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EARNINGS INEQUALITY IN SRI LANKA

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EARNINGS INEQUALITY IN SRI LANKA

Abstract

Since the 1990s, accelerating economic growth has regained its dominance in the anti poverty strategies. However, the rising tendency of income inequity at the global level and within the countries emphasises the need to incorporate distributional factors to make the pro-poor growth strategies effective. This paper explores the sources of this surge in income inequality in a developing country context. The paper attempts to estimate an earnings function for Sri Lanka based on the household expenditure survey. The earners are distinguished by ethnicity, gender, sectors of employment, place of residence, education and occupation. One of the significant results of this study is that there was no 'ethnic effect' per se on earnings on Sri Lanka. Having seen a significant gender effect in earnings, the paper further attempts to calculate the degree to which this gender difference in earnings represents 'discrimination' against women.

The extent of real inequality of opportunities that people face cannot be readily deduced from the magnitude of inequality of incomes, since what we can or cannot do, can or cannot achieve, do not depend just on our incomes but also on the variety of physical and social characteristics that affect our lives and make us what we are - (Sen, 1992, p.28)

INTRODUCTION

Sri Lanka is one among the very few developing countries which has achieved high levels of human development in consistent with high income countries. However the ongoing civil war has affected both the level of growth in relation to its potential as well its social fabric of the country enormously[1] which has polarised the society across ethnic and spatial divides. Sri Lanka embarked on market friendly liberalisation policies since late 1970s which led to an increase in economic growth, however, this was not reflected on the distribution of income which remained more or less unchanged (Dunham and Jayasuriya, 2000). Despite the fact

that the experiences of East Asian countries tend to negate the 'so-called' trade-off between augmenting growth and reducing distributional imbalances (Birdsall, Ross and Sabot, 1995), the argument that growth is always distribution-neutral is still not a conclusive one (Bruno, Ravallion and Squire, 1996).

In developed countries, the main characteristics of the increasing inequality, particularly earnings inequality, are differences in educational qualifications and earnings inequality within education and age groups (Katz and Murphy, 1992; Bound and Johnson, 1992; Gordon, Coder and Ryscavage, 1992). In Australia, the widening earnings dispersion is seen as a result of changes in the structure of employment or changes in relative rates of pay for different type of employees (Keating, 2003). The change in the composition of employment reflects to an extent as to how Australia has shifted the supply curve in response to the changing structure of demand and technology. However, in Germany since the mid 1970s, earnings inequality has fallen significantly, particularly in the bottom half of the distribution (Abraham and Houseman), which is in sharp contrast with many developed countries particularly the United States. The declining earnings inequality in Germany is attributed to reasons such as (1) relatively centralised wage setting (2) growth in the supply of more educated workers against an increase in demand for such labour and (3) role of education and training system to supply workers with an appropriate mix of skills. Although, there are some studies, e.g., Chapman (1999) argues that increased education and training may not directly create more jobs for the unemployed, as the German experience clearly revealed the importance of education and training as crucial determining factors in reducing earnings inequality and the role of institutions in achieving this.

In developing countries, Kuznets (1955) has identified the shift of population from traditional to modern activities as an important reason for inverted U relationship between inequality and development, and found that developing countries had relatively greater inequality than developed countries. The variations in inequality reflect real differences across countries in participation in the modern sectors of the economy and indicate the importance of urbanisation and industrialisation in determining the extent of inequality. Ahluwalia's (1976) study, which examined the distribution of income and the process of development on the basis of cross country analysis, supports the increase in relative inequality in the early stages of development followed by a decline in the later stages which is attributed to factors such as changes in inter-sectoral shifts in the structure of production, educational attainment and labour skills.

In China, studies have highlighted powerful divergences in earnings among its provinces as well (Knight, Li and Zhao, 2001). It is also noted that in China, signs of wage discrimination against minorities and women are strong and the productive characteristics of workers are rewarded in the labour market (Knight and Song, 2003). The decomposition analyses of the rapid increase in mean earnings showed that unskilled market wage rose very little in real terms, the impetus came from the rising returns to education and the growing gap between the local private sector and other ownership factors. Cunningham and Jacobson (2003) addresses the question of how greater equality by gender and race/ethnicity in distribution of earnings which would affect overall earnings inequality in the context of Latin America and concludes that equal treatment has no effect on the inequality measurements. According to this study, policies that attempt to equalise earnings related characteristics across the population based on earnings standards alone is effective than any type of targeting.

