Chapter 8

Human Capital, Urbanization, and Ethnicity: *Analysis of Regional Inequality in Sri Lanka*

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1. PERSISTENT INEQUALITIES IN SRI LANKA

Sri Lanka suffers from three forms of persistent and aggravating consumption inequalities. The level of inter-personal inequality – as measured by the Gini index of consumption inequality – has increased rather sharply from 32 percent to 40 percent between 1990-1991 and 2001-2002. At the same time, the level of rural-urban inequality – as measured by the gap in average consumption expenditure between urban and rural areas and expressed as proportion of the rural level – has increased from 47 percent to 63 percent. The level of inter-regional inequality, as measured by the gap in average consumption expenditure between the Western and non-Western provinces and expressed as proportion of

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the latter, has also increased from 32 percent to 48 percent during the same period.[1] The present article focuses on the third form of inequality, i.e. regional inequality in consumption expenditure. The term 'regional gap' (or 'regional inequality') in this article will refer to the differences between the Western and non-Western Provinces.

The choice of Sri Lanka as a case study of persistent and aggravating regional inequality is interesting from several perspectives. First, Sri Lanka is long known as the champion performer in the area of human development in South Asia. The advantage continues to be overwhelmingly in favour of Sri Lanka in respect of key human development indicators such as adult literacy and under-five mortality. For instance, in 2005, the male adult literacy rate was 92 percent in Sri Lanka and the rate of under-five mortality was only 14 per thousand live births. This was a truly impressive achievement compared to its South Asian neighbours such as India, Bangladesh, and Pakistan.[2] Second, Sri Lanka also has a much lower level of (dollar-a-day) poverty compared to its neighbours. Third, Sri Lanka has a much higher budgetary coverage of social transfer programmes targeted to the welfare groups compared to its neighbours in South Asia. Fourth, not only does Sri Lanka has a higher level of income compared to its neighbours, but it also maintained a decent average growth rate of 5.8 percent per year, notwithstanding conflict in the North during the period under consideration (i.e. 1990-1991 and 2001-2002). Finally, strikingly however, Sri Lanka has very low urbanization rates judged even by the South Asian standards. For instance, the rate of urbanization in Sri Lanka is assessed at only 15 percent compared with 35 percent for Pakistan, 29 percent for India and 25 percent for Bangladesh.[3] Even with potential definitional issues, Sri Lanka has a lower urbanization rate compared to the level predicted by its income.

Given the interplay of these factors one would have expected moderation of inter-personal, rural-urban and interregional inequalities. This, however, has

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[1] These estimates are based on unit-record data. Note that the term 'non-Western provinces' does not include the conflict-affected areas of the North, as these areas were not included in the HIES data for 1990-1991 and 2001-2002. The trends of aggravating inequalities are however valid even when we consider the latest HIES data for 2006-2007. However, we restrict the findings to the period between 1990-1991 and 2001-2002 HIES for which we have complete results, as reported in the present article.

[2] According to the data provided by the 2008 World Development Indicators (WDI), the male adult literacy rate for 2005 was 73 percent in India, 64 percent in Pakistan, and 54 percent in Bangladesh. The female adult literacy rate for Sri Lanka is also very high (89 percent) compared to only 35 percent in Pakistan, 41 percent in Bangladesh, and 48 percent in India. The under-five mortality rate (per thousand live births) for 2005 is assessed at 74 for India, 99 for Pakistan, and 73 for Bangladesh.

[3] This is based on World Development Indicators (WDI) 2008 published by the World Bank.

not happened in Sri Lanka. As mentioned at the outset, Sri Lanka had a relatively high level of consumption inequality in 1990-1991, which has risen sharply in the subsequent decade. Both rural-urban and interregional inequalities have also risen sharply during the same period. Overlapping of these three forms of aggravating inequalities in a relatively high human development country makes Sri Lanka an interesting case study.

The present article has ten sections. The first section indicates the relevance of Sri Lanka as a case study of persistent regional inequality. The second section briefly discusses the relevant literature and identifies factors that may explain regional inequality. The third section summarizes the methodology of estimation with a focus on the quantile regression framework and describes the data used. The fourth section describes the key differences between the Western and non-Western provinces. The fifth section analyses the relevance of urban proximity as a factor of differential household welfare at the national level. Urbanization's welfare effects are especially strong for the Western Province. The role of differential access to human capital in shaping regional differences in welfare has been taken up in section six. This section also discusses the varying effects of human capital at different quantiles or per capita expenditure groups. Section seven discusses the role of domestic and international migration (via remittances), while the eighth section analyses the factor of ethnic division in contributing to regional inequality. Section nine decomposes the inter-regional gap in the welfare level into 'returns effect' and 'endowment effect' by taking into all the relevant covariates into consideration. The results indicate the increasing prominence of the 'return effects', accounting for higher share of inter-regional welfare differences. The final section offers the concluding remarks.

2. PERSISTENT REGIONAL INEQUALITY: ROLE OF HUMAN CAPITAL, URBANIZATION, AND ETHNIC DIVISION

Ideas of persistent regional inequality can be traced back to Gunnar Myrdal's (1957) hypothesis of 'cumulative causation', which was advanced to account for the persistence of differences in a wide variety of development indices across nations and regions within nations. At the heart of such model lies the idea of increasing returns in the favoured region. Instead of leading to equality, forces of supply and demand interact with each other to produce cumulative movements away from spatial equilibrium. The emergence of multiple equilibria explains the persistence of spatial inequality and points to the need of 'big push' type deep interventions for overcoming dualism.[4]

[4] The other line of inquiry sees dualism as a function of time, of stage of development, largely to be overcome in the process of development (modernization) itself. According to this line of

