



**International Conference on
" Women and Youth in Arab Development"
(Cairo, Egypt, 22-24 March 2010)**

**Decreasing the Gender Gap in
Employment and Pay in the Arab
World: Measuring the Gains for
Women, Youth and Society**

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Zafiris Tzannatos ¹

I Introduction:

Equality is an elusive concept. For example, what if gender pay parity were achieved not by an increase female pay to the level of men's but by reducing men's pay to that of women's? Alternatively, what does equality mean for women if the number of women in wage employment (a key monitoring indicator of gender progress in the labor market) increases while women's work in the invisible economy remains the same? Or, how does male unemployment relate to the increasing labor force participate rate of women? Or, can the feminization of certain jobs and more broadly of the workforce lead to a reduction of the level of real pay of *all* workers? These are not rhetorical questions. They have been (and are still being used) by different policy and advocacy groups though from various perspectives and intents. What is obvious is that greater equality can directly create winners and also losers while it can also challenge existing norms. The former can happen, for example, if women displace men in the labor market. The latter can happen if the increasing role of women in the labor market changes family norms or increases the likelihood of family dissolution and so on.

The objective of this paper is to narrow this long list of eventualities by trying to answer in an empirical way a rather focused question: "What if women and men were paid the same and both did the same kind of jobs?". In other words, what if there were no gender discrimination in either pay or employment? The estimates suggest that increasing gender equality creates directly net social gains the prime beneficiaries of which are women while men may not be necessarily adversely affected in the long run.

The paper is organized as follows. The next section provides an overview of several gender dimensions of the labor markets in the Middle East and North Africa region (MENA) . Section 3 measures historical and recent trends in employment segregation in MENA. Section 4 summarizes the regional gender pay differences. The core part of the paper is Section 5 in which the long-term effects of eliminating segregation and pay discrimination are estimated through the use of an economic simulation model. Section 6 puts the simulation (theoretical) results of the model in the context of reality and implementation challenges for pursuing gender equality policies. Section 7 summarizes and concludes.

II Gender Issues in MENA: An Overview

Gender differences are on average highest in the Middle East and North Africa (MENA) region compared to other world regions. Though there exist country variations in terms of legal and social provisions as well as in economic and social outcomes, it will not be an

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exaggeration to say that women's economic potential in the MENA region is constrained more than in any other world region.

Looked at it from a positive angle, the region has the greatest potential to benefit from eliminating gender differences in the labor market compared to any other region in the world. In fact, some significant progress has taken place recently as summarized below².

Fertility

While in the 1950s the MENA region had the highest fertility rates in the world, fertility declined faster than in any other region. The average number of children per woman dropped from more than seven in the 1950s to fewer than four in the 1990s, a figure which was on a par with South Asia and considerably lower than in Africa where the number remained in excess of six children. On the latest count (2002), the regional average had declined to 3.2 children/woman. The decline can be highlighted with reference to Egypt, where, following the first national population policy in 1973, the contraceptive prevalence rate rose from 21 percent (1980) to 50 percent (1996) and fertility dropped from 5.1 to 3.3 children per woman.

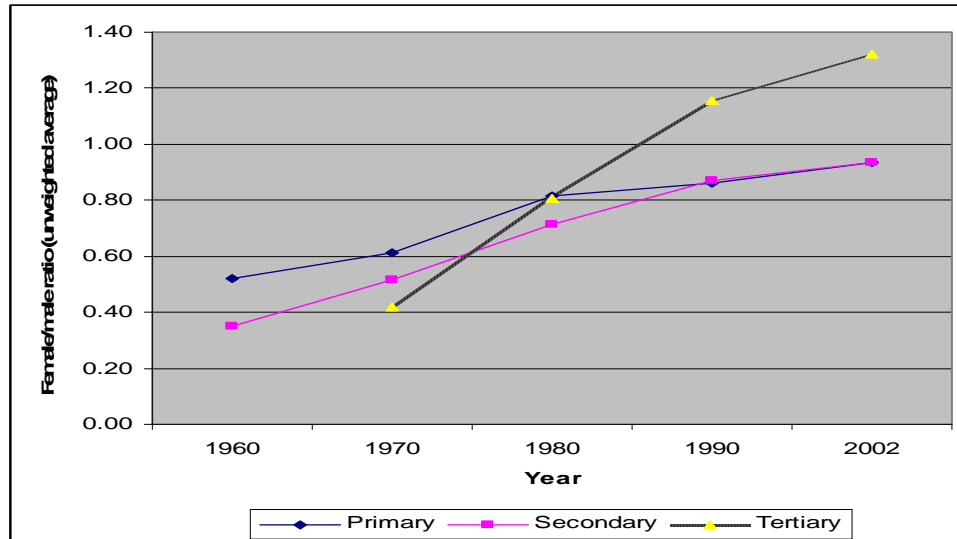
Education

The school enrollment ratio of girls to boys in the region was barely more than 50 percent in the 1960s. However, the ratio increased fast and now stands at more than 95 percent, having reached parity in many countries (Figure 1). As a result, the average female schooling increased from less than one year in 1950 to nearly five years by 2000, and the female literacy rate went from 17 percent in 1970 to 53 percent in 2000.

An interesting development is that in higher education there are often more girls than boys, and this phenomenon is more common in the Gulf countries, where in some cases there are more than two female students for each male student. A parallel move has been to allow women to enroll in what were previously considered to be "inappropriate" subjects, such as engineering, from which they used to be barred by decree. And as a general rule, girls typically outperformed boys in standardized international literacy and, at times, science, examinations.