In Section 2 of this paper, we attempts to estimate earnings function for Sri Lanka based on the latest Consumer Finances and Socio Economic Survey 1996-97 which excluded war-affected districts. We calculate the values of the Gini Coefficient for the distribution of the different types of income, across respondents reporting a positive income of that type based on the information on the income of the respondents. Section 3 addresses the question of how greater equality by gender and race/ethnicity in distribution of earnings would affect earnings inequality. The decomposition exercise of male-female earnings in this section is followed by a broader decomposition analyses on earnings inequality in Section 4, which also examines the debate on inequality and polarisation in the context of Sri Lanka. Section 5 summarises the main findings of the study and broader policy implications.

ESTIMATING AN EARNINGS FUNCTION FOR SRI LANKA

The total earnings of the 7,826 earners in the Survey (i.e. persons with positive earnings) were defined as the sum of their earnings from their primary and subsidiary occupations. As it turned out, earnings from subsidiary occupations were, on average, only 3 per cent of total earnings with the primary occupation contributing 97 per cent to total earnings. Table 1 shows some of the salient features with respect to the earners in the Survey, where these are distinguished by their ethnicity - Sinhalese, Tamil and Muslim[2]. The first feature of note is that average earnings were lowest for Tamils (571 rupees per week) and roughly the same for Sinhalese and Muslim earners.

Table 1
The Socio-Economic Position of Earners in Sri Lanka, by Ethnicity

	Sinhalese	*Tamil*	*Muslim*	*All Earners*
Number in sample	**6,514**	**1,041**	**271**	**7,826**
% of Total sample	**83**	**13**	**4**	**100**
Average earnings total (rupees)	**913**	**571**	**919**	**868**
Average earnngs (male)	**994**	**647**	**956**	**955**
Average earnngs (female)	**727**	**480**	**682**	**679**
%Rural	**86**	**9**	**63**	**75**
%Urban	**13**	**11**	**34**	**14**
%Estate	**1**	**80**	**3**	**11**
% female	**30**	**46**	**14**	**32**
Average age (yrs)	**37**	**37**	**36**	**37**
Zone of residence:				
Zone 1	**47**	**14**	**20**	**42**
Zone 2	**13**	**2**	**12**	**12**
Zone 3	**37**	**77**	**46**	**42**
Zone 4	**3**	**7**	**22**	**4**
Marital Status:				
% Married	**67**	**71**	**70**	**67**
% Single/widowed/divorced	**33**	**29**	**30**	**33**
Educational attainment:				
High (passed year 10 or above)	**44**	**7**	**34**	**39**
Moderate (passed up to year 10)	**50**	**66**	**61**	**53**
Low (no schooling)	**6**	**27**	**5**	**8**
Nature of Employment:				
% Regular employees	**38**	**62**	**21**	**41**
% Casual or Contract employees	**62**	**38**	**79**	**59**
Occupation:				
Professional, Managerial or Technical	**11**	**3**	**12**	**10**
Clerical	**12**	**1**	**9**	**10**
Sales	**4**	**4**	**20**	**5**
Service	**8**	**5**	**11**	**8**
Production	**65**	**87**	**48**	**67**
Sector of Employment:				
Public	**13**	**11**	**34**	**14**
Organised Private Sector	**86**	**9**	**63**	**75**
Unorganised Private Sector	**1**	**80**	**3**	**11**

Notes to Table 1:
Total earnings: sum of earnings from employment in primary and subsidiary occupations. *However, for all earners, earnings from subsidiary occupations were zero*.
Zone: Zone 1 (Colombo, Gampaha, Kalutara, Galle, Matara); Zone 2 (Hambantota, Monergala, ampara, Polonnarwa, Anuradhapura, Puttalam); Zone 3 (Kandy, Matale, Nuwara-Eliya, Badulla, Ratnapura, Kegalle, Kurunegala); Zone 4 (Colombo Municipal Area).

The second feature of note is the gap in male-female earnings: males earned, on average, 41 per cent more than females (955 against 679 rupees). The third noteworthy feature is differences between earners from the three ethnicities in their sectors of employment: 86 per cent of Sinhalese earners lived in rural areas while 80 per cent of Tamil earners lived on tea estates; the most urbanised ethnic group were the Muslims, one-third of whom lived in urban areas. The fourth feature is place of residence that while only 3 per cent of the Sinhalese earners, and 7 per cent of Tamil earners, lived in the Colombo Municipal Area, it was home to one in five of Muslim earners.

The fifth feature relates to educational qualifications. The proportion of earners with higher educational qualifications - defined as passing the 10 school year or more – was very small for Tamils (7 per cent) and highest for the Sinhalese (44 per cent). As regards, middle level qualifications – defined as having passed up to, but not including, the 10th year at school – 66 per cent of Tamil, 61 per cent of Muslim, and 50 per cent of Sinhalese earners had such qualifications. Overall, only 6 per cent of Sinhalese, and 5 per cent of Muslim – compared to 27 per cent of Tamil – earners had no schooling. The magnitude of high percentage of school drop outs among Tamils will be more significant if we include Tamil heartlands such as 'Jaffna' in the sample which has the highest school drop-out rates in the country (World Bank, 2000). In many of these areas, children have interrupted schooling due to displacement of families by the conflict and children are also lured (forcibly or not) to join the civil war.