Subsequent literature points to several pathways that explain persistent regional inequality. First, differential regional access to human capital can lead to long-term growth divergence between leading and lagging regions. An important strand of the endogenous growth models is premised on the causal role of human capital in shaping persistent regional inequality. Countries which have higher initial human capital tend to exhibit faster economic growth leading to long-term growth divergence between income-rich and income-poor countries (Ray 1998 provides a summary of the initial literature). Why some countries (and regions) were able to accumulate higher initial human capital in the first place was linked variously with higher initial wealth inequality in the presence of borrowing constraints, with emphasis on differing pathways such as inter-generational path dependence affecting investment in children (Galor and Zeira 1993), differential ability to make transition to non-farm work (Banerjee and Newman 1993), varying institutional performance affecting incentives to invest in land and human capital (Engerman and Sokoloff 2000; Banerjee and Iyer 2005), or giving shape to different policies with regard to public investment in human capital (Galor et al., 2009). Although Sri Lanka is a high-performer in attaining broad-based access to basic human development indicators, differential regional access to human capital may have some relevance even there, especially when the quality in learning outcomes is taken into account. Despite significant investment in public education, Sri Lankan students at grade 4, for instance, exhibit rather weak proficiency in first languages (Sinhala or Tamil-37 percent), English (10 percent), and Mathematics (38 percent) at the national level. Even poorer learning outcomes are recorded in the lagging areas.[5]

Second, differential level of 'economic density' (extent of urbanization and urban proximity, for example) can shape differing fortunes for different regions and act as another contributing factor to persistent regional inequality. Insights from 'new economic geography' show how higher 'economic density' offers benefits of agglomeration economies and provides better incentives for human capital

reasoning, higher wage in the favoured region will attract surplus labour from the disfavoured region while falling rate of profit in the favoured region will motivate capital to flow into the disfavoured region, leading to greater equalization. In this view, spatial inequality need not be chronic. Williamson (1965), for instance, shows that inter-regional inequality may actually follow an inverted-U curve, with 'pull' effects emanating from the favoured region being weak in the early stage of development and stronger in the later stages. Which of these processes will actually hold out at the end as the central tendency would depend on the relative strength of what Myrdal called 'backwash' as opposed to 'spread' effects, or Hirschman (1958) termed as 'polarization' as against 'trickling down' effects.

[5] The matched figures for rural and urban areas, respectively, indicate the nature of the problem first languages (34 vs. 51 percent); English (7 vs. 23 percent); Mathematics (35 vs. 52 percent). These estimates are based on the survey done by the National Education Research and Evaluation Centre, University of Colombo, and cited from World Bank (2007).

accumulation, leading to long-term divergence between regions. Paul Krugman (1991; 1999) provides initial insights to this literature, with Kanbur and Venables (2005) and Nguyen et al. (2007) providing interesting empirical case studies. Recent World Development Report of the World Bank provides useful overview of this approach (see, World Bank 2009). However, benefits of agglomeration economies need to be weighed against the external diseconomies such as congestion and pollution that can affect welfare and growth.[6] This may have some relevance for Sri Lanka since, in 2001, about one-half of Sri Lanka's urban population lived in the Colombo district of the Western Province (and about one-quarter lives in Colombo Metropolitan City alone).

Third, persistent regional inequality often overlaps with persistent ethnic inequality. The lagging regions often have high concentration of minority population who may suffer relative neglect in the process of development. Unfortunately, the HIES 1990-1991 and 2001-2002 for Sri Lanka did not include the conflict-afflicted northern areas, which historically had very high concentration of Tamil population. As a result, comparison between 'western' and 'non-Western' provinces (excluding the North) does not show a marked difference in the population distribution by ethnicity status. There is some evidence, however, that minority Tamil population has been in a state of relative disadvantage displaying higher poverty rate compared to majority Sinhala population in both 1990-1991 and 2001-2002. In fact, the poverty headcount index based on the 'national poverty line' shows divergent trends by ethnicity status – while for Sinhala population it has dropped from 26.3 to 22.3 percent, it has increased slightly from 26.2 to 26.8 percent for Sri Lankan Tamil, and increased sharply for the Indian Tamil from 18.8 to 25.7 percent (Gunewardena 2007; World Bank 2007). However, to what extent the ethnic biases may have contributed to persistent regional inequality between Western and non-Western provinces remain unexplored.

Fourth, the lagging regions may also suffer from a variety of other sources influencing low labour mobility. Lack of connectivity to growth centres can constrain labour mobility; immobility may be influenced by policy-induced distortions in the land market, holding back the pace of potential migration; it can also be shaped by diverse institutional-historical circumstances such as 'chronic poverty traps' in the estate sector in Sri Lanka (Gunewardena, 2007). All these can lead to low returns to human capital in the lagging regions and contribute to persistent regional inequality.

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[6] Henderson (2000) estimates that a 10-percentage point gap between the country's optimal and actual 'urban primacy' (defined as the share of the main urban centre of the country in the country's total urban population) can reduce the country's annual growth rate by more than one percentage point.

In this article we examine the relevance of these factors of labour mobility–education, connectivity, urbanization, ethnic division, and migration in explaining the persistent regional gaps in welfare in Sri Lanka.

3. METHODOLOGY AND DATA

In this study we adopt a quantile regression framework to explore this issue. The latter allows for covariates to have marginal effects (returns) that vary with a household's position in the welfare distributions, which cannot be revealed, for instance, by the Oaxaca-Blinder decomposition method.

The technical approach adopted in the article is inspired by Buchinsky (1994), Patrinos and Sakellariou (2004), and Nguyen et al. (2007). There are three parts to the econometric analysis. First, we begin by estimating an ordinary least squares (OLS) model (similar to the Mincerian wage equation model with regional fixed effects) to estimate household per capita expenditure as a function of experience (age) and human capital (years of education completed). Here we specifically control for observed household locational differences between western and non-Western provinces, and between urban and non-urban areas. This model does not take into account possible difference of coefficients among different income groups.

Second, we use a quantile regression model to estimate household per capita expenditure. The quantile regression allows for covariates to have marginal effects (returns) that vary with household's position in the welfare distributions, which cannot be revealed, for instance, by the Oaxaca-Blinder decomposition method. Using quantile regressions one can investigate how welfare (expenditure) vary with household characteristics such as at the 5th (very low), 50th (median), 95th (very high) percentiles of the distribution of household expenditures.

Third, the decomposition technique enables us to decompose the Western–non-Western gap at each quantile into two components: one component due to Western and non-Western differences in the distributions of returns and one component due to differences in the distributions of covariates in the households between Western and non-Western regions. We also decompose the urban-rural gap within Western and non-Western province to examine the differential impact of urbanization across leading as against lagging regions.

