International Trade Liberalization and Gender Wage Inequality: A Cross-National Analysis 1975–1998

by

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Abstract

This study examines the effects of economic globalization on gender wage inequality. A theory of global economic restructuring and its impact on the quality of women's work suggests that national integration into the world economy through trade liberalization significantly expands women's access to income but does not necessarily remove barriers to women's advancement or ameliorate the predominance of low-paying, menial jobs held by women. A measure of gender wage inequality is employed as the dependent variable in cross-sectional and panel OLS regression analyses of fifty-five nations using data from 1975–1998. In addition to national socio-economic forces, trade openness is found to have *increased* the female share of earned income from 1990–1998 in selected models. Furthermore, trade risk and transnational corporate penetration are found to be significantly related (both positively and negatively) to gender wage differentials. However, these effects are determined by a country's world system position and region. The analyses illustrate that global economic restructuring is a gendered process that transforms and builds upon existing gender inequalities and national economic status. Therefore, the inclusion of global structural characteristics into comparative research on gender inequality is essential.

Biography

Lisa B. Meyer is Associate Professor of Sociology at SUNY Geneseo. Her interest and current research is in the field of globalization and gender and development. Specifically, she is interested in the ways in which increased trade within the world economic system over the last three decades has influenced gender relations in the realm of formal employment and household relations.

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INTRODUCTION

Over the last decade, the focus of study among many scholars in the social sciences has centered on the causes, scope, and impact of the process known as 'globalization' or 'global economic restructuring.' One aspect of economic globalization is the internationalization of production and the accompanying emergence of a new international division of labor (McMichael 1996). In addition, globalization involves an increasing flow of goods and resources across national borders through trade liberalization policies and regional trading agreements (Belous and Hartley 1990; Jackson 1993; McMichael 1996). According to the World Bank (1997), world exports of goods and services in relation to world output rose from 12.1 percent in 1973 to 16.7 percent in 1994. Since women have been integral to the formation and growth of export economies throughout the world for centuries (Senior 1991; Momsen 1993; Joekes and Weston 1994; Freeman 2000), the nature of the current global trading system raises some important questions for social scientists interested in understanding changing gender roles throughout the world.

The expansion of the global trading system during the past three decades may have a differential impact on women and men because of their gender-specific roles. Women may be particularly susceptible to the negative effects of increased trade liberalization because cross-nationally, in comparison to men, they have differential access to economic resources such as basic and higher education, property, credit, training (in business and agriculture), and wages (UNDP 1995). Despite the important differences in men's and women's roles in the era of economic globalization, the effects of trade openness and other forms of economic globalization (e.g. investment openness) continue to be discussed mainly in non-gender-specific economic and political terms. Debates about the *gendered* impact of trade are for the most part concentrated in circles of feminist economists and within women's non-governmental organizations throughout the world (Bakker 1994; Joekes and Weston 1994; Marchand 1994; Beneria 1995; Elson 1995; United Nations Development Programme 1995; Riley and Mejia 1997; Haxton and Olsson 1997; WIDE 1997a, 1997b). This unfortunate exclusion of the differential social and economic impacts of trade liberalization on women and men from the policy arena may in fact worsen the lives of the people that policy makers are aiming to improve. As argued by Sen (1996:132), "trade liberalization is not inherently welfare producing; it can produce and re-produce inequality, social disparities and poverty at the same time as it expands wealth." This study explores the interrelation of trade and gender by focusing on one aspect of gender relations in national labor markets: gender wage inequality. More specifically, I attempt to determine what effect, if any, economic globalization has on gender pay relativities cross-nationally.

The first section outlines the theoretical framework for the relationship between economic globalization and gender wage inequality. It also briefly discusses the national- and individual-level determinants of cross-national variation in women's share of earned income that have been identified in previous comparative studies on this topic. The second section describes the data and methods used in my analyses, and the third section presents the results. The fourth discusses the findings, compares them to those of previous research, and considers their importance in reference to theories concerned with the gender dimensions of economic globalization. I conclude by discussing the broad implications that reductions in the gender wage gap has for national development and gender equality, as well as directions for further research.

The Interrelation of Economic Globalization and Gender Wage Inequality

According to Peterson, understanding and interpreting global restructuring involves relational thinking requiring a comprehension of macro- (practices, institutions, structures of social re/production), meso- (meaning systems, ideologies, paradigms), and micro- (subjectivity, agency, self and collective identities) level processes as "interacting dimensions of social reality" (Peterson 1997:185). The concept of relational thinking is particularly useful in a discussion concerning economic liberalization and gender wage inequality in that it sensitizes us to the specifically gendered and contradictory outcomes of global structural transformations (Peterson 1997; Marchand and Runyan 2000). That is, using this framework forces us to ask questions such as: What happens to gender pay relativities as more women are absorbed into the modern sector as wage laborers? Is the gender pay gap lower or higher in trade-related activities compared to non-exporting activities? Furthermore, relational thinking reveals the extent to which global restructuring is embedded in and exacerbates unequal power relations based on gender, as well as race, ethnicity, and class (Mitter and Rowbotham 1995; Peterson 1997; Marchand and Runyan 2000).

With regards to the impact of global economic restructuring on women's wages relative to men's, several theorists have suggested that integration into the global economy significantly expands opportunities for women in the workplace, but does not necessarily remove barriers to women's advancement or ameliorate the predominance of low paying, menial jobs held by women (Mears 1995; Joekes and Weston 1994; L. Meyer 2003, 2006). In other words, economic liberalization is, as Marchand argues, both an 'inclusionary' and 'exclusionary' process for women (Marchand 1994, 1996; Marchand and Runyan 2000).

The creation of new jobs and the increasing demand for female labor—particularly in export-producing industries—has been well-documented over the last three decades (Fernandez-Kelly 1983; Ward 1990; Wood 1990, 1994; Joekes and Weston 1994; L. Meyer 2006). As nations liberalize their economies[1] and transnational corporations (TNCs) set up operations in developing countries in order to reduce costs, women (especially young unmarried women) in these nations are increasingly drawn into the manufacturing sector (Joekes and Weston 1994; L. Meyer 2003). Additionally, with opportunities in banking and commercial services growing in direct response to globalization through the provision of special services to expanding international companies, jobs in financial and office services tend to grow rapidly during the expansion of international business (Mears 1995). As a result, in regions such as Latin America and the Caribbean, as well as Asia, export activity has also led to the widening of opportunities for women's employment in service-sector jobs which were previously dominated by men (Freeman 1993, 2000; Pearson and Mitter 1993; Joekes and Weston 1994; Gaio 1995; Gothaskar 1995; Mears 1995; Sim and Yong 1995; L. Meyer 2003).

In a global economy organized around services and flexible production processes, women in the developing world have inadvertently become the preferred labor force for certain kinds of jobs. This is because women continue to be associated with unremunerated and service-oriented reproductive labor and, in being viewed as more docile then men, are often seen as physically and mentally better suited to perform tedious repetitive tasks (Fernandez-Kelly 1983; Hale 1998; Ward 1990; Marchand and Runyan 2000)[2]. These jobs range from light assembly work in export-processing zones and subcontracted homework to clerical and domestic work—all positions at the low end of a hierarchical occupational structure (Ward 1990; Boris and Prugl 1996; Freeman 2000).

The majority of the scant evidence that does exist on the relationship between neo-liberal economic reforms and gender wage inequality suggests that large wage differences by gender exist throughout labor markets in both the developed and developing world (Birdsall and Sabot 1991; Psacharopoulos and Tzannatos 1992; Kang 1993; Joekes and Weston 1994; Reskin and Padvic 1994; Joekes 1995; Seguino 1997, 2000; Dávila and Pagán 1999). Nevertheless, some scholars suggest that the gender pay gap is reduced as a result of increased economic openness. For example, in a study of six countries, Tzannatos (1999) found that labor markets in developing countries have been transformed relatively quickly in the age of economic globalization, with gender differentials in pay in these countries narrowing much faster than in industrialized nations. Furthermore, when comparing wage and occupational differences in two Mexican cities, Tijuana and Torreon, Anderson and Dimon (1995) concluded that the wage gap is lower where export-processing activity increases the demand for labor, especially female labor. In some cases, such as Bangladesh, gender wage differentials narrowed in the export textile industry more than in any other manufacturing sector in the early stages of liberalization (Bhattacharya 1999), but at the same time amplified in other areas as the proportion of men taking up high-skilled jobs and the number of temporary workers among women increased (Paul-Majumder and Begum 2000).

