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Unemployment, Job Quality and Labour Market Stratification in the MED Region: The cases of Egypt and Morocco

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Unemployment, Job Quality and Labour Market Stratification in the MED Region: The cases of Egypt and Morocco

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Abstract

Our study focuses on the labor market implications of trade liberalization in the MED region analyzing the cases of Egypt and Morocco. Following an exploration of the structure of the Egyptian and Moroccan labor markets, particularly employment and unemployment trends during their liberalization processes, we investigate the determinants of unemployment duration during this transition. Our analysis then turns to assessing the impact of tariffs and trade openness upon the job quality and wages of Egyptian workers in 1998 and 2006. We also specifically highlight the role of educational attainment upon wages while noting the influence of demographic characteristics such as gender, education, and geography upon wage and job quality outcomes. The results of our work exhibit the variable impact of trade openness and tariffs upon job quality and wages highlighting the need for targeted trade policy which strikes a balance between the benefits of liberalization and the social and economic stabilization sometimes brought by targeted protectionism.

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Executive Summary

Both Egypt and Morocco have embarked on trade liberalization and economic reform programs since the mid 1970s. With the open door policy in the 1970s, Egypt began pursuing liberalization policies that were later followed by various trade agreements and in 1991 embarked on a structural reform program that included eliminating large fiscal and external imbalances, trade, exchange rate, and financial sector reforms aiming at liberalising the economy, and an ambitious privatisation program. Morocco embarked on similar programs in the 1980s by pursuing a structural adjustment program intending to re-orient the economy to the production of tradable goods. From 1989, a large privatisation programme of public firms went under way and since 1984, restructuring of the Moroccan economy towards export orientation started. Foreign trade has been liberalized as early as 1986, culminating with several association agreements.

Trade liberalisation initiatives in both countries took various forms: unilateral, bilateral and multilateral agreements and attempted to introduce greater external competition into protected domestic markets, remove distortions and enhance economic efficiency at both macro and individual firm's level. We focus on the labor market implications of economic restructuring, mainly trade liberalization, in Egypt and Morocco. We study several labor market outcomes namely: unemployment, wages, and job quality. In particular we examine the stratification of labor market by gender, education and sector over the period of trade reforms in the two countries.

First we examined the impacts of trade liberalisation on the structure of the labor market in both countries in Chapter II. An important aspect of the labour market during transition is the sectoral change in employment. We found evidence that Egypt and Morocco have undertaken various trade and economic reforms that have had significant impact on their labour markets. In both countries the shares of the public sector in total employment have fallen but the impact was more substantial in Egypt given the predominance of the public sector. During the 1990s, Morocco has experienced a decline in the share of agriculture and an increase in the share of manufacturing. In Egypt, the share of agriculture also declined, but so did the share of manufacturing. However, the share of services in Egypt has increased. Moreover, there was no tendency toward the feminization of the male-dominated sectors in Egypt. In fact, the disproportionately female sectors (other than the civil service) de-feminized. Conversely, a significant growth of textile and garment manufacturing was experienced in Morocco which accounts for a significant portion of its feminization. These contradictory trends in Egypt and Morocco were driven by differences in the two countries' structure of foreign exchange earnings. While Morocco relied increasingly upon the export of labour-intensive manufactured goods, Egypt became increasingly dependent upon service exports such as tourism. On the other hand, unemployment rates have increased during transition in both countries. However, in Morocco unemployment was the result of restructuring whilst in Egypt a larger majority of the unemployed were new entrants. These impacts have been felt unevenly given the stratification of the labor market in both countries with women, the youth and the highly educated were more affected than the rest of the labour force.

Secondly, in Chapter III, we examined the factors that determine the probability of leaving unemployment and whether this probability has changed in Egypt during the period of reforms. We investigated whether particular groups have experienced longer unemployment durations and lower hazard rates of leaving unemployment during the period of transition. We found that

the probability of exiting unemployment to public sector has fallen, whilst that of exiting unemployment to informal private sector has increased during the period of transition. Although, education was the main determinant of exits to public sector with both males and females initially in the 70s having similar hazard rates, by the 90s the gender gap started to grow with higher hazard rates for educated men than for educated women. However, for exits from unemployment to informal employment, gender is the main determinant: men are more likely to exit to informal private employment than women regardless of their educational level. Although the hazard rate of leaving unemployment to formal private employment has increased in the 80s relative to the 70s, it has been rather stagnant in the 90s for men. As for women, the probability of getting a private formal sector is almost close to zero and has hardly changed for the past three decades. In addition, the findings indicate that education is an important determinant of exiting unemployment leading to a positive relationship with exiting unemployment to public sector, but a negative one with exiting unemployment to private informal sector.

In Chapter IV we examine further the interaction between education and institutional sector as determinants of stratification in labor rewards during the transition. The main conclusion reached is that the impact of returns to schooling upon wages in Morocco and Egypt during the era of structural adjustment has diminished. This is particularly due to low quality technical education which serves to compress the wage structure. We illustrate this by highlighting two diverging trends. In Morocco wages became compressed and the differential between the private and the public sector generally narrowed, especially for workers with technical or university degrees. Simultaneously, real wages in the public sector stagnated. Generally, the Egyptian experience saw a polarization of wages in the two sectors, with almost symmetrical trends between men and women. The availability of more recent data for Egypt in 2006 allows for a more detailed analysis of returns of education across the entire earning distribution as the country enters into an era of rapid trade liberalization. Results show that in Egypt, returns to technical schooling decrease over the wage distribution. These findings imply that technical education may have a negative impact upon within-group wage inequality as the spread of returns drops for higher educational levels. One explanation is that there is an interaction between schooling and ability, in which the least able can benefit more from their schooling and the pay gap between the more and less able shrinks for higher educational levels. On the other hand, returns to university education in comparison to technical degrees increase over the earning distribution, and particularly so for males in the non-government sector. For this group, university education has a decentralizing impact upon the distribution of earnings. Thus even in an environment of decreasing returns at the university level, the last decade witnessed great stratification between income groups in Egypt. High income groups appear to be able to utilize social capital to derive full benefit of university education, particularly in the private sector. On the other hand, technical secondary graduates, of lower income and academic achievement, are unable to derive any form of economic mobility from their education. The above trends are consistent with a story of the decline of the public enterprise and manufacturing sectors, in an era of trade liberalization.

In Chapter V, we investigate this story further by focusing the analysis more specifically on the Moroccan and the Egyptian manufacturing sectors over their respective period of rapid trade liberalization. By doing so we are able to utilize the same labor data sets used in the previous chapters, but merge it (at the two-digit industry level) with trade variables that capture export orientation, import penetration as well as direct policy change relating to reduction of average tariffs, and use the merged data set to estimate an inter-industry wage premia model. The results indicate that for both Egypt and Morocco, after accounting for worker observable characteristics, industries that paid high tariff protection paid lower wages to workers. Although export

promotion, as measured by the share of exports to total output in each industry, is by far the largest component of trade reform in both countries over the period understudy, it only proved to 7be a statistically significant determinant of wages in the Egyptian case. Export orientation and the change in export orientation are both significant and positively related to wages in 2006. In other words, for all manufacturing, trade liberalization in form of lower tariffs and trade openness in terms of export orientation (but not import penetration which is insignificant) appear to exert a positive influence on wages for the average worker in the manufacturing sector in Egypt. There interesting sector and gender differentials as well. In Morocco, only private enterprise workers gain, whereas public enterprise witnesses substantial reduction in wages due to liberalization. In contrast, in Egypt both types of workers gained, and gains were even greater for public enterprise workers. The gender dimension seems to be consistent in both countries, though, with females in fact gaining much more from trade liberalization compared to their male counterparts. This lends some support to the theories of Gary Becker who argued that increased competition through trade would make it more difficult to discriminate against female workers

Finally in Chapter VI, we utilize data on quality of jobs in the Egypt to see the extent to which higher paid jobs resulting from trade reform also could fit the description of being 'decent' or 'high quality' jobs. Our results highlight that institutional factors of job quality (social security, medical insurance, a contract, paid casual leave, paid sick leave, and whether the worker is a member of a trade union) have the strongest correlation with the trade variables used in the analysis. Tariff reduction per se, does not seem to have had a significant impact on either wages or job quality over this period. On the other hand, increased export orientation exerts a strong positive impact on wages, but a significant negative impact on all job quality indices in many specifications. Finally, industries with the highest import penetration levels have the lowest job quality, but those that had the largest increase in import penetration actually also saw large improvements in job quality. The above results underscore the clear distinction between wage and job quality outcomes in the Egyptian labor market, and the importance of separating the two when examining the effect of trade policy on labour in MED region in general.

Given our research, it can be seen that the stratification of the Egyptian and Moroccan labor markets, as evidenced by the movement of wages, by access to employment, and by the returns to education within various economic sectors and across demographic characteristics, is generally improving over the period in question. There is also some indication that the rewards to women in the workforce are increasing and that the economic divide between men and women is similarly narrowing in some but not all respects. However, these advancement are taking place in an environment of gradually increasing levels of economic and social hardship such that certain groups are becoming simply "less worse off" than their counterparts over time. This is particularly the case when one examines the data relating to unemployment in both countries, job quality as measured by formality and the stability of employment in Egypt. Significantly, our research has shown that demographic factors such as gender, education and geography influence wage outcomes to a degree often exceeding more tangible trade reform variables. Given this, there are very clearly cultural or historical forces particularly influencing the position of women, access to education, and the geographic distribution of unemployment and poverty in the labor markets of the developing world, including in the MED region. Remedy to this state of affairs is unlikely to be found in a simple embrace of international markets and domestic liberalization but is more likely found in domestic political economy reforms aimed at producing a credible judicial structure and educational system to enforce equality and the elimination of unjust labor market segmentation.

Résumé Exécutif

A partir des années 1970, l'Egypte et le Maroc se sont engagés dans un processus de libéralisation des échanges et de réformes économiques. Concernant l'Egypte, la politique de «porte ouverte » des années 1970 fut la première étape qui a été suivie par la signature de divers accords commerciaux jusqu'à ce qu'en 1991, le gouvernement égyptien ait adopté le programme de réforme économique et d'ajustement structurel. Ce dernier incluait l'élimination des déséquilibres budgétaires et extérieurs, la stimulation des échanges commerciaux et du taux de change, le développement du secteur financier visant à libéraliser l'économie et la promotion d'un programme de privatisation très ambitieux. Alors qu'au niveau du Maroc, l'adoption du programme d'ajustement structurel eut lieu dans les années 1980. Réorienter l'économie vers la production de biens échangeables était le principal objectif de ce programme. Simultanément, à partir de 1984, une politique de promotion des exportations fut implémentée menant à la libéralisation du commerce en 1986 et la signature de plusieurs accords d'association. De surcroît, un vaste programme de privatisation des entreprises publiques est mis en œuvre à partir de 1989.

Les initiatives de libéralisation du commerce dans les deux pays ont pris des formes diverses: accords unilatéraux, bilatéraux et multilatéraux et a tenté d'introduire plus de concurrence étrangère sur les marchés nationaux auparavant protégés, supprimer les distorsions et améliorer l'efficacité économique tant au niveau macroéconomique qu'au niveau des firmes individuelles. Nous mettons l'accent sur les implications de cette restructuration économique, notamment la libéralisation du commerce, sur le marché du travail égyptien et marocain. Plusieurs aspects du marché du travail sont pris en considération, à savoir: le chômage, les salaires et la qualité d'emploi. En effet, nous examinons la stratification du marché du travail selon le sexe, l'éducation et le secteur au cours d'une période de réformes commerciales dans les deux pays.

Nous avons d'abord examiné l'impact de la libéralisation commerciale sur la structure du marché du travail dans les deux pays dans le chapitre II. Durant la transition des deux pays, le changement sectoriel dans l'emploi fut un aspect important du marché du travail. Ainsi, nous avons trouvé que l'Egypte et le Maroc ont entrepris des réformes économiques et commerciales qui ont eu un impact significatif sur leurs marchés du travail. Dans les deux pays, les parts du secteur public dans l'emploi total ont chuté, mais l'impact a été plus important en Egypte caractérisée par une prédominance du secteur public. Durant les années 1990, le Maroc a connu une baisse de la part de l'agriculture et une augmentation de la part du secteur manufacturier. En Égypte, non seulement la part de l'agriculture a diminué, mais aussi celle du secteur manufacturier au profit d'une expansion des services. En outre, il n'y avait pas de tendance vers la féminisation des secteurs à prédominance masculine en Egypte. En fait, les secteurs dominés de façon disproportionnée par les femmes (autres que les services civils) ont connu une déféminisation. En revanche, les secteurs féminisés au Maroc, surtout le textile et l'habillement, se sont accrus de manière. Ces tendances contradictoires en Égypte et au Maroc sont expliquées par les différences de structure entre les deux pays au niveau des recettes en devises. Alors que le Maroc s'est basé sur l'exportation des biens manufacturés intensifs en main-d'œuvre, l'Égypte est devenue plus dépendante des exportations de services comme le tourisme.
De plus, les deux pays, au cours de leur transition, ont connu une augmentation du niveau du taux de chômage. Toutefois, les raisons sous-jacentes sont différentes. Alors qu'au Maroc, cette

hausse était le résultat d'une restructuration du marché du travail, en Égypte, une plus grande majorité des chômeurs étaient de nouveaux entrants. Ces répercussions ont été ressenties de façon inégale étant donné la stratification du marché du travail dans les deux pays. Ainsi, les femmes, les jeunes et les personnes qualifiées étaient parmi les plus touchés de la population active.

Deuxièmement, dans le chapitre III, deux questions majeures sont examinées : d'une part, quels sont les facteurs qui déterminent la probabilité de sortir du chômage, et d'autre part, si cette probabilité a changé en Égypte pendant la période des réformes. Nous avons aussi étudié la durée du chômage de différents groupes pour voir si quelques groupes ont connu plus longues durées de chômage, et donc, un faible taux de hasard pour sortir du chômage au cours de la période de transition. Nous avons constaté que, au cours de la période en question, la probabilité de sortir du chômage pour entrer dans le secteur public a diminué, tandis que celle de sortir du chômage vers le secteur privé informel a augmenté. L'éducation était le principal déterminant de ces mouvements vers le secteur public avec un taux de hasard similaires pour les hommes et pour les femmes dans les années 1970. En revanche, au cours des années 1990, les taux de hasard ont augmenté plus pour les hommes éduqués que pour les femmes de même niveau d'éducation. Concernant les sorties du chômage vers l'emploi informel, le genre était le principal déterminant vu que les hommes sont plus susceptibles de sortir du chômage vers le secteur privé informel que les femmes, indépendamment de leur niveau d'éducation. Malgré une hausse au cours des années 1980 par rapport aux années 1970, le taux de hasard de sortie du chômage vers l'emploi privé formel a été plutôt stagnant dans les années 1990 pour les hommes. Quant aux femmes, la probabilité d'avoir un emploi au sein du secteur privé formel est quasiment égale à zéro et n'a guère changé au cours des trois dernières décennies. En outre, les résultats indiquent que le déterminant le plus important de sortir du chômage est l'éducation. En effet, cette dernière est positivement corrélée avec la sortie du chômage vers le secteur public et négativement corrélées avec la sortie du chômage vers le secteur informel.

Dans le chapitre IV, nous examinons l'interaction entre l'éducation et le secteur institutionnel en tant que déterminants de la stratification des revenus de travail au cours de la transition. La principale conclusion est la suivante : au Maroc et en Egypte, l'impact des rendements de l'éducation sur les salaires pendant l'ère de l'ajustement structurel a diminué. Cela est notamment dû à une éducation technique de faible qualité qui sert à resserrer la structure des salaires. Nous illustrons cela en mettant en évidence deux tendances divergentes. Au Maroc, l'éventail des salaires s'est resserré et, en général, le différentiel des salaires entre le secteur privé et celui public a diminué, surtout pour les travailleurs ayant des diplômes techniques ou universitaires. Simultanément, les salaires réels dans le secteur public ont stagné. D'autre part, l'expérience égyptienne a connu une polarisation des salaires dans les deux secteurs, avec des tendances presque symétriques pour les hommes et les femmes. La disponibilité des données plus récentes pour l'Egypte, à savoir celles de 2006, permet une analyse plus détaillée des rendements de l'éducation pendant une période de libéralisation rapide du commerce. Les résultats montrent qu'en Egypte, les rendements de l'enseignement technique diminuent par rapport à la distribution des salaires. Ceci implique que l'éducation technique a un impact négatif sur les inégalités au sein des groupes de salaires comme l'éventail des rendements a diminué pour les niveaux d'enseignement supérieurs. Une explication possible est qu'il existe une interaction entre la scolarité et la capacité : les moins capables peuvent profiter davantage de leur scolarité réduisant ainsi l'écart de rémunération entre eux et leurs homologues plus capables pour les niveaux d'éducation élevés. Les rendements de l'éducation universitaire par rapport à ceux de l'éducation technique ont beaucoup augmenté, en particulier pour les hommes dans le secteur non gouvernemental. Pour ce groupe, l'enseignement universitaire a un impact décentralisant sur la distribution des revenus. Ainsi, même dans un environnement de baisse des rendements au

niveau universitaire, la dernière décennie a vu une grande stratification entre les groupes de revenu en Egypte. Les groupes à revenus élevés semblent être en mesure d'utiliser le capital social, ce qui leur a permis de bénéficier pleinement de l'enseignement universitaire, notamment dans le secteur privé. D'autre part, les personnes détenant un diplôme secondaire technique, et caractérisées par des revenus et des réussites scolaires plus faibles, sont incapables de tirer profit de leur éducation qui pourrait déboucher sur une mobilité économique. Les tendances ci-dessus sont compatibles avec une histoire du déclin des entreprises publiques et du secteur manufacturier au cours d'une ère de libéralisation commerciale.

Dans le chapitre V, nous enquêtons ces tendances en focalisant l'analyse sur les secteurs manufacturiers au Maroc et en Egypte au cours de leur période respective de la libéralisation des échanges. Ceci est rendu possible en utilisant les mêmes données de travail utilisées dans les chapitres précédents et fusionnées avec les données du commerce (au niveau industriel de deux chiffres). Ces dernières incluent l'orientation à l'exportation, la pénétration des importations et les changements de tarifs moyens captant le changement de politique commerciale. Toutes ces données fusionnées sont utilisées ensemble pour estimer un modèle de prime de salaire interindustriel. Les résultats indiquent que pour l'Egypte et le Maroc, après avoir tenu compte des caractéristiques observables des travailleurs, les industries ayant une forte protection tarifaire paient des salaires plus bas pour leurs travailleurs. Malgré l'importance de la promotion à l'exportation (telle que mesurée par la part des exportations dans la production totale de chaque branche d'activité) qui est la composante la plus importante de la réforme commerciale dans les deux pays au cours de la période en question, cette dernière ne s'est révélée un déterminant significatif des salaires que dans le cas de l'Egypte. De surcroît, l'orientation à l'exportation et la variation de celle-ci sont à la fois significatives et positivement corrélées aux salaires en 2006. En d'autres termes, la libéralisation des échanges sous forme de réduction tarifaire et l'ouverture commerciale en termes d'orientation à l'exportation (mais pas la pénétration des importations qui n'est pas significative) semblent exercer une influence positive sur les salaires pour le travailleur moyen dans le secteur manufacturier en Egypte. Des différences intéressantes tant au niveau du genre qu'au niveau des secteurs sont observées. Au Maroc, seuls les travailleurs des entreprises privées ont gagné, alors que les entreprises publiques ont connu une réduction substantielle des salaires à cause de la libéralisation. Par contre, en Egypte, les deux types de travailleurs ont gagné, et les gains sont encore plus élevés pour les travailleurs des entreprises publiques. La dimension du genre semble être cohérente dans les deux pays avec les femmes qui tirent profit de la libéralisation des échanges plus que leurs homologues masculins. Cela tend à confirmer les théories de Gary Becker qui a montré qu'une concurrence accrue à travers le commerce réduit la possibilité d'avoir une discrimination contre les travailleurs féminins.

Finalement, le chapitre VI traite de la qualité des emplois en l'Égypte afin de voir dans quelle mesure les emplois mieux rémunérés résultant de la réforme du commerce pourraient aussi correspondre à la description des emplois étant «décent» ou de «meilleure qualité». Nos résultats soulignent que les facteurs institutionnels de la qualité de l'emploi (sécurité sociale, assurance médicale, contrat, congés payés occasionnels, congés de maladie payés, et si le travailleur est membre d'un syndicat) ont la plus forte corrélation avec les variables du commerce utilisées dans l'analyse. La réduction des tarifa en soi, ne semble pas avoir eu un impact significatif sur les salaires ou la qualité des emplois au cours de cette période. En revanche, l'augmentation de l'orientation à l'exportation exerce un impact positif sur les salaires, mais un impact significativement négatif sur tous les indices de qualité des emplois dans de nombreuses spécifications. Enfin, les industries caractérisées par les niveaux de pénétration d'importation les plus élevés ont la qualité des emplois la plus faible, mais celles qui ont connu la plus forte augmentation de la pénétration des importations ont également connu une amélioration de la

qualité des emplois. Les résultats ci-dessus soulignent la nette distinction des différentes conséquences sur le salaire et la qualité des emplois sur le marché du travail égyptien, et l'importance de séparer les deux lors de l'examen de l'effet de la politique commerciale sur le travail dans la région MED en général.

Pour conclure, on peut constater que la stratification des marchés du travail égyptien et marocain, comme en témoignent le mouvement des salaires, l'accès à l'emploi et le rendement de l'éducation au sein des différents secteurs économiques et entre les caractéristiques démographiques, s'améliore de manière générale au cours de la période en question. Il s'est avéré aussi que les rendements des femmes augmentent et que la distinction économique entre les hommes et les femmes se réduit. Toutefois, ces progrès ont lieu dans un contexte d'une hausse progressive des difficultés économiques et sociales, de sorte que certains groupes deviennent simplement «moins pires» que leurs homologues au cours du temps. C'est particulièrement le cas lorsque l'on examine les données relatives à la qualité de l'emploi, mesurée par la formalité et la stabilité de l'emploi en Egypte. De manière significative, cette étude a montré que les facteurs démographiques comme le genre, l'éducation et la géographie influencent les salaires, à un degré qui dépasse souvent les variables de réforme commerciales plus tangibles. Compte tenu de cela, il existe évidemment des forces culturelles ou historiques influençant la position des femmes, l'accès à l'éducation et la répartition géographique de la pauvreté sur les marchés du travail des pays en développement, et notamment dans la région MED. Remédier à un tel problème ne réside ni dans une simple libéralisation des marchés internationaux ni dans une libéralisation interne, mais nécessite une réforme interne de l'économie politique visant à produire une structure judiciaire crédible et un système éducatif assurant l'égalité et éliminant toute segmentation injuste du marché de travail.

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List of Acronyms

CAPMAS	Egyptian Central Agency for Public Mobilizaton and Statistics
CEN-SAD	Community of Sahel and Saharan States
COMESA	Common Market for Eastern and Southern Africa
ELMS 98	Egypt Labor Market Survey of 1998
ELMPS 06	Egypt Labor Market Panel Survey of 2006
ERF	Economic Research Forum
EU	European Union
GAFTA	Greater Arab Free Trade Area
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GSTP	Global System of Trade Preferences
HOS	Hecksher-Ohlin-Samuelson
ILO	International Labor Organization
MED	Mediterranean
MENA	Middle East and North Africa
MLSMS	Morocco Living Standard Measurement Surveys
NMAE	Nomenclature Marocaine des Activities Economique
OECD	Organization for Economic Co-Operation and Development
OLS	Ordinary Least Squares
ROR	Rate of Return
TRIPS	Trade-Related aspects of Intellectual Property Rights
WTO	World Trade Organization

Introduction

Recent decades have witnessed the implementation of various economic reforms in developing countries. Those reforms aimed to transform economies and move away from state controlled to "free" market economies and entailed various internal changes to the structure of production in the form of privatization and deregulation as well as external changes involving trade liberalization. Although economic theory shows that those reforms should lead to economic growth, the experience of many countries did not fit this idealized vision. For example, economic theory shows that trade liberalization leads to an increase in welfare resulting from the improved allocation of resources, yet in practice trade liberalization has often led to higher wage inequality and unemployment.

Therefore, a primary object of this research is to explore the influence of recent reforms mainly in the form of trade liberalization (international trade openness) upon labor market outcomes. Our focus is two countries: Egypt and Morocco, both of whom have embarked on trade liberalization and economic reform programs since the mid 1970s. With the open door policy in the 1970s, Egypt began pursuing liberalization policies that were later followed by various trade agreements and in 1991 embarked on a structural reform program that included the elimination of domestic fiscal and external imbalances, trade openness, exchange rate targeting, and financial sector reforms aiming at generally "liberalizing" the economy. This was combined with an ambitious privatization program. Morocco embarked on similar programs in the 1980s by pursuing a structural adjustment program intending to re-orient the economy toward the production of tradable goods. 1989 witnessed a large privatization programme of public firms and 1984 a restructuring of the Moroccan economy towards export orientation. Foreign trade had been liberalized as early as 1986 culminating with several association agreements.

This report focuses upon the labor market implications of trade openness in the case of Egypt and Morocco. Given that trade liberalization and other economic reform policies usually lead to winners and losers and given the segmentation in the labor market in both countries, we examine several labor market outcomes such as unemployment, wages, and job quality to investigate the degree to which those impacts are variable by gender, education, and sector.

Expectations of increasing pressure upon domestic labor markets has been historically one of the main reasons underlying resistance by both policy makers and the public alike to trade liberalization in the MED region. This is presumably the very same reason Egypt chose to follow a gradual approach to trade liberalization regardless of whether liberalization took place unilaterally as the country became a signatory to the GATT and a member of WTO or within the framework of the preferential trade agreements between Egypt and the EU. Efforts to liberalize trade have so far cumulated in the removal of all quantitative barriers by the early 1990s which was subsequently replaced by tariffs at one stage followed by a reduction of tariffs at a later stage. As stated, Morocco embarked on a similar course of action in the 1980s by pursuing a structural adjustment program.

At the level of the firm, the main objective of gradual tariff reduction is to provide potentially efficient firms with breathing space so that they may adjust to free trade in an orderly manner resulting in minimal disruption to output or employment. Workers too will have to adjust to trade liberalization by either changing employers, sectors or occupations. To accomplish this they may need to acquire new skill through retraining. In this process,

they may suffer from long spells of unemployment or experience falling wages once re-employed. Workers too, therefore, might also incur adjustment costs which can be avoided through a gradual reduction of trade barriers.

Based upon an understanding of the related theoretical and international empirical literature as presented in Section I, the remainder of our analysis is organized as follows. Section II explores the nature of current trade regimes and liberalization initiatives in Egypt and Morocco and examines the impact on the labor market in particular on employment, wages and unemployment in both Egypt and Morocco as they transition from an environment of protectionism to one of heightened international competition. Section III investigates further the effects on unemployment by focusing on unemployment duration in Egypt during the period of transition and highlights the stratification of the labor market by gender and education. Section IV studies the determinants of wages in Morocco and Egypt controlling for sector selection (which is another source of stratification) and estimates quantile wage regressions for both countries. It also calculates rate of return to schooling and shows the effects for the various strata in both labor market. Section V turns to the impact on job quality and analyzes issues related to the measurement of quality of work and presents estimates on the relationship between trade openness and job quality in Egypt. Section VI provides estimates of the effects of tariff protection and trade openness on wage determination in Egypt and Morocco. Our final section concludes by summarizing the significance of our results and discussing some of their policy implications.

I. Deconstructing Technical Examinations of Labor Markets:

Theory and International Empirical Evidence[1]

Perhaps the most glaring flaw in modern economics, and specifically the manner in which labor market exploration takes place, is the elegant and often inappropriate abstraction away from the realm defined as “non-economic”. There exists a very strong tendency in modern work to assume away variables or interactions that are deemed "demographic", “sociological” or “psychological” or “political” in an effort to focus our attentions upon easily measurable quantities that fit comfortably with our methodological tools; namely econometrics or higher theory even more strongly embedded in the realm of the abstract. While these are valuable tools (and some will be used here), it is our contention that we must continuously attempt to reach beyond their limitations and be willing to explore results aside from our initially stated ones. First however, it is important that our study begins with a discussion of the pre-analytic visions associated with the economic investigations of job quality, education, and trade while highlighting the degree to which labor and the conditions in which labor exists have been ignored.

Labor Standards and Job Quality

As Drusilla Brown points out in *Labor Standards: Where do they Belong on the International Trade Agenda*, there exists, at the outset, international debate over the implicit relevance of labor rights in general. According to Brown, opponents of international labor standards assert that the regulation of labor markets is an issue of “national sovereignty (and) should remain primarily in the domain of domestic policy” (2001). These are fundamental issues such as the length of the work week, bonded labor, child labor practices, the right to association and to collectively bargain, as well as the right to exist in an environment free of discrimination. A substantial variety of literature is put forth by Brown exploring the relative costs and benefits associated with the presence or absence of these standards or prohibitions which are nearly fundamental human rights by most standards of the developing world. It therefore comes as little surprise that economic literature is largely unconcerned with issues of "job quality" in its minor position relative to issues such as child labor or indentured servitude.

Highlighting this ability to rationalize extreme economic conditions, Singh (2001) notes that utility maximizing behavior may lead a worker to "bond" contractually to a single employer. Conversely, Genicot (2000) notes that this may discourage the development of formal

[1] This chapter is authored by John Salevurakis.

capital markets as financial institutions will be unlikely to lend to an individual who's labor is in fact bonded to an employer. The dialogue seems to have abstracted entirely from the moral or ethical issues surrounding the practice of what is, for all intents and purposes, indentured servitude. Similarly, Freeman (1994) notes the dualistic impact of enabling labor unions to operate as they may streamline the bargaining process or operate as a monopoly and serve only the interests of an institutional elite. Even the prohibition of child labor cannot be unilaterally assumed positive enough in the short run to overcome familial income reductions.

Perhaps not surprisingly, it is workers in the developed world who are most concerned for the working conditions in the developing world. This is, according to the literature, not out of any sense of benevolence but rather because low wages in a country with no worker protections will, according to international trade theory, more dramatically reduce the wages in the country with a regulated labor market (Stolper and Samuelson, 1941). The "rational" concern is simply that the absence of international standards will lead to a dramatic "race to the bottom" of the wage and working conditions scale as globalization persists. In an effort to attract foreign investment, it is certainly not unlikely that the regimes of the developing world will become increasingly repressive of labor. Still, this reality as based upon a common-sense understanding of the developing world is largely ignored by economic literature and its often staggering ability to jettison the political and social issues of the day.

This neglect of labor continues in literature exploring the impact of trade liberalization upon democratization. While Rundra (2005) acknowledges in *Globalization and the Strengthening of Democracy in the Developing World*, that there exists varying degrees of democratization and that civil liberties exist along a spectrum within democratization, labor rights and the conditions of labor are nowhere considered in the presented work as a proxy for democracy. This is the case in spite of the fact that the right to freely associate is (whether in discussions of wage bargains or political opposition) an undeniably foundational feature of any democracy outside the purely cosmetic variety. Rundra's study shows, not surprisingly, that international trade yields higher levels of "democratization" if there exists a sufficient amount of social spending to compensate the masses for potential or actual welfare losses brought by globalization. This welfare loss compensation sub-text exists in this particular body of work in spite of, and not due to, its economic content as Rundra is actually a professor of international affairs.

To illustrate that Economics is not the only perpetrator of biased research, one might also look to the econometric methodology as applied by Richard, Gellany, and Sacko (2001). In *Money with a Mean Streak, Foreign Economic Penetration and Government Respect for Human Rights in Developing Countries,* the authors econometrically assert their refutation of dependency theory by drawing a correlation between foreign economic penetration and a heightened respect for "civil liberties" in the developing world. What is almost completely ignored however is the coefficient illustrating that the higher levels of "development" achieved also correlate with statistically significant reductions in the "physical integrity" of those same citizens. The lack of physical integrity is defined by the presence of "torture,

political killing, disappearances" as well as people being imprisoned for their religious beliefs. Given this neglect of most horrific circumstances, it seems unsurprising that matters such as job quality might fall by the wayside of contemporary economic analysis. Therefore, our goal in this work is to highlight that which has been sadly passed over by a great deal of research and yield policy recommendations for human development to exist alongside the economic development encouraged by other bodies of work.

Trade, Employment, and Unemployment

Previous literature specifically addressing the impact of trade reform upon labor markets has concentrated upon employment and wage effects with only a small number of studies explicitly handling the impact upon job quality and informality. It is widely believed that trade liberalization will ultimately affect the distribution of employment across sectors along with the relative rewards to different types of labor rather than to aggregate employment. Neoclassical economists naturally argue that macroeconomic variables and labor market institutions - rather than trade policy - affect long run unemployment. While there are a number of models that conclude that trade liberalization can lead to unemployment in the long run, such findings are not backed by any empirical evidence. (Hoekman and Winters, 2005 P. 2-3). However, the situation is quite different in the short run.

Along with macroeconomic variables and labor institutions, Structuralists assert that trade policy can definitely impact aggregate employment in the short run. This line of reasoning rests upon one important assumption: the absence of instantaneous adjustment to trade liberalization. It is reasonable to expect then that trade liberalization will lead to contraction of some sectors and expansion of others. The problem, however, stems from the fact that the process of expansion can proceed at a slower rate compared to contraction along the transition leading to unemployment (Hoekman and Winters, 2005 P. 2-3). Given this modest contribution of theory to the question of trade liberalization and employment, it is important to note that it is largely considered an empirical question. (Davidson et al, 1999)

The empirical literature on trade liberalization does not provide compelling evidence supporting the contention that trade liberalization is associated with high levels of unemployment or falling real wages in developed countries. Two main reasons were found to be responsible for such results. The first stems from the absence of strong specialization in production unlike the case with developing countries (OECD, 2005 p. 28). Second, it is also often argued that trade between OECD countries and developing countries is too small to have an impact on employment or wages in the former countries. (Francois, 2004 P. 7). However, most of econometric studies addressing this issue suffer from endogeneity bias and the estimates are not robust to variations in model specification or data source. (OECD ,2005). Meanwhile a more recent, study conducted by the OECD (2005 p 30) found that trade liberalization has been associated with falling employment over the period 1970-2000 for international competition industries in the majority OECD countries. In general, and compared to the 1990s, recent research reveals that trade influences labor outcomes partially due to increase in trade in intermediate goods as well as services. (Hoekman and Winters, 2005 P. 2, 15).

However, in response to the above mentioned shortcomings of research pertaining to developed countries, some consider the empirical literature pertaining to developing countries as more informative and its results more robust. This is due to the fact that most of these countries have greatly reformed their trade regimes making it easier to trace the

source of the shock in time. This in turn makes it easier to trace the role of trade liberalization as it influences employment. (Hoekman and Winters, 2005 P. 2, 15).

A World Bank study by Michaely et al 1991, revealed that transitional unemployment following trade liberalization is quite small in a number of developing countries. A survey of more than 50 studies addressing problems of adjustment to free trade concurs with this result. In fact, some of these studies show that manufacturing employment increased within one year of the implementation of trade liberalization in some developing countries. Low adjustment costs are attributed to several reasons. First, adjustment costs are of a short term nature and fall to zero once workers are reemployed. Second, estimates of the duration of unemployment were found to be low. Third, normal turnover in many industries appeared to exceed dislocation resulting from trade liberalization. This implies that adjustment through shedding labor can take place with no forced unemployment. Fourth, to a great extent the process of resource allocation following liberalization takes place through inter-industry shift which in turn reduced the dislocation of factors of production. Finally in the case of developing countries comparative advantage lies in labor intensive industries so trade liberalization would be expected to increase employment and not vice versa. (Matusz and Tarr, 1999 P. 2)

Conversely, one main reason that can lead to high adjustment costs in developing countries compared to developed countries is inflexible labor markets in the former. However, the fact that a higher percentage of labor force is employed in the agricultural sector and in the informal labor market both of which are very flexible suggests that adjustment costs can still be low. Apart from such concerns, general evidence from country experience show that for each dollar of adjustment costs corresponds to several dollars worth of efficiency gains from trade liberalization. Adjustment costs are also highest following liberalization but disappear after a period lasting from 1-5 years (Matusz and Tarr, 1999 P. 12,18).

Trade and Wages

The specific relationship between trade and wages of course follows theoretically from the Hecksher-Ohlin-Samuelson (HOS) framework asserting that trade will affect the relative payments to factors of production via the changing relative prices of commodities. A reduction in tariffs for example should lower a commodity's relative price, which would lower the demand for factors of production used in that sector. If the sector happens to be labor-abundant, then the decline in prices will disproportionately lower the demand for labor and hence lower their wages. Hence, trade liberalization would lead to increasing inequality between factors of production or heightened demand for low job quality informal sector workers. However, this model does not predict that trade will alter industry specific returns since it assumes perfectly competitive markets with perfect factor mobility across uses. These assumptions however, do not seem to be valid for many developing countries where markets are characterized by wide spread imperfections and factors of production are extremely immobile. Further, in the developing world, the ability for the market or government to "compensate" domestic factors or industries damaged by trade liberalization

(as postulated by Samuelson) seems extremely limited. The short run Immobile Factors model or the medium-run Ricardo-Viner model, that assume constrained factor mobility across sectors, are arguably more suited to the situation in developing countries with extreme labor and product market rigidities.

The immobile-factors model assumes that all factors are completely immobile in the short run. It predicts that tariff reductions and increased trade will lead to a decline in the earnings of factors in the import-competing sectors and an increase in earnings in the export sector. Similarly, workers in sectors that experience a larger decline in tariffs, and hence a larger decline in the price of their output, will face a decline in their wages relative to the economy-wide average while those in sectors with smaller tariff reduction will face a relative welfare gain . The Ricardo-Viner model (sometimes referred to as the Specific Factors Model) is a middle-ground which allows one factor to be mobile across sectors while the other one is sector-specific. In this case the factor specific to the import competing industry will lose from lower tariffs, that specific to the export-competing industry will gain from freer trade, while the effect on the real wages of labor (the mobile factor) will be ambiguous depending on the consumer's preferences for the two goods. The real wage will rise in terms of the imported good which is now cheaper but will fall in terms of the exportable good which is now more expensive.

Several studies have attempted to test the relationship between trade reform, employment and relative wages for both developing and advanced economies. For the United States, Revenga (1992), Katz and Freeman (1992) and Gaston and Trefler (1994) were some of first attempts to measure the effect of the expansion of trade in the 1980s on industry wages. These studies point to a negative relation between tariff protection and industry wages. For developing countries, Hanson and Harrison (1999) used firm panel data to investigate whether the rising skilled-unskilled wage gap in Mexico in the 1980s could be explained by trade reforms. They did not find a significant correlation between producer price changes and relative white collar employment. However, they found that reductions in tariffs were much lower in skill intensive sectors, which were originally less protected than the low-skill sectors. This in turn meant that reductions in prices in the low-skilled sectors were larger, which would explain the increase in wage differentials. Harrison and Hanson (1999) found no significant relation between the ratio of white-collar to blue-collar workers' average annual wages and the level and change of industry tariffs and import licenses in the manufacturing sector between 1984 and 1990. Revenga (1997), using the same firm panel data for Mexico found that tariff reductions were associated with a decline in both employment and wages. Currie and Harrison (1997) investigated the impact of trade reform on wages and employment in Morocco during the 1980s. They found no significant effect of tariff reduction on employment or wages in private sector firms. Government-owned enterprises on the other hand responded to tariff reductions by raising employment, and lowering wages. All of these studies relied on data that did not include information on worker characteristics. This does not allow for separating the effect of the reduction in trade barriers on wages, from that on returns to education.