The sixth noteworthy feature relates to the occupation of the earners. Over two in three earners in Sri Lanka earned their living as production workers and this proportion was highest for Tamil earners (87 per cent) and lowest for Muslim earners (48 per cent). At the other end of the occupational ladder, just over one in ten Sinhalese and Muslim workers, compared to only 3 per cent of Tamil earners, were in professional, managerial and technical occupations. Lastly, a majority of the earners worked in the "organised" private sector but this proportion was greatest for Sinhalese earners (86 per cent) and lowest for Tamil earners (9 per cent).

Table 2
Earnings Functions for Sri Lanka

	All Earners	*Male Earners*	*Female Earners*	*Sinhalese Earners*	*Tamil Earners*	*Muslim Earners*
Urban	**0.400**	**0.513**	**0.262**	**0.371**	**0.077**	**0.667**
	(8.1)	**(8.1)**	**(3.5)**	**(3.8)**	**(0.9)**	**(2.1)**
Rural	**0.303**	**0.417**	**0.153**	**0.257**	**0.284**	**0.596**
	(6.6)	**(7.0)**	**(2.3)**	**(2.7)**	**(4.0)**	**(2.1)**
Sex	**-0.350**	**-**	**-**	**-0.394**	**-0.078**	**-0.392**
	(22.1)			**(22.1)**	**(2.4)**	**(2.9)**
Age (years)	**0.030**	**0.037**	**0.020**	**0.030**	**0.028**	**0.056**
	(8.3)	**(8.1)**	**(3.5)**	**(7.4)**	**(3.5)**	**(2.7)**
Age sq	**-0.0004**	**-0.0005**	**-0.0003**	**-0.0004**	**-0.0003**	**-0.0007**
	(9.5)	**(8.7)**	**(4.2)**	**(8.6)**	**(3.3)**	**(3.0)**
Married	**0.175**	**0.231**	**0.030**	**0.177**	**0.088**	**0.152**
	(9.4)	**(8.9)**	**(1.2)**	**(8.5)**	**(2.1)**	**(1.2)**
Experience	**0.006**	**0.003**	**0.006**	**0.007**	**-0.0003**	**0.004**
(years)	**(5.8)**	**(2.6)**	**(3.4)**	**(6.0)**	**(0.1)**	**(0.5)**
Regular	**0.340**	**0.308**	**0.399**	**0.374**	**0.127**	**0.544**
employee	**(16.2)**	**(11.1)**	**(13.4)**	**(15.8)**	**(2.9)**	**(3.4)**
Days worked in	**0.133**	**0.145**	**0.109**	**0.131**	**0.159**	**0.105**
week	**(30.4)**	**(26.6)**	**(15.5)**	**(27.2)**	**(15.1)**	**(3.6)**
Tamil	**-0.040**	**-0.045**	**-0.031**	**-**	**-**	**-**
	(1.0)	**(0.9)**	**(0.5)**			
Muslim	**0.024**	**0.005**	**-0.027**	**-**	**-**	**-**
	(0.6)	**(0.1)**	**(0.3)**			
Zone 1	**-0.002**	**-0.010**	**-0.015**	**0.052**	**-0.315**	**-0.047**
	(0.1)	**(0.1)**	**(0.2)**	**(1.1)**	**(3.2)**	**(0.3)**