In Southeast Asia, divergent trends in pay discrimination have been reported. Seguino (2000) found that in Taiwan, greater capital mobility in the female labor-intensive sectors leaves women workers more vulnerable to losses of bargaining power in wage negotiations and widens the gender wage gap. However, in South Korea, the more restrictive capital mobility environment encourages firms to maintain competitiveness by employing less gendered strategies, such as technological upgrading and product quality improvements which do not lead to increases in the gender wage gap. On the other hand, with reference to trade openness, Berik et al. (2002) found, during 1981–1999, rising import shares were associated with increased wage discrimination against women workers in concentrated industries, such as textiles and electronics, in both Taiwan and Korea.

Wage differentials across nations can be explained by the driving forces of the global economy, namely the relocation of production to developing nations. These shifts in production are based on the theory of comparative advantage, which argues that nations will export goods that their labor produces relatively efficiently and cheaply and import goods that their labor produces relatively inefficiently (Gern 1991). Hence, in order to take advantage of low wages—developing nations' comparative advantage—and maintain a competitive position in the global marketplace, TNCs have restructured their operations to increase the number of exports from developing countries.

However, discussions concerning the trends associated with comparative advantage belie an increasingly gendered process. Writing on the rise of female employment in export manufacturing, Joekes contends that "...women are the source of the lowest of low-wage labour available and the mobilization of women into the export sector in developing countries can be logically interpreted as the ultimate expression of the forces of comparative advantage" (1995:4). This statement is supported by research conducted in Mauritius, Korea, Malaysia, Taiwan, India, and the Dominican Republic (Joekes 1995).

In addition to the effect of global economic pressures, the fact that women earn less than men is explained by neo-classical economists in terms of differences in human capital. According to this theory, individuals invest in human capital as long as they expect future returns to compensate them for foregone earnings and other costs of acquiring human capital (Mincer 1970, 1979; Becker 1975). It is assumed that individual workers accumulate their personal investments, or 'human capital,' to maximize earnings through the life-cycle. Education and work experience have been

identified as the most important human capital factors (Becker 1975; Stevenson 1973). Schools provide individuals with important skills that increase their productivity in the labor market. Thus, it is assumed that more highly educated workers tend to be more productive and receive higher wages. Since longer periods of labor force participation expose workers to more opportunities of job training and skill development, those who stay in the labor market for longer periods of time are also expected to be more productive and earn higher wages (Becker 1975). Human capital theorists argue that the major differences between the human capital of women and men result from the disparity of their life-cycle work experience in the labor market. That is, while women and men are seen as equally capable, women's low earnings are due to their lower work experience and educational attainment.

Although human capital theory is one of the most widely accepted economic models used in understanding earnings determinations, it fails to incorporate the forces that determine educational attainment, length of time in the workplace, and hours worked, which are deeply rooted in society-wide notions about gender and women's childbearing role. According to Joekes:

> ...women are commonly prevented by statute from working night shifts, which limits their possibilities of employment in continuous process industries; women are similarly perceived of as in need of protection from heavy and dangerous work—both permeated by conceptions of masculinity—and thus largely excluded from engagement in heavy industry; women leave employment periodically for childbearing, which carries over into expectations of women's lack of commitment and relative docility in the face of dismissal and poor treatment; and this, combined with the fact that women typically (though by no means always) enter the labour market with lesser levels of educational attainment, translates into a perception that women are suited to "lesser skilled" and therefore appropriately lesser paid jobs—in itself another gender-based, socially constructed inference rather than an objective feature of reality (1987:5).

Moreover, the human capital model ignores structural aspects of labor markets. Many studies have identified occupational sex segregation, or the concentration of women and men in particular occupations, as a major factor in lowering women's earnings, thereby maintaining women's inferior economic and social status relative to men (Roos 1981; England et al. 1982; England and Farkas 1986; Kang 1993; Dávila and Pagán 1999).

Cross-national similarities in the sex-typing of occupations in industrialized and developing countries are well documented (Jonung 1984; Roos 1981; Bettio 1988; Charles 1992; Anker 1998; Semyonov and Jones 1999; Chang 2000). Female-dominated occupations tend to have lower wages, less on-the-job training, and fewer possibilities for occupational advancement than male-dominated occupations (Stevenson 1973; Elson and Pearson 1981; Baron and Bielby 1985; Pearson and Mitter 1993; Joekes and Weston 1994; Gothaskar 1995). Furthermore, women are overrepresented in clerical, sales, and service work, while men predominate in production and managerial occupations (Joekes and Weston 1994; Adler and Izraeli 1994; Anker 1998). Occupational sex differentiation is a barrier to gender equality in the labor market and is therefore an important mechanism through which women are denied access to high-paying and high-status jobs.

There are several ways in which shifts in global economic production have affected women's distribution and status in the occupational structure throughout the world. In addition to spurring

the creation of new low-end jobs in the manufacturing and service sectors, trade and investment liberalization increases competition among businesses worldwide. Some scholars have argued that this intense competition motivates companies to use all of the best human resources available, and thus they become more amenable to using women, especially in managerial positions (Adler and Izraeli 1994; Gothaskar 1995; Mears 1995; Sim and Yong 1995). While the proportion of women holding managerial positions falls dramatically short of that of men cross-nationally, Adler and Izraeli (1994) find that, for several reasons, TNCs are more likely to be and have been more successful in placing women in higher level management assignments than domestic organizations. First, they can utilize hiring practices that do not coincide with those of the local culture and thus can and do hire women managers. This is the case even in those countries where local firms rarely hire women to fill management positions. Second, TNCs have begun to send women abroad as expatriate managers. Third, whereas domestic and multi-domestic[3] firms have been characterized as structural hierarchies, TNCs are increasingly characterized as horizontal networks in which women work particularly well. According to Adler and Izraeli (1994:9), "the international business enterprise is often centered around relationship-building and is based on a structure that is less hierarchical and more circular or team structured." This organizational structure is perceived as easier for women and one in which they can function more effectively than men. Lastly, TNCs have identified diversity—including gender diversity—as a form of innovation that is crucial for global competitiveness. These positive effects of economic liberalization on women's distribution in national occupational structures is supported by L. Meyer's (2003) cross-national study, which indicates that global economic forces have in fact *reduced* occupational sex segregation and status inequality. However, these effects are determined by region and a country's world system position.

Despite the fact that economic globalization has the potential to reduce gender status inequality and segregation in occupational structures in both industrialized and developing nations, major barriers to women's advancement still exist. These barriers include: stereotypical perceptions of women's abilities and qualifications; socio-cultural attitudes towards women's family and work roles; women's minimal access to the social networks from which companies recruit managers and executives; and broad-based discrimination against women (Adler and Izraeli 1994; Mears 1995; Singh-Sengupta 2001). Furthermore, the globalization process does not automatically provide women with the important credentials, contacts, and networks that are required for promotion to executive status (Adler and Izraeli 1994).

In addition to occupational attainment, national legal environments have been identified as important determinants of gender wage differentials (Charles 1992; Gregory and Dávila 1993). For example, in comparing the gender pay gaps in Costa Rica and El Salvador, Dávila and Pagán (1999) argue that a modest gain in Costa Rican women's earnings during the 1980s can in part be attributed to that country's relatively pro-female legal environment (e.g. paid maternity leave, childcare facilities available to working women, representation of women in state legislatures)[4]. Furthermore, Weichselbaumer and Winter-Ebmer (2003) found that countries that have signed the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) have significantly lower gender wage residuals. This is attributed to the fact that once states enter into the treaty, they commit themselves to undertake a number of measures to end discrimination. These include adopting the principle of equality of men and women in their legal system (e.g. removing restrictions for women to work at night and while pregnant), establishing institutions to guarantee the protection of women against discrimination, and reporting to a committee that monitors states' compliance with the convention.

Despite the importance of investigating the role that equal-treatment legislation plays in promoting gender equality in the labor market, studies on the topic have been quite limited and have concentrated on investigating one single country, usually in the advanced, industrialized world (Neumark and Stock 2001; Gunderson 1994). This is primarily due to the lack of data on equal-treatment laws and enforcement institutions at the international level.

