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Gender inequalities, economic growth and economic reform: A preliminary longitudinal evaluation

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Foreword

Over the last decade or so, feminist studies concerned with economic development have called attention to the relationship between gender inequalities and development. One concern of these efforts is to gain a better understanding of the impact of economic reforms on gender inequalities. Despite the popular nature of this debate there have been few systematic cross-national studies of the impact of economic growth and structural adjustment on *global* changes in women's status and gender inequality over time. Moreover, in particular, few studies have tried to ask what the impact of specific policies, that are considered a part of reforms, is on gender inequalities? This paper is an initial attempt at addressing these questions on a cross sectional basis. Its concern can be summed up by the question: Have strategies of economic growth and structural reform in recent decades served to enhance or undermine the status of women?

The importance of this kind of initial study is not only about the questions it seeks to answer directly, but also that with such a basis, researchers can target more particular cases/samples in order to explore in greater detail the processes in question. In this sense, such a quantitative exercise, serves to highlight important issues for further study.

The index developed by the authors is based on available UN data, which are the only large database estimating levels of women's status for a relatively long period of time. The assessment suggests both regional and other socio-economic characteristics play some role in determining gender inequality, which has also by and large witnessed a decline in last three decades. In assessing the relative impact of economic reform policies through a new set of data the results suggest that most of the usual indicators of structural adjustment (e.g., extent of fiscal deficit, magnitude of public sector, taxes on trade) do not appear as significant variables explaining trends in gender inequality. The relative significance of exports within national economies (often used as an indicator of globalization or integration into world markets) also appears not to be significantly related to patterns of change in gender inequality. However, the important exception is in regards to expenditures in education. Such expenditures do have a significant relationship with gender inequalities, suggesting that the decline of gender inequalities has been most significant in countries characterized by higher levels (initially and over time) of expenditures in education.

The crucial implication is that the impact of structural adjustment policies on gender inequalities is likely to vary depending on the extent to which such policies include cutbacks or increases in educational expenditures (and this might apply to other social expenditures as well, such as those in health). The findings suggest that higher levels of educational expenditures might lead to greater gender equality, and such equality, in turn, as indicated by the relevant literature, is likely to have a significant and positive effect on economic growth.

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1. Introduction

While feminist studies have always called attention to the relationship between gender inequalities and development, over the last decade the relationship between economic growth, structural adjustment, and inequalities between men and women has become one of the most debated issues in policy-making arenas and in the social sciences. Non-governmental organizations (NGOs) throughout the world are actively and critically assessing the impact of economic policies on women. Partly in response to these concerns, international agencies such as the International Labour Organization (ILO), the United Nations (UN), and the World Bank are attempting to better understand the gender specific impact of alternative development strategies, while national governments often have become more active in promoting policies designed to reduce inequalities between men and women.

A crucial concern of these efforts is to gain a better understanding of the impact of economic reforms and structural adjustment on gender inequalities. Broadly speaking, structural adjustment refers to a broad set of policy reforms aimed at promoting a more effective integration of countries into world markets. Some of these policy reforms have included opening the financial sector to foreign investments, lowering or eliminating import tariffs, privatizing state industries, lowering fiscal deficits, and so forth. While there are now many well-known criticisms of reforms, the critique of the reforms from a gender perspective tends to suggest that greater reliance on markets tends to enhance inequalities between men and women (for example, by increasing the overall burden of women without an equivalent improvement in their control over resources). In response, advocates of reforms, on the other hand, counter that greater reliance on markets tends to produce greater equity among men and women (for example, by enhancing the opportunities and increasing the returns to labor force participation by women).

Despite the popular nature of these positions there have been few systematic cross-national studies of the impact of economic growth and structural adjustment on *global* changes in women's status and gender inequality over time. Moreover, in particular, few studies have tried to ask what the impact of specific policies, that are considered a part of reforms, is on gender inequalities.

Our study analyzes and further develops data on gender inequality to evaluate the cross-sectional and longitudinal impact of economic growth and structural adjustment on changes in gender inequality. The findings reported in this article address a key question in existing debates: Have strategies of economic growth and structural reform in recent decades served to enhance or undermine the status of women?

2. Issues

There is considerable dispute about the impact of stabilization and structural adjustment programmes. These programmes have been designed primarily to correct balance of payments deficits by some combination of increased exports, decreased imports, and an increase in net inflows of capital. While there is some agreement that such adjustments may be unavoidable, there has been greater disagreement on the social impact of the package of market-centered policies that generally have accompanied structural adjustment. Some argue that as implemented,

such programmes can reduce poverty by promoting stronger growth, others are skeptical that market-centered reforms, as implemented over the past decade can even do that. Essentially, since growth is generally inversely related to poverty, a period marked by reforms in which any growth takes place is bound to reduce some poverty. On the distribution of income, the issue is even more problematic, in developing countries income inequality has tended to increase, once again it has been accompanied by different rates of growth and varying degrees of reform[1]. The larger point about the reforms package is that in proposing the policies it does, at least in the shorter run it dampens and slows down growth itself. This slowing down of the economy has many adverse social consequences. The gender-based argument suggests that the impact of this worsening is disproportionately borne by women, who in any case start from a worse position.

Several studies more specifically criticize structural adjustment programmes in less developed countries for exacerbating inequalities between men and women. Some authors indicate that women are particularly vulnerable to such programmes due to their disproportional representation among the poor and the disempowered[2]. Elson (1995b and 1995c) indicates that structural adjustment programmes, through cuts in public spending and social programmes, increase the scope and intensity of women's unpaid household labor (e.g., ensuring the health care and nourishment of family members); and even where such programmes enhance market opportunities, men are likely to control the resulting income gains, producing little benefit for other household members[3]. Structural adjustment programmes also tend to make working women relatively more vulnerable to unemployment and/or poor conditions of employment[4]. Others have noted the consequences of such programmes for young women: Buchman (1996: 23) reports that over the 1975-1985 period, structural adjustment had a negative impact on female secondary enrollment, suggesting that as "low-income households develop strategies to enhance income and trim expenses," teenage girls become more likely than teenage boys to see their educational opportunities curtailed [5]. The World Bank (1991: 107) also acknowledges that in many cases, the "relative position of women has often deteriorated during structural adjustment."

On the other hand, several studies indicate that structural adjustment programmes might not necessarily enhance inequalities between men and women. While calling for more disadvantaged groups to be protected from the more immediate effects of such policies, Killick (1995) argues that the process of structural adjustment is in general essential for long-run economic growth and a reduction of poverty. Lantican, Gladwin and Seale (1996) suggest that economic growth is accompanied by a decline of gender inequalities in some areas (such as education) but not others (such as manufacturing employment). Likewise, Lele (1986) views the expansion of labor market opportunities (stimulated by economic growth) as potentially beneficial for women, but warns that the persistence of market distortions and institutional barriers to entry might continue to prevent the full access of women to these opportunities. Even Sparr (1994) acknowledges that some women may benefit from structural adjustment programmes, and hence argues that such programmes should be viewed as promoting greater social differentiation among women.

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[1] For example, Berry (1997: 6) finds that "market-friendly policy shifts have been systematically associated with an abrupt and significant worsening of income distribution," and Portes (1997) argues that reforms have been accompanied by growing unemployment and an intensification of exploitation in informal firms. This debate remains contentious, and often hindered by the lack of appropriate data to evaluate the trends in question.

[2] See Buchman 1996; Çagatay, Elson and Grown 1995; Elson 1995a and1995b.

[3] See Sparr 1994.

[4] See Elson 1995b; Sparr 1994.

[5] See Sparr 1994.

Finally, several studies have indicated that data have been lacking to fully evaluate the impact of structural adjustment on gender inequalities. Haddad, Brown, Richter and Smith (1995: 893), for example, note that "virtually no panel data, gender disaggregated in key areas, have been collected for the expressed purpose of disentangling the interactions between gender roles and adjustment policies. This lack of data inhibits our ability to assess the impact of adjustment on male and female time allocation and time burdens."

The central purpose of this article is to assess the relative impact of reforms policies on the evolution of inequalities between men and women. In order to do this it establishes an indicator of gender inequalities, assesses its trend and then examines its relationship to indicators of policy associated with reforms.

To assess the impact of economic growth and structural adjustment on women's empowerment and gender inequalities, this article uses and further develops a new set of data. Constructing such data has been difficult, as the relationships in question require data that (a) cover a sufficiently long period of time (from the 1970s to the late 1990s) to assess meaningful transformations; (b) include a broad range of countries so as to control for potentially key areas of difference (such as levels of wealth, or cultural-religious orientation); and (c) include countries that have experienced different levels of effective reform (so as to be able to weight the relative importance of structural adjustment in shaping shifts in inequality between men and women). No single source was available to provide the requisite data, so to conduct the exercises presented in this article, a new set of data was developed from several, independent sources.

