but it decreases a male's chance of being a non-wage or as being a non- government wage earner in most cases. For females, education increases a female's probability to be wage worker, especially in the government sector, even more so than men, followed by the non-government sector. As expected, higher education reduces the probability of a female being a non-wage earner. One interpretation is that women prefer to work in the government, even more than men, because of its more convenient working conditions and short working hours. Simultaneously, however, education also increases the probability of unemployed as well for both men and women in Egypt.

Other patterns are found by examining the coefficients on the household level identification variables. As expected, presence of small children negatively affects the probability of being a wageworker for women and positively affects it for men. Non-labor income exerts influence only in preventing women from becoming non-wage workers.

4.3 OLS and selectivity-Corrected wage equation estimates

The selectivity corrected wage equation estimates, alongside the weighted OLS results are presented in Tables A2 and A3. The specification follows convention with a variety of human capital, demographic and job characteristics variables including years of experience, experience squared, level of educational qualification and region of residence. Also included were controls for whether employees obtained a higher degree after appointment, whether contract is of a temporary nature as well as their occupation and sector of economic activity. With these set of controls, the estimated equations generally have high adjusted R^2 (ranging from 0.5 to 0.7, which is very high for cross-sectional regressions) and the coefficients are generally significant and of the expected sign.

The selectivity corrected results are in broad agreement with the least square results in terms of comparison across sector and gender groups. The results, however, show that there was significant negative selection for males in both the public and the private sector and no significant selection for females in 2006. By 2012, however, there was positive selectivity in the private sector only for both males and females. These results imply that the same factors that lead male workers to be selected in the public or private sector also lead them to receive lower wages in 2006. Positive selection of workers in the private sector is consistent with the operation of a more competitive labor market, and it is worth noting that the coefficient estimate is much higher for the selectivity term for females than it is for males. Thus not correcting for selectivity will underestimate the gender gap in the private sector. It appears that the bias on parameter estimates was of a quite significant magnitude, that the resultant of gender wage differentials significantly increased. One needs to be careful though about the sensitivity of the results to representation of the selection rule in the selectivity correction procedure. [16]

4.4 Alternative Decompositions of Gender Wage Differentials

As for the gender (male-female) differentials, the results of applying the conventional decomposition formula in equation 4 are shown in Fig 2. They show that the unexplained component, usually attributable to discrimination, is indeed small in the public sector (22% in 2006 declining to 11% of female wages in 2012). In the private sector the gender gap is much higher at 47% in 2006 declining to 42% in 2012.

[16] Research in other contexts (mainly in the evaluation of manpower training and social programs) have shown that, in absence of meaningful exclusion principles, estimates differ widely when alternative selection procedures are used. This led for a preference to using experimental data in selectivity models rather than having results subject to improper representation of the selection rule (Lalonde, 1986 and Burtless and Orr, 1986). Heckman and Hotz (1989) suggested instead several specification tests that exploit the panel nature of data to test various selectivity correction procedures. Given the nature of our data, neither of these methods were available. Recent research suggest that the mean square error of OLS estimates can be much lower than two-step or MLE selection models. (See Puhani, 1997 and Kennedy, 1998 and references cited therein).

In order to investigate the effect of gender on predicted occupational distributions, we turn to estimating a model of occupational attainment.

Following the approach advocated by Greenhalgh and Steward (1985), Miller and Volker (1985) and Miller (1987), we estimate an ordered probit model to predict the probability that an individual will be employed in one of six occupational job groups, namely: (1) managers, (2) professionals, (3) technicians and associate professionals, (4) clerical support workers (5) service craft and plant workers, (6) elementary and agricultural workers, [17] postulated to be a function of the person's educational attainment, labor market experience and region of residence. Incorporating information on the ranking of occupations into the estimation procedure permits for explicit statements to be made concerning vertical mobility. Thus, a positive coefficient indicates a high probability of being located in a more prestigious occupation.

It is worth noting from the outset that we are only catching a limited level of occupational concentration by looking at the 1 digit level. If we look in a more detailed fashion at differences between males and females in occupational distribution at the 3 digit level we will definitely catch a much higher degree of dissimiliarty. Table 3 shows the top 3 digit occupation by gender and sector for 2006 and 2012. As can be seen in the public sector 41% of males are in the 5 top posts and 62% are in the top 5 posts. One occupation they have in common is basic schoolteachers, but unlike women males are also concentrated among building cleaners and care takers, security workers and technicians and assistants to engineers. Females are highly concentrated amongst assistant administrators, nurse and mid-nurses and midwives, accounting clerks and secondary school teachers. In the private sector in 2012 55% of all men are in the following 5 occupations construction workers, agriculture workers, truck drives, shop sales workers, guards and mail deliver and baggage handlers; 50% of females' textile machinery workers, shop sales workers, basic education teachers, agricultural workers and assistants in secretarial works.

[17] The advantage of this grouping of occupational attainment as opposed to the standard 7 one-digit ones (scientific & technical, managerial, clerical, sales, services, agricultural and production) is that it corresponds to actual classifications in establishment employment records. It is also possible in our classification to rank the occupations by average wages (as was done in Greenhlagh and steward , 1985) which is necessary for the estimation of the ordered probit model.

