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Structural Breaks in Consumption Patterns: India, 1952 To 1991

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ABSTRACT

The tests for structural breaks in consumption patterns indicate multiple break points which are not uniform across the population groups and also across commodity groups. Further, the results indicate that the breaks could often be induced by the changes in the data collection methodology of the survey and not due to changes in consumer behaviour alone. Apart from this, there is a shift in the consumption pattern during the mid-1980's in both the rural and the urban sectors. For the lowest expenditure class the shift is away from food items with the rural sector showing a change in the price response and the urban sector showing a change in the total expenditure coefficient. For the middle and the upper expenditure classes the shifts are not only from the food items towards non food items but also from the 'food' group that includes items like cereals, milk and milk products towards the 'other food' group which includes items like vegetables and fruits. Its causes are found to be changes in preferences as well as the income effect.

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Moreover, the scope, concept and design of surveys, the way questionnaires are structured and information is elicited have changed over time. These factors affect the comparability of estimates across time and reduce their usefulness for study of changes in consumption patterns.

Rest of the paper is organised as follows. Section 2 discusses briefly the findings of the existing studies on the changes in consumption patterns for India. Section 3 describes the organisation of the data set as