Feliciano (2001) is one of the first studies that used individual-level data to study the impact of trade reform on wages. She follows a two-step procedure, first estimating the wage equation for each individual-industry observation, as a function of individual characteristics such as years of schooling, experience, marital status, gender, enterprise (public/private) and industry. Next, she estimated the relationship between this calculated industry wage differential and measures of industry protection levels (tariffs and license coverage, as well

as trade openness, producer prices and import penetration). Her results indicate that reductions in tariffs, changes in producer prices and import penetration did not have a significant effect on industry wage differentials. She found that the reduction in import licenses decreased relative wages of workers in reformed manufacturing industries by 2%. Her results also indicate no significant impact of trade reform upon employment or hours of work. Her evidence also suggest that trade reform was associated with greater wage dispersion and a decrease in the relative wages of skilled workers. Attanasio, Goldberg and Pavcnik (2004) investigated the effects of tariff reductions in Columbia in the 1980s and 1990s on wage inequality. They also use a two stage estimation techniques similar to that of Feliciano, to calculate the effect of tariff reductions on industry wage premiums. Their results indicate a positive and significant effect of both tariff levels and first differences in tariffs on industry wage premiums. These results also point to an economically significant effect with a 50% reduction in tariffs being associated with 6% decrease in the industry wage premium in that sector. They also find that the sectors that experienced the highest reduction in tariff protection and hence in industry wage premiums were also the same sectors with the highest share of unskilled workers and the lowest wages.

Trade and Job Quality

Goldberg and Pavcnik (2003) presented a theoretical model that examined the relationship between trade liberalization and informal employment. Their model would seem to imply that trade liberalization will lower the optimal number of formal workers hired by a firm and increase that of informal workers. They test this model using data for Brazil and Columbia during periods of widespread liberalization. They found however that trade liberalization did not contribute to the expansion of the informal sector in Brazil and should therefore not represent a parallel degradation in job quality. Trade liberalization was, however, associated with a small but statistically significant rise in informality in Columbia, although only in the period prior to labor market reforms yielding higher levels of market rigidity in the formal sector. In short, formal labor market rigidity coupled with broader liberalization will likely reduce labor market formality and potentially job quality. However, it is not altogether clear that there is not a similar degradation in job quality and wages within the formal sector absent this labor market rigidity and migration to the informal sector. Marjit, Kar and Beladi (2007) present a theoretical model that incorporates both formal and informal workers in a HOS framework. They find that a reduction in tariffs in the import-competing sector will raise both employment and wages in the informal sector. Informal wages will also rise in the export sector whose price has increased but informal employment in that's sector will fall even if the sector is labor-intensive. They do not test these results empirically. The only other paper that we are aware of discussing the quality of jobs following trade reform empirically is Currie and Harrison (1997) who find that trade liberalization in Morocco is associated with an increase in the number of temporary workers hired by firms in the formal sector. These temporary workers may be viewed as "quasi formal" and the hiring may very well be a result of formal labor market rigidities as discussed above.

Another interesting finding of Attanasio et al. (2004) is related to the increased rate of informal employment in Columbia following trade reforms. This issue ties directly to the job quality issue although the only aspect of job quality that they consider is the informality issue (thereby ignoring the low quality of temporary jobs in the formal sector, for example). They found that reductions in tariffs are associated with an increase in informal employment, although this effect is more pronounced before Columbia implemented labor market reforms that made it less costly to fire workers. Dutta (2007) performed a similar analysis for wages in India's manufacturing sector following large scale trade reforms in the 1980s and 1990s. She calculated industry wage premiums after accounting for observable worker characteristics and potential selection bias, as the difference between the wage received by the average worker in a given industry and that received by the average worker in the economy. She then uses these wage premiums to determine the effect of trade reform. She finds a positive and significant effect of tariffs on wage premia, and of changes in tariffs upon changes in wage premia. This provides evidence that wages declined significantly following the reduction in protection levels in the affected industries. Acosta and Gasparini (EDCC 2007) investigate the effects of capital accumulation and trade liberalization on rising wage inequality in Argentina during the 1990s. They find that capital accumulation effect on rising inequality was larger than the trade liberalization effect as measured by import penetration. However, they do not use a direct measure of trade liberalization as embodied in tariff rates. Import penetration rates and other trade flow measures are arguably endogenous since they depend on factor costs, and hence most studies cited above rely on tariffs and changes in tariffs as the main measure of trade policy changes while import and export measures are used in robustness checks regressions with tariffs.

Other studies have relied on comparing the degree of wage inequality and employment effects on various groups of workers using a "before-after" approach, not controlling specifically for the effect of trade reform.(Robertson (1997), Green, Dickerson and Arbache (2001), El-Hamidi (2008) to name a few) The obvious drawback with these studies is that many other policy changes typically accompany trade reform such public sector downsizing, privatization, structural adjustment, etc., and unless direct measures of trade reform are included in the analysis clear cut conclusions about the effects of *trade reform* per se, cannot be made with any degree of confidence.

II. Trade Regimes and Labor Outcomes: the Cases of Egypt & Morocco[2]

Both Egypt and Morocco have embarked upon trade liberalization and economic reform programs since the mid 1970s. With the open door policy, Egypt began pursuing liberalization policies that were later followed by various trade agreements and in 1991 would implement a structural reform program that included the elimination of large fiscal and external imbalances as well as policies targeting trade, exchange rate, and financial sector reforms hoping to liberalize and privatize the economy. Morocco embarked upon similar programs in the 1980s by pursuing a structural adjustment program intending to re-orient the economy to the production of tradable goods. Specifically, since 1989 an ambitious programme seeking the privatization of public firms was initiated. Similarly, since 1984, restructuring of the Moroccan economy towards an export orientation has been pursued. Foreign trade has been liberalized as early as 1986 culminating in several association agreements. In this section of our report, we examine in detail these various trade agreements embarked upon by Egypt and Morocco during the last few decades.

General Background: Trade Agreements

Until the 1970s, both Egypt and Morocco (along with a large portion of the Arab world) enjoyed sustained economic growth and improving social and economic indicators under interventionist government policy. Public investment was high and large nationalized industries thrived. By the end of the 1970s and the beginning of the 1980s however, Morocco had experienced a balance of payments crisis, forcing it to look to the IMF for help. The trade reforms of 1983 were set against this backdrop of structural adjustment and targeted a reduction of maximum duties from 400 percent to 45 percent. Shortly after, in 1986 and with a maximum tariff rate of 160 percent, Egypt initiated its own set of trade

[2] This chapter is authored by Jackline Wahba.

reforms. Many of the protectionist measures, particularly tariffs, that had been built up over the preceding decades were cut. Further, the Economic Reform and Structural Adjustment Program (ERSAP) was introduced in 1991 to provide stability via further liberalization measures.

Agreements within GATT and the WTO

Egypt and Morocco have both been members of WTO since its origin in 1995. Prior to this, both countries were members of GATT; Egypt having joined in 1970 and Morocco in 1987. Egypt in particular played a leading role within each of these organizations, representing the interests of the developing world and the MENA region specifically. The formation of the WTO in 1995 out of the Uruguay Round brought with it broad ranging agreements aimed at freeing up trade to which Egypt and Morocco are both parties. These consist mainly of the General Agreements on Trade in Goods, the General Agreement on Trade in Services (GATS) and the agreement on Trade-Related aspects of Intellectual Property Rights (TRIPS). These covered rules on tariffs, quotas, technical barriers and other non-tariff restrictions to trade, which includes requiring members to convert non-tariff barriers into tariff form by 2000. This differs fundamentally from GATT, which did not directly address non-tariff barriers. Although essentially broad in scope, the agreements do make a distinction between agricultural and non-agricultural products.

Egypt has also adhered to three of the four plurilateral agreements (agreements between a subset of the WTO membership). These agreements were addressing "trade in civil aircraft", "dairy products" and "bovine meat". The latter two were terminated in 1997. Egypt is not part of the agreement on "government procurement". Similarly, Morocco is not a part of any such agreements. Although both Egypt and Morocco have fulfilled most of their obligations to the WTO, there are areas where they have claimed difficulties in implementation. Both have experienced problems enacting TRIPS due partly to a lack of local patent law in certain areas such as pharmaceuticals. There have also been reported problems implementing other realms of the agreements on trade in goods including those on technical barriers to trade. These difficulties are noted in the literature as being particularly persistent in Egypt (Kheir-El-Din and Ghoneim, 2004).

Greater Arab Free Trade Area (GAFTA)

GAFTA was signed in 1988, but implemented in 1998 with the intention of moving to "free trade" by the end of 2007. It set out yearly reductions of 10 percent in the tariff rates applied to traded goods. A separate framework agreement for services was completed in 2003. The agreement covers all industrial goods subject to lists of exceptions that member countries are permitted to compose. Such exceptions were relatively few in number. For example, in 1998 832 of the 6000 trade commodities were on such a list. In 2000 it was agreed that all exceptions would end in September 2002. Although an intention to reduce non-tariff barriers was expressed, no negotiations over the terms of such an agreement are part of this agreement.

Euro-Mediterranean Partnership Agreements

The Euro-Mediterranean Partnership Agreements comprise 27 EU states, 3 EU candidates and "Mediterranean partners" (Egypt, Morocco, Algeria, Israel, Jordan, Lebanon, the Palestinian Authority, Syria and Tunisia). It renewed the previous agreement that had stood

between Arab countries and the EU since the late 1970s which had provided Egypt and Morocco, among other Arab countries, access to EU markets for all goods with the exception of textiles. The EMPA extended previous agreements to include textiles which obviously benefited Egypt substantially. In return, the Mediterranean partners were required to phase out tariffs and non-tariff barriers on EU goods over a 12 year period. The phasing out is structured in such a manner as to encourage tariff dispersion during the period and protect industrial products for the longest time. This provision was particularly important to Morocco, which has attempted to make manufacturing a central part of its development strategy (Achy and Sekkat 2004a). Liberalization of trade in services beyond the level stipulated by GATS is not required. The agreement does include agricultural and processed agricultural products, but larger tariff constraints or delayed liberalization is allowed for these goods.

Bilateral Agreements, the Aghadir Declaration, and Other Agreements

Arab countries entered into a number of bilateral agreements during the 1990s. Morocco and Egypt entered into specific an agreement in April 1999. Both countries simultaneously had agreements with Jordan (signed in 1998) and Tunisia (1998). These agreements did not amount to free trade areas, but rather provided preferential access to markets. The Aghadir agreement superseded bilateral agreements between these countries. It was signed by Egypt, Morocco, Tunisia and Jordan in February 2003 with the stated purpose of moving toward the existence of a formal free trade area. The new agreement went beyond the bounds of the bilateral agreements and included services, intellectual property, customs, government purchases and dumping. The 1990s also saw Egypt sign a number of bilateral trade agreements with other countries in its region including Lebanon, Syria, and Iraq.

Egypt and Morocco are also both members of the Global System of Trade Preferences (GSTP), which was established in 1988 and now has a membership consisting of 43 developing countries. Its purpose is to mutually advantage member states through the freeing of trade. In 1998 both countries also became members of the new "Community of Sahel and Saharan States" (CEN-SAD). One of CEN-SAD's aims was to liberalize trade. Egypt also became part of the Preferential Trade Area in Eastern and Southern Africa in 1981. This was subsequently strengthened and broadened to become the Common Market for Eastern and Southern Africa (COMESA) in 1994. It now consists of 19 members. In February 1989 Morocco entered into a union with Algeria, Libya, Mauritania and Tunisia, known as the Maghreb Arab Union. The main aim in the short run was to integrate markets and reduce barriers between member countries.

Protectionism in Practice

Although Egypt and Morocco have both complied with most of their commitments, agreements do not always translate directly into realized tariffs. It is therefore helpful to observe the movements in tariff rates. From the initiation of reforms in 1986 to the beginning of WTO agreements in 1994/5, the Egyptian maximum tariff fell from 100

percent to 70 percent. It then continued to fall, reaching 40 percent in 1998. The next two years saw a slight increase to 43 percent with the most protected goods including some technical goods such as television receivers and apparati for radiotelephony as well as footwear, handbags, and other leather goods. In compliance with WTO commitments, Egypt has simultaneously embraced a policy of removing non-tariff barriers and replacing them with tariffs. Egypt has also followed a policy of tariff dispersion whereby tariff rates applied to processed goods are higher than those for raw materials. The tariff rates for semi-processed goods lie on a scale between these two extremes. This inevitably produces incentives for resources to move from the production of less processed goods to more processed goods.

It is also important to note that Egypt's unweighted average tariff rates as well as the prevailing import-weighted average tariff rate each display a significant decrease between 1994 and 1998 when the unweighted average fell from 25.9 percent to 19.9 percent (Refaat, 2003). After a slight increase to 21.5 percent in 2000 it declined back to 20.4 percent in 2002 showing that trade reform slowed after 2000. Import-weighted averages follow the same trend, but at a lower level indicating that imports are skewed towards the low-tariff goods. In addition to tariffs, Egyptian customs charges a fee for service and inspection of 1% on all imports plus a fee of 2 percent on goods that are subject to tariffs between 5 and 29 percent or 3 percent on goods that are subject to tariffs of 30 percent or more. Other non-tariff barriers have been maintained including quality control, legislation and anti-dumping measures. These are permitted as emergency measure under the WTO.

During the 1990's, Egypt also passed legislation protecting some of its industries. These include only allowing cars to be imported in their year of manufacture, increasing the local component requirement for car assembly to 45 percent from 40 percent, and encourage government bodies to buy domestic products. The most highly protected industries in Egypt are textiles, clothing, leather products, cars, transportation, furniture, glass and pottery, and beverages. Interestingly, cotton ginning has consistently been negatively protected (Refaat, 2003). The trade reforms of the early 1980s saw the maximum tariff fall from 165 percent in 1985 to 45 percent in 1988 representing rapid liberalization under IMF guidance. Since then tariffs have been maintained at a steady and relatively low rate.

Despite the concerted efforts noted above to liberalize a highly restrictive trade regime since the early nineties, most manufacturing sectors continue to be highly protected via a high and uniquely escalating tariff structure. Between 1998 and 2005, the simple average tariff rate for manufacturing fell from 27.6% to 21.1% while that for agricultural products increased from 64.9% to 66.4%. Egypt has however generally followed a gradual approach to trade liberalization replacing non tariff barriers, like quotas, with tariff barriers. Following WTO accession in 1995, Egypt's commitments have been more or less to bind tariff rates at levels that in many cases have exceeded existing levels. While 98% of Egypt's tariff lines are bound, the average bound *rate* fell from 45% in 1998 to 38.6% in 2005. The average bound rate on agricultural products stands at 92.2% in contrast to 29% for non agricultural products (WTO, 2005).

In 2004, all customs service fees and charges on imports where abolished but a general sales tax ranging from 5%-45% was levied on both domestically produced as well as imported goods. The average tariff rate fell from 25% in the nineties to 6%, but trade liberalization efforts have been concentrated in the area of intermediate and capital goods. It is needless

to mention that this has served to increase the effective rates of protection enjoyed by manufacturing industries.

The Impact of Liberalization

It is clear from the above summary that trade liberalization initiatives in both countries took various forms: unilateral, bilateral and multilateral agreements while attempting to introduce greater external competition into protected domestic markets, remove distortions, and enhance economic efficiency at both macro and individual firm levels. In theory, during trade liberalization the human capital stock becomes an important determinant of comparative advantage because capital is more mobile and technologies diffuse across borders more readily. Thus, the labour market becomes important in determining the experience of the economy as a whole.

Hoekman and Winters (2005) summarize the literature on the effects of trade upon labour outcomes. They argue that skilled workers benefit more than unskilled workers, but the majority of inequality is not caused by the effects of trade because the prices of goods produced by unskilled workers have not fallen significantly. Another interesting observation is that employment effects do not appear to have been as great as theory would predict. They also add that the main impact of trade policy reforms and greater openness will generally be on the distribution of employment across sectors and the relative returns to different types of labour. Trade policy reforms are not expected to have long term impact on employment since long-run levels of employment are primarily determined by macroeconomic variables and labour market related institutions, rather than trade and trade policy. However, in many cases trade reforms are accompanied by labour and other market reforms.

A number of studies have been carried out to explore the effect or trade upon labour market outcomes in Morocco & Egypt. For example, one might investigate Sekkat & Achy (2004a) who provide a comprehensive review of the existing literature on Morocco's trade and trade policy as well as its impact on the Moroccan economy. The majority of these types of studies have focused upon employment and wages in the manufacturing sector however as well as the impact of trade reform. They have not necessarily taken into account the other economic reforms which were implemented at the time. Below we review a few of those studies.

Employment

Using data from the 1990s, Achy and Sekkat (2004b) found that liberalization had only a small impact on employment rates. Employment was found to be negatively correlated with both the share of exports in total sales and the share of imports of raw materials. Only the share of exports provided a statistically significant result, however. They suggest that these

results may be caused by the ways that Moroccan firms adapt to freer trade. The new competition may drive investment in new technologies and the upgrading of capital stocks. Alternatively, they may choose to employ more skilled workers instead of unskilled. Both would result in average output per worker increasing which can reduce employment requirements if the volumes being sold do not increase sufficiently.

Bourdarbat (2005) agrees with this analysis regarding skilled workers. He found that, after the reforms of 1983, the probability of new graduates being employed in the public sector fell as would be expected…but also that this was not offset by increases in the probability of being employed in the private sector. Job creation in the private sector therefore appears to have lagged behind job losses in the public sector.

Income and Wages

The observed effects of increased investment in new technologies and human capital appear to have the expected effect of increasing factor incomes (Löfgren et al.1999; Hoekman and Winters, 2005; Dennis, 2006). However, the change in the distribution of the workforce between the public and private sector owing to reforms has significant simultaneous connotations for the distribution of wages (Bourdarbat, 2005). Wages in the private sector begin at a lower level but increase more rapidly than in the public sector. There is therefore a shift, in the long run, in favor of the old at the expense of the young. The spread of income is also greater because of an increased emphasis on productivity. A probable improvement is that the private sector discriminates less against women (for example, in the awarding of promotions) so the gender pay gap should be narrower. Simulations by Löfgren et al (1999) identify another group that loses with liberalization. They claim that the rural poor are often worse off due to their dependence on small-scale rain-fed agriculture. They lack the ability to adapt and benefit from the new economic conditions. They suggest two possible solutions; money transfers and retraining. They estimate that both, but especially the latter measure, would prove effective and beneficial to all. Dennis (2006) highlights the importance of production factor mobility. A greater level of factor mobility enables the economy to adjust and form proper incentives. Resources need to move from industries with a lower comparative advantage to industries with greater comparative advantage in order for an economy to utilize all available gains from trade.

El Hamidi & Said (2005) examine some of the equity implications of transition by examining changes in the distribution of returns to education and public sector wage premia in Egypt and Morocco. They use joint models of educational choice and wage determination. Selectivity corrected returns to three types of education: no secondary education, general and university education, or vocational education, indicate that a reduction in the role of the public sector leads to falling returns over time. Only for the Egyptian private sector workers is there a tendency for wider wage distribution (indicating 'sheep skin effects' or credentialism). For these workers, returns increased to both types of education over time. Morocco, however, witnessed overall wage compression by level of education, but there is also some evidence of higher returns for vocational school graduates in the private sector by the end of the 1990s. This might also indicate better matching of educational credentials and productivity differences within the private sector of both countries. Oaxaca-Blinder wages-differential decompositions of sector wage gaps for Egypt and Morocco indicate that the unexplained component in public wage premia have declined in Egypt but substantially increased in Morocco over the 1990s. Economic liberalization and

public sector retrenchment, which were much more comprehensive in Morocco, appear to have had a more dislocating effect on labor market wage outcomes there.

The above studies suggest that the impacts of trade liberalization operate through wages as opposed to employment and depend upon labour market institutions, the efficiency of capital markets and social policies. Based on those results, and given that both Egypt and Morocco have experienced trade reforms simultaneous to their economic reforms, we examine the impact on the labour market of all of those associated changes.

Our present exploration will specifically focus upon the labor market implications of economic restructuring in Egypt and Morocco. In particular we examine the stratification of labor market outcomes over the period of structural adjustment and trade reforms in these two countries. Both structural adjustment programs and trade liberalization programs are expected to reduce employment opportunities in the public sector and increasingly replace them with jobs in the private realm while also favoring the production of tradables and, in particular, labour-intensive manufactured exports. Below we examine the effects of transition upon the labour market in Morocco and Egypt focusing on whether transition increased the segmentation in the labour market along gender, age & education variables.

The Structures of the Moroccan and Egyptian Labour Markets during Transition

The educational attainment of the adult population in the MENA region has increased roughly 180% over the last three decades. In percentage terms, this is more than any other region of the world (Keller and Nabli 2002). Thus it is not surprising that both Morocco and Egypt have specifically experienced an increase in the educational attainment of their working populations. This can be seen in Tables 1 and 2. However, two points are worth noting. First, there exists a gender difference in the level of educational attainment as females exhibit lower average educational levels than males. Second, it has to be remembered that the average level of education of the working population is higher in Egypt relative to Morocco.

Table 1: Educational level of the Labour Force (%) in Morocco, 1991 & 1999, by Gender

	1991			1999		
	M	F	T	M	F	T
None	51.65	75.48	59.82	41.72	64.41	49.4
read & write	24.2	10.31	19.44	26.75	13.43	22.24
primary	11.63	4.67	9.24	16.59	9.32	14.13
lower secondary	5.94	3.8	5.21	8.16	6.66	7.65
technical	3.02	2.64	2.89	0.68	0.64	0.67
upper secondary	1.39	1.54	1.44	3.03	2.3	2.79
university	2.17	1.56	1.96	3.07	3.23	3.13

Author's calculations based on the MLSMS 1991 & 1999

Table 2: Educational level of Working Population (%) in Egypt, 1988,1998 & 2006, by Gender

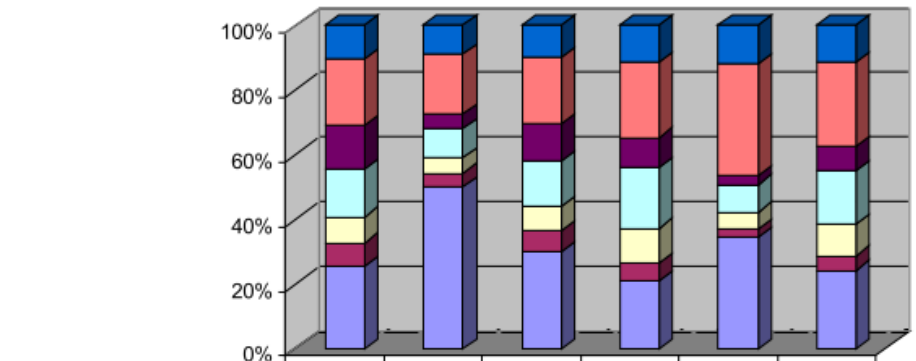
	M 1988	F 1988	T 1988	M 1998	F 1998	T 1998	M 2006	F 2006	T 2006
Illiterate	39.9	65.71	49.24	25.07	47.84	34.09	21.78	42.24	29.49
read & write	18.92	4.48	13.70	12.51	6.61	10.17	8.5	4.51	7
less than intermediate	14.13	5.68	11.07	19.43	10.98	16.08	17.81	9.93	14.84
intermediate	14.45	14.11	14.32	24.23	20.02	22.56	31.15	26.15	29.27
higher than intermediate	2.73	3.01	2.83	5.57	5.19	5.42	4.34	3.33	3.96
university	9.88	7.02	8.84	13.1	9.35	11.67	16.41	13.83	15.54

Note: Extended definition of work is used.
Author's calculations based on the ELMS 1998 & ELMPS 2006

It must be remembered that public sector employment grew rapidly in Arab Countries during the 1960s and 1970s. The growth of public sector employment was often regarded as an important element in speeding a country's development, a desirable means of injecting expansion into the economy, and also a high social priority. The public sector has not surprisingly been quite pivotal in the Egyptian labour market. It has played a major role in absorbing the increasing labour force during the past three decades. It has specifically been the preferred sector of employment for many new entrants to the labour market, particularly women. The guaranteed civil-service employment for graduates of secondary and higher educational institutions has therefore also led to a concentration of the increasingly educated workers within the public sector. But by the early 1990s, prior to economic reforms, the public sector was overstaffed and inefficient, and its wage bills constituted a huge burden on government expenditure. Conversely, the growth of the private formal sector in job creation and absorption has been limited. Thus, any structural adjustment programmes in Egypt have had to start by shaking the public sector.

The Egyptian government has turned to downsizing the public sector in an effort to reduce budget deficits and address the inefficiencies in the civil service as part of the economic reform programme. Early retirement has been the main method used to reduce public sector employment in the 1990s. By 2006, there is evidence to suggest that both the shares of government employment and public enterprises in total employment have declined. Figure 1 suggests that the brunt of the squeeze in the public sector has been experienced by females. It can be seen below that the public sector employment of women reached 50% of their total employment in 1998 and that this fell to 34.5% in 2006. It is also worth noting that this did not translate into movement of women from the government sector towards higher paying jobs, but rather towards household enterprises.

Figure 1: Distribution of Employment by Sector (%) & Gender in Egypt 1998 & 2006

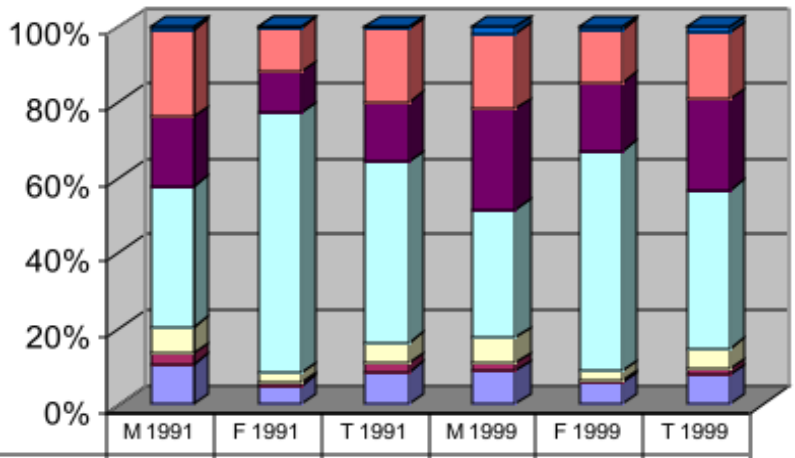


	Male 1998	Female 1998	Total 1998	Male 2006	Female 2006	Total 2006
SelfEmpWithNoHHmember	10.25	8.8	9.98	11.33	11.74	11.42
HHEnterprisWorker	20.77	18.75	20.39	23.35	34.88	26.01
IrrWage	13.41	4.34	11.73	9.13	2.6	7.63
InformPriv_RegWage	14.87	8.98	13.78	19.01	8.56	16.61
FormalPriv_RegWage	8.06	4.89	7.47	10.85	5.35	9.59
PubEnt	7.06	4.19	6.53	5.28	2.28	4.59
GovEmploy	25.58	50.04	30.1	21.04	34.58	24.16

Author's calculations based on the ELMS 1998 & ELMPS 2006

Although the public sector has not been as dominant in Morocco as in Egypt, it has played an important role particularly for employing educated workers. Again there is evidence that between 1991 and 1999, the share of the public sector in the total employment of Morocco has declined slightly. However, in the case of Morocco, women did not bear the brunt of the reforms as discussed above. This can be seen in Figure 2. There was however, a slight movement of women from the agricultural non-wage sector to the non-agricultural sector.

Figure 2: Employment Distribution by Sector (%) in Morocco, 1991 & 1999, by Gender



	M 1991	F 1991	T 1991	M 1999	F 1999	T 1999
Other	0.85	0.37	0.68	1.8	0.95	1.51
Private Non-Agr Non-Wage	23.13	11.65	19.24	19.91	13.83	17.85
Private Non Agr Wage	18.31	10.74	15.74	26.83	18.14	23.89
Private Agr Non- Wage	37.19	68.93	47.96	33.7	58.16	41.99
Private Agr Wage	6.89	2.51	5.41	6.88	2.51	5.4
SOE	3.04	0.74	2.26	2.12	0.52	1.57
Government	10.58	5.05	8.7	8.76	5.89	7.79

Author's calculations based on the MLSMS 1991 & 1999

An important aspect of the labour market during transition is the sectoral change in employment. During the 1990s, Morocco has experienced a decline in the share of agriculture and an increase in the share of manufacturing. In Egypt, the share of agriculture also declined, but so did the share of manufacturing. However, the share of services in Egypt has increased. As Assaad (2004) argues, Egypt's employment growth was more rapid in disproportionately male sectors such as transportation, construction, utilities, and a variety of service industries typically considered non-tradable. Moreover, there was no tendency toward the feminization of these male-dominated sectors in Egypt. In fact, the disproportionately female sectors (other than the civil service) de-feminized. Conversely, structural adjustment led to a significant growth of textile and garment manufacturing in Morocco which accounts for a significant portion of its feminization. These contradictory trends in Egypt and Morocco were driven by differences in the two countries' structure of foreign exchange earnings. While Morocco relied increasingly upon the export of labour-intensive manufactured goods, Egypt became increasingly dependent upon service exports such as tourism. These trends can be seen below in tables 3 and 4.

Table 3: Employment Distribution (%) by Economic Activity & Gender in Morocco, 1991 & 1999

	1991			1999		
	M	F	T	M	F	T
Agric & Fishing	52.41	70.76	52.93	35.82	43.73	41.43
Mining, manufacturing & utilities	18.86	12.36	12.51	12.86	12.59	14.77
Construction	0.17	0.11	4.01	9.21	6.02	6.15
Trade, restaurant & hotel	4.72	3.53	13.64	18.36	18.86	13.75
transportation	0.33	0.91	2.45	4.07	3.25	2.81
Finance & real estate	0.89	0.37	0.84	0.75	1.08	0.8
Community, social & personnel services	13.8	11.49	12.81	12.51	13.49	12.95
undeclared	8.82	0.47	0.81	6.61	0.98	7.35

Author's calculations based on the MLSMS 1991 & 1999

Table 4: Employment Distribution (%) by Economic Activity & Gender in Egypt

		1988			1998			2006	
	M	F	T	M	F	T	M	F	T
Agric. & Fishing	37.72	67.07	47.79	24.06	70.56	42.12	25.12	64.81	39.51
Mining, manufacturing & utilities	17.33	8.74	14.38	17.99	3.63	12.4	15.81	6.63	12.48
construction	8.31	0.4	5.6	8.86	0.27	5.53	9.81	0.2	6.33
Trade, restaurant & hotel	12.65	7.32	10.82	15.14	6.06	11.61	18.33	7.18	14.29
transportation	5.5	0.72	3.86	6.75	0.56	4.35	8.47	0.85	5.71
Finance & real estate	1.65	1.06	1.44	1.69	1	1.42	2.6	1.38	2.15
Community, social & personnel services	16.82	13.74	15.77	25.5	17.52	22.4	19.33	18.42	19
Other	0.02	0.96	0.34	0.01	0.41	0.16	0.52	0.54	0.53

Author's calculations based on the ELMS 1998 & ELMPS 2006

Wages

As already mentioned, many studies find that wages are more likely to react to trade reforms than employment. However, since trade reforms were also accompanied by privatization programs and a downsizing of the public sector, changes in employment were experienced. This is more the case for Egypt than Morocco. Interestingly, in Morocco there was noticeable decline in real hourly wages over the 90s. This is the case for both the public and the private sectors. Conversely, Egypt experienced a decline in real wages between 1988 and 1998 in both the public and private sectors, but witnessed an increase in the public real wage between 1998 and 2006. This can be seen below in table 5.

Table 5: Log Real Hourly Wage in Morocco & Egypt

	Total		Public Sector		Private Sector	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Egypt 1988 (E)	0.786	0.80	0.940	0.71	0.697	0.81
Egypt 1998 (E)	0.551	0.67	0.646	0.64	0.458	0.69
Egypt 2006 (E)	0.804	0.82	1.018	0.87	0.624	0.72
Moroc 1991 (M)	5.535	0.90	6.072	0.781	5.184	0.77
Moroc 1999 (M)	5.211	1.18	6.306	0.70	4.972	1.09

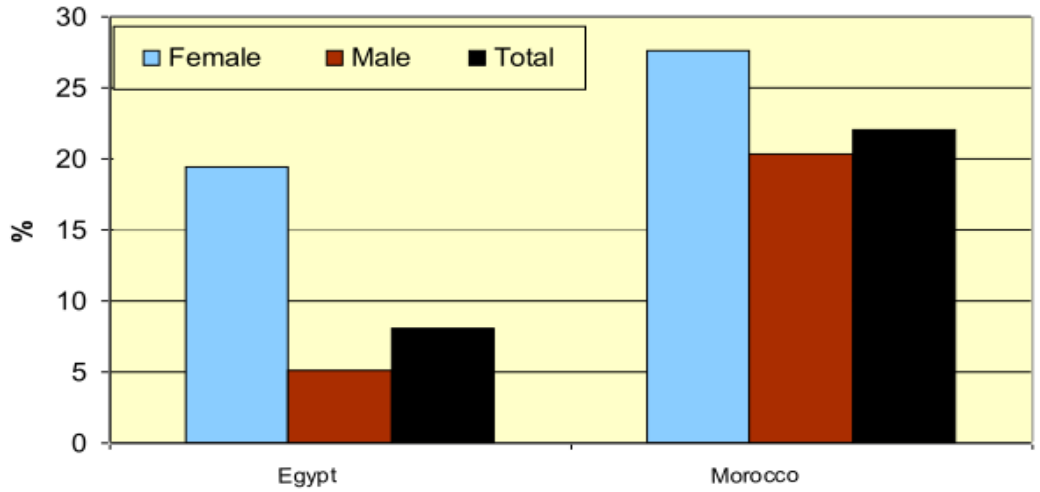
Author's calculations based on the MLSMS 1991 & 1999 and the ELMS 1998 & ELMPS 2006

The above however represents averages and says little about distribution. In the years leading up to 2006, in Egypt in particular, domestic and international prices were increasing dramatically along with rising average real wages. The lack of wage flexibility in lower and middle class families has meant a dramatic decline in their standard of living even though wages for the few at the top of the income distribution have more than made up the difference thus raising the average figures. The remainder of this section focuses on unemployment during transition and tries to document the changes in the patterns and determinants of unemployment in Egypt and Morocco along gender, age, and education categories.

Incidence of Unemployment

In spite of rising levels of educational attainment over the last decade, most of the countries in the MENA region experienced high and persistent unemployment rates making unemployment in MENA one of the highest in the world. Egypt and Morocco are no exception to this unfortunate rule. An important aspect of unemployment in MENA countries that is seen in both Egypt and Morocco is its gender dimension. Women's unemployment rates are generally higher than men's. This higher female unemployment rate is generally due to the growth in the female working-age population and the rising labor force participation rates brought about by higher educational attainment. Both Egypt and Morocco during transition have experienced relatively high female unemployment rates. This can be specifically observed below in figure 3.

Figure 3: Unemployment Rates (%) by Gender in Egypt & Morocco in 1999



Author's calculations based on the MLSMS 1991 & 1999 and the ELMS 1998 & ELMPS 2006

Another important aspect of stratification in both labour markets is found in the variable of educational attainment. In the case of Egypt, unemployment is more common among more educated workers. This is particularly disturbing given the rising levels of educational attainment in the region over the last few decades. This contrasts with the case of Morocco where the number of those educated among the unemployed is not as high. Still, Morocco has seen the number of educated unemployed workers increase during the period of transition. This is illustrated in tables 6 and 7.

Table 6: Distribution of Unemployment by Educational Level (%) in Egypt

		1988			1998			2006	
	Total	Male	Female	Total	Male	Female	Total	Male	Female
illiterate	19.99	23.16	16.92	11.12	15.75	20.71	3.57	6.33	1.26
read & write	7.64	10.89	4.48	4.33	6.02	8.63	1.07	2.2	0.13
Less than intermediate	12.05	14.62	9.55	8.05	11.98	12.10	4.57	7.73	1.93
intermediate	43.3	35.58	50.8	52.79	45.86	241.91	49.7	44.08	54.39
Higher than intermediate	5.36	3.84	6.83	10.09	8.1	49.58	7.68	5.64	9.38
university	11.42	11.44	11.41	13.56	12.2	60.08	33.02	33.84	32.34

Author's calculations based on the ELMS 1998 & ELMPS 2006

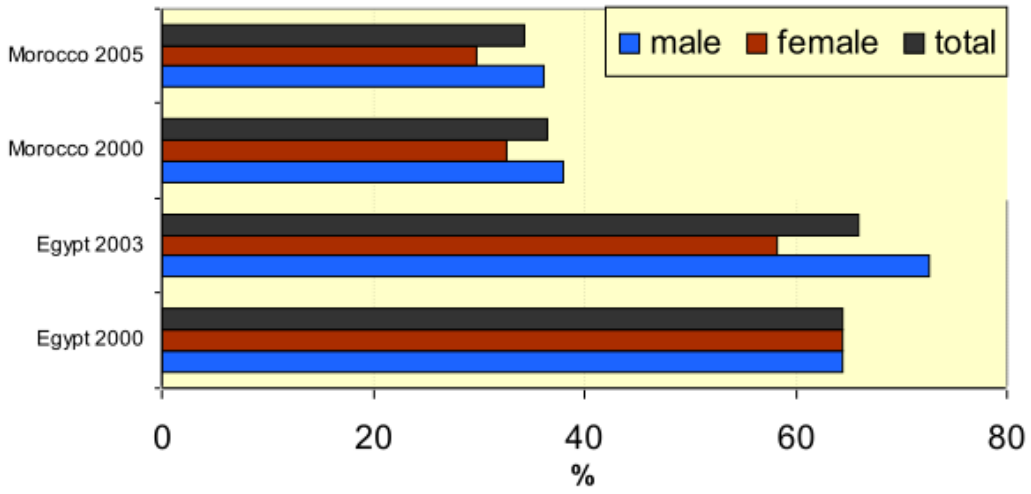
Table 7: Distribution of Unemployment by Educational Level (%) in Morocco

		1991			1999	
	Total	Male	Female	Total	Male	Female
None	53.65	55.14	50.76	42.52	41.48	44.57
Primary	18.57	19.38	16.99	26.77	29.17	22.01
Secondary	25.81	23.62	30.09	23.15	23.09	23.09
Tertiary	1.97	1.87	2.16	7.56	6.26	10.13

Author's calculations based on the MLSMS 1991 & 1999

An important characteristic of unemployment in both countries is its relatively young face. The youth comprise around one third of the unemployed in Morocco and almost three quarters of the unemployed in Egypt. In fact, almost 50% of those unemployed are first time job seekers in Morocco, whilst in Egypt this figure has been as high as 90% at the end of the 1990s. Youth unemployment is also mostly concentrated among the educated as a result of the incapability of both economies to create new job opportunities. In short, both nations' private sectors are failing to accommodate the annual increase in the labor force composed largely of youth entering the labor market for the first time at the time. This is less the case in Morocco where the private sector has been growing faster than in Egypt. An illustration of youth unemployment in both Egypt and Morocco can be seen below in figure 4.