Zone 2	**-0.174**	**-0.199**	**-0.122**	**-0.113**	**-0.336**	**-0.399**
	(3.9)	**(3.6)**	**(1.6)**	**(2.1)**	**(2.1)**	**(2.1)**
Zone 4	**-0.221**	**-0.256**	**-0.182**	**-0.161**	**-0.481**	**-0.334**
	(5.3)	**(5.0)**	**(2.6)**	**(3.2)**	**(4.8)**	**(2.0)**
Higher education	**0.328**	**0.342**	**0.293**	**0.371**	**0.296**	**0.130**
	(10.6)	**(8.2)**	**(6.4)**	**(9.7)**	**(3.4)**	**(0.6)**
Middle education	**0.136**	**0.152**	**0.117**	**0.176**	**0.136**	**0.116**
	(5.1)	**(4.0)**	**(3.2)**	**(5.1)**	**(3.7)**	**(0.6)**
Clerical	**-0.309**	**-0.349**	**-0.211**	**-0.319**	**-0.351**	**-0.376**
	(10.0)	**(8.2)**	**(4.9)**	**(9.9)**	**(2.1)**	**(1.9)**
Sales	**-0.396**	**-0.405**	**-0.480**	**-0.409**	**-0.678**	**-0.312**
	(9.5)	**(7.9)**	**(6.0)**	**(8.8)**	**(4.9)**	**(1.5)**
Service	**-0.489**	**-0.453**	**-0.490**	**-0.482**	**-0.899**	**-0.535**
	(13.9)	**(10.1)**	**(7.7)**	**(12.7)**	**(6.6)**	**(2.5)**
Production	**-0.444**	**-0.458**	**-0.410**	**-0.448**	**-0.578**	**-0.442**
	(15.3)	**(11.7)**	**(9.1)**	**(14.5)**	**(4.6)**	**(2.3)**
Public Sector	**0.098**	**-0.002**	**0.334**	**0.082**	**0.098**	**-0.175**
	(3.8)	**(0.1)**	**(7.9)**	**(2.9)**	**(1.5)**	**(0.9)**
Organised Private Sector	**0.108**	**0.043**	**0.237**	**0.118**	**0.067**	**0.085**
	(5.0)	**(1.5)**	**(7.2)**	**(4.9)**	**(1.2)**	**(0.6)**
Intercept	**5.391**	**4.756**	**5.055**	**5.392**	**5.512**	**5.046**
	(51.1)	**(36.8)**	**(30.9)**	**(37.9)**	**(23.6)**	**(8.4)**

Notes to Table 2:
Dependent variable is log(total earnings); figures in parentheses are t-values.
Explanatory variables as defined in Table 1.
Residual categories: male; single; casual or contract employee; Sinhalese; zone 5; low educational attainment; professional, managerial, technical occupation; unorganised private sector.
Notes to the equations:
All earners equation: 7,826 observations; R^2 (adj)= 0.433.
Male earners equation: 5,338 observations; R^2 (adj)= 0.397.
Female earners equation: 2,488 observations; R^2 (adj)= 0.512.
Sinhalese earners equation: 6,514 observations; R^2 (adj)= 0.437.
Tamil earners equation: 1,041 observations; R^2 (adj)= 0.348.
Muslim earners equation: 271 observations; R^2 (adj)= 0.296.

Table 2 shows the results of estimating earnings equations for Sri Lanka with the log of total earnings as the dependent variable and, therefore, the coefficients are to be interpreted as the percentage change in earnings, consequent upon a unit change in the value of the associated explanatory variable. The earnings equations were estimated, first, over all the 7,826 earners; then, separately for the 5,338 male, and 2,488 female, earners; and lastly, separately for the 6,514 Sinhalese earners, the 1,041 Tamil earners and the 271 Muslim earners.

The estimation results point, firstly, to the fact that *ceteris paribus* a move from the estates sector to the rural sector would increase earnings by 30 per cent and a move from the estates to the urban sector would increase earnings by 40 per cent. In particular, the 'sector premium' was substantially higher for male, compared to female, earners. The fact that an overwhelming majority of Tamil earners worked on estates, provides an explanation for the lower earnings of Tamils, compared to Sinhalese and Muslims. The effect of residence on earnings also made itself felt through the zones: earners, irrespective of gender or ethnicity, living in Zones 2 and 3 could expect significantly lower average earnings – 17 and 22 per

cent lower, respectively, over all earners – to workers in Zone 4, the residual region; however, there was no significant difference in average earnings between Zones 1 and 4.

Being a regular – as opposed to a casual or contract employee – raised average earnings, across all earners, by 34 per cent and this effect was strongest for female earnings (a rise of 40 per cent) and for Muslim earnings (54 per cent)[3]. Earnings (per week) also increased with the number of days worked in the week. The average numbers of weekly working days were, in terms of ethnicity, 4.9 for Sinhalese earners, 5.1 for Tamil and 5.0 for Muslim earners and, in terms of gender, 4.8 for men and 5.0 for women. Every additional day worked raised average earnings, across all workers, by 13 per cent; however, the effect of an additional day worked raised male earnings by more than it did female earnings (15 against 11 per cent) and Tamil earnings (16 per cent) by more than it did Sinhalese (13 per cent) or Muslim (11 per cent).

Although an increase in age and in years of experience added to earnings, the effect of age was stronger than the effect of work experience: every additional year of age added 3 per cent to earnings compared to less than 1 per cent for every additional year of experience; indeed, the length of work experience did not – though age did – have any significant influence on the earnings of Tamil and Muslim workers.