Empirically, these data are useful because they allow us to evaluate the relationships at hand not only in a cross-sectional sample, but in a longitudinal evaluation as well. Methodologically, the data allow us to show that cross-sectional and longitudinal results can be fruitfully contrasted and compared to further enhance our insights into both the broad patterns at hand, and the relationship between these broad patterns and the trajectories of specific populations. Theoretically, as we indicate in the conclusion, the patterns and trends in women's status and in gender inequalities identified in our research allow us to reevaluate and better understand existing debates within the literature.

The next (and third) section of this paper discusses the data and methods. It introduces the Gender Inequality Index that we have constructed. This Index has been based on UN data. After having introduced the data being used we discuss our findings in section 4. This section is divided in to four parts. We first assess the cross sectional patterns in gender inequalities and then proceed to evaluate trends in gender inequalities more systematically, we then go on to select the best-fit models and finally use the reform indicators in assessing impacts on gender inequality. Section 5 concludes.

3. Data and methods

We begin by describing our dependent and independent variables.

Dependent variable: The GI indicator

The dependent variable in our exercises is an indicator of gender inequality. This indicator is constructed using a formula recommended by the United Nations in its own methodological observations regarding the Gender Development Index. The UN constructed the GDI to further specify its human development index (HDI). The UN's HDI uses standardized data drawn from national sources to measure the relative achievement of nations in advancing three components of human capability: health and longevity, education, and standard of living. The GDI is designed to evaluate the achievement of women along each of the three components above. Hence, to construct the GDI, the UN developed separate measures evaluating the achievement of women in regards to life expectancy, education, and access to income.

As we have indicated in a previous article[6] several criticisms have been raised regarding the extent to which the GDI and/or its components adequately capture women's status. Regarding the individual components, for example, the share of earned income is likely to center around women's formal participation in the urban labor force, failing to fully assess patterns of inequality in income distribution within informal and subsistence sectors, underestimating the extent of economic participation of women in rural areas, or failing to value the work of women outside the paid labor force. Formal measures of educational achievement are likely to miss differences in the quality of the education received by men and women, and in the benefits accruing to such achievement. The indicator of life expectancy, as measured, might fail to sufficiently credit the higher average life expectancy achieved for women as compared to men. In relation to the GDI as a whole, critics might note that it fails to consider the extent to which resources and power are unequally distributed in a given country between and within households and families, that it privileges what are likely to be indicators of women's participation in markets, and that the use of a single index of gender inequality would tend to oversimplify the multidimensional character of such inequality.[7]

These reservations are important. But for our present purposes, the GDI as constructed does effectively capture three key dimensions (education, health, income) in the distribution of resources between men and women that are usually emphasized in the relevant literature.[8] Furthermore, a recent study has constructed alternative cross-national indicators of women's status (such as the relative workload of men and women in both formal and informal activities) using the rather detailed data provided by the Demographic and Health Surveys in 25 peripheral and semiperipheral countries, and a comparison of these alternative indicators with the United Nations' GDI shows that "there is remarkable consistency in the rankings of countries on these … different measures of women's status and gender inequality."[9] Hence, while it is important to critically assess the constraints and limitations of the indicators in question, the GDI as constructed does provide an adequate and relevant (albeit perhaps initial) comparative measure of women's status.

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[6] See Forsythe, Kozeniewicz and Durrant 2000.

[7] Kishor and Neitzel 1996; Mason 1986; Norris 1987; Whyte1978.

[8] E.g., Ward 1984.

[9] Kishor and Neitzel 1996:101.

Table 1. Rank change in Gender Inequality (GI) between 1970 and 1997

1970 Gender Inequality Rankings (low to high)	1997 Gender Inequality Rankings (low to high)				
	1 (lowest)	2	3	4	5 (highest)
1 (lowest)	Haiti Thailand	Guinea Honduras	Egypt India		
2	Ghana Jamaica Paraguay Tanzania United States Zambia	El Salvador Philippines Sri Lanka			
3	Canada Denmark Ecuador France Malawi Portugal Sweden	Bangladesh Dominican Republic Malaysia Panama Turkey			
4	Australia Belgium Brazil Colombia Finland Netherlands New Zealand Norway Papua New Guinea Peru	Costa Rica Japan	Tunisia		Pakistan
5 (highest)	Austria Barbados Iraq Singapore Trinidad and Tobago United Kingdom	Argentina Chile Greece Ireland Italy Luxembourg Mexico Mozambique Nepal Nicaragua Spain Venezuela	Algeria Syria United Arab Emirates	Morocco	Guatemala Iran Saudi Arabia

Source: Authors' calculations using data from United Nations, *Women's Statistics and Indicators Database* (Version 4, CD-ROM) and United Nations, *Human Development Report 1999*, following formulas developed in United Nations, *Human Development Report 1995.*

Note: GI = Weight of the gender gap relative to the country's Human Development Indicator (HDI), following United Nations, *Human Development Report 1995.* For further explanation of calculation, see that report, p. 79.

KEY: 1 GI < .050
2 GI = .050 to .100
3 GI = .100 to .150
4 GI = .150 to .200
5 GI > .200

While the GDI has been constructed as an indicator of the relative status of women, here we are interested in assessing patterns and trends in inequality between men and women. This issue received moderate attention in the various United Nations reports that have discussed the GDI measure, but as yet these reports have provided only an indirect evaluation of the magnitude of these inequalities (by contrasting the ranking of nations according to their HDI and GDI). Using a formula recommended by the United Nations itself in the pertinent methodological observations regarding the GDI,[10] we assess the level of inequality in each country by calculating

GI = (HDI - GDI) / HDI,

where gender inequality (GI) is calculated as the weight of the gap relative to a country's HDI.[11] Such a measure of gender inequality assumes that a value of 0 attains in situations where women hold parity with men relative to education and income, and where the life expectancy of women maintains the edge observed on average on a global basis. As with the measure of status, critics might challenge each of these assumptions, but the indicator is relevant to the issues addressed in this piece. We provide the pertinent values for the calculated GI for 1970 and 1997 in Appendix A. The Appendix also includes the change in GI between the two years (calculated as difference-of-logs).

Table 1 provides a summary of the changes in gender inequality undergone by the countries in our study between 1970 and 1997. As suggested by the table, some countries (e.g., Austria, Barbados, Iraq, Singapore, Trinidad and Tobago, United Kingdom) underwent a considerable decline in the relative extent of inequalities. Others (e.g., Egypt, India) underwent a considerable increase in the relative extent of inequalities. Finally, in some cases inequalities remained relatively less pronounced throughout the two periods (as in Haiti and Thailand), while in others they remained relatively more pronounced (as in Guatemala, Iran and Saudi Arabia, and Pakistan). These widely divergent patterns suggest that individual case studies might offer very different conclusions regarding the character of change in inequalities between men and women experienced in recent decades, and that consideration of this pattern might be useful in organizing alternative paths of contrast and comparison.

Independent variables

The main independent variables included in our study are level of economic development, gender empowerment, weight of patriarchal institutional arrangements, and various indicators of structural adjustment.

[10] United Nations 1995.

[11] In 1999 the United Nations changed its procedures for measuring the income components of both the HDI and GDI. To allow for the longitudinal exercise in question, we have adjusted the newer data by using the older procedures of the UN for both the GDI and HDI.

Following a standard procedure in the literature, our measure of economic development is Gross Domestic Product per Capita (GDPPC), as provided by the United Nations for both 1970 and 1992.[12] Change in GDPPC has been calculated using difference-of-logs.

The study uses a revised version of the UN's gender empowerment measure (GEM) to evaluate the relative significance of the participation of women in the professional and political arenas in explaining differences in GDI and GI. The GEM has three components: the share of women in earned income, the relative weight of women among administrators and professional workers, and the share of women of parliamentary seats. The United Nations make the GEM data available for 102 countries in 1999, and the values of this indicator range from a low of 0.120 (for Niger) to a high of 0.810 (for Norway). For the purposes of our study, we use as our indicators of women's empowerment the combined values for two of the components used in the GEM: the relative weight of women among administrators and professional workers, and the share of women of parliamentary seats. Obviously, the purpose of this adjustment is to eliminate from our measure of women's empowerment the one component (share of women in earned income) that is already included in our GDI measure. We also conducted the same analyses with each of the individual components of the GEM, but there were no significant differences in the results.

