APPLICATION OF THE COUNTRY PRODUCT DUMMY METHOD TO CONSTRUCT SPATIAL AND TEMPORAL PRICE INDICES FOR SRI LANKA

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Abstract

Inadequate geographic coverage, inadequate population coverage, and short length of series make existing Sri Lankan price indices less than optimal to measure long-term trends inequality and poverty. Since they are based on binary methodologies they also do not satisfy the property of transitivity. In contrast, the multilateral Country Product Dummy (CPD) method satisfies the axiom of transitivity and ensures base region invariance. This paper applies the CPD method to construct spatial and temporal price indices that can be used for inequality and poverty analysis in Sri Lanka. It uses expenditure data from the Labor Force and Socio-Economic Surveys (LFSS) of 1980/81 and 1985/86 and the Household Income and Expenditure Surveys (HIES) of 1990/91, 1995/96, 2002, 2006/07 and 2009/10 conducted by the Department of Census and Statistics, Sri Lanka, to construct the indices. The former conflict-affected regions are excluded due to lack of data. The study reveals some recently emerging differences in rural and urban prices that are significant and cause for concern. These differences merit careful investigation to find out underlying factors using more appropriate and extensive data.

Key Words: Inequality Measurement; Poverty Measurement; Multilateral Price Indices; Country Product Dummy Method; Sri Lanka.

JEL Codes: C22, D63, E31, I32

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INTRODUCTION

This paper applies the Country Product Dummy method to construct spatial and temporal price indices that can be used for inequality and poverty analysis in Sri Lanka over the period 1980-2010. The former conflict-affected regions are excluded from the analysis due to lack of data from these regions for most of this period.

There are several reasons why currently available indices are not appropriate for the purpose of inequality measurement. Among them are the following: inadequate geographic coverage, inadequate population coverage and short length of series. For example, almost all existing price indices (indices constructed and used by Department of Census and Statistics, 2004, Datt and Gunewardena, 1997, Gunewardena, 2007)have been computed for the specific purpose of measuring poverty, and use the consumption patterns of 40 per cent of households with the lowest consumption expenditure to construct the price indices. As a result, these price indices are not appropriate for the purpose of measuring inequality. Nor are they the most optimal to adjust consumption to measure poverty with. This is because existing indices are based on binary methodologies such as Paasche, Laspeyres and Fisher, which do not satisfy the property of transitivity. This means that the set of price comparisons that the binary methodologies yield are not inherently internally consistent between all possible direct and indirect comparisons(Kravis et al., 1982).

In contrast, multilateral methods such as the Elteto-Koves-Szulc (EKS) index, the Geary-Khamis (GK) method, and the Country-Product-Dummy (CPD) method, satisfy the property of transitivity. Nevertheless, the EKS and GK methodalso require a set of region or region-wise prices and quantities of items of uniform quality specifications, which is difficult to obtain. In contrast, the CPD methodology was originally developed as a specialized regression technique to deal with representative price lists of different countries that were not identical and to ensure base country invariance (Coondoo et al., 2004).

Hence this paper applies the CPD methodology to construct price indices for the analysis of inequality and poverty trends in Sri Lanka. We believe that the length of the series, covering a period of thirty years, and the fact that it covers the urban and rural (including estates) sectors in seven provinces, will be useful for researchers conducting trend analyses with household income and expenditure data, whether in inequality measurement, or in poverty measurement. Only the Colombo Consumers' Price Index (CCPI) covers a longer period. Besides, while the CCPI is a temporal series, it is not a spatial series, as it takes into account only the consumption patterns of consumers in Colombo.

METHODOLOGY AND DATA

The CPD methodology is really a bridge-region method that links two regions together on the basis of the relationship of each to a (base) region by taking into account all price comparisons with all other regions(Kravis et al., 1982). Consequently, the method regards each price as being dependent on the region in which it is observed, and on the item to which it refers.