In case of Sri Lanka, analysis is done for a period roughly covering a decade. To this end we shall use primarily HIES data for 1990-1991 and 2001-2002 for Sri Lanka. The HIES data has been generated by Sample Survey unit in the Department of Census and Statistics, the central statistical agency in Sri Lanka. The HIES 1990-1991 has 18,462 households, while the HIES 2001-2002 has 16,924 households; both the surveys are nationally representative. However,

Northern and Eastern provinces were excluded from these surveys due to the conflict occurring in these areas. We account for the effects of the stratified groups and clusters in the sampling by adjusting for weights for each household. Both surveys follow a standard income and expenditure questionnaire format that allows us to compute comparable welfare estimations. The HIES questionnaire includes household and individual demographics, education, ethnicity, location of the household, employment, migration and remittances, expenditures and incomes. We also used other regional level data to enrich the district or sub-district level of information to examine the spatial inequalities. Such regional information includes population density, distance to the capital city of Colombo, and so on.[7]

4. REGIONAL CONTRASTS BETWEEN WESTERN AND NON-WESTERN PROVINCES

Historically, the Western province was the most developed among all provinces. Its initial advantage was noticeable even in the 1950s in terms of per capita income, level of literacy, and the extent of urbanization. This advantage maintained to this date. In fact, the regional gap in some key indicators of living standards has widened between the West and the rest of the country since the early 1980s. The income (expenditure) gap between the leading and lagging regions has not only persisted over time, it appears to have widened in recent years as per the available survey data (Table 1). The gap between leading (Western province) and lagging (non-western provinces) areas in Sri Lanka in average living standards (as measured by real per capita expenditure) has increased appreciably during the 1990s – from 32 percent in 1990-1991 to 48 percent in 2001-2002.[8]

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[7] Annex 1 provides summary statistics of the household and individual information used for the analysis. The dependent variable is log household real per capita expenditure measured in 2001-2002 Sri Lanka Rupees . The household and individual demographics used are the age of the household head (age), age squared (age^2), the gender of the household head dummy (gender=1 if male), ethnicity of the household head (using non-Sinhala as the reference category), marital status dummies of the household head (1 if single, widowed, separated). The human capital is the 'years of schooling of the head of the household'. We try to control for district and community characteristics by including accessibility to large cities or accessibility to certain infrastructure. For accessibility, we included the 'distance to Colombo' for HIES 2001-2002 data for each household included in the HIES data. In 1990-1991 data, however, we could not generate the matched information. The remittances are also an important source of income for many households in Sri Lanka and increasingly becoming an essential part of their income. We use dummy variables for those households who received remittances in the previous one year, and whether the variables relate to domestic or international remittance .To see whether the household welfare differs by location type, we used dummy variables for urban (urban=1 if urban), west (west=1 if Western province). We used the Western province as the leading region since it includes Colombo city and its vicinities, and many industries and economic activities are located in this province.

[8] The matched gap between urban and rural areas (excluding the estate sector) has increased at an even sharper pace-from 47 percent to 63 percent during the same period.

Similar differences are noticeable in respect of access to educational human capital (Table 2). Although the overall urbanization rate is low, about 50 percent of the total urban population resides in the Colombo district of the Western province alone. A recent World Bank report mentions that 'poverty reduction has been slow [in Sri Lanka] due to widening inequalities among income groups and across regions, and because growth is concentrated in Western Province' (2007, p.xix).

What explains this sharply rising regional inequality? In this article we consider three possible sources. First, the advantage of the leading region also lies in higher *economic density* of activities. The level of urbanization was historically much higher in the Western province, with *Colombo* district as the leader of urban growth. Since the mid-1970s, the two other districts (*Gampaha* and *Kalutara*) also started urbanizing rapidly, partly to avoid congestion in the already highly dense Colombo city. This, however, may not have happened on a similar scale and magnitude elsewhere outside the Western province. We expect to get a high correlation between the extent of urbanization and welfare gains.

Second, notwithstanding the spread of basic human development across regions in Sri Lanka the quality of human capital (schooling quality) is likely to be higher in the Western province, resulting in more remunerative occupational choice for people educated there. Available evidence suggests considerable regional variation in learning outcomes. The level of First Language (Sinhala and Tamil) proficiency, mathematics proficiency and english language proficiency is higher in the leading regions and much less in the lagging regions (Aturupane, 2007).

Third, even with similar quality of human capital migrants from non-Western provinces may be reluctant to migrate out to Western region because of other disincentives. These disincentives may have diverse sources. Lack of physical proximity or adequate connectivity, to the centre of higher economic growth is a well-known example. In case of Sri Lanka, one also needs to consider the special case of the estate sector. Here one is confronted with another socio-political reality, estate workers having the least physical and inter-generational mobility among all social groups. All these sources may have led to low returns to human capital in the lagging regions and hence, the persistent regional gap in average consumption expenditure (income).

5. URBAN PROXIMITY AND EXPENDITURE INEQUALITY

The global evidence on the enhanced welfare effects of living in the proximity to areas of higher economic density is also borne out by the Sri Lanka data.[9] The evidence suggests the importance of economic density, as typified by urbanization. Workers and businesses migrate closer to higher economic densities, as seen in

[9] See, World Bank (2009) for a recent survey of global evidence on the importance of 'economic density' as factor of faster economic development.

Table 1: Real per capita expenditure in leading and lagging regions/ sectors, 1990-1991 to 2001-2002

1990-91

	Western province (Leading)							non-Western province (Lagging)						
	Urban		Rural		Estate		Total	Urban		Rural		Estate		Total
	Sinhale	Other	Sinhale	Other	Sinhale	Other		Sinhale	Other	Sinhale	Other	Sinhale	Other	
Population	2443	818	1574	74	5	44	4958	2212	749	8909	452	172	1010	13504
	49%	16%	32%	1%	0%	1%	100%	16%	6%	66%	3%	1%	7%	100%
Real per capita expenditure	3595	3237	2722	2201	2494	2395	3226	3281	2811	2246	2224	2650	2194	2447

Source: Household Income and Expenditure Survey 1990-1991 by Sri Lanka Department of Census and Statistics (DCS).