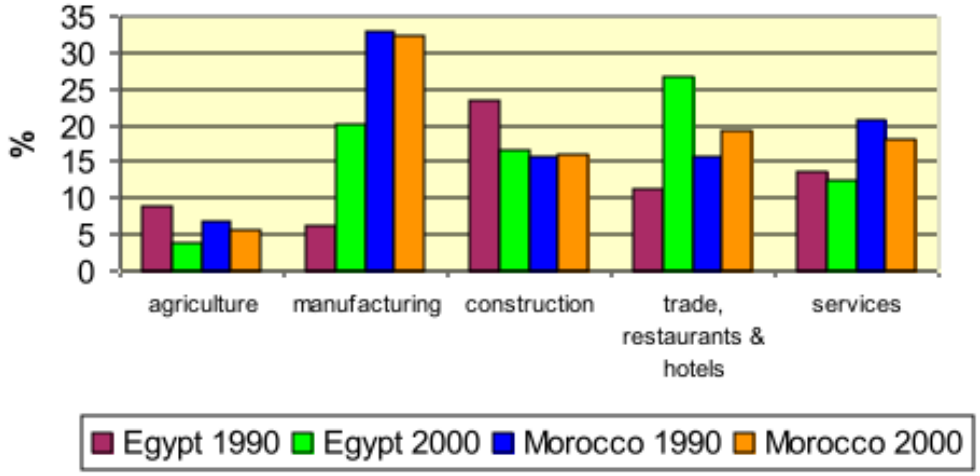
Figure 4: Youth Unemployment (15-24) as a % of Total Unemployment



Author's calculations based on the MLSMS 1991 & 1999 and the ELMS 1998 & ELMPS 2006

Examining the previous economic activity of those unemployed indicates which activities have been booming and which have been declining. Figure 5 shows the ILO estimates for the distribution of the unemployed who previously held jobs by economic activity for Egypt & Morocco in 1990 and 2000 which also enables one to examine the effects of economic reforms on unemployment. A number of interesting points emerge from this figure. First, unemployment is the lowest in agriculture in both countries. Unemployment amongst manufacturing workers has increased four folds in Egypt and although it has fallen slightly in Morocco in 2000 compared to 1990, it still accounts for the unemployment of more than 30% of workers which is not surprising given privatization, economic and trade reforms. In addition, unemployment among workers in trade, restaurants and hotel have increased in both countries, but more so for Egypt than for Morocco. On the other hand unemployment in services has fallen in both countries suggesting a more flexible sector that is able to absorb workers more easily.

Figure 5: Distribution of Unemployment by Economic Activity in Egypt & Morocco: 1990 & 2000



Author's calculations based on the MLSMS 1991 & 1999 and the ELMS 1998 & ELMPS 2006

Characteristics of Unemployment during Transition

In order to provide a robust picture of unemployment in those two countries over transition, we rely on household level data. The analysis for Egypt is based on three data sets: the 2006 Egypt Labour Market Panel Survey, the 1998 Egyptian Labor Market Survey (ELMS) and the 1988 Labor Force Sample Survey. For Morocco, we use Morocco Living Standard Measurement Surveys (MLSMS) of 1990/1991 and 1998/1999. All surveys are nationally representative household surveys that include extensive data on employment characteristics such as status, economic activity, duration of unemployment, or occupation.

First, we examine the characteristics of the unemployed in each country during transition. Table 8 indicates the proportion of the new entrants among the unemployed has been on the increase and that the proportion of females among the unemployed has increased suggesting that females have been hurt more by reforms. There is empirical evidence though that many women were discouraged and dropped out of the labour market altogether. In addition, unsurprisingly due to the downsizing of the public sector, almost one third of the unemployed in 2006 were university graduates compared to 13 % in the 80s and 90s. In addition, although unemployment has always been an urban phenomenon this has changed and unemployment in rural areas in Egypt has increased.

Second, in the case of Morocco we use two definitions of unemployment the first is the standard ILO definition actively seeking employment (the job-search criterion), and the second doesn't necessities this search requirement. This only makes a difference in the analysis for 1999 but not so much for 1991. In particular if the search criterion is ignored, this includes many women who would be excluded from the unemployment count. However the main other patterns still persist. There is an increase in the share of university graduates among the unemployed, whilst still unemployment is concentrated among the young.

We now compare the experiences of both countries. An important difference between unemployment in Egypt and Morocco is that in Egypt new entrants comprised over 80% of the unemployed compared to 50% in Morocco. Examining the reasons behind unemployment in Morocco indicates that restructuring might have been responsible for a substantial proportion of unemployment in Morocco. Almost 35% of those who previously held jobs were unemployed due to firms' closure in 1999 up from 22 percent in 1991. However, in Egypt a larger majority of the unemployed were new entrants, suggesting that economic restructuring was not as important a reason there. More than half the unemployed in Egypt claimed they were unemployed because of an absolute absence of jobs, which suggests that their unemployment might have been involuntary.

In Egypt, the unemployed was slightly younger in age with a mean of around 25 years old, while in Morocco the mean age was around 27 years of age. In addition, given that the majority of the unemployed in Egypt were new entrants to the labor market 56% were below 25 years old and another 16% were between 25 and 29 years old in 2006. The proportion of youth (ages 15-24) among the unemployed in Morocco is less than in Egypt and reaches almost half of the total unemployed (47%). It is also worth noting that in Morocco the proportion of the unemployed among those over 30 years of age has increased after restructuring and is higher than Egypt.

The distribution of the unemployed by educational level seems to be different in the two countries. In Egypt the proportion of the educated among the unemployed was high at around 90 %, while in Morocco 70% of the unemployed had no education or just primary education. The average number of years of schooling of the unemployed in Egypt increased from 9.4 to 11 years in 1998 and from 6.8 to 8.2 years in Morocco in 1999 reflecting the overall increase in educational attainment in both countries. Finally another difference was the regional aspect, in Egypt unemployment has increased in rural areas but not in Morocco where unemployment is till an urban phenomenon. Perhaps more striking is the reality that unemployment duration has increased dramatically over the years in both Egypt and Morocco. This is illustrated in Tables 8 and 9 and discussed further below.

Table 8: Characteristics of the Unemployed in Egypt

	1988	1998	2006
New Entrant (%)	57.31	70.24	79.89
Male	51.61	45.26	41.76
Mean Age in years	24.75	24.77	25.11
Age groups (%)			
15-19	25.00	19.74	13.37
20-24	39.50	40.77	43.42
25-29	18.51	21.59	15.83
30-39	9.54	12.64	14.53
40-49	5.34	2.56	5.89
50-59	1.53	2.56	0.8
Urban Residence (%)	75.40	69.40	58.06
Unemployment Duration in weeks	29	159	177

Notes: New entrant refers to those who did not hold previous jobs.
All analysis is based on unemployed with search criterion and extended labour market.
Author's calculations based on the ELMS 1998 & ELMPS 2006

Table 9: Characteristics of the Unemployed in Morocco

	Search		No Search	
	1991	1999	1991	1999
New Entrant (%)	50.49	54.85	48.75	47.59
Male	66.14	56.91	66.03	66.75
Mean Age in years	26.68	27.09	25.99	27.23
Age groups (%)				
15-19	19.21	18.68	19.97	15.95
20-24	31.78	28.68	33.75	26.68
25-29	25.71	23.35	22.62	27.14
30-39	15.54	19.96	15.23	21.4
40-49	4.38	7.22	5.77	6.8
50-59	3.39	1.70	2.66	2.03
Educational level (%)				
illiterate	22.81	17.09	23.88	16.14
read & write	29.07	23.93	29.77	26.38
Primary	19.61	29.49	18.57	26.77
Intermediate	14.46	17.95	14.95	16.85
Secondary	10.85	4.70	10.87	6.3

university+	3.20	6.84	1.97	7.56
Urban Residence (%)	68.98	80.38	72.79	79.12
married	16.46	16.83	24.88	20.24
Unemployment Duration in months	79	178	77	166

Author's calculations based on the MLSMS 1991 & 1999

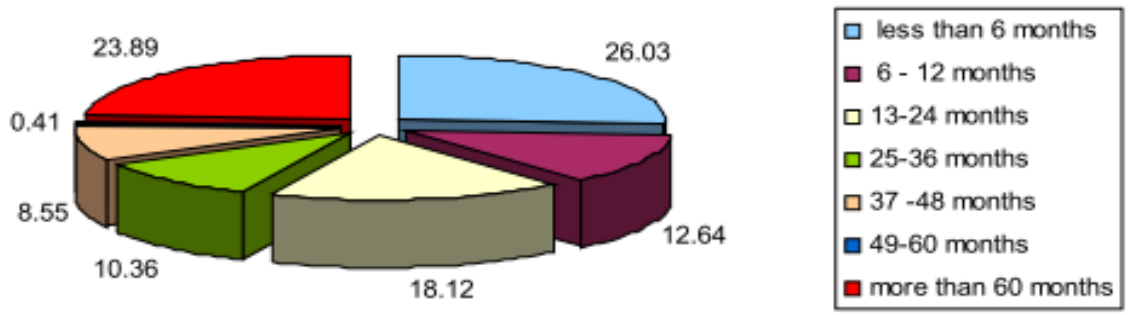
Unemployment Duration

Tables 8 and 9 clearly show the mean length of unemployment spells in Egypt and Morocco over time. The duration of unemployment appears to have increased sharply over time in both countries. In Egypt, the average duration of unemployment has increased from 29 weeks in 1988, to 159 weeks in 1998 and up to 177 in 2006 while in Morocco the average duration of unemployment increased from 79 to 178 weeks.[3] The data also suggest that unemployment durations were longer among first time job seekers than among those with previous work experience. For first-time job seekers in Egypt, the average unemployment duration was around 190 weeks compared to 86 weeks for those with previous work experience in 1998. Similar patterns are apparent in Morocco. Thus, it is clear that new entrants tend to wait longer for jobs.

3 Although these figures, like any retrospective data, may suffer from recall and reporting problems, the increase in duration of unemployment in both cases is unmistakable.

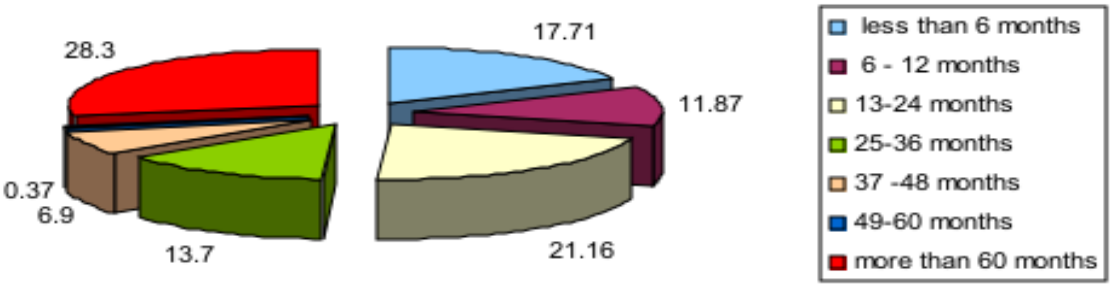
Figures 6 through 9 show the distribution of the unemployed by unemployment duration and gender in both countries. In Morocco there was a tendency for women to stay longer unemployment but this was so much more the case in Egypt where only 8 % of men remained unemployed after 5 years but the share among women was 29%.

Figure 6: Male Unemployment Duration in Morocco: 1999



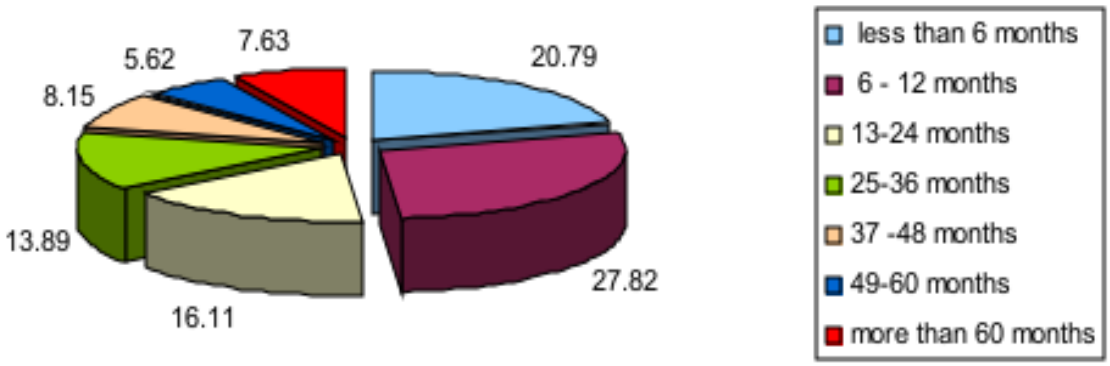
Author's calculations based on the MLSMS 1991 & 1999

Figure 7: Female Unemployment Duration in Morocco: 1999



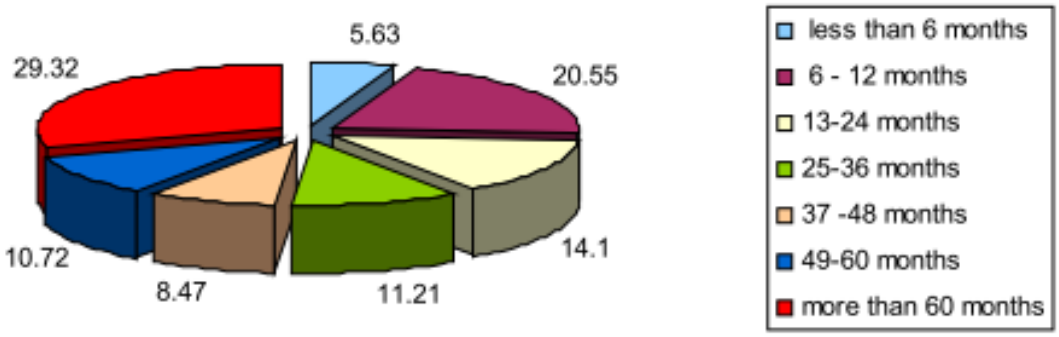
Author's calculations based on the MLSMS 1991 & 1999

Figure 8: Male Unemployment Duration in Egypt 2006



Author's calculations based on the ELMS 1998 & ELMPS 2006

Figure 9: Female Unemployment Duration in Egypt 2006



Author's calculations based on the ELMS 1998 & ELMPS 2006

The Determinants of Unemployment in Egypt and Morocco

Having examined the characteristics of the unemployed in Egypt and Morocco, we now turn to the determinants of unemployment. To examine the relationship between unemployment and socio-economic factors, we use a probit regression model and estimate the probability of being unemployed. We investigate the influence of age, gender, education, urban and rural region of residence, and marital status on the likelihood of being unemployed in Egypt and Morocco during the period of reforms. The marginal effects of the probability of unemployment in Morocco are reported in Table 10 and those for Egypt in Table 11. For both countries, the determinants of unemployment are similar. The probability of being unemployed is higher for females than for males even when other individual characteristics such as age and education are controlled for. The probability of unemployment is much more prevalent among single, never married individuals compared to those who are married. In addition, the probability of unemployment is higher in urban than rural areas in both Morocco and Egypt. Age plays an important role in unemployment with the highest likelihood being for the 20-29 years old in both countries. The probability of unemployment falls with age for both men and women in Egypt and Morocco.

Table 10: Determinants of Unemployment in Morocco: Marginal Effects

	1991*		1999*		1999**	
	Marginal Effect	Std Error	Marginal Effect	Std Error	Marginal Effect	Std Error
Male	-0.0013	0.007	-0.0221	0.004	-0.036	0.035
Age Groups: ref: 20-24 years old						
aged1519	-0.0315	0.007	-0.0056	0.004	-0.057	0.050
aged2529	0.0076	0.010	-0.0004	0.005	0.014	0.048
aged3039	-0.0360	0.008	-0.0133	0.004	-0.053	0.050
aged4049	-0.0357	0.009	-0.0200	0.004	-0.098	0.066
aged5059	-0.0376	0.011	-0.0234	0.004	-0.109	0.089
Educational level dummies : ref: no education						
Read & Write	0.0594	0.012	0.0274	0.007	0.146	0.046
Primary	0.0895	0.017	0.0535	0.009	0.213	0.049
Intermediate	0.1220	0.024	0.0653	0.013	0.230	0.058
Secondary	0.1411	0.038	0.0372	0.017	0.154	0.162
University	0.0428	0.028	0.0788	0.022	0.280	0.086
Marital Status						0.080
married	-0.1008	0.011	-0.0263	0.005	-0.161	0.044
Urban/Rural Residence						
Urban	0.0760	0.008	0.0319	0.004	0.142	0.038
Base	0.071		0.027		0.246	
No. of Obs	6425.000		9582.000		10939.000	
log likelihood	-1815.720		-1587.470		-4055.341	

Note: * Unemployment standard definition: labor market with search criterion. **Unemployment - no search criterion.
Author's calculations based on the MLSMS 1991 & 1999Table 11: Determinants of Unemployment in Egypt: Marginal Effects

	Table 11: Determinants of Unemployment in Egypt : Marginal Effects					
	1988		1998		2006	
	Marginal Effect	Std Error	Marginal Effect	Std Error	Marginal Effect	Std Error
Male	-0.0390	0.008	-0.0247	0.007	-0.024	0.005
Age Groups: ref: 20-24 years old						
aged1519	-0.0008	0.005	-0.0117	0.007	0.001	0.002
aged2529	-0.0579	0.011	-0.0671	0.013	-0.023	0.006
aged3039	-0.0269	0.006	-0.0544	0.010	-0.013	0.004
aged4049	-0.0270	0.006	-0.0617	0.011	-0.014	0.004
aged5059	-0.0283	0.006	-0.0567	0.011	-0.014	0.004
Educational level dummies : ref: no education						
Read & Write	0.0406	0.012	0.0316	0.019	0.017	0.011
Primary	0.0380	0.011	0.0055	0.012	0.008	0.005
Intermediate	0.1086	0.013	0.1444	0.016	0.107	0.011
Secondary	0.0682	0.018	0.1254	0.022	0.133	0.020
University	0.0650	0.013	0.0786	0.016	0.166	0.015
Region of Residence						
Alex & Canal cities	-0.0044	0.005	0.0293	0.013	0.002	0.003
Lower Urban	-0.007	0.005	0.009	0.009	0.002	0.003
Upper Urban	-0.005	0.005	-0.025	0.009	-0.004	0.002
Lower Rural	-0.024	0.006	-0.013	0.008	-0.009	0.003
Upper Rural	-0.022	0.006	-0.040	0.010	-0.011	0.003
Base	0.029		0.059		0.014	
log likelihood	-1510.700		-1871.509		-2620.577	

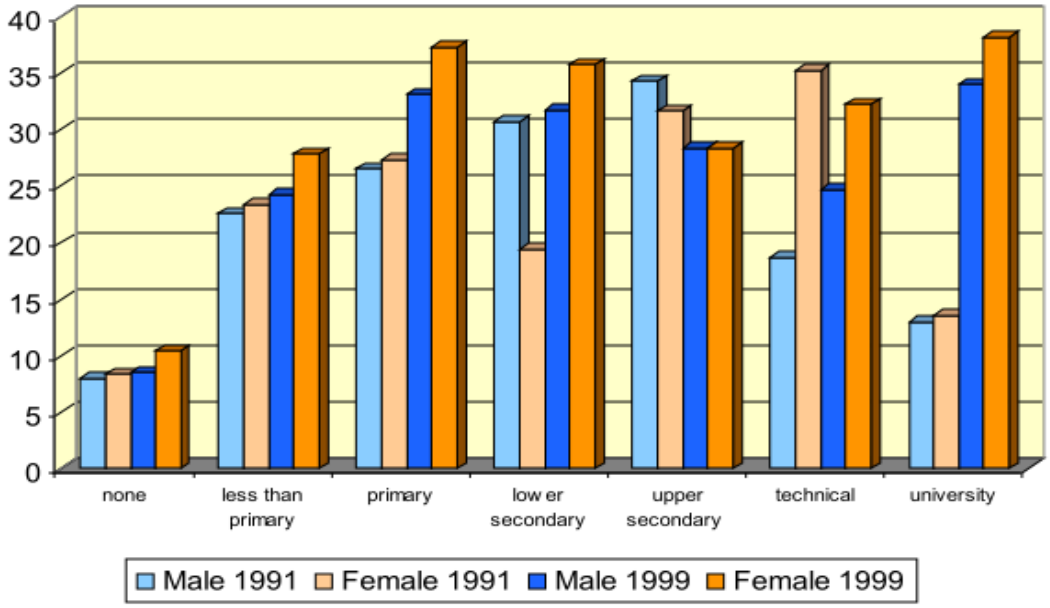
Reference person: male, 25-29, lives in Greater Cairo.
Author's calculations based on the ELMS 1998 & ELMPS 2006

Figures 10 and 11 illustrate the predicted probability of unemployment by educational level. In Egypt, the probability of unemployment in1998 increased for almost all educational levels with the exception of those with primary education. Those with intermediate level of education have the highest probability of unemployment. Overall those with more than primary education tend to have higher probability of unemployment than those with primary or less in Egypt. However, in Morocco, the relationship between education and the probability of unemployment is not linear. In 1991, male unemployment was highest among holders of primary and lower secondary school certificates. For females, the highest unemployment rates were seen among technical graduates. However, in 1999, the highest

male unemployment rates was among university graduates, but unemployment rates among women increased across almost all educational levels.

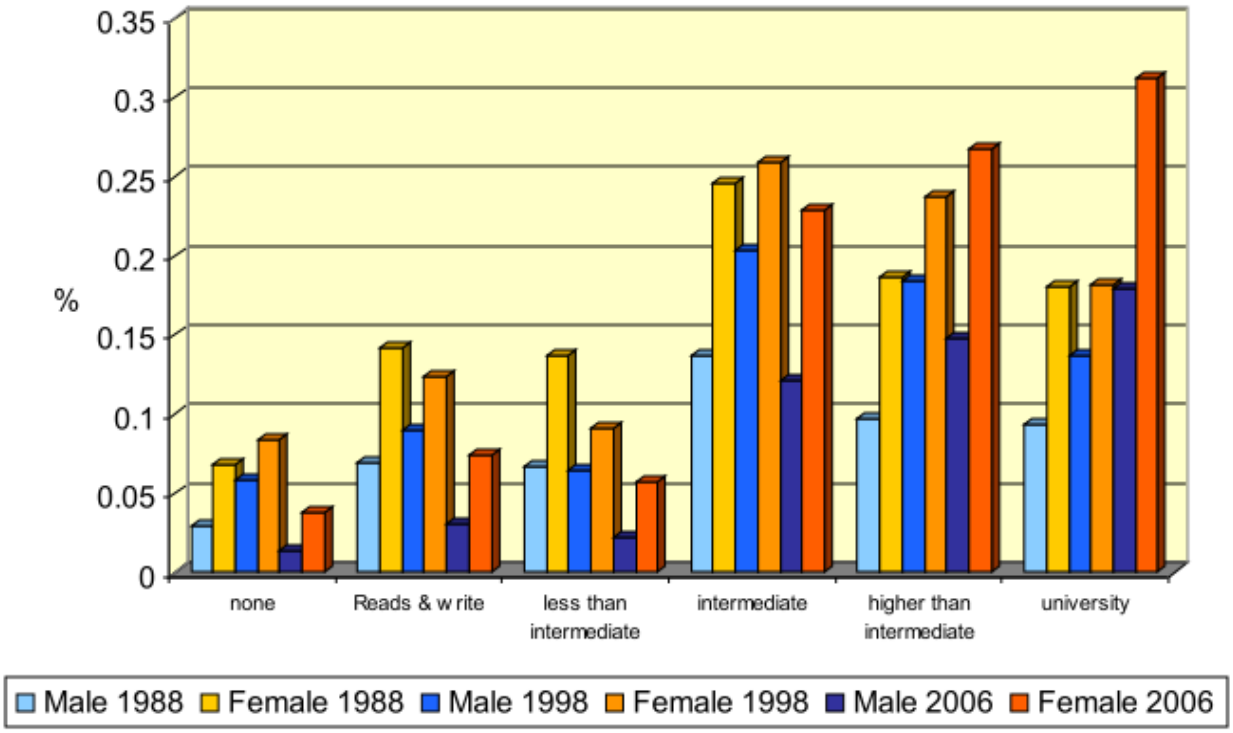
Thus, the findings indicate that the burden of unemployment was not shared equally. In fact females have been hurt more than males in both Morocco and Egypt during transition. Although in both countries the highly educated have fared worse than the rest, in particular in Egypt.

Figure 10: Predicted Probability of Unemployment by educational level in Morocco 1991 & 1999



Note: Urban areas, no search criterion.
Author's calculations based on the MLSMS 1991 & 1999

Figure 11: Predicted Probability of Unemployment by educational level in Egypt 1988, 1998 & 2006



Author's calculations based on the ELMS 1998 & ELMPS 2006

Conclusion

Both Egypt and Morocco have undergone structural adjustment programs and trade liberalization programs in the past 2-3 decades. We have examined the effects of transition on the labour market in Morocco & Egypt focusing in particular on whether transition increased the segmentation in the labour market along gender, age & education.

The structure of employment was affected during transition. In the 1990s, Morocco has experienced a decline in the share of agriculture and an increase in the share of manufacturing. In Egypt, the share of agriculture also declined, but so did the share of manufacturing. However, the share of services in Egypt has increased. Moreover, there was no tendency toward the feminization of the male-dominated sectors in Egypt. In fact, the disproportionately female sectors (other than the civil service) de-feminized. Conversely, a significant growth of textile and garment manufacturing was experienced in Morocco which accounts for a significant portion of its feminization. These contradictory trends in Egypt and Morocco were driven by differences in the two countries' structure of foreign exchange earnings. While Morocco relied increasingly upon the export of labour-intensive manufactured goods, Egypt became increasingly dependent upon service exports such as tourism.

The findings also suggest that in the case of Egypt, almost 90% of the unemployed are new entrants to the labour market resulting from the downsizing of the public sector and the limited capacity of the private sector to generate new jobs. The problem of unemployment in Egypt has affected mainly young highly educated workers and females in particular. Conversely, in Morocco the public sector share in total employment was quite small relative to that in Egypt and has shrunk further following the privatization process and the slowness of the government hiring in the nineties. Only around 50% of the unemployed in Morocco were new entrants suggesting that restructuring has led to many losing their jobs. Examining the characteristics of the unemployed in Morocco, although the highly educated have high probability of unemployment, those with primary education also have high probability of unemployment. Yet, females tend to be affected more by unemployment than males.

Egypt and Morocco have undertaken various trade and economic reforms that have had significant impact on their labour market. The evidence suggests that unemployment rates have increased during transition. However this impact has been felt unevenly given the stratification of the labor market in both countries. Thus, women, the youth and the highly educated have been more affected than the rest of the labour force. This suggests that faster job creation is essential however, as is evident from the analysis, reforming the distortionary labor market policies is crucial, in particular, rationalizing the role of the public sector. However, for Egypt and Morocco to be able to reduce unemployment and utilize their human resources in order to be able to compete in a globalized world, there is a need to invest in "better quality" educated labor force that has the needed skills required in the modern labor market.

III. Unemployment Duration during Transition: The Case of Egypt[4]

In order to fully understand unemployment, it is important to examine unemployment duration. We focus on the case of Egypt during the period of trade liberalization and economic reforms for this analysis.[5] We examine the factors that determine the probability of leaving unemployment and investigate whether the probability of leaving unemployment has changed during the period of reforms. Our previous analysis shows that the average unemployment duration has increased over the last twenty years. One important issue of interest to policymakers however, is whether particular groups have experienced longer unemployment durations or lower hazard rates of leaving unemployment during the period of transition. Clearly, the persistence of high unemployment rates can be a major problem for a developing country as long term unemployment can lead to discouraged workers, scarring effects, social alienation and other societal problems. Employers may also use information on unemployment history as signals of productivity. Additionally, if particular groups are more likely to be affected by transition, directed policies could help to alleviate the impact.

As discussed earlier, unemployment in Egypt is dominated by new entrants to the labour market rather than by displaced workers. This is not surprising given that previous studies have shown that trade liberalization has tended to operate through wages as opposed to employment and tended to depend upon labour market institutions, the efficiency of capital markets, and social policies. Given that the major reform affecting the labour market during the period of transition has been the downsizing of the public sector, it is expected that such reforms would have a significant impact upon unemployment. Another important feature of unemployment in Egypt is that there is no unemployment benefit in practice.[6] Hence, the majority of unemployment in Egypt is the result of queuing for public sector jobs. Meanwhile the private formal sector has been rather small and has not really been growing fast enough to be able to absorb the new entrants to the labour market.

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[4] This chapter is authored by Jackline Wahba and Christian Schluter.

[5] Unfortunately, this analysis of the determinants of unemployment duration can not be undertaken for the case of Morocco since both the LSMS 1990/91 and 1998/99 data do not include information on unemployment duration of those workers currently employed.

[6] The unemployment benefit eligibility criteria are so strict that coverage is almost zero.

In this section of our work, we examine exit rates from unemployment to employment and also distinguish between exits to different types of jobs, namely public sector job, informal private jobs and formal private jobs. We also control for the new entrants to capture whether they have experienced lower hazard rates of exiting unemployment during transition, in particular given the downsizing of the public sector relative to more experienced workers. The aim here is to measure the extent to which reforms have affected the probability of workers leaving unemployment and the probability of the unemployed getting good jobs such as public sector jobs or formal private jobs as opposed to bad jobs with no security (informal private sector) jobs.

A Review of the Literature

Most studies exploring unemployment duration have addressed developed countries. For example, van den Berg and van Ours (1999) focused upon France while Portugal was the focus of Portugal and Addison (2003). Additionally, there are a few studies that have focused upon the experience of Eastern European economies such as: Slovak by Lubyova and van Ours (1997), and Russia by Foley (1997) and Grogan and van den Berg (2001). The majority of the above studies has been exploring the effect of changes in unemployment benefit on unemployment duration- e.g. Kupets (2006) and Lubyova, and van Ours (1997). Very few studies have focused on unemployment duration in developing countries although the nature of unemployment in developing countries is quite different to that in developed countries. Few exceptions are Tunali and Assaad (1992), Tansel and Tasci (2005), Dendir (2006), Serneels (2007) and El Hamidi and Wahba (2006).

Tunali and Assaad (1992) investigate the links between market structure and unemployment duration in the construction sector in Egypt. Tansel and Tasci (2005) study unemployment duration in Turkey using two definitions of unemployment: unemployment with search criterion and unemployment without search. Serneels (2007) examines youth unemployment duration of men in Ethiopia and explore the role of the public sector in unemployment. El Hamidi and Wahba (2006) focus on youth unemployment in Egypt and examine the effects of economic reforms on the incidence and duration of youth unemployment in 1998. They find that youth unemployment is driven by the public sector hiring practices. Our work extends the analysis of El Hamidi and Wahba (2006), by using more recent data namely ELMPS06, studying unemployment among all age groups; i.e. not restricting the analysis to the youth, and distinguishing between exits from unemployment to formal and informal employment. To our knowledge this is the first work that examines exits from unemployment to informal and formal employment during a period of transition.

Previous studies examining the main determinants of unemployment duration find mixed results. We are interested in particular in the effect of gender, education and age on the probability of leaving unemployment. First, we examine the impact of gender. A few studies have looked at women unemployment because of lack of data and the difficulty of observing unemployed women. Ham et al. (1999) examine women unemployment in the Czech and

Slovak Republics during transition find that women's longer unemployment spells are the result of the practices of employers and institutions. However, Grogan and van den Berg (2001) find that Russian women have significantly lower unemployment durations than men. Dendir (2006) finds that gender is not an important determinant of unemployment duration in urban Ethiopia. Kupets (2006) too finds that differences in hazards of exit to employment between men and women are not significant. Tansel and Tasci (2005) show that the probability of leaving unemployment for women is substantially lower than for men. They argue that this may indicate that either women have a high shadow value of home production activities, and thus a high reservation wage, or may be an indication of discrimination against women in the labour market.

Education is also seen as an important determinant of unemployment duration, yet there is no agreement on the direction of this relationship. Grogan and van den Berg (2000) find that workers with high education have significantly shorter unemployment spells in comparison with lower educated workers in Russia. This result is in contrast with the results concerning the effect of education obtained by Foley (1997) for Russia. Kupets (2006) finds that the exit rate to employment increases with education in the Ukraine. Dendir (2006) finds that workers with vocational, college or university education have higher escape rates from unemployment than secondary school graduates in Ethiopia.

Age also plays an important role in unemployment duration. Most studies find that older workers have lower probabilities relative to younger individuals of exiting unemployment. Abraham and Vodopivec (1993) find that older workers and least educated workers have the most troubles in finding a job in Slovenia. Lower hazard rate at older ages is also found by Serneels (2007) in Ethiopia. Narendranathan and Stewart (1993a) and Arulampalam and Stewart (1995) suggest that the probability of entering full-time work falls with age and voluntary separation from the previous job and increases with predicted earnings in employment. Kupets (2008) finds that the probability of exit from unemployment to employment decreases with age in the Ukraine and that older worker are at a disadvantage in a rapidly changing economic environment.

Thus, the empirical findings suggest that determinants of unemployment are different across countries and that individual characteristics are not always significant determinants of unemployment duration. We explore in this work the role played by gender, age and education in determining unemployment duration during a period of reforms.

The Data and Methodology

The empirical analysis is based on the 2006 Egypt Labour Market Panel Survey (ELMPS06) conducted by the Economic Research Forum (ERF) in cooperation with the Egyptian Central Agency for Public Mobilization and Statistics (CAPMAS) – the main statistical agency of the Egyptian government. This is a nationally-representative household survey of 8,349 households that include extensive individual data on employment characteristics such as status, economic activity, duration of unemployment, occupation, employment history…etc. The ILO definition of unemployment is used in this analysis where unemployment refer to those who are (1) without work, (2) available for work and (3) have been looking for work. Our sample is based on 2615 unemployed workers with complete and incomplete unemployment duration spells in 2006.

The empirical analysis of unemployment duration is based on the job search approach where the duration of unemployment is modeled by specifying the conditional probability of leaving unemployment, referred to as the hazard function, see Lancaster (1990). The hazard function is the product of two probabilities: the probability of receiving a job offer and the probability of accepting job offer. We estimate a reduced form model where the total effects of the variables on exiting unemployment is estimated rather than their separate effects on the two probabilities.[7]

The slope of the hazard function reflects the nature of duration dependence. For example, downward sloping hazard functions relate to negative duration dependence and upward sloping hazard functions to positive duration dependence. Horizontal hazard functions correspond to no duration dependence. Non-linear duration dependence (e.g. some combination of positive and negative duration dependence) is also possible, and this would correspond to a non-linear hazard function (e.g. an inverted U-shape).

Given the nature of our data, unemployment durations are grouped into discrete time intervals (months). Therefore, we estimate the probability of exiting unemployment in a discrete time independent competing risks framework with flexible baseline hazard rates. In addition, we take account of unobserved heterogeneity. Although few authors have criticized the inclusion of an error term which is independent of both observed heterogeneity and time for example, Narendranathan and Stewart (1993a) and Boheim and Taylor (2002), other studies like Tansel and Tasci (2004) have argued that omission of unobserved factors result in inconsistent estimates. We report the estimates with and without unobserved heterogeneity.

Based on Jenkins (2004), we estimate by maximum likelihood two discrete time (grouped duration data) proportional hazards regression models: (1) the Prentice-Gloeckler (1978) model; and (2) the Prentice-Gloeckler (1978) model incorporating a gamma mixture distribution to summarize unobserved individual heterogeneity, as proposed by Meyer

[7] Jenkins (2004).

(1990). We chose a parametric specification for duration dependence log (t) to capture the duration dependence. For further details on the PGH models, see Jenkins (2004).

In model 1, the discrete time hazard rate for person *i* in the time interval *j* to leave unemployment to a certain state can be written as:

$$h_j(X_{ij}) = 1 - \exp\{-\exp[X_{ij}'\beta + \theta(t)]\}$$

where X_{ij} is a set of covariates, ® are the coefficients to be estimated, and \(t) is the functional form of how the duration of the spell affects the hazard rate assumed to be exp(t).

Model 2 incorporates a Gamma distributed random variable to describe unobserved (or omitted) heterogeneity between individuals. The discrete-time hazard function is:

$$h_j(X_{ij}) = 1 - \exp\{-\exp[X_{ij}'\beta + \gamma_j + \log(\varepsilon_i)]\}$$

where ε_i is a Gamma distributed random variable with unit mean and variance $\sigma^2 \equiv v$.

The covariates used include the individual characteristics such as gender, level of education, age at start of unemployment, and whether the individual is/was a new entrant to the labour market. To control for the local labour market conditions we use regional residence dummies. In order to capture the changes over the period of reforms we control for the year unemployment began by including decadal dummies between 1960s and 2000s.

First, we examine exit from unemployment to any employment. Secondly, we investigate three exit destinations from unemployment to (i) informal private employment (measured as lack of job contract or social insurance contribution), (ii) formal private employment (measured as holding job contract and social insurance coverage); (iii) public sector employment (government and public enterprises).

Empirical Findings

First, we examine the hazard rates of leaving unemployment to any employment without distinguishing between types of jobs in Table 12. The estimated coefficients of the two discrete time hazard models with and without unobserved individual heterogeneity are presented.[8] Comparing both models show that the variance of the gamma mixture

[8]Note that the proportionate impact of each variable on the state-specific hazard rate can be calculated by taking the exponent of the coefficient.

distribution is significant suggesting that there is evidence of unobserved heterogeneity (frailty). This is also suggested by the larger duration dependence parameter in Models 2 since not accounting for unobserved heterogeneity induces an under-estimate of the extent to which the hazard rate increases with duration. Moreover the coefficients in Models 2 are slightly larger in absolute value than those in Models 1 which is expected because frailty weakens the magnitude of the impact of covariates on the hazard rate.

Examining the determinants of leaving unemployment status for *any* employment, we find evidence of positive duration dependence suggesting that the longer the unemployment spell, the higher the probability of leaving unemployment for employment. The results also suggest that male workers are more likely than female workers to exit from unemployment to employment. The hazard rates of leaving unemployment declines with age. Education also seems to be an important determinant of exits from unemployment. The higher the educational level the higher the hazard rate of leaving unemployment to employment status. There is no evidence that the hazard rate for the newly entrant to the labour market is significantly different from older workers although the hazard rate is positive. Another important issue is the changes in hazard rates during the period of transition. The estimates indicate that the hazard rate of leaving unemployment to employment has decreased from 84% in the 80s to, 57% in the 1990s and falling to 38% in 2000s.

Secondly, we distinguish in this research between exits into different types of jobs. We report exits to informal private employment in Table 13 and to public sector employment in Table 14. First, gender is important for the "type" of employment. Male workers are more likely than females to exit from unemployment to informal employment but gender is not significant for exits to public sector employment. In a way this reflects the characteristics of the labour market which tends to be segmented along gender. Women are less likely to be employed in the private sector, both in formal and informal jobs which in a way explain women's strong preference for public sector employment where they face less discrimination in hiring. The findings also suggest that newly entrants to the labour markets are more likely than experienced workers to leave unemployment to the public sector but not to informal employment. Although the hazard rate of exiting unemployment declines with age for exits in informal jobs, exits to public sector employment seems to be highest for those in the 20-24 years age bracket. Education is positively related to exits to public employment where the most educated tend be have the highest probability which reflects the hiring system in the public sector in Egypt. However, education doesn't increase the hazard rate of exiting to informal employment in a monotonic way.

Examining the changes in hazard rates during the period of transition, for different types of jobs reveal an interesting trend. The hazard rate of leaving unemployment to informal employment has increased from 2.5 times in the 80s to, four times in the 1990s and 5 times in 2000s relative to the 1970s. On the other hand, the hazard rate of exits to public sector employment has decreased from 51 % in the 1980s, to 19% in the 1990s and to just 9% in 2000s relative to the 1970s. Below we explore this further by presenting the predicted

hazard rates by gender and education levels for the 1970s, 1980s and 1990s and present exits by type of job.