When the equation was estimated over all earners, the results showed that a high education qualification, compared to no schooling, raised earnings by 33 per cent and this effect was stronger for male than for female earners (34 against 29 per cent) and stronger for Sinhalese than for Tamil earners (37 against 30 per cent). The benefits of middle-level were lower, raising earning by 14 per cent over no schooling, though once again this effect was stronger for male than for female earners (15 against 12 per cent) and stronger for Sinhalese than for Tamil earners (18 against 14 per cent).

The earnings of persons in clerical, sales, service, and production jobs were considerably lower than those in (the control category of) professional/managerial/technical jobs: across all earners, earnings in these four occupations were, respectively, 31, 40, 49 and 44 per cent lower than in professional/managerial/technical occupations.

The last factor affecting earnings was the sector of employment. Compared to working in the unorganised private sector, the earnings equation – when estimated over all earners – showed that working in the public sector and in the organised private sector added, on average, 10-11 per cent to earnings offered in the unorganised private sector, which was

treated as the residual sector. However, these 'sector of work' premiums were gender biased in that they accrued to women, rather than to men, and ethnic biased in that that they accrued to Sinhalese, rather than to Tamil or Muslim, earners.

Table 1 showed that, on average, Sinhalese and Muslim earnings were around 60 per cent above Tamil earnings. However, an important conclusion that emerges from the estimation results shown in Table 2 is that there was no 'ethnic effect' *per se* on earnings in Sri Lanka. After other non-ethnic factors had been controlled for, the coefficients on the Tamil and Muslim dummy variables were not significantly different from zero, whether in the all earners, male earners, and female earners equations. The most important of the non-ethnic factors were controlling for the urban/rural/estates sectors and for education effects. Firstly, the vast majority of Tamil earners worked on estates where average earnings (485 rupees per week) were considerably lower than in the rural (854 rupees per week) or urban (1,250 rupees per week) sectors. Secondly, relatively few Tamil earners - compared to Sinhalese and Muslim earners - had high educational qualifications when such qualifications offered a considerable earnings premium[4].

Table 1 showed that, on average, male earnings were around 40 per cent higher than female earnings. However, unlike the inter-ethnic earnings differences discussed above, there remained, even after controlling for non-gender factors, a significant 'gender effect': the coefficient on sex was significantly different from zero in the all earners equation and in the individual ethnic equations.

In addition to giving information on the earnings of employed persons, the Survey also provided information on the income of the respondents. Two types of income were distinguished: money income (mean value: 8,154 rupees) and income-in-kind (mean value: 1,793 rupees), with total income (mean value: 9,948 rupees) being the sum of these two incomes[5]. Both money and in-kind incomes were reported according to their values in the month, and in the six months, preceding the Survey. Money income was further distinguished by whether it was generated through employment or through investments.

Table 5
Income Inequality in Sri Lanka
For Different Types of Income

Income Type	*Gini Coefficient*
Total Earnings	**0.414**
Total Income	**0.666**
Total Income in Kind	**0.800**
Total Money Income	**0.772**
Employment Income	**0.437**
Investment Income	**0.579**

The Gini coefficient, for the different income types, is computed across respondents reporting a positive income of that type.
Total income is the sum of total money income and income in kind.
Total money income is the sum of employment and investment income.

Table 5 shows values of the Gini coefficient for the distribution of the different types of income, across respondents reporting a positive income of that type. The values of the Gini coefficient for total earnings and income from employment are very similar. However, inequality in the distribution of investment income (Gini: 0.579) was much greater than inequality in the distribution of employment income (Gini: 0.437). When the distributions of employment and investment income were combined to obtain total money income, the value of the Gini coefficient for total money income (0.772) was greater than the Gini values for its two components - the implication of this is that those persons who had high employment income also had high investment income. The highest degree of inequality was recorded for the distribution of income-in-kind (Gini: 0.800). However, since people who had relatively high income-in-kind also had relatively low money income, the distribution of total income (total money income + income-in-kind) was more equal (Gini: 0.666) than the distribution of total money income (employment + investment income) or of the distribution of income-in-kind.

THE DECOMPOSITION OF MALE-FEMALE EARNINGS

A natural question that arises from male-female differences in earnings – commented upon above – is the degree to which this gender difference in earnings represents 'discrimination' against women. This question can be answered using the Oaxaca (1973) and Blinder (1973) decomposition methodology. The male and female earnings equations may be written as:

$$\log(W_F) = \mathbf{X}'_{\mathbf{F}}\boldsymbol{\beta}_{\mathbf{F}} \text{ and } \log(W_M) = \mathbf{X}'_{\mathbf{M}}\boldsymbol{\beta}_{\mathbf{M}} \qquad (1)$$

where: W_F and W_M are, respectively, female and male earnings; $\mathbf{X_F}$ and $\mathbf{X_M}$ are vectors, respectively, of observations on explanatory variables for female and male earnings; and $\boldsymbol{\beta}_{\mathbf{F}}$ and $\boldsymbol{\beta}_{\mathbf{M}}$ are coefficient vectors for the female and male earnings equations.