RESEARCH DESIGN AND HYPOTHESES

In an effort to determine what effect, if any, economic globalization has on gender pay relativities, I conducted a cross-national, multivariate statistical analysis. The population for this study includes all nations for which data on the female share of earned income are available. The period under consideration in this study is 1975–1998. The sample consists of fifty-five nations that had a population of over one million in 1980. Data for the analysis were obtained primarily from United Nations Development Program Human Development Reports (UNDP 1995, 1996, 1997, 1999, 2000) and the World Bank World Development Indicators (1998, 1999) and World Investment Report (1997).

Two statistical models were employed for the analysis of the female share of earned income. First, cross-sectional data are used in which the independent variables are lagged eight to ten years behind the dependent variable. This design tests for the effects of the independent variables on the level of women's share of earned income and takes into account the fact that the effects of global economic restructuring are not immediate. Second, analyses with a lagged dependent variable are included in an effort to control for previous levels of earned income.

Dependent Variable

The dependent variable, gender wage inequality, is measured as women's share of earned income as measured by the value of per capita GDP (PPP US$) for women as a percent of per capita GDP (PPP US$) for men in 1998. The United Nations Development Program calculates this data from the female share and male share of earned income. These shares, in turn, are estimated from the ratio of female wage to male wage (non-agricultural wage) and the percentage shares of women and men in the economically active population (UNDP 1995–2000).

Independent Variables

I include several global economic measures—four of which are trade-related—to test for the effects of the global trading system on gender pay relativities.

The first is a general measure of trade and is operationalized as the sum of merchandise exports and imports measured in current US dollars divided by the value of GDP converted to international dollars using purchasing power parity conversion[5]. This indicator captures the overall magnitude of national participation in the global trading system.

The second indicator of trade openness is exports of goods and services as a percent of GDP. Unlike the first indicator of openness, this measure captures the shift toward an 'export orientation' that has occurred within many developing nations as a result of structural adjustment policies implemented in the 1980s and membership in the World Trade Organization. Higher levels of trade openness are expected to increase women's wages relative to men's. These effects are expected to be greater in the periphery and semi-periphery than in the core of the world economy. This

hypothesis is based on the fact that women make up a large proportion of the pool of unskilled labor that is required for export production in manufacturing and service sectors, particularly in developing nations.

A third indicator of economic globalization is exposure to external risk. While the previous two variables provide a measure of trade magnitude, they do not take into consideration the sensitivity of domestic economies to occurrences in other nations or the world economy. That is, two economies can be equally exposed to trade yet they might have quite different levels of exposure to external risk if their terms of trade differ in volatility. For example, the ratio of trade to GDP is around 86 percent in both Norway and Jamaica, yet the terms of trade are almost four times as volatile in Jamaica. Rodrik (1997) argues that since exposure to external risk is the consequence both of high levels of trade and of volatility in the prices of traded goods, it is the interaction of these two that is important for understanding employment patterns. The measure is calculated as the product of trade openness and the standard deviation of the first logarithmic differences in the terms of trade[6].

While Rodrik (1997) examines the effects of trade risk volatility on income more generally and on state spending, his theory has implications for women's share of earned income. In particular, specialization (in the global trading system) according to comparative advantage is expected to result in more concentrated production structures[7]. Although the demand for female labor in formerly male-dominated productive sectors is quite strong (especially in developing countries), higher levels of exposure to external risk increase job insecurity in these productive sectors. The persistence of conventional gender ideologies that view men as the primary breadwinners in their households (Lafont 2000; Mies 1986) suggests that men are more likely to be employed in these occupations in such an unstable environment. Therefore, it is expected that higher levels of trade risk reduces women's wages relative to men since all workers, but especially female workers, are vulnerable to labor shocks brought on by the interaction between openness and terms of trade. Given that core nations have more diversified economies and production structures, these effects are expected to be larger in the semi-periphery and the periphery.

The final measure of global economic integration and risk is trade dependency, or commodity concentration—a Gini-Hirschman index of concentration, defined over 239 three-digit standard international trade classification categories of exports as calculated by the United Nations Conference on Trade and Development. This variable attempts to measure one of the particular *patterns* of trade that dependency theorists predict will have negative consequences for nations. Previous studies (Ward 1984; Pampel and Tanaka 1986; Clark et al. 1991; Miller 1999) have predicted that overspecialized trade relationships (or higher levels of commodity concentration) in the world trading system will lower women's share of economic resources relative to men's.

All four trade measures are averaged over ten or fifteen years, depending on data availability. This is done to capture the effects of the trading system that has emerged over the last three decades, as well as to maximize the number of observations in the statistical models. To examine the extent to which the above indicators cluster into distinct factors and represent two distinct concepts, I analyzed the four measures of trade using principle factor analysis[8]. The analysis yielded a two-factor solution which accounted for approximately 90.04 percent of the variance[9]. I use these two factor indices to measure openness and risk in my models.

In addition to trade openness and the risks associated with open economies, increased foreign investment—particularly in the form of TNCs—has been found to influence gender relations in

national labor markets in general and to raise women's wages relative to men's (Fernandez-Kelly 1983; Ward 1983; Ross 1997; Tzannatos 1999; Anderson and Dimon 1995). In order to test this argument, I include a measure for TNC penetration. This variable is operationalized as the ratio between foreign direct investment inward stock and market GDP[10]. This is an indicator of the amount of foreign ownership and control over the national economy and is expected to decrease women's share of earned income relative to men's as TNCs often invest in labor-intensive industries that leave women workers more vulnerable to losses of bargaining power in wage negotiations. This effect is expected to be greater in low- and middle-income nations, given the rise of flexible production processes that define the era of globalization.

Concerning national socio-economic factors that affect gender wage differentials, I include four measures. The first, child/woman ratio, takes into account the fact that family structure has been found to play a role in gender discrimination in employment. I measure this as the number of children ages 0–9 divided by the number of women ages 25–44. According to Pampel and Tanaka (1986), this measure taps childrearing duties more directly than the crude birth rate (Semyonov 1980) or the total fertility rate (Ward 1983). Moreover, it captures the current size of the population needing care, has the advantage of measuring fertility over the last ten years, and controls for variation in infant and child mortality. Because childbirth and the presence of young children in the household leads women to exit the labor market periodically and often leads to perceptions about their degree of commitment to employment, high child/woman ratios are expected to increase the gap between men's and women's wages.

Deeply rooted, society-wide notions about gender and employment are further captured in the analysis by using two standardized indices of occupational sex segregation provided by Semyonov and Jones (1999). Much of the research on this topic has used a range of measures to describe gender-based occupational differentiation. These measures can be classified into two distinct types: nominal segregation and ordinal inequality (Fossett and South 1983; Stafford and Fossett 1989; Charles and Grusky 1995; Anker 1998; Semyonov and Jones 1999). Nominal segregation includes various indices of dissimilarity (D, D_S) (Gibbs 1965; Duncan and Duncan 1955) and the ratio index of occupational distributions of men and women (R) (Charles 1992; Charles and Grusky 1995). These measures provide summary estimates of the extent to which the occupational distributions of men and women differ, ignoring the ranking of occupations. For example, the index of dissimilarity estimates the percentage of either men or women that would have to change occupation in order for the two groups to have an identical occupational distribution.

Unlike measures of nominal segregation, measures of ordinal inequality take into account the unequal representation in a hierarchical occupational system. That is, they provide information on the degree to which men and women are differentially distributed in a stratified occupational structure. Examples include Stanley Lieberson's (1976) index of net differences (ND) that provides an estimate of the probability that a man would, on average, be ranked at a higher (or lower) rank category than a woman (Semyonov and Jones 1999). The two indices used in the analysis capture both dimensions of the occupational structure. It is expected that nations with higher levels of occupational segregation and status inequality will have greater gender wage differentials.

To account for equal-treatment laws, I include a variable for whether or not a nation ratified and entered into force the CEDAW by 1990[11]. Given that ratification and entry into force of the Convention commits states to address the specific nature of discrimination against women in the economy (as well as in the political and private spheres), this variable is expected to have a positive effect on the female share of earned income.