Figures 12 through 14 illustrate the predicted baseline hazard rates out of unemployment to employment by gender and education where less educated refer to those with intermediate or less and the highly educated to those with secondary and university education.[9] Those figures show how gender and education matter for getting a job. Male workers with high education have the highest predicted hazard rate of exiting unemployment to employment, followed by highly educated females then by less educated males and finally less educated females trailing behind. It is also worth noting that the predicted hazard rates of exits into employment has declined slightly in the 1980s but have fallen more in the 1990s.

Figure 12

[9] These figures are for a reference person who is between 25 and 29 years of age and lives in Greater Cairo.

Figure 13

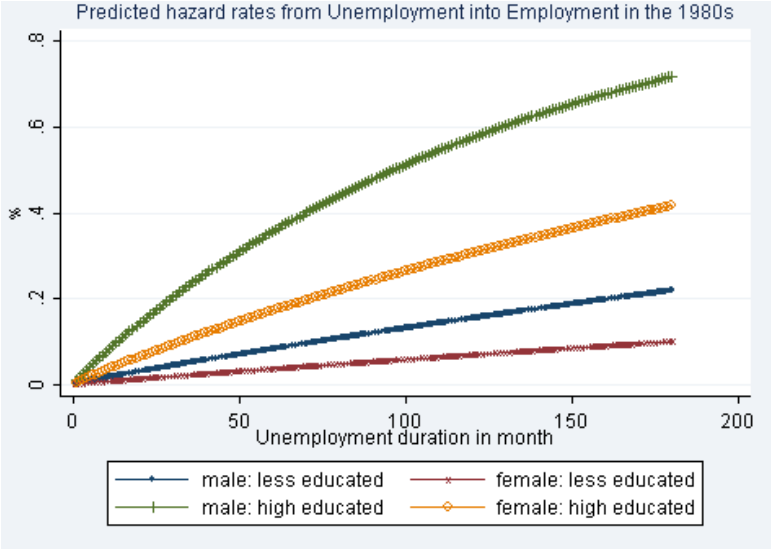
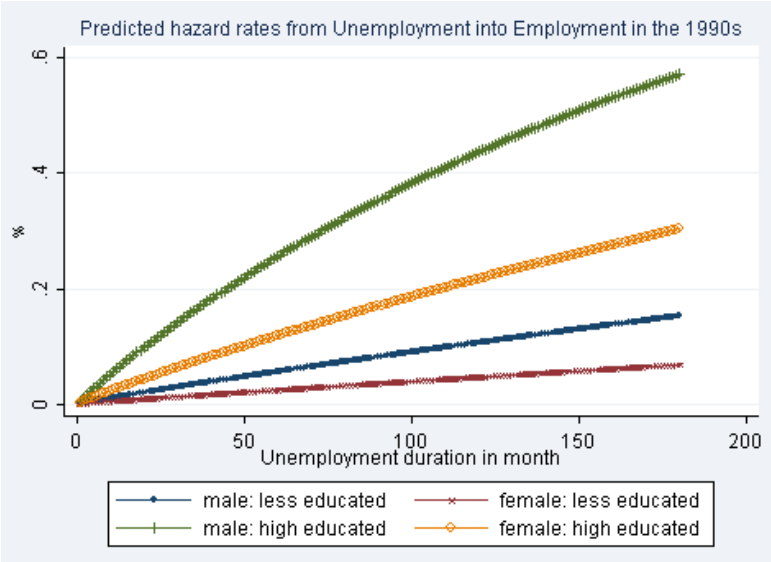


Figure 14



Figures 15 through 17 illustrate the predicted hazard rates out of unemployment to informal private employment by gender and education. Those figures reflect a totally different

scenario from previous figures. Here men are more likely to exit to informal private employment than women regardless of their educational level. Interestingly, less educated men have the highest predicted hazard rate followed by highly educated men reflecting the fact that highly educated workers tend to queue for public sector jobs. It is also interesting that the hazard rate of exiting to informal private employment has increased between the 1970s and 1990s.

Figure 15

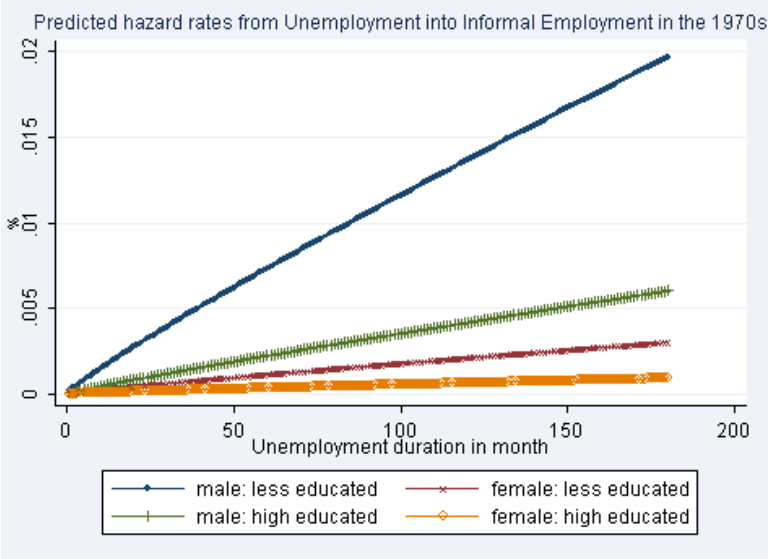


Figure 16.

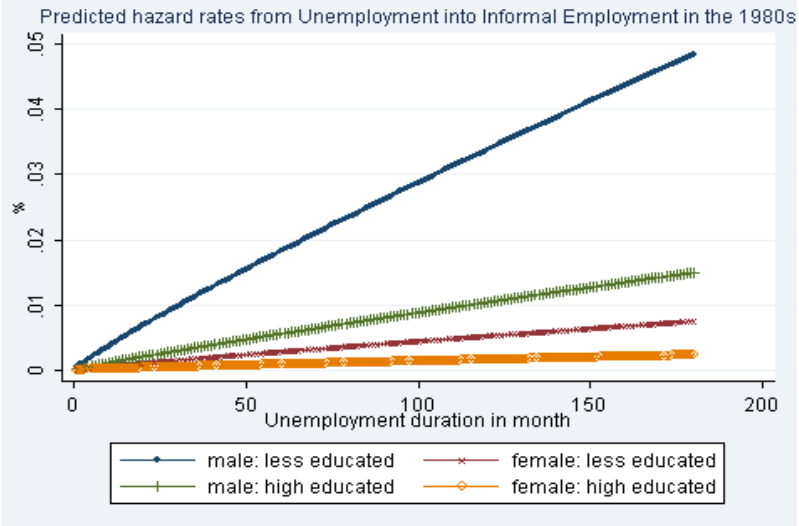
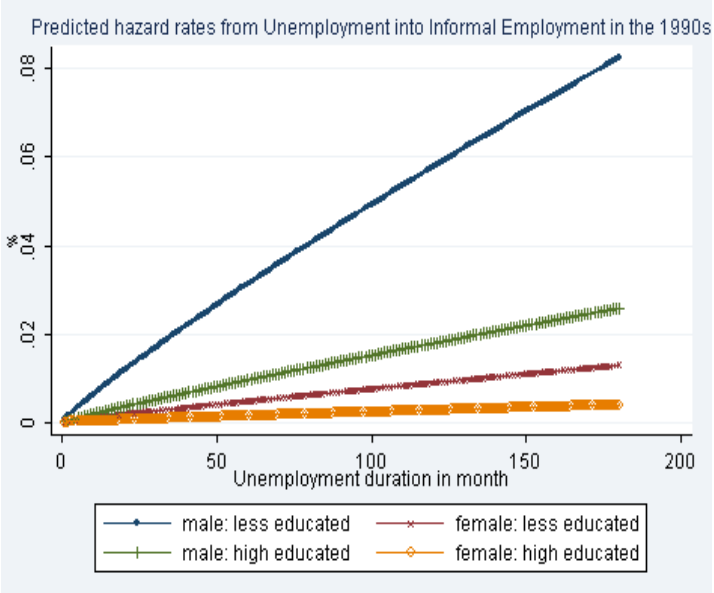


Figure 17.



Figures 18 through 20 show the predicted hazard rates out of unemployment to formal private employment by gender and education. Again they reflect the importance of education and gender in getting a formal private job and more importantly the low probability of exits into that sector. However, those predicted hazard rates have doubled in the 1980s compared to the 1970s but did not change a lot in the 1990s explaining one of the main reasons behind the increase in unemployment during that period. Yet for females, the hazard rates of exiting into that sector still seem to be close to zero.

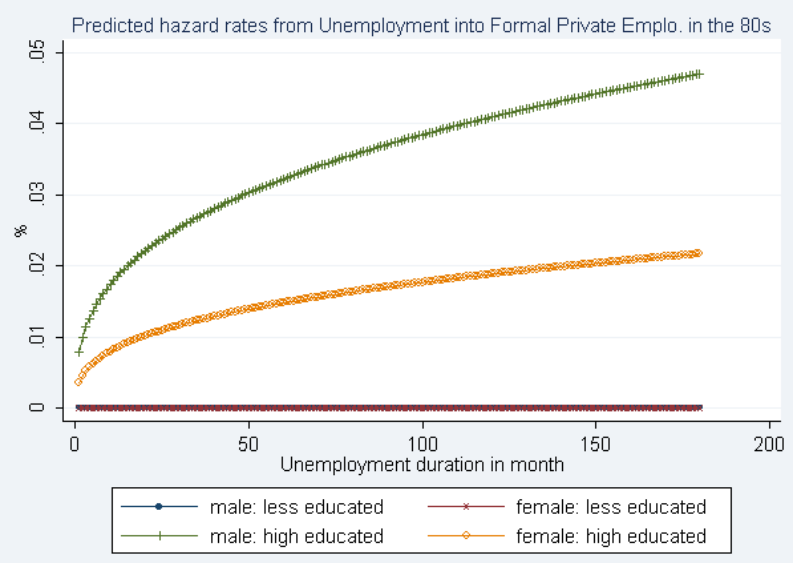


Figure 18.

Figure 19.

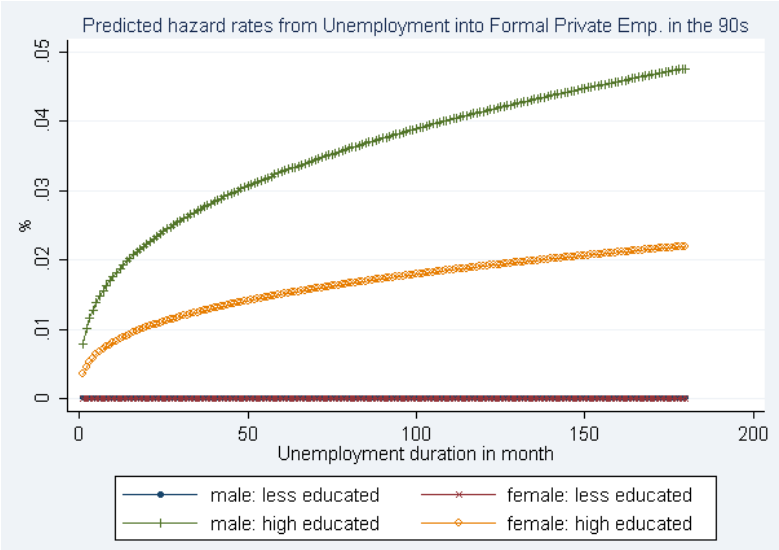
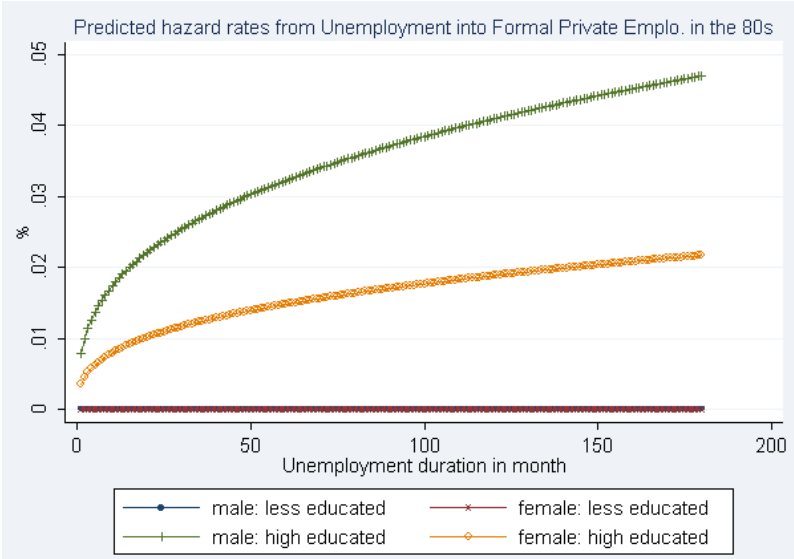


Figure 20.



Finally Figures 21 through 23 show the predicted hazard rates out of unemployment to public employment. It is very clear from those figures that for employment in the public sector education is the main determinant and not gender. The hazard rates are the same for highly educated men and women in the 1970s. However, by the 1990s, the hazard rate for women has become lower than for men. In addition, the hazard rates of exits to public sector have declined from the 1970s to the 1990s as a result of reforms.

Figure 21.

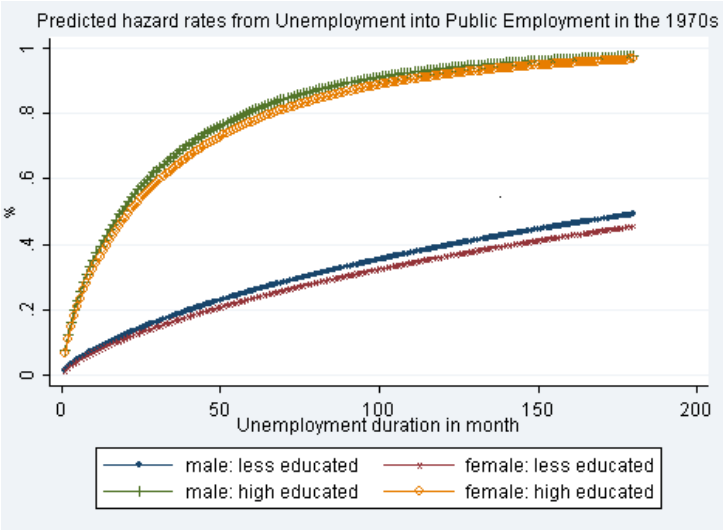


Figure 22.

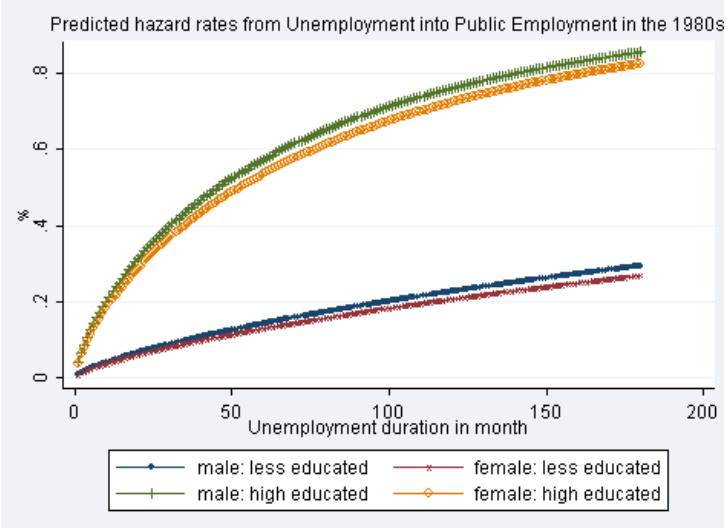
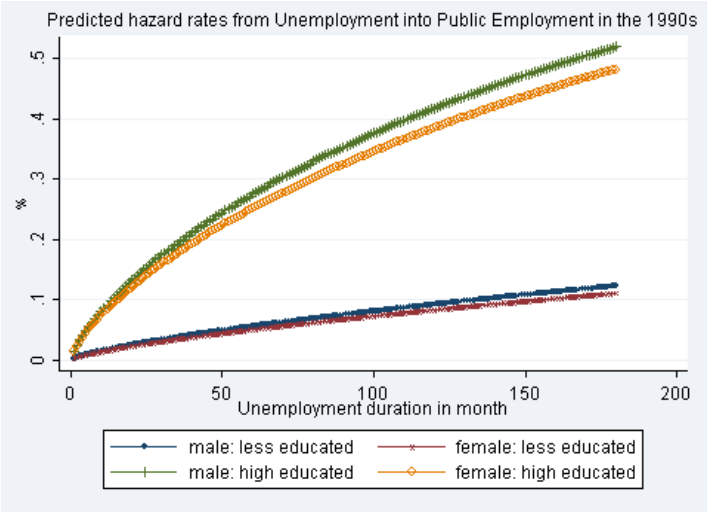


Figure 23.



It is clear from the findings that the labour market is segmented along gender and education. To sum up, the public sector has been the preferred sector for educated women. The private formal sector is small although growing, but is still almost inaccessible to female workers. Employment in the informal sector has been increasing particularly for less educated men. Thus, these findings indicate that there is a need for policies to focus on how best to help the private formal sector to grow to absorb the increasing pool of unemployed. In addition, policies should recognize that female workers with the downsizing of the public sector and the inaccessibility of the private formal sector are being squeezed out of good jobs and out of the labour market altogether.

Unemployment Duration Analysis

This section of our research examines the determinants of unemployment duration in Egypt during the period of trade liberalization and economic reforms. We examine the factors that determine the probability of leaving unemployment into different types of jobs. We also investigate whether the probability of leaving unemployment has changed during the period of reforms. The findings suggest that gender, age and education play an important role in leaving unemployment.

As can be seen in Tables 12 through 14, the probability of leaving unemployment to any employment has also declined in the last three decades. The probability of exiting unemployment to public sector has fallen, whilst that of exiting unemployment to informal

private sector has increased. Although, education was the main determinant of exits to public sector with both males and females initially in the 70s having similar hazard rates, by the 90s the gender gap started to grow with higher hazard rates for educated men than for educated women. However, for exits from unemployment to informal employment, gender is the main determinant: men are more likely to exit to informal private employment than women regardless of their educational level. Although the hazard rate of leaving unemployment to formal private employment has increased in the 80s relative to the 70s, it has been rather stagnant in the 90s for men. As for women, the probability of getting a private formal sector is almost close to zero and has hardly changed for the past three decades.

Table 12 : PGM Hazard from Unemployment to Any Employment

Variables	Model 1		Model 2	
	Coeff.	t-stat	Coeff.	t-stat
Individual Characteristics				
Male	0.607	10.86	0.855	9.95
New LM entrant	0.211	1.29	0.370	1.68
Age at start of Unemployment: ref: 15-19 years of age				
20-24	-0.036	-0.43	-0.056	-0.44
25-29	-0.180	-1.16	-0.273	-1.24
30-59	-0.914	-2.45	-1.137	-2.37
Educational level: (ref. Illiterate)				
Read & write	-0.453	-1.02	-0.961	-1.33
Primary	0.527	1.69	0.736	1.40
Intermediate	0 .562	1.89	0.811	1.62
Secondary	0.591	1.91	0.844	1.63
University+	0.951	3.13	1.377	2.70
Region of Residence: (ref. Greater Cairo)				
Alex & Canal Cities	0.074	0.87	-0.093	-0.70
Lower Urban	-0.286	-3.27	-0.608	-4.49
Upper Urban	-0.234	-2.86	-0.466	-3.61
Lower Rural	-0.311	-3.63	-0.611	-4.65
Upper Rural	-0.056	-0.50	-0.299	-1.75
Log of Unemployment Duration	0.380	13.30	0.958	10.25
Year entered unemployment (ref: 1970s)				
1960s	0.166	1.22	-0.114	-0.51
1980s	-0.139	-1.63	-0.170	-1.23
1990s	-0.481	-6.12	-0.569	-4.57
2000s	-0.762	-7.70	-0.964	-6.99
Constant	-6.10	-16.43	-7.747	-12.28
Gamma Variance	----	----	0.938	5.94
Number of obs. (person months)	103530		103530	
Log Likelihood	-7444.509366		-7400.6988	

Author's calculations based on the MLSMS 1991 & 1999 and the ELMS 1998 & ELMPS 2006

Table 13: PGM Hazard from Unemployment to Informal Employment

Variables	Model 1		Model 2	
	Coeff.	t-stat	Coeff.	t-stat
Individual Characteristics				
Male	1.397	13.42	1.891	11.60
New LM entrant	0.144	0.65	0.303	0.167
Age at start of Unemployment: ref: 15-19 years of age				
20-24	-0.531	-3.92	-0.756	-3.87
25-29	-0.652	-2.53	-0.835	-2.51
30-59	-1.000	-2.43	-1.412	-2.42
Educational level: (ref. Illiterate)				
Read & write	-0.901	-0.26	-0.375	-0.61
Primary	-0.033	-0.13	-0.044	-0.10
Intermediate	-0.612	-2.71	-0.950	-2.31
Secondary	-0.884	-3.17	-1.546	-3.16
University+	-0.659	-2.57	-1.013	-2.23
Region of Residence: (ref. Greater Cairo)				
Alex & Canal Cities	-0.182	-1.27	-0.437	-2.03
Lower Urban	-0.500	-3.45	-0.743	-3.52
Upper Urban	-0.456	-3.33	-0.851	-4.05
Lower Rural	-0.542	-4.05	-0.976	-4.69
Upper Rural	-0.109	-0.70	-0.478	-1.94
Log of Unemployment Duration	0.389	8.26	0.907	7.15
Year entered unemployment (ref: 1970s)				
1960s	-0.764	-2.24	-1.234	-2.62
1980s	0.696	3.50	0.917	3.30
1990s	1.010	5.53	1.466	5.59
2000s	1.163	5.87	1.620	5.79
Constant	-7.235	-17.41	-8.737	-13.32
Gamma Variance	----	----	1.882	4.06
Number of obs. (person months)	105516		105516	
Log Likelihood	-3262.071		-3243.746	

Author's calculations based on the MLSMS 1991 & 1999 and the ELMS 1998 & ELMPS 2006

Table 14 : PGM Hazard from Unemployment to Public Sector Employment

Variables	Model 1		Model 2	
	Coeff.	t-stat	Coeff.	t-stat
Individual Characteristics				
Male	0.032	0.42	0.109	1.16
New LM entrant	0.627	2.1	0.702	2.02
Age at start of Unemployment: ref: 15-19 years of age				
20-24	0.245	2.01	0.332	2.18
25-29	0.075	0.34	0.083	0.30
30-59	-1.342	-1.29	-1.515	-1.39
Educational level: (ref. Illiterate)				
Read & write	0.353	0.48	0.409	0.50
Primary	1.247	2.05	1.644	2.39
Intermediate	1.872	3.2	2.442	3.69
Secondary	2.171	3.64	2.868	4.19
University+	2.509	4.21	3.352	4.87
Region of Residence: (ref. Greater Cairo)				
Alex & Canal Cities	0.197	1.66	0.218	1.43
Lower Urban	0.070	0.61	0.023	0.16
Upper Urban	0.006	0.05	0.015	0.1
Lower Rural	0.088	0.73	0.055	0.37
Upper Rural	0.217	1.27	0.216	1.03
Log of Unemployment Duration	0.424	10.84	0.750	9.06
Year entered unemployment (ref: 1970s)				
1960s	0.243	1.71	0.489	2.42
1980s	-0.583	-5.84	-0.668	-4.95
1990s	-1.382	-14.01	-1.645	-12.21
2000s	-2.132	-13.72	-2.444	-13.14
Constant	-8.166	-11.95	-9.674	-11.65
Gamma Variance	---	---	0.608	4.01
Number of obs. (person months)	105516		105516	
Log Likelihood	-4380.033		-4362.811	

Author's calculations based on the MLSMS 1991 & 1999 and the ELMS 1998 & ELMPS 2006

Conclusion

This chapter examined the factors that determine the probability of leaving unemployment and whether this probability has changed during the period of reforms. In addition, we investigated whether particular groups have experienced longer unemployment durations and lower hazard rates of leaving unemployment during the period of transition. Clearly, the persistence of high unemployment rates can be a major problem for the individuals leading to discouraged workers, scarring effects, and social alienation, but also for the economy in terms of loss of productive resources.

The main findings of this chapter are as follows. The probability of exiting unemployment to public sector has fallen, whilst that of exiting unemployment to informal private sector has increased during the period of transition. Although, education was the main determinant of exits to public sector with both males and females initially in the 70s having similar hazard rates, by the 90s the gender gap started to grow with higher hazard rates for educated men than for educated women. However, for exits from unemployment to informal employment, gender is the main determinant: men are more likely to exit to informal private employment than women regardless of their educational level. Although the hazard rate of leaving unemployment to formal private employment has increased in the 80s relative to the 70s, it has been rather stagnant in the 90s for men. As for women, the probability of getting a private formal sector is almost close to zero and has hardly changed for the past three decades. In addition, the findings indicate that education is an important determinant of exiting unemployment. There is a positive relationship between education and exiting unemployment to public sector, but a negative relationship between education and exiting unemployment to private informal sector.

Overall, the findings suggest that women and the educated in particular have experienced the brunt of the recent economic reforms in Egypt. This suggests that future policies should focus upon promoting the private sector. Reducing the cost of hiring and firing for private firms will no doubt help to increase job creation. In addition, it is important to help the private sector by making it easier to start up new businesses and growing those businesses by improving access to credits, facilitating innovation, and fostering inter-enterprise linkages. In particular, those initiatives should target women since they are badly affected by the transition. Moreover, given the findings it is essential to re-visit the educational system and ensure that it produces the right skills needed by the private sector as well as the highest quality of educated workers who would be able become productive rather than be wasted as unemployed.

IV. Measuring the Impact of Schooling upon Wage Outcomes During Liberalisation in Egypt and Morocco[10]

Conventional wisdom in education policy literature has been that, while technical and tertiary skills are important for growth in developed countries, it is primary and secondary education that are related to actual development in the poorest and intermediate developing countries. Accordingly, donor and lending agencies, including the World Bank, have been promoting investment in basic and general education in MENA and other developing regions (World Bank, 1995a; Psacharopoulos, 1987, 1994) with little regard for the types of jobs or the sort of "development" that such targeting might yield. Among the reasons cited for such policy advice are low rates of returns to vocational and technical education, the high cost of those types of education, and a weak relationship between vocational school graduates and the needs of the labor market.

However, the experience of the East-Asian economies, such as Japan, Taiwan, Singapore and South Korea, demonstrate that investments in vocational skills at the secondary school level are beneficial for both the individual and society (Tzannatos and Johnes, 1997; Green et al, 1999; Gill et al., 2000). In contrast to these successes however, a recent Arab Human Development Report (UNDP, 2003) has highlighted the deep seated institutional, political and economic problems faced by education in the region. Even in countries like Egypt, where reform of vocational secondary and higher level technical education systems is now a priority on the policy agenda, recent analyses show that the pattern of growth associated with technical education had little to do with a rational planning exercise or even a weak focus upon how one might provide young people with workplace relevant skills. Instead this growth pattern was related to haphazard efforts at diverting students aspiring to higher educational attainment. Today technical education graduates in Egypt represent the population hit most by the inadequacies of the education system as evinced by their high unemployment rates, low returns to education and high representation amongst the lowest income/poorest of the population.

[10] This Chapter in authored by Mona Said

This section of our work will investigate the impact of secondary and higher education upon labor market outcomes in Egypt and Morocco, with emphasis on technical education. These two countries present contrasting examples in this sphere. Egypt is praised for now approaching universal primary school enrollment and closing the gender gap but criticized for over-investing in low quality secondary and tertiary education. Conversely, Morocco is seen to be one of only three countries in the region (the other two being Saudi Arabia and Yemen) where access to primary schools remains problematic; especially for girls (Van Eeghen, 2003; Megahid, 2004).

In what follows, we will focus more directly upon the role of educational attainment in particular by estimating selectivity corrected earnings equations for government, non-government wage workers and non-wage workers by gender, employing a multinomial-logit model to undertake the selection correction. In addition to evaluating the returns to education at the mean of the earnings distribution, this section of our work will also evaluate returns to education, along the entire earnings distribution, using quantile regression methods.

Estimation Methodology

Research on returns to education is based on the work by Mincer (1974) and, in the traditional specification, returns to education are estimated as follows:

$$\text{Ln}W = \beta_0 + \beta_1 \text{EDU} + \beta_2 \text{EXP} + \beta_3 \text{EXP}^2 + u \qquad (1)$$

Here EDU is the number of years of schooling, EXP is experience in years, EXP^2 is experience squared, and u is a random disturbance term. The specification is shown logarithmically in order for the regressors to be interpreted in terms of marginal effects. In this way, index β is interpreted as the rate of returns to schooling.

A recent extension to this model is designed to capture the so-called "certification effect" or "sheep skin effect". The idea is an employer might value a worker with a certificate more than a worker without one. For this reason, and to allow for estimated rate of return to vary by level of schooling, dummies for levels of education are used instead of years of schooling. The modified Mincerian earnings function is then:

$$\text{Ln}W = \beta_0 + \sum \beta_k \text{E.Dum}_{ik} + \beta_2 \text{EXP} + \beta_3 \text{EXP}^2 + u \qquad (2)$$

HereE.Dum consists of dummies for levels of education while years of experience are calculated by the following formula: (age – years of schooling - 6).

The model with detailed educational dummies is presented as:

Ln Wi = αi + ßı rd writei + ß2 primaryi + ß3 preparatoryi + ß4 gen seci+ ß5 voc 3yr agr seci+ ß6 voc 3yr ind seci + ß7 voc 3yr com seci + ß8 voc 5yr seci + ß9 postseci + ß10 university 4yrsi + ß11 university 6yrsi + ß12 postgradi + ß13 Xi + ß14 Xi 2 + ui
i = 1, 2, 3… n (3)

The private rate of return (ROR) to different levels of education can be derived from the following formula, rk = (βk - βk-1) / Δnk. This calculates the incremental private rate of

return to the kth level of education where βk represents the coefficient of a specific level of education, βk-1 is the coefficient of the previous level of education, and Δn is the difference in years of schooling between k and k-1. S primary and S preparatory stand for the total number of years of schooling for each successive level of education. For example, the difference in returns for the students holding completed primary education relative to the illiterate is: r primary = ß2/(S primary=5). The same applies to the completed preparatory education relative to the completed primary education, r preparatory = (ß3- ß2) / (S preparatory-S primary =8-5=3) and so forth (Hamidi, 2006).

Correct estimation of the above returns hinges on the ability to identify determinants of wages for randomly selected individuals from the sample under study. However, the above wage equation can only be estimated for non-random groups of individuals (i.e those who report a wage or salary). This leads to sample selection bias especially when the unobservable characteristics of the work decision (vi) are correlated with the unobservable characteristics affecting wages (εi). The sample selection problem can be stated as follows:

$yi^* = xi'\beta + \varepsilon i \quad i=1, 2\ldots n$ (4a)

$di^* = zi'\gamma + vi \quad i=1,2,\ldots,n$ (4b)

$di=1$ if $di^* > 0$; $di=0$ otherwise (4c)

$y_i = y_i^* \; * \; d_i$ (4d)

Furthermore, yi is observed only when di* is greater than zero.

$E(yi \mid di^* > 0) = E[yi \mid vi > -zi\gamma]$

$= xi'\beta + E[ui \mid vi > -zi\gamma]$ (5)

When $E[ui \mid vi > -zi\gamma] \neq 0$, least squares regression yields inconsistent estimates of ß.

Sector Selection Decision

The standard treatment for the sample selection problem is Heckman's (1979) two-step estimate. It initially uses the entire sample to model the choice to work by a probit model. The results of the probit estimation in the second stage are then used in the third stage to construst estimates of the selection variables (the inverse Mill's ratio λi^):

$\lambda\hat{} = \phi(zi'\gamma) = \Phi(zi'\gamma)$ (6)

Here ø and Φ denote the probability density function (pdf) and cumulative distribution function (cdf) of the standard univariate normal distribution respectively. When adding the inverse Mill's ratio λi^ into OLS estimation, Formula (5) can be expanded as:

$E[yi \mid di^* > 0] = xi'\beta + E[ui \mid vi > -zi\gamma] = xi'\beta + \rho\,\delta v\ \lambda i + \varepsilon i$ (7)

Here ρ is the correlation coefficient of u and v, δv is the variance of of the error term vi (δu is assumed to be 1 or standard normally distributed), and the error term εi has a zero mean

(normally distributed) and is uncorrelated with vi. Thus, a simple application of OLS to equation 7 will yield consistent estimates of β (Zhang, 2003). Lee proposed a generalization of the two-step selection bias correction method introduced by Heckman (1979) that allows for any parameterized error distribution. His method extends to the case where selectivity is modeled as a multinomial logit decision (Bourguignon, 2004). His extension to Heckman's correction method will be used in this research as a multinomial logistic regression which will allow us to examine selection into different sectors of participation as will be discussed below.

Selectivity Corrected Earnings Function and Quantile Regressions

Estimating the parameters in the first stage allows calculating the selection term which, to correct for selectivity bias, is then entered linearly into the wage equation where the dependent variable in the wage equation is the log hourly earnings such that:

$$\text{Ln}W = \beta_0 + \sum\beta_k E.Dum_{ik} + \beta_2 EXP + \beta_3 EXP^2 + \sum\beta_j \text{ Reg. } Dum_{ij} + \beta_4 \lambda + u \qquad (8)$$

It is here that E.Dum are dummies for levels of education, experience, experience squared, regional dummies and the selection term.

Finally, the above model is estimated across different quantiles of the wage distribution using quantile regression methods. Quantile methods are also preferred over, or along side, least square estimation due to the higher degree of robustness in estimation, reduced sensitivity to outlying observations (Koenker and Bassett, 1978; Deaton, 1997). The Quantile regression method can be written in equation form as the qth quantile of the conditional log distribution of wages as a linear function of the regression variable, X:

$$\text{Quantile}_q (\ln w|x) = X \beta_q \qquad (9)$$

The model can be estimated by finding the vector (β_q) that minimizes the following expression,

$$\sum_{r<0} q \,|\ln w - x'\beta_q\,| + \sum_{r>0} (1-q)\,|\ln w - x\beta_q\,| \qquad (10)$$

Data, Sample of the Study, and Empirical Results

This section of our work makes use of two recently available Egyptian household survey data sets that contain a wealth of information on household composition and socioeconomic characteristics such as income, parental background, measures of access to the labor market, detailed education history, ownership of assets, migration histories and activity status. These are the 1998 Egypt Labor Market Survey (ELMS) and the Egypt Labor Market Panel Survey (ELMPS) for 2006. Both surveys are nationally representative covering 5000 households in 1998 and 8500 households in 2006 and were carried out jointly by the Economic Research Forum (ERF) and the Egyptian Central Agency for Public Mobilisation and Statistics (CAPMAS). They were conceived as a periodical longitudinal survey, because they contain comparable data. In fact, the ELMPS 2006 covers households included in the ELMS 1998, as well as those units that resulted from splits of the original households and a

sample of new households. For Morocco, we use The Morocco Living Standard Measurement Studies (MLSMS) of 1990/1991 and 1998/1999, covering 3349 households in 1990/91, and 5129 households in 1998/1999. Both surveys include extensive data on employment characteristics such as status, economic activity, duration of unemployment, occupation.

Sector Based Wage Inequality in Egypt and Morocco

Based on parameter estimates for selectivity corrected wage equations, Table 15 presents decompositions for sector wage gaps for Egypt and Morocco which separate the justifiable (i.e. explained) and unjustifiable (i.e. unexplained or pure premium) components. For Egypt, although the unjustifiable proportion of the sector wage gap slightly increased, both the raw as well the adjusted public-private wage differentials have decreased during the decade of economic liberalization policies. Thus unexplained sector wage inequality declined as the public sector wage premium narrowed from 11.5 % in 1988 to 4.4% 1998. In other words, by the end of the decade under study, the public sector lost a degree of its attraction in Egypt, at least as expressed in terms of wage premiums. This of course might have been more than counteracted by the persistence of substantial non-wage benefits in the sector which were always the major determinant of queues for public sector employment in Egypt.

Conversely, the changes in public–private sector unexplained wage gaps in Morocco appear to be in the opposite direction. The unexplained pure pay premium in the public sector, which was already much higher than in Egypt at 39% in 1991, jumped even higher to 57% in 1999. This means that public sector employees earned nearly 60 percent higher than comparable private sector employees in Morocco– a very high gap by international, and even MENA, standards. Thus even disregarding differences in non-wage benefits, public sector employment remained a very attractive option in Morocco. Overall, and in contrast to what happened in Egypt, the nineties appears to be a decade of increasing wage inequality by sector in Morocco.

Table 15: Wage Decomposition for Egypt and Morocco: Public vs. Private

	Raw Differential.	Percent Explained (Endowments)	Percent Unexplained (Pure Premium)	Adjusted (Unexplained) Differential (in percent)
Egypt				
1998, Public vs. Private Sector	6.7	34	67	4.4
1988, Public vs. Private Sector	18.9	39	61	11.5
Morocco				
1999, Public vs. Private Sector	111.3	48.8	51.2	57.0
1991, Public vs. Private Sector	80.6	51.2	48.8	39.3

Source: Authors' own calculations from from1988 LFSS and 1998 ELMS, Egypt and 1991 and 1999 MLSMS, Morocco.

Rate of Returns During Structural Adjustment Programmes- Morocco in Relation to Egypt

In this section of our work we examine the labor market outcomes of secondary school graduates and their evolution throughout the decade of structural adjustment, which took place in the 1990s in both Egypt and Morocco. We will focus on how the acquisition of general vs. vocational education impacts the returns individuals obtain once they enter the labor market, focusing on both men and women in the public and private sector.

The 1990s have been a period of considerable socio-economic change. Both Morocco and Egypt opted for a downsizing of the government sector and for the implementation of liberalization measures, albeit with different intensity. The pace of structural adjustment was faster in Morocco than Egypt, and this had a more noticeable effect on wages. As shown in Table 16, between 1991 and 1999 the public-private differential increased substantially in Morocco, from 80.6 to 111.3 while it decreased from 18.9 to 6.7 in Egypt between 1988 and 1998.

In both countries the unexplained differential increased, suggesting that the wage discrimination was not attributable to the different levels of human capital accumulation, but rather to labour market segmentation, whereby lower pay in the public sector is due to the existence of a dual public-private economic structure. Results of selectivity corrected wage equations for Morocco (Table 16) display two distinct trends. In the private sector, vocational education and university graduates saw a decline in their wage, with the latter witnessing the greatest reduction from a coefficient of 1.48 to 0.64. Real wages of university graduates in the public sector declined as well, while vocational graduates saw their real wages increase, not only narrowing the gap with university graduates, but even surpassing them.