2001-2002

	Western province (Leading region)							non-Western province (Lagging region)						
	Urban		Rural		Estate		Total	Urban		Rural		Estate		Total
	Sinhale	Other	Sinhale	Other	Sinhale	Other		Sinhale	Other	Sinhale	Other	Sinhale	Other	
Population	1219	539	2803	153	55	58	4827	1089	394	8778	753	253	830	12097
Percent	25%	11%	58%	3%	1%	1%	100%	9%	3%	73%	6%	2%	7%	100%
Real per capita expenditure	5880	4467	3979	2880	2715	2035	4441	5627	3617	2771	2381	3743	1997	2999

Source: Household Income and Expenditure Survey 2001-2002 by Sri Lanka Department of Census and Statistics (DCS).

Note: Rs at constant 2002 prices. Population percent is in each region.

Table 2: Education in western and non-western provinces (1990-1991 to 2001-2002)

		Western province (Leading)				non-Western province (Lagging)				National
		Urban	Rural	Estate	Total	Urban	Rural	Estate	Total	
	Years of education	7.93	7.19	4.49	7.65	7.51	5.61	3.94	5.88	6.35
HIES 1990-1991	observation	3261	1648	49	4958	2961	9361	1182	13504	18462
	percentage	17.7%	8.9%	0.3%	26.9%	16.0%	50.7%	6.4%	73.1%	100.0%
	Years of									
HIES 2001-2002	education	9.77	9.30	8.12	9.45	9.86	8.31	8.11	8.48	8.76
	observation	1758	2956	113	4827	1483	9531	1083	12097	16924
	percentage	10.4%	17.5%	0.7%	28.5%	8.8%	56.3%	6.4%	71.5%	100.0%

Source: Household Income and Expenditure Survey by Sri Lanka Department of Census and Statistics (DCS).

the growth of cities. Many others can benefit from urban agglomeration economies by at least temporarily migrating to cities for economic livelihoods often on a daily basis even if they do not reside directly in these areas.[10]

With increased economic distance from growth centres, welfare of people residing in lagging areas can drop considerably. This global evidence is also valid for a relatively small country such as Sri Lanka. After allowing for the usual individual/ household level controls we find that 'distance from Colombo city' is inversely correlated with the welfare gains in 2001-2002 (Table 3; model a and model b).[11]

Table 3: OLS regression of real per capita expenditure with 'urban proximity' (2001-2002)

Dependent: Household real per capita expenditure	model a.		model b.		model c.	
		Robust		Robust		Std.
Variables	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Err.
sex	−0.100 ***	0.017	−0.058 ***	0.017	−0.057 ***	0.016
age	0.004 **	0.002	0.004 **	0.002	0.004 **	0.002
age^2	0.00002	0.000	0.00001	0.000	0.00001	0.000
education (years)	0.242 ***	0.040	0.237 ***	0.040	0.227 ***	0.039
single dummy	0.005	0.020	0.029	0.020	0.021	0.020
widowed dummy	−0.053	0.040	−0.028	0.039	−0.035	0.039
separated dummy	0.083 ***	0.001	0.079 ***	0.001	0.074 ***	0.001
urban dummy			0.226 ***	0.026	0.174 ***	0.026
rural dummy			−0.094	0.023	−0.106 ***	0.023
west dummy					0.225 ***	0.013
Sinhale dummy			0.140 ***	0.016	0.112 ***	0.016
remittance abroad dummy			0.280 ***	0.025	0.270 ***	0.024
remittance domestic dummy			0.116 ***	0.023	0.139 ***	0.023
logged distance to Colombo	−0.023 **	0.001	−0.010 ***	0.002	0.004	0.002
constant	7.271 ***	0.060	7.062 ***	0.061	6.927 ***	0.060
observations	16924		16924		16924	

Source: Household Income and Expenditure Survey 2001-2002 by Sri Lanka Department of Census and Statistics (DCS).

Note: Distance to Colombo is the straight line distance from the centroid of the Colombo district to the household's residing DS (District Secretariat)'s centroid. It may be mentioned that the 'urban proximity' data are not available for 1990-1991.

***Significant at 1% level, ** Significant at 5% level, * significant at 10% level.

[10] This is especially true of Sri Lanka with relatively high rental value for houses in cities such as Colombo. Many government employees commute from outside the Colombo city while residing in the Western province. Many even commute from other provinces where there is a convenient transport communication such as commuting via rail (The popular Daily Galle Express is a case in point).

[11] In fact, inclusion of Western province as separate fixed effects along with the distance variable renders perverse sign for the latter due to very high multi-collinearity between the two (see, Table 3; model c). This also means that much of the advantages of residing in the Western province are related to living in close proximity to the Colombo city compared to the other provinces. Due to high multi-collinearity we drop the distance variable in the subsequent exercises.

The evidence is consistent with the poverty map done for Sri Lanka indicating not just the lower poverty incidence of the Western region (especially Colombo) but also of larger geographic concentration of poor people as preferred place of residence (Tilakaratna and Satharasinghe 2005; World Bank 2007).

The other indicator which shows the positive impact of urbanization relates to the welfare effects associated with the urban residence itself. In 1990-1991, the average welfare gains in terms of real per capita expenditure of an *urban resident* was about 15-16 percent higher after allowing for usual controls (data not shown). The matched effect for urban residence appears to have increased to 16-20 percent by 2001-2002 (Table 3). We further consider the urban effect for Western and non-Western provinces separately. The matched effect of urban residence is positive and significant for the Western province only in both the survey periods (Table 4), implying that differential urbanization rate may be an important explanatory factor of interregional inequality.

Table 4: OLS regression of household real per capita expenditure in western and non-western provinces, 1990-1991 to 2001-2002

1990-91

Dependent: Household real per capita expenditure	Western provinces		Non-Western provinces	
Variables	Coef.	Robust Std. Err.	Coef.	Robust Std. Err.
sex	−0.033	0.031	−0.022	0.016
age	0.005	0.004	−0.0003	0.002
age^2	0.000005	0.000	0.00005 **	0.000
education (years)	0.073 ***	0.004	0.044 ***	0.001
single dummy	0.146 ***	0.051	0.240 ***	0.033
widowed dummy	0.089 **	0.035	0.082 ***	0.018
separated dummy	−0.275 ***	0.089	0.061	0.046
urban dummy	0.075 **	0.038	−0.064 ***	0.023
Sinhale dummy	0.013	0.027	−0.105 ***	0.012
remittance abroad dummy	0.042 **	0.018	0.029 **	0.012
remittance domestic dummy	−0.008	0.024	0.027 **	0.011
education*urban	0.011 **	0.005	0.030 ***	0.003
constant	6.932 ***	0.101	7.303 ***	0.054
observations	4958		13504	

Contd...