Based on the general agreement among gender and development scholars that the impact of trade on gender has been complex and varied by region, I include a geographic region indicator. Each nation is classified into one of five regions: (1) Sub-Saharan Africa; (2) Middle East and North Africa; (3) Asia and the Pacific; (4) Latin America and the Caribbean; (5) Western Europe, the United States, Canada, Australia, and New Zealand (Western Europe et al.). In order to determine the differential effects of global economic factors on the gender wage gap, I use interaction terms in my equations. The region variables are intended to capture economic *and* cultural variation. While these are crude measures of culture that mask large within-group differences, they do capture a great deal of the diversity that exists across regions in gender-role socialization and in gender wage inequality.

Finally, I include a measure for a nation's position in the world economy. Status is based on GNP per capita in 1995. Low-income or peripheral nations are those with GNP per capita up to $765, middle-income or semi-peripheral countries are those with GNP per capita $766 to $9,385, and high-income or core nations are those with GNP per capita above $9,386. These measures are included in interaction terms to test hypotheses based on economic theory—namely that the effects of openness, risk, and TNC penetration on gender wage inequality differ in the developing world and advanced industrialized nations[12]. As stated previously, trade openness and TNC penetration are expected to have a larger positive effect on the dependent variable for developing nations, while risk is expected to have a larger negative effect in developed countries. Table 1 (page 15) lists the variables and data sources used in the analyses.

RESULTS

Figure 1 (page 24) charts women's share of earned income (as a percent of GDP per capita) from 1990 to 1998. The graph illustrates that the average female share of earned income went from 25.37 percent in 1990 to 31.4 percent in 1998. Table 2 (page 25) presents the results of the t-test conducted on the means of the female share of earned income in four different samples: all countries, low-income, middle-income, and high-income nations. The findings indicate that the female share of earned income significantly changed during the 1990s.

As for differences among the three national income groups, women's share of real GDP per capita significantly increased from 1990 to 1998 in all income groups. Figure 2 (page 25) illustrates that in 1998 women's share of earned income was highest in OECD nations (Western Europe, the United States, and Australia) (35.54). Sub-Saharan Africa followed with an average of 34.70. Not far behind is Asia and the Pacific (30.30), followed by Latin America and the Caribbean (28.53), and the Middle East (23.08).

Table 3 (page 18) presents the descriptive statistics for the variables used in the analyses. The mean value for the dependent variable (Female Share of Earned Income, 1998) is 32.68 with a standard deviation of 7.41. The female share of earned income is lowest in Oman (13.91) and highest in Namibia (47.70).

Furthermore, Table 4 (page 19) presents the correlation matrix of variables used in the analyses. None of the independent variables are highly correlated with the dependent variable, with the exception of the lagged dependent variable (r = .764). Among the independent variables, there are several that are highly correlated. For example, child/woman ratio is correlated with trade risk (r = .664) and trade openness is correlated with TNC penetration (r = .527). Due to these relationships and the problems associated with multicollinearity, estimates may be less stable and reliable[13].

Another problem associated with multivariate analyses is heteroscedasticity. This refers to the situation in which, contrary to the assumption of homoscedasticity, the error term in a regression model does not have constant variance (Berry and Feldman 1985)[14]. As a result of this situation, ordinary least squares (OLS) estimation and the associated formula for calculating standard errors cannot be used without concern of serious distortion (e.g. confidence intervals will be too wide, significance tests for b will be too difficult to pass, and the OLS slope coefficient estimator will appear to be less precise). After performing several diagnostic procedures, I was able to rule out heteroscedasticity as a severe problem in my models[15].

Table 5 (page 20) presents my cross-sectional OLS estimates of unstandardized regression for the female share of earned income in 1998. The first equation estimates the effects of national socio-economic determinants on the dependent variable, including child/woman ratio, entry into force of CEDAW, and one measure of occupational sex segregation—nominal segregation. Equations 2–4 estimate the effects of globalization measures. Due to missing data in the independent variables, sample size varies across models.

One variable in the base model (Equation 1)—child/woman ratio—is significant and negative. As predicted, higher child/woman ratios decrease women's share of earned income. Of the global level variables, none have a significant impact on the dependent variable. In fact, the models including openness and risk and TNC penetration are not significant.

Equations 5–8 include my second measure of occupational sex segregation—ordinal inequality. Significant relationships are found between the dependent variable and child/woman ratio (models 5 and 7), ordinal inequality (models 5–8), and trade openness (model 6). Higher child/woman ratios reduce women's share of earned income, while higher levels of ordinal inequality and trade openness increase women's share of earned income. Concerning trade liberalization, the findings indicate that openness increases women's share of earned income[16].

To determine whether or not the relationship between economic globalization and gender wage inequality differs among peripheral, semi-peripheral, and core nations, I added the following interaction term to the regression equations discussed above:

$$Y= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 X_2 + \mu,$$

where X_1 is either trade openness, trade risk, or TNC penetration and X_2 is either low-income nations, middle-income nations, or high-income nations. Interaction terms with all combinations of X_1 and X_2 were performed.

My findings (see Table 6, page 21), reveal that the effects of global economic processes on women's share of earned income are in fact determined by position in the world economy and region[17]. A significant and positive interaction effect is found between TNC penetration and low- and high-income nations. Higher levels of TNC penetration increases women's share of earned income in peripheral and core nations and decreases women's share in other nations ($b_{\text{low-income}} = 1.07$, $b_{\text{other nations}} = -0.96$, $b_{\text{high-income}} = 0.60$, $b_{\text{other nations}} = -1.71$). Furthermore, a significant and negative interaction exists between trade openness and middle-income nations ($b_{\text{middle-income}} = -2.48$, $b_{\text{other nations}} = 0.85$). Finally, a significant and positive interaction exists between trade risk and nations in Asia and the Pacific ($b_{\text{Asia and the Pacific}} = -13.43$, $b_{\text{other nations}} = 0.04$). That is, the combination of high levels of trade and of volatility in the prices of traded goods between 1975 and 1990 is associated with a more equitable distribution of wages among women and men in Asia and the Pacific.

The results of my panel analyses are presented in Table 7 (page 22). Not surprisingly, gender wage inequality measured in 1990–1992 has a positive and significant effect on gender wage inequality in 1998. In fact, it is the only significant predicator of the dependent variable when national socio-economic and global-level variables are also accounted for in the models[18].

Concerning interaction effects in the change models, only regional interactions are identified and can be found in Table 8 (page 23)[19]. Trade openness and TNC penetration have a significant and positive effect on the change in women's share of earned income from 1990 to 1998 in Sub-Saharan Africa and Asia and the Pacific. Trade risk has a positive influence on the dependent variable in Asia and the Pacific while a negative effect is found in Sub-Saharan Africa.

DISCUSSION

The results of my analyses indicate that in addition to national socio-economic forces, economic restructuring at the global level determines women's share of earned income cross-nationally. The most consistent finding in the cross-sectional analyses is that of the child/woman ratio and ordinal inequality. In almost all models, the earning capacity of women relative to men is increased in nations where women's childrearing activities are lessened as a result of having fewer children aged 0–9. Furthermore, in nations with highly stratified occupational structures (ordinal inequality), a smaller gender wage gap exists. The direction of the relationship between ordinal inequality and the dependent variable is opposite of what was expected, given that higher levels of occupational inequality have been found to be an impediment to achieving gender wage equality. There are several possible explanations for this finding. First, it should be noted that while not significant, the direction of the relationship between nominal segregation and the female share of earned income was negative as hypothesized. When further examining the relationship between these two measures of occupational sex segregation, we see that they are not independent of each other (r = -.364, significant at the .05 level). The direction of the relationship between the two variables indicates that women are more likely to be allocated to high-status jobs (white-collar positions) and men are more likely to be employed in low-status jobs (blue-collar, manual) when segregation is extensive. When segregation is more flexible, women tend to be allocated in unequal numbers to low-status occupations. Given that economic liberalization, particularly in semi-peripheral and peripheral nations, has been found to increase the number of women in male-dominated occupations such as manufacturing, it could be argued that nominal segregation is the more appropriate measure to use when examining the effects of global economic forces on gender pay differentials. The results might also be due to factors not controlled for as a result of missing data. Those factors include: 1) whether nations have highly centralized unionized wage setting, which tends to reduce gender wage inequality; and 2) the presence of pro-female legal environments (beyond the ratification and entry into force of CEDAW) and dominant gender ideologies that have led to a more equitable distribution of wages among men and women.