Alternatively, equation (1) may be written as:

$$\log(W_M) - \log(W_F) = \mathbf{X_M}'\boldsymbol{\beta}_\mathbf{M} - \mathbf{X_F}'\boldsymbol{\beta}_\mathbf{F} = (\boldsymbol{\beta}_\mathbf{M} - \boldsymbol{\beta}_\mathbf{F})'\mathbf{X_F} + (\mathbf{X_M} - \mathbf{X_F})'\boldsymbol{\beta}_\mathbf{M} \qquad (2)$$

or as:

$$\log(W_M) - \log(W_F) = \mathbf{X_M}'\boldsymbol{\beta}_\mathbf{M} - \mathbf{X_F}'\boldsymbol{\beta}_\mathbf{F} = (\boldsymbol{\beta}_\mathbf{M} - \boldsymbol{\beta}_\mathbf{F})'\mathbf{X_M} + (\mathbf{X_M} - \mathbf{X_F})'\boldsymbol{\beta}_\mathbf{F} \qquad (3)$$

The first term in equations (2) and (3) – which may be interpreted as the 'discrimination' component – measures the (log) difference in male and female earnings resulting from differences in their respective coefficient vectors (β_M-β_F): in equation (2) these differences are evaluated at $\mathbf{X_F}$, the observations relating to the female attribute vector; in equation (3) they are evaluated at $\mathbf{X_M}$, the observations for the male attribute vector. The second term in equations (2) and (3), above, measures the (log) difference in male and female earnings resulting from differences in their respective attribute vectors ($\mathbf{X_M}$-$\mathbf{X_F}$): in equation (2) these differences are evaluated using β_M, the male coefficient vector; in equation (3) they are evaluated using β_F, the female coefficient vector.

Table 3
The Decomposition of Differences in Earnings Between Males and Females

All Earners				
Sample Average	***Women Treated as Men***		***Men Treated as Women***	
$\log(earn^M / earn^F)$	$\mathbf{X_F}'\hat{\boldsymbol{\beta}}_\mathbf{M} - \mathbf{X_F}'\hat{\boldsymbol{\beta}}_\mathbf{F}$	$\mathbf{X_M}'\hat{\boldsymbol{\beta}}_\mathbf{M} - \mathbf{X_F}'\hat{\boldsymbol{\beta}}_\mathbf{M}$	$\mathbf{X_M}'\hat{\boldsymbol{\beta}}_\mathbf{M} - \mathbf{X_M}'\hat{\boldsymbol{\beta}}_\mathbf{F}$	$\mathbf{X_M}'\hat{\boldsymbol{\beta}}_\mathbf{F} - \mathbf{X_F}'\hat{\boldsymbol{\beta}}_\mathbf{F}$
6.516-6.237=0.279	**6.551-6.237 = 0.314**	**6.516-6.551 = -0.035**	**6.516-6.08 = 0.436**	**6.08-6.237 = -0.157**

The results from decomposing the gender difference in earnings are shown in Table 3 using the estimated coefficients shown in the second (β_M : male) and third (β_F : female) equations of Table 2. The left hand panel shows the decomposition results when 'women are treated as men', i.e. from equation (2) and the right hand panel shows the decomposition results when 'men are treated as women', i.e. from equation (3).

The observed difference between men and women in the logarithm of their earnings – $\log(earn^M / earn^F)$ – u was 0.279 for all earners. Consequently, average male earnings were 28 per cent higher than average female earnings[6]. When, for all earners, female attributes were evaluated at male coefficients ('women were treated as men'), the log

difference in earnings was predicted to be 0.314 which is higher than the observed sample difference. In other words, if women were treated 'fairly' – in that their earnings attributes were evaluated using male coefficients – then the average log earnings of women (6.551) would *exceed* that observed for men (6.516). To put it differently, women in the Sri Lankan Survey had *superior* earnings attributes compared to men. However, these superior female attributes were translated into earnings using coefficients which were markedly inferior to those used for converting male attributes into earnings. As a result, female earners – notwithstanding their superior attributes – had average earnings which were considerably lower than the male average and, as has been argued, this fact could be attributed *entirely* to discrimination against women earners.