Table 16: Selectivity Corrected Wage Equations by Sector of Employment, Morocco, 1991 and 1999

Log Weekly Wages	Public, 91	Private, 91	Public, 99	Private,99
General+University	0.956	1.477	0.678	0.927
	(0.203)**	(0.657)*	(0.070)**	(0.154)**
Vocational	0.379	1.456	0.740	1.448
	(0.180)*	(0.398)**	(0.173)**	(0.344)**
Experience	0.074	0.098	0.111	0.092
	(0.027)**	(0.030)**	(0.021)**	(0.012)**
Experience Sq.	-0.120	-0.130	-0.163	-0.140
	(0.046)*	(0.020)**	(0.032)**	(0.020)**
Regions (Oued Ed-Dahab-Lagouira=Ref)				
Laayoune-Boujdour-Sakia El Hamra	-0.055	-0.508	-0.268	0.777
	(0.317)	(0.269)	(0.195)	(0.446)
Guelmime Es-Semara	0.087	-0.476	-0.392	0.000
	(0.321)	(0.251)	(0.199)*	(0.000)
Souss-Massa-Daraa	0.180	-0.641	-0.413	-0.056
	(0.287)	(0.207)**	(0.176)*	(0.306)
Gharb-Chrarda-Beni Hssen	0.043	-0.360	-0.413	-0.024
	(0.346)	(0.277)	(0.186)*	(0.315)
Chaouia-Ouardigha	0.040	0.445	-0.399	-0.042
	(0.293)	(0.314)	(0.181)*	(0.319)
Tensift Al Haouz	0.260	-0.500	-0.310	0.136
	(0.333)	(0.254)	(0.184)	(0.311)
Oriental			-0.605	0.282
			(0.181)**	(0.310)
G.Casablanca			-0.211	0.720
			(0.157)	(0.294)*
Rabat-Salé-Zemmour-Zaer			-0.444	0.269
			(0.151)**	(0.300)
Doukala Abda			-0.334	-0.184
			(0.199)	(0.311)
Tadla Azilal			-0.404	0.000
			(0.209)	(0.000)
Meknes Tafil			-0.317	-0.416
			(0.169)	(0.303)
Fes-Boulemane			-0.523	-0.259
			(0.194)**	(0.318)
Taza-Al Hoceima-Taounate			-0.576	-0.546
			(0.196)**	(0.317)
Tanger-Tetouan			-0.615	0.379
			(0.192)**	(0.300)
Lambda	-0.087	-0.066	-0.108	-0.172
	(0.100)	(0.087)	(0.066)	(0.052)**
Constant	5.113	5.648	4.968	4.414
	(0.465)**	(0.498)**	(0.370)**	(0.345)**
Observations	184	163	441	1033
R-Squared	0.39	0.42	0.31	0.30

* Significant at 5% level; ** significant at 1% level, Standard errors in parenthes`es
Source: Authors' own calculations from1991 and 1999 MLSMS, Morocco.

Moroccan data reveal several interesting facts leading to one conclusion. Wages in Morocco have witnessed a compression and more equal distribution in 1999 than in 1991. For example, graduates of general and university education working in the public sector earned 96 percent higher than those who did not continue through secondary education, while vocational graduates earned only 38 percent more. We notice a drop in returns in 1999 to 68 percent for the first group and an increase to 74 percent for vocational workers in the public sector. The same result is observed in the private sector. Between 1991 and 1999, general and university graduates working in the private sector witnessed a drop in their comparative wages to their lower education by 59%, whereas comparative differences rose in favor of vocational graduates by more than 13%. The 'sheep skin effect' does not show up in Morocco. Private sector workers appeared to have no significant differences in earnings of both types of education. Contrary to Egypt, public sector workers in Morocco have witnessed compression in their wages between all types of graduates, in just eight years.

Wages are naturally the primary factor behind the evolution of rate of returns. For Moroccan males with university education (versus secondary) in the public sector, returns dropped from 26 percent to 5 percent in a decade (Table 17). Males in the private sector also experienced a drop in returns at all levels of education. Despite a 1 percent drop in their returns, female university graduates in the public sector did fare better in 1999 than in 1990. We can conclude that, as the country went through a period of structural adjustment, workers experienced substantial wage compression in most, if not all, sectors. As a consequence, rate of returns decreased for virtually every sector.

Table 17: Percentage differences in Private Rates of Return By Sector, Morocco, 1991 and 1999

Males

Education Level	Public, 91	Public, 99	Private, 91*	Private, 99
Primary to R&W	14.60	4.87	6.60	0.83
Prep. To Primary	10.97	10.00	8.50	11.80
Sec. to Prep.	9.37	8.97	22.43	19.20
Univ. to Sec.	25.85	4.93	25.08	8.58

Females,

Education Level	Public, 91	Public, 99	Private, 91*	Private, 99*
Primary to R&W	12.70	18.13	8.80	10.10
Prep. To Primary	12.17	13.53	23.20	19.90
Sec. to Prep.	1.87	4.77	1.57	13.13
Univ. to Sec.	14.18	13.13	25.75	0.58

* Corresponds to insignificant coefficients. Shaded areas correspond to insignificant coefficients.

Males in the private sector also experienced a drop in returns at all levels of education. Despite a 1 percent drop in their returns, female university graduates in the public sector did fare better in 1999 than in 1990. We can conclude that, as the country went through a

period of structural adjustment, workers experienced substantial wage compression in most, if not all, sectors. As a consequence, rate of returns decreased for virtually every sector.

The more elaborate set of data available for Egypt allows for a decomposition of our analysis according to gender and more levels of education. Males with vocational education exhibit falling wages in the public sector, while general secondary graduates have seen their salaries increase between 1988 and 1998. In the private sector men's, wages have increased across the board for all levels of education and generally the higher the education level, the higher the increase. The upward pressure on wages may be a signal that the private sector succeeded in attracting the most qualified workers, diverting them from seeking employment in the public sector. With regard to women, the picture is more complex. Women with a secondary degree or above have seen their wages rise substantially across the decade, especially women with a 5-year vocational education degree. At the same time, the wages for of all categories in the public sector lost value, mainly because nominal wages were frozen altogether and therefore they lost value in real terms as inflation mounted (Table 18).

Table (18): Selectivity Corrected Log Real Wage Equations by Sector of Employment, Egypt, 1988 and 1998

Females	Public Sector			Private Sector		
	1988	1998		1988	1998	
Rdwrite	0,331	0,022	-0,309	0,102	-0,032	-0,134
Primari	0,353	0,347	-0,006	-0,026	0,316	0,342
Preparatory	0,954	0,732	-0,222	0,059	-0,372	-0,431
Gensec	1,427	1,175	-0,252	0,657	1,047	0,390
vocsec3	1,496	1,162	-0,334	-0,197	0,352	0,549
vocsec5	1,645	1,508	-0,137	-0,373	0,475	0,848
Univabove	1,992	1,743	-0,249	1,027	1,249	0,222

Males	Public Sector			Private Sector		
	1988	1998		1988	1998	
Rdwrite	0,137	0,236	0,099	0,061	0,139	0,078
Primari	0,338	0,384	0,046	-0,034	0,152	0,186
Preparatory	0,493	0,443	-0,050	-0,062	0,261	0,323
Gensec	0,872	1,051	0,179	0,129	0,507	0,378
vocsec3	0,996	0,876	-0,120	0,01	0,361	0,351
vocsec5	1,128	1,122	-0,006	0,018	0,517	0,499
Univabove	1,494	1,404	-0,090	0,363	0,861	0,498

Table (18) also presents us interesting results from Egypt. With almost no exception, vocational education yielded lower rate of returns if compared with general education for all categories in both sectors. At the same time, 5 year vocational institutes invariably exhibit higher rates if compared with 3 year vocational institutes. An interesting result is that, while

the advantage of general over vocational education decreased substantially for males in the public sector, while it increased sharply for women in the private sector. This result may lead us to conclude that as women vocational graduates were forced to opt out of public employment, their returns in the private sector started to improve. Rates of return of university education vs general education changed less uniformly, but in general they remained stable or decrease only marginally. While real wages almost invariably fell for all categories in the public sector, this impacted rate of returns in a very ambiguous fashion, for instance the rate of returns of women did not change much. In the private sector the rate of returns of female university graduates decreased, but returns for all males tended to be stable. Finally, the decade of structural adjustment did not lead to clear outcomes for Egyptian graduates.

The availability of more recent data for Egypt in 2006 allows for the more detailed analysis of returns of education in the new Millennium, as the country enters into an era of rapid trade liberalization. Also due to the presence of necessary identifying controls, one is able to correct these estimates for selection into different participation states and sectors of employment as well examine the returns across the entire earning distribution.

Determinants of Choice (Multinomial Logit Model) for Egypt

Four multinomial logit regressions are estimated to study selection into non-participation, unemployment, non-wage work, non-government work, and government wage work by gender and round (1998 and 2006). In each equation, the dependent variable is a categorical variable represented by the five different work status states mentioned above. The identification variables (affecting participation but not wages) are represented by household-related variables that determine participation in the labor force which consequently impacts the choice of the employment status. Parameter estimates are then used to compute the six selection variables or inverse (λ) Mill's ratios to correct for selectivity bias, which are then subsequently included as regressors in the second and third-stage wage equations.

Appendices IV.A1 and IV.A2 show the parameter estimates of the sector-gender-round specific selection equations. The reference category is an illiterate and non-participant person living in Greater Cairo. The results show that education increases a male's probability of being a wage worker in the government sector but it decreases a male's chance of being a wage worker in the non-government sector or as being a non-wage earner in most cases in both 1998 and 2006. Thus, the government remains the favored employer for men because of its job security and compensating retirement schemes in addition to short working hours and lower effort. For females, education increases the probability of being a wage worker, especially in the government sector. As expected, higher educational attainment also reduces the probability of a female being a non-wage earner in both 1998 and 2006. One interpretation is that women (like men) prefer to work in the government for its more convenient working conditions and short working hours.

Other patterns are found by examining the coefficients reflecting household variables. Both parental education and fathers' self employed/employer status appear to negatively influence the probability of females joining wage employment (relative to non-participation) in 1998. To the extent that these variables are reflective of higher income or socio-economic status, this may also be indicative of the predominance of the income-effect due to higher household income acting as a disincentive for female wage work in 1990s Egypt. By 2006,

however, mother's education exerted the expected positive influence upon the choice to be a wage worker for males and for females to join non-government wage employment.

A male is more likely to be a non-wage earner in the first place (probably persuing work for a family business), followed by working for wage in the government sector if his father was self-employed or an employer at the time he entered the labor market. For females, a father's work status as self-employed or an employer increases a daughter's probability of being a non-wage earner just like men. However, it decreases the chance of being a wage worker in either the government or non-government sectors.

Another result worthy of highlighting is that all vocational secondary and university educated females and males with industrial vocational secondary level faced a higher probability of unemployment in 1998. This is attributed to the vocational industrial enrolment expansion adopted by the government and was based on a belief that such skills were the most in demand by the labor market. By 2006 the situation had worsened for both sexes (particularly for males) such that the probability of being unemployed jumped for all vocational and university graduates and not just those with industrial track education. Moreover, university graduates currently face the highest probability of being unemployed among all the educational groups as a result of the massive expansion of university enrolment over time. This implies that the government has failed to alleviate the high demand for university education and caused progressively inferior labor market outcomes for both technical secondary and university graduates.

Relative to their male counterparts, female university and vocational secondary graduates face double the probability of unemployment. This result can be interpreted as giving credence to the view that educated women in the Egyptian labor market still suffer discriminatory treatment in employment relative to their male counterparts. This is especially the case in the private sector where employers are reportedly reluctant to hire women due to the high cost of maternity and other mandated benefits.

Incremental Returns to Different Levels of Education for Egypt

The wage equations for men and women (across economic sectors) are then estimated based on standard Mincerian wage determination model. Log hourly wage is assumed to depend on many explanatory variables such as: educational attainment, potential experience, potential experience squared, and a set of controlling dummy variables for location (Alexandria, rural Upper Egypt, urban Upper Egypt, rural Lower Egypt, and urban Lower Egypt). The standard errors of the third stage are adjusted to account for the presence of estimated regressors. The empirical work estimates six wage equations for both men and women across the three employment states (non-wage, non-government, and government) in both rounds of 1998 and 2006.

The above parameter estimates are used to calculate incremental rates of return to education. Equality of coefficients tests are further conducted to test significant differences in

coefficients across years and levels of education. Tables 19 and 20 present the Ordinary Least Squares (OLS) and the selectivity corrected incremental private rates of return to education for men and women respectively. The selection-bias correction is based on Lee's method. The equation used for computing the incremental rate of return is: $rk = (\beta k - \beta k\text{-}1) / \Delta nk$. It calculates the private rate of return to the kth level of education where βk represents the coefficient of a specific level of education, $\beta k\text{-}1$ is the coefficient of the previous level of education, and Δn is the difference in years of schooling between k and k-1. To ensure that these rates of return are significant, tests of restrictions that the coefficients of kth variables are equal to those of (k-1)th are conducted. According to the Human Capital mode, the rate of return to educational levels will fall as the educational level gets higher, since the opportunity cost of education increases with educational level.

The analysis primarily focuses on non-government sector as it reflects market forces in wage determination. The wage determination in the government sector however is rigid and institutionalized such that non-monetary earnings, not accounted for in the returns, are highly pronounced. Non-wage earnings tend to reflect relatively more productivity differences.

First it should be noted that, compared to OLS, almost all the selectivity corrected incremental returns to education have the same coefficients for men across all work states in 1998 and 2006. Relative to the preparatory certificate holders, there are small (1-8%) but mostly positive and significant returns for males in both 1998 and 2006. These returns, however, have been declining in both the non-wage and non-government realms. The returns are highest in the government sector which remains the favored employer for male technical secondary graduates. These graduates obviously face much poorer prospects in the private labor market which creams the best technical secondary graduates and generally considers them as belonging to lower social classes. Only the returns for vocational agricultural secondary graduates working in the non-government and government sectors improved from 1998 to 2006. For women, the situation is even worse with positive returns to vocational secondary education comparable to the preparatory level only in the government. There are negative returns in the non-wage sector and insignificant ones in the non-government sector.

Compared to the general secondary level, Table 19 illustrates generally negative incremental OLS returns to the three-year vocational agricultural, industrial, and commercial secondary education compared to the general secondary for men in all sectors in 1998. By 2006 however, the returns for vocational secondary graduates are positive for non-wage earners and non-government workers alike. Returns to government workers are inferior but still positive. In general, there is an improvement in the incremental rates of return for vocational secondary graduates compared to general secondary from 1998 to 2006, especially for male non-government workers. It should be cautioned however that all estimates compared to the general secondary level are not likely to be reliable as the vast majority of general secondary graduates (over 90%) join the university track and very few join the labor force.

Compared to the vocational secondary level, both higher technical institute and university graduates earn higher returns. It is noteworthy that, probably due to the high annual growth of higher-technical secondary enrolment (13.5%) compared to vocational secondary (5%) from 2000-2005, returns for higher technical institute graduates dramatically declined for non-government workers in 2006. Returns to male university graduates (as compared to

vocational secondary) witnessed a slight improvement in the non-government sector. This originated presumably the private sector segment which increasingly rewards university graduates in relation to what might be expected from the government sector. Moreover, and especially relative to higher technical institute graduates, returns to university graduates increased dramatically (by nearly a factor of 3.5) for non-government workers in 2006. For women, returns to university education remain higher than technical education but have been declining between 1998 and 2006. This can be seen in Table 20.

Finally, changes in returns to education throughout the period 1998-2006 indicate a decline for higher levels of education in the male general secondary and university graduate populations working in the non-government sector. This is the result of cumulative effect of previous episodes of rapid acceleration in university graduates from 1995 to 2001. For women, the returns to university graduates working in the government sector declined. It is worth noting that highly educated women are now facing a doubly difficult treatment in the labor market as they are not able to join the private sector at the same rate as men. This is due to institutional and cultural barriers to private sector employment. The worsening prospects for women are consistent with results of other studies such as El-Hamidi and Assaad (2006) and El-Hamidi (2007) which indicate that females are suffering higher discrimination in the labor market in 2006.

Table 19: Ordinary Least Squares and Selectivity Corrected Estimates of Incremental Private Rate of Return for Men by Work Status, Egypt 1998, 2006

Education Level	Incremental Rate of Return											
	Ordinary Least Squares						Selectivity Corrected					
	Non-Wage		Non-Government		Government		Non-Wage		Non-Government		Government	
	1998	2006	1998	2006	1998	2006	1998	2006	1998	2006	1998	2006
Vocational Secondary versus Preparatory	0.07 ***	0.04 **	0.05 ***	0.01	0.11 ***	0.11 ***	0.07	0.04	0.05	0.01	0.10	0.08
Agricultural Secondary	0.06	0.04	0.00	0.02	0.09 **	0.16 ***	0.05	0.04	0.00	0.03	0.08	0.14
Industrial Secondary	0.07 **	0.05 **	0.06 ***	0.02	0.11 ***	0.08 ***	0.07	0.05	0.06	0.02	0.11	0.07
Commercial and Other Secondary	0.08 ***	0.02 ***	0.04 ***	0.00 ***	0.11 **	0.11 **	0.08	0.02	0.04	0.00	0.10	0.08
Vocational Secondary versus General Secondary	-0.11	0.00	-0.45	0.11	-0.22	-0.14	-0.12	0.01	-0.45	0.10	-0.23	-0.20
Agricultural Secondary	-0.17	0.01	-0.60 ***	0.14	-0.29 *	0.03	-0.17	0.01	-0.60	0.14	-0.30	-0.04
Industrial Secondary	-0.11	0.02	-0.41 ***	0.12	-0.20	-0.20	-0.12	0.04	-0.41	0.11	-0.20	-0.24
Commercial and Other Secondary	-0.09 ***	-0.05 ***	-0.48 ***	0.06	-0.22 ***	-0.13 ***	-0.10	-0.03	-0.48	0.06	-0.23	-0.22
Higher Technical Institute versus Vocational Secondary	0.03 ***	0.07 ***	0.16 ***	0.06 ***	0.13 ***	0.12 ***	0.03	0.07	0.17	0.06	0.13	0.10
University versus Vocational Secondary	0.09 ***	0.08 ***	0.11 ***	0.13 ***	0.12 ***	0.10 ***	0.09	0.09	0.11	0.14	0.12	0.08
University versus Higher Technical Institute	0.14 ***	0.10 ***	0.06 ***	0.21 ***	0.10 ***	0.09 ***	0.14	0.10	0.05	0.21	0.11	0.06

Source: Author's calculations based on ELMS 1998 and ELMPS 2006
Note: Standard errors are in parenthesis * denotes significance at the 10 percent level, ** denotes significance at the 5 percent level and *** denotes significance at the 1 percent level, (Vocational Commercial Secondary is the reference category).

Table 20: Ordinary Least Squares and Selectivity Corrected Estimates of Incremental Private Rate of Return for Women by Work Status, Egypt 1998, 2006

Education Level	Incremental Rate of Return											
	Ordinary Least Squares						Selectivity Corrected					
	Non-Wage		Non-Government		Government		Non-Wage		Non-Government		Government	
	1998	2006	1998	2006	1998	2006	1998	2006	1998	2006	1998	2006
Vocational Secondary versus Preparatory	-0.34 **	0.06	0.05	-0.09	0.05	0.16 ***	-0.26	0.06	0.10	-0.01	0.07	0.07
Agricultural Secondary		0.04	0.10	-0.20	0.10	0.03		0.04	0.13	-0.18	0.11	-0.05
Industrial Secondary	-0.14	0.00	0.06	-0.08	0.08	0.17	-0.02	0.00	0.12	-0.04	0.09	0.11
Commercial and Other Secondary	-0.39 **	0.09	0.04	-0.09	0.05	0.16	-0.33	0.08	0.10	0.02	0.07	0.07
Vocational Secondary versus General Secondary	-1.92 **	-1.16 **	-0.29	-0.15	-0.31	0.13	-1.69	-1.20	-0.16	-0.04	-0.26	-0.06
Agricultural Secondary		-1.21 **	-0.11	-0.50	-0.17	-0.24		-1.24	-0.07	-0.55	-0.13	-0.43
Industrial Secondary	-1.27	-1.33	-0.23	-0.14	-0.23	0.17 **	-0.93	-1.37	-0.11	-0.16	-0.19	0.05
Commercial and other Secondary	-2.01 **	-1.08 ***	-0.29	-0.14	-0.32	0.14	-1.88	-1.11	-0.15	0.03	-0.27	-0.06
Higher Technical Institute versus Vocational Secondary		-0.20 **	0.06	0.02	0.11 **	0.06 ***		-0.16	-0.01	-0.01	0.13	0.03
University versus Vocational Secondary	0.23 **	0.03	0.19 ***	0.14 ***	0.10 ***	0.03 ***	0.17	0.07	0.20	0.17	0.11	0.01
University versus Higher Technical Institute		0.26	0.31 ***	0.27 *	0.09 ***	0.01 ***		0.30	0.41	0.36	0.09	-0.02

Source: Author's calculations based on ELMS 1998 and ELMPS 2006
Note: Standard errors are in parenthesis * denotes significance at the 10 percent level, ** denotes significance at the 5 percent level and *** denotes significance at the 1 percent level, (Vocational Commercial Secondary is the reference category).

Quantile Regression Results for Egypt

Vocational education graduates occupy the largest and fastest increasing share amongst low-waged workers in Egypt (reaching 37% in 2006), however there is a large degree of dispersion or inequality in wages among this group. More generally, the labor force in Egypt is not well described by constant returns to education for all workers. The average may provide a misleading impression as to the variation in the magnitude of the pay gap across the wage distribution as it implicitly assumes that the schooling-related earnings increment is constant across the wage distribution. Therefore, we attempt here to account for this by estimating incremental rates of return to secondary, higher institute, and university education based on quantile regressions.

Tables 21 and 22 and Figures 23 and 24 show these incremental returns for the non-government and government sectors respectively, calculated across years, gender and five quantiles of the earning distribution (10^{th}, 25^{th}, 50^{th}, 75^{th} and 90^{th}) . An analysis of the returns to education exhibits interesting dynamic trends. In general, the median percentiles tend to exhibit more similar rates of returns than at the tail of the distribution. The results show that in both 1998 and 2006, returns to vocational secondary school certificates versus preparatory certificates are very low (not exceeding 12%). This was particularly the case for female non-government workers for whom they were uniformly negative across quantiles in 2006. Returns to two year technical institutes actually fall across quantiles indicating that such education adds very little in terms of incremental earnings for higher earning groups. Conversely, returns to university education are clearly increasing across quantiles and are much higher in the non- government compared to the government sector. There is an anomaly in the case of female government worker in 2006, where returns to university education (compared to technical education suddenly turn negative at he 75^{th} and 90th percentiles.[11]

Table 21. Rates of return to education for males across earnings quintiles

Private Rate of Return	Female Non-Wage Worker 1998				
	10th	25th	50th	75th	90th
Vocational versus Preparatory	0.04	0.02	0.02	0.11	0.10
Two-year Technical Institute versus Vocational	0.20	0.08	0.12	0.04	-0.06
University versus Vocational	0.14	0.10	0.11	0.10	0.08
University versus Two-year Technical Institute	0.07	0.12	0.10	0.17	0.23

Private Rate of Return	Male Non-Wage Worker 2006				
	10th	25th	50th	75th	90th
Vocational versus Preparatory	0.00	0.02	0.04	0.08	0.08
Two-year Technical Institute versus Vocational	0.10	0.18	0.08	0.01	0.02
University versus Vocational	0.06	0.07	0.09	0.08	0.12
University versus Two-year Technical Institute	0.01	-0.03	0.09	0.16	0.22

Private Rate of Return	Female Non-Government Worker 1998				
	10th	25th	50th	75th	90th
Vocational versus Preparatory	-0.10	-0.03	0.13	0.06	0.11
Two-year Technical Institute versus Vocational	0.18	0.25	0.18	-0.02	-0.16
University versus Vocational	0.18	0.20	0.16	0.17	0.17
University versus Two-year Technical Institute	0.18	0.15	0.14	0.35	0.49

Private Rate of Return	Male Non-Government Worker 2006				
	10th	25th	50th	75th	90th
Vocational versus Preparatory	0.01	0.01	0.03	0.00	0.02
Two-year Technical Institute versus Vocational	0.05	0.06	0.07	0.09	0.04
University versus Vocational	0.09	0.11	0.12	0.15	0.20
University versus Two-year Technical Institute	0.13	0.17	0.16	0.20	0.35

Private Rate of Return	Male Government Worker 1998				
	10th	25th	50th	75th	90th
Vocational versus Preparatory	0.13	0.12	0.09	0.08	0.12
Two-year Technical Institute versus Vocational	0.16	0.16	0.14	0.10	0.10
University versus Vocational	0.11	0.11	0.12	0.12	0.12
University versus Two-year Technical Institute	0.06	0.05	0.10	0.13	0.14

Private Rate of Return	Male Government Worker 2006				
	10th	25th	50th	75th	90th
Vocational versus Preparatory	0.18	0.13	0.10	0.06	0.06
Two-year Technical Institute versus Vocational	0.16	0.13	0.08	0.07	0.12
University versus Vocational	0.10	0.10	0.09	0.10	0.16
University versus Two-year Technical Institute	0.03	0.08	0.10	0.13	0.20

Table 22. Rates of return to education for females across earning quantiles

Private Rate of Return	Male Non-Wage Worker 1998				
	10th	25th	50th	75th	90th
Vocational versus Preparatory	0.09	-0.42	-0.40	-0.52	-0.66
Two-year Technical Institute versus Vocational					
University versus Vocational	0.10	0.09	0.31	0.31	0.30
University versus Two-year Technical Institute					

Private Rate of Return	Female Non-Wage Worker 2006				
	10th	25th	50th	75th	90th
Vocational versus Preparatory	-0.03	0.01	0.04	0.06	0.21
Two-year Technical Institute versus Vocational	-0.39	0.02	0.00	-0.13	-0.40
University versus Vocational	0.09	0.05	0.08	0.03	-0.05
University versus Two-year Technical Institute	0.58	0.08	0.16	0.19	0.29

Note: Post secondary is dropped due to small cell size

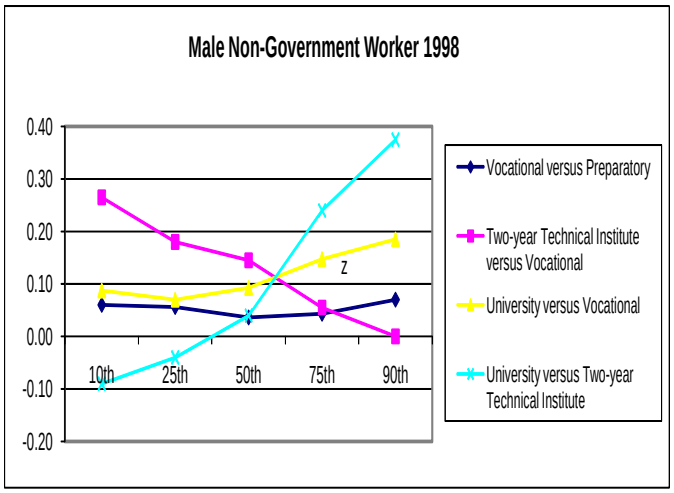
Private Rate of Return	Male Non-Government Worker 1998				
	10th	25th	50th	75th	90th
Vocational versus Preparatory	0.06	0.06	0.04	0.04	0.07
Two-year Technical Institute versus Vocational	0.27	0.18	0.15	0.06	0.05
University versus Vocational	0.09	0.07	0.09	0.15	0.19
University versus Two-year Technical Institute	-0.09	-0.04	0.04	0.24	0.38

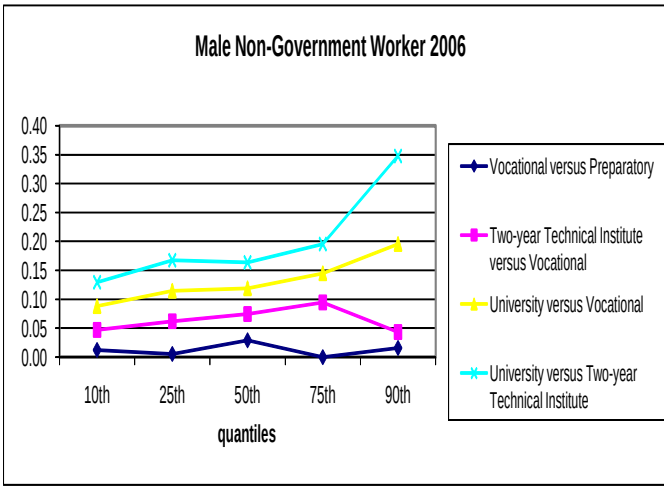
Private Rate of Return	Female Non-Government Worker 2006				
	10th	25th	50th	75th	90th
Vocational versus Preparatory	-0.09	-0.13	-0.07	-0.23	-0.15
Two-year Technical Institute versus Vocational	0.10	0.01	0.09	0.11	-0.02
University versus Vocational	0.12	0.13	0.14	0.18	0.19
University versus Two-year Technical Institute	0.15	0.25	0.19	0.24	0.40

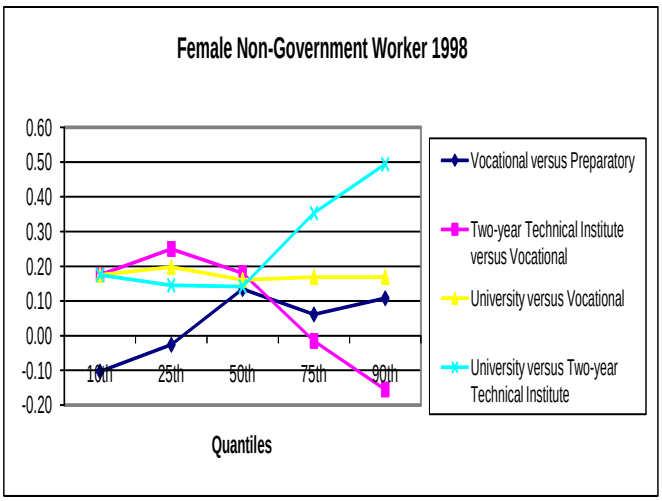
Private Rate of Return	Female Government Worker 1998				
	10th	25th	50th	75th	90th
Vocational versus Preparatory	0.09	0.02	0.05	0.01	0.03
Two-year Technical Institute versus Vocational	0.21	0.14	0.11	0.08	0.04
University versus Vocational	0.12	0.09	0.09	0.10	0.10
University versus Two-year Technical Institute	0.04	0.05	0.08	0.13	0.15

Private Rate of Return	Female Government Worker 2006				
	10th	25th	50th	75th	90th
Vocational versus Preparatory	0.22	0.12	0.09	0.21	0.12
Two-year Technical Institute versus Vocational	0.04	0.01	0.03	0.05	0.10
University versus Vocational	0.08	0.08	0.07	0.03	-0.04
University versus Two-year Technical Institute	0.13	0.14	0.11	0.01	-0.17

Figure 23: Incremental Rates of Return to Education on the Non-government Sector







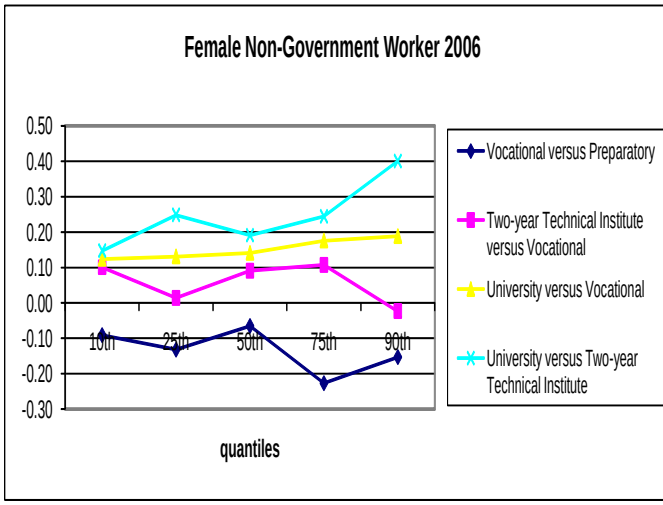
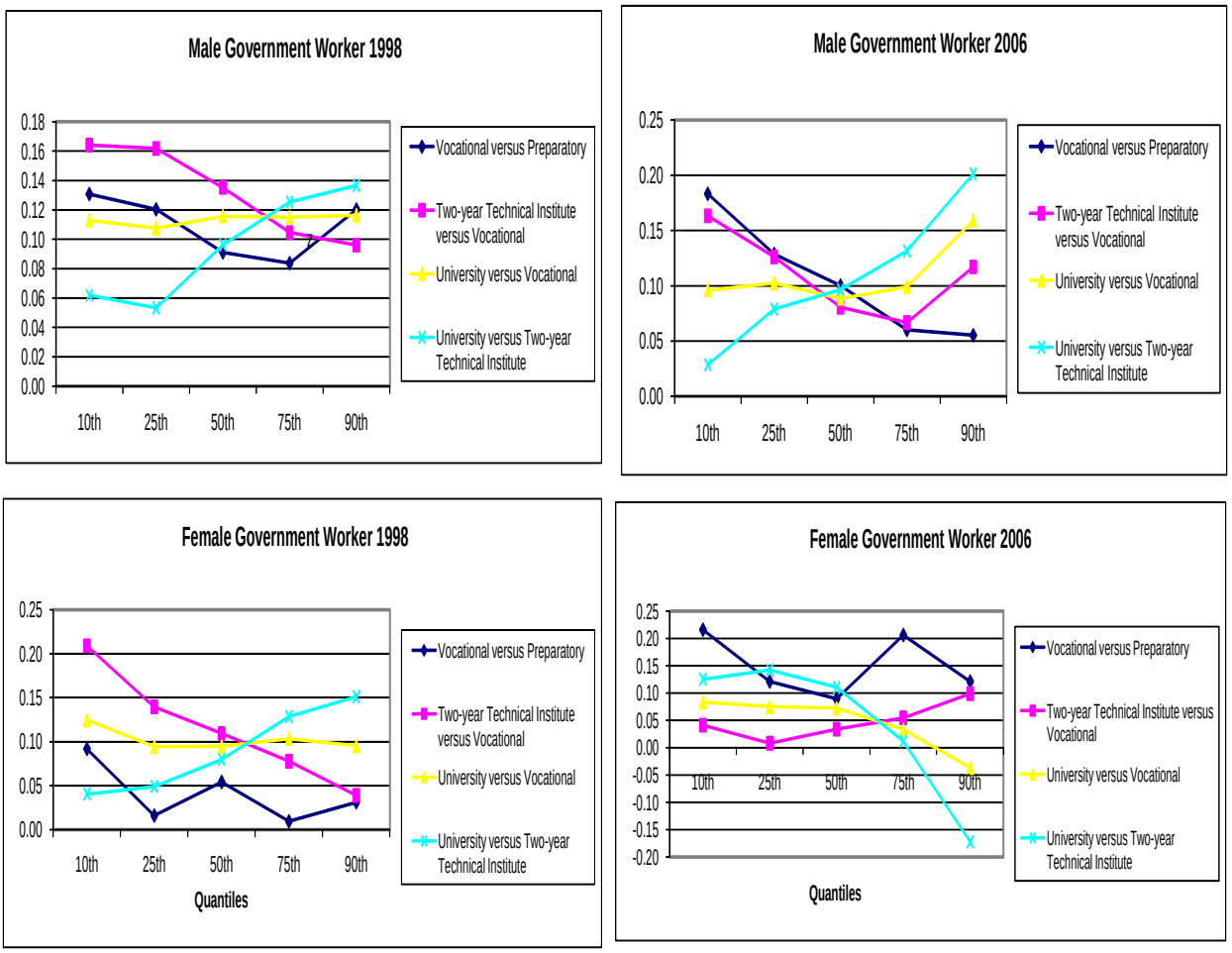


Figure 24: Incremental Rates of Return to education on the Government Sector



Conclusion:

We can conclude our discussion of the impact of returns to schooling on wages in Morocco and Egypt during the era of structural adjustment across the 1990s by pointing out at the two diverging trends. In Morocco wages became compressed and the differential between the private and the public sector generally narrowed. The biggest loss was recorded by general education graduates in the private sector. Conversely, all private sector employees gained in real terms. This is more true of men and women with more advanced technical or university degrees. Simultaneously, real wages in the public sector stagnated and thus recorded major losses in real terms. In general, the Egyptian experience saw a polarization of wages in the two sectors, with almost symmetrical trends between men and women.

The availability of more recent data for Egypt in 2006 allows for the more detailed analysis of returns of education in the new Millennium, as the country enters into an era of rapid trade liberalization. Also due to the presence of necessary identifying controls, one is able to correct these estimates for selection into different participation states and sectors of employment as well examine the returns across the entire earning distribution. The results show that in Egypt, returns to technical schooling drop over the wage distribution. The

earnings increment associated with vocational secondary and two year technical institutes is lower for those individuals whose unobservable characteristics place them at the top of the conditional wage distribution. These findings imply that technical education may have a negative impact upon within-group wage inequality as the spread of returns drops for higher educational levels. One explanation is that there is an interaction between schooling and ability, in which the least able can benefit more from their schooling and the pay gap between the more and less able shrinks for higher educational levels. On the other hand, returns to university education in comparison to technical degrees increase over the earning distribution, and particularly so for males in the non-government sector. For this group, university education has a decentralizing impact upon the distribution of earnings.

Overall, The socioeconomic changes witnessed by Morocco and Egypt since the mid 1980s have had an adverse impact on the achievements of vocational graduates. Family background remained one of the crucial determinants of occupational choice, especially in Egypt, meaning that children are still likely to replicate the occupational choices of their parents. As labor markets became more polarized, vocational graduates seem to have been the least favored group both in the government and private sector, mainly because of the declining role of the government sector and because of the private sector's preference for males with post-secondary education.

Although these results give credence to the view that education has generally been inequality reducing in Egypt, they nevertheless point to the persistent inferior, and even deteriorating, position of technical secondary and higher education graduates in the Egyptian labor market when compared to that of university graduates. As a result in Egypt, low-earners are twice as likely to be vocational graduates than they are to be illiterate . Further, the results pertaining to Egypt highlight interesting trends relating to gender and the evolving role of the private sector. While the public sector experienced general real wage declines as a result of frozen wages in the sector, it still possessed the ability to attract workers of both genders and all levels of educational attainment. In fact, our results show that the likelihood of either men or women working in the public sector increased with educational attainment. Interestingly however, the probability of either a man or a women being unemployed simultaneously increased with higher levels of education. This was shown to be especially the case for women.

The implication above is that both men and women are drawn to the public sector by "non-wage" forces and, in the era of liberalization, fewer and fewer workers are able to find opportunity there. The fact that women have experienced rising relative wages in such an environment seems to imply that they are likely at the front of job queues due to their lower wages but are only retained as long as economic prosperity persists. In times of economic stagnation or stasis, it is likely that all newly hired workers are released from employment. The ability of men, and certainly women, to find opportunity in the public sector is obviously declining as the size of the sector declines. Simultaneously, however, the ability of the private sector to absorb an increasingly educated workforce has been limited. This is illustrated by the reality that benefits for university educated women in the private sector

have been declining in the era of economic reform. Such returns for men were only shown to be stagnant. In Egypt as in Morocco, the private sector is least kind to the theoretically most capable and most educated workers. The implication is that the growth and development of private business and industry has not responded to the era of liberalization in these countries with investment. That this can take place during an era generally characterized as prosperous does not bode well for future returns to workers and should force analysts to question the reasons behind such stagnation.

Another possible explanation of these trends could be that a mechanism of path-dependency locks many workers into secondary job markets. Questions of opportunity costs may yield a somewhat rational underestimation of the value of education for those in the lower strata of educational attainment. This coupled with dismal wage prospects and structural barriers could serve to significantly reduce the return to vocational education, setting a vicious circle that inevitably co-opts younger generations. These dynamics deserve closer examination as ELMPAS 2006 data suggest that graduates of vocational school constitute the biggest and fastest growing group among new entrants in the labor market.

Again, the above is likely related to the unfortunate inability of the private sector to effectively respond to various forms of education and the perceived virtuousness of a "shrinking private sector" in an environment of liberalization. The apparent lag between "privatization" and "liberalization" in relation to "economic growth and development" has created a circumstance characterized largely by human suffering and inefficiency haing the ability to rival any seen in past eras of closely managed economies in either Egypt or Morocco. Secondary research might well be focused upon the causes of such lags and potential ways in which they might be eliminated.