Table 3. Top Five Three Digit Occupations by Gender and Sector, 2006, 2012

Sector	2006			
	Male		**Female**	
	Occupation	*% of total employment*	*Occupation*	*% of total employment*
Public	Basic education teachers	9.74	Basic education teachers	20.6
	Building cleaners and care takers	9.66	Assistant administrators	17.7
	Security workers	8.85	Nurse and Midwife assistants	8.8
	Assistant administrators	7.98	Accounting Clerics	6.3
	Technicians and assistants to engineers	5.04	Secondary School Teachers	6.0
	Total Top Five Occupations	**41.3**	**Total Top Five Occupations**	**59.3**
Private Sector	Agriculture and Livestock workers	14.1	Shop Sales wokers	15.9
	Construction Workers	11.4	Agriculture and Livestock workers	12.2
	Truck Drivers	9.2	Textile machinery workers	8.3
	Shop Sales wokers	9.1	Basic education teachers	6.7
	Service workers in Restaurants, hotelsand hospitals	5.1	Assistant administrators	6.6
	Total Top Five Occupations	**49.0**	**Total Top Five Occupations**	**49.6**
	2012			
	Male		**Female**	
	Occupation	*% of total employment*	*Occupation*	*% of total employment*
Public	Building Caretakers	10.25	Basic education teachers	24.7
	Basic education teachers	9.61	Assistant administrators	20.6
	Assistant administrators	8	Nurse and Midwife assistants	7.1
	Security workers	7.03	Secondary School Teachers	5.6
	Technicians and assistants to engineers	6.82	Specialists in Social Studies	4.3
	Total Top Five Occupations	**41.7**	**Total Top Five Occupations**	**62.2**
Private Sector	Construction Workers	16.6	Textile machinery workers	11.0
	Agricultural and Gardening workers	13.9	Shop Sales wokers	10.9
	Truck Drivers	11.0	Basic education teachers	10.6
	Shop Sales wokers	9.4	Agricultural and Gardening workers	10.4
	Guards, mail delivery and baggage handlers	4.4	Assistants in Secretarial work	6.9
	Total Top Five Occupations	**55.3**	**Total Top Five Occupations**	**49.9**

Notes: Occupations are ordered in descending order according to their proportion in total employment.

[1] This can include teachers and teaching supervisors in Ministry of Education

As can be seen from the estimates of the model presented in Table 4, education and labor market experience are both associated with an increase in the probability of being located in higher ranked occupations. The impact of education on occupational ranking is stronger in the public sector than in the private sector for both males and females. In particular, obtaining a university degree considerably raises the probability of being ranked in more prestigious jobs in the government and public enterprise sector.

Table (4): Estimates Of the Ordered Probit Model of Occupational Attainment, 2006- 2012

	2006				2012			
	Male		Female		Male		Female	
VARIABLES	Public	Private	Public	Private	Public	Private	Public	Private
Exper	-0.0628***	-0.0440***	-0.0141	0.0174**	-0.0422***	-0.0245***	-0.0200*	0.0541***
	(0.00909)	(0.00384)	(0.0149)	(0.00873)	(0.00717)	(0.00288)	(0.0108)	(0.00703)
Expsq	-0.000481***	-0.000598***	-0.000371	-9.05e-05	0.000247*	0.000427***	-0.000209	-0.000741***
	(0.000157)	(5.61e-05)	(0.000301)	(0.000140)	(0.000150)	(5.19e-05)	(0.000275)	(0.000141)
literate without any diploma	-0.116	-0.460***	-0.101	-0.155	-0.459***	-0.501***	0.243	-0.128
	(0.138)	(0.0539)	(0.476)	(0.143)	(0.143)	(0.0575)	(0.555)	(0.172)
elementary school	-0.405***	-0.480***	-0.992*	-0.0428	-0.854***	-0.365***	-1.811***	0.312**
	(0.129)	(0.0498)	(0.535)	(0.118)	(0.125)	(0.0432)	(0.683)	(0.126)
middle school	-1.041***	-0.500***	-1.790***	-0.270	-1.454***	-0.331***	-1.855***	0.406**
	(0.147)	(0.0666)	(0.442)	(0.169)	(0.135)	(0.0537)	(0.399)	(0.168)
General high school	-2.433***	-0.841***	-3.412***	-1.006***	-2.239***	-0.713***	-2.980***	-0.255
	(0.258)	(0.141)	(0.563)	(0.368)	(0.167)	(0.0816)	(0.401)	(0.252)
Vocational high school	-2.483***	-0.735***	-2.508***	-0.209**	-2.320***	-0.524***	-2.776***	-0.206**
	(0.123)	(0.0449)	(0.277)	(0.0911)	(0.111)	(0.0386)	(0.345)	(0.0897)
post-secondary institute	-3.019***	-1.089***	-3.413***	-0.506**	-2.828***	-1.020***	-3.343***	-0.634***
	(0.141)	(0.0863)	(0.293)	(0.222)	(0.135)	(0.0768)	(0.361)	(0.207)
university & above	-4.024***	-1.503***	-4.190***	-0.776***	-3.993***	-1.377***	-4.593***	-0.896***
	(0.133)	(0.0604)	(0.288)	(0.124)	(0.122)	(0.0493)	(0.350)	(0.112)
Alx, Sz C.	-0.110	-0.0425	0.0147	0.0949	-0.0434	0.0995*	-0.192*	-0.0338
	(0.0899)	(0.0613)	(0.111)	(0.144)	(0.0830)	(0.0522)	(0.112)	(0.132)
Urb. Lwr.	-0.353***	-0.0496	-0.124	0.206	-0.190**	0.0778	-0.312***	0.112