Table 4 (contd.)

2001–2002

Dependent: Household real per capita expenditure	Western provinces		Non-Western provinces	
Variables	Coef.	Robust Std. Err.	Coef.	Robust Std. Err.
sex	−0.038	0.033	−0.068 ***	0.019
age	0.000	0.004	0.006 ***	0.002
age^2	0.000	0.000	0.000	0.000
education (years)	0.089 ***	0.004	0.063 ***	0.002
single dummy	0.234 ***	0.066	0.223 ***	0.047
widowed dummy	0.019	0.039	0.027	0.023
separated dummy	−0.095	0.077	−0.011	0.044
urban dummy	0.104 *	0.054	−0.020	0.046
Sinhale dummy	0.168 ***	0.027	0.051 ***	0.015
remittance abroad dummy	0.276 ***	0.040	0.268 ***	0.031
remittance domestic dummy	0.160 ***	0.058	0.131 ***	0.024
education*urban	0.017 ***	0.006	0.036 ***	0.005
constant	7.013 ***	0.119	6.953 ***	0.063
observations	4827		12097	

Source: Household Income and Expenditure Survey 1990-1991 and 2001-2002 by Sri Lanka Department of Census and Statistics (DCS).

Note: Household real per capita expenditure at constant 2002 price.

***Significant at 1% level, ** Significant at 5% level, * significant at 10% level.

6. EDUCATIONAL HUMAN CAPITAL AND EXPENDITURE INEQUALITY

6.1 Uneven Spread of Human Capital

Although Sri Lanka has attained well-known initial success in providing broad-based basic education, significant quality differentials in education persist between leading and lagging regions. The average year of education was about 30 percent higher in the Western province in 1990-1991 compared to the rest of the country (Table 2). There has been an improvement in the expansion of education between the survey periods – data is indicative of educational convergence in sheer quantitative terms – indicating a positive policy response to the problem of lagging regions through accumulation of human capital. The gap in years of education has dropped from 30.1 percent to 11.3 percent for the region as a whole, and from 28.3

percent to 11.9 percent for the rural sector; the matched regional gap has nearly disappeared for the estate sector. For the urban sector, the corresponding gap has been negligible throughout, suggesting that the regional difference in human capital is mainly driven by differential accessibility of the rural/estate sector. The positive policy response seems inadequate on closer scrutiny, however. The level of English language proficiency is much less in the lagging region. This comes through both interprovincial and interurban comparisons. This implies that, for a given level of educational qualification, graduates in the Western province have greater employable skills compared to the non-Western provinces (Aturupane, 2007). Thus, students in the Western province, and the better-off districts in other provinces such as the Galle and Matara district in the Southern province, the Kurunegela district in the north-Western province, and the Kegalle district in the Sabaragamuwa province, perform much better on cognitive achievement tests in first language, mathematics and english than students in the other provinces and districts. These differences come up repeatedly in learning assessments.

One recent study provides estimation of computer literacy of the household population in the age group of 5 to 69 years of Sri Lanka (Satharasinghe, 2004). At the national level, 10 percent of the above population is computer literate. Reports from the Western province show the highest computer literacy rate of 15.3 percent, while the lowest percentage of 5 percent was reported from Uva and north Central provinces. The key implication of these findings is that migrants from other provinces with lower quality of human capital would not be employed in the relatively high paying jobs in the Western province.

6.2 Returns to Human Capital by Leading/ Lagging Regions

In case of Sri Lanka, household human capital has been measured by the number of years of schooling attained by the household head. Returns to education for each extra year of schooling have increased for the entire sample over the 10-year period covered by these surveys.[12] The incremental gains are higher in the Western province – earning an *additional* 3 percent return compared to the

[12] In this article, we use the term 'return to education' rather loosely, mainly in the sense of 'marginal effects' in terms of additional household income (expenditure) contributed by an extra year of schooling controlling for other factors (covariates), as in the case of Mincerian wage equation measuring the return to human capital. The return to education, however, demands strict definition in terms of benefit-cost ratio. This allows the possibility that while benefits from education are higher in leading (urban) areas, the costs of education may also be higher there compared to lagging (rural) areas, thereby negating the thesis of higher return to education in leading (urban) areas. In case of Sri Lanka, however, this does not pose much of a conundrum – 'cost of education per student' is rather uniform between leading and lagging regions because of near-dominance of public education at all levels (especially at the post-secondary level).

average pay-off in non-Western provinces in both the survey periods (Table 4). The extra pay-off to human capital in the leading province is related to the greater productivity of educated individuals living in a more urbanized setting (and, possibly, the effects of residing in close proximity to the main state-agencies).

6.3 Differential Returns to Education across Consumption Quantiles

Human capital is one of the main sources of expenditure (income) inequality across quantiles in Sri Lanka. The returns to education are much lower for the bottom quantiles compared to the top quantiles in both the years, rising, for example, secularly from 4 percent for the 5th percentile to 9 percent for the 95th percentile in 2001-2002 (Table 5).

The above pattern is further borne out once the returns to human capital by quantiles are calculated separately by leading/ lagging regions. First, the higher returns to human capital for the leading region are noticeable for all the quantiles and are valid for both the survey periods. For example, in 2001-2002, for the 5th percentile the return to education was about 8 percent compared with 4 percent in the lagging region; for the 25th percentile, the corresponding figures are 9 percent and 6 percent; and for the 95th percentile, they are 11 percent and 9 percent, respectively (Table 6). Second, as in the case of overall samples, the pattern of increasing returns to human capital at the upper quantiles is found valid for both the regions, and for both the periods.