The standard CPD formulation regresses the logarithm of observed prices on two sets of dummy variables, one relating to the various regions and the other to the various commodities. The model has no intercept. It includes the observations of unit prices for the base region in the base year in its vector of prices representing the dependent variable but does not include a dummy to represent the base as an explanatory variable. Setting region j = 1 as base and introducing the dynamic of time t(t = 1, 2, ..., T), the regression version of the model is:

$$\ln p_{jit} = \eta_{21} D_{21} + \dots + \eta_{MT} D_{MT} + \pi_1 D_1^* + \pi_2 D_2^* + \dots + \pi_N D_N^* + u_{jit}.$$
 (1)

In equation (1), D_{jt} refers to the *j*-th region dummy variable in time *t*, taking value equal to 1 for all observations for region *j* in time *t* and zero for all other regions and times. D_i^* is the *i*-th commodity dummy variable taking value equal to 1 for commodity *i* and zero for all other commodities. The random disturbance term u_{ijt} is a normally distributed variable with mean zero and variance σ^2 . The coefficient η_{jt} of each region dummy variable denotes the differences in the log of prices between the base region in the base year and the subscripted region at the subscripted time. e^{η} is the purchasing power parity for that particular region relative to the base of region 1 when t = 1.

Rao (1995)generalised the estimation procedure of the model by making use of quantity and value data and extending the model to allow for the use of weights. The extension had its roots in weighted least squares with weights being equivalent to the square root of expenditure shares, v_{iit} , as in equation (2):

$$\sqrt{v_{jit}} \ln p_{jit} = \eta_{21} \sqrt{v_{jit}} D_{21} + \dots + \eta_{MT} \sqrt{v_{jit}} D_{MT} + \pi_1 \sqrt{v_{jit}} D_1^* + \pi_2 \sqrt{v_{jit}} D_2^* + \dots + \pi_N \sqrt{v_{jit}} D_N^* +$$
(2)
$$u_{jit}$$

The analysis in this paper uses expenditure data (value and quantity) from the Labour Force and Socio-Economic Surveys (LFSS) of 1980/81 and 1985/86 and the Household Income and Expenditure Surveys (HIES) of 1990/91, 1995/96, 2002, 2006/07 and 2009/10 conducted by the Department of Census and Statistics, Sri Lanka. The surveys are broadly comparable in design and methodology, particularly in the schedules related to household expenditure. The surveys could not be carried out in the Northern and Eastern Provinces for twenty years after 1985, although with the ending of the conflict (from most of the East in 2007 and in the North in 2009), first the Eastern Province and then the Northern Province were covered. However, since the present paper aims to construct price indices that can be used to investigate inequality and poverty trends in Sri Lanka during the post-liberalization period, we are compelled to exclude the North and the East because of the lack of data. Nevertheless, in a companion paper we intend to construct spatial and temporal price indices for the analysis of inequality and poverty for all Sri Lankan provinces including the North and the East for the years 1985/86, 2009/10 and 2012/13 in order to enable the analysis of inequality and poverty trends in the entire island.

Equation 2 was estimated over two samples. To construct the price indices for inequality analysis, we estimated the model over data on the value and quantity of all non-durable consumption expenditure of all households in all the surveys other than those households in the North and the East. In contrast, the price indices for poverty analysis were constructed by estimating equation (2) only over the non-durable consumption expenditure data of households with per capita consumption expenditure that was in the lowest four deciles. Expenditure data that was used to select the poorest 40 per cent of households in this way, excluded expenditure on durables and non-consumption expenditure such as provident fund contributions, social activities and litigation.

Household price and expenditure data from the two samples for seven survey years for seven provinces, each with urban and rural sectors, were used to construct both sets of indices. It should be noted that the rural sector includes the estates sector as well. The price index for the urban sector in region 1 (Western Province) in 1980/81, the first year for which data is available, was set as the base or numeraire. Consequently, the number of regional dummies in the basic model of equation (1) applied to seven survey years, seven provinces and two sectors amounted to a total of 97 for each estimation (7 regions*7 years*2 sectors -1 [for base] = 97). Aggregated food and non-food commodity dummies amounted to 43, and these related to those categories for which quantity data were available. The classification system for expenditure categories was based largely on Datt and Gunewardena's (1997) method. Sample weights were not used as they were not available for the LFSS data of 1980/81.