	(0.0845)	(0.0567)	(0.105)	(0.131)	(0.0817)	(0.0477)	(0.100)	(0.130)
Urb. Upp.	-0.276***	0.299***	-0.260**	1.160***	-0.200**	0.299***	-0.334***	0.401***
	(0.0868)	(0.0649)	(0.111)	(0.146)	(0.0848)	(0.0549)	(0.112)	(0.151)
Rur. Lwr.	-0.0330	0.881***	-0.181*	1.085***	-0.108*	0.733***	-0.362***	0.641***
	(0.0643)	(0.0450)	(0.0981)	(0.101)	(0.0606)	(0.0366)	(0.0900)	(0.0937)
Rur. Upp.	-0.157**	0.994***	-0.524***	1.817***	0.0741	0.884***	-0.536***	0.970***
	(0.0744)	(0.0469)	(0.150)	(0.103)	(0.0685)	(0.0389)	(0.130)	(0.107)
Ancillary Parameters								
First Separation Point	-6.071***	-2.237***	-5.644***	-0.779***	-5.558***	-1.816***	-6.413***	-0.987***
	(0.188)	(0.0825)	(0.345)	(0.154)	(0.156)	(0.0599)	(0.375)	(0.124)
Second Separation Point	-4.507***	-1.981***	-3.932***	-0.426***	-3.967***	-1.529***	-4.180***	-0.433***
	(0.176)	(0.0812)	(0.336)	(0.151)	(0.146)	(0.0588)	(0.367)	(0.119)
Third Separation Point	-3.613***	-1.815***	-2.663***	-0.214	-3.081***	-1.328***	-2.673***	-0.214*
	(0.171)	(0.0805)	(0.331)	(0.149)	(0.142)	(0.0581)	(0.362)	(0.118)
Fourth Separation Point	-3.212***	-1.747***	-1.481***	-0.0762	-2.806***	-1.278***	-1.805***	-0.111
	(0.169)	(0.0802)	(0.323)	(0.149)	(0.140)	(0.0579)	(0.355)	(0.117)
Fifth Separation Point	-0.605***	-0.0890	0.524	1.124***	-1.739***	0.415***	-1.428***	0.928***
	(0.164)	(0.0782)	(0.372)	(0.151)	(0.135)	(0.0569)	(0.347)	(0.119)
Observations	2,493	6,601	1,118	1,751	2,740	8,810	1,368	1,503

Notes: The dependent variable is occupational / job group ordered in an ascending order by average wage. The ancillary parameters are the various separation points (threshold levels) that model the categorization in the ordered probit model. Standard errors are in parenthesis. * denotes significance at the 10 percent level, ** denotes significance at the five percent level and *** denotes significance at the 1 percent level.

In order to highlight the underlying labor market processes, the estimates in Table 4 are used to simulate the occupational distribution for females using the male equation estimates. The latter simulation shows the occupational redistribution that females would obtain if their attributes were rewarded in the same

manner as those of their male counterparts. Table 4 presents this simulation alongside actual male and female distributions. Two segregation indices were reported to compare the effects of the redistribution on occupational segregation. Both measure the degree of segregation and range from 0 to 1 (see Brown, Moon and Zoloth, 1976). A zero value indicates equal proportions of men and women in each occupation, while a value of one reflects total segregation of the sexes. The Duncan dissimilarity index represent the proportion of either men or women who would have to be transferred from one occupation to another in order to obtain equal proportions across all occupations. The segregation index is a measure of association between a person's occupation and sex, with a higher degree of association indicating segregation by sex across occupations.

The calculated indices presented in Table 5 reveal that the highest levels of actual gender based segregation are in the public-enterprise sector, followed by the government and are least in the private sector. Yet the difference in the distributional pattern in the public sector is mainly driven by the fact that females are concentrated in clerical positions (57% of females in the government and 44% in the public enterprise sector). Moreover, these results are not likely to be upheld if one examines narrower occupational distributions. Table 6 shows the five most prevalent detailed (three digits) occupations for males and females in the three sectors. Although there is a higher concentration of females in a few clerical occupations in the public sector (70% of females in the government and 60% in public enterprises are in five mostly clerical positions), yet most of these positions are also amongst the most prevalent ones for males. So actual occupational segregation is not as large as implied by the above analysis. In the private sector, however, females are concentrated in completely different "feminine" occupations. Accountancy is the only occupation to be common to both sexes in the five most prevalent occupations.

Table 5 also shows the distribution that would have prevailed if female attributes were rewarded in the same manner as those of their male counterparts. Both indices witness a drop in all three sectors. The segregation index, in particular, drops quite substantially (by a third) in the private sector. These drops in the indices reflect the strong combined effects of discrimination in the labor market and of differences in tastes.[18] In other words, occupational segregation between men and women would in each case be substantially reduced by assigning women to occupations according to the men's model of occupational attainment.

[18] Since the difference is residual, it may also contain justified differences to the extent that we have omitted or incorrectly specified personal characteristics that affect occupational attainment.

Table 5 Predicted and Actual Occupational Distributions, 2006 -2012

Job Group	Managers	Professionals	Technicians and associate professionals	Clerical support workers	Service Craft & Plant workers	Elementary and agricultural workers	Duncan's Index of Dissimilarity v's actual male	Segregation Index v's actual male
				2006				
				A. Government				
Actual Distributions								
Male (P^m)	0.08	0.29	0.19	0.08	0.33	0.02		
Female (P^f)	0.10	0.42	0.31	0.13	0.04	0.00	0.31	0.15
Predicted Female Distribution Using Male Coeficients	0.04	0.16	0.15	0.08	0.50	0.07	0.23	0.18
				C. Private				
Actual Distributions								
Male (P^m)	0.09	0.04	0.03	0.01	0.45	0.38		
Female (P^f)	0.02	0.02	0.01	0.01	0.14	0.80	0.42	0.88
Predicted Female Distribution Using Male Coeficients	0.12	0.04	0.03	0.01	0.47	0.31	0.06	0.14
				2012				
				A. Government				
Actual Distributions								
Male (P^m)	0.08	0.31	0.21	0.06	0.20	0.15		
Female (P^f)	0.06	0.51	0.32	0.07	0.01	0.03	0.32	0.21
Predicted Female Distribution Using Male Coeficients	0.05	0.17	0.16	0.06	0.25	0.32	0.22	0.13
				B. Private				
Actual Distributions								
Male (P^m)	0.09	0.05	0.04	0.01	0.50	0.32		
Female (P^f)	0.03	0.04	0.02	0.01	0.13	0.78	0.46	0.67
Predicted Female Distribution Using Male Coeficients	0.11	0.05	0.04	0.01	0.50	0.29	0.03	0.18

Note: Duncan's Index of Dissimilarity = $0.5 \sum |P_{mi} - P_{wi}|$ where P_{mi} and P_{wi} are the proportion of females and males respectively in the i^{th} job group.