² The figures and trends described in the following sections are derived from a combination of sources including the data bases of the International Labor Organization (*laborsta*) and the World Bank (*World Development Indicators*) as well as various publications including Handoussa and Tzannatos (2002), Tzannatos (1998, 1999 and 2008).

**Figure 1. Female/Male Ratio, Gross Enrolment Rates in Education:
MENA (regional unweighted average)**



Source: World Bank (2008).

Employment

As in the case of fertility, women's employment in the MENA region was also an outlier in the 1950s. The regional female labor force participation rate stood at 12 percent in the 1950s, which was only one-third of the global average of 36 percent. It has since grown fast and more than doubled by the 1990s. Today it is not that uncommon — compared even to the recent past — to see women occupying senior government posts, including ministerial appointments, as well as executive positions in the private sector or academic posts.

A couple of examples can provide a more concrete picture with respect to women's employment in the MENA region, starting with a diversified economy: In Jordan, women's share in the total labor force increased from 15 percent in 1980 to 24 percent by 2000 as the female labor force participation rate almost doubled during this period, from 7 percent to 13.5 percent. Education was closely associated with Jordanian women's increasing participation in the labor force: Two-thirds of working women have intermediate diplomas and higher degrees³.

The case of Qatar is illuminating as it is also quite representative of other Gulf Cooperation Council states (GCC). While the "all age" female labor force participation rate was a deceptively low 30 percent in 2004, the number of young Qatari women entering the labor force is now almost on par with that of men's. (Table 1)

³ World Bank (2004),

**Table 1: Nearly as Many Qatari Women Enter the Labor Force as Qatari Men Every Year
 (Intercensal Annual Changes in Net Employment, 1997-2004)**

	Employment 1997	Annual Increase	Employment 2004	Percentage Increase
	(1)	(2)	(3)=(1)+5x(2)	(4)=(3)/(2)-1
Women	8702	923	15163	74.2%
Men	27573	1078	35119	27.4%
Ratio	31.6%	85.6%	43.3	36.8%

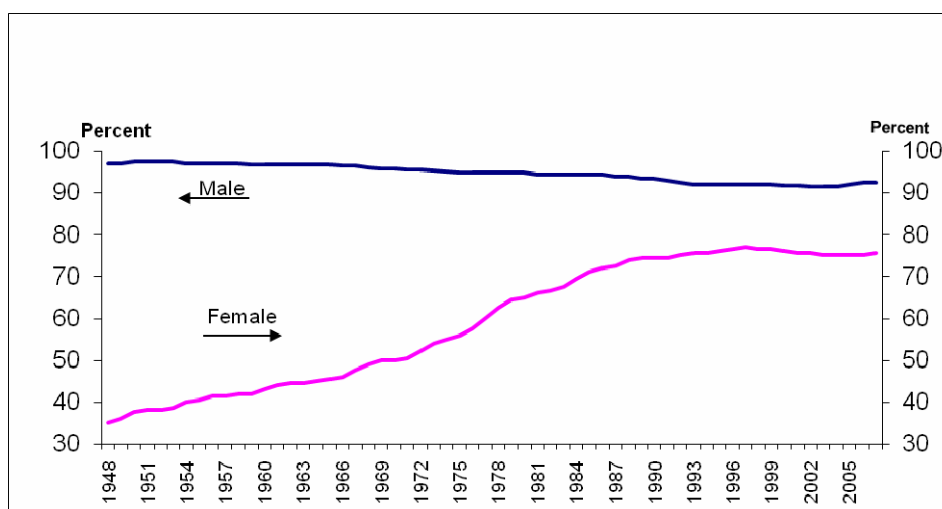
Source: Qatar Population Censuses, 1997 and 2004

The Move Towards Equality

As the gender differences narrow, it is naturally to ask: is equality being achieved by improving women's position/outcomes in the labor market or by decreasing those of men? There can be many different answers to this question which, in some regional quarters, is motivated by the presumption that women "steal" jobs from men.

The relationship between increased female labor force participation and the labor force participation rate of men is shown in Figure 2 with respect to the historic experience in the USA. The small decline in male participation is due to the increasing education enrolment of men and the greater availability of pensions over time. The conclusion is that the rise in the female labor force participation rate does not necessarily crowd out men out of the labor market.

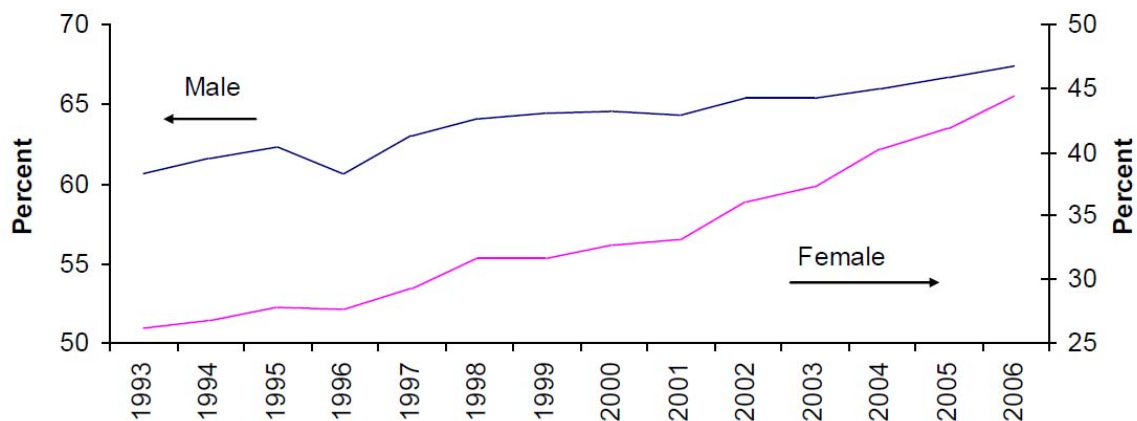
Figure 2: Labor Force Participation Rate in USA, 1948-2006