Appendix (IV.A1): Multinomial Logit Estimates of Work Status Selection Equation (1998)

	Males								FEMALES							
	Non-Wage		Non-Government		Government		Unemployed		Non-Wage		Non-Government		Government		Unemployed	
Variable	prob	S.E	prob	S.E.	prob	S.E.	prob	S.E.	prob	S.E	prob	S.E.	prob	S.E.	prob	S.E.
Constant	-7.44 ***	0.44	-5.42 ***	0.39	-16 ***	0.59	-3.61 ***	0.61	-4.97 ***	0.66	-0.47	0.53	-15.74 ***	0.80	-5.30 ***	0.95
Age	0.47 ***	0.02	0.45 ***	0.02	0.80 ***	0.03	0.21 ***	0.04	0.10 ***	0.03	-0.10 ***	0.03	0.48 ***	0.04	0.15 **	0.07
$Age^2/1000$	-5.86 ***	0.31	-6.06 ***	0.29	-9.38 ***	0.36	-3.42 ***	0.52	-1.35 ***	0.00	1.20 ***	0.37	-5.34 ***	0.47	-4.11 ***	1.21
Educational attainment:																
Read & Write	-0.50 ***	0.18	-0.33 **	0.17	0.41 *	0.21	-0.04	0.31	-0.77 ***	0.28	-0.30	0.29	0.84 *	0.49	0.73	0.49
Primary	-0.51 ***	0.17	-0.33 **	0.16	0.78 ***	0.21	-0.12	0.27	-0.46 *	0.25	0.08	0.24	1.04 **	0.49	0.57	0.42
Preperatory	-0.43 *	0.23	-0.51 **	0.21	0.83 ***	0.26	0.10	0.34	-0.98 **	0.43	-0.15	0.33	2.56 ***	0.41	0.39	0.57
General Secondary	-0.90 **	0.37	-1.31 ***	0.37	0.60	0.39	0.14	0.68	-1.14	1.02	0.18	0.74	2.97 ***	0.55	1.65	1.06
Voc.Sec.Agricultue	-0.95 ***	0.30	-1.08 ***	0.28	1.46 ***	0.31	0.11	0.39	-29.8	1950238	0.86	0.75	5.08 ***	0.52	4.12 ***	0.38
Voc.Sec.Industrial	-0.99 ***	0.18	-0.74 ***	0.16	1.07 ***	0.21	0.67 ***	0.23	-0.83	0.60	1.15 ***	0.31	4.63 ***	0.37	3.73 ***	0.30
Voc.Sec.Commercial & Other	-1.19 ***	0.22	-1.13 ***	0.19	1.62 ***	0.22	0.38	0.27	-0.53 *	0.28	1.18 ***	0.19	5.28 ***	0.29	3.39 ***	0.27
Higher Technical Institute	-1.35 ***	0.37	-2.30 ***	0.40	2.20 ***	0.32	0.11	0.47	-29.4	1800147	1.15 **	0.55	7.24 ***	0.36	3.09 ***	0.51
University and Above	-1.18 ***	0.20	-1.11 ***	0.18	1.86 ***	0.20	0.38	0.28	-0.16	0.44	2.32 ***	0.22	6.62 ***	0.31	3.96 ***	0.31
Household-related variables:																
Father's education level intermediate or above	0.12	0.23	0.22	0.20	-0.06	0.21	-0.32	0.31	-0.04	0.37	-0.57 **	0.23	-0.34 **	0.15	-0.55 ***	0.21
Mother's education level intermediate or above	0.38	0.48	0.18	0.45	-0.22	0.45	1.04 *	0.56	0.18	0.68	-0.78 *	0.44	-0.70 ***	0.24	-0.71 *	0.43
Father's occupation self-employed or an employer	1.70 ***	0.13	0.26 **	0.13	0.67 ***	0.14	-1.20 ***	0.29	0.16	0.15	-0.95 ***	0.22	-0.58 ***	0.14	-0.31 *	0.18
Regions:																
Alex	-0.11	0.18	-0.06	0.16	-0.21	0.18	0.34	0.23	-0.29	0.35	-0.55 ***	0.19	0.18	0.18	0.07	0.22
Rural Upper Egypt	0.43 **	0.18	-0.09	0.16	0.77 ***	0.19	-0.02	0.26	0.64 **	0.26	-1.23 ***	0.24	0.30	0.29	-0.16	0.25
Urban Upper Egypt	0.49 ***	0.17	-0.12	0.16	1.09 ***	0.17	0.30	0.23	0.53 **	0.26	-1.07 ***	0.22	1.29 ***	0.17	0.01	0.21
Rural Lower Egypt	0.54 ***	0.17	-0.02	0.15	1.03 ***	0.17	0.64 ***	0.22	0.87 ***	0.24	-1.03 ***	0.20	0.78 ***	0.19	0.36 *	0.19
Urban Lower Egypt	0.37 **	0.17	-0.18	0.15	0.55 ***	0.17	0.30	0.23	0.51 *	0.27	-0.57 ***	0.19	0.94 ***	0.17	0.69 ***	0.19
Log Likelihood	-7318.4099								-4030.942							
Goodness of fit- c2	3243.95								3859.11							
Sample Size	6099								6298							

Note: Standard errors are in parenthethis. * denotes significance at the 10 percent level, ** denotes significance at the five percent level and *** denotes significance at the 1 percent level

Source: Author's calculations based on ELMS 1998 and ELMPS 2006

Appendix (IV.A2): Multinomial Logit Estimates of Work Status Selection Equation (2006)

	Males								FEMALES							
	Non-Wage		Non-Government		Government		Unemployed		Non-Wage		Non-Government		Government		Unemployed	
Variable	prob	S.E	prob	S.E.	prob	S.E.	prob	S.E.	prob	S.E	prob	S.E.	prob	S.E.	prob	S.E.
Constant	-7.28 ***	0.38	-6.41 ***	0.36	-17.68 ***	0.53	-4.11 ***	0.67	-5.39 ***	0.38	-1.92 ***	0.43	-16.00 ***	0.60	-8.88 ***	0.93
Age	0.49 ***	0.02	0.53 ***	0.02	0.89 ***	0.03	0.23 ***	0.04	0.14 ***	0.02	-0.01	0.02	0.49 ***	0.03	0.27 ***	0.06
Age^2	-6.34 ***	0.26	-7.22 ***	0.26	-10.51 ***	0.32	-4.19 ***	0.60	-1.68 ***	0.23	-0.02	0.31	-5.24 ***	0.36	-5.62 ***	1.07
Educational attainment:																
Read & Write	0.01	0.17	0.15	0.17	0.50 **	0.20	0.58	0.43	-0.80 ***	0.18	0.01	0.25	0.75 **	0.38	-28.48	1622634
Primary	-0.26 *	0.14	-0.04	0.14	0.66 ***	0.17	0.05	0.35	-0.39 ***	0.13	-0.03	0.20	-0.32	0.53	1.07 *	0.58
Preperatory	-0.60 ***	0.18	-0.48 ***	0.17	0.49 **	0.21	0.08	0.40	-1.03 ***	0.20	-0.23	0.26	1.11 ***	0.38	1.17 *	0.65
General Secondary	-1.06 ***	0.28	-1.26 ***	0.29	-0.14	0.36	0.38	0.56	-1.34 ***	0.47	0.22	0.43	1.80 ***	0.50	1.87 **	0.83
Voc.Sec.Agricultue	-0.36	0.22	-0.39 **	0.21	1.48 ***	0.25	1.15 ***	0.37	-1.04 **	0.47	0.28	0.44	3.99 ***	0.32	3.80 ***	0.48
Voc.Sec.Industrial	-0.38 ***	0.14	-0.15	0.14	1.25 ***	0.17	1.50 ***	0.28	-0.79 ***	0.19	0.34 *	0.21	3.31 ***	0.25	3.95 ***	0.43
Voc.Sec.Commercial & Other	-0.61 ***	0.16	-0.37 **	0.16	1.64 ***	0.18	0.98 ***	0.31	-0.78 ***	0.13	0.90 ***	0.14	4.04 ***	0.19	3.95 ***	0.42
Higher Technical Institute	-0.69 **	0.24	-0.31	0.23	1.77 ***	0.25	1.67 ***	0.37	-1.14 ***	0.35	0.78 ***	0.24	4.48 ***	0.22	4.31 ***	0.44
University and Above	-1.02 ***	0.16	-0.75 ***	0.15	1.90 ***	0.17	2.04 ***	0.29	-1.44 ***	0.29	1.56 ***	0.16	5.37 ***	0.20	4.76 ***	0.42
Household-related variables:																
Father's education level intermediate or above	-0.11	0.19	-0.13	0.17	-0.10	0.18	0.00	0.23	-0.25	0.23	-0.78 ***	0.18	-0.43 ***	0.12	-0.44 ***	0.15
Mother's education level intermediate or above	0.77 *	0.41	0.89 **	0.39	0.65 *	0.40	-0.72	0.60	0.10	0.42	0.42 *	0.24	0.15	0.17	-0.46 **	0.24
Father's occupation self-employed or an employer	0.94 ***	0.12	0.02	0.12	0.26 **	0.12	-0.49 *	0.26	0.49 ***	0.07	-0.70 ***	0.14	-0.29 ***	0.10	-0.71 ***	0.15
Regions:																
Alex	-0.01	0.17	0.04	0.15	-0.33 *	0.18	0.11	0.22	-0.02	0.26	-0.10	0.14	0.50 ***	0.15	0.24	0.20
Rural Upper Egypt	0.80 ***	0.15	-0.14	0.14	0.86 ***	0.16	-0.84 ***	0.23	2.10 ***	0.19	-1.22 ***	0.18	0.63 ***	0.19	0.19	0.20
Urban Upper Egypt	0.37 **	0.15	-0.29 **	0.14	0.61 ***	0.16	-0.19	0.20	1.30 ***	0.20	-0.85 ***	0.16	1.08 ***	0.13	0.34 *	0.18
Rural Lower Egypt	0.69 ***	0.15	-0.11	0.14	0.89 ***	0.16	-0.22	0.20	0.73 ***	0.19	-0.62 ***	0.14	0.82 ***	0.15	0.71 ***	0.16
Urban Lower Egypt	0.49 ***	0.16	-0.26 *	0.15	0.26	0.17	-0.08	0.22	0.26	0.23	-0.43 ***	0.15	0.86 ***	0.14	0.97 ***	0.17
Log Likelihood	-11753.992								-8447.5102							
Goodness of fit- c2	4904.67								4861.61							
Sample Size	10132								10501							

Note: Standard errors are in parenthethis. * denotes significance at the 10 percent level, ** denotes significance at the five percent level and *** denotes significance at the 1 percent level

Source: Author's calculations based on ELMS 1998 and ELMPS 2006

V. The Effect of Trade Reform on Wages in Egypt and Morocco[12]

The purpose of this chapter is to investigate the impact of trade reform upon wages in Egypt and Morocco. Both Egypt and Morocco went through periods of rapid trade liberalization since the mid-1980s. Studies that investigate the effect of trade reform on wages in the Middle East and North Africa region in particular, and in developing countries in general are fairly limited. To date, no such study has been conducted for Egypt, and only one study for Morocco (Curie and Harrison 1997) studied the early period of liberalization in the 1980s using data at the firm level. Given the nature of their data however, they were not able to control for individual specific characteristics that impact wages, and hence could not separate the effect of the reduction in trade barriers on wages from that impact caused by education, experience, etc.

In this chapter, we will utilize available labor market data in both Egypt and Morocco which has rich information on worker characteristics that allow us to separate these effects for each worker, and also to account for the effect of other characteristics such as gender, region and sector of employment. Besides representing the first attempt to directly estimate the impact of trade liberalization measures on wage and non-wage outcomes in the Moroccan and Egyptian labor market, our study will go beyond previous literature by merging labor market survey data at the two-digit industry level with trade measures that capture export promotion and import penetration, as well as direct policy change relating to reduction of average tariffs.

Following a brief review of the recent empirical literature on effect of trade liberalization on wages in developing countries this section will then present the main stylized facts on trade openness and tariff reduction during the era of trade reform in Egypt and Morocco. This will be followed by a description of the labor market data used and the summary statistics underlying the estimation of inter-industry wage differentials in both countries. The empirical methodology and results are then presented in three sections: for all workers in manufacturing, for public versus private sector, and finally, by gender (male versus female). The section will end by summarizing the main results of the

[12] This Chapter is authored by Mona Said and Sherine Al-Azzawi.

estimation and highlighting the differential impact of trade openness and declining protection in Egypt and Morocco.

Previous Empirical Studies on the Effect of Trade Liberalization on Wages

Several recent studies have attempted to test the relationship between trade reform, employment and relative wages for both developing and advanced economies. Most of these, however, as noted in Chapter I, had the drawback of relying on data that did not include information relating to worker characteristics. Feliciano (2001) is one of the first studies that used individual-level data to study the impact of trade reform on wages. She follows a two-step procedure, first estimating the wage equation for each individual-industry observation, as a function of individual characteristics such as years of schooling, experience, marital status, gender, enterprise (public/private) and industry. Next, she estimated the relationship between this calculated industry wage differential and measures of industry protection levels (tariffs and license coverage, as well as trade openness, producer prices and import penetration). Her results indicate that reductions in tariffs, changes in producer prices and import penetration did not have a significant impact upon industry wage differentials. She found that the reduction in import licenses decreased the relative wages of workers in reformed manufacturing industries by 2%. Her results also indicate no significant impact of trade reform on employment or hours of work. Her evidence also suggest that trade reform was associated with greater wage dispersion and a decrease in the relative wages of skilled workers.

Attanasio, Goldberg and Pavcnik (2004) investigated the effects of tariff reductions in Columbia in the 1980s and 1990s on wage inequality. They also use a two stage estimation techniques similar to that of Feliciano in order to calculate the effect of tariff reductions on industry wage premiums. Their results indicate a positive and significant effect of both tariff levels and first differences in tariffs on industry wage premiums. These results also point to an economically significant effect with a 50% reduction in tariffs being associated with 6% decrease in the industry wage premium in that sector. They also find that the sectors that experienced the highest reduction in tariff protection and hence in industry wage premiums were also the same sectors with the highest share of unskilled workers and the lowest wages.

Dutta (2007) performed a similar analysis for wages in India's manufacturing sector following large scale trade reforms in the 1980s and 1990s. She calculated industry wage premiums after accounting for observable worker characteristics and potential selection bias, as the difference between the wage received by the average worker in a given industry and that received by the average worker in the economy. She then uses these wage premiums to determine the effect of trade reform. She finds a positive and significant effect of tariffs upon wage premia, and of changes in tariffs on changes in wage premia. This provides evidence that wages declined significantly following the reduction in protection levels in the affected industries. Similarly, Acosta and Gasparini (2007) investigate the effects of capital accumulation and trade liberalization upon rising wage inequality in Argentina during the 1990s. They find that capital accumulation's impact upon rising inequality was larger than the trade liberalization effect as measured by import penetration. However, they do not use a direct measure of trade liberalization as embodied by tariff rates. Import penetration rates and other trade flow measures are arguably endogenous since they depend on factor costs, and hence most studies cited above rely on tariffs and changes in tariffs as the main measure of trade policy changes while import and export measures are used in robustness checks regressions with tariffs.

Other studies have relied on comparing the degree of wage inequality and employment effects on various groups of workers using a "before-after" approach, not controlling specifically for the effect of trade reform (Robertson (1997), Green, Dickerson and Arbache (2001), El-Hamidi (2008) to name

a few). The obvious drawback to these studies is that many other policy changes typically accompany trade reform such public sector downsizing, privatization, structural adjustment, etc. Unless direct measures of trade reform are included in the analysis, clear cut conclusions about the effects of *trade reform* per se, cannot be made with any degree of confidence.

One important way in which the present study contributes and extends the above literature is by merging the labor survey data on wages and worker characteristics with trade data at the two-digit industry level for both countries. This allows for the direct inclusion of adequate measures of trade openness and protection at the industry level in the wage regressions. In what follows, a brief description of the Moroccan and Egyptian data on trade openness and reform is presented.

Trade Reform and Data in Morocco and Egypt

Morocco has gone through several phases of trade liberalization. During the 1980s, Morocco's tariffs were drastically reduced in many industries, with the maximum tariff reduced from 165% to 45% between 1984 and 1990. The average tariffs however, only declined slightly, falling from 32.5% to 28.6% over that period (Curie and Harrison 1997). In the early 1990s, many quantitative restrictions were eliminated and converted into tariffs, which increased the average tariff rate for manufacturing products from 28.6% in 1990 to 75% in 1993. These rates fell once again to 24% by 1997, but have been rising slightly in the most recent few years. Table 23 shows data on tariff reductions in the 1984-1990 period and Table 25 shows data from 1993 onwards.

Table 23: Trade Reform in Morocco 1984-1990

		Tariffs		Imports/(Q+M-X)	Exports/Output	TOI
Code	Description	1984	1990	1990	1990	
10	Food Products	23	32.8	20.6	29.2	48
11	Other food Products	49.7	32.3			
12	Beverage and Tobacco	90.6	36.6	5.7	0.8	7
13	Textiles	52.9	35.6	24.0	17.1	43
14	Clothing	70.5	44.7	3.3	67.6	69
15	Leather and Shoes	43	31.7			
16	Wood Products	26.6	25.8	31.4	9.0	51
17	Paper and printing	17.4	25.6	26.1	11.0	42
18	Mineral products	23.9	29.1	10.1	3.1	14
19	Basic Metals	9.3	13.1	67.8	28.9	178
20	Metallic Products	31.7	32.6	24.6	3.1	35
21	Machineryand Equipment	11.5	16.3	84.8	11.7	503
22	Transport Materials	15.9	22.8	57.4	7.2	132
23	Electronics	21.6	27.5	52.4	29.8	107
24	Precision Equipments	22.9	26.3	80.0	12.2	363
25	Chemical Products	21.3	20.8			
26	Rubber and Plastics	33	36.3	25.5	7.9	39
27	Other Industrial	55.3	39.0	99.1	97.0	409

Source: Tariff data is from Curie and Harrison (1997), Exports and Imports data are from the World Bank, Output is from the UN Statistical Division. Q=output, M=Imports, X=Exports. TOI=(X+M)/Q.

Table 24: Trade Reform in Morocco 1993-2002

ISIC.V3	DESCRIPTION	Tariffs 1993	Tariffs 1997	Tariffs 2002	Imports/ (Q+M-X) 1998	Exports/ Output	TOI
15	MANUFACTURE OF FOOD PRODUCTS AND BEVERAGES	85.4	42.1	50.1	10.7	16.2	374
16	MANUFACTURE OF TOBACCO PRODUCTS				9.7	0.1	N.A
17	MANUFACTURE OF TEXTILES	92.5	29.5	37.1	72.2	46.0	238
18	MANUFACTURE OF WEARING APPAREL; DRE	99.9	34.2	49.5	-25.8	147.6	16
19	TANNING AND DRESSING OF LEATHER; MA	77.6	31.4	46.1	66.4	81.8	137
20	MANUFACTURE OF WOOD AND OF PRODUCTS	92.5	32.1	46.7	61.0	28.7	375
21	MANUFACTURE OF PAPER AND PAPER PROD	93.4	32.9	47.3	24.0	6.5	1104
22	PUBLISHING, PRINTING AND REPRODUCTI	90.5	31.9	44.8	39.1	5.2	N.A
23	MANUFACTURE OF COKE, REFINED PETROL				5.1	0.0	N.A
24	MANUFACTURE OF CHEMICALS AND CHEMIC	58.3	18.9	30.6	46.6	40.9	189
25	MANUFACTURE OF RUBBER AND PLASTICS	87.2	31.8	44.1	37.8	7.1	1146
26	MANUFACTURE OF OTHER NON-METALLIC M	74.0	28.0	41.8	8.9	4.8	1059
27	MANUFACTURE OF BASIC METALS	33.7	9.4	29.8	53.8	20.2	413
28	MANUFACTURE OF FABRICATED METAL PRO	81.8	27.3	36.1	37.8	3.3	2209
29	MANUFACTURE OF MACHINERY AND EQUIPM	55.1	17.7	20.2	87.1	10.4	1030
30	MANUFACTURE OF OFFICE, ACCOUNTING A	63.1	11.0	NA	NA	NA	0
31	MANUFACTURE OF ELECTRICAL MACHINERY	73.3	20.6	30.3	52.3	35.7	231
32	MANUFACTURE OF RADIO, TELEVISION AN	54.5	10.5	16.0	211.2	426.9	N.A
33	MANUFACTURE OF MEDICAL, PRECISION A	65.3	13.5	6.1	78.6	53.7	158
34	MANUFACTURE OF MOTOR VEHICLES, TRAI	57.8	17.3	27.8	54.3	5.4	1530
35	MANUFACTURE OF OTHER TRANSPORT EQUI	65.3	14.2	14.0	NA	NA	N.A
36	MANUFACTURE OF FURNITURE; MANUFACTU	97.5	33.9	44.0	49.7	14.6	642

Source: Tariff data is from Khalid Sekkat, based on data from the WTO, Exports and Imports data are from the World Bank, Output is from the UN Statistical Division (UNSD), missing values for ISIC codes 16, 22,23 and 32 were calculated based on data from UNIDO on consumption = output+imports-exports. . Q=output, M=Imports, X=Exports. TOI=(X+M)/Q.

In the case of Egypt, despite concerted efforts to liberalize a highly restrictive trade regime since the early nineties, Egypt's tariffs remain relatively high, especially when compared to other developing with large internal markets and diversified industrial economies. Most manufacturing sectors continue to be highly protected mainly via a high and escalating tariff structure. Following WTO accession in 1995, Egypt commitments have been more or less to bind tariff rates at levels that in many cases have exceeded existing levels. While 98% of Egypt's tariff lines are bound, the average bound rate fell from 45% in 1998 to 38.6% in 2005. (WTO, 2005)

To further open the Egyptian economy, the new cabinet of 2004 reduced average un-weighted tariff rate from 27% to 20% and rationalized the tariff structure. The number of products subject to non-tariff barriers were also substantially reduced. After the 2004 reform it is evident that both nominal and effective protection has declined for almost all manufacturing sectors with most of trade liberalization efforts concentrated in the area of intermediate and capital goods. Table 25 shows data on tariff reductions over the period 1997-2005. The average tariff declined was from 18.6% to 12.3% over this period. The biggest declines were in Motorized Vehicle Manufacturing, rubber products and paper manufacturing.

Table 25. Measures of Trade Reform in Egypt 1997-2005

ISICR 3 `		1997			2005			Change 1997-2005		
		wghtd avg tariff	Import_penet	Export_ orient	wghtd avg tariff	Import _penet	Export_ orient	tarrif	import penetration	export orientation
15	Food and Beverage Manufacturing	21.89	26.88	3.60	12.62	25.02	11.48	9.26	-1.86	7.88
16	Tobacco Manufacturing	19.92	6.37	0.01	21.72	3.96	0.04	-1.80	-2.41	0.04
17	Textiles Manufacturing	24.03	14.76	32.31	13.87	10.54	19.74	10.16	-4.22	-12.57
18	Garment Manufacturing	39.71	1.73	30.29	37.00	2.76	19.96	2.71	1.03	-10.32
19	Leater Goods Manufacturing	37.15	19.89	32.30	30.76	33.19	26.18	6.39	13.30	-6.12
20	Wood Product (except Furniture) Manufacturing	11.10	91.76	6.00	5.85	92.40	9.27	5.24	0.64	3.27
21	Paper Manufacturing	16.94	52.98	2.43	5.11	34.63	6.53	11.83	-18.36	4.10
22	Publishing and Printing Manufacturing	8.94	11.82	3.35	7.62	17.15	2.59	1.32	5.33	-0.76
23	Coke and Petroleum Products Manufacturing	16.30	1.86	1.42	2.52	33.03	49.25	13.78	31.17	47.83
24	Chemical Product Manufacturing	11.02	46.47	11.20	9.44	47.41	16.14	1.58	0.95	4.94
25	Rubber Product Manufacturing	26.49	41.29	11.99	11.46	31.44	8.58	15.03	-9.86	-3.41
26	Non-metallic Mineral Manufacturing	19.11	14.89	8.82	15.93	9.45	22.05	3.18	-5.44	13.23
27	Basic Metal Manufacturing	10.64	44.77	15.41	3.03	27.34	15.55	7.61	-17.44	0.14
28	Metalic Product (Except Machinery and Equipment) Manufacturing	23.36	40.60	10.71	13.48	41.16	24.58	9.88	0.55	13.87
29	Machinery and Equipment (Others) Manufacturing	10.48	67.88	1.50	7.81	58.34	4.69	2.67	-9.54	3.19
30	Office Equipment and Computer Manufacturing Manufacturing	4.73	100.11		0.22	95.27	7.53	4.51	-4.83	7.53
31	Electrical Equipment (Others) Manufacturing	18.36	48.06	1.68	8.20	39.28	5.02	10.16	-8.78	3.33
32	Radio, Television and Communication Equipment Manufacturing	8.32	63.70	0.44	1.30	60.87	3.00	7.02	-2.83	2.56
33	Medical Equipment Manufacturing	7.67	85.41	2.78	4.98	81.02	3.48	2.69	-4.39	0.70
34	Motorized Vehicle Manufacturing	39.80	50.54	4.14	23.38	59.43	6.16	16.42	8.88	2.02
35	Other Transport Equipment Manufacturing	12.28	45.80	0.41	13.55	40.12	5.96	-1.27	-5.68	5.54
36	Furniture Manufacturing	20.91	53.25	33.47	20.47	74.99	48.41	0.44	21.74	14.94
	average	18.60	42.31	10.20	12.29	41.76	14.37	6.31	-0.55	4.17

Source: Authors' calculation based on data provided by the Egyptian Ministry of Trade and Industry

Table 25 also presents information on the other two trade openness indices used in the following empirical analysis in the paper, namely import penetration, imports/(Output+imports-exports) and export orientation (exports/output). For Egypt, in general, the import penetration index did not change substantially or declined for other industries over this period, however, it has increased for coke and petroleum products, leather goods, motorized vehicles and furniture manufacturing. The most notable is the increase in export promotion index from an average of 10.2 to 14.4. The largest increases were in Coke and Petroleum, non-metallic minerals and metallic products. Moreover export promotion also increased in food and beverage, furniture manufacturing followed by office equipment and chemical industries.

Labor Market Data and Summary Statistics

Our analysis of Morocco utilizes the Morocco Living Standard Measurement Studies (MLSMS) of 1990/1991 and 1998/1999. This survey analyzed 3,349 households in 1990/91, and 5,129 households in 1998/1999. Both surveys include data on industry of employment, education level, employment status, economic activity, and enough information to calculate weekly wages. [13] We restrict our sample to wage workers employed in manufacturing, aged 16 to 64, with wages in 1990/91 inflated to 1998/99 values using the CPI.

The analysis is performed by linking the individual employment data to data relating to tariff levels, import penetration and export orientation at the industry level. In the 1990/91 MLSMS, the Moroccan Nomenclature of economic activities (Nomenclature Marocaine des Activities Economique or NMAE) is used to classify the economic activity of each worker. The survey only provides this at the two-digit level. In 1998/99, however, ISIC Review 3, 4-digit classification codes are used. Since the 1990/91 data is at a much higher level of aggregation, there was no way to construct a reasonable concordance between the two years without making too many unfounded assumptions. We therefore use the NMAE system for 1990/91, and aggregate the ISIC Review 3 data for 1998/99 up to the 2-digit level, in order to link it with available trade data.

Data on tariffs for 1984 and 1990 were obtained from Curie and Harrison (1997). Tariff data for all later years were kindly provided to us by Khalid Sekkat, and derived from the WTO schedule of tariffs. Data on exports and imports was obtained from the World Bank and aggregated up to the appropriate level for each survey. Data on output was obtained from the UN Statistical Division. For all these variables we use data lagged one year in order to avoid any endogeniety problems.

As for Egypt, the empirical analysis is based on the recent Egypt Labor Market Panel Survey (ELMPS06), a follow-up survey to the Egypt Labor Market Survey of 1998 (ELMS 98) that was carried out by the Economic Research Forum (ERF) in cooperation with CAPMAS[14]. ELMS 1998 was carried out on a nationally-representative sample of 4,816 households. The ELMPS 2006 sample consists of a total of 8,349 households3. The data provide information on monthly earnings, worker characteristics e.g., age, education, gender, marital status, occupation, industry and sector of employment as well as region of residence. The working sample is restricted to manufacturing sector workers, between the ages of 15 and 65, who report positive monthly

[13] We used weekly wages in Morocco since the number of daily working hours in 1999 was not available. Both surveys provided data on weekly wages.

[14] For more details, see Barsoum, G. 2006. Egypt Labor Market Panel Survey 2006, Final Report. The Population Council, Cairo,. Egypt.

earnings. Hourly real wages are calculated as the sum of wages earned in the reference month from primary jobs, adjusted for average number of work days per month and average hours per day. For comparability purposes, wages of 1998 are inflated to 2006 Egyptian pounds using the consumer price index (inflation factor is 1.43 from 1998 to 2006).

Table 26 provides sample statistics for all the variables used in the regressions for 1990/91 and 1998/99 for Morocco. Many observations had missing values for the economic activity variable and therefore could not be linked to the trade data. Thus the number of observations has decreased considerably, especially for 1990/91. In the regressions, we experiment with pooling the data from both years to see if there are any significant differences. The sample in both years looks very similar, except the share of females increased from 245 to 32% of sample. This also coincided with a decrease in the upper secondary, and increase in lower education levels in the sample. This was also a period of greater trade openness in Morocco as reflected in the export orientation index. The tariff reduction and import penetration indices, hardly change.

Table 26 Sample Statistics of variables used in the regressions, Morocco 1990/1991 and 1998/1999

	1990/91			1998/99		
Variable	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Tariff	297	32.78	6.98	784	31.38	7.29
Import penetration	234	21.90	17.91	781	20.51	39.91
Export orientation	234	22.87	24.07	781	68.31	63.76
TOI	234	63.26	87.31	781	120.17	82.79
Male	297	0.76	0.43	884	0.68	0.47
Age	297	30.94	10.42	884	30.96	10.57
Agesqr	297	1065.38	741.53	884	1070.25	730.77
Sector of employment (omitted: private)						
Private Wage	297	0.89	0.32	884	0.91	0.28
Public enterprise	297	0.08	0.28	884	0.06	0.24
Government	297	0.01	0.11	884	0.01	0.10
Education levels: (omitted: illiterate)						
Read &Write	297	0.28	0.45	871	0.36	0.48
Primary	297	0.16	0.36	871	0.22	0.42
Lower Secondary	297	0.07	0.26	871	0.08	0.28
Technical	297	0.05	0.23	871	0.01	0.09
Upper Secondary	297	0.01	0.08	871	0.04	0.20
University	297	0.02	0.15	871	0.02	0.13

Table 27 below presents summary descriptive statistics of variables used in regressions for Egypt. As noted in the introduction, the sample of estimation is limited to wage workers currently employed in the manufacturing sector. All figures are properly weighted to reflect the population distribution. A comparison of 1998 and 2006 figures reveals that on average, real hourly wages increased, whereas all three measures of job quality recorded a marked

decline over this period. As for the explanatory variables, the share of public enterprises in the manufacturing sector in Egypt has declined from 30% to 20%, and this shift coincided with a slight decline in average years of experience (from 18 to 16.8), a more notable reduction in the share of workers with a university degree (from 8% to 12%), and a substantial increase in the proportion of workers with a vocational secondary degree (from 26.5% to 35%). Figures in both years reflect a high concentration of manufacturing activity in greater Cairo and rural lower Egypt, together accounting for over 50% of employment in the sector. Finally, the average figures for trade related and other industry variables indicate a 6% decline in average tariffs, a 15% increase in export orientation and hardly any change in import penetration. Manufacturing industries also on average become more feminized, unionized and staffed by an increasing portion of white collar and more skilled (secondary degrees and above) workers.

Table 27 : Means and Standard Deviation of Variables Used in Regressions in Egypt

	1998			2006		
Variable	**No. Obs.**	**Mean**	**Std. Dev.**	**No. Obs.**	**Mean**	**Std. Dev.**
LnRHrWag	836	0.25	0.66	1189	0.73	0.78
Percent female	1027	0.11	0.14	1533	0.14	0.14
pub_gov	1027	0.29	0.45	1533	0.19	0.39
Priv	1027	0.71	0.45	1533	0.81	0.39
Expr	1027	18.14	13.02	1533	16.81	12.16
Exprsq	1027	498.40	585.24	1533	430.22	542.66
Illiterate	1027	0.20	0.40	1533	0.18	0.38
Read/Write	1027	0.15	0.35	1533	0.08	0.28
Primary	1027	0.17	0.37	1533	0.14	0.35
Preparatory	1027	0.08	0.27	1533	0.07	0.26
GeneralSec~y	1027	0.01	0.12	1533	0.01	0.10
Vocational~c	1027	0.27	0.44	1533	0.35	0.48
PostSecond~y	1027	0.05	0.21	1533	0.05	0.21
univabove	1027	0.08	0.27	1533	0.12	0.32
Greater Cairo	1027	0.28	0.45	1533	0.26	0.44
Alex	1027	0.12	0.32	1533	0.13	0.33
Rur. Up. Egypt	1027	0.15	0.36	1533	0.16	0.36
Urb. Up. Egypt	1027	0.05	0.22	1533	0.05	0.22
Rur. L. Egypt	1027	0.27	0.44	1533	0.28	0.45
Urb. L. Egypt	1027	0.14	0.34	1533	0.13	0.33
Tariff	1027	0.19	0.10	1533	0.13	0.09
imp_penet2	1027	0.40	0.26	1533	0.39	0.25
export_ori~t	1027	0.10	0.12	1533	0.15	0.14
chng_tariff	--	--	--	1533	-0.06	0.05
chng_imp_p~2	--	--	--	1533	0.00	0.12
chng_expor~t	--	--	--	1533	0.04	0.12

Empirical Methodology and Results

We use the inter-industry wage differentials approach to determine whether workers in less heavily protected industries have lower wages than workers of similar observable characteristics in the more heavily protected industries. Let $i=1,2,3\ldots I_j$ index workers in industry j. We regress the log of worker i's wages at time t ($\ln(w_{ijt})$) on a vector of worker characteristics H_{ijt} (age, age squared, gender, education indicators, sector indicators, and region of residence) and a set of industry

indicators (P_{ijt}) reflecting the degree of international trade and protection. We estimate the following equation:

$$\ln(w_{ijt}) = H_{ijt}\beta_H + P_{ijt}\beta_P + \varepsilon_{ijt} \quad (1)$$

for $i = 1,...I_J$; $j = 1,...,J$ and $t =$ 1991 or 1998 for Morocco; and 1998 or 2006 for Egypt. The results of this operation can be seen below in Table 28.

Table 28: Estimation of the Effect of trade and protection on wages in Morocco 1990/91 & 1998/99 : All Manufacturing Workers

	1991				1999	
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Tariff	-1.518	-0.648	-0.955**	-0.562	-0.468	-0.036
	(1.294)	(1.475)	(0.411)	(0.439)	(0.489)	(0.563)
Change in tariff		0.512		0.760**	0.778**	0.643**
		(0.418)		(0.307)	(0.310)	(0.322)
Import penetration	-0.203	-0.143	-0.324***	-0.312***	-0.278**	0.052
	(0.417)	(0.420)	(0.082)	(0.082)	(0.116)	(0.244)
Change in Import penetration						-0.535
						(0.348)
Export orientation	0.128	0.109	-0.035	0.035	0.110	-0.163
	(0.284)	(0.285)	(0.050)	(0.058)	(0.186)	(0.257)
Change in Export orientation					-0.097	0.299
					-0.468	(0.347)
Female	-0.504***	-0.490***	-0.334***	-0.325***	-0.327***	-0.318***
	(0.106)	(0.106)	(0.057)	(0.057)	(0.058)	(0.058)
Age	0.093***	0.097***	0.098***	0.097***	0.097***	0.096***
	(0.026)	(0.026)	(0.014)	(0.014)	(0.015)	(0.015)
Age squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Public enterprise	0.362**	0.335**	0.486***	0.427**	0.420**	0.408**
	(0.159)	(0.160)	(0.170)	(0.171)	(0.173)	(0.173)
Government sector	0.079	0.113	0.501*	0.511*	0.512*	0.519*
	(0.405)	(0.405)	(0.273)	(0.272)	(0.273)	(0.273)
Read and Write	0.167	0.189*	0.114*	0.124*	0.124*	0.113*
	(0.105)	(0.107)	(0.066)	(0.066)	(0.067)	(0.067)
Primary	0.020	0.040	0.253***	0.247***	0.244***	0.237***
	(0.141)	(0.142)	(0.074)	(0.074)	(0.075)	(0.075)
Lower Secondary	0.836***	0.872***	0.469***	0.454***	0.440***	0.430***
	(0.206)	(0.207)	(0.104)	(0.104)	(0.105)	(0.105)
Technical	0.625***	0.638***	0.464*	0.442	0.432	0.436
	(0.216)	(0.216)	(0.281)	(0.280)	(0.282)	(0.282)
Upper Secondary	1.246**	1.273**	0.902***	0.905***	0.905***	0.902***
	(0.524)	(0.524)	(0.136)	(0.136)	(0.136)	(0.136)
University	1.783***	1.745***	1.348***	1.304***	1.301***	1.259***
	(0.264)	(0.265)	(0.220)	(0.220)	(0.221)	(0.222)
Intercept	4.215***	3.855***	3.644**	3.826**	4.108**	3.569*
	(0.578)	(0.648)	(1.823)	(1.818)	(1.830)	(1.834)
Observations	228	228	759	759	752	752
R-squared	0.495	0.499	0.422	0.426	0.423	0.425

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

All regressions are limited to those aged 16 to 64, who are currently employed for a wage, and we use survey weights for each regression. All regressions included region fixed effects. Only seven regions were included in the 1990/91 survey, while all 16 were available in 1998/99. Change in tariff variable is calculated between 1984 and 1990 for 1991, and between 1993 and 1997 for 1999. No data on export orientation and import penetration was available before 1990, therefore we could not run regressions on changes in these variables for 1991.Results indicate that tariffs, change in tariffs, import penetration and export promotion did not have a significant effect on wages in 1991. We experimented with various other specifications where each of these trade variables was included alone in the regression, and in various other combinations. In all cases the trade variables were

always insignificant in 1991. These results are consistent with those obtained by Curie and Harrison (1997) where they also found no significant relation n for the full sample in 1991.

For 1999, tariffs and import penetration have a significant negative effect on wages in column (3). This implies that industries that had high tariff protection rates in 1999 paid lower wages to their workers, even after accounting for worker observable characteristics, than industries with low tariffs. To put these numbers in perspective, if a worker in an industry with the average tariff (31.4%) is moved to an industry with no tariff, then the wage of this worker would rise by 30%. This is of course a very substantial increase in wages. The coefficient on import penetration is negative and significant. This indicates that the higher the import penetration ratio, the lower the wages in that industry. The effect of export promotion is statistically insignificant. These results are in line with what Gaston and Trefler (1994) found in data relating to the United States.

We also investigate the related question of whether industries that have witnessed the greatest changes in tariffs, export orientation or import penetration over time tend to have higher wages in 1999. Results are in column (4), (5) and (6) of Table 28. The coefficient on tariffs is still negative but no longer significant. The coefficient on the change in tariff is positive and significant. This indicates that industries that witnessed the greatest reduction in tariffs also had lower wages in 1999. For example, in the manufacturing sector of wearing apparel; dressing and dyeing of fur (number 18), which witnessed the largest reduction in tariffs from 99% in 1993 to 34% in 1997, the effect of this 65% decrease in tariffs is a 49% lower wage in 1999 than an industry with no change in tariff levels. Taken together, these two results indicate that higher tariff rates in an industry correlate with lower wages. Similarly, higher the degrees of tariff reduction correlate with lower wages. In columns (5) and (6) we include change in export orientation and import penetration variables and find that these are insignificant. We also attempted pooling the data for the two years, but results were nearly identical to those in columns (3) and (4).