A similar conclusion emerges when 'men were treated as women'. If male earnings attributes were evaluated at female coefficients then average log earnings for men (6.08) would be *lower* than that observed for women (6.237). To put it differently, men in the Sri Lankan Survey had *inferior* earnings attributes compared to women. However, these inferior male attributes were translated into earnings using coefficients which were markedly superior to those used for converting female attributes into earnings. As a result, male earners – notwithstanding their inferior attributes – had average earnings which were considerably higher than the female average and, as has been argued, this fact could be attributed *entirely* to discrimination in favour of male earners.

THE DECOMPOSITION OF EARNINGS INEQUALITY IN SRI LANKA

The previous section used the econometric estimates (shown in Table 2) to decompose the difference between men and women in their *average* earnings (Table 3). However, the estimated equations allow these earnings to be predicted for *each* earner in the sample, conditional upon the relevant values of the determining variables. Armed with a knowledge of these individual earnings, one can estimate how much of the overall inequality in these earnings can be explained by a particular factor. For example, how much of the inequality in the 7,826 earnings could be accounted for by differences in: gender; ethnicity; zone of residence; urban/rural/estates dweller? This section provides an answer to this question, using the methodology of 'inequality decomposition'.

Suppose that the sample of N earners is divided into M mutually exclusive and collectively exhaustive groups with N_m ($m=1…M$) earners in each group. Let $\mathbf{y} = \{y_i\}$ and $\mathbf{y_m} = \{y_i\}$ represent the vector of incomes for, respectively, all the earners in the sample ($i=1…N$) and

all the earners in group *m*. Then an inequality index $I(\mathbf{y};N)$ defined over this vector is said to be *additively decomposable* if:

$$I(\mathbf{y};N)=\sum_{m=1}^{M} I(\mathbf{y_m};N_m)w_m+\mathbf{B}=\mathbf{A}+\mathbf{B} \qquad (4)$$

where: $I(\mathbf{y};N)$ represents the *overall* level of inequality; $I(\mathbf{y_m};N_m)$ represents the level of inequality within group m; **A** – expressed as the weighted sum of the inequality in each group, w_m being the weights – and **B** represent, respectively, the *within-group* and the *between-group* contribution to overall inequality.

Only inequality indices which belong to the *Generalised Entropy* (GE) family of indices are additively decomposable (Shorrocks, 1980). These indices are defined by a parameter θ : when θ=0 the weights are the population shares, and when θ=*1* the weights are the income shares, of the subgroups. When θ=*0*, the inequality index is the Mean Logarithmic Index (Theil, 1967):

$$GE(0)=\left(\sum_{i=1}^{N}\log(\mu/y_i)\right)/N \qquad (5)$$

where: μ is the mean income computed over the entire sample. When θ=*1*, the inequality index is Theil's Index (Theil, 1967):

$$GE(1)=\left(\sum_{i=1}^{N}(y_i/\mu)\log(y_i/\mu)\right)/N \qquad (6)$$

If, indeed, inequality can be 'additively decomposed' along the lines of equation (1) above, then, as Cowell and Jenkins (1995) have shown, the proportionate contribution of the between-group component (**B**) to overall inequality is the income inequality literature's analogue of the R^2 statistic used in regression analysis: the size of this contribution is a measure of the amount of inequality that can be 'explained' by the factor (or factors) used to subdivide the sample (for example, household's region supply or the educational status of the household head). Further, Zhang and Kanbur (2001) argue that this statistics could be used as an indicator (out of several proposed) of the concept "polarisation".

Table 4
The Decomposition of Earnings Inequality in Sri Lanka by Population Subgroup: Theil's Mean Logarithmic Deviation Index

Decomposition by↓	*Overall Inequality*	*Within Group Inequality*	*Between Group Inequality*	*Between Group Inequality as % of Overall Inequality*	*Between Group as % of Within Group Inequality*
Sex	**0.31118**	**0.29915**	**0.01203**	**3.9**	**4.0**
Ethnicity	**0.31118**	**0.29986**	**0.01133**	**3.6**	**3.8**
Zone	**0.31118**	**0.28955**	**0.02163**	**7.0**	**7.5**
Urban/rural/estates	**0.31118**	**0.28479**	**0.02639**	**8.5**	**9.3**
By *all* four of above	**0.31118**	**0.26381**	**0.04737**	**15.2**	**18.0**

***Notes to Table 4**:*
Gini Coefficient=0.414
Earnings = total earnings from employment in primary and subsidiary occupations.
Variable definitions as in Table 1.