While it was expected that equal-treatment legislation would be significantly related to the dependent variable, this relationship was not borne out in any of my models. This finding could be attributed to the fact that the measure does not adequately capture egalitarian ideologies. It may also be an illustration of the process of decoupling (J. Meyer 1997) between purposes of world cultural models and the actual institutional structures that are created. For example, nations like Ecuador and Libya ratified CEDAW and entered it into force by 1990 (with Ecuador doing so quite early—in 1981). However women's share of earned income relative to men's is quite low in both countries (19.58 and 18.74 respectively). Moreover, the United States has not yet ratified the treaty,

yet women's share of earned income is much larger (37.98). This suggests that the adoption of such treaties by nations is: 1) an attempt to gain legitimacy in the world polity; and 2) evidence that the diffusion of world cultural principles occurs at different levels. Nevertheless, the role that national legal environments play in reducing gender inequities in the labor market and society in general cannot be discounted and improved data collection on the topic is greatly needed for further analysis.

Global determinants of women's share of earned income were also identified, however these findings are restricted to the cross-sectional analysis that included the ordinal inequality measure of occupational sex segregation and to models (level and change) that took into account world-system position. As predicted, trade openness had a significant and positive effect on women's share of earned income. This finding contradicts Berik et al. (2002) who found that increases in import shares increased the gender pay gap. Inclusion of interaction terms for income group indicates that TNC penetration increases women's wages relative to men in low- and high-income nations. The finding concerning peripheral nations lends support to neo-classical economic arguments such as comparative advantage and standard trade theory (Stolper and Samuelson 1941) that wages among unskilled workers—many of whom are women—in developing nations exporting goods that are intensive in unskilled labor will be augmented by trade and investment liberalization[20]. The positive effect of trade openness on women's wages in core nations and the negative effect of TNC penetration on women's wages in middle-income nations is contrary to neo-classical arguments (specifically regarding wages in the core) and provides mixed support for the critical political economic view that there is a dampening effect of openness on real wage growth that results from non-wage costs (Rodrik 1997) or a "race to the bottom."

When controlling for previous levels of the gender wage gap, trade openness and TNC penetration also increase women's wages relative to men's, but those findings are restricted to Sub-Saharan Africa and Asia and the Pacific. It also appears that the effect of trade risk on the female share of earned income is negative in Sub-Saharan Africa and positive in Asia and the Pacific. This finding could be attributed to the type of economies and production structures present in each region. That is, workers—especially women—are less vulnerable to trade risk in more diversified economies and production structures (Asia) than in very specialized economies and production structures (Sub-Saharan Africa).

Conventional expectations about the importance of cultural attitudes in determining gender wage inequality are supported by my analyses. In comparing women's share of earned income across regions (Figure 2), we can see that the Middle East and Latin America—regions where both the traditional role of women has been outside the paid workforce and religious (Islam) or ideological (machismo in Latin America) support for male dominance is still widely recognized—have values below the sample mean. It cannot be said with certainty that these regional differences are due to culture, but that seems a highly plausible explanation.

My reduced cross-sectional models are able to account for between 14 percent and 22 percent of the variation in women's share of earned income with sample size varying from forty to forty-five nations around the world. This leaves a large amount of the variation unexplained. The unexplained variation may be due to the exclusion of potentially important factors such as individual-level or human capital-level determinants (education, experience, and hours worked) and national legal environments that my study was unable to capture.

CONCLUSION

Despite the increase in women's share of earned income between 1990 and 1998 cross-nationally, achieving wage parity with their male counterparts continues to elude women around the world. This is an unfortunate reality, given the important role that women play in both production and reproduction in the global economy. How then, can this reality be altered?

The results of my analyses suggest that family size contributes to the reduction in gender wage inequality. Improving access to family planning and reducing women's childrearing duties is but one way to improve women's access to economic resources. The structural features of national labor markets—namely, the degree of ordinal inequality—also play an important role in determining gender pay differentials, although the specific mechanism(s) underlying this relationship is not clear. Finally, increased economic openness influences gender wage inequality and does so differently according to world-system position and region.

It could be argued that the income gains made by women in peripheral and core nations as a result of trade and investment openness warrants further liberalization. However, after considering the conflicting pressures found in the global economy, this may not be a plausible solution to further improve women's access to employment and in turn their share of earned income. The relocation of production plants, shifting corporate strategies, and the proliferation of sub-contracting in the global economy might be just as likely to encourage the employment of males over females. For example, in a firm-level study conducted on the agricultural sector in the Dominican Republic, Raynolds (2001) found that when contracting at a plantation was shifted to an intermediary firm, a new hiring scheme that favored male labor (e.g. implementation of a pay-per-job, piece-work system—both of which require greater strength and a competitive work environment) replaced the original corporate strategy to employ women. As a result, the majority of women employed at the plantation lost their jobs. Furthermore, L. Meyer (2003) found that, while on the one hand trade openness was associated with a *decline* in female labor force participation rates between 1985 and 1995, on the other hand investment openness in the form of TNCs and higher levels of risk within the global trading system were associated with an *increase* in women's representation in national labor forces during the same period[21]. Therefore, given the ever-changing strategies of global capital, definitive conclusions about the future of gender pay differentials in the global economy cannot be formed.

While my study provides some support for the comparative advantage model of international trade, as noted earlier this paradigm neglects to discuss the effects that trade has on income distribution within countries, which in turn has an effect on the gains from comparative advantage. In fact, contrary to standard trade theory (Stolper and Samuelson 1941), which links increased trade with a reduction in inequality in poor nations, Beer (2001) finds no effect of trade openness on the distribution of income in peripheral nations. However, Beer (2001) and Aldersen and Nielsen (1999) conclude that TNC penetration increases income inequality in low-income nations[22]. Those findings indicate a need to further explore the relationship between increased income inequality and gender pay differentials.

Furthermore, the gains made by women in developing nations may vary by age group, race, and ethnicity. For example, Joekes and Weston (1994) found that in South Korea there has been a shift towards employment of older married women as workers in export factories. They argue that the significance of this new employment strategy is that wage discrimination by gender often seems to be more severe among married persons than among single persons. Unfortunately, my study is

unable to examine these important distinctions among women. Lastly, my analyses point to an important question concerning the impact of increasing pay equity in the developing world: if some women are getting a larger share of their nations' economic pie, does their increased economic status influence gender relations within the household, the occupational system, and the national political structure?

Reducing the gender wage gap has several implications for national development, particularly in developing economies. According to Tzannatos (1999), the narrowing of gender differentials can increase national economic output, reduce poverty, and greatly improve the welfare of women *and* men. Children's welfare also increases, as there are substantial differences in how women and men within the household spend their incomes, and children's nutritional status and survival probability tends to be linked more with the mother's earnings than the father's (Caldwell 1979; Kumar 1978; Hobcraft et al. 1984; Bradshaw, et al. 1993; Boehmer and Williamson 1996; Jacobson 1992; Shen and Williamson 1997; United Nations 1993, 1994).

Due to the limitations of my analysis and the diverging forces driving global economic processes, future research on gender wage inequality is clearly warranted. Case studies that utilize individual-level data on education, hours worked, and employment experience would be especially useful in parsing out the effects of human capital, occupational structures, and economic liberalization on gender wage differentials. In addition to the need for studies that control for individual-level characteristics, comparative case studies are also essential. For example, a comparative study of women's wages in countries that have developed different export sectors based on their comparative advantage and natural endowments (e.g. light manufacturing and service activities as opposed to oil and gas production) could shed further light on the gendered implications of trade and investment liberalization, as well as trade risk.

Furthermore, firm-level studies can greatly contribute to our understanding of how the business strategies of TNCs and local contracting firms relate to women's earning capacity. Finally, household-level studies can provide critical information on the effects of trade-induced wage increases for women on bargaining power in the household and other household relations as measured by separation, divorce, and incidences of domestic violence.

Table 1. Variable Descriptions and Data Sources

DEPENDENT VARIABLE

Women's Share of Earned Income 1998
Women's share of earned income as measured by the value of per capita GDP (PPP US$) for women as a percent of per capita GDP (PPP US$) for men in 1998. The United Nations Development Program calculates this data from the female share and male share of earned income. These shares, in turn, are estimated from the ratio of the female wage to the male wage (non-agricultural wage) and the percentage shares of women and men in the economically active population. Data from 1990–1992 are included in the panel analyses. From United Nations Development Programme (1995–2000)[a].