Source: Bureau of Labor Statistics

Of course, there is no reason for the MENA countries to follow the employment patterns or gender values of the American society. But a look at the employment changes in Kuwait over time (Figure 3) does not produce a much different picture than in the US (or for practically any other OECD economy).

Figure 3: Labor Force Participation Rate in Kuwait by Gender, 1993-2006



Source: Kuwait, Ministry of Planning, Population, and the Labor Force, 1993-2006

Note: Kuwaiti nationals only

All in all, the issue is more whether the economy creates *enough* number of jobs rather than who should do what job. In this respect, changes in the demand for labor are more important than changes in the labor supply of women. The difference between labor demand and labor supply is often missed outside the circles of professional economists.

Despite the aforementioned developments in the areas of fertility, education, employment and so on, still, a lot needs to be done to achieve gender equality in the MENA region. Areas of prime importance include gender segregation (employment discrimination) as well as gender pay differentials (wage discrimination). As these two dimensions are at the core of the main hypothesis of this paper (that is, the elimination of employment and pay discrimination), they are examined in some detail below.

III Gender Segregation In Employment:

When women are in the labor force, they usually perform different tasks and work in different sectors than men. The conditions of women's employment tend also to be "atypical" (i.e., part-time, temporary, or casual work, work in the home and subcontracting). In terms of occupations, for example, nearly two-thirds of women in manufacturing are categorized as laborers, operators and production workers while only a few can be found in the administrative and managerial positions that are predominantly held by men. Women workers are usually employed in a limited number of industrial sectors: more than two-thirds of the global labor force in garment production is female--accounting for almost one-fifth of the total female labor force in manufacturing. With respect to employment status, the majority of family workers are



female and, it may be added, often unpaid. Moreover, much of the work performed by women is not paid – an outcome of the traditional division of labor within the household or the nature of employment in family farms⁴.

Differences in the employment distributions of women and men in the labor market can be summarized in many different ways, including the Duncan index.⁵ The index can measure employment *dissimilarity* between any two groups of workers. In the case of women and men the Duncan index, D , takes the form

$$D = \frac{1}{2} \sum_{i=1}^N |f_i - m_i|$$

where $i = 1, 2, \dots, N$ is the total number of sectors of interest (for example, industries or occupations), f_i and m_i are the sectoral employment ratios of women and men to their respective labor force, and the summation refers to the absolute differences between women's and men's ratios within each sector. The minimum value of the index is zero; it occurs when women and men have identical employment distributions across sectors, i.e., when the percentage of women in each sector is the same as the percentage of women in total employment. The maximum value, unity, occurs when there is complete dissimilarity (no women and men work in the same sector).

The paper calculates the value of the Duncan index, first, in the longer historical context (from the 1950s till the 1980s) based on information derived from national censuses; and, second, in the more recent period (1980s till today) based on labor force surveys and establishment surveys. Breaking up the time since 1950 into two sub-periods is driven by two considerations. First, the data come from different sources (censuses *versus* surveys) and different types of classifications over time⁶. Second, the first period can be associated more with the ordinary course of development and growth during the post-war period, while the post-1980 period has been subjected to the additional forces of globalization. In fact, some of the changes observed in the Duncan index in these two periods have been in opposite directions.

Historical Trends 1950s-1980s

The worldwide value of the Duncan index based on census data suggests that the gender industrial segregation declined over time. It declined from 0.395 in the 1950s to 0.310 in the 1980s (Table 2). Though for MENA countries the decline was less dramatic (from 0.425 to 0.378) it was nevertheless significant and faster than that observed in East Europe and South Asia.

⁴ Tzannatos (1998).

⁵ Duncan and Duncan (1955).

⁶ Naturally, the value of the Duncan index is sensitive to the number of categories ("digits") adopted and the classifications used. Therefore, choices about how many digits to consider and which classification to adopt are affecting comparisons both over time and across countries. Note that the value of the index has no relationship to the percentage of the labor force that would need to change sector to achieve gender equality. This depends on the *absolute* number of female and male workers while the index is a relative measure (Tzannatos, 1990).



**Table 2 : Employment Dissimilarity (Duncan Index) Among Employees
by Industry, 1950s-1980s**

	N	Early Duncan	Late Duncan
Africa (excl. North Africa)	4	0.4559	0.3003
East Asia & Pacific	9	0.3368	0.2332
South Asia	3	0.2827	0.2677
Eastern & Central Europe	5	0.3234	0.3141
Rest of Europe	15	0.3711	0.3216
Middle East and North Africa	6	0.4250	0.3781
Americas	19	0.4602	0.3258
Total	61	0.3948	0.3097

Notes: (a) Unweighted regional averages; (b) N = no. of countries; (c) The calculation of the index is based on 8 industries: agriculture, mining, manufacturing, construction, utilities, construction, transport and services as tabulated in ILO (International Labour Organization) (1990) Yearbook of Labour Statistics: Retrospective Edition on Population Censuses 1945-1989. Geneva: ILO.