Table 4 shows the results of decomposing the total earnings of the 7,826 individuals in the sample who reported positive earnings. When the 7,826 persons were divided by gender (68 per cent, male; 32 per cent, female) 3.9 per cent of overall inequality could be ascribed to differences in mean income between men and women (i.e. to between group inequality); on an ethnic (Sinhalese, Tamil, Muslim) split, the between-group contribution was 3.6 per cent; the urban/rural/estates divide explained 8.5 per cent – while the division of earners by their zone of residence explained 7 per cent – of overall earnings inequality in Sri Lanka. These results strongly suggest that the source of earnings inequality in Sri Lanka was more spatial (in that, the zone of residence mattered) – involving, additionally, an urban/ rural/ estates dimension – rather than gender or ethnicity. When earners were subdivided by all the four factors – sex, ethnicity, zone and urban/rural – 15 per cent of overall earnings inequality in Sri Lanka could be explained by differences in mean income between the subgroups[7].

In recent years, economists have drawn a distinction between 'inequality' and 'polarisation' (Esteban and Ray, 1994; Wolfson, 1994, Tsui and Wang, 1998; Foster and Wolfson, 1992; Zhang and Kanbur, 2001). Foster and Wolfson (1992) developed a polaristaion ordering that encompasses dimensions of both inequality and equality – (1) greater distancing between two groups below and above the median and (2) incomes below or above the middle position become closer to each other. A standard measure of inequality measures the spread of an income distribution and the measure is underpinned by the Pigou-Dalton axiom whereby a transfer of income from a richer to a poorer person would cause the value of the index to fall. On the other hand, the concept of polarisation emphasises ‘clustering’ – the propensity of incomes to cluster at certain nodal points. As Zhang and Kanbur (2001) show, redistribution may cause overall inequality to decrease but – as some income classes

are ‘squeezed out’ as a consequence of this redistribution – for polarisation to increase. Moreover, they argue that, among the plethora of measures of polarisation, a good measure of polarisation is provided by the ratio of the between group contribution to the within group contribution to overall inequality.

As the last column of Table 4 shows for Sri Lankan earnings, this measure of polarisation takes the value 9.3 on the urban/rural/estates axis and 7.5 on a zonal divide. On this measure, Zhang and Kanbur (2001) report, for Chinese real per capita consumption expenditures, values of 241 for the the rural-urban divide and 51 for the coastal-inland divide. Thus in China, 71 per cent of inequality in per capita consumption could be explained by differences in mean consumption between rural and urban areas and 17 per cent could be explained by differences between coastal and inland areas; in Sri Lanka only 8.5 per cent of inequality in earnings could be explained by the urban/rural/estates divide and only 7 per cent of inequality in earnings could be explained by inter-zonal differences.

SUMMARY AND POLICY IMPLICATIONS

This study estimated an earnings function for Sri Lanka which explains the significant positive effects of urbanisation and education on earnings. However, the decomposition analysis of earnings inequality reveals that the source of earnings inequality in Sri Lanka is more spatial. This issue is aggravated by the uneven distribution of bank credit and subsequent financial exclusion of the poor through their location in remote districts (Olsen, 2001). There are studies which have supported the arguments that in the move to a market economy, the role of welfare expenditure in maintaining social cohesion and political stability is crucial (Dunham and Jayasuriya, 2000). This study emphasises the need to redress spatial level imbalances in welfare activities and earning opportunities which could affect the macro stability of the country to a larger extent.

The decomposition exercise of male-female earnings indicates the significant extent to which the gender disparity in earnings represents ‘discrimination’ against women. These findings provide greater insights into the fallacy of the perceived notion of no significant gender inequality either in access to health and education services, or in economic welfare and income poverty levels (World Bank, 2000). The simulations showed that irrespective of inferior attributes, men had average earnings which were considerably higher than the female average that attributed *entirely* to discrimination in favour of male earners. These findings are more severe when we incorporate spatial dimensions into it such as in rural and estate areas where the income earning opportunities are very poor, particularly in Tamil majority areas

not included in the sample. Despite commendable achievements in social indicators, the spatial, ethnic and gender imbalances raise wider questions that need to be addressed in a development strategy to maintain social and political cohesion.

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Notes

[1] The conflict has reduced the economic growth by about 2 to 3 percentage per year (CBS, 1999).
[2] It should, however, be pointed out that, as there were no respondents from the Tamil heartlands - Jaffna, Mannar, Vavuniya, Muaitivu, Trincdmalee, Batticaloa, Kilinochchi - the Tamils in the Survey were unlikely to be representative of Tamils in Sri Lanka.
[3] Though, given the small number of Muslim earners in the sample, the results pertaining to Muslims should be interpreted with some caution.
[4] The average earnings of persons with high, middle and low qualifications were, respectively, 1222, 666 and 479 rupees per week.
[5] Mean values are computed over all respondents, for incomes over the past six months.
[6] $earn^M/earn^F=exp(0.279)=1.276$
[7] Earners were distinguished by their sex, ethnicity, zone of residence, and urban/rural/estates status: this yielded 72 subgroups.