GLOBAL ECONOMIC DETERMINANTS

Trade Openness Index
This index is based on the linear combination of two measures of economic openness. The first is the sum of merchandise exports and imports measured in current US dollars divided by the value of GDP converted to international dollars using purchasing power parity conversion. Averaged over fifteen years (1975–1990). The second is the sum of exports of goods and services as a percent of GDP. Averaged over ten years (1980–1990). Former from Penn World Tables 5.6, latter from World Development Indicators (1999).

Trade Risk Index
This index is based on the linear combination of two measures of the risk associated with engagement in the current global trading system. The first is the product of trade openness and the standard deviation of the first logarithmic differences in the terms of trade, 1975–1990 (Rodrik 1997). From World Data (1995). The second is the Gini-Hirschman index of concentration defined over 239 three-digit standard international trade classification categories of exports as calculated by the United Nations Conference on Trade and Development, averaged over ten years (1980–1990). From UNCTAD (1999).

Transnational Corporate Penetration
The ratio between foreign direct investment inward stock and market GDP. From the World Investment Report (selected years).

NATIONAL SOCIO-ECONOMIC DETERMINANTS

Child/Woman Ratio
The number of children ages 0–9 divided by the number of women ages 25–44. From World Development Indicators (1999).

Occupational Sex Segregation
Nominal Segregation
A factor index that provides a summary estimate of the extent to which the occupational distributions of men and women differ, ignoring the ranking of occupations. Estimates the percent of either men or women that would have to change occupation in order for the two groups to have an identical occupational distribution. From Semyonov and Jones (1999).
Ordinal Inequality
A factor index that provides a summary estimate of the extent to which the occupational distributions of men and women differ, taking into account the unequal representation in a hierarchical occupational system. Provides an estimate of the probability that a man would, on average, be ranked at a higher (or lower) rank category than a woman. From Semyonov and Jones (1999).

Equal-Treatment Legislation
A dummy variable based on whether a nation ratified and entered into force the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) by 1990. From WISTAT, Women's Indicators and Statistics Database, Version 4, United Nations (2000).

[a] Data are for latest available year. When no wage data were available, an estimate of 75 percent was used for the ratio of the female non-agricultural wage to the male non-agricultural wage.

Table 1 *continued*

Region
Four region dummy variables—one each for Sub-Saharan Africa (N = 5), the Middle East and North Africa (N = 6), Asia and the Pacific (N = 10), Latin America and the Caribbean (N = 16). The baseline region is Western Europe, the United States, Canada, Australia, and New Zealand (N = 18). From United Nations Development Programme (1998).

Status in the World Economy
Three income-group dummy variables based on GNP per capita in 1995. One each for low-income or peripheral nations (GNP per capita $765), middle-income or peripheral countries (GNP per capita $766 to $9,385), and high-income or core nations (GNP per capita above $9,386). From the United Nations Development Programme (1999).

Table 2. Results of Paired Samples t-Tests of Female Share of Earned Income 1990 and 1998

	Mean (SD) Earned Income 1990	Mean (SD) Earned Income 1998	Change in Mean Earned Income 1990–1998	t
All countries (N = 49)	25.37 (9.04)	31.23 (6.88)	5.86	-8.53**
Low-income nations (N = 5)	24.74 (8.82)	31.42 (6.60)	6.70	-3.95*
Middle-income nations (N = 27)	22.04 (8.65)	28.54 (6.41)	6.50	-6.33**
High-income nations (N = 17)	31.28 (6.97)	35.69 (5.64)	4.41	-4.36**

*p ≤ .01 **p ≤ .001 (paired sample t-tests).

Table 3. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	SD
Female Share of Earned Income, 1998	113	13.91	47.70	32.68	7.41
Female Share of Earned Income, 1990	100	5.30	45.00	26.10	9.15
Child/Woman Ratio, 1990	116	.12	3.56	2.11	.90
Nominal Segregation, 1990	54	-5.65	5.85	.19	2.63
Ordinal Inequality, 1990	54	-4.63	7.77	-.02	2.82
Entry into Force of CEDAW, 1990	84	.00	1.00	.99	.11
Trade Openness Index, 1975–1990	97	-2.39	3.38	.00	.99
Trade Risk Index, 1975–1990	97	-1.99	1.80	.00	.92
TNC Penetration, 1990	101	-6.91	.08	-2.77	1.33

Table 4. Pearson's Correlation Matrix for Variables in the Study

	1	2	3	4	5	6	7	8	9
1. Female Share of Earned Income, 1998	1.00 (113)	.76** (100)	-.17 (110)	-.15 (54)	.14 (54)	-.07 (81)	-.13 (94)	-.18 (94)	-.18 (98)
2. Female Share of Earned Income, 1990		1.00 (100)	-.18 (99)	-.23 (50)	.10 (50)	-.11 (74)	-.03 (89)	-.15 (89)	-.10 (91)
3. Child/Woman Ratio, 1990			1.00 (116)	.10 (53)	.13 (53)	.14 (81)	-.17 (96)	.66* (96)	-.14 (99)
4. Nominal Segregation, 1990				1.00 (54)	-.36** (54)	.03 (46)	-.27 (48)	.05 (48)	-.22 (50)
5. Ordinal Inequality, 1990					1.00 (54)	.05 (46)	-.17 (48)	-.05 (48)	-.24 (50)
6. Entry into Force of CEDAW by 1990						1.00 (84)	.24* (71)	.25* (71)	-.01 (74)
7. Trade Openness Index, 1975–1990							1.00 (97)	.28** (97)	.51** (92)
8. Trade Risk Index, 1975–1990								1.00 (97)	.08 (92)
9. TNC Penetration, 1990									1.00 (101)

Notes: The top number is the correlation coefficient; the number in parentheses is the sample size.
*p < .10 **p < .05 (two-tailed tests).

Table 5. Cross-Sectional OLS Estimates of the Effects of Global and Local Determinants on Women's Share of Earned Income (1998)

Equations	1	2	3	4	5	6	7	8
Child/Woman Ratio, 1990	-3.48*** (1.15)	-1.70 (1.74)	-2.99** (1.17)	-2.26 (1.87)	-3.65*** (1.10)	-2.01 (1.63)	-3.16*** (1.15	-2.22 (1.77)
Entry into Force of CEDAW, 1990	-2.87 (6.17)	-4.42 (6.76)	-3.12 (5.90)	-5.56 (6.98)	-3.56 (5.90)	-8.10 (6.39)	-3.68 (5.75)	-8.24 (6.68)
Nominal Segregation, 1990	-.39 (.38)	-.40 (.38)	-.33 (.38)	-.30 (.40)				
Ordinal Inequality, 1990					.70** (.31)	.83** (.33)	.57** (.34)	.76** (.37)
Trade Openness Index, 1975–1990		1.18 (1.45)		1.38 (1.61)		2.37* (1.40)		2.35 (1.57)
Trade Risk Index, 1975–1990		-1.06 (1.81)		-.36 (1.91)		-.53 (1.70)		-.28 (1.81)
TNC Penetration (ln), 1990			-.60 (.85)	-.81 (1.10)			-.07 (.88)	-.34 (1.08)
Constant	41.01*** (6.13)	39.36*** (7.44)	38.99*** (6.32)	39.52*** (7.66)	42.01*** (5.87)	43.76*** (7.11)	41.24*** (6.30)	43.43*** (7.47)
Adjusted R^2	.15	.06	.11	.05	.22	.18	.15	.15
F	3.53**	1.49	2.25*	1.36	5.17***	2.76**	2.86**	2.11*
N	45	41	42	40	45	41	42	40

Notes: The top number is the regression coefficient; the number in parentheses is the standard error.
*p < .10 **p < .05 ***p < .01 (one-tailed tests).