Sources: Z. Tzannatos (1999).

Though from historical perspective, as evidence from the previous table, industrial segregation in employment has shown a strong tendency to decline, this probably overstates the narrowing of the gender employment differentials over time due to aggregation biases. The calculations above are based on seven industries which are too broad (see note to table 2). Thus changes in the composition of employment within individual sectors evades enumeration. For example, domestic service was the biggest single occupational category for women in Britain from the first census enumeration (1851) till World War II. This "social, community and personal services" industry continued to be the largest employer of women in the post-war era though domestic servants became practically an extinct group. So, let's look at a more recent period focusing on occupational differences.

The 1980s and the Start of Globalization

The more recent period (post 1980) can be examined in more detail at country level by occupations (Table 3). The table includes also some non-Arab countries for comparison purposes (such as Cyprus and Israel). The values of the Duncan index for the listed countries show that segregation has increased in as many countries as it has not while it has remained the same in another two countries.



**Table 3: Employment Dissimilarity (Duncan Index) All Workers
by Occupation, 1980s-2000s**

Country	Early Year	Duncan	Late Year	Duncan
Algeria	2001	0.387	2004	0.333
Cyprus	1999	0.417	2004	0.412
Egypt	1997	0.315	2003	0.334
Iran	1996	0.381		
Israel	1995	0.386	2003	0.354
Oman	1993	0.404	2000	0.349
Palestine	1996	0.412	2004	0.490
Qatar	1997	0.478	2001	0.494
Saudi Arabia			2002	0.497
UAE	1995	0.508	2000	0.508
Yemen	1999	0.477		

Note: The calculation of the index is based on the following occupations: professionals; technicians and associate professionals; legislator, senior officials and managers; clerks; service workers, shop and market sales workers; skilled agricultural and fishery workers; craft and related trade workers; plant and machine operators and assemblers; elementary occupations; and armed forces.

Source: Tzannatos (2008) based on ILO data.

One explanation for decline in the value of the Duncan index from the 1950s to the 1980s, but not since then, is because the first period uses industrial statistics: While women have made inroads into more industries, occupational differences have persisted as gender stereotypes are reconstituted as much as they are destructed. As industrial organizations become more complex in the wake of the knowledge economy and more flexible arrangements emerge (including subcontracting and outsourcing), the division of labor by sex may get reconstituted with shifts in production methods and technology that redistribute power, resources and authority in ways that keep women in subordinate positions. In this shift a new gender division of labor can become more disadvantageous to women as some jobs get "defeminized" (for example, nurses, telephone operators, flight attendants) and some formerly male jobs are "feminized" (for example, bank tellers, teachers).

Either way, the results for the post-1980 period suggest that segregation is rather resilient in the MENA region. Having said that, changes in segregation need to be better understood. In fact, some evidence points to the fact that an increase in segregation is not necessarily synonymous with immediately poorer opportunities or labor market outcomes for women⁷. An explanation for this is that women are offered more opportunities for upward mobility when production is organized around strictly segregated occupations than when women and men work together. Under such an arrangement, women will be required to supervise other women and get better jobs than they would otherwise have, while in male occupations some men simply have to accept low status/ low pay jobs. On similar grounds, horizontal desegregation does not unambiguously represent an improvement in the labor market position of women: the feminization of previously male dominated jobs can be associated with deteriorating employment conditions due to the increase in *total* labor supply that in turn depresses wages for

⁷ For example, in an early study of Puerto Rico, segregation patterns were found to be consistent with median annual earnings of women that were quite close to those of men (Presser and Kishor, 1991).



both women and men in those jobs⁸. This may also lead to an increase in vertical segregation, if men move up to top positions.

IV Gender Inequality in Pay:

So far, the paper concentrated on the employment dimension of gender differences but perhaps more important is what women get in return for offering their labor to the labor market. Typically, women's work is valued less than men's and their pay is on average around two-thirds of men's. Overall, perhaps *no more than one-fifth of the world's wages accrue to women* because fewer women than men work for wages, women are usually engaged in the low-paying sectors and, even in these sectors, women are usually paid less than men doing the same job⁹.

As a general rule, female relative (to male) wages tend to increase over time. The unweighted global average of female relative (to men's) pay in 55 countries stood at 76 percent in 1990 (the average year of early observations) compared to 80 percent in 2000 (the average year of our late observations)¹⁰. This calculation gives an average annual rate of growth of pay around 0.5 of one percent.

These international comparisons are however rather crude and can be misleading. What can one infer about gender equality from the fact that women relative pay is highest in regions usually associated with greatest gender differences such as MENA, Africa and the low income Asian countries (Table 4)? Is this an indication of greater equality or just the result of selectivity because only a few but the most educated and productive women are working in the MENA region? It is likely that female wages are observed mainly for those women facing high rewards in the labor market while male wages are calculated over all male workers, that is, those who have high wages and those who have low wages. Also, it is probable that the high relative pay of women in developing countries is affected disproportionately by those who are employed in government jobs. This is manifested by the fact that some developing countries reported average female earnings in paid employment exceed those of men or are close to parity with men's wages¹¹.

⁸ Horizontal segregation exists when women and men are employed in different occupational groups such as management and the professional and technical vocations. Vertical segregation exists when men and women work in the same occupational group, such as teachers, but men do the more skilled, more responsible and better paid activities while women perform complementary activities, for example, within the teaching profession the majority of headmasters are men, within healthcare fields the majority of women are nurses.