Several authors in the literature (for example, from both the "Women in Development" (WID) and "Gender and Development" (GAD) approaches) have argued that Muslim and Latin American countries are more likely to be characterized by the prevalence of patriarchal institutional arrangements that promote or preserve higher levels of gender inequality.[13] These attributes provide at least an initial indicator of a variable that cannot be easily operationalized. To assess the relative significance of this characteristic, we introduce into our models two dummy variables: the first one assumes the value of one where 50% or more of a country's population is Muslim, and the other assumes the value of one when a country is located in Latin America.[14]

As indicated in our literature review, there is an ongoing debate on whether processes of structural adjustment have served to enhance or reduce gender inequalities. One of our previous studies considered whether structural adjustment has been a significant variable affecting changes in relative gender inequality. Following Bradshaw and Wahl,[15] we used a structural adjustment index that was a composite of four indicators: 1) the number of bilateral debt restructurings over the 1975-1990 period; 2) the number of multilateral debt restructuring over the same period; 3) the number of times a country received extended funds from the International Monetary Fund (IMF); and 4) the total IMF loans received as a percentage of its allotted quota over the period in question.[16] The same index had been used in other studies of the social impact of structural adjustment.

In the current exercise, we have sought to assess a broader range of indicators of structural adjustment. To date, there have been few studies providing original data seeking to measure the

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[12] United Nations, *Women's Indicators and Statistics Database (Version 4.0, CD-ROM)*. An additional measure such an exercise might want to consider is the share of the rural population (as many studies have observed that such an indicator might be relevant to patterns in women's status). However, such a measure is highly correlated (generally, above .85) with our GDPPC indicator, and the inclusion of rural population measure in our models generated serious multicollinearity problems. For this reason, we have decided to delay our consideration of such a measure until we provide a more detailed evaluation of patterns of change in the components of the GDI.

[13] Apodaca 1998; Boserup 1990; Collver and Langlois 1962; Shukri 1996; Youssef 1972 and 1976; Moghadam1994.

[14] The relevant data for constructing the Muslim variable are from Weeks 1988. The data have been updated with Britannica's *Guide to the Countries of the World* [http://www.Britannica.com].

[15] Bradshaw and Wahl 1991.

[16] We thank Professor York Bradshaw for making this index available to us.

extent of structural reforms across a broad sample of low-, middle-, and high-income nations. We therefore selected indicators that have been consistently mentioned in several cross-national studies of smaller sub-groups of countries (e.g., Easterly, Loayza, and Montiel 1997; Lora 1997; World Bank 1996; and Sachs and Warner 1995). These indicators include the following:

DEFICIT	1995 government surplus/deficit (total government revenue plus all grants received less total expenditure, government lending and repayment) as a percentage of GDP.[17] We include this variable because a central effort of structural reforms programmes has been to target deficit spending and bring fiscal expenditures under greater control. While we use DEFICIT to assess the cross-sectional impact of this variable, we also evaluate the impact of 1970-1997 change in the indicator with our CHANGEDEF variable
SOEINV	investment of State-Owned Enterprises as a percentage of Gross Domestic Fixed Investment. We include this indicator because one of the most important components of structural reform has been an effort to decrease the relative importance of state enterprises (under the assumption that central planning is not as effective as the market in determining effective levels of supply and demand). The indicator provides a measure of the relative weight of market mechanisms.
TARIFF97	calculated as the 1997 mean tariff (the simple average of the rates applied to all imports subject to tariffs). An important component of structural reforms has been an effort to move away from state regulation of trade, and to promote greater integration into world markets. The relative level of tariffs provides an indirect indicator of the level of state regulation of foreign trade.[18]
BMP97	black market premium, defined as the parallel exchange rate as a percentage of the official exchange rate. Several authors have used such a measure as an indicator of the extent of reform in trade policies.[19]
PUBINV97	public investment as a percentage of GDP. The indicator is used with the same rationale as the SOEINV measure above.[20] While we use PUBINV97 to assess the cross-sectional impact of this variable, we also evaluate the impact of 1970-1997 change in the indicator with our CHANGEPUBINV variable.
DEF97	1997 overall deficit/surplus, expressed as a percentage of GDP (following the same rationale as the DEFICIT measure above).[21]
TAXTRD97	taxes on international trade and transactions, expressed as a percentage of GDP (however, this measure captures taxes in addition to tariffs). The indicator is used with the same rationale as the TARIFF97 measure above.[22] While we use TAXTRD97 to assess the cross-sectional impact of this variable, we also evaluate the impact of 1970-1997 change in the indicator with our CHANGETAXTRD variable.
EDUC	expenditures on education expressed as a percentage of GNP.[23] Critics of structural adjustment programmes have often maintained that such strategies tended to have a detrimental effect on social expenditures. In our exercise, we seek to assess the relationship between the level of such expenditures and GI. We also evaluate the impact of 1970-1997 change in education expenditures with our CHANGEEDUC variable. [24]
CHANGEEXP	assesses the extent of change between 1970 and 1997 in the relative share of exports of goods and services in GNP. Critics and supporters of policies conducive to greater integration in the world-economy debate whether such integration (and the concomitant

[17] Source: *Trends in Developing Economies* (TIDE), available on-line from the World Bank Socio-Economic Time Series Access and Retrieval System (STARS) [http://wbln0018.worldbank.org/psd].

[18] For authors using such an indicator, see Lora (1997), The World Bank (1996), and Sachs and Warner (1995). Source: *Trends in Developing Economies* (TIDE), available on-line from the World Bank Socio-Economic Time Series Access and Retrieval System (STARS) [http://wbln0018.worldbank.org/psd].

[19] For such an use see, for example, Easterly, Loayza and Montiel (1997) and Sachs and Warner (1995). Source: Macro Time Series [http://www.worldbank.org/research/growth/GDNdata.htm].

[20] Source: Macro Time Series [http://www.worldbank.org/research/growth/GDNdata.htm].

[21] Source: Government Finance Series [http://www.worldbank.org/research/growth/ GDNdata.htm].

[22] Source: Government Finance Series [http://www.worldbank.org/research/growth/ GDNdata.htm].

[23] Source: WISTAT 4, CD-Rom.

[24] Data for 1997 or latest year available.

	growing weight of tradables in economic activities) has negative or positive effects for gender equity. Hence, we use such an indicator to assess the impact of globalization on GI.

Several caveats apply to our findings on structural adjustment. First, our work is restricted by the lack of comprehensive cross-national, longitudinal data on the recent evolution of structural reforms. Our study has resorted to rough indicators of such reforms, but a more detailed study of the issue would require the compilation of more detailed data on the issue. Second, our study provides a statistical overview of the data: different trends might be revealed through a more detailed, qualitative study of trends in appropriate groups of countries (for example, have gender inequalities become less or more pronounced in countries that are usually perceived as examples of successful structural reforms? And is there a pattern in the extent of structural reforms among countries that have experienced either a high or low reduction of gender inequalities?). Third, our measures cannot assess some of the consequences of structural adjustment programmes observed in the literature: the intensification of the double day (or 'the triple roles') for women and the manner and outcome of intra-household negotiations over changing household resources. Finally, our study has focused on changes in aggregate, national levels of gender inequality, but a different pattern might be revealed in a more detailed study of the effects of structural reforms on particular groups of women (for example, poorer women within a given country).

In a previous study, to evaluate *longitudinal* patterns of change, we calculated

$$?y = ß_0 + ß_1 (\text{GI 1970}) + ß_2 \ (\text{GDP 1970}) + ß_3 (\text{change in GDP})$$

$$+ ß_4 (\text{GDP 1970} * \text{change in GDP}),$$

where ?y is the measure of change in the relevant dependent variable (following Firebaugh and Beck,[25] as indicated by the difference-of-logs (or log (y_2/y_1)) in GI between 1970 and 1992,) GI 1970 controls for the original level of women's status or gender inequality in 1970, GDP 1970 controls for the original level of economic development in 1970, and change in GDP is a measure of economic growth as indicated by the rate of change of GDPPC between 1970 and 1992. And to assess whether the longitudinal data might follow the curvilinear pattern described by authors such as Boserup (1970), the interaction term ?GDPPC*GDPPC1970 served to evaluate whether the impact of economic growth on the status of women or in inequalities between men and women differed according to the initial level of economic development (Boserup's approach, for example, would predict that such an interaction term would be significant and negative within the model focusing on change in inequalities between men and women). We then introduced additional independent variables into this longitudinal models to assess their impact.