Unit values for the price variable are defined as follows. For region *j*,

$$p_{ji} = \frac{\overline{v}_{ji}}{\overline{q}_{ji}}.$$
(3)

In this equation, \overline{v}_{ji} denotes average expenditure on commodity *i* consumed in region *j*, while \overline{q}_{ii} denotes the average quantity of commodity *i* consumed in region *j*.

Conventionally, the poverty line is expressed in national prices. Therefore, in order to express the national poverty line in terms of price levels prevailing in different regions at different times, it becomes necessary to construct national price indices that will permit temporal and spatial analyses. In this paper we have constructed two such indices, one national, and the other sectoral, so that researchers can select the price index most appropriate for their analysis. The analysis follows Datt and Gunewardena (1997) to construct the national price indices as weighted averages of the temporal and spatial price indices, where the weights are the population shares by sector, province and year.

RESULTS

Ordinary Least Squares estimation can be used to obtain the coefficients of the explanatory variables in equation (2), so long as the least squares assumptions hold. One such assumption is that the explanatory variables are independent from each other. If, however, there are one or more exact linear relationships among the explanatory variables, then the least squares estimator cannot be defined. Tests for multicollinearity ruled out the presence of exact collinearity between explanatory variables in both estimations of equation (2), although the two commodity dummy variables for rice and cereals and food-bought-out, reported high (>10) variance inflation factors. However, the solution for this problem, either dropping the correlated variables or instrumenting for them, was not practical as the first two commodities are staples and represent an important component of household consumption, while the third commodity is heavily based on the first two. In any case, in the absence of exact collinearity, the least squares estimator still remains the best linear unbiased estimator by the Gauss-Markov theorem (Hill et al., 2011). Besides, our interest here is on the coefficients of the regional dummies from which we derive our spatial and temporal price indices, rather than the coefficients of the commodity dummies, and tests for multicollinearity ruled out the presence of exact linear relationships between our variables of interest.

We first set out the results for the estimation of price indices for inequality analysis using the CPD method in Tables 1 to 4. The results for the estimation of price indices for the analysis of poverty are set out in Tables 5 to 8. Consider the outcomes of the estimation of price indices for inequality first. Table 1 presents the regression results for the spatial dummy variables for the urban sector, while Table 2 sets out the results for the rural sector, based on expenditure data from the full sample. Regression results for the commodity dummies are not presented as they are not required for the construction of regional price indices other than in the specification of the CPD model, but are available from the authors on request. The full set of urban and rural price indices is set out in in Table 3, which is derived from the exponentials of the coefficients of the regional dummies in Tables 1 and 2. The regression results appear sensible. For example, all proved significant at the 1 per cent or 5 per cent critical level other than for the coefficients representing first year (1980/81) variables for all regions and both sectors. With Western Province's urban sector of the first survey year, 1980/81, taken as the base, the data suggests a twelve (urban)to sixteen (rural) fold increase in prices between 1980/81 and 2009/10. This is in keeping with the movement of the Colombo Consumer's Price Index(CCPI) over the same period(Central Bank of Sri Lanka, various years). Moreover, the twelve to fifteen-fold increase in urban prices since 1980/81 is broadly consistent across regions.

However, rural prices have been generally lower than urban prices until 2002. They appear to have caught up in 2006/07, and by 2009/10, rural prices in Western and Southern Provinces appear to exceed urban prices in the same provinces. To test whether the coefficients for the regional dummies both urban and rural, were equal to each other, we conducted Wald tests and Table 4 sets out the results. It can be seen that other than for rural prices of 2006/07 and 2009/10, the hypothesis that regional prices are different from each other in any year was rejected at the 5 per cent level of significance. It is likely that variations in commodity prices across regions averaged out to produce regional price indices that are close to each other during most of this period. The relatively higher rural prices of 2006/07 and 2009/10, however, merit further investigation in future research.