Table 29 below presents the regression results for all workers in the manufacturing sector in Egypt. In this as well as all of the following regressions, the log hourly wage equations are estimated for three models: 1998 levels, 2006 levels of trade variables, and 2006 changes in trade variables. Based on goodness of fit statistics, the human capital model appears to well explain wage setting in the manufacturing sector in Egypt. As expected, there is a significant negative wage differential associated with being female in both years. There is a positive and significant wage differential in 2006 in the public sector. The experience wage profiles follow the expected inverted U-shape implied by human capital theory. There are also increasing returns to education, and they particularly jump at the university or above levels. Finally, there are mostly negative and significant differentials due to residence outside of greater Cairo. As for trade variables, level of tariff protection is significantly negatively related to wages in both 1998 and 2006. Export orientation as well as the change in export orientation are both significant and positively related to wages in 2006. In other words, for all manufacturing, trade liberalization in form of lower tariffs and trade openness in terms of export orientation (but not import penetration which is insignificant) appear to exert an positive influence on wages for the average worker in the manufacturing sector in Egypt.

Table 29: Estimation of the Effect of trade and protection on wages in Egypt 1998 & 2006 : All Manufacturing Workers

	(1)	(2)	(3)
VARIABLES	1998:level	2006:level	2006:change
Tariff	-0.839***	-0.858***	-0.429
	(0.310)	(0.259)	(0.360)
Chngtariff			0.260
			(0.522)
Imp_penet2	-0.039	0.017	-0.069
	(0.090)	(0.094)	(0.109)
chngimp_penet2			0.640*
			(0.357)
Exp_orient	0.058	0.913***	0.089
	(0.172)	(0.162)	(0.268)
chngexp_orient			0.707***
			(0.254)
Female	-0.042	-0.149**	-0.152**
	(0.063)	(0.064)	(0.064)
Expr	0.051***	0.043***	0.043***
	(0.005)	(0.006)	(0.006)
Exprsq	-0.001***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)
ReadWrite	0.191***	-0.034	-0.018
	(0.067)	(0.090)	(0.089)
Primary	0.356***	0.088	0.095
	(0.065)	(0.074)	(0.074)
Preparatory	0.345***	0.151*	0.166*
	(0.080)	(0.090)	(0.090)
GeneralSecondary	0.610***	0.106	0.100
	(0.176)	(0.201)	(0.200)
VocationalSec	0.474***	0.256***	0.255***
	(0.062)	(0.065)	(0.064)
PostSecondary	0.506***	0.391***	0.369***
	(0.094)	(0.101)	(0.100)
Univabove	1.072***	0.774***	0.757***
	(0.085)	(0.081)	(0.080)
Alex	-0.026	-0.054	-0.059
	(0.062)	(0.065)	(0.064)
Ruegypt	-0.107*	-0.130**	-0.126*
	(0.061)	(0.066)	(0.066)
Uuegypt	-0.047	-0.231**	-0.249**
	(0.093)	(0.104)	(0.103)
Rlegypt	-0.175***	-0.214***	-0.207***
	(0.052)	(0.053)	(0.053)
Ulegypt	-0.119*	-0.128*	-0.104
	(0.062)	(0.067)	(0.067)
pub_gov	-0.043	0.137***	
	(0.045)	(0.052)	
Constant	-0.425***	0.039	0.290*
	(0.112)	(0.109)	(0.171)
Observations	835	1189	1189
R-squared	0.402	0.280	0.291

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

The Impact of Trade and Protection on Wages in Morocco and Egypt by Sector

The above results apply to the manufacturing sector as a whole, previous studies[15] have shown that the effect of trade liberalization upon industry wages can vary significantly by sector. To investigate whether this is true after we control for observable worker characteristics we split the sample by sector. The results are in Table 30. For the Moroccan data, each individual in manufacturing was classified as working in one of 4 sectors: public enterprise, government, private wage employment and private non-wage employment. Since we limit our analysis to only wage-workers, the latter group was eliminated. Among the remaining sectors, private wage employment was the most common (about 90% of the sample), followed by about 9% in public enterprises while less that 1% worked in government. Since the latter had very few observations (only 11 observations in both years) it was grouped with the public enterprise sector, and the results were reported under "public" for these two groups of workers.

In 1991, a higher tariff was associated with a significantly lower wage in the Public sector but did not have a significant impact upon wages of workers in private employment. The change in tariffs also did not affect wages significantly in 1991. This is likely because tariff had not really declined substantially between 1984 and 1990. In 1999 however, after more widespread liberalization had taken place, we see a very large difference in the effect by sector. For workers in the public sector, the positive coefficient implies that the reduction in tariffs had a strong *negative* effect on wages. Again, if a worker in an public industry with the average tariff (31.4%) is moved to an industry with no tariff, then the wage of this worker would fall by 213% (-31.4%* 6.8). This is definitely a substantial reduction in income for those in public enterprises due to liberalization. The effect upon workers in the private sectors was smaller however and in the opposite direction: a reduction in tariffs significantly improved the wages of these workers. These results are consistent with what Curie and Harrison (1997) obtained for Morocco using firm level data (without controlling for worker characteristics).

[15] See for example Curie and Harrison (1997).

Table 30 Estimation of the effect of trade and protection on wages in Morocco by Sector

	1991				1999			
VARIABLES	(1) Public	(2)	(3) Private	(4)	(5) Public	(6)	(7) Private	(8)
Tariff	-7.176*	-1.360	-0.491	-0.061	6.840*	6.947*	-0.985**	-0.604
	(3.908)	(8.423)	(1.423)	(1.612)	(3.288)	(2.914)	(0.421)	(0.452)
Change in tariff		0.997		0.293		2.441		0.704**
		(1.272)		(0.513)		(1.430)		(0.310)
Import penetration	-1.944	-0.967	-0.054	-0.026	4.320*	4.143*	-0.312***	-0.301***
	(1.324)	(1.838)	(0.486)	(0.490)	(1.918)	(1.703)	(0.083)	(0.083)
Export orientation	1.653	-0.097	-0.058	-0.051	4.687**	5.827***	-0.048	0.017
	(0.939)	(2.429)	(0.299)	(0.300)	(1.510)	(1.496)	(0.051)	(0.058)
Female	-0.733	-0.696	-0.463***	-**	-0.302	-0.228	-0.310***	-0.304***
	(0.456)	(0.468)	(0.123)	(0.124)	(0.197)	(0.180)	(0.058)	(0.059)
Age	-0.042	-0.050	0.104***	0.106***	-0.073	-0.167*	0.097***	0.096***
	(0.082)	(0.084)	(0.028)	(0.029)	(0.068)	(0.082)	(0.015)	(0.015)
Age squared	0.001	0.001	-0.001***	-**	0.002**	0.003**	-0.001***	-0.001***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Read and Write	0.105	0.118	0.209*	0.216*	0.555*	0.666**	0.111*	0.121*
	(0.249)	(0.254)	(0.116)	(0.117)	(0.279)	(0.255)	(0.067)	(0.068)
Primary	0.705	1.052	0.102	0.113	1.720***	1.420***	0.233***	0.226***
	(1.053)	(1.161)	(0.151)	(0.153)	(0.327)	(0.339)	(0.075)	(0.075)
Lower Secondary	0.000	0.000	0.848***	0.867***	1.543***	1.354***	0.434***	0.406***
	(0.000)	(0.000)	(0.214)	(0.217)	(0.267)	(0.262)	(0.107)	(0.108)
Technical	0.212	0.205	0.696***	0.704***	0.000	0.000	0.443	0.419
	(0.311)	(0.317)	(0.246)	(0.247)	(0.000)	(0.000)	(0.280)	(0.282)
Upper Secondary	0.000	0.000	1.212**	1.225**	1.938***	1.806***	0.909***	0.912***
	(0.000)	(0.000)	(0.538)	(0.539)	(0.288)	(0.267)	(0.145)	(0.146)
University	1.360	1.794*	1.813***	1.788***	2.365***	2.198***	1.327***	1.283***
	(0.766)	(0.958)	(0.291)	(0.295)	(0.380)	(0.350)	(0.226)	(0.227)
Intercept	8.398***	6.723**	3.147***	2.979***	-0.923	2.115	3.679**	4.126**
	(1.645)	(2.716)	(0.665)	(0.728)	(1.946)	(2.478)	(1.819)	(1.827)
Observations	26	26	193	193	29	29	722	715
R-squared	0.830	0.841	0.492	0.493	0.984	0.989	0.407	0.407

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. All regressions included region fixed effects: seven regions for 1990/91 and sixteen for 1998/99.

In case of Egypt as in Table 31 below, the negative effect of tariff on wages and positive effect of export promotion seems to equally hold for the private and public sector. The magnitude however is much larger for the public sector, implying that public enterprise workers stand to gain more from trade liberalization.

Table 31 Estimation of the effect of trade and protection on wages in Egypt by Sector

Sector		public			private	
VARIABLES	1998:level	2006:level	2006:change	1998:level	2006:level	2006:change
Tariff	-1.501***	-1.116	-0.916	-0.686	-0.639**	-0.265
	(0.468)	(0.769)	(0.851)	(0.427)	(0.311)	(0.424)
chngtariff			1.591			-0.123
			(1.110)			(0.639)
Imp_penet2	-0.288*	0.029	-0.289	0.008	0.034	-0.025
	(0.151)	(0.263)	(0.285)	(0.119)	(0.112)	(0.134)
chngimp_penet2			0.812			0.478
			(0.745)			(0.444)
Exp_orient	-0.246	1.259***	0.206	0.170	0.755***	0.188
	(0.272)	(0.334)	(0.666)	(0.234)	(0.221)	(0.326)
chngexp_orient			0.692			0.683**
			(0.556)			(0.323)
Female	-0.079	-0.017	-0.005	-0.035	-0.214***	-0.205***
	(0.089)	(0.134)	(0.133)	(0.090)	(0.074)	(0.074)
Expr	0.054***	0.059***	0.058***	0.052***	0.042***	0.042***
	(0.009)	(0.013)	(0.012)	(0.007)	(0.007)	(0.007)
Exprsq	-0.001***	-0.001**	-0.001**	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ReadWrite	0.220*	0.015	0.110	0.227***	-0.077	-0.072
	(0.120)	(0.208)	(0.209)	(0.085)	(0.101)	(0.101)
Primary	0.320**	-0.132	-0.031	0.373***	0.105	0.103
	(0.129)	(0.193)	(0.193)	(0.078)	(0.081)	(0.080)
Preparatory	0.391***	0.114	0.201	0.378***	0.134	0.131
	(0.133)	(0.207)	(0.207)	(0.108)	(0.102)	(0.102)
GeneralSecondary	0.820***	0.263	0.240	0.407	-0.020	-0.036
	(0.220)	(0.392)	(0.388)	(0.284)	(0.238)	(0.238)
VocationalSec	0.636***	0.345**	0.394**	0.430***	0.195***	0.199***
	(0.117)	(0.170)	(0.169)	(0.078)	(0.071)	(0.071)
PostSecondary	0.822***	0.489**	0.509**	0.350***	0.300**	0.296**
	(0.153)	(0.207)	(0.206)	(0.124)	(0.123)	(0.123)
univabove	1.145***	0.768***	0.804***	1.087***	0.764***	0.747***
	(0.134)	(0.188)	(0.187)	(0.121)	(0.092)	(0.092)
Alex	0.064	-0.101	-0.062	-0.132	-0.044	-0.054
	(0.082)	(0.118)	(0.118)	(0.094)	(0.081)	(0.081)
Ruegypt	-0.137	-0.248*	-0.129	-0.080	-0.102	-0.121
	(0.092)	(0.146)	(0.150)	(0.082)	(0.074)	(0.075)
Uuegypt	0.039	-0.038	-0.013	-0.119	-0.312***	-0.337***
	(0.130)	(0.210)	(0.208)	(0.131)	(0.120)	(0.120)
Rlegypt	-0.121	-0.302**	-0.208	-0.199***	-0.205***	-0.217***
	(0.090)	(0.125)	(0.128)	(0.067)	(0.060)	(0.060)
Ulegypt	-0.070	-0.023	0.079	-0.133	-0.166**	-0.167**
	(0.100)	(0.143)	(0.147)	(0.083)	(0.077)	(0.077)
Constant	-0.466***	-0.132	0.092	-0.457***	0.104	0.144
	(0.176)	(0.276)	(0.290)	(0.150)	(0.121)	(0.165)
Observations	320	294	294	515	895	895
R-squared	0.460	0.299	0.323	0.338	0.228	0.234

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

The Impact of Trade and Protection on Wages in Morocco and Egypt by Gender

In all specifications shown in Tables 29 and 30, the coefficient reflecting females was large, negative and significant. This indicates the existence of a male-female wage gap, but does not say anything about whether trade liberalization may have had any effect, whether positive or negative, on the size of this gap. In Table 32, we further investigate whether the effect of trade liberalization upon wages differed by gender. Once again, all the trade variables were insignificant in their effect on wages of both genders in 1991. In 1999, however, higher tariffs are associated with a much larger negative effect upon the wages of women. Thus, females seem to have in fact gained more from trade liberalization compared to their male counterparts. This lends some support to the theories of Gary Becker who argued that increased competition through trade would make it more difficult to discriminate against female workers. For females, the change in tariffs also has a significant positive effect that indicates that females in industries witnessing the greatest reduction in tariffs also had lower wages in 1999. Similarly for Egypt, as can be seen from Table 33, females seems to have benefited more from tariff reduction and export promotion.

Table 32 Estimation of the effect of trade and protection on wages in Morocco by Gender

	1991				**1999**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Males		Females		Males		Females	
Tariff	-0.649	0.025	-5.269	-2.311	-0.806*	-0.519	-2.345**	-2.107*
	(1.491)	(1.677)	(4.500)	(5.360)	(0.450)	(0.502)	(1.087)	(1.080)
Change in tariff		0.389		1.601		0.471		1.532**
		(0.442)		(1.578)		(0.366)		(0.616)
Import penetration	0.090	0.111	-0.654	-0.651	-0.302***	-0.283**	-0.353**	-0.431***
	(0.486)	(0.487)	(1.201)	(1.201)	(0.111)	(0.112)	(0.136)	(0.138)
Export orientation	0.084	0.065	0.234	-0.031	-0.103	-0.056	0.002	0.091
	(0.336)	(0.337)	(0.845)	(0.884)	(0.064)	(0.074)	(0.082)	(0.088)
Age	0.108***	0.112***	0.075	0.081	0.121***	0.120***	0.088***	0.083***
	(0.029)	(0.029)	(0.067)	(0.067)	(0.017)	(0.017)	(0.027)	(0.027)
Age squared	-0.001***	-0.001***	-0.001	-0.001	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Public enterprise	0.196	0.176	1.070*	0.952	0.482***	0.448**	0.272	0.116
	(0.179)	(0.180)	(0.559)	(0.571)	(0.181)	(0.183)	(0.415)	(0.415)
Government sector	0.124	0.158	-0.271	-0.318	0.567*	0.567*	0.712	0.770*
	(0.431)	(0.433)	(1.344)	(1.344)	(0.330)	(0.329)	(0.470)	(0.466)
Read and Write	0.107	0.125	0.403	0.414	0.059	0.070	0.117	0.093
	(0.118)	(0.120)	(0.382)	(0.382)	(0.084)	(0.084)	(0.103)	(0.103)
Primary	-0.034	-0.013	0.606	0.591	0.144	0.138	0.290**	0.278**
	(0.157)	(0.159)	(0.372)	(0.373)	(0.093)	(0.093)	(0.119)	(0.118)
Lower Secondary	0.707***	0.751***	1.362**	1.270**	0.317**	0.314**	0.727***	0.648***
	(0.239)	(0.244)	(0.515)	(0.522)	(0.128)	(0.128)	(0.166)	(0.167)
Technical	0.479*	0.469*	0.236	0.452	0.274	0.262	0.651	0.559
	(0.249)	(0.249)	(0.853)	(0.879)	(0.335)	(0.335)	(0.469)	(0.465)
Upper Secondary	0.575	0.635	1.475**	1.464**	0.893***	0.902***	0.798***	0.729***
	(1.034)	(1.037)	(0.669)	(0.669)	(0.167)	(0.167)	(0.232)	(0.231)
University	1.894***	1.847***	1.423**	1.232**	1.370***	1.348***	0.896**	0.742**
	(0.501)	(0.504)	(0.563)	(0.593)	(0.283)	(0.283)	(0.356)	(0.357)
Intercept	3.655***	3.368***	4.943**	4.107*	3.335***	3.478***	4.869***	5.578***
	(0.655)	(0.732)	(2.156)	(2.308)	(0.445)	(0.458)	(1.777)	(1.781)
Observations	174	174	54	54	488	488	271	271
R-squared	0.423	0.426	0.756	0.763	0.464	0.466	0.477	0.490

Significance levels: *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. All regressions included region fixed effects: seven regions for 1990/91 and sixteen for 1998/99.

Table 33 Estimation of the effect of trade and protection on wages in Egypt by Gender

Gender		(MALE)			Female	
VARIABLES	1998:level	2006:level	2006:change	1998:level	2006:level	2006:change
Tariff	-0.614*	-0.712***	-0.609*	-2.579**	-1.674*	1.417
	(0.324)	(0.274)	(0.369)	(1.274)	(1.008)	(1.715)
Chngtariff			0.551			-4.063
			(0.494)			(3.591)
Imp_penet2	-0.016	0.070	-0.025	-0.746**	-0.394	-0.750
	(0.094)	(0.089)	(0.103)	(0.373)	(0.688)	(0.803)
chngimp_penet2			0.550			0.849
			(0.337)			(2.472)
Exp_orient	0.016	0.871***	0.328	0.322	1.878*	-2.012
	(0.177)	(0.155)	(0.256)	(0.967)	(1.060)	(1.989)
chngexp_orient			0.356			3.418***
			(0.248)			(1.221)
pub_gov	-0.023	0.114**	0.112**	-0.312*	0.341	0.305
	(0.047)	(0.050)	(0.050)	(0.184)	(0.244)	(0.235)
Expr	0.047***	0.043***	0.043***	0.058***	0.012	0.020
	(0.006)	(0.006)	(0.006)	(0.018)	(0.036)	(0.034)
Exprsq	-0.001***	-0.000***	-0.000***	-0.000	0.001	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
ReadWrite	0.214***	0.058	0.068	-0.141	-0.761**	-0.683*
	(0.068)	(0.088)	(0.087)	(0.484)	(0.381)	(0.367)
Primary	0.396***	0.070	0.081	-0.169	0.219	0.105
	(0.068)	(0.072)	(0.072)	(0.232)	(0.338)	(0.326)
Preparatory	0.361***	0.145*	0.159*	0.060	0.609	0.629
	(0.084)	(0.087)	(0.087)	(0.312)	(0.483)	(0.463)
GeneralSecondary	0.586***	0.036	0.043	0.512	0.263	-0.375
	(0.182)	(0.191)	(0.192)	(0.752)	(1.277)	(1.322)
VocationalSec	0.482***	0.302***	0.303***	0.279	-0.113	-0.074
	(0.065)	(0.064)	(0.064)	(0.235)	(0.271)	(0.262)
PostSecondary	0.484***	0.412***	0.399***	0.459	0.151	0.318
	(0.100)	(0.098)	(0.097)	(0.317)	(0.506)	(0.539)
Univabove	1.061***	0.842***	0.831***	1.070***	0.208	0.302
	(0.090)	(0.080)	(0.080)	(0.285)	(0.326)	(0.326)
Alex	0.017	-0.002	-0.008	-0.154	-0.259	-0.156
	(0.066)	(0.065)	(0.065)	(0.203)	(0.222)	(0.217)
Ruegypt	-0.099	-0.130**	-0.125**	-0.265	-0.245	-0.215
	(0.062)	(0.063)	(0.063)	(0.335)	(0.424)	(0.407)
Uuegypt	-0.035	-0.217**	-0.228**	0.039	-0.994*	-1.024*
	(0.096)	(0.099)	(0.099)	(0.402)	(0.594)	(0.570)
Rlegypt	-0.169***	-0.279***	-0.273***	0.013	0.233	0.187
	(0.054)	(0.052)	(0.052)	(0.234)	(0.221)	(0.215)
Ulegypt	-0.122*	-0.144**	-0.130**	-0.157	-0.147	0.119
	(0.066)	(0.066)	(0.066)	(0.224)	(0.285)	(0.285)
Constant	-0.455***	0.000	0.131	0.221	0.244	0.057
	(0.118)	(0.106)	(0.135)	(0.378)	(0.569)	(0.856)
Observations	749	1039	1039	86	150	150
R-squared	0.368	0.298	0.304	0.679	0.284	0.357

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

Conclusion:

In this chapter we utilize the same two Moroccan and Egyptian labor data sets used in the previous Chapter to analyze the direct impact of tariff reduction and trade openness on wage outcomes in the manufacturing sector in the two countries in their respective periods of rapid trade liberalization. To that end, we merge these labor data sets with data on tariffs, import penetration and export promotion at the two-industry digit level.

Results based on estimating an inter-industry wage premia model indicate that, for both Egypt and Morocco, after accounting for worker observable characteristics, industries that paid high tariff protection paid lower wages to workers. Although export promotion, as measured by the share of exports to total output in each industry, is by far the largest component of trade reform in both countries over the period understudy, it only proved to be a statistically significant determinant of wages in the Egyptian case. Export orientation and the change in export orientation are both significant and positively related to wages in 2006. In other words, for all manufacturing, trade liberalization in form of lower tariffs and trade openness in terms of export orientation (but not import penetration which is insignificant) appear to exert a positive influence on wages for the average worker in the manufacturing sector in Egypt.

There are interesting sector and gender differentials as well. In Morocco, only private enterprise workers gain, whereas public enterprise witnesses substantial reduction in wages due to liberalization. In contrast, in Egypt both types of workers gained, and gains were even greater for public enterprise workers. The gender dimension seems to be consistent in both countries, though, with females in fact gaining much more from trade liberalization compared to their male counterparts. This lends some support to the theories of Gary Becker who argued that increased competition through trade would make it more difficult to discriminate against female workers. In the following chapter, we utilize data on quality of jobs in the Egypt to see the extent to which higher paid jobs resulting from trade reform also could fit the description of being ‘decent’ or ‘high quality’ jobs.

VI. Estimation of the Influence of Trade upon Job Quality in Egypt[16]

According to a recent global ILO report on the subject, globalization has not led to the creation of sufficient, sustainable, and qualitatively acceptable work opportunities around the world. Within this global trend, different regions show mixed results in terms of job creation, productivity results, wage improvements and poverty reduction. In many developing economies the problem is mainly a lack of decent and productive work opportunities rather than outright unemployment. Women and men are working very hard for very little because their only alternative is to have no income at all. Women are also continuing to catch up to men in terms of participation in labor markets throughout the world. However, it is believed that this may be out of necessity to "stay even" with previously earned total household incomes. Further, women in the MENA region continue to be disproportionately engaged in low-wage, low-productivity and part-time jobs. (ILO, 2005).

For example, Assaad (2004) presented specific results exhibited a trend of feminization of the Moroccan labor force during liberalization in 1990s, but highlighted an opposite trend in Egypt. An update of this work looking at the ELMPS Egyptian data in the new millennium showed that after a period of de-feminization (1988-1998), some sectors operated as magnets to women between 1998-2006. These sectors specifically include clothes and food manufacturing (Assaad and El-Hamidi, 2007). This trend helped compensate for a declining trend in female employment in both government and public sectors and reductions in participation amongst illiterate women and those with vocational secondary degrees. In short, losses that women were experiencing in more desirable sectors of the labor market were being halfheartedly compensated in the sectors providing lower wages. This leads to a more stable but illusory unemployment rate concealing the qualitative reduction in the welfare of women and other demographic segments of the Egyptian labor force. It is also important to note that feminization represents an important edge for many countries facing liberalized trade regimes while seeking to build their export manufacturing sector. The explicit question remains whether newly created opportunities have been jobs of such a nature to qualify as decent work.

In this section of our report, we will examine the impact of trade liberalization upon job quality and wages between 1998 and 2006 while controlling for economic sector. We will employ three measures of trade based upon tariff and trade flow data. The analysis below is

[16] This Chapter is authored by Mona Said and John Salevurakis.

based upon 1998 and 2006 Egyptian job quality data in which the collection of observations has been regressed specifically upon indexes relating to the openness of trade and controlling for individual demographic and economic characteristics.

Job Quality Indices

As job quality is a multi-faceted concept, a wide range of indicators have been proposed by several studies. In this study we derive a measure of job quality based on indicators from ELMPS. Basing on review of literature[17], job quality can be measured along 4 dimensions:1) Income security which entails adequate income, access to social security and health care**,** 2) Employment Security which defines the regularity of employment, contract, paid sick leave, and paid annual leave, 3) Voice representation security measures such as membership in trade unions and 4) Work Security such as adequate working hours, decent workplace, and a reasonable commuting distance to work. Relating the above measurement dimensions to the labor data we have on hand, an index of job quality is constructed that in cooperates the following 11 criteria. 1)Earnings, 2) The nature of a workplace, 3) Adequate working hours, 4) Commuting time to work, 5)Employment regularity, 6) The existence of social insurance, 7) The existence of health insurance, 8) The existence of a contract 9) The availability of paid sick leave, 10) the existence of paid annual leave, and 11) Membership in a trade union. As some of these measures are continuous (e.g. earnings, working hours, commuting time to work and others are dichotomous, we normalize continuous variables to a scale of 0 to 1 and then combine the different measures into a single measure using factor analysis. We also let the correlation structure among variables produce the factor weights.

Based on the above criteria, three measures of job quality will be used, the institutional job quality measure which only incorporates criteria from 6 to 11, the JQIWW which includes all criteria but is limited to only wage workers, and finally the JQWW2 which is also

[17] For a detailed literature review and the methodology underlying the job quality indices used here see Assad and Roushdy (2008)

confined to only wage workers and includes all but the earnings criteria which thus represents a non earnings job quality measurement. The advantage of the use of the above job quality measures as dependent variables in the empirical analysis lies in the comprehensiveness of the indices in comparison to previous studies using a dummy for formality. Our job indices are therefore much more informative about the true quality of work as implied by the decent work literature which goes far beyond formality.

Methodology and Results

Our focus is on the impact of trade liberalization on industry wages and job quality. We employ the inter-industry wage differentials approach to determine whether workers in less heavily protected industries have lower wages or job quality than workers of similar observable characteristics in the more heavily protected industries. Even after accounting for worker-specific characteristics such as education and experience, workers in the same occupations in different industries may still earn different wages. We can utilize these industry wage premia, as they are called, to investigate the effect of reduced protection or increased trade on wages and job quality. We expect these changes to affect worker wages or job quality within a given industry first, because in the short run, workers are immobile—they cannot move between industries—and thus any such industry-specific change will affect working conditions in that industry first, before affecting other economy-wide variables. The effects of liberalization can therefore be identified at the industry level.

Let i=1, 2, 3…I_j index workers in industry *j*. We regress the log of worker i's wages at time *t* (ln(w_{ijt})) and the index of their job quality (JQI_{ijt}) on a vector of worker characteristics H_{ijt} (age, age squared, gender, education indicators, sector indicators, and region of residence) and a set of variables (P_{jt}) reflecting the degree of protection and international trade at the industry level. We estimate the following equations:

$$JQI_{ijt} = H_{ijt}\beta_{Ht} + P_{jt}\beta_{Pt} + \varepsilon_{ijt}$$

for $i = 1,...I_J$; $j = 1,...,J$ and $t =$ 1998 or 2006.

The one-step estimator is consistent, but if there are errors shared by all individuals within a given industry, the standard errors will be biased downward. [18]

Tariff Results

The first regressions, conducted using 1998 and 2006 tariff data describing Egypt highlight that there is exists a slightly "more negative" relationship between our proxy for the

[18] Following Dickens and Katz (1987), a two-step procedure is implemented was implemented in Said and Al-Azzawi (2009), and the results were very similar to what was obtained here.

openness to trade (the decreasing tariff rate) and the job quality index over time. This can be seen in Table 34 below. The implication of this is that, during periods of general liberalization, the role of rising tariffs increases in ensuring decreases in job quality. Wages were also curiously shown to be negatively impacted by rising tariffs and to an increasing degree during the period of liberalization from 1998 through 2006. The implication of this combined reality is that the changing tariff structure of Egypt (a reduction) had an increasingly positive result upon job quality and increasingly positive results upon wages. Therefore, it can be implied that workers gain from tariff reduction in the form of higher job quality and wages.

The Impact of Import Penetration and Export Promotion

When considering the import penetration variable, it is interestingly shown that trade openness as measured in this way has only a minor negative (in fact nearly non-existent) statistical relationship with job quality. In this case, the influence is shown to be very slightly negative in 1998 and slightly more negative 2006. The implication of this may be interpreted to state that, during periods of liberalization, the role of import penetration increasingly influences job quality in a negative way. This is not altogether surprising as domestic labor demand falls in inverse relation to the percentage of domestically produced goods consumed. Only in the case of the 2006 data, however, can the results be interpreted as statistically significant and at a level of 1%. Interestingly, however, the sacrifice made by labor is made only in the realm of job quality. What is clear however is that the influence of export promotion is more dramatically positive upon wages and but statistically negative upon job quality.

It is important to note however, that besides the direction of those effects, it is very important to look at the magnitude of all variables in question. It should be note that all three of the trade variables were in fact divided by 100, so we can get coefficients that represent fractional points. The true size of the effect is therefore very small (ie one-hundredth of the actual coefficient reported in Table 34). This shows that the overall impact of trade variables is still extremely small in comparison to other demographic

Table 34. Summary of Results

		Wages as dependent variable				**Job Quality as dependent variable**			
Model	**Trade Explanatory variables in Model**	1998		2006		1998		2006	
1	Tariff rate	-0.839	***	-0.858	***	-1.064	***	-1.061	***
	Import Penetration	-0.039		0.017	**	-0.337	***	-.456	***
	Export Promotion	0.058		0.913	***	-0.234		-0.229	
2	Tariff rate		**	-0.429	**		**	-1.612	***
	Change in Tariff Rate		*	0.260	**			-0.099	
	Import Penetration			-0.069				-0.557	***
	Change in Imp. Pen.			0.640	*			0.755	**
	Export Promotion			0.089				0.323	
	Change in Exp. Prom..			0.707	***			-0.570	**
	* significant at 10%								
	** significant at 5%								

The Role of Demographic Factors

The above illustrated influence of tariffs and other more "economic" variables stands in quantitative contrast to the often stronger influence of gender, education, and the geographic locale over the wages and job quality of workers over time. For example, our coefficients made available in the appendices (Table VI.A1-V1.A2) below describe the often major influence of many factors not usually discussed in trade research. While the influence of trade (and the openness to it) as measured in various ways is a primary focus of this research, it is inescapably obvious that the influence of some of our control variables is overwhelming in the face of our primary result. Given this apparent influence of education in particular upon job quality, it seemed clear that further analysis should be conducted with respect to gender or education's influence upon wages. Presently, the influence of education upon job quality is reflected in seven variables using "illiteracy" as the omitted variable. The influence of an individual having no educational diploma, elementary, middle school, high school, vocational, secondary institute, and university education is explored within the context of job quality while simultaneously isolating the influence of trade openness upon

our dependant variable. Aside from the influence of education, a dummy variable was included in our primary research to capture the influence of gender as well as two variables to explore the influence of work experience upon job quality. The first of these latter variables is defined by the age of the individual minus the age when the individual first entered the labor force for at least six months and the second is this number squared. Similarly, the influence of geography within the Egyptian workforce is explored using Cairo as the omitted variable. The locales under direct analysis are Alexandria, urban Lower Egypt, urban Upper Egypt, rural Lower Egypt, and rural Upper Egypt. Finally, sectoral analysis takes places using the governmental realm as the omitted variable. The variable influence of the public sector, private sector and "other" sectors are explored directly.

It is interesting to note that the influence of being female upon job quality was often statistically significant and negative to a degree that it was sometimes only possible to overwhelm its influence with a university education. Similarly, the impact of post-secondary education or vocational training, is nearly as (or often slightly more) influential than gender in relating to job quality and has the statistical power to eclipse most of the demographic disadvantages experienced by those residing in upper and lower Egypt. As mentioned before however, the impact of geography is stark. When examining 1998 and 2006 data, the statistical disadvantage of being a rural or even urban upper Egyptian is nearly double that of being a rural or urban lower Egyptian with respect to the job quality of Cairenes. Similarly, the influence of existing in the "non-governmental" sector of the economy was universally negative for workers.

It is also important to recall that these regressions were conducted on 2006 data including our previously mentioned "change variables" Given the addition of these, the results seen in Table 34 highlight a dramatic reduction in the role of economic variables such as tariff rates relative to demographic and political forces. This change also brought a reduction in the impact of education and geography but actually strengthened the impact of gender upon job quality. The implication of these results is that demographic divisions within the Egyptian economy have a more obvious impact upon job quality than the interaction of that economy with others within in a global context. Somewhat surprisingly, and in contrast to previous examples, the role of gender is not only substantial but enhanced in relation to other variables when controlling for other economic factors. For example, in this case, a university education may sometimes have a difficult time compensating in terms of job quality for the negative influence of being a woman. Further, a university education is sometimes one of the few demographic characteristics able to compensate for the negative job quality influence of geographic factors like residing in rural Upper Egypt. As mentioned, however, a move into the governmental sector from either the public or private realms statistically promises, however, to improve job quality dramatically. The potential for this to take place however, is becoming increasingly limited in the era of liberalization.

The above findings parallel already mentioned research undertaken by Goldberg and Pavcnik (2003), found that trade policy itself was of a relatively minor influence upon the structure of wages and job quality characterizing the labor markets of Columbia and Brazil.

This work discovered that it is labor market institutions in Brazil and Columbia which dominated the economic landscape and possessed the capability to enhance or overwhelm positive and negative "economic" factors. These “institutions” most likely attempt to correct for the demographic disadvantages possessed by certain members of the population.

Conclusion

In this section of our work, we utilized data on the quality of jobs in Egypt to explore the extent to which higher paid jobs resulting from trade reform might fit the description of being ‘decent’ or ‘high quality’ jobs as well. Our results have highlighted that institutional and demographic characteristics such as gender, geographic locale, and educational variables have a strong relationship with job quality (as represented by an index of access to social security, medical insurance, a contract, paid casual leave, paid sick leave, and whether the worker is a member of a trade union).

Tariff reduction per se, is not shown to have had a significant impact upon either wages or job quality over this period. Conversely, increased export orientation exerts a strong positive impact on wages, but a significant negative impact on all job quality indices in many specifications. Finally, industries with the highest import penetration levels have the lowest job quality, but those that had the largest increase in import penetration actually also saw large improvements in job quality.

The above results underscore the clear distinction between wage and job quality outcomes in the Egyptian labor market, and the importance of separating the two when examining the effect of trade policy on labour in MED region in general. In terms of magnitudes, however, demographic variables, especially gender, level of educational attainment and region, remain however as much more important determinants of wages and job quality in Egypt than any other economic variable that capture trade openness.

Appendix (V1.A1)Estimation of the Effect of trade Variables on Job Quality Index for Wage Workers

	(1)	(2)	(3)
VARIABLES	1998:level	2006:level	2006:change
tariff	-0.308	-0.092	-0.551*
	(0.319)	(0.207)	(0.289)
chngtariff			0.563
			(0.417)
Imp_penet2	-0.668***	-0.241***	-0.275***
	(0.092)	(0.075)	(0.087)
chngimp_penet2			-0.128
			(0.286)
Exp_orient	-0.084	0.265**	0.628***
	(0.176)	(0.129)	(0.214)
chngexp_orient			-0.414**
			(0.203)
female	-0.238***	-0.217***	-0.218***
	(0.065)	(0.051)	(0.051)
pub			-0.032
			(0.084)
priv			-0.436***
			(0.080)
expr	0.008	0.031***	0.031***
	(0.005)	(0.005)	(0.005)
exprsq	0.000	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)
ReadWrite	0.210***	0.102	0.096
	(0.068)	(0.072)	(0.072)
Primary	0.247***	0.202***	0.204***
	(0.066)	(0.059)	(0.059)
Preparatory	0.389***	0.141**	0.135*
	(0.082)	(0.072)	(0.072)
GeneralSecondary	0.352*	0.222	0.210
	(0.181)	(0.156)	(0.156)
VocationalSec	0.402***	0.351***	0.351***
	(0.064)	(0.051)	(0.051)
PostSecondary	0.523***	0.397***	0.401***
	(0.097)	(0.080)	(0.080)
univabove	0.629***	0.554***	0.555***
	(0.087)	(0.064)	(0.064)
alex	-0.155**	0.008	0.016
	(0.063)	(0.051)	(0.052)
ruegypt	-0.339***	-0.359***	-0.358***
	(0.063)	(0.053)	(0.053)
uuegypt	-0.341***	-0.406***	-0.397***
	(0.096)	(0.082)	(0.082)
rlegypt	-0.279***	-0.165***	-0.163***
	(0.054)	(0.043)	(0.043)
ulegypt	-0.252***	-0.193***	-0.199***
	(0.064)	(0.053)	(0.054)
pub_gov	0.552***	0.412***	
	(0.047)	(0.041)	
Constant	0.133	-0.287***	0.214
	(0.115)	(0.087)	(0.136)
Observations	836	1195	1195
R-squared	0.440	0.328	0.333

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

Appendix (VI.A2) Estimation of the Effect of trade Variables on Non Earnings Job Quality Index

	(1)	(2)	(3)
VARIABLES	1998:level	2006:level	2006:change
tariff	-0.276	0.024	-0.479*
	(0.317)	(0.204)	(0.284)
chngtariff			0.583
			(0.411)
Imp_penet2	-0.660***	-0.230***	-0.255***
	(0.092)	(0.074)	(0.086)
chngimp_penet2			-0.246
			(0.281)
Exp_orient	-0.065	0.137	0.612***
	(0.176)	(0.127)	(0.211)
chngexp_orient			-0.477**
			(0.200)
female	-0.218***	-0.188***	-0.188***
	(0.065)	(0.051)	(0.051)
pub			-0.035
			(0.083)
priv			-0.443***
			(0.079)
expr	-0.001	0.024***	0.024***
	(0.005)	(0.004)	(0.004)
exprsq	0.000	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)
ReadWrite	0.204***	0.100	0.092
	(0.068)	(0.071)	(0.070)
Primary	0.210***	0.196***	0.197***
	(0.066)	(0.058)	(0.058)
Preparatory	0.349***	0.113	0.105
	(0.082)	(0.071)	(0.071)
GeneralSecondary	0.282	0.202	0.186
	(0.181)	(0.154)	(0.154)
VocationalSec	0.343***	0.313***	0.313***
	(0.063)	(0.051)	(0.051)
PostSecondary	0.439***	0.326***	0.332***
	(0.097)	(0.079)	(0.079)
univabove	0.448***	0.439***	0.442***
	(0.087)	(0.063)	(0.063)
alex	-0.142**	0.006	0.014
	(0.063)	(0.051)	(0.051)
ruegypt	-0.304***	-0.346***	-0.347***
	(0.062)	(0.052)	(0.052)
uuegypt	-0.316***	-0.378***	-0.367***
	(0.095)	(0.081)	(0.081)
rlegypt	-0.244***	-0.129***	-0.128***
	(0.054)	(0.042)	(0.042)
ulegypt	-0.233***	-0.170***	-0.177***
	(0.064)	(0.053)	(0.053)
pub_gov	0.581***	0.417***	
	(0.046)	(0.040)	
Constant	0.238**	-0.175**	0.321**
	(0.115)	(0.085)	(0.134)
Observations	841	1195	1195
R-squared	0.394	0.283	0.290

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

Appendix (VI.A3). Estimation of the Effect of trade Variables on the Institutional Job Quality Index

	(1)	(2)	(3)
VARIABLES	1998:level	2006:level	2006:change
tariff	-1.064***	-1.061***	-1.612***
	(0.341)	(0.259)	(0.361)
chngtariff			0.099
			(0.523)
Imp_penet2	-0.337***	-0.456***	-0.557***
	(0.099)	(0.093)	(0.109)
chngimp_penet2			0.775**
			(0.358)
Exp_orient	-0.234	-0.229	-0.323
	(0.189)	(0.161)	(0.268)
chngexp_orient			-0.570**
			(0.254)
female	-0.088	-0.100	-0.116*
	(0.070)	(0.064)	(0.064)
pub			-0.136
			(0.106)
priv			-1.052***
			(0.100)
expr	0.033***	0.038***	0.038***
	(0.006)	(0.006)	(0.006)
exprsq	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)
ReadWrite	0.257***	0.116	0.116
	(0.073)	(0.090)	(0.090)
Primary	0.244***	0.243***	0.246***
	(0.071)	(0.074)	(0.074)
Preparatory	0.312***	0.285***	0.281***
	(0.088)	(0.090)	(0.090)
GeneralSecondary	0.386**	0.191	0.204
	(0.195)	(0.195)	(0.196)
VocationalSec	0.522***	0.540***	0.542***
	(0.068)	(0.064)	(0.064)
PostSecondary	0.555***	0.495***	0.486***
	(0.104)	(0.100)	(0.101)
univabove	0.757***	0.786***	0.778***
	(0.094)	(0.080)	(0.080)
alex	-0.038	0.152**	0.157**
	(0.068)	(0.064)	(0.065)
ruegypt	-0.297***	-0.309***	-0.296***
	(0.067)	(0.066)	(0.066)
uuegypt	-0.277***	-0.167	-0.153
	(0.103)	(0.103)	(0.103)
rlegypt	-0.275***	-0.136**	-0.133**
	(0.058)	(0.053)	(0.053)
ulegypt	-0.228***	-0.105	-0.107
	(0.069)	(0.067)	(0.067)
pub_gov	1.216***	0.962***	
	(0.050)	(0.051)	
Constant	-0.759***	-0.905***	0.309*
	(0.124)	(0.109)	(0.171)
Observations	841	1195	1195
R-squared	0.669	0.511	0.514

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

VII. Conclusions and Policy Implications[19]

Both Egypt and Morocco have undergone structural adjustment programs and trade liberalisation programs in the past three decades. We have examined the effects of transition on the labour market in Morocco & Egypt focusing in particular on whether transition increased the segmentation in the labour market along gender, age, and educational characteristics.