7. MIGRATION AND EXPENDITURE INEQUALITY

The evidence for Sri Lanka suggests that migration to the main growth centres can be an important channel for addressing the challenges of inclusive development for the lagging region. First, the returns to domestic migration are important for all the quantiles in both lagging and leading regions in 2001-2002 (Table 6); this was not the case in 1990-1991. This indicates the rising importance of domestic migration for improving household welfare. Second, in 2001-2002, the return to economic migration is higher for the 5th and the 95th percentiles in the lagging region. However, in the middle class segment – from 50th to 75th percentiles – the matched returns are higher for the leading regions. This essentially reflects more gainful economic migration from nearby districts within the Western province to the Colombo city. Third, the pattern of international migration is not dictated by the internal growth dynamics alone; many from the lagging districts have been able to migrate abroad. As a result, the returns to international migration for each quantile are similar across leading versus lagging regions. The other noteworthy aspect is that returns to international migration are relatively stable way up the distribution ladder (up to the 75th percentile), rising only sharply for the topmost 95th percentile.

Table 5: Quantile regression of household real per capita expenditure (2001-2002)

	5th Percentile		25th Percentile		50th Percentile		75th Percentile		95th Percentile	
		Bootstrap		Bootstrap		Bootsrap		Bootstrap		Bootstrap
Variable	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
sex	−0.049 **	0.020	−0.047 ***	0.017	−0.067 ***	0.017	−0.073 ***	0.024	−0.016	0.029
age	0.003	0.003	0.001	0.001	0.002	0.002	0.007 ***	0.002	0.011 *	0.006
age^2	0.00000	0.000	0.00003 **	0.000	0.00004 **	0.000	0.00000	0.000	−0.00002	0.000
education (years)	0.042 ***	0.002	0.060 ***	0.001	0.071 ***	0.001	0.082 ***	0.002	0.093 ***	0.003
single dummy	0.078	0.053	0.098 *	0.055	0.279 ***	0.048	0.332 ***	0.041	0.501 ***	0.091
widowed dummy	−0.043	0.036	0.018	0.019	−0.001	0.023	0.052 *	0.026	0.094 **	0.038
separated dummy	−0.024	0.041	0.003	0.040	−0.031	0.029	−0.038	0.061	0.203	0.151
urban dummy	−0.053	0.037	0.038	0.035	0.062 **	0.031	0.110 ***	0.036	0.229 ***	0.064
Sinhale dummy	0.017	0.026	0.066 ***	0.012	0.084 ***	0.013	0.106 ***	0.016	0.234 ***	0.031
Remittance abroad dummy	0.254 ***	0.034	0.260 ***	0.021	0.256 ***	0.024	0.256 ***	0.041	0.400 ***	0.077
remittance domestic dummy	0.098 **	0.038	0.085 ***	0.022	0.112 ***	0.021	0.132 ***	0.036	0.105 *	0.061
education*urban	0.040 ***	0.005	0.033 ***	0.003	0.031 ***	0.004	0.027 ***	0.004	0.016 **	0.007
constant	6.462 ***	0.078	6.772 ***	0.040	6.959 ***	0.053	7.112 ***	0.061	7.357 ***	0.136

Source: Household Income and Expenditure Survey 1990-1991 and 2001-2002 by Sri Lanka Department of Census and Statistics (DCS).

Note: *** Significant at 1% level, ** Significant at 5% level, * significant at 10% level.

8. ETHNICITY AND EXPENDITURE INEQUALITY

Higher returns to belonging to the majority social (ethnic) identity are important components of the persistent divide between the leading and lagging regions in Sri Lanka. Similar to distance, division (borders, ethnic divide) can be a deterrent to the integration between the leading and lagging regions. Ethnic variation in poverty status has been well-documented in the Sri Lanka literature (Gunewardena, 2007; World Bank, 2007). Returns to belonging to the ethnic majority vary substantially by the survey period and across quantiles. First, the base model with OLS shows that the Sinhala majority is better off controlling for other factors of interest (Table 3). Second, the ethnic gap is much more pronounced for the topmost quantile. In 2001-2002, returns to belonging to ethnic majority are about 7-10 percent higher than those observed for the ethnic minorities at the 25th, median and 75th percentile, but the matched difference rises sharply to 24 percent at the 95th percentile (Table 5). Third, the matched advantage to belonging to ethnic majority is *greater* in the leading region in 2001-2002 across the quantiles (Table 6).

Higher returns to belonging to ethnic majority may have a more recent growth origin. This may be due to two reasons. First, the period under consideration coincides with the sharpening of ethnic strife in Sri Lanka, leading to the migration overseas of a sizeable portion of the better educated individuals among the minority ethnic communities. As the surveys do not capture the Sri Lankans living overseas, the finding in this section would under-estimate the returns to human capital investment for minority ethnic communities. Second, policies can also reproduce social divisions in the pattern of employment. HIES 1901-1991 and 2001-2002 also show that, for a given level of education, Sinhala majority had greater access to public employment.

9. RETURN EFFECTS VS. ENDOWMENT EFFECTS

Using the Machado-Mata technique we decompose the interregional gap (Western/non-Western for Sri Lanka) into *returns effect* and *covariate effect* (Nguyen et al., 2007). An increasing share of the overall gap in living standard between the leading and lagging regions in Sri Lanka is attributable to higher returns to endowments. Market reforms tend to enhance the productivity of the available resource endowments; as a result, the return effects become increasingly important source of regional divergences in living standard. The second wave of economic reform towards liberalization started in Sri Lanka around 1990-1991 (Kelegama and Parikh, 2003). In 1990-1991, the return effects were relatively muted and

Table 6: Quantile regression of household real per capita expenditure in western and non-western provinces (HIES 2001-2002)