Segregation Index = $\sum T_i (P_i - P)^2 / TP(1-P)$ where P_i is the proportion of females and Ti is the total number of people in the i^{th} job group.

The results in Table 6 show that most of the gender gap in the government is justifible, we decompose the gender differentials only in the private sector using a method which incorporates the behavioural model of occupational status as presented in Table 4. Compared to results from the standard decomposition of the gender gap presented in the previous section, the above estimates show that once the male and female occupational distributions are not treated as all justifiable, the discriminatory gender wage gap is quite significant at 48% of female wages in the private sector in 2012. Most of this is due to intra-occupational based discrimination, but a substantial part is also due to inter-occupational segregation. In fact, there is no part of the crude gender gap that is justifiable, because based on characteristics differences between 2006 and 2012, there should have been a small premium in favor of women (1-3%).

Table 6 Intraoccupational-interoccupational Decomposition of Gender Wage Gaps in Private Sector (2006-2012)

	2006	2012
Total Gender Gap (in log hourly wage)	0.45	0.39
Intra Occupational	0.31	0.27
Justified	0.04	0.01
Discrimination	0.27	0.26
Inter Occupational	0.14	0.12
Justified	-0.05	-0.05
Segregation	0.19	0.17
Percent of Female Hourly Wage		
(1) Justified Intra Occupational	4.1%	0.8%
(2) Justified Inter Occupational	-5.0%	-4.7%
(3) Intra Occupational Discrimination	30.6%	29.8%
(4) Inter Occupational Segregation	21.5%	18.2%
Unjustified Component as % of Female Hourly Wage (3+4)	52.1%	48.0%

Notes: The unjustified component as % of female hourly wages is calculated as the exponent of the differential in log hourly wages minus 1.

Thus in the private sector, where the highest incidence of gender based discrimination occurs, a very small proportion of the gender gap is justifiable (9%). The rest is due to the two forms of pay discrimination, with intra-occupational pay discrimination amounting to 30% and segregation to 21% of female wages. In 2006, dropping to 18% in 2012. Both these estimates are quite high by international comparisons.[19] This small decline in inter occupational segregation reflected in the small drop in the overall gender wage gap from 52% to 48%.

5. Conclusion and Recommendations

This paper considers the estimation of gender-based and sector-based wage differentials both between and within the public and private sector labour markets in Egypt, employing data from the 1990 Establishment-Level Survey. Using earnings functions estimates and standard decomposition techniques, it was shown that both males and females have an earning disadvantage in the public enterprise and government sectors after correcting for a range of personal and job characteristics. If total rewards are considered (including non-pecuniary benefits), this disadvantage declines but is not eliminated for government workers. It declines even further or becomes non-existent for public enterprise males and turns into an advantage for female public enterprise employees.

Also the results obtained here confirm that that the component of the gender pay that is roughly attributable to gender-based pay discrimination is small in the public sector. In contrast, it is quite high by international comparisons (amounting to 39% of female pay) in the private sector and apparently takes place by paying a pure rent premium to men. The gender gap was further decomposed into components attributable to intra-occupational pay discrimination and inter-occupational segregation. This revealed that the unexplained component is even higher, at about 82% of female pay, in the private sector, with a large proportion (34.7% of female pay) attributable to segregation or entry barriers facing females in certain occupations. Inter-occupational segregation is also substantial in the public enterprise sector, but amounts to a smaller percentage of female hourly wages. In the government sector, there is evidence of some small pay discrimination against women within occupation, but inter-occupational segregation in fact works for female pay so that the total unexplained gap is almost non-existent there.

[19] Pay discrimination (within occupations) ranges between 14-36% in the private sectors in industrialised countries. It is estimated to be in the range of 9-28% in Costra-Rica and Occupational segregation was less than 3% of the total unexplained gender gap in Costa-Rica and only 7% in the U.K. (Miller, 1987 and Gindling , 1992).

The above results have several important policy implications. From a cost-minimisation or tax-payers point of view it might not matter that public sector employees are underpaid relative to their 'equivalent' private sector counterparts -- as long as that situation does not create an excess demand for certain types of workers. But from an equity and efficiency point of view, the existence of such wage differentials does matter. It is unlikely that workers, especially at the higher end of the wage structure, would remain in the public sector, unless they believe non-pecuniary aspects (mainly job security and low effort) of the job compensates for low wages. Alternatively, they may hold on to the job while having a second job in the private sector or supplementing income through corruption and bribery etc. Either way, we have an adverse selection story in the public sector of low productivity, less motivated workers only interested in securing some minimum income, with minimum effort, from government jobs or using public office to provide access to other types of jobs or bribes.

Finally, given the favourable treatment of women in the government compared to the private sector and the lower levels of discrimination there, it is likely that the burden of privatisation and civil service downsizing may fall disproportionately on women and may negatively affect the already low participation rates, unless effort is made to reduce the extent of gender-based discrimination in the private sector. In that respect, public policy focus on education and training as keys to a more equitable access to opportunities and the benefits of development for women may be insufficient. Social policy prescriptions call for further investigation into the reasons why females are concentrated in subordinate labour groups and why they appear to be paid less for similar human capital endowments in some segments of the private sector.