Overall, we found that that a decline of inequalities between men and women over the 1970-1992 period had been most pronounced for countries that had higher original levels of gender inequality in 1970 (that is, higher values in the GI measure). The change in GDP variable and the interaction term were both significant. The interaction term was significant (at the .001 level) and negative, suggesting that economic growth was most likely to be accompanied by rising or little change in GI in countries at lower original levels of GDPPC, and that the relationship between economic growth and gender inequalities tended to level-off in countries with higher original levels of GDPPC. In countries classified as Muslim, reductions in inequality tended to be less

[25] Firebaugh and Beck 1994.

pronounced than in countries elsewhere in the world..[26] A Latin American variable was not significant in explaining changes in inequality over the period under consideration.[27]

Our previous study considered the impact of structural adjustment on changes in the GI measure. Overall, the structural adjustment variable was not significant in explaining changes in the GI measure over the 1970-1992 period. Our study noted that the lack of significance of structural adjustment on changes in the GI measure goes against some of the literature on the impact of structural adjustment on women's status, but we indicated several caveats regarding our preliminary conclusions.[28]

In this exercise, we seek to further assess the impact of a broader range of indicators of structural adjustment on change in gender inequalities (as indicated by the GI indicator). However, our new structural adjustment indicators not available for all countries that have the relevant GI data, so the sample size varies according to which of the structural adjustment indicators is under consideration. To deal with this constraint, we have used variables derived from our previous study (GI 1970, GDP 1970, 1970-1997 change in GDP, interaction term, Muslim, Latin America) to specify the best-fitting model for each sample of countries (the relevant variables differ slightly from sample to sample). Once the best-fitting model has been determined for a particular sample, we include a structural adjustment indicator into the model, to assess the impact of its inclusion.

Regression diagnostics were run on all models to assess whether multicollinearity among the independent variables was influencing our estimates. In our models, except where indicated, the variance inflation factors (VIFs) associated with our explanatory variables fell below the value that would have led us to suspect that our estimates could be excessively influenced by multicollinearity.[29]

4. Findings

In order to facilitate the review of our findings, we discuss our results in the following order: (a) cross sectional patterns in inequality between men and women; (b) trends in inequality between men and women; (c) best fitting models; (d) reform indicators and gender inequality.

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[26] Thus, in a *cross-sectional* analysis, the Muslim attribute helped to predict that a country might rank higher in the relative prevalence of inequalities between men and women, and such an attribute predicted a greater propensity to maintain inequalities in a *longitudinal* analysis of the period under consideration.

[27] Thus, in a *cross-sectional* analysis, the Latin American attribute helps to predict that a country mig[27] On the other hand, the Latin American variable was not significant in explaining changes in ht rank higher in the relative prevalence of inequalities between men and women, but the attribute predicts no greater or lesser propensity to experience changes in such inequalities in a *longitudinal* analysis of the period under consideration.

[28] Semyonov (1980) has indicated that inequalities between men and women are significantly shaped by patterns of income inequality in the distribution of resources among households, so that countries with low levels of income inequality between households are more likely to be characterized by a smaller gap between men and women. We tested this hypothesis in a further specification of our models, but did not find support for the argument.

[29] According to the standards discussed in Neter, Kutner, Nachtsheim, and Wasserman 1996.

Cross-sectional patterns in inequality between men and women

Our first step was to replicate the models explored in our previous study. The results for various linear and curvilinear cross-national models of the relationship between gender inequality and our independent variables are provided in Table 2.

Table 2. Ordinary Least Squares (OLS) regression models of Gender Inequality (GI), circa 1992 (various samples)

Variables	A[a]	B[b]	C[c]
Intercept	-.0061	-.0009	.0024
GDPPPC (logged)	.0078 *	.0069 *	.0067 *
50% + Muslim (yes=1)	.1020 ***	.1076 ***	.1067 ***
Latin America (yes=1)	.0503 ***	.0521 ***	.0516 ***
Adjusted R^2	.4162	.4123	.3962
N	129	130	120

Sources: GI, authors' calculations; GDPPC, United Nations, *Women's Indicators and Statistics Database* (Version 4, CD-ROM) (New York: United Nations, Department of Economic and Social Information and Policy Analysis Statistical Division, 1999); Muslim, John Weeks, 1988 "The Demography of Islamic Nations," *Population Bulletin* 43(4).
Notes: GI represents the weight of the gender gap relative to the country's Human Development Indicator (HDI), following United Nations, *Human Development Report 1995*. For further explanation of calculation, see that report, p. 79. GDPPC represents gross domestic product per capita.
[a]Replication of optimal model from previous study (Forsythe, Korzeniewicz, and Durrant 2000).
[b]Optimal model from previous study (Forsythe et al. 2000) using different GDP data. Source: WISTAT version 4.0.
[c]Optimal model for circa 1992 sample, using the restriction that GI for 1997 be present.

KEY		
	***	p < .001
	**	p < .01
	*	p < .05
	Y	p < .10

The best-fitting model in our previous study is reproduced as model A in Table 2. This model had three significant variables: GDPPC, the Muslim and Latin American dummy variables. The GDPPC variable was positive and statistically significant at the .05 level, suggesting that levels of inequality circa 1992, as indicated by the GI and controlling for the other variables in the model, tended to higher in countries of higher level of development (and no support was found for a curvilinear relationship between these variables). The Muslim and Latin American variables are positive and statistically significant at the .001 level, suggesting that, all other things being equal, levels of inequality circa 1992 tended to be higher in Muslim and Latin American countries. The same relationships and levels of significance were maintained in two different samples of countries: a marginally larger sample (N=130) using WISTAT GDP data (Model B in Table 2); and a smaller sample (N=120) restricted to countries that have the appropriate data available for 1997 (Model C in Table 2). The model discussed in this paragraph hence appears robust across all the different 1990 samples of countries.

However, as indicated by Table 3 below, the initial model is less useful to interpret the1997 cross-sectional data. In these data, as indicated by the Original Model in Table 3, the GDPPC and Latin American variables lose their significance (and fail to gain such significance in any combination of the variables explored in our original analysis). Of course, this could result from differences in the particular sample of countries included in the analysis. However, the same results were obtained after restricting a sample (model A in Table 3) to those countries for which the original model held in 1990 (the countries included in the C model of Table 2): after assessing

which variables produced the best model for interpreting the data, the only variable of significance in the 1997 cross-sectional analysis is the Muslim dummy variable. As for the previous period, the variable is positive and statistically significant at the .001 level (see model A in Table 3; as indicated by model B in table, virtually the same results were obtained after expanding the sample back to the 125 countries for which 1997 data are available). This suggests that over the 1990s, both GDPPC and Latin American status lost the significance they had during earlier decades in explaining cross-sectional differences in gender inequality. This finding matches the patterns of change suggested by Table 1, as the descriptive evidence suggests that between 1970 and 1997, both wealthy and Latin American countries tended to shift towards lower levels of inequality between men and women. On the other hand, through the 1990s, levels of gender inequality remained considerably higher in Muslim countries.

Inclusion of the women's empowerment measure changes the size of the sample. Again, the results differ for 1990 and 1997. In 1990, as indicated in models 1990 A and 1990 B in Table 4, the significant variables in our optimal model included GDPPC (as in the previous paragraph, positive and significant at least at the .05 level), both the Muslim and Latin American variables (positive and significant at the .001 level), and the 2-component GEM variable (negative and significant at the .01 level). Not surprisingly, this suggested that gender inequality was less pronounced in countries where women had higher levels of empowerment.

Table 3. Ordinary Least Squares (OLS) regression models of Gender Inequality (GI), circa 1997

Variables	Original Model[a]	A[b]	B[c]
Intercept	.0487 *	.0492 ***	.0493***
GDPPPC (logged)	-.0005		
50% + Muslim (yes=1)	.0662 ***	.0620 ***	.0620***
Latin America (yes=1)	.0172		
Adjusted R^2	.2551	.2539	.2513
N	125	120	125

Sources: GI, authors' calculations; GDPPC, United Nations, *Women's Indicators and Statistics Database* (Version 4, CD-ROM) (New York: United Nations, Department of Economic and Social Information and Policy Analysis Statistical Division, 1999); Muslim, John Weeks, 1988 "The Demography of Islamic Nations," *Population Bulletin* 43(4) and *Britannica's Guide to the Countries of the World* (online version, www.britannica.com).
Notes: GI represents the weight of the gender gap relative to the country's Human Development Indicator (HDI), following United Nations, *Human Development Report 1995*. For further explanation of calculation, see that report, p. 79. GDPPC represents gross domestic product per capita.
[a]Optimal model for circa 1992 sample (see Table 2), run on 1997 sample.
[b]Optimal model for 1997 sample restricted to those countries with GI data for both 1990 and 1997.
[c]Optimal model for 1997 sample
KEY *** p < .001
** p < .01
* p < .05
Y p < .10

Several of the same variables remain significant in an analysis of the 1997 data (see models 1997A, 1997B and 1997C in Table 4). Both the Muslim and Latin American variables remain positive and significant (although with a slight decline in the level of such significance for both

variables), suggesting that gender inequality continued to show relatively higher levels in countries with such a characteristic. The 2-component GEM variable remains negative and significant at the .01 level, suggesting that gender inequality tends to be less pronounced in countries with higher levels of gender empowerment (although the precise causal relationship between these two variables would require greater inquiry). However, replicating the results obtained in the cross-sectional exercise explored in Table 3, the GDPPC variable is no longer significant in the optimal models obtained for the 1997 data. Again, this suggests that by 1997, level of economic development is no longer significant in explaining cross-sectional differences in gender inequality as it was in previous decades.