Western Province	5th Percentile		25th Percentile		50th Percentile		75th Percentile		95th Percentile	
		Bootstrp Std.		Bootstrp Std.		Bootstrp Std.		Bootstrp Std.		Bootstrp Std.
Variable	Coef.	Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Ceof.	Std. Err.
sex	−0.013	0.043 0.76	−0.001	0.049	−0.008	0.035	−0.028	0.045	0.033	0.048
age	−0.005	0.006 0.39	0.005	0.005	0.002	0.004	0.000	0.006	−0.001	0.012
age^2	0.00008	0.000 0.18	-0.00001	0.000	0.00003	0.000	0.00005	0.000	0.00006	0.000
education (years)	0.077 ***	0.007 0.00	0.092 ***	0.004	0.097 ***	0.003	0.097 ***	0.005	0.107 ***	0.008
single dummy	0.070	0.130 0.59	0.184	0.149	0.316 ***	0.092	0.313 ***	0.091	0.430 ***	0.139
widowed dummy	−0.009	0.083 0.91	0.054	0.054	0.030	0.036	0.083 *	0.044	0.021	0.085
separatd dummy	−0.042	0.095 0.66	-0.045	0.079	−0.111 **	0.054	−0.111	0.101	0.207	0.305
urban dummy	0.280 ***	0.034 0.00	0.273 ***	0.019	0.247 ***	0.027	0.260 ***	0.031	0.239 ***	0.064
sinhale dummy	0.065	0.045 0.15	0.138 ***	0.036	0.142 ***	0.039	0.163 ***	0.040	0.242 ***	0.073
remittance abroad dummy	0.252 ***	0.060 0.00	0.265 ***	0.042	0.249 ***	0.047	0.258 ***	0.064	0.384 ***	0.109
remittance domestic dummy	0.045	0.122 0.72	0.120 *	0.066	0.173 ***	0.058	0.213 ***	0.054	0.044	0.252
constant	6.409 ***	0.179 0.00	6.440 ***	0.170	6.808 ***	0.098	7.229 ***	0.154	7.696 ***	0.275
observations=	4827									

Contd.

Table 6 (contd.)

non-Western Province	5th Percentile			25th Percentile		50th Percentile		75th Percentile		95th Percentile	
		Bootstrp Std.			Bootstrp Std.		Bootstrp Std.		Bootstrp Std.		Bootstrp Std.
Variable	Coef.	Err.		Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Ceof.	Std. Err.
sex	−0.062	0.038	0.10	−0.058 ***	0.016	−0.098 ***	0.023	−0.089 ***	0.032	−0.053	0.042
age	0.006 *	0.003	0.07	0.002	0.002	0.003	0.002	0.008 **	0.004	0.014 **	0.007
age^2	−0.00001	0.000	0.75	0.00003	0.000	0.00003 *	0.000	−0.00001	0.000	−0.00006	0.000
education (years)	0.041 ***	0.001	0.00	0.056 ***	0.002	0.065 ***	0.002	0.075 ***	0.002	0.089 ***	0.003
single dummy	0.127 **	0.062	0.04	0.126 ***	0.043	0.254 ***	0.052	0.315 ***	0.058	0.595 ***	0.098
widowed dummy	−0.077 *	0.043	0.08	0.017	0.023	−0.020	0.025	0.034	0.038	0.099 **	0.050
separatd dummy	−0.038	0.083	0.65	−0.014	0.062	−0.016	0.037	−0.037	0.055	0.251	0.169
urban dummy	0.186 ***	0.031	0.00	0.275 ***	0.023	0.326 ***	0.014	0.400 ***	0.026	0.365 ***	0.050
Sinhale dummy	0.009	0.021	0.66	0.040 ***	0.011	0.053 ***	0.018	0.078 ***	0.020	0.202 ***	0.042
remittance abroad dummy	0.251 ***	0.058	0.00	0.255 ***	0.029	0.227 ***	0.037	0.220 ***	0.041	0.400 ***	0.104
remittance domestic dummy	0.103 ***	0.030	0.00	0.101 ***	0.030	0.129 ***	0.034	0.134 ***	0.042	0.136 **	0.059
constant	6.398 ***	0.077	0.00	6.776 ***	0.045	6.993 ***	0.059	7.108 ***	0.081	7.299 ***	0.158
observation =	12097										

actually far outweighed by the endowment effects (see, Figure 1).[13] Only for the top 10-20 percent of households in the distribution the return effects had any noticeable weight, amounting to about one-third of the total differences in welfare between leading and lagging regions. In contrast, for the bottom 10-20 percent, the overall weight of the return effects did not exceed 10 percent of the total welfare gap across regions. This pattern no longer holds for Sri Lanka. The return effects have become much more pronounced across the quantiles by 2001-2002, accounting for higher share of inter-regional welfare differences (see, Figure 2).

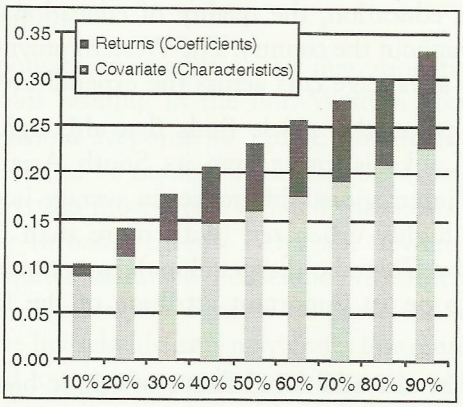

Figure 1: Returns and covariate effects for western (leading)–non-western (lagging) gaps in Sri Lanka (HIES 1990-1991)

Source: Estimated from unit-record data of HIES 1990-1991.

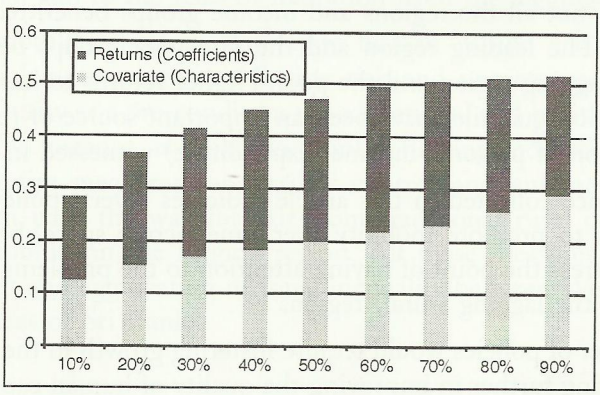

Figure 2: Returns and covariate effects for western (leading)–non-western (lagging) gaps in Sri Lanka (HIES 2001-2002)

Source: Estimated from unit-record data of HIES 2001-2002.

[13] Note these are combined return effects to all the covariates used in the quantile regression (based on Table 6). The results for 1990-1991 are not shown in the table.