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Table (A1): Measures of Sectoral and Employment Status Gender Segregation, 1988-2012

Sectors	Total	Men	Women	Mi	fi	|fi-mi|
		1988				
Agriculture	7898400	3890190	4008210	0.355	0.665	0.310
Mining	30131	25511	4620	0.002	0.001	0.002
Manufacturing	2301070	1794071	506999	0.164	0.084	0.080
Electricity, Gas and Water	137776	130943	6833	0.012	0.001	0.011
Construction	879376	857036	22340	0.078	0.004	0.075
Trade	1826834	1381255	445579	0.126	0.074	0.052
Transportation	700316	656551	43765	0.060	0.007	0.053
Financial Services	255506	194746	60760	0.018	0.010	0.008
Not specified	2947909	2023806	924103	0.185	0.153	0.031
	16977318	10954109	6023209		**DI**	**0.310**
		1998				
Agriculture	8990316	3061163	5929153	0.236	0.704	0.468
Mining	41603	41603	0	0.003	0.000	0.003
Manufacturing	2494373	2203929	290444	0.170	0.034	0.135
Electricity, Gas, Water	147964	131939	16025	0.010	0.002	0.008
Construction	1096806	1073580	23226	0.083	0.003	0.080
Trade	2472954	1964812	508142	0.151	0.060	0.091
Transportation	938961	891084	47877	0.069	0.006	0.063
Financial Services	326104	240790	85314	0.019	0.010	0.008
Other services	4906467	3381515	1524952	0.260	0.181	0.079
	21415548	12990415	8425133		**DI**	**0.468**
		2006				
Agriculture	11076676	4448072	6628604	0.259	0.649	0.390
Mining	60086	60086	0	0.003	0.000	0.003
Manufacturing	3141029	2473583	667446	0.144	0.065	0.079
Electricity, Gas, Water	189621	164667	24954	0.010	0.002	0.007
Construction	1660060	1640808	19252	0.095	0.002	0.094
Trade	3263116	2575256	687860	0.150	0.067	0.082
Transportation	1510905	1421518	89387	0.083	0.009	0.074
Financial Services	206025	142349	63676	0.008	0.006	0.002
Other services	6298590	4262798	2035792	0.248	0.199	0.049
	27406108	17189137	10216971			**0.390**
		2012				
Agriculture	7921305	3854294	4067011	0.297	0.483	0.186
Mining	61622	61622	0	0.005	0.000	0.005
Manufacturing	3066156	2749308	316848	0.212	0.038	0.174
Electricity, Gas, Water	393067	361844	31223	0.028	0.004	0.024
Construction	2510609	2489940	20669	0.192	0.002	0.189
Trade	3414163	2798820	615343	0.215	0.073	0.142
Transportation	1665488	1623877	41611	0.125	0.005	0.120
Financial Services	206478	162902	43576	0.013	0.005	0.007
Other services	7273273	4830822	2442451	0.372	0.290	0.082
	26512161	18933429	7578732		**DI**	**0.465**
Percentage change in Dissimilarity Index from 2006 to 2012						**19%**
Employment Satus	**Total**	**Men**	**Women**	**Mi**	**fi**	**|fi-mi|**
		1988				
Employer	2702939	2233743	469196	0.203	0.077	0.126
Salaried employee / employee	8102700	6506035	1596665	0.593	0.263	0.330
Domestic service	4599898	1442898	3157000	0.131	0.520	0.388
Self-employed / independent	1647704	796678	851026	0.073	0.140	0.068
	17053241	10979354	6073887		**DI**	**0.456**
		1998				

Employer	1881140	1806252	74888	0.139	0.009	0.130
Salaried employee / employee	11117535	8975085	2142450	0.689	0.254	0.435
Domestic service	6889160	966273	5922887	0.074	0.702	0.628
Self-employed / independent	1577579	1284537	293042	0.099	0.035	0.064
	21465414	13032147	8433267		**DI**	**0.628**
		2006				
Employer	3226403	3005824	220579	0.173	0.022	0.152
Salaried employee / employee	13833334	11034884	2798450	0.637	0.273	0.364
Domestic service	8283305	1744904	6538401	0.101	0.638	0.537
Self-employed / independent	2235046	1541810	693236	0.089	0.068	0.021
	27578088	17327422	10250666		**DI**	**0.537**
		2012				
Employer	2535851	2394515	141336	0.184	0.019	0.165
Salaried employee / employee	16466721	13502334	2964387	1.036	0.391	0.645
Domestic service	5126573	1136538	3990035	0.087	0.526	0.439
Self-employed / independent	2383016	1900042	482974	0.146	0.064	0.082
	26512161	18933429	7578732		**DI**	**0.666**
Percentage change in Dissimilarity Index from 2006 to 2012						**24%**

Table A2: Ordinary least Squares and Selectivity Corrected Wage Equation Estimates, Egypt 2006

	Ordinary Least Square Estimates					Selectivity Corrected Estimates			
	Total	Male		Female		Male		Female	
		Private	Public	Private	Public	Private	Public	Private	Public
exper	0.054***	0.046***	0.040***	0.061***	0.055***	0.046***	0.022***	0.062***	0.047***
	(0.002)	(0.003)	(0.005)	(0.012)	(0.006)	(0.003)	(0.007)	(0.013)	(0.010)
expsq	-0.001***	-0.001***	-0.000***	-0.001***	-0.001***	-0.001***	-0.000	-0.001**	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
nlevel2	0.032	0.057	0.148*	-0.321*	-0.320	0.065	0.085	-0.379*	-0.366
	(0.038)	(0.044)	(0.082)	(0.174)	(0.239)	(0.046)	(0.085)	(0.221)	(0.242)
nlevel3	0.105***	0.083**	0.233***	-0.092	0.143	0.081**	0.187**	-0.021	0.147
	(0.033)	(0.037)	(0.077)	(0.153)	(0.278)	(0.040)	(0.082)	(0.167)	(0.278)
nlevel4	0.199***	0.155***	0.387***	0.150	0.441*	0.165***	0.293***	0.178	0.404*
	(0.043)	(0.050)	(0.089)	(0.200)	(0.239)	(0.056)	(0.098)	(0.220)	(0.242)
nlevel5	0.445***	0.232*	0.855***	0.271	0.803***	0.208	0.822***	0.287	0.754**
	(0.091)	(0.121)	(0.178)	(0.281)	(0.299)	(0.136)	(0.179)	(0.448)	(0.302)
nlevel6	0.339***	0.209***	0.631***	-0.070	0.684***	0.211***	0.479***	-0.038	0.537***
	(0.028)	(0.033)	(0.068)	(0.108)	(0.134)	(0.038)	(0.089)	(0.120)	(0.180)
nlevel7	0.513***	0.308***	0.858***	0.081	0.756***	0.326***	0.654***	0.116	0.599***
	(0.040)	(0.062)	(0.081)	(0.179)	(0.141)	(0.067)	(0.110)	(0.189)	(0.194)
nlevel8	0.773***	0.772***	1.041***	0.561***	0.963***	0.807***	0.818***	0.622***	0.777***
	(0.031)	(0.043)	(0.069)	(0.119)	(0.135)	(0.052)	(0.110)	(0.133)	(0.206)
region_2	-0.035	0.025	0.004	-0.124	-0.190***	0.029	0.010	-0.156	-0.200***
	(0.028)	(0.039)	(0.056)	(0.103)	(0.062)	(0.041)	(0.057)	(0.110)	(0.064)
region_3	-0.169***	-0.083**	-0.213***	-0.616***	-0.204***	-0.045	-0.212***	-0.642***	-0.217***
	(0.028)	(0.040)	(0.054)	(0.110)	(0.059)	(0.042)	(0.054)	(0.128)	(0.063)
region_4	-0.146***	-0.124***	-0.183***	-0.182	-0.173***	-0.126***	-0.207***	-0.289*	-0.199***
	(0.027)	(0.039)	(0.049)	(0.140)	(0.055)	(0.043)	(0.050)	(0.169)	(0.062)
region_5	-0.215***	-0.082**	-0.337***	-0.485***	-0.195***	-0.081**	-0.365***	-0.514***	-0.198***
	(0.025)	(0.034)	(0.046)	(0.100)	(0.061)	(0.037)	(0.048)	(0.116)	(0.064)