Table 4. Ordinary Least Squares (OLS) regression models of Gender Inequality (GI) for countries with Gender Empowerment Measures (GEM) data

Variables	1990 A [a]	1990 B[b]	1997 A [c]	1997 B[d]	1997 C[e]
Intercept	.0533*	.0522*	.1083***	.1128***	.1066***
GDPPC (logged)	.0085**	.0083*	.0008		
50%+ population Muslim (yes=1)	.0703***	.0724***	.0461**	.0457**	.0453**
Latin America (yes=1)	.0547***	.0558***	.0275*	.0268*	.0280*
2-component GEM	-.1127**	-.1092**	-.1148**	-.1115**	-.1040**
Adjusted R^2	.3866	.3729	.3107	.3191	.3192
N	104	104	83	83	89

Sources: GI, authors' calculations; GDPPC, United Nations, *Women's Indicators and Statistics Database* (Version 4, CD-ROM) (New York: United Nations, Department of Economic and Social Information and Policy Analysis Statistical Division, 1999); Muslim, John Weeks, 1988, "The Demography of Islamic Nations," *Population Bulletin* 43(4) and *Britannica's Guide to the Countries of the World* (online version, www.britannica.com); 2-component GEM, our calculations and United Nations, *Human Development Report 1999* and *Women's Statistics and Indicators Database* (Version 4, CD-ROM).

Note: GI represents the weight of the gender gap relative to the country's Human Development Indicator (HDI), following United Nations, *Human Development Report 1995*. For further explanation of calculation, see that report, p. 79. GDPPC represents gross domestic product per capita. GEM represents the Gender Empowerment Measure. The GEM was calculated using the formulas described in United Nations, Human Development Report 1995 using data from United Nations, *Women's Statistics and Indicators Database* (Version 4, CD-ROM) and United Nations, *Human Development Report 1999.* The 2-component GEM is calculated using only the parliamentary representation and decision-making components.

[a] Replication of optimal model from previous study (Forsythe, Korzeniewicz, and Durrant 2000)

[b] Optimal model from previous study (Forsythe et al. 2000) using different GDP data. Source: WISTAT Version 4.0

[c] Replication of optimal model for 1990 with 1997 data, using the restriction that GEM variable for both 1990 and 1997 be present.

[d] Optimal model for 1997 data, using the restriction that GEM variable for both 1990 and 1997 be present.

[e] Optimal model for 1997 data, restricted only by presence of 1997 GEM variable.

KEY	***	$p < .001$
	**	$p < .01$
	*	$p < .05$
	Y	$p < .10$

In short, the cross-sectional models for 1997 suggest that the level of economic development no longer shows the positive significance it had in previous decades in shaping inequalities between

men and women as measured by the GI, and that there are significant cultural/institutional legacies (as represented by those countries classified as Muslim or Latin American). However, the relative significance of such legacies is sensitive to whether a 2-component GEM variable is introduced in the cross-sectional analysis of the data.

Trends in inequality between men and women

As indicated in Appendix A and Table 1, most nations experienced a decline in such inequalities, but there were five nations where these inequalities became more pronounced. These five countries, experiencing an increase in gender inequalities, were Egypt, Guinea, Honduras, India, and Pakistan. The six countries experiencing the greatest relative decline in gender inequalities were Austria, Barbados, Iraq, Singapore, Trinidad and Tobago, and the United Kingdom.

We summarize the results for the relevant longitudinal models in Table 5 below. In our previous study, the best-fitting model included several variables. As indicated by Model A-1 in Table 5, the GI 1970 variable was significant at the .01 level and negative, suggesting that a decline of inequalities between men and women over the 1970-1992 period was most pronounced for those countries that had higher original levels of gender inequality in 1970 (that is, higher values in the GI). The GDPPC 1970 indicator was significant at the .05 level and positive, meaning that, taking into account original levels in the GI, a decline of inequalities between men and women over the 1970-1992 period would appear to have been more pronounced in countries that had lower original levels of economic development.

The model provided additional *longitudinal* evidence for the existence of a curvilinear relationship between economic growth and changes in inequalities between men and women. The interaction term (between economic growth and the original level of economic development) was significant (at the .001 level) and negative. This interaction term can be interpreted to suggest that economic growth was most likely to be accompanied by declining GI in countries at lower original levels of GDPPC, and that economic growth tended to have less of an impact on gender inequalities in countries with higher original levels of GDPPC.

Finally, countries classified as Muslim were less likely to undergo a reduction in inequalities between men and women. As indicated by Model A-1 in Table 5, the variable in question is significant (at the .05 level) and positive, suggesting that in countries classified as Muslim, reductions in inequality tended to be less pronounced. Thus, in a *cross-sectional* analysis, the Muslim attribute helps to predict that a country might rank higher in the relative prevalence of inequalities between men and women, and such an attribute predicts a *greater* propensity to maintain inequalities in a *longitudinal* analysis of the period under consideration[30]. As in our cross-sectional analysis earlier, these results tended to hold (with slight differences in levels of significance) across different samples of data (see model B-1 in Table 5).

[30] In a *cross-sectional* analysis, while the Latin American attribute also helps to predict that a country might rank higher in the relative prevalence of inequalities between men and women, but the attribute predicts no greater or lesser propensity to experience changes in such inequalities in a *longitudinal* analysis of the period under consideration.

Table 5. Ordinary Least Squares (OLS) regression models of change in Gender Inequality (change in GI), 1970-1990[a]

Variables	A-1[b]	A-2[c]	B-1[d]	B-2[e]	B-3[f]
Intercept	-2.2407 *	-2.0290	-2.1539	.3213	.3240
GI 1970	-2.9384 **	-4.3577 *	-3.6066 ***	-5.2160 ***	-5.1925 ***
GDPPC 1970 (logged)	.3764 *	.3835	.3847		
Change in GDP[g]	2.3769 **	1.9569	2.2561 *		
GDPPC 1970 x change in GDP	-.3962 ***	-.3250	-.3853 *		
50%+ population Muslim (yes=1)	.6695 *	.6000 Y	.8778 **	.7230 *	.7193 *
Structural Adjustment Index[h]		-.0243			-.0122
Adjusted R^2	.4951	.2985	.4658	.3297	0.315
N	66	42	66	42	42

Sources: Change in GI, authors' calculations ; GDPPC, United Nations, *Women's Indicators and Statistics Database* (Version 4, CD-ROM) (New York: United Nations, Department of Economic and Social Information and Policy Analysis Statistical Division, 1999); Muslim, John Weeks, 1988, "The Demography of Islamic Nations," Population Bulletin 43(4); Structural Adjustment Index, York Bradshaw, University of Indiana, Bloomington.

Notes: GI represents the weight of the gender gap relative to the country's Human Development Indicator (HDI), following United Nations, *Human Development Report 1995*. For further explanation of calculation, see that report, p. 79. GDPPC represents gross domestic product per capita.

[a] Measured using difference of logs, $\log(y_2/y_1)$.

[b] Replication of optimal model for change in GI 1970-1990 (Forsythe, Korzeniewicz, and Durrant 2000).

[c] Replication of optimal model for change in GI 1970-1990 with Structural Adjustment Index.

[d] Replication of optimal model for change in GI 1970-1990 using new GDP variables. Source: WISTAT 4.0.

[e] Optimal model for countries with Structural Adjustment Index data.

[f] Optimal model for countries with Structural Adjustment index variable added to regression model.

[g] Measured using difference-of-logs, $\log (y_2/y_1)$. Logged GDPPC is used for both years.

[h] Based on number of bilateral debt restructurings from 1975-90, number of multilateral debt restructurings 1975-90, number of times a country received extended International Monetary Fund (IMF) funds, and total number of IMF loans received as a percentage of its allotted quota 1975-90. See York Bradshaw and Wahl (1999) for more information.