Table 6. Interaction Effects between Globalization Measures, Income Group, and Region on Women's Share of Earned Income

Transnational Corporate (TNC) Penetration†	Interaction Effect
Effect of TNC Penetration in low-income nations	1.07
Effect of TNC Penetration in other nations	-.96
Effect of TNC Penetration in low-income nations minus the effect in other nations	2.03**
Effect of TNC Penetration in middle-income nations	-2.48**
Effect of TNC Penetration in other nations	.85
Effect of TNC Penetration in middle-income nations minus the effect in other nations	-3.33**
Effect of TNC Penetration in high-income nations	.60
Effect of TNC Penetration in other nations	-1.71
Effect of TNC Penetration in high-income nations minus the effect in other nations	2.31*
Effect of TNC Penetration in Asia and the Pacific	.34
Effect of TNC Penetration in other regions	-2.03*
Effect of TNC Penetration in Asia and the Pacific minus the effect in other regions	2.37*
Trade Risk	
Effect of Trade Risk in Asia and the Pacific	13.43*
Effect of Trade Risk in other regions	.04
Effect of Trade Risk in Asia and the Pacific minus the effect in other regions	13.39*

*p < .10 **p < .05 (one-tailed tests).

† These results were obtained when the equation included child/woman ratio, entry into force of CEDAW, and *nominal segregation*. Similar results (with the exception of the high-income nation/TNC penetration interaction) were found when *ordinal inequality* was included into the equation.

Table 7. Panel OLS Estimates of the Effects of Global and Local Determinants on Women's Share of Earned Income (1998)

Equations	1	2	3	4	5	6	7	8
Women's Share of Earned Income, 1990–1992	.68*** (.09)	.69*** (.08)	.67*** (.08)	.70*** (.09)	.65*** (.09)	.65*** (.08)	.66*** (.08)	.67*** (.096)
Child/Woman Ratio, 1990	-.155 (.88)	.754 (1.10)	.093 (.82)	.481 (1.20)	-.338 (.88)	.511 (1.10)	-.044 (.81)	.40 (1.18)
Entry into CEDAW by 1990	-.33 (3.92)	-.46 (3.92)	-.46 (3.48)	.41 (4.10)	-.63 (3.87)	-1.80 (3.95)	-.75 (3.41)	-.70 (4.09)
Nominal Segregation, 1990	-.10 (.25)	-.11 (.23)	-.010 (.22)	-.08 (.23)				
Ordinal Inequality, 1990					.24 (.21)	.27 (.21)	.27 (.21)	.26 (.23)
Trade Openness Index, 1975–1990		.58 (.84)		.12 (.94)		.99 (.87)		.49 (.97)
Trade Risk Index, 1975–1990		-.65 (1.06)		-.61 (1.13)		-.48 (1.04)		-.58 (1.11)
TNC Penetration (ln), 1990			.56 (.52)	.57 (.68)			.79 (.53)	.69 (.67)
Constant	14.75*** (5.10)	13.30** (5.34)	16.23*** (4.58)	13.89** (5.49)	15.97*** (5.16)	15.93*** (5.66)	17.72*** (4.64)	16.11*** (5.71)
Adjusted R^2	.67	.69	.70	.69	.68	.71	.71	.71
F	22.57***	15.76***	19.78***	13.28***	23.17***	16.64***	20.95***	13.97***
N	43	40	41	39	43	40	41	39

Notes: The top number is the regression coefficient; the number in parentheses is the standard error.
*p < .10 **p < .05 ***p < .01 (one-tailed tests).

Table 8. Interaction Effects Between Globalization Measures, Income Group, and Region on Change in Women's Share of Earned Income (1990–1998)

Trade Openness (TO)†	Interaction Effect
Effect of TO in Sub-Saharan Africa	26.43*
Effect of TO in other regions	.29
Effect of TO in Sub-Saharan Africa minus the effect in other regions	26.14*
Effect of TO in Asia and the Pacific	3.40*
Effect of TO in other regions	-.38
Effect of TO in Asia and the Pacific minus the effect in other regions	3.78*
Trade Risk (TR)†	
Effect of TR in Sub-Saharan Africa	-4.95*
Effect of TR in other regions	.21
Effect of TR in Sub-Saharan Africa minus the effect in other regions	-5.16*
Effect of TR in Asia and the Pacific	10.22**
Effect of TR in other regions	-.73
Effect of TR in Asia and the Pacific minus the effect in other regions	10.95***
Transnational Corporate (TNC) Penetration†	
Effect of TNC Penetration in Sub-Saharan Africa	.78
Effect of TNC Penetration in other regions	.62
Effect of TNC Penetration in Sub-Saharan Africa minus the effect in other regions	.16*
Effect of TNC Penetration in Asia and the Pacific	1.37
Effect of TNC Penetration in other regions	.08
Effect of TNC Penetration in Asia and the Pacific minus the effect in other regions	1.29**

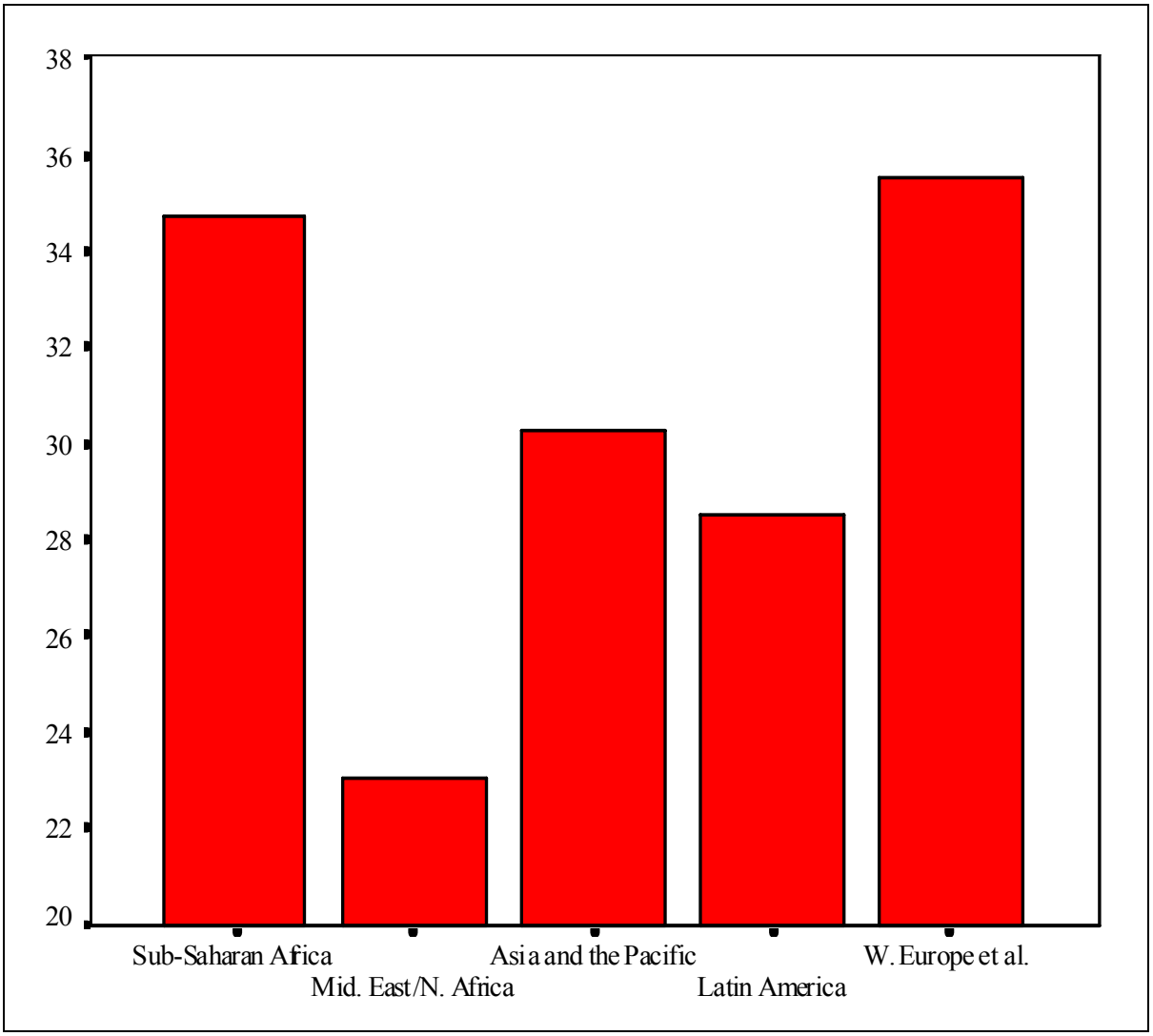
*p < .10 **p < .05 ***p < .01 (one-tailed tests)

† These results were obtained when the lagged dependent variable, child/woman ratio, entry into force of CEDAW, and *nominal segregation* was included in the equation. Similar results were found when *ordinal inequality* was included in the equation, with the exception of a Sub-Saharan Africa interaction with trade openness and trade risk.