region_6	-0.196***	-0.094***	-0.301***	-0.254*	-0.282***	-0.086**	-0.310***	-0.357**	-0.291***
	(0.027)	(0.035)	(0.052)	(0.145)	(0.090)	(0.039)	(0.053)	(0.179)	(0.092)
female	-0.221***								
	(0.020)								
crgovwg	0.020								
	(0.019)								
sel2						-0.097**			
						(0.042)			
sel3							-0.197***		
							(0.067)		
sel5								0.046	
								(0.147)	
sel6									-0.086
									(0.070)
Constant	0.679***	0.782***	0.541***	0.625***	0.234	0.873***	1.106***	0.520*	0.570*
	(0.036)	(0.046)	(0.085)	(0.133)	(0.148)	(0.055)	(0.213)	(0.273)	(0.324)
Observations	7,525	3,478	2,488	438	1,119	3,140	2,446	392	1,099
R-squared	0.239	0.159	0.200	0.335	0.325	0.152	0.204	0.348	0.325

Standard errors in parentheses

Table A3: Ordinary least Squares and Selectivity Corrected Wage Equation Estimates, Egypt 2012

	Ordinary Least Square Estimates					Selectivity Corrected Estimates			
	Total	Male		Female		Male		Female	
		Private	Public	Private	Public	Private	Public	Private	Public
Exper	0.035***	0.024***	0.033***	0.039***	0.037***	0.025***	0.025***	0.033***	0.049***
	(0.002)	(0.002)	(0.004)	(0.012)	(0.006)	(0.003)	(0.006)	(0.013)	(0.008)
Expsq	-0.000***	-0.000***	-0.000***	-0.000	-0.000*	-0.000***	-0.000	-0.000	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
nlevel2	0.023	0.019	0.206**	0.107	0.323	0.009	0.201**	0.095	0.380
	(0.039)	(0.044)	(0.085)	(0.242)	(0.256)	(0.046)	(0.088)	(0.244)	(0.262)
nlevel3	0.066**	0.006	0.210***	0.378**	1.995***	-0.011	0.231***	0.394**	1.999***
	(0.028)	(0.031)	(0.073)	(0.158)	(0.394)	(0.032)	(0.078)	(0.160)	(0.395)
nlevel4	0.096***	0.009	0.413***	0.040	0.527***	-0.039	0.383***	-0.009	0.579***
	(0.034)	(0.038)	(0.081)	(0.209)	(0.201)	(0.042)	(0.087)	(0.213)	(0.209)
nlevel5	0.283***	0.169***	0.662***	0.359	0.694***	0.110	0.667***	0.168	0.751***
	(0.046)	(0.058)	(0.098)	(0.237)	(0.185)	(0.068)	(0.102)	(0.260)	(0.195)
nlevel6	0.264***	0.120***	0.683***	0.128	0.760***	0.084***	0.657***	0.179	0.882***
	(0.023)	(0.027)	(0.060)	(0.119)	(0.145)	(0.029)	(0.072)	(0.123)	(0.174)
nlevel7	0.378***	0.241***	0.828***	0.143	0.853***	0.197***	0.777***	0.090	1.011***
	(0.038)	(0.057)	(0.076)	(0.201)	(0.157)	(0.061)	(0.092)	(0.216)	(0.189)
nlevel8	0.638***	0.447***	1.116***	0.706***	1.095***	0.384***	1.050***	0.752***	1.232***
	(0.027)	(0.035)	(0.062)	(0.121)	(0.144)	(0.041)	(0.085)	(0.126)	(0.185)
region_2	-0.018	-0.081**	0.099*	-0.198*	0.005	-0.075*	0.110*	-0.312**	0.023
	(0.028)	(0.038)	(0.055)	(0.116)	(0.066)	(0.039)	(0.056)	(0.126)	(0.067)
region_3	-0.175***	-0.176***	-0.146***	-0.258**	-0.256***	-0.187***	-0.134**	-0.333**	-0.243***
	(0.027)	(0.036)	(0.054)	(0.129)	(0.061)	(0.038)	(0.055)	(0.139)	(0.062)
region_4	-0.157***	-0.120***	-0.196***	-0.281*	-0.226***	-0.122***	-0.206***	-0.448***	-0.193***
	(0.025)	(0.035)	(0.050)	(0.143)	(0.058)	(0.037)	(0.051)	(0.168)	(0.062)
region_5	-0.225***	-0.192***	-0.265***	-0.403***	-0.217***	-0.207***	-0.270***	-0.480***	-0.200***
	(0.023)	(0.030)	(0.046)	(0.106)	(0.058)	(0.032)	(0.047)	(0.115)	(0.059)
region_6	-0.087***	-0.025	-0.242***	-0.194	-0.184**	-0.041	-0.241***	-0.344*	-0.158**
	(0.024)	(0.031)	(0.049)	(0.165)	(0.074)	(0.032)	(0.050)	(0.184)	(0.075)
Female	-0.127***								
	(0.019)								
Crgovwg	0.048***								