KEY		
	***	$p < .001$
	**	$p < .01$
	*	$p < .05$
	Y	$p < .10$

The models in this case were also restricted by an adjustment indicator (Models A2 and B3) restricting the sample to only those countries in which reforms were in evidence. As indicated the structural adjustment variable was not significant in explaining changes in the GI measure over the 1970-1992 period. The lack of significance of structural adjustment on changes in the GI measure goes against some of the literature on the impact of structural adjustment on women's status, although the caveats discussed earlier apply here as well. The same results were obtained after estimating an optimal model (B-2 in Table 5) for a smaller sample of countries (those for which the

data on structural adjustment were available): upon addition in model B-3 of Table 5, the structural adjustment variable was not significant.

But as in the cross-sectional exercise, the results are altered when the data are expanded to 1997. Model A in Table 6 provides the most appropriate fit to the data. In this model, the GI 1970 variable is significant at the .001 level and negative, again indicating that a decline of inequalities between men and women over the 1970-1997 period has been most pronounced for those countries that had higher original levels of gender inequality in 1970 (that is, higher values in the GI). The GDPPC 1970 indicator is significant at the .01 level but is now negative, suggesting that, taking into account original levels in the GI, a decline of inequalities between men and women over the 1970-1997 period appears to have been more pronounced in countries that had higher original levels of economic development (again, confirming the impressions of the descriptive data presented in table 1). It is important to note that using the GDPPC indicator and its transformations as independent variables in the models has the effect of controlling for national income when examining coefficients on other variables. The Muslim variable is significant (at the .001 level) and positive, suggesting that in countries classified as such, reductions in inequality tended to be less pronounced. Similarly, the Latin American variable is significant (at the .05 level) and positive, indicating that in such countries, reductions in inequality were less pronounced.

Table 6. Ordinary Least Squares (OLS) regression models of change in Gender Inequality (GI), 1970-1997a

Variables	A	B	C
Intercept	.8635	-.0438	-.0434
GI 1970	-3.9687***	-5.7212***	-5.7188***
GDPPC 1970 (logged)	-.2493**		
Change in GDP[b]			
GDPPC 1970 x change in GDP			
50%+ population Muslim (yes=1)	1.2866***	.8513**	.8504**
Latin America (yes=1)	.4284*		
Structural Adjustment Index[c]			-.0012
Adjusted R^2	.5401	.3867	.3706
N	65	42	42

Sources: Change in GI, authors' calculations; GDPPC, United Nations, *Women's Indicators and Statistics Database* (Version 4, CD-ROM) (New York: United Nations, Department of Economic and Social Information and Policy Analysis Statistical Division, 1999); Muslim, John Weeks, 1988 "The Demography of Islamic Nations," *Population Bulletin* 43(4) and *Britannica's Guide to the Countries of the World* (online version, www.britannica.com). Structural Adjustment Index, York Bradshaw, University of Indiana, Bloomington.

Notes: GI represents the weight of the gender gap relative to the country's Human Development Indicator (HDI), following United Nations, *Human Development Report 1995*. For further explanation of calculation, see that report, p. 79. GDPPC represents gross domestic product per capita.

[a] Measured using difference of logs, $\log(y_2/y_1)$.

[b] Measured using difference-of-logs, $\log (y_2/y_1)$. Logged GDPPC is used for both years.

percentage of its allotted quota 1975-90. See York Bradshaw and Wahl (1999) for more information.

KEY *** $p < .001$
** $p < .01$

* $p < .05$
Y $p < .10$

However, when restricting our sample to the countries for which the general structural adjustment index data were available, the best-fitting model changed significantly (see model B in Table 6). Again, the GI 1970 variable is significant at the .001 level and negative, indicating that a decline of inequalities between men and women over the 1970-1997 period has been most pronounced for those countries that had higher original levels of gender inequality in 1970 (that is, higher values in the GI). But of the remaining variables, only the Muslim variable is significant (at the .01 level) and positive (again suggesting that in countries classified as such, reductions in inequality tended to be less pronounced). Into this best-fest-fitting model, we included the same general structural adjustment variable as we used in our previous study. Again, the variable was not significant when included in our optimal model (in this case, Model C of Table 6).

The best fitting models

Having observed that sample sizes have a significant influence on which models best fit a particular sample, we proceeded to construct best-fitting models (excluding the structural adjustment variables) for each particular sample (their size varied according to the availability of the appropriate data). These optimal models always included a combination of the following variables: GI 1970 (indicating the original level of gender inequality); GDPPC 1970 (logged) (indicating a country's level of economic development); a dummy variable for Muslim countries; and a dummy variable for Latin American countries. Table 7 below summarizes the variables (and level of significance) included in the best-fitting models for each particular sample.

Table 7. Summary of levels of significance, optimal models for samples restricted by presence of Structural Adjustment Programme indicator (Model A results, Tables 8-11)

	Sample							
Variables	1	2	3	4	5	6	7	8
GI 1970	.01	.05	.01	.001	.001	.01	.05	.05
GDPPC 1970 (logged)	.001	.01	.001	.01			.001	.001
50%+ population Muslim (yes=1)	.001	.05	.01	.001	.001	.01		
Latin America (yes=1)				.05				

As indicated in Table 7, in all eight samples, the GI 1970 variable was always significant (although the level of significance varied slightly from model to model) and negative, suggesting that a decline of inequalities between men and women over the 1970-1997 period has been most pronounced for those countries that had higher original levels of gender inequality in 1970 (that is, higher values in the GI).

In six out of the eight samples, the GDPPC 1970 variable was significant (with some variation in level) and negative, meaning that, taking into account original levels in GI, a decline of inequalities between men and women over the 1970-1997 period would appear to have been more pronounced in countries that had higher original levels of economic development.

In six out of the eight samples, the Muslim dummy variable was significant (at varying levels) and positive, suggesting that in countries classified as Muslim, reductions in inequality tended to be less pronounced. These results confirm previous findings: in a *cross-sectional* analysis, the Muslim attribute helps to predict that a country might rank higher in the relative prevalence of inequalities between men and women, and such an attribute predicts a *greater* propensity to maintain inequalities in a *longitudinal* analysis of the period under consideration. In other words, the available GI data suggest that the relative reduction in inequalities between men and women in countries classified as Muslim was less pronounced than the reduction that characterized countries elsewhere in the world.

Finally, the Latin America dummy variable was significant (and positive, following a similar pattern to the Muslim dummy variable in this particular instance) in only one of the samples.

Reform indicators and gender inequalities

Having ascertained the best-fitting model for each relevant sample, we then proceeded to assess the relative significance of each of the more specific indicators of reforms associated with structural adjustment. The results were rather consistent across seven of the specific indicators. Similar to our results in our previous study, in seven of the eight samples (see Tables 8 through 11), the inclusion of a structural adjustment variable was not significant in affecting changes in inequalities between men and women. According to the data analyzed here, neither the levels of government surplus/deficit, the degree of government participation or public investment in the economy, the extent of tariffs and taxes on foreign trade, or the extent of black market premiums appear to have had a significant influence on the cross-sectional distribution of gender inequalities in 1997.

One important exception to the above findings is that of educational expenditures: those countries spending more on education in 1997 experienced greater declines in gender inequalities for the period 1970-1997 (see Table 8, Sample 3). This confirms that certain public investments (such as those in education) might have a disproportionate effect among men and women. However, it is debatable whether this is an appropriate indicator of structural adjustment: while critics of structural adjustment often blame such reforms for severely cutting state expenditures in social areas such as education, advocates of structural reform generally respond that nothing in their policy prescriptions calls for reductions in such social expenditures.

Table 8. Optimal models for Structural Adjustment Programme (SAP) indicators
Dependent variable: Change in GI 1970-1997[a]

Variables	Sample (1)		Sample (2)		Sample (3)	
	DEFICIT (a)	DEFICIT (b)	SOEINV (a)	SOEINV (b)	EDUC (a)	EDUC (b)
Intercept	2.4180***	2.4272***	1.5527*	1.4962*	2.1854***	1.8185***
GI 1970	-2.9783**	-2.9271*	-3.6243*	-3.6358*	-3.1780**	-3.5051***
GDPPC 1970 (logged)	-.4762***	-.4815***	-.3336**	-.3285**	-0.4302***	-.2293*
50%+ population Muslim (yes=1)	.9684***	.9701***	.7421*	.7218*	.7022**	.8834***
Structural Adjustment Indicator[b]		-.0067		.0017		-.1964**
Adjusted R^2	.6523	.6458	.4254	.4125	.5595	.6297
N	52	52	48	48	58	58

Sources: Change in GI, authors' calculations; GDPPC, United Nations, *Women's Indicators and Statistics Database (Version 4*, CD-ROM) (New York: United Nations, Department of Economic and Social Information and Policy Analysis Statistical Division, 1999); Muslim, John Weeks, 1988, "The Demography of Islamic Nations," Population Bulletin 43(4) and *Britannica's Guide to the Countries of the World* (online version, www.britannica.com); DEFICIT and SOEINV, Trends in Developing Economies (TIDE), World Bank Socio-economic Time Series Access and Retrieval System (STARS) at http://wbln0018.worldbank.org/psd/. EDUC, United Nations, *Women's Statistics and Indicators Database* (Version 4, CD-ROM).