10. CONCLUDING REMARKS

This article finds that even in the relatively high human capital context of Sri Lanka, the interregional gap in living standards is persistent; in fact, the gap has widened in the process of economic growth. The article finds that both uneven spread of human capital and urbanization played a significant role in shaping relatively higher consumption inequalities in Sri Lanka.

On the first point, the article reveals that notwithstanding substantial investments in public education, the quality of educational human capital has not been uniform throughout the country. The Western province has higher returns to education and this advantage cuts across the expenditure quantiles.

On the second point, the article finds that although the overall level of urbanization in Sri Lanka is lower than its South Asian neighbours, urban proximity matters for interregional differences in average household welfare. The Western province is highly urbanized (with more than 50 percent of urban population living in the Colombo district alone). In contrast, relatively low level urbanization seems to be an important attribute of the lagging non-Western provinces.

There may also be the additional factor of ethnic biases in labour market (especially in respect of public sector employment), which may lead to lower return to minority ethnicity groups, for a given level of human capital.

The article also finds that while economic reform has improved the returns to endowments, not all the regions and income groups benefitted equally from higher growth. The leading region and the non-poor groups benefitted much more than the lagging region and the poor. Higher returns to human capital for upper consumption quantiles have been an important source of rising inequality in the distribution of personal income (expenditure) witnessed in Sri Lanka.

The evidence collected in this article indicates several policy implications. The key idea is to promote mobility over time, across space, between sectors. The results re-stress the point of paying attention to the problems of growth and development in the lagging (rural) region.

The first set of policies would require fostering growth in the leading region as well as investing further in improving the quality of human capital to improve the employable skills of population, especially in the lagging region, which is suffering from the lack of quality education as indicated by the level of English language proficiency and computer literacy. This will also enhance labour mobility and migration from the lagging to the leading region as well as increase further the returns to human capital across the ladder of distribution.

The second set of policies would require subsequent improvements in the connectivity of the lagging regions with larger urban centres and strategic growth poles to reduce the 'costs of migration'. Improved connectivity would allow the residents of the lagging regions to commute for work to nearby urban centres. This may require developing one or two more vibrant and large urban centres above and beyond Colombo Metropolitan City (the latter may already be suffering from the burden of very high urban primacy). This idea is certainly worth exploring in the context of Sri Lanka marked with high initial human development but relatively low urbanization.

A third set of policies must address the migration risks and uncertainties faced by the households residing in the non-Western provinces of Sri Lanka. This is because household response to public investments in education and connectivity can turn out to be modest in the lagging (rural) regions because of perceived risk and uncertain prospects associated with costs of migration and job search in the leading (urban) regions. After all, upward mobility along the educational ladder requires sustained household investment in human capital, which may not take place in the context of perceived widespread risk and uncertainty. Risk-averse householdsfirms may prefer low return (farm) investments with low volatility and low human capital requirements rather than switch over to high return (non-farm) investments with high human capital requirements but with high volatility. To make the scenario worse, perceived ethnicity-based discrimination in the urban labour market (especially in case of public sector employment) can add to the risks of migration from the lagging areas.

Upward mobility through 'deliberate human capital accumulation' thus anticipates initial investments in reducing risk and uncertainty in the lagging region. Food security as a pre-condition for educational and health human capital accumulation, for instance, is a case in point. Ensuring food security, which in turn would require measures for fertility control and enhanced agricultural productivity, can pave the way for exit from traditional rural occupations and faster labour mobility in the lagging region. All these measures would help to reduce persistent and aggravating regional inequality between Western and non-Western provinces of Sri Lanka.

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ANNEX 1

List of variables and summary statistics of HIES 2001-2002

Variable	Description	Western				Non-Western				Total			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
lnrpcexp	Natural logarithm of household real per capita expenditure	8.12	0.71	5.71	11.2	7.74	0.65	5.61	11.6	7.85	0.69	5.6	11.6
sex	household head's sex	1.22	0.41	1	2	1.20	0.40	1	2	1.21	0.40	1	2
age	household head's age	49.38	13.71	18	95	49.14	13.95	14	99	49.21	13.88	14	99
age^2	age squared	2627	1431	324	9025	2609	1468	196	9801	2614	1458	196	9801
edu	household head's education level	9.45	3.71	1	19	8.48	4.61	1	19	8.76	4.39	1	19
single	household head is single	0.03	0.16	0	1	0.02	0.15	0	1	0.02	0.15	0	1
widowed	household head is widowed	0.14	0.35	0	1	0.14	0.35	0	1	0.14	0.35	0	1
separated	household head is separated.	0.02	0.13	0	1	0.02	0.12	0	1	0.02	0.12	0	1
wage-earn	household head engaged in paid employment? 1. yes 2. no	1.51	0.50	1	2	1.54	0.50	1	2	1.53	0.50	1	2
seacrop	household head engaged in seasonal crops? 1. yes 2. no	1.94	0.23	1	2	1.74	0.44	1	2	1.80	0.40	1	2
non-seacrop	household head engaged in nonseasonal crops? 1. yes 2. no	1.84	0.37	1	2	1.65	0.48	1	2	1.70	0.46	1	2
non-agri	household head engaged in nonagricutural activity? 1. yes 2. no	1.83	0.38	1	2	1.86	0.35	1	2	1.85	0.36	1	2
urban	1 if household lives in urban	0.36	0.48	0	1	0.12	0.33	0	1	0.19	0.39	0	1
rural	1 if household lives in rural	1.22	0.97	0	1	1.58	0.82	0	1	1.48	0.88	0	1
Sinhale	1 if household head is sinhale	0.84	0.36	0	1	0.84	0.37	0	1	0.84	0.37	0	1
Buddhist	1 if household head is buddhist	0.74	0.44	0	1	0.81	0.39	0	1	0.79	0.41	0	1
Hindu	1 if household head is hindu	0.05	0.22	0	1	0.09	0.29	0	1	0.08	0.27	0	1
Muslim	1 if household head is muslim	0.08	0.26	0	1	0.06	0.24	0	1	0.06	0.25	0	1
West	1 if household lives in Western districts: Colombo, Gampaha, Kalutara									0.29	0.45	0	1
	Observations	4827				12097				16924			

Source: Estimated from unit-record data of HIES 2001–2002.