	(0.017)								
sel2						0.056*			
						(0.030)			
sel3							-0.073		
							(0.047)		
sel5								0.227*	
								(0.123)	
sel6									0.065
									(0.051)
Constant	0.968***	1.178***	0.576***	0.743***	0.399**	1.173***	0.782***	0.370	0.110
	(0.034)	(0.043)	(0.082)	(0.140)	(0.156)	(0.047)	(0.159)	(0.257)	(0.257)
Observations	10,088	5,571	2,739	410	1,368	5,261	2,665	385	1,339
R-squared	0.153	0.067	0.218	0.211	0.234	0.064	0.217	0.215	0.229

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0

Table A4. Multinomial Logit Estimates of Work Status Selection Equations, Egypt 2006-2012

	2006								2012							
	Male				Female				Male				Female			
	Non-wage	Private	Public	Unemployed	Non-wage	Private	Public	Jnemploye	Non-wage	Private	Public	Jnemploye	Non-wage	Private	Public	Jnemployed
age	0.686***	0.739***	1.048***	0.544***	0.140***	0.072***	0.553***	0.602***	0.740***	0.788***	1.105***	0.614***	0.183***	0.189***	0.484***	0.432***
	(0.020)	(0.021)	(0.026)	(0.045)	(0.017)	(0.027)	(0.031)	(0.077)	(0.020)	(0.019)	(0.026)	(0.038)	(0.020)	(0.029)	(0.028)	(0.052)
agesq	-0.009***	-0.010***	-0.012***	-0.008***	-0.002***	-0.001***	-0.006***	-0.011***	-0.009***	-0.010***	-0.013***	-0.008***	-0.002***	-0.003***	-0.005***	-0.007***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)
nlevel2	-0.145	-0.077	0.641***	0.071	-0.763***	-0.119	1.284***	-12.646	-0.513***	-0.538***	0.400*	-0.000	-0.291	-0.118	1.935***	1.478***
	(0.178)	(0.183)	(0.203)	(0.457)	(0.183)	(0.283)	(0.406)	(725.702)	(0.189)	(0.187)	(0.217)	(0.381)	(0.207)	(0.290)	(0.420)	(0.564)
nlevel3	-0.353**	-0.302**	0.752***	-0.414	-0.407***	-0.079	0.651	1.277*	-0.714***	-0.762***	0.140	-0.784***	-0.354**	-0.176	0.203	0.772
	(0.145)	(0.145)	(0.173)	(0.368)	(0.134)	(0.213)	(0.469)	(0.675)	(0.133)	(0.127)	(0.165)	(0.288)	(0.144)	(0.189)	(0.630)	(0.476)
nlevel4	-1.500***	-1.799***	-0.147	-1.667***	-1.243***	-0.950***	1.628***	0.866	-1.669***	-1.675***	-0.340*	-1.933***	-1.035***	-1.077***	2.502***	0.747
	(0.149)	(0.150)	(0.185)	(0.394)	(0.187)	(0.273)	(0.409)	(0.714)	(0.141)	(0.129)	(0.175)	(0.333)	(0.195)	(0.266)	(0.339)	(0.470)
nlevel5	-3.315***	-4.124***	-1.895***	-3.318***	-3.119***	-2.589***	2.239***	-0.488	-2.646***	-3.133***	-0.707***	-2.360***	-1.746***	-1.213***	3.919***	1.730***
	(0.231)	(0.240)	(0.309)	(0.571)	(0.716)	(0.600)	(0.518)	(1.124)	(0.171)	(0.152)	(0.208)	(0.332)	(0.392)	(0.315)	(0.325)	(0.410)
nlevel6	-0.753***	-0.792***	1.238***	0.370	-0.734***	0.511***	4.645***	4.169***	-0.918***	-0.862***	1.091***	-0.050	-0.427***	-0.392**	4.559***	3.487***
	(0.125)	(0.125)	(0.147)	(0.276)	(0.116)	(0.151)	(0.237)	(0.508)	(0.125)	(0.120)	(0.145)	(0.232)	(0.110)	(0.152)	(0.257)	(0.341)
nlevel7	-1.092***	-1.157***	1.478***	0.529	-1.083***	0.546**	5.257***	4.299***	-0.860***	-1.167***	1.502***	0.176	-0.801**	0.009	5.238***	3.748***
	(0.226)	(0.215)	(0.227)	(0.359)	(0.351)	(0.261)	(0.263)	(0.533)	(0.247)	(0.235)	(0.249)	(0.356)	(0.370)	(0.287)	(0.288)	(0.375)
nlevel8	-1.004***	-1.123***	1.801***	1.202***	-1.002***	1.354***	6.088***	4.814***	-1.264***	-1.333***	1.495***	0.262	-0.660***	0.790***	6.381***	4.160***
	(0.161)	(0.159)	(0.171)	(0.297)	(0.255)	(0.177)	(0.249)	(0.516)	(0.151)	(0.144)	(0.162)	(0.251)	(0.219)	(0.161)	(0.264)	(0.349)
_lregion_2	0.096	-0.064	0.019	0.148	-0.098	-0.247	0.493***	0.217	-0.044	-0.175	0.378**	0.147	0.077	-0.236	0.510***	0.227
	(0.158)	(0.142)	(0.158)	(0.213)	(0.250)	(0.157)	(0.143)	(0.196)	(0.165)	(0.141)	(0.161)	(0.218)	(0.292)	(0.169)	(0.138)	(0.203)