Notes: See Table 9. [a] Measured using difference of logs, $\log(y_2/y_1)$; [b] Data are for 1997 or latest available year.

Table 9. Optimal models for Structural Adjustment Programme (SAP) indicators
Dependent variable: Change in GI 1970-1997[a]

Variables	Sample (4)	
	TARIFF97 (a)	TARIFF97 (b)
Intercept	.8723	.8571
GI 1970	-3.8401***	-3.7831***
GDPPC 1970 (logged)	-.2550**	-.2545**
50%+ population Muslim (yes=1)	1.2702***	1.265***
Latin America (yes=1)	.4866*	.4548*
Structural Adjustment Indicator[b]		.0002
Adjusted R^2	.5265	.5202
N	58	58

Sources: Change in GI, authors' calculations; GDPPC: see Table 8; TARIFF97, Trends in Developing Economies (TIDE), World Bank Socio-economic Time Series Access and Retrieval System (STARS) at http://wbln0018.worldbank.org/psd/.

Notes: [a] Measured using difference of logs, $\log(y_2/y_1)$; [b] Data are for 1997.

Common notes for Tables 8 and 9:
GI represents the weight of the gender gap relative to the country's Human Development Indicator (HDI), following United Nations, *Human Development Report 1995*. For further explanation of calculation, see that report, p. 79. GDPPC represents gross domestic product per capita.

KEY *** p < .001
** p < .01
* p < .05
Y p < .10

Table 10. Optimal models for Structural Adjustment Programme (SAP) indicators
Dependent Variable: Change in GI 1970-1997[a]

	Sample (5)		Sample (6)	
Variables	BMP97 (a)	BMP97 (b)	PUBINV97 (a)	PUBINV97 (b)
Intercept	-.1384	-.1384	.1561	.3502
GI 1970	-5.1715 ***	-5.166***	-6.0256 **	-6.0098 **
50%+ population Muslim (yes=1)	1.1007 ***	1.1074***	.7823 **	.8854 **
Structural Adjustment Indicator[b]		-.0002		-.0348
Adjusted R^2	.4614	.4495	.3943	.3832
N	49	49	28	28

Sources: Change in GI, authors' calculations; GDPPC, United Nations, *Women's Indicators and* Statistics Database (Version 4, CD-ROM) (New York: United Nations, Department of Economic and Social Information and Policy Analysis Statistical Division, 1999); Muslim, John Weeks, 1988, "The Demography of Islamic Nations," Population Bulletin 43(4) and Britannica's Guide to the Countries of the World (online version, www.britannica.com); BMP97 and PUBINV97, World Bank Macro Time Series, http://www.worldbank.org/research/growth/GDNdata.htm.

Notes: GI represents the weight of the gender gap relative to the country's Human Development Indicator (HDI), following United Nations, Human Development Report 1995. For further explanation of calculation, see that report, p. 79.
[a] Measured using difference of logs, $\log(y_2/y_1)$.
[b] Data are for 1997.

KEY *** p < .001
** p < .01
* p < .05
Y p < .10

Table 11. Optimal models for Structural Adjustment Programme (SAP) indicators
Dependent Variable: Change in GI 1970-1997[a]

	Sample (7)		Sample (8)	
Variables	DEF97 (a)	DEF97 (b)	TAXTRD97 (a)	TAXTRD97 (b)
Intercept	3.3812 ***	3.1137 ***	3.3387 ***	1.5504
GI 1970	-4.2981 *	-3.9054 Y	-4.4323 *	-4.0373 Y
GDPPC 1970 (logged)	-.5626 ***	-.5402 ***	-.5515 ***	-.3380
Structural Adjustment Indicator[b]		-.0412		.2356
Adjusted R^2	.6683	.6828	.6444	.6542

N	21	21	19	19

Sources: Change in GI, authors' calculations; GDPPC, United Nations, *Women's Indicators and* Statistics Database (Version 4, CD-ROM) (New York: United Nations, Department of Economic and Social Information and Policy Analysis Statistical Division, 1999); Muslim, John Weeks, 1988, "The Demography of Islamic Nations," Population Bulletin 43(4) and Britannica's Guide to the Countries of the World (online version, www.britannica.com); DEF97 and TAXTRD97, World Bank Government Finance Series, http:// www.worldbank.org/research/growth/GDNdata.htm.

Notes: same as Table 10. GDPPC represents gross domestic product per capita.

Finally, Table 12 below shows the results obtained when including indicators of structural adjustment that seek to assess the relative change undergone by such indicators between 1970 and 1997. Although the sample sizes are relatively small due to availability of appropriate data, models 1 through 3 in Table 12 indicate that changes in neither public

Table 12. Ordinary Least Squares (OLS) regression models for change in Gender Inequality (GI), 1970-1997[a] and change in Structural Adjustment indicators (as noted in each model)

Variables	(1) CHANGEPUBINV[b]		(2) CHANGEDEF[c]		(3)CHANGETAXTRD[d]		(4) CHANGEEXP[e]	
	A[f]	B[g]	A	B	A	B	A	B
Intercept	.2602	.2598	-3.3370	-4.5054	-3.3354	-3.5864	1.9195***	1.8656**
GI 1970	-6.7075**	-6.7046**					-3.0406**	-2.9698*
GDPPC 1970 (logged)			.3399	.5623	.3397	.3968	-.3999***	-.3986***
Change in GDP[h]			2.6754*	3.3438*	2.6738*	2.8782*		
GDPPC 1970 x change in GDP			-.4175*	-.5408Y	-.4172*	-.4634*		
50%+ population Muslim (yes=1)	.6682*	.6681*					.7114**	.7013**
Change in SAP Indicator		.0014		.0225		-.0875		.0771
Adjusted R^2	.4178	.3925	.6371	.6166	.5986	.5758	.5252	.5177
N	27	27	13	13	12	12	58	58

Sources: Change in GI, authors' calculations; GDPPC, United Nations, Women's Indicators and Statistics Database (Version 4, CD-ROM) (New York: United Nations, Department of Economic and Social Information and Policy Analysis Statistical Division, 1999); Muslim, John Weeks, 1988, "The Demography of Islamic Nations," Population Bulletin 43(4) and Britannica's Guide to the Countries of the World (online version, www.britannica.com); CHANGEPUBINV, CHANGEDEF, CHANGETAXTRD, and CHANGEEXP, authors' calculations.

Notes: GI represents the weight of the gender gap relative to the country's Human Development Indicator (HDI), following United Nations, Human Development Report 1995. For further explanation of calculation, see that report, p. 79. GDPPC represents gross domestic product per capita.

[a] Measured using difference of logs, log(y2/y1).

[b] Measured using difference of logs, log(y2/y1).

[c] Measured as a rate of change, (y2-y1)/y1.

[d] Measured using difference of logs, log(y2/y1).

[e] Measured using difference of logs, log(y2/y1).

[f] Model A is the optimal model found for sample size restricted by presence of the structural adjustment indicator (public investment, deficit/surplus, taxes on international trade, or change in exports of goods and services).

[g] Model B is the optimal model for the restricted sample with the addition of the structural adjustment indicator.

[h] Measured using difference of logs, log(y2/y1). GDPPC logged is used for both years.

KEY		
	***	p < .001
	**	p < .01
	*	p < .05
	Y	p < .10

investments (CHANGEPUBINV), deficits (CHANGEDEF), nor taxes on international trade (CHANGETAXTRD) are significant when added to the best-fitting models assessing change in gender inequality between 1970 and 1997. Also, encompassing a much larger sample of countries, model 4 in Table 12 suggests that changes in the relative share of exports of goods and services in GNP were also not significant (when controlling for other variables) in affecting changes in gender inequality over the period under consideration.