Figure 1. Women's Share of Earned Income (percent) for fifty-five nations, 1990–1998

Source: United Nations Development Programme (1995-2000).

Figure 2. Regional Variation in Female Share of Earned Income for fifty-five nations, 1998



Source: United Nations Development Programme (1995-2000)

NOTES

[1] While some developing nations have adopted liberalization measures to gain legitimacy in a world economy based on principles of openness, many have been pressured to take the neo-liberal path. In fact, trade and investment liberalization reforms have been required for the receipt of much of the financial assistance provided to developing nations steeped in debt by international lending agencies such as the World Bank and the IMF (McMichael 1996). These reforms were designed to increase the volume and diversify the structure of the imports and exports of developing countries in an effort to promote employment of underutilized resources with greater specialization in labor-intensive production (Joekes and Weston 1994).

[2] For managers in these industries, docility is expected to ensure few disruptions on the shop floor and to stem organizing efforts.

[3] A multi-domestic company allows its subsidiaries to develop and exploit local opportunities, expects them to create a local knowledge and competency base, and decentralizes significant decision making to the subsidiaries (Mears and Sanchez 2001).

[4] Nevertheless, the authors state that this increase in women's earnings relative to men's may be unrealistic because such gains "might have been negated by employers to female workers in the form of lower returns for some of their unobservable endowments (e.g., innate ability)" (Dávila and Pagán 1999:216).

[5] According to the World Development Indicators, GDP in PPPs has been used in the denominator to adjust for differences in domestic prices. This a conservative measure because the GDP of many developing countries is larger in PPP terms than when converted at official exchange rates (World Bank 1998:313).

[6] Openness is expressed as $([x + m]/y)$. The standard deviation of the first logarithmic differences in the terms of trade expressed as $sdx(t) = \ln(p(t)) - \ln(p(t-1))$, where p(t) and p(t-1) are the terms of trade indices for t and t-1, respectively, and "ln" stands for natural logarithms.

[7] Ricardo's law of comparative advantage suggests that international trade enables every country to apply its resources to the productions from which it gets the highest possible income (Gern 1993). In other words, countries engage in international trade so that they can: 1) benefit from the differences in production among countries, given that some nations produce things better and cheaper than others, and 2) achieve economies of scale, or efficiency in production. In this Ricardian model of international trade, labor is the only factor of production and countries differ *only* in the productivity and price of labor in different industries. In sum, the theory of comparative advantage implies that nations will export goods that their labor produces relatively efficiently and cheaply, and import goods that their labor produces relatively inefficiently.

[8] Intercorrelations among the four measures lend support to this possibility. The data reveal that trade openness and exports are highly related to each other with a correlation of r = .91and exposure to external risk and commodity concentration are associated with a correlation of r = .61.

[9] In results not presented here, trade openness (factor 1) accounted for 60.68 percent of the variance. The second factor loads onto the measures relating to the risks of participation in the current global trading system. The risk factor (factor 2) accounted for 31.94 percent of the variance. Following the two-factor solution, I constructed two standardized indices. The first index is based on the linear combination of the two measures of openness; the second index is based on the linear combination of two measures of risk and dependency. In contrast to models where each trade variable is entered separately, the use of these measures in one equation allows for more parsimonious models.

[10] The penetration measure circa 1967 and 1973 found in Bornschier and Chase-Dunn (1985) uses

a measurement of foreign stock from an OECD publication which provides the total book value of stock of foreign investment. Post-1980 measures used in this dissertation are from the World Investment Report (selected years) (World Bank). For a discussion of the comparability of the two measures, see Beer (2001).

[11] Due to missing data, the presence/absence of other national equal-treatment laws are not included in the analyses.

[12] In each equation with interaction product terms, estimates for continuous variables included in the interaction are for the left-out categories, or those coded 0.0 rather than 1.0, of the 0.0-1.0 dummy variables (region and income level). In an effort to obtain more information from my interaction terms, I code each dummy variable as both 1.0 and 0.0. That is, for trade openness, when low-income is coded 1.0 for low-income nations and 0.0 for middle- and high-income ones, the estimated trade openness slope is for the left-out or middle- and high-income categories; when it is coded 1.0 for middle- and high-income nations and 0 for low-income ones, the estimated trade openness slope is for the left-out or low-income categories. Similarly for trade risk and TNC penetration (when region is coded 1.0 for the Middle East and 0.0 for non-Middle East, the estimates slope is for the left-out or non-Middle East categories, and so on).

[13] In an effort to determine whether or not my estimates were in fact unstable, I performed several diagnostic procedures. First, I reviewed the variance inflation factor (VIF) values produced when the highly correlated variables were included in the same model. With the exception of GDP per capita in its logged form, no high VIF scores were found. Additionally, I removed (one by one) each of the highly correlated variables from the analysis. The outcome of this test indicated that the estimates did not differ from those found in models that included independent variables with high correlation coefficients.

[14] This situation results from a number of problems, including measurement error in the dependent variable (e.g. when the unit of analysis is the nation, and data are derived from government records, it may be that some nations keep more accurate records than others) and interaction between an independent variable in the model and another variable that has been left out of the model.

[15] These tests include: examining a graph in which the regression residuals are plotted against the independent variable suspected to be correlated with the variance of the error term; regressing the absolute values of regression residuals for the sample on the values of the same suspect independent variables and then conducting significance tests for the coefficient estimates from this regression (Glejser in Berry and Feldman 1985).

[16] When the components of the trade openness index are entered separately in the equation (not presented here), average exports is also significant. However, the magnitude of trade, or the sum of merchandise exports and imports, is not significant.

[17] Additional analyses not presented included income group and regional dummies as independent variables *without* interactions. No significant difference exists between women's share of earned income between the periphery, semi-periphery, or the core (using both measures of occupational sex segregation). As for region, the results suggest that across all models (except those including only TNC penetration) women in the Middle East and North Africa possess a significantly lower share of national income than women in other regions when controlling for both local and global factors.

[18] However, when components of trade openness and trade risk indices were entered separately into the equation, commodity concentration was significantly and negatively related to the female share of earned income. This finding supports Rodrik's argument that risks associated with trade openness are equally, if not more, important in considering the effects of economic liberalization. Furthermore, it supports previous studies (Ward 1984; Pampel and Tanaka 1986) that found economic dependency with core nations negatively affects women's position relative to men's.

[19] Additional analyses not presented included income group and regional dummies as independent

variables *without* interactions. No significant difference exists between women's share of earned income between the periphery, semi-periphery, or the core. As for region, the results suggest that women in the Middle East and North Africa possess a significantly lower share of national income than women in other regions when controlling for national socio-economic factors. When global economic factors are included, no significant regional difference is found.

[20] An explanation for the negative effect of TNC penetration on the female share of earned income in middle-income nations, many of which are in Asia and the Pacific (six out of sixteen), is warranted. This result may be an indication that as semi-peripheral nations increase wages in unskilled sectors of the economy and move to higher value-added production in manufacturing and services, TNCs move production to peripheral nations where higher profits can be found. As unskilled women in semi-peripheral nations have to compete with men for the few remaining jobs in these sectors, gender wage discrimination is more likely. Furthermore, higher skilled women in middle-income nations enter occupations where gender wage differentials have not been greatly affected by economic openness.

[21] Trade openness was found to have had a larger negative effect on change in female labor force participation in core nations. Effects of increased trade risk on changes in female labor force participation were also identified. That is, higher levels of trade risk were associated with increases in the female share of national labor forces. These effects were found to be greater in the periphery than in the semi-periphery and the core. The contradictory findings concerning trade and investment openness, as well as trade risk, lend support to Rodrik's claim (1997) that it is the interaction between openness and volatility that matters when examining the demand for labor. These results suggest that the blanket liberalization reforms instituted over the last two decades have a variety of consequences–some of which act to weaken structures of gender inequality, while others operate to reinforce these structures.

[22] In addition, Beer (2001) finds that the impact of TNC penetration on inequality in core nations changed from the 1980s to the 1990s. While TNC penetration had no effect on income inequality in high-income nations using 1985 data, it *was* found to increase the share of income accruing to the top 20 percent of the population using 1995 data (cross-sectional and panel analyses).