⁹ Tzannatos (1998).

¹⁰ Using the ILO data base, see Tzannatos (2008).

¹¹ For example, countries that report female relative earnings in excess of 90 percent are Bahrain, Costa Rica, Hong Kong, Kenya, Panama, the Philippines, Tanzania, Swaziland and Mongolia. See Tzannatos (2008).



Table 4: Relative (F/M) Pay Wages by Region

1980s/1990s		% change between the two periods for group in the previous column	1990s/2000s	
MENA	0.95	-2%	MENA	0.93
AFR	0.89	-2%	EA/ Other	0.90
Other Asia	0.88	3%	AFR	0.87
Nordic	0.83	1%	Nordic	0.84
LAC	0.77	1%	LAC	0.78
ECA	0.72	7%	ECA	0.77
Other Europe	0.71	7%	North EU/AUS/NZ	0.76
North EU/AUS/NZ	0.70	9%	Other Europe	0.76
East Asia/High Income	0.60	23%	EA/High Income	0.74

Note: The country groups are as follows: Nordic: Finland, Iceland, Norway, Sweden; North EU etc: Australia, New Zealand, Austria, Belgium, Denmark, France, Luxembourg, Netherlands, Switzerland, United Kingdom; Other Europe: Gibraltar, Ireland, Malta, Portugal, Cyprus; EA High Income: Hong Kong, Japan, Korea, Singapore; ECA: Belarus, Bulgaria, Hungary, Latvia, Lithuania, Turkey, Ukraine, Georgia, Kazakhstan; LAC: Brazil, Colombia, Costa Rica, El Salvador, Guadeloupe, Mexico, Netherlands Antilles, Paraguay; MENA: Bahrain, Jordan, Palestine, Egypt; Africa: Botswana, Kenya, Swaziland, Tanzania; Other Asia: Mongolia, Philippines, Sri Lanka, Thailand.

Source: Tzannatos (2008) based on ILO data.

Table 5: Relative (Female/Male) Wages by Country

COUNTRY	YEAR	REL.WAGE	YEAR	REL.WAGE	CHANGE	TYPE	Remarks
Cyprus	1988	0.681	2004	0.731	0.5%	Monthly	A
Egypt	1969	0.750	1978	0.889	1.9%	Monthly	B
Jordan	1980	0.836	1999	0.885	0.3%	Daily	B
Palestine	1996	0.832	2004	0.833	0.0%	Daily	A
Qatar			2001	0.994		Monthly	A
Turkey	1988	0.858	2001	0.983	1.1%	Daily	A

Note: A = All workers

B = Excluding workers in agriculture and fishing

Source: Tzannatos (2008) based on ILO data.

As a general rule, differences in pay and working history between women and men, women's average earnings are universally lower than those of men. Next section examines what would happen to national output (GDP) and male wages (a) if women workers ceased to be concentrated in the female dominated jobs (elimination of occupational segregation) and jobs were equally shared between women and men and (b) if there were only one level of wage for both women and men in those now gender-blind jobs. This is answered with the aid of some economic modeling¹² whose only certain outcome is to predict, obviously, that women would be clear winners in such a scenario¹³. Will output decline and what will happen to male wages?

¹² A method to evaluate the wage and output effects under conditions of discrimination has been proposed in the context of racial segregation (Bergmann, 1971). This method can be extended to apply in a gender context (Tzannatos, 1988). See explanations in Annex.

¹³ Unfortunately, no Arab country has the kind of data that would enable this exercise to be applied to it, however, the results from other mainly middle-income countries should be fairly applicable to the MENA region, too.



V What if Employment and Pay Equality Were Achieved?

More formally, women's crowding in certain sectors and jobs reduces their wages as well as output while men gain for sure in relative (to women's) terms while whether they also do so in absolute terms remains to be determined. This will be so, if gender differences in the labor market are the result of gender discrimination and women are excluded, for example, from some occupations and crowded in others. Then, by virtue of the distorted relative labor supply across occupations, pay would be higher in male-dominated occupations and lower in female-dominated occupations than it would be under nondiscriminatory conditions. Another effect of segregation would be a welfare loss (reduction in total output) arising from the misallocation of the labor force: in plain terms, competent female workers are excluded from the most productive activities they can do which are then undertaken by less able (compared to women) men. Whether the loss of output affects the absolute level of men's pay is undetermined *a priori*. However, as already mentioned, if women are discriminated against, men improve their relative position relatively to women.

To find out the effects of achieving equality in the labor market, one has first to estimate output under current conditions, compare it to the new level of output under equality and then examine the distributional consequences on employment and wages separately for women and men. The difference between these two estimates of output provide an indication of the potential (maximum) welfare gains that could be achieved, if women had the same characteristics and preferences as men, and they had the same occupational wages within the same industries as men. This process will not necessarily lead to equal economywide average wages of women and men as the model assumes that differences in the industrial distribution of women and men remain the same¹⁴.

A prerequisite for the achieving gender equality is not just the removal of the "labor demand" discrimination but also the removal of the many other barriers mentioned. The results of the current exercise are indicative of what can happen in the *long-run* when (1) women and men are equally endowed with human capital, (2) there is no employer discrimination, (3) family constraints are no more binding upon women than men, and (4) the gender specific effects of social norms and other institutional factors have withered away.