On the other hand, compatible with our previous finding on EDUC, we have also found that original levels and patterns of change in education expenditures have a significant association with change in gender inequalities. As indicated by Model B in Table 13 (following a similar procedure as in Table 12), the original (circa 1970) levels of expenditures in education had a significant (at the .05 level) and negative relationship to change in inequality. This means that declining levels of gender inequality characterized countries with higher original levels of expenditures in education. Also, the extent of change in expenditures in education had a significant (at the .05 level) and negative effect on gender inequalities. This means that countries experiencing the largest increases in educational expenditures were characterized by declining levels of gender inequality. In short, these findings suggest that patterns of change in social expenditures (such as education) might have a significant impact on gender inequalities.[31]

Table 13. Ordinary Least Squares (OLS) regression models for change in Gender Inequality (GI), 1970-1997[a] and change in educational expenditure indicator

Variables	A	B
Intercept	2.3298***	2.1654***
GI 1970	-3.1589**	-3.3744**
GDPPC 1970 (logged)	-.4558***	-.3039*
50%+ population Muslim (yes=1)	.6373*	.8025**
Baseline 1970 Education Expenditure[b]		-.1757*
Change in Education Expenditure, 1970-97[c]		-.5581*
Adjusted R^2	.5661	.6052
N	53	53

Sources: Change in GI, authors' calculations; GDPPC, United Nations, *Women's Indicators and Statistics Database* (Version 4, CD-ROM) (New York: United Nations, Department of Economic and Social Information and Policy Analysis Statistical Division, 1999); Muslim, John Weeks, 1988, "The Demography of Islamic Nations," *Population Bulletin* 43(4) and *Britannica's Guide to Countries of the World* (online version, www.britannica.com); Education Expenditure, United Nations, *Women's Indicators and Statistics Database* (Version 4, CD-ROM).

Notes: GI represents the weight of the gender gap relative to the country's Human Development Indicator (HDI), following United Nations, *Human Development Report 1995*. For further explanation of calculation, see that report, p. 79. GDPPC represents gross domestic product per capital.
[a]Measured using difference of logs, $\log(y_2/y_1)$;
[b]Measured as percentage of GNP;
[c]Measured using difference of logs, $\log(y_2/y_1)$.

KEY *** $p < .001$
** $p < .01$
* $p < .05$

[31] Future research should link these findings to studies that have found that gender inequality in education has a significant negative impact on economic growth (e.g., Dollar and Gatti 1999; Klasen 1999).

Y p < .10

5. Conclusion

The available data confirms the continuing significance of many of the variables we identified in a previous study as significant for the analysis in the cross-sectional and longitudinal characteristics of gender inequalities in the world: in particular, key cultural-religious characteristics (such as a Latin American regional affiliation or majority Muslim population) have had a significant impact in persisting gender inequalities.

The present study, however, focused more closely on assessing the relative impact of economic reform through a new set of data. Once again, replicating the results of a previous study, a more detailed analysis of relevant data suggests that most of the usual indicators of structural adjustment (e.g., extent of fiscal deficit, magnitude of public sector, taxes on trade) do not appear as significant variables explaining trends in gender inequality. The relative significance of exports within national economies (often used as an indicator of globalization or integration into world markets) also appears not to be significantly related to patterns of change in gender inequality.

However, the important exception is in regards to expenditures in education. Such expenditures do have a significant relationship with gender inequalities, suggesting that the decline of gender inequalities has been most significant in countries characterized by higher levels (initially and over time) of expenditures in education. The crucial implication is that the impact of structural adjustment policies is likely to vary depending on the extent to which such policies include cutbacks or increases in educational expenditures (and this might apply to other social expenditures as well, such as those in health). Our findings suggest that higher levels of educational expenditures might lead to greater gender equality, and such equality, in turn, as indicated by the relevant literature, is likely to have a significant and positive effect on economic growth.

APPENDIX

Values of 1970 Gender Inequality (GI), Value of 1997 GI, Change in GI (1970-97), and Change in Women's Status (GDI) (1970-97)

Country	1970 GI	1997 GI	Change in GI	Change in GDI
Algeria	.220	.145		.960
Argentina	.225	.086	-0.957	.340
Australia	.159	.013	-2.519	.263
Austria	.201	.033	-1.819	.276
Bahamas		.017		
Bahrain		.137		.678
Bangladesh	.126	.071		1.205
Barbados	.278	.025	-2.426	.407
Belgium	.182	.027	-1.896	.284
Benin		.072		
Bolivia		.055		
Botswana	-.063	.028		.795
Brazil	.176	.042	-1.426	.638
Brunei Darussalam		.056		
Bulgaria		.015		
Burkina Faso		.053		
Burundi		.029		
Cameroon		.068		
Canada	.136	.022	-1.820	.202
Cape Verde		.070		
Chad		.055		
Chile	.204	.083	-.904	.419
China		.045		
Colombia	.170	.039	-1.459	.576
Comoros		.048		
Congo		.043		
Costa Rica	.176	.072	-.895	.434
Côte d'Ivoire		.122		
Cuba		.042		
Czech Republic		.019		
Denmark	.137	.010	-2.594	.193
Dominican Republic	.105	.095		.608
Ecuador	.124	.042		.645
Egypt	.030	.142		.893
El Salvador	.090	.065		.671
Estonia		.018		
Ethiopia		.067		1.527
Fiji		.100		.521
Finland	.165	.020	-2.116	.262
France	.148	.020	-2.009	.223
Gambia		.043		
Ghana	.085	.013		.988
Greece	.212	.058		.423

Country	1970 GI	1997 GI	Change in GI	Change in GDI
Guatemala	.212	.170	-.218	.528
Guinea	.009	.059	1.877	1.039
Guinea-Bissau		.093		
Guyana		.052		.267
Haiti	.041	.014	-1.068	.503
Honduras	.020	.034	.523	.494
Hong Kong, China (SAR)		.045		
Hungary		.022		
India	.016	.058	1.305	.578
Indonesia	-.003	.038		.734
Iran, Islamic Republic of	.259	.289	.111	.630
Iraq	.418			
Ireland	.255	.081	-1.46	.326
Italy	.217	.058	-1.316	.301
Jamaica	.097	.015	-1.891	.165
Japan	.198	.092	-.764	.206
Kenya		.010		
Korea, Republic of		.063		
Kuwait		.080		.505
Latvia		.014		
Lebanon		.113		
Lesotho	-.049	.040		.427
Libyan Arab Jamahiriya		.155		
Lithuania		.023		
Luxembourg	.200	.073	-1.004	.230
Malawi	.108	.031	-1.234	.692
Malaysia	.104	.070	-.402	.622
Maldives	.259	.087	-1.091	
Mali		.022		
Malta		.122		
Mauritania		.036		
Mauritius		.091		
Mexico	.259	.087		.502
Mongolia		.005		
Morocco	.209	.127	-.503	.785
Mozambique	.395	.063	-1.841	.502
Myanmar	-.066	.012		.378
Namibia		.041		
Nepal	.210	.060	-1.260	1.034
Netherlands	.190	.034	-1.736	.270
New Zealand	.197	.018	-2.422	.291
Nicaragua	.201	.033	-1.805	.367
Niger		.055		
Nigeria		.033		
Norway	.181	.018	-2.320	.261
Pakistan	.197	.159	-.210	.621
Panama	.149	.067	-.793	.480
Papua New Guinea	.172	.026	-1.904	.642
Paraguay	.070	.027	-.972	.406
Peru	.199	.037	-1.691	.562

Country	1970 GI	1997 GI	Change in GI	Change in GDI
Philippines	.070	.034	-.703	.431
Poland		.019		
Portugal	.146	.041	-1.272	.552
Qatar		.139		
Romania		.020		
Russian Federation		.015		
Saudi Arabia	.526	.212	-.908	.965
Senegal		.036		
Singapore	.239	.033	-1.976	.522
Slovakia		.022		
Spain	.268	.060	-1.496	.387
Sri Lanka	.075	.029	-.958	.330
Sudan	-.005	.073		.677
Suriname				
Swaziland		.051		.818
Sweden	.133	.017	-2.039	.208
Switzerland		.037		
Syrian Arab Republic	.270	.100	-.992	.631
Tajikistan				
Tanzania, United Republic of	.066	.009	-1.981	.562
Thailand	.037	.025	-.367	.601
Togo	-.016	.056		.690
Trinidad and Tobago	.297	.047	-1.833	.413
Tunisia	.194	.094	-.725	.912
Turkey	.136	.091	-.401	.665
Uganda		.023		
United Arab Emirates	.414	.133	-1.136	.737
United Kingdom	.210	.023	-2.219	.297
United States	.081	.019	-1.467	.133
Uruguay		.032		
Venezuela	.293	.065	-1.506	.450
Viet Nam		.008		
Yemen		.128		
Zambia	.076	.016	-1.588	.173
Zimbabwe		.019		

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