We turn next to the estimation of spatial and temporal price indices for poverty analysis. Table 5 presents the regression results for the spatial dummy variables for the urban sector, while Table 6 sets out the results for the rural sector, based on expenditure data from the poorest 40 per cent of the survey sample. The full set of urban and rural price indices is set out in in Table 7, which is derived from the exponentials of the coefficients of the regional dummies in Tables 5 and 6. The series for Sri Lanka as a whole, and for urban and rural Sri Lanka are the provincial and sectoral averages weighted with relevant population shares. The regression results in Tables 5 and 6 also appear sensible and the price index for Sri Lanka as a whole has recorded a 13-fold increase during the reference period. However, while the price index for urban Sri Lanka records an 11-fold increase, that for rural Sri Lanka records a 14-fold increase. Here, rural price indices for Western, North Western and Uva in 2009/10 exceeding urban prices in the same provinces have caused rural prices to exceed urban prices. Table 8 reports the results of the Wald tests of whether the coefficients for the regional dummies, both urban and rural, were equal to each other. Other than for rural prices of

2006/07, the hypothesis that regional prices are different from each other in any year was rejected at the 5 per cent level of significance. Again, underlying reasons merit further investigation in future research.

We can compare the price indices for poverty analysis for 1985/86 and 1990/91 generated by this study, with those derived by Datt and Gunewardena (1997). While their study configured some of the regions somewhat differently, they also reported price indices for the combined urban and rural sectors. Their results show that rural prices were 5 per cent and 6.25 per cent less than urban prices for 1985/86 and 1990/91 respectively. In contrast, as Table 7 shows, the price indices for the rural sector generated by the CPD method were 12 per cent and 9.7 per cent less than the urban sector's price indices in1985/86 and 1990/91. The larger rural-urban price differentials in the present series clearly arise from the CPD methodology used to generate the price indices. We are unable to carry out a similar comparison between the price indices for later years in this study with the series generated by the Department of Census and Statistics, as their series is constructed at district level and does not differentiate between the urban and rural sectors (see Department of Census and Statistics 2004).

CONCLUSION

This study constructed spatial and regional price indices for the years 1980/81, 1985/86, 1990/91, 1995/96, 2002, 2006/07 and 2009/10 for the admittedly limited purpose of measuring trends in consumption inequality and poverty.

The empirical research revealed some recently emerging differences in rural and urban prices that are significant and cause for concern. These differences merit careful investigation to find out underlying factors, using more appropriate and extensive data. For example, multivariate time series analysis using the spatial consumer and producer price data series maintained by the Central Bank of Sri Lanka, may throw further light on the extent to which commodity markets are spatially integrated, and help identify the commodities and district markets that are lagging behind. As importantly, such an analysis will show whether differentials between the prices that consumers pay for products, and the prices that producers receive, have decreased over the years with better transport and connectivity, or whether these differentials have remained the same, or even increased, due to other reasons such as anti-market practices. Research on these lines can better inform policies aimed at controlling inflation even while making sure that producers get better prices for their products.

A major limitation of the present study is that the price indices produced cannot be used to analyze the progress of inequality and poverty in the North and the East, and, in fact, in the country as a whole. However, in a companion paper, we intend constructing a spatial and temporal price index for all Sri Lankan provinces including the North and SLJER Volume 2 Number 1, June. 2014

the East for the years 1985/86, 2009/10 and 2012/13 that will enable the analysis of poverty and inequality in those regions as well.