Though, obviously, subject to a series of qualifications and rather suggestive, the results of the simulations suggest that women's wages can increase significantly at practically little loss in male wages. The regional results are presented in Table 5. The results are based on the ILO data on industrial employment that include information on female and male wages separately for different industries¹⁵. Each industry is assumed to have two occupations, a low pay one as proxied by the female employment in the concerned industry, and a high pay one, as proxied by the male employment. What stands out in the results is that, under the assumptions of the model, female wages can increase significantly at low costs to male wages.

In fact, in the process of achieving greater equality, male wages need not decrease at all in the long run. Part of the explanation rests on the fact that there can be significant output gains (column 3). In other words, a reduction in segregation is not a purely redistributive issue; *the*

¹⁴ See Annex for a formal derivation of the model as well as its underlying assumptions and qualifications.

¹⁵ Tzannatos (2008).



"size of the pie" increases with women claiming a bigger share. In fact, given that the economy grows over time, men's wages need not decline in absolute terms--a point worth noting because with zero-sum gains the losers (in this case men) may devise strategies for forestalling equality. This phenomenon has been emphasized in the political economy literature and is known as "the reversal rest": Those losing from economic change can bribe the winners and forestall the move toward a Pareto-efficient outcome.

Table 6: Effects of Eliminating Gender Differences in Pay and Employment

Region	Increase in Female Wages	Decrease in Male Wages	Output (GDP) gains	% of LF to be reallocated
	(1)	(2)	(3)	(4)
Nordic	9	-4	2	18
North EU/AUS/NZ	18	-6	3	26
South Europe	28	-5	5	29
East Asia, High Income	38	-6	6	32
East Europe	19	-5	4	26
LAC	18	-3	3	15
Country average (unweighted)	22	-5	4	25

Notes: Nordic = Denmark, Finland, Norway, Sweden; North EU etc: Australia, Belgium France, the Netherlands, New Zealand, Switzerland, UK; South Europe = Cyprus, Ireland, Portugal, Gibraltar; East Asia High Income: Japan, Singapore, South Korea and Taiwan; East Europe = Lithuania, Croatia, Latvia, Bulgaria, Kazakhstan, Ukraine, Georgia; LAC = Brazil, Costa Rica, Mexico.

Sources: See Tzannatos (2008)

The model assumes an instantaneous adjustment towards full equality. However, a point that needs to be mentioned is that it may take considerable time before equality is achieved: Column 4 indicates the percentage of the labor force that would have to be reshuffled to achieve the gains estimated in the current exercise. The mere size of labor reallocations (the shift of women to men's jobs and vice versa) is not something that can be achieved in the short-run given that the main avenue for changes of existing labor market patterns are through annual *flows* to the labor force, and these are usually only a fraction of the labor force *stock*. On the other hand, given that the process of reaching gender equality takes long time, this implies that the pay of men may not need to decline as there are bound to be productivity and output gains during the ordinary course of development.

What does this imply for middle-income economies like most of those in the MENA region? The regional variation of the results suggest that the Nordic countries would be the least to benefit from gender equalization, and this is expected as these group of countries are closer to equality than others. This is also true, but to a lesser extend, for the most industrialized countries of Europe, Australia and New Zealand. On the other hand, the high income countries in the sample from East Asia (Japan, Singapore, South Korea and Taiwan) seem to be characterized by the greatest gender differences in the labor market, if the results of the simulation are taken at face value. Recalling that the data used in the simulation are based on wage employment only (and therefore relate to the more formal part of the labor market) the results for Latin America and East Europe countries are not that dissimilar to those of the most industrialized countries in Europe, though South European countries come in between this



group and the East Asian one. Perhaps MENA economies are likely to follow the patterns observed for South European economies.

VI Qualifications :

The Data and the Assumptions and Qualifications of the Model

The empirical estimates are based on reported earnings as a proxy for marginal products. It is well known that in a conventional competitive regime, economically fitted production functions, when differentiated, need not give marginal productivity conditions that equal observed earnings. This should not, however, produce unacceptable results in our case, if the proportional discrepancy between earnings and their respective marginal products is the same for both sexes.

The lack of information on the different educational levels and work experiences attained by men and women in the studied industries does not allow to refine the estimates by differences arising from the different human capital levels held by women and men. Thus the results refer to achieving wage equality under the assumption that women and men are equally productive.

The model itself does not allow for complementarity between non-labor inputs and different categories of labor. This need not adversely affect our results, to the extent that sectoral levels of inputs are being kept constant. However, this can be important in the longer run, if reallocation of capital were allowed as a response to changes in the returns to capital.

The assumption of a common elasticity of substitution may distort the pattern of optimal industrial allocation of labor although it does not alter significantly the estimate of the overall gains. Nevertheless, there is wide agreement that all pairwise elasticities of substitutions are substantially greater than unity, ranging usually between three and nine. *The paper therefore reports results based on the value of the elasticity of substitution being six* and other results (based on elasticity values between 1 and infinity) are available from the author. In general terms, the value of six produces mid-point estimates as simulated effects flatten out asymptotically above the value of six.

The assumption of fixed industrial output prices implies that there is an infinitely elastic demand for the product of each industry. This implies in turn that we are in an open and relatively small economy and/or that industrial output changes are sufficiently small to leave the relative prices of the final output unchanged.