The findings suggest that in the case of Egypt, almost 90% of the unemployed are new entrants to the labour market resulting from the downsizing of the public sector and the limited capacity of the private sector to generate new jobs. The problem of unemployment in Egypt has affected mainly young highly educated workers and females in particular. Conversely, in Morocco, the public sector share in total employment was quite small relative to that in Egypt and has shrunk further following the privatization process and the slowness of the government hiring in the nineties. Only around 50% of the unemployed in Morocco were new entrants suggesting that restructuring has led to many losing their jobs. Examining the characteristics of the unemployed in Morocco, although the highly educated have high probability of unemployment, those with primary education also have high probability of unemployment. Yet, females tend to get affected more by unemployment than males.

Our results have highlighted that the impacts of trade liberalization on the labor maket in Egypt and Morocco. We have studied several labor market outcomes namely: unemployment, wages, and job quality. In particular we examined the stratification of labor market by gender, education and sector over the period of trade reforms in the two countries. Egypt and Morocco have undertaken various trade and economic reforms that have had significant impact on their labor market. The evidence suggests that unemployment rates have increased during transition. However this impact has been felt unevenly given the stratification of the labor market in both countries. Thus, women, the youth and the highly educated have been more affected than the rest of the labor force. This suggests that faster job creation is essential however, as is evident from the analysis, reforming the distorted labor market policies is crucial, in particular, rationalizing the role of

[19] This Chapter is prepared by John Salevurakis, with contributions from co-authors of the report.

the public sector. However, for Egypt and Morocco to be able to reduce unemployment and utilize their human resources in order to be able to compete in a globalized world, there is a need to invest in "better quality" educated labor force that has the needed skills required in the modern labor market.

In addition, in Egypt given that women and the educated in particular have experienced the brunt of the recent economic reforms future policies should focus on promoting the private sector. Reducing the cost of hiring and firing for private firms will no doubt help to increase job creation. In addition, it is important to help the private sector by making it easier to initiate and cultivate businesses by improving access to credits, facilitating innovation, and fostering inter-enterprise linkages. In particular, those initiatives should target women since they are badly affected by the transition. Moreover, given the findings it is essential to re-visit the educational system and ensure that it produces the right skills needed by the private sector as well as the highest quality of educated workers who would be able become productive rather than be wasted as unemployed

Exploration of the effect of the process of wage determination and pattern of wage inequality in Egypt and Morocco suggest that the socioeconomic changes witnessed since the mid 1980s have had an adverse impact on the achievements of vocational graduates. Further, trade liberalization has had, at best a mixed impact upon wages and job quality within in Egypt specifically. Family background remained one of the crucial determinants of occupational choice, especially in Egypt, meaning that children are still likely to replicate the occupational choices of their parents. Similarly, geographic locale and other demographic characteristics are shown to be extremely influential in the determination of wages and job quality within Egypt. Further, as labor markets became more polarized over recent years, vocational graduates seem to have been the least favored group both in the government and private sector, mainly because of the declining role of the government sector and because of the private sector's preference for males with post-secondary education. This preference is represented in our regression results illustrating the overwhelmingly positive influence of formal education upon job quality and wages from 1998 through 2006.

Similarly, although the results above give credence to the view that technical education has generally been inequality reducing in Egypt, they nevertheless point to the persistent inferior, and even deteriorating, position of technical secondary and higher education graduates in the Egyptian labor market in comparison to university graduates. This, in spite of the fact that the supply of university graduates in both countries has been consistently increasing. As a result, low-earners in Egypt are twice as likely to be vocational graduates than simply illiterate. Apparently haphazard trade liberalization over the same time period has added a degree of uncertainty to these individuals' lives and their labor market positions.

More specifically, it can be seen above that the returns to schooling upon wages in Morocco and Egypt during the era of structural adjustment have diminished as Moroccan wages became compressed and the differential between the private and the public sector generally

narrowed. The biggest loss was recorded by general education graduates in the private sector. Conversely, all private sector employees gained in real terms. This is particularly true of men and women with more advanced technical or university degrees. Simultaneously, real wages in the public sector generally stagnated. The Egyptian experience saw a polarization of wages in the two sectors, with almost symmetrical trends between men and women. In short, while wages for many seemed to decline, the wages declined less for those at the top of the income or educational scales. The result is an environment characterized by increasingly impoverished levels of inequality. This, in spite of the fact that wage returns to higher education declined. The implication here is that the returns to higher education decreased at a slower rate than those to other forms of education. This is likely due to some university graduates still being able to utilize their "social capital" to advance in the face of changing economic conditions that are harming other segments of their own or other educational sectors.

A possible explanation of these labor market trends could also be that a mechanism of path-dependency locks a specific category of workers in a secondary job market. Questions of opportunity cost and an underestimation of the value of education, coupled with dismal wage prospects and structural barriers, reduce significantly the return to vocational education, setting a vicious circle that inevitably co-opts younger generations. These dynamics deserve closer examination as Egyptian 2006 data suggest that graduates of vocational school constitute the biggest and fastest growing group among new entrants in the labor market. Further, this vicious circle of underestimating education is compounded in the job quality realm as women and others recognize their demographic or sectoral disadvantage as the obvious cause of their difficulties.

Further, as evidenced by our previous analysis, international exchange cannot be clearly expected to improve the job quality or wages of workers within Egypt. While tariffs exhibit the power to increase job quality and wages. Conversely, while trade openness as defined by the ratio of exports to output exhibits the power to increase wages, it's ability to improve job quality is universally negative. Similarly, trade openness, as defined by exports and imports in relation to output, exhibits mixed results in the realm of wages and job quality.

Our more complex regressions indicate that tariffs have a universally negative impact upon wages and job quality but that export promotion can lead to the degradation of job quality over time. This combined with decreases in long run job quality and the rising wages associated with export promotion would indicate that if trade openness is to be pursued, it is in the interest of policy makers to couple their broad liberalization policies with tariff reduction in the interest of increased wages and job quality. This should be undertaken with the understanding that the influence of this variable has decreased from 1998 through 2006.

In Egypt, it was further shown that trade liberalization was accompanied by an increase in import penetration ratios -despite high tariff rates and the added protection provided through rules of origin- and yet this has not resulted in declining employment. In fact, and as mentioned above employment in manufacturing has been increasing between 1993 and 2006. While these results seem comforting, it is important to recognize though that tariffs continue to be high for some industries and that the bulk of trade liberalization efforts have been concentrated in the area of intermediate and capital goods so that one cannot postulate with certainty that further liberalization - in the area of final goods -might not be accompanied by high adjustment costs. It is thus crucial at this stage to examine certain

features of labor markets as well as some of the characteristics of the labor force that can help in predicting high adjustment costs.

The conclusions and policy implications of this research are to be found embedded in the reality that the impacts of trade liberalization and market rationalization are largely ambiguous over time and across demographic characteristics. Furthermore, as these results are taking place within an environment that is increasingly subject to the winds of the global economic change, the current statistical relation between market forces and various segments of the Moroccan and Egyptian labor markets cannot be wholly assumed to represent the future. Given our research however, it can be seen that the stratification of the labor market as measured by the movement of wages, access to employment, and returns to education within various economic sectors might be generally improving over the period in question and that the economic divide between men and women is similarly often narrowing. However, these improvements are taking place in an environment of gradually increasing levels of economic and social hardship such that certain groups are becoming simply "less worse off" than their counterparts over time. This is particularly the case when one examines the data relating to job quality as measured by formality and the stability of employment in Egypt and Morocco. It is also important to note that the often positive relationship between liberalization and wages in this period is quite likely the result of the global economic environment pulling wages in a positive direction in spite of the fact that prices during this period were largely outstripping the returns to workers.

Effective policies to combat persistent inequality and gender divides within our present environment of economic crisis do not likely include further liberalization. In fact, the free movement of goods and services in the present period will likely have a contrary result relative to what might be achieved with free movement in the factors of production. Encouraging investment via the liberalization of domestic credit markets for instance will likely pull more out of poverty than the elimination of trade barriers. Simultaneously, a revolution in the realm of Egyptian higher education such that fewer, but might higher quality, graduates are produced annually will likely attract foreign and domestic capital. Further, one cannot deny the role of political stability and predictability in determining a developing nation's ability to attract investment, produce economic growth, and experience human development. Similarly, our research has shown that demographic factors such as gender influence wage outcomes to a degree often exceeding more tangible economic realities. Given this, there are clearly cultural or historical forces influencing the position of women in particular in the labor markets of the developing world. Remedy to this state of affairs can only be found in domestic political reforms aimed at producing a credible juridical structure to enforce equality and the elimination of unjust labor market segmentation.

References

Abdelkarim, A. (1997) *Technical and vocational education and training in the Philippines: experience and views of trainees,* The International Journal of Manpower, Vol. 18, No. 8 (1997), Emerald Group Publishing, pp. 675-701

Achy, L. And Sekkat, K. (2004a), "Trade Liberalization and Employment in the Moroccan Manufacturing Sector: *Firm-level Analysis"*

Achy, L. & Sekkat, K. (2004), "Overlapping trade agreements : Status and challenges for Morocco, IDRC Research Programme 2004-05, Research Report no 427.

Ahlburg, D and M.Amer (2004) *Labor Market Mobility Among Egyptian Youth*, Paper submitted to Workshop on Gender, Work and Family in MENA, 8-10 June, Mahdia City, Tunisia.

AlAzzawi, S. and M.Said (2009) "Trade Liberalization, Inter-Industry Wage Differentials and Job Quality in Egyptian Manufacturing" Population Council working paper no. 6, Cairo, Egypt.

Altonji, Joseph G. (1998) *Effects of Personal and School Characteristics on Estimates of the Return to Education*, Economic Perspectives 22, pp.65-80.

Amer, M (2002) *Youth Labor Market Trajectories over time: A comparison of the 1980s and 1990s*, in Assaad, R. (ed.) The Egyptian Labor Market in an Era of Reform. (Cairo, New York: AUC Press).

Anker, R. 2002.**"**People's Security Surveys: An outline of methodology and concepts**."** International Labour Review Vol. 141, No. 4

Anker R., Chernyshev I., Egger P., Mehran F. and Ritter J. 2002. Measuring Decent Work with Statistical Indicators" with Statistical Indicators" International Labour Review, Vol.142, 2003

Antoninis, M. (2001). *The expansion of technical secondary education in Egypt and its effect on the labor market* Ph.D. Dissertation. St. Anthony's College.

Antoninis, M.(2002) *The Vocational School Fallacy Revisited: Technical secondary Schools in Egypt* Working paper, Mediterranean programd, European University Institute.

Arabsheibani, Reza G. and Lamine Manfor. (2001). *Non-Linearities in Returns to Education in Libya* Education Economics 9, pp.139-144.

Arias, Omar; Kevin F. Hallock and Walter Sosa-Escudero. (2001). *Individual Heterogeneity in the Returns to Schooling: Instrumental Variables Quantile Regression Using Twins Data*" Empirical Economics 26.

Arriagada, A.M., Ziderman, A., (1992). *Vocational Secondary Schooling: Occupational Choice and Earnings in Brazil*. The World Bank, Washington, DC.

Arum, R. (1998), Invested Dollars or Diverted Dreams: The Effect of Resources on Vocational Students' Educational Outcomes, Sociology of Education, Vol. 71, (April 1998), pp. 130-151

Ashenfelter, Orley and Alan Krueger. (1994). *Estimates of the Economic Return to Schooling from a New Sample of Twins* American Economic Review 84, pp.1157-1174.

Assaad, R. and F. El Hamidi (2001). Is All Work the Same? A Comparison of the Determinants of Female Participation and Hours of Work in Various Employment States in Egypt. In The Economics of Women and Work in the Middle East and North Africa. E.

Mine Cinar (Ed.). Amsterdam: JAI – Elsevier Science, pp. 117-150.

Assaad, R. and El-Hamidi (2007) " Assessing Female labor Force in Egypt Then (1998) , and Now (2006)"

Assaad, R. (2004) "Why did Economic Liberalization lead to Feminization of the Labor Force in Morocco and De-Feminization in Egypt?"

Assaad, Ragui. (1997). *The effects of public sector hiring and compensation policies on the*

Egyptian labor market World Bank Economic Review 11, 1 (January).

Assaad, R, 2004 "Why Did Economic Liberalization Lead to Feminization of the Labor Force in Morocco and De-feminization in Egypt?" In *Labor Markets in the Middle East and North Africa*. Yousef, Tarik (ed), London: Routledge. (Forthcoming).

Assaad R and R. Roushdy (2007) " Job quality among non-wage workers in Egypt" paper presented at ERF 15th Annual Conference, Cairo Egypt.

Behrman, J. R., & Wolfe, B. L. (1984). *The socioeconomic impact of schooling in a developing country*. Review of Economics and Statistics, 66, 296–303.

Benhabib, J. and Spiegel, M.M. (1994). *The role of human capital in economic development: evidence from aggregate cross-country data* Journal of Monetary Economics, 34, 143-173.

Bennell, P., (1996a). *General versus vocational secondary education in developing countries: a review of the rates of return evidence*. The Journal of Development Studies 33 (2), 230–247.

Bennell, P., (1996b.) *Using and abusing rates of return: a critique of the World Bank's 1995 education sector review*. International Journal of Educational Development 16 (3), 235–248.

Bennell, P., Segerstrom, J., (1998) *Vocational education and training in developing countries: has the World Bank got it right?* International Journal of Educational Development 18(4), 271–287.

Bertocchi, G.; Spagat, M. (2004) The Evolution of Modern Educational Systems Technical vs. General Education, Distributional Conflict, and Growth, Journal of Development Economics, April 2004, v. 73, iss. 2, pp. 559-82.

Bishop, J. H.; Mane, F. (2004) *The Impacts of Career-Technical Education on High School Labor Market Success*, Economics of Education Review, Special Issue Aug. 2004, v. 23, iss. 4, pp. 381-402.

Böheim, R. and Taylor, M. P. (2000), "Unemployment Duration and Exit States in Britain", Discussion Paper No. 2000-1, Institute for Social and Economic Research, University of Essex.

Boissiere, M; J.B. Knight and R.H. Sabot. (1985). *Earnings, Schooling, and Cognitive Skills*, The American Economic Review 75, pp.1016-1030.

Borghans, L.; De Grip, A.; Heijke, H. (1996) *Labor Market Information and the Choice of Vocational Specialization*, Economics of Education Review, February 1996, v. 15, iss. 1, pp. 59-74.

Bourguignon, F. and M. Fournier (2004) "Selection Bias Corrections. Based on the Multinomial Logit Model: Monte Carlo Experiments"

Boudarbat, B. 2005, "Job-Search Strategies and the Unemployment of University Graduates in Morocco" presented at the IZA-EBRD International Conference on Labour Market Dynamics, the Role of Institutions and Internal Labour Markets in Transition and Emerging Market Economies May 2005.

Cantor, L. (1985) Vocational Education and Training: The Japanese Approach, Comparative

Education, Vol. 21, No. 1, 67-75, reprinted in: Björk, C. and Rohlen, T. (1998) "*Education and Training in Japan*", Vol. 3, London: Routledge Library of Modern Japan

Card, D.; Krueger A.B. (1992). *Does School Quality Matter? Returns to Education and the Characteristics of Public Schools in the United States*, The Journal of Political Economy 100, pp.1-40

Card, D. (1998) *The Casual Effect of Education on Earnings* Center for Labor Economics working

paper
Casse, Daniel and Manno, B.V. (1998) *The Cost and Price of College and the Value of Higher Education* Academic Questions 11, pp. 38-55.
Chang, Ha-Joon (2004) The Role of Social Policy in Economic Development: Some Theoretical Reflections and Lessons from East Asia, T. Mkandawire (ed.), Social Policy in Development Context (London: Macmillan)
Chiswick, B. R. (1986) *Comment on Hauser and Sewell*, Journal of Labor Economics, 4 (3 (Part 2)), S116–S120.
Cohn, E.; Addison, J.T. (2003) *The Economic Returns of Lifelong Learning in OECD Countries*, Education Economics, Vol.6, pp. 253-307.
Cosca, T. (1998) *Earnings of College Graduates in 1996* Occupational Outlook Quarterly 42, pp. 20-29.
Currie, J. and Harrison, A. 1997 "Sharing the Costs: The Impact of Trade Reform on Capital and Labour in Morocco" Journal of Labour Economics, Vol. 15, No. 3, pp. S44-S71.
De Moura, C. (1987) *Is vocational education really that bad?* International Labour Review, 1987, Vol. 126, Issue 5, p 603.
Deaton, A.(1997) *The Analysis of Household Surveys* (Maryland: The John Hopkins University Press).
Dendir, Seife (2006), "Unemployment duration in poor developing economies: evidence from urban Ethiopia", *The Journal of Developing Areas*, Fall.
Dennis, A. 2006 "Trade liberalization, factor market flexibility, and growth:
The case of Morocco and Tunisia", The World Bank, World Bank Policy Research Working Paper 3857.
Diyen, H. (2004), *Reform of Secondary Education in Morocco: Challenges and Prospects*, Prospects, Vol. 34, No. 2 (June, 2004). Franklin, pp. 211-222.
Dougherty, C.; Jimenez E. (1991) *The Specification of Earnings Functions: Tests and Implications* Economics of Education Review, Vol. 10, No. 2.
El-Hamidi, F. (2006) *General or Vocational Schooling? Evidence on School Choice, Returns and 'Sheepskin' Effects from Egypt, 1998.* The Journal of Policy Reform, Vol. 9, No. 2 (June, 2006), Routledge, pp. 157-176.
El Hamidi, F. and Wahba, J. (2006), "The Effects of Structural Adjustment on Youth Unemployment in Egypt", *ERF Twelfth Annual Conference Proceedings*. ERF, Cairo.
El-Hamidi, Fatma (2008). "Trade Liberalization, Gender Segmentation, and Wage Discrimination: Evidence from Egypt" ERF Working Paper No. 414.
El Hamidi, F. and Said, Mona, 2005 "Wage Inequality by Education and Gender in MENA: Contrasting the Egyptian and Moroccan Experiences in the 1990s"
Feliciano, Zadia M. (2001). "Workers and Trade Liberalization: The Impact of Trade Reforms in Mexico on Wages and Employment," *Industrial and Labor Relations Review*, Vol.55, No.1, pp 95-115.
Foley, Mark C. (1997), "Labour Market Dynamics in Russia", *Economic Growth Centre:* Centre Discussion Paper no. 780, New Haven: Yale University.
Gaston, Noel and Daniel Trefler (1994). "Protection, Trade, and Wages: Evidence from U.S.Manufacturing,"
Industrial and Labor Relations Review, Vol. 47, No. 4 (July), pp. 574–93.
Gaston, N., & Sturm, R. (1991) *Educational attainment and the returns to education for Australian youth: evidence of selfselection?* Economic Analysis and Policy, 21 (1), 29–45.
Gill IS and Heyneman S.P. (2000) *Arab Republic of Egypt*, in : IS Gill, F Fluitman, and A Dar (eds.) *Vocational education and training reform : matching skills to markets and budgets, A joint study of the World Bank and the International Labor Office*, Oxford University.
Gill IS, A Dar and F Fluitman (1999) *Constraints and Innovation in Reforming National Training*

Systems : Cross-country Comparisons, International Journal of Manpower 20(7), pp.405-431

Goldberg, K and Pavcnik, N (2003) *The Response of the Informal Sector to Trade Liberalization*, Journal of Development Economics (72), pp. 463-496

Godfrey, M. (1997) *Planning for Vocational Education, Training and Employment: A Minimalist Approach* International Journal of Manpower, 1997, v. 18, iss. 1-2, pp. 206-27.

Green, F. et al. (1999). "The Role of the State in Skill Formation: Evidence from the Republic of Korea, Singapore, and Taiwan", Oxford Review of Economic Policy, Vol. 15, No. 1, 82-96.

Griliches, Z. (1977) *Estimating the returns to schooling: some econometric problems*. Econometrica, 45, 1–22.

Grogan, L. and van den Berg, G.J. (2001), "The Duration of Unemployment in Russia," *Journal of Population Economics*, 14 (3), 549-568.

Grootaert, C. (1990) Returns to Formal and Informal Vocational Education in Cote d'Ivoire: The Role of the Structure of the Labor Market Economics of Education Review, 1990, v. 9, iss. 4, pp. 309-19.

Ham, J., Svejnar, J. and Terrel, K. (1999), "Women's unemployment during transition Evidence from Czech and Slovak micro-data" Economics of Transition 7 (1), 47-78.

Handoussa, H. and Z. Tzannatos (2002) Employment Creation and Social Protection in the Middle East and North Africa., Cairo: AUC Press.

Hanson, Gordon and Ann Harrison (1999) "Trade Liberalization and Wage Inequality in Mexico*" Industrial and* Labor Relations Review 52(2), 271-287.

Hanushek, Eric A. (1995) *Interpreting Recent Research on Schooling in Developing Countries* The World Bank Research Observer 10, pp. 227.

Hargreaves E (1997) *The diploma disease in Egypt : teaching and the monster of the secondary leaving certificate* Assessment in education : principles, policy and practice 4 (1), pp.161-176

Harik, I (1987) Some political and cultural considerations bearing on survey research in the Arab world, in : MA Tessler, M Palmer, TE Farah and BL Ibrahim (eds.) The evaluation and application of survey research in the Arab world, Westview Press

Harrison, A. and G. Hanson (1999). "Who Gains from Trade Reform? Some Remaining Puzzles." Journal of *Development Economics 59(1)*: 125-154.

Haveman, R.; Wolfe B. and Spaulding J. (1991) *Childhood Events and Circumstances Influencing High School Completion* Demography 28, pp. 133-157.

Hayward, G. (2004) *Foreword: a century of vocationalism* Oxford Review of Education; Mar2004, Vol. 30 Issue 1, p3-12, 10p.

Hay-Woo, J. (1991) *Education and Economic Growth in Taiwan: A Case of Successful Planning*, World Development, 19:8, keyword: "country experience"

Hecker, D.E. (1992) *College Graduates: Do We Have Too Many or Too Few? College Earnings and Why They Vary* Occupational Outlook Quarterly 36, pp. 13.

Heckman, J., (1979), "Sample Selection Bias as a Specification Error", *Econometrica*, Vol. 47, pp.153-161.

Heckman, J. (1979) *Sample Selection as Specification Error* Econometrica 47:153-161.

Herman, H.D. (1995), *School-leaving Examinations, Selection and Equity in Higher Education in South Africa*, Comparative Education, Vol. 31, No. 2, Special Number (17): Educational Reconstruction and Transformation in South Africa. (June, 1995), pp. 261-274.

*Hoekman, B. and Winters, L. Alan, 2005, "*Trade and Employment: Stylized Facts and Research Findings", DESA Working Paper No. 7.

Hollenbeck, K. (1993) *Postsecondary Education as Triage: Returns to Academic and Technical Programs*, Economics of Education Review, September 1993, v. 12, iss. 3, pp. 213-32.

Horrace and Oaxaca (2001), "Inter-industry Wage differentials and the Gender Wage Gap: Identification issues." Industrial Relations and Labor Recvieqw, vol. 54, no. 3, p.611-618.

Hotchkiss L (1993) *Effects of training, occupation, and training-occupation match on wage*, Journal of Human Resources 28(3), pp.482-496

International Labor organization (2005) *Key Indicators of the Labour Market*, 4th Edition.

ILO**,** 1999 SEED Working Paper No. 4, Job Quality and Small Enterprise Development, International Labour Organisation, Geneva

Jaeger, D. A. and Page, M.E. (1996) *Degree Matters: New Evidence on Sheepskin Effects in the Returns to Education* The Review of Economics and Statistics 78, pp.733

Jenkins, Stephen (2004), *Survival Analysis*. University of Essex, mimeo.

Johanson, R. K., and Kanawaty, G. (2001) *Investing in the Future: The National Training Fund in Egypt*, ILO-UNDP, Geneva.

Jones, F.L. (1983) *On Decomposing the Wage Gap: A Critical Comment on Blinder's Method*. The Journal of Human Resources, 28, 126-130.

Kane, T.J. and Rouse, C.E. (1995) *Labor-Market Returns to Two- and Four-Year College* American Economic Review 85, pp.600-615.

Kang, S.; Bishop, J.H. (1989) *Vocational and Academic Education in High School: Complements or Substitutes?* Economics of Education Review, 1989, v. 8, iss. 2, pp. 133-48.

Kheir- El Din, H. and Ghoneim, A. 2004, "The Economic and Regulatory Policy Implications of Overlapping preferential trade agreement sin Arab countries: The case of Egypt", IDRC Research Programme 2004-05, Research Report no 425.

Koenker, R. And Bassett, G. Jr. (1978), *Regression Quantiles,* Econometrica, vol. 46 (1), pp. 33-50.

Kremer, Michael R. 1995. *Research on Schooling: What We Know and What We Don't – A Comment on Hanushek* The World Bank Research Observer 10, pp. 247.

Kupets, O. (2006) "Determinants of unemployment duration in Ukraine", *Journal of Comparative Economics* 34 (2), 228-247.

Kuruvilla, S. (1996), Linkages between industrialization strategies and industrial relations/ human resource policies: Singapore, Malaysia, the Philippines and India, Industrial and Labor Relations Review, Vol. 49, No. 4 (Jul., 1996), pp. 635-657

Lassibille, G. and Gomez, L.N. (1998) *The Evolution of Returns to Education in Spain 1980-1991* Education Economics 6, pp. 3-10.

Leigh-Doyle, S. (1991) *Increasing Women's Participation in Technical Fields: A Pilot Project in Africa* International Labour Review, 1991, v. 130, iss. 4, pp. 427-44.

Lillis K and D Hogan (1983) *Dilemmas of diversification : problems associated with vocational education in developing countries*, Comparative Education 19(1), pp.89-107

Lindgren (2005), M "*Does schooling make sense? A household perspective on the returns to schooling in Egypt*", Lund studies in economic history, Lund University, Sweden.

Löfgren, H., El-Said, Moataz and Robinson, S. 1999,"Trade Liberalization, Transfers and Skill Upgrading in Morocco: A Dynamic General Equilibrium Analysis," mimeo.

Lubyova, M. and. van Ours, J.C (1997), "Unemployment Dynamics and the Restructuring of the Slovak Unemployment Benefit System", *European Economic Review*, 41, 925-934.

Lynch, L. (1989) *The youth labour market in the eighties: determinants of reemployment*

probabilities for young men and women Review of Economics and Statistics, 71, 37-45.

McGinn, N.F. et al (1980) *Education and Development in Korea*, Cambridge, MA: Council on East Asian Studies Harvard University

McMahon, W.W.; Jung, J.H.; Boediono (1992) *Vocational and Technical Education in Development: Theoretical Analysis of Strategic Effects on Rates of Return* Economics of Education Review, September 1992, v. 11, iss. 3, pp. 181-94.

McKormick, K. (1988) *Vocationalism and the Japanese Educational System*, Comparative Education, Vol. 24, No. 1, pp.37-51.

Megahed, N (2004) *Secondary Education Reforms in Egypt: Rectifying Inequality of Educational and Employment opportunities* Mimeo, Univeristy of Pittsburg.

Metcalf DH (1985) *The economics of vocational training : past evidence and future considerations*, World Bank Staff Working Papers 713, The World Bank

Middleton J and A Ziderman (1997) *Overview: World Bank policy research on vocational education and training*, International Journal of Manpower 18(1-2), pp.6-28

Min, W.F.; Tsang, M. C. (1990) Vocational Education and Productivity: A Case Study of the Beijing General Auto Industry Company Economics of Education Review, 1990, v. 9, iss. 4, pp. 351-64.

Mincer, J. (1974) *Schooling, experience and earnings* New York: National Bureau of Economic Research.

Moenjak, T.; Worswick, C. (2003) *Vocational Education in Thailand: A Study of Choice and Returns* Economics of Education Review, February 2003, v. 22, iss. 1, pp. 99-107.

Narendranathan, W. and M. Stewart (1993), "Modelling the probability of leaving unemployment: Competing risks models with flexible baseline hazards", *Journal of the Royal Statistical Society*, Series C, Applied Statistics, 42(1), 63-83.

Nabli, M. (2002) *Higher Education in the Middle East and North Africa: Challenges and Opportunities for the 21st Century* paper submitted for conference of Institut du Monde Arabe.

Neuman, S.; Ziderman A. (2001) Can Vocational Education Improve the Wages of Minorities and Disadvantaged Groups? The Case of Israel, IZA Discussion Paper No. 348

Oakes, J. (1983) Limiting Opportunity: Student Race and Curricular Differences in Secondary Vocational Education, American Journal of Education, Vol. 91, No.3 (May, 1983), pp. 328-355

Oaxaca, R. L., (1973) *Male-Female Wage Differentials in Urban Labor Markets*, International Economic Review, Vol.14, pp. 693-709.

Ohno, K. and Ohno, I. (1998) *Japanese Views on Economic Development: Diverse Paths to the Market*, London: Routledge Studies in the Growth Economies of Asia,

Paleocrassas, S.; Rousseas, P.; Vretakou, V. (2002) *Upper Secondary Curriculum Options and Labour Market Performance: Evidence from a graduates survey in Greece* Journal of Vocational Education and Training, Volume 54, Number 2, 2002.

Pempel, T.J. (1999) *The Developmental Regime in a Changing World*, in: Woo-Cummings, M. *The Developmental State*, Ithaca: Cornell University Press, keyword: "country experience"

Portugal, P. and Addison, J. T. (2003), "Six Ways to Leaving Unemployment", *IZA Discussion Paper* No. 954, Bonn.

Preston, R. (1993), *Gender and Relevance: decentralized vocational education in Papua New Guinea*, Oxford Review of Education, Vol. 19, No. 1., pp. 101-115
Pritchett, L. (1999) *Where has all the Education Gone?* World Bank: Washington.
Psacharopoulos G and WA Loxley (1985) *Diversified secondary education and development: evidence from Colombia and Tanzania*, Johns Hopkins University Press
Psacharopoulos, G. (1984) *The Contribution of Education to Economic Growth: International Comparisons* In J. W. Kendrick, International Comparisons of Productivity and Causes of the Slowdown. Cambridge: American Enterprise Institute/Ballinger Publishing Company.
Psacharopoulos, G., (1986) *Returns to education*. The Journal of Human Resources 20 (4), 583–604.
Psacharopoulos, G., (1987) *To vocationalize or not to vocationalize? That is the curriculum question* International Review of Education 33 (2), 187–211.
Psacharopoulos, G., (1994) Returns to investment in education: a global update. World Development 22 (9).
Psacharopoulos, G. (1995) "The Profitability of Investment in Education." Working Paper.
Refaat, A. 2003 "Trade-Induced Protectionism in Egypt's Manufacturing Sector" ECES Working Paper No. 85.
Reilly, B. and P. V. Dutta (2005) " The Gender Pay Gap and Trade Liberalisation: Evidence for India" PRUS working Paper no.32, University of Sussex , UK.
Reimers, C. W. (1983) *Labor Market Discrimination Against Hispanic and Black Men* The Review of Economics and Statistics, 65 (4), 570-579.
Revenga, Ana (1997). "Employment and Wage Effects of Trade Liberalization: The Case of Mexican Manufacturing," *Journal of Labor Economics*, Vol.15, No.3, S20-S43.
Roesch, G. (1991) *Vocational Training in Korea*, in: Georg, W. et al *Vocational Education and Training, Employment and Labour Relations in the Republic of Korea*, Baden-Baden: Nomos
Said, M (2002) *A Decade of Declining wage Inequality?* in Assaad, R. (ed.) (2002) *The Egyptian Labor Market in an Era of Reform.* (Cairo, New York: The American University in Cairo Press)
Said, M (2003) Occupational Segregation and the Distribution of Wage Premia in Egypt: Evidence from Quantile Regressions Economics Department, SOAS, Working Paper no 132, 2003.
Said, M (2004) Compensating Differentials and Non-Pecuniary Aspects of Public Sector Jobs: Evidence from Egyptian Household Survey Data Economics Department, SOAS, Working Paper no 136, 2004.
Sakellariou, C. (2003) Rates of Return to Investments in Formal and Technical/Vocational Education in Singapore Education Economics, April 2003, v. 11, iss. 1, pp. 73-87
Salmi, Jamil (2000) *Tertiary education in the Twenty-First Century: Challenges and Opportunities* Human Development Department LCSHD Paper Series No. 62; June 2000. The World Bank.
Sato, M. (1987) *Vocational Training in the Takeoff Period*, in: Toyoda, T. (ed.) *Vocational Education in the Industrialization of Japan*, The United Nations University, Tokyo: University of Tokyo Press
Schultz, P.T. (1988) *Education Investments and Returns*, in: Chenery, H. and Srinivasan, T.N. HandLindgren (2005) of Development Economics, Vol. I, North Holland: Amsterdam.
Serneels, Pieter (2007), "The Nature of Unemployment among Young Men in Urban Ethiopia", Review of Development Economics, 11(1), 170–18.
Siphambe, H.K. (2000) *Rates of return to education in Botswana*. Economics of Education Review 19, 291–300.
Tansel, A. (1994) *Wage-employment, Earnings and Returns to Schooling for Men and Women in Turkey*, Economics of Education Review, 13:4, pp.305-320. 15

Tansel, A. (2001) *Self Employment Wage Employment and Returns to Schooling by Gender in Turkey*, in Labor and Human capital in the Middle East: Studies of Markets and Household Behavior. ed. by Djavad Salehi-Isfahani, Ithaca Press, Reading, UK.

Tansel, A. (2002) *General Versus Vocational High Schools and Labor Market Outcomes in Turkey*. In *Human Capital Population Economics in the Middle East*, İsmail Sirageldin(ed.) An Economic Research Forum Edition, The American University in Cairo Press.

Tansel, A and Tasci, M (2005), "Determinants of Unemployment Duration for Men and Women in Turkey", ERF Discussion Paper 0332, ERF.

Te Riele, K.; Crump, S. (2002) *Young people, education and hope: bringing VET in from the margins*, International Journal of Inclusive Education; Jul2002, Vol. 6 Issue 3, p251-266, 16p.

Toyoda, T. (1988) *Education and Industrialization of Japan*, in: Toyoda, T. (ed.) *Vocational Education in the Industrialization of Japan*, The United Nations University, Tokyo: University of Tokyo Press

Tsang, M. C. (1997) *The Cost of Vocational Training*, International Journal of Manpower, 1997, v. 18, iss. 1-2, pp. 63-89.

Tunali, I. and R. Assaad (1992), "Market Structure and Spells of Employment and Unemployment: Evidence from the Construction Sector in Egypt", *Journal of Applied Econometrics*, 7, 339-367.

Tunali, I. 2003. *General vs. Vocational Secondary School Choice and Labor Market Outcomes in Turkey, 1988-98*. Paper presented at the 10th annual ERF conference in Morocco, December, 2003.

Tzannatos Z and G Johnes (1997) *Training and skill development in the East Asian Newly Industrialized Countries*, Journal of Vocational Education and Training 49(3).

UNDP (2003) *Arab Human Development Report: Building a Knowledge Society*. New York: UNDP

USAID and IEQ (2004) *Secondary School Reforms in Arab states*, Mimeo, from http:// www.ginie.org

Van den Berg, G. J. and van Ours, J.C. (1999), "Duration Dependence and Heterogeneity in French Youth Unemployment Durations", *Journal of Population Economics*,12(2), 273-285.

Van Eeghen, W (1993) *Education and Economic Growth in Middle East and North Africa*, Paper presented at the First Meeting of the Mediterranean Development Forum (MDF1).

Wade R (1990) *Governing the market : economic*, Princeton University Press

Wilson, K. (2001) *The Determinants of Educational Attainment: Modeling and Estimating the Human Capital Model and Education Production Functions,* Southern Economic Journal 67, pp. 518-551.

World Bank (1980) *Education Sector Policy Review*, Washington: World Bank

World Bank (1995a) *Priorities and Strategies for Education: A World Bank Sector Review. Education and Social Policy Department*, World Bank, Washington, D.C.

World Bank (1995b) World Development Report 1995: Workers in an Integrating World, Oxford University Press

World Bank (1996) *Staff appraisal report; The Arab Republic of Egypt ; Education Enhancement Program*, Report 15750-EGT, Human Development Group, Middle East and North Africa Region

World Bank (2004), Unlocking the Employment Potential in the Middle East and North Africa : Toward a New Social Contract, Washington DC.

World Bank (2005), *Reforming TVET in the Middle East and North Africa: experiences and challenges*, Washington DC.

Zhang, H. (2003, August). "Sample Selection Bias and Returns to Education in Egyptian Labor Market, 1988, and 1998. Humphery Institute of Public Affairs, University of Minnesota.