	1980/81	1985/86	1990/91	1995/96	2002	2006/07	2009/10
Western		0.5789***	1.1504***	1.6035***	2.0977***	2.3256***	2.7347***
		(-0.1172)	(-0.1185)	(-0.1181)	(-0.1187)	(-0.1179)	(-0.1205)
Central	-0.1406	0.5436***	1.1356***	1.5594***	2.0046***	2.2703***	2.6982***
	(-0.1104)	(-0.1166)	(-0.1157)	(-0.1207)	(-0.1194)	(-0.1159)	(-0.1157)
Southern	-0.0613	0.4216***	1.0348***	1.4318***	2.0779***	2.2703***	2.7151***
	(-0.1122)	(-0.1126)	(-0.1133)	(-0.1184)	(-0.1074)	(-0.1144)	(-0.1197)
North Western	0.0044	0.3785***	1.0401***	1.4774***	2.0662***	2.1268***	2.5971***
	(-0.1117)	(-0.1087)	(-0.1141)	(-0.1155)	(-0.1174)	(-0.1191)	(-0.1223)
North Central	-0.1209	0.3911***	1.0691***	1.5784***	2.0838***	2.3348***	2.6563***
	(-0.1045)	(-0.1178)	(-0.1154)	(-0.1124)	(-0.1143)	(-0.1106)	(-0.1176)
Uva	0.0596	0.4874***	1.0723***	1.4448***	2.0583***	2.2976***	2.6604***
	(-0.1127)	(-0.1149)	(-0.1149)	(-0.1172)	(-0.1138)	(-0.1147)	(-0.1128)
Sabaragamuwa	-0.0195	0.4762***	1.0676***	1.4448***	2.1167***	2.2272***	2.6673***
	(-0.1100)	(-0.1137)	(-0.1159)	(-0.1184)	(-0.1168)	(-0.1169)	(-0.1208)

Table 1: CPD Price Indices for Inequality Analysis: Regression Results for Regional Dummies, Urban Sector

Notes: Standard errors in parentheses. * significant at 5%;** significant at 1%.

	1980/81	1985/86	1990/91	1995/96	2002	2006/07	2009/10
Western	-0.0439	0.4645***	1.0363***	1.4859***	2.0604***	2.3314***	2.7987***
	(-0.1193)	(-0.1236)	(-0.1224)	(-0.1251)	(-0.1242)	(-0.1235)	(-0.1209)
Central	-0.0380	0.4032***	1.0071***	1.3836***	1.9928***	2.1968***	2.6137***
	(-0.1150)	(-0.1191)	(-0.1239)	(-0.1253)	(-0.1223)	(-0.1247)	(-0.1270)
Southern	-0.0571	0.3129**	0.9490***	1.3770***	1.9328***	2.2034***	2.8757***
	(-0.1124)	(-0.1217)	(-0.1190)	(-0.1209)	(-0.1251)	(-0.1219)	(-0.1063)
North Western	-0.0813	0.3226**	0.9380***	1.3479***	1.9182***	2.2464***	2.6504***
	(-0.1056)	(-0.1277)	(-0.1187)	(-0.1261)	(-0.1255)	(-0.1232)	(-0.1177)
North Central	-0.0463	0.3050***	0.9572***	1.3253***	1.8428***	2.1183***	2.6099***
	(-0.1079)	(-0.1157)	(-0.1169)	(-0.1192)	(-0.1196)	(-0.1244)	(-0.1144)
Uva	-0.0052	0.3270***	0.9684***	1.3009***	1.8709***	2.2413***	2.5401***
	(-0.1029)	(-0.1180)	(-0.1168)	(-0.1205)	(-0.1222)	(-0.1161)	(-0.1186)
Sabaragamuwa	-0.0970	0.3729***	0.9860***	1.3821***	1.9646***	2.2424***	2.6067***
	(-0.1143)	(-0.1173)	(-0.1195)	(-0.1217)	(-0.1217)	(-0.1192)	(-0.1152)

Table 2: CPD Price Indices for Inequality Analysis: Regression Results for Regional Dummies, Rural Sector

Notes: Standard errors in parentheses. * significant at 5%;** significant at 1%

Region	1980/81	1985/86	1990/91	1995/96	2002	2006/07	2009/10
Urban sector							
Western	1.000	1.784	3.159	4.970	8.148	10.233	9.416
Central	0.869	1.722	3.113	4.756	7.423	9.682	15.405
Southern	0.941	1.524	2.815	4.186	7.988	9.683	14.852
North Western	1.004	1.460	2.829	4.382	7.895	8.388	15.105
North Central	0.886	1.479	2.913	4.847	8.035	10.328	13.425
Sabaragamuwa	1.061	1.628	2.922	4.241	7.832	9.950	14.243
Uva	0.981	1.610	2.908	4.241	8.303	9.274	14.303
Rural sector							
Western	0.957	1.591	2.819	4.419	7.849	10.292	16.423
Central	0.963	1.497	2.738	3.989	7.336	8.996	13.650
Southern	0.944	1.367	2.583	3.963	6.909	9.055	17.739
North Western	0.922	1.381	2.555	3.849	6.808	9.454	14.159
North Central	0.955	1.357	2.604	3.763	6.314	8.317	13.598
Sabaragamuwa	0.995	1.387	2.634	3.673	6.494	9.405	12.682
Uva	0.908	1.452	2.681	3.983	7.132	9.416	13.554