Finally, the results are based on the assumption that complete equalization of male and female labor is achieved. This is not likely to happen in real life as the economy-wide structure of the labor market will also depend on decisions made by the suppliers of labor. If households "prefer" women to work in certain sectors or restrict the trade-off between family responsibilities and market, the optimal allocation of labor would be constrained from an economic perspective. Thus, the estimates provide, as in all other similar studies, an upper bound of possible long-run effects upon a hypothetical society where production and reproduction is equally shared between men and women.



The usefulness of the exercise stems from the fact that women have historically improved their position in the labor market, partly through increasing their labor force attachment and working in the same sectors as men. If this trend continues, then the labor market may asymptotically adjust to the values indicated by the simulations. The fact that the model is based on a simulation (for the same reason that all similar studies have adopted this procedure, that is, due to the lack of adequate data) implies that the *picture* emerging from the model and its underlying assumptions should be interpreted cautiously.

Going from the Model to Reality

How easy is it to achieve a gender-blind labor market in the MENA economies, like the one the portrayed in the model? The only answer one can give, and a not a very informative one, is that this is not an easy task as labor market outcomes do not depend only on labor policies. There are also factors that operate *before* women enter the labor market (pre-market discrimination) or *outside* the labor market. Some of these factors are listed below.

Often gender inequality starts early, before women join the labor market, and keeps women at a disadvantage throughout their lives. In some countries, infant girls are less likely to survive than infant boys because of parental discrimination and neglect – even though biologically infant girls should survive in greater numbers infant boys. During childhood, in some countries girls are more likely to drop out of school and to receive less education than boys because of family discrimination, household duties and family needs for child labor.

Furthermore, women's economic potential can be restricted because they control fewer resources, face more constraints and have fewer opportunities than men. When in the labor market, married women have less control of their earnings than men – often very little or none depending on norms and legal and cultural treatment of family resources. Other differences arise from differences in the reproductive spheres¹⁶ that manifest themselves in the historically lower female labor force participation rates than men's that reduce women's attachment to the labor force and create gender specific expectations for future generations (including less investment in the human capital of girls) or induce employers to consider women as marginal workers to whom it will not be worth providing firm specific training or extent senior positions¹⁷.

In a way of summary, though there are many factors affecting the labor market outcomes of women, some important ones include¹⁸:

¹⁶ Standard theory for the empowerment of other minorities (such as ethnic, racial and so on) may provide insufficient guidance for the case of gender as women are found in the "majority" group in equal proportions as men (as daughters, sisters, wives living in the households with the same socio-economic characteristics as their counterparts). To put it graphically, there is quite a difference if inequality is the result of class-based production (exploitation) or sex-based reproduction (patriarchy).

¹⁷ All this leads to women facing fewer opportunities than men. The measurement of inequality of opportunity is generally elusive and only a few studies have addressed the issue explicitly. However, a recent paper on Turkey suggested a "lower-bound" estimate that inequality of opportunity accounts for at least 25-30 of overall inequality in the wealth of ever-married women aged 30-49. See Ferreira et al. (2010).

¹⁸ The effects of these factors can be intensified by globalization to the extent that rapid economic changes are not accompanied by equally rapid changes in social arrangements or the introduction of effective laws and public policies that can mitigate the costs of adjustment.



Differential treatment of women in the economy:

- 1) Employer based discrimination (unjustified or "justified" if the employer feels female workers are less committed to work)
- 2) Discriminatory labor laws
- 3) Conditioning taxation and social insurance on gender/family
- 4) Unequal access to finance and microcredit
- 5) Differential mobility (e.g. internal/external migration).

Public policies and practices:

- 6) Lack of gender sensitive budgeting (for better allocation of resources)
- 7) Lack of gender disaggregated data for informed analysis, design of policies, planning, monitoring and evaluation.
- 8) Education (e.g. curricula or differential public provision due to norms)
- 9) Health (population policies, sexual and reproductive health, protection against violence and harassment)
- 10) Limited child care and support for the elderly or the disable – areas traditionally catered by women's unpaid labor (that increase women's "time-poverty")
- 11) Lack of adequate infrastructure (housing, energy, water, environment etc)
- 12) Discriminatory provisions in family, labor, civil etc laws; land registration, inheritance, credit.

Family and broader social arrangements:

- 13) Less education for girls
- 14) Early marriages
- 15) Polygamy
- 16) Inheritance
- 17) Norms
- 18) Limited awareness and representation in decision making.

Why do these discriminatory provisions exist? The answers are complex but in general terms countries have their own social values as well as political and economic histories. Institutions that emerged in the past and served societies in one way or another for years cannot be dismantled instantaneously without alternatives. The same way one cannot abolish child labor in the absence of viable economic alternatives, changing the role of women and men entails changes in the economy (the invisible economy included) as well as policies and norms. Some of the barriers can be removed simply by political will and can be done at a stroke of a pen – though compliance may remain elusive for some time. Others require measures that have heavy implementation requirements. For example, "socializing" the costs of reproduction (as many northern European countries have done) requires elaborate tax/benefit structures and institutional capacities that are lacking in developing countries. Finally, in addition to political and economic complications, removing what appears to be barriers to women may not be accepted on the basis of religion or local cultural norms.



VII Conclusions :

Monitoring progress in gender equality is not an easy task. For example, school enrolment rates is a straightforward indicator but misses gender differences with respect to the contents of education – such as subjects studied. These difficulties get more complicated in the case of monitoring the progress in gender equality in the labor market and women's empowerment as both represent outcomes (more than outputs) of very complex and often contradictory processes. For example, an increase in the participation of women in the wage sector needs to be examined against whether women's role in the invisible economy (and at home) has been reduced accordingly. Thus using indicators for single dimensions of the labor market can be misleading.