_lregion_3	0.308**	-0.444***	0.054	-0.092	0.085	-0.546***	0.790***	0.957***	0.488***	-0.101	0.495***	0.024	0.474**	-0.346**	1.058***	1.093***
	(0.144)	(0.135)	(0.149)	(0.206)	(0.210)	(0.165)	(0.139)	(0.167)	(0.149)	(0.134)	(0.154)	(0.214)	(0.238)	(0.168)	(0.132)	(0.169)
_lregion_4	0.405***	-0.381***	0.493***	-0.051	1.131***	-1.067***	1.066***	0.353*	0.424***	-0.173	0.744***	0.007	0.847***	-0.787***	1.230***	0.753***
	(0.142)	(0.133)	(0.145)	(0.199)	(0.178)	(0.193)	(0.134)	(0.181)	(0.143)	(0.127)	(0.146)	(0.202)	(0.221)	(0.181)	(0.127)	(0.172)
_lregion_5	0.391***	-0.296**	0.565***	-0.219	0.495***	-0.585***	0.950***	0.821***	0.580***	0.038	0.937***	-0.400**	1.093***	-0.425***	1.196***	1.276***
	(0.131)	(0.121)	(0.136)	(0.196)	(0.174)	(0.149)	(0.142)	(0.164)	(0.129)	(0.113)	(0.132)	(0.195)	(0.203)	(0.141)	(0.125)	(0.156)
_lregion_6	0.637***	-0.097	0.640***	-0.401*	1.820***	-0.949***	0.772***	0.260	0.618***	-0.009	0.836***	-0.306	1.290***	-1.552***	1.033***	0.208
	(0.139)	(0.131)	(0.150)	(0.236)	(0.168)	(0.192)	(0.193)	(0.204)	(0.132)	(0.115)	(0.139)	(0.202)	(0.204)	(0.196)	(0.150)	(0.186)
siblingl6	0.236***	0.140***	0.143***	-0.454***	0.045	-0.756***	-0.495***	-0.467***	0.280***	0.201***	0.189***	-0.209**	0.061	-0.573***	-0.298***	-0.265***
	(0.048)	(0.048)	(0.053)	(0.105)	(0.034)	(0.080)	(0.058)	(0.062)	(0.048)	(0.046)	(0.052)	(0.088)	(0.039)	(0.074)	(0.048)	(0.049)
siblingm6	-0.005	-0.141***	-0.023	-0.095*	0.164***	-0.006	-0.114***	0.081*	-0.008	-0.152***	-0.082**	-0.167***	0.118***	-0.135***	-0.291***	0.029
	(0.030)	(0.030)	(0.034)	(0.058)	(0.023)	(0.042)	(0.040)	(0.047)	(0.030)	(0.028)	(0.034)	(0.057)	(0.028)	(0.046)	(0.038)	(0.042)
stotwgam					-0.000	-0.000*	0.000	0.000					-0.000***	-0.000	-0.000	-0.000***
					(0.000)	(0.000)	(0.000)	(0.000)					(0.000)	(0.000)	(0.000)	(0.000)
_lftempst_2	1.040***	-0.336***	0.247**	-0.485**	0.553***	-0.541***	-0.202	-0.256*	1.441***	-0.006	0.679***	-0.578***	0.744***	-0.235*	0.129	-0.009
	(0.109)	(0.108)	(0.123)	(0.209)	(0.087)	(0.154)	(0.139)	(0.154)	(0.097)	(0.091)	(0.109)	(0.198)	(0.090)	(0.140)	(0.115)	(0.122)
_lftempst_3	0.559***	-0.327**	0.238	0.293	0.197	-0.192	-0.053	0.124	0.953***	-0.161	0.245*	-0.252	0.092	-0.347*	0.127	0.126
	(0.136)	(0.135)	(0.151)	(0.220)	(0.120)	(0.168)	(0.164)	(0.175)	(0.118)	(0.111)	(0.136)	(0.212)	(0.134)	(0.183)	(0.144)	(0.149)
_lftempst_4	0.544	-0.294	-0.172	-0.943	-0.529	1.316**	1.593**	0.390	1.620***	-0.055	0.915*	-14.214	0.126	-0.246	-0.398	-0.715
	(0.420)	(0.431)	(0.527)	(1.083)	(0.759)	(0.649)	(0.779)	(1.114)	(0.392)	(0.400)	(0.509)	(943.754)	(0.615)	(1.029)	(1.093)	(1.051)
_lftsectr_1	-0.312***	-0.502***	0.153	-0.164	-0.153	-0.220*	0.019	-0.098	0.152	-0.374***	0.443***	-0.132	0.120	-0.032	0.393***	0.315***
	(0.111)	(0.101)	(0.116)	(0.170)	(0.111)	(0.130)	(0.123)	(0.133)	(0.096)	(0.082)	(0.100)	(0.138)	(0.113)	(0.121)	(0.099)	(0.103)
other_labor_inc	-0.000***	-0.000***	-0.000***	0.000	0.000	-0.000	-0.000***	0.000**	-0.000	-0.000**	-0.000	-0.000	-0.000**	-0.000	-0.000***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-10.853***	-9.335***	-20.220***	-8.790***	-5.683***	-2.627***	-17.352***	-13.805***	-12.263***	-10.221***	-21.825***	-9.847***	-7.005***	-4.810***	-17.183***	-11.786***
	(0.372)	(0.361)	(0.507)	(0.749)	(0.367)	(0.476)	(0.642)	(1.165)	(0.366)	(0.329)	(0.502)	(0.667)	(0.447)	(0.538)	(0.610)	(0.849)
Observations	11,207	11,207	11,207	11,207	11,496	11,496	11,496	11,496	14,214	14,214	14,214	14,214	14,748	14,748	14,748	14,748
Standard errors																
*** p<0.01, ** p<																