Table 3:	Spatial	and	Temporal	Price	Indices	for	Inequality	Analysis,	Sri	Lanka
	1980/81	-200	9/10.							

Table 4: Results for Significant Differences in Regional Prices for Inequality Analysis in Each Year 1980/81-2009/10.

Year	Urbar	n Sector	Rural Sector		
	\overline{F}^{*}	Prob> F	\overline{F}^{*}	Prob> F	
1980	0.95	0.4599	0.19	0.9809	
1985	0.89	0.5401	0.42	0.8645	
1990	0.29	0.9407	0.15	0.9888	
1995	0.74	0.6169	0.41	0.8728	
2002	0.17	0.9841	0.65	0.6864	
2007	0.72	0.6361	2.37	0.0277	
2010	0.26	0.9550	2.47	0.0218	

	1980/81	1985/86	1990/91	1995/96	2002	2006/07	2009/10
Western		0.4775***	1.0571***	1.4730***	1.9832***	2.2144***	2.6335***
		(-0.1231)	(-0.12570	(-0.1206)	(-0.1238)	(-0.1277)	(-0.1297)
Central	0.0270	0.3585***	1.1026***	1.4316***	1.8932***	2.2816***	2.5758***
	(-0.1154)	(-0.1218)	(-0.1218)	(-0.1277)	(-0.1255)	(-0.1141)	(-0.1263)
Southern	0.0555	0.3477***	0.9730***	1.3469***	2.0446***	2.1534***	2.6624***
	(-0.1120)	(-0.1225)	(-0.1197)	(-0.1270)	(-0.1155)	(-0.1232)	(-0.1233)
North Western	-0.0405	0.2748**	0.9036***	1.2605***	1.8922***	2.1457***	2.6116***
	(-0.1055)	(-0.1234)	(-0.1168)	(-0.1270)	(-0.1277)	(-0.1290)	(-0.1313)
North Central	0.0766	0.3599***	1.0016***	1.3464***	2.1709***	2.2795***	2.5533***
	(-0.1006)	(-0.1187)	(-0.1274)	(-0.1208)	(-0.1303)	(-0.12740	(-0.1296)
Uva	0.1154	0.3294***	0.9956***	1.4479***	1.9274***	2.2618***	2.5671***
	(-0.1177)	(-0.1160)	(-0.1211)	(-0.1274)	(-0.1198)	(-0.1094)	(-0.1270)
Sabaragamuwa	0.0988	0.2370**	0.9665***	1.3577***	2.1207***	2.1797***	2.4929***
	(-0.1089)	(-0.1159)	(-0.1191)	(-0.1265)	(-0.1291)	(-0.1355)	(-0.1365)

Table 5: CPD Price Indices for Poverty Analysis: Regression Results for Regional Dummies, Urban Sector

Notes: Standard errors in parentheses. * significant at 5%;** significant at 1%. The analysis is based only on the consumption expenditure data of the poorest 40 per cent of the full survey sample.