Bearing this in mind, one cannot fail to observe that various statistical indicators suggest that women get the short end of the stick in practically all areas of the labor market. This is particularly so in the MENA region: Much of women's work is not paid and, when it is, it is rewarded less than the work of men; women's labor force participation rates are lower than men's; women's employment is concentrated in a few sectors and occupations and, compared to men, women are rarely found in senior positions.

Overall, it is difficult to say much about the future gains for women in MENA arising from the increase in female literacy, reduction in fertility and greater participation in the labor force. However, improvements in female education create important dynamics for the repositioning of women in public life. Wives can now be more educated than their husbands. Women are bound to face increased employment opportunities and greater control over resources. The increase in women's productivity can in turn accelerate economic growth. As the MENA region has suffered for long from low rates of economic growth, women's productivity can hardly remain unnoticed by policymakers. In fact, most countries have constitutional provisions (at least on paper for now) relating to the equality of all citizens. This can pave the way for harmonizing family, civil and labor laws. When these laws are enforced, they will further change the division of bargaining power within households and women's aspirations, thus reinforcing the existing trends toward gender equality. This process is bound to benefit the youth, female and male. For both, the efficient gains that will be created as a result of a better functioning labor market are bound to (a) increase incentives for more and better education that is more aligned to the labor market needs, for example, by decongesting the teaching profession from female teachers or increasing the share of women in male subjects – such as engineering; (b) induce a more balanced role formation among the youth, (c) reduce youth unemployment and (d) more generally, expand employment opportunities for both youth and adults.

However, perhaps the greatest difficulty relates not so much to the magnitude of the gains but "when". Though women's education has increased significantly, it is still concentrated in subjects that perpetuate sex stereotyping in employment. And, while women's employment increased faster in the MENA than in any other region, female labor force participation remains the lowest in the world at around 30 percent, compared to the second lowest, the predominantly Catholic Latin America, where the rate is around 45 percent. Also, employment segregation in the MENA region is still the highest in the world and is declining at a slower rate than elsewhere. And in some countries civil and company laws impose



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restrictions on women's ownership, and women are discriminated against in the areas of pensions under social security laws and inheritance under family law.

It is not that long since the West underwent the gender transformation — sometime between the end of World War II and the 1960s. It may not be that long before something similar happens in the MENA region. Today it is not that uncommon — compared to the past — to see more women in the labor force and more women in senior positions. This provides an impetus for women's economic empowerment and role formation for the current generation. Since a key component of gender mainstreaming is education, and women in the MENA region are doing quantitatively and qualitatively better than men, one may say that though the glass is still half-empty, it may fill up quickly.



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Annex: The Simulation Model

It is assumed that in each industry i (omitted for notational simplicity) output is given by a function¹⁹:

$$Y = f(L_m^m, L_m^f) \quad (1)$$

Where Y = output in industry i ; L = labor in industry i ; and superscripts m, f refer to male and female labor respectively that are employed initially in completely segregated occupations.

On the assumption that all factors of production other than male and female are fixed, these other factors are not introduced explicitly into the production function.

Secondly, it is assumed that in each industry each occupation is paid its marginal product:

$$w^s = \theta Y / \theta L^s \quad (2)$$

where

$$s = m \text{ or } f$$

The problem now is to find the optimal amount of labor, levels of wages and output if reallocation of female labor is allowed from the female occupations to the male occupations, such that:

$$Y^* = f(L^{m*}, L^{f*}) \quad (3)$$

$$w^{m*} = w^{f*} \quad (4)$$

$$L^{m*} + L^{f*} = L^m + L^f \quad (5)$$

where the asterisk indicates the new (optimal) value of the appropriate variable.

To solve the system of equations (3) to (5) we assume that within each industry the different occupations can be aggregated into a constant elasticity of substitution production function of the form:

$$Y = A \left[\sum \alpha L^{m-\rho} + \sum \beta L^{f-\rho} \right]^{-1/\rho} \quad (6)$$

Where ρ is a parameter which depends on the elasticity of substitution (σ) of female for male labor (see below), α and β are parameters which depend on the nature of the occupation to

¹⁹ For a more detailed presentation see Bergmann (1971) and Tzannatos (1988).



which women are restricted (the smaller the value of β the more rigorous the restriction) and A is a constant which takes into account the contribution to output of factors of production other than labor.

Taking into account condition (2) and the explicit formulation of the production function (equation 6), the system can be solved for the optimal values of labor, wages and output.

The solution is:

$$L^{m*} = \left[\alpha^\sigma / (\alpha^\sigma + \beta^\sigma) \right] [L^m + L^f]$$

$$L^{f*} = L^m + L^f - L^{m*}$$

$$Y^* = \sum w^m \left[(L^m / L^{m*}) / Y \right]^{\rho+1} L^m + \sum w^f \left[(L^f / L^{f*}) / Y \right]^{\rho+1} L^{f*}$$

$$w^{m*} = w \left[L^m / L^{m*} \right]^{\rho+1} \left[Y^* / Y \right]^{\rho+1}$$

$$w^{f*} = w^{m*}$$

where sigma is the elasticity of substitution between female and male labor,

$$\sigma = 1 / (1 + \rho)$$

and α and β can be estimated from the formulae:

$$\alpha = w^m \left[L^f / Y \right]^{\rho+1}$$

$$\beta = w^f \left[L^f / Y \right]^{\rho+1}$$