	1980/81	1985/86	1990/91	1995/96	2002	2006/07	2009/10
Western	-0.0317	0.2810**	0.9755***	1.3905***	1.9672***	2.1595***	2.7232***
	(-0.1189)	(-0.1261)	(-0.1260)	(-0.1361)	(-0.1347)	(-0.1347)	(-0.1324)
Central	0.0434	0.2971**	0.9475***	1.2839***	1.8562***	2.1384***	2.6045***
	(-0.1171)	(-0.1198)	(-0.1284)	(-0.1309)	(-0.13270	(-0.1381)	(-0.1306)
Southern	0.0045	0.3466***	0.9412***	1.3571***	1.8889***	2.1006***	2.5835***
	(-0.1090)	(-0.1197)	(-0.1241)	(-0.1238)	(-0.1287)	(-0.13150	(-0.1308)
North Western	-0.0813	0.3226**	0.9380***	1.3479***	1.9182***	2.2464***	2.7943***
	(-0.1056)	(-0.1277)	(-0.1187)	(-0.1261)	(-0.12550	(-0.12320	(-0.11770
North Central	0.0703	0.2680**	0.9584***	1.2672***	1.8293***	2.0415***	2.5620***
	(-0.1018)	(-0.1155)	(-0.1139)	(-0.11580	(-0.1208)	(-0.12560	(-0.1175)
Uva	0.0362	0.2709**	0.9297***	1.2897***	1.8320***	2.0113***	2.4920***
	(-0.1062)	(-0.1141)	(-0.1133)	(-0.1210)	(-0.1189)	(-0.1345)	(-0.1228)
Sabaragamuwa	-0.0134	0.2778**	0.9302***	1.3218***	1.9238***	2.1222***	2.6131***
	(-0.1130)	(-0.1250)	(-0.1230)	(-0.12180	(-0.11790	(-0.1233)	(-0.1202)

Table 6: CPD Price Indices for Poverty Analysis: Regression Results for Regional Dummies, Rural Sector

Notes: Standard errors in parentheses. * significant at 5%;** significant at 1%. The analysis is based only on the consumption expenditure data of the poorest 40 per cent of the full survey sample.

Region	1980/81	1985/86	1990/91	1995/96	2002	2006/07	2009/10
National	1.006	1.393	2.662	3.839	6.787	8.480	13.247
Urban sector							
Western	1.000	1.612	2.878	4.362	7.266	9.156	8.350
Central	1.027	1.431	3.012	4.185	6.641	9.793	13.922
Southern	1.057	1.416	2.646	3.845	7.726	8.614	13.141
North Western	1.087	1.327	2.623	4.254	6.796	7.825	14.331
North Central	1.080	1.433	2.723	3.844	8.766	9.772	13.621
Sabaragamuwa	1.122	1.390	2.706	4.254	6.872	9.600	12.849
Uva	1.104	1.267	2.629	3.887	8.337	8.844	13.028
Urban Sri Lanka	1.020	1.501	2.821	4.249	7.288	9.016	10.820
Rural sector							
Western	0.969	1.324	2.652	4.017	7.151	8.667	15.230
Central	1.044	1.346	2.579	3.611	6.399	8.486	13.525
Southern	1.005	1.414	2.563	3.885	6.612	8.171	13.243
North Western	0.960	1.316	2.468	3.527	6.634	8.548	16.352
North Central	1.073	1.307	2.607	3.551	6.230	7.702	12.962
Sabaragamuwa	1.037	1.311	2.534	3.632	6.246	7.473	12.086
Uva	0.987	1.320	2.535	3.750	6.847	8.350	13.641
Rural Sri Lanka	1.002	1.338	2.569	3.734	6.660	8.303	14.071

Table 7: Spatial and Temporal Price Indices for Poverty Analysis, Sri Lanka 1980/81-2009/10.

	Urba	n Sector	Rura	Sector
Year				
	\overline{F}^{*}	Prob> F	F^{*}	Prob> F
	0.26	0.0565	0.40	0.0704
1000	0.26	0.9565	0.40	0.8794
1980	0.76	0.5998	0.11	0.9958
1985				
	0.35	0.9089	0.07	0.9985
1990	0.26	0.0022	0.25	0.0591
1005	0.50	0.9022	0.23	0.9381
1993	1.27	0.2677	0.29	0.9435
2002				
	0.75	0.6079	2.96	0.0069
2007				
	0.32	0.9266	1.35	0.2308
2010				

Table 8:	Test Results for	Significant	Differences	in Regional	Prices f	for Poverty
	Analysis in Each	Year 1980/8	81-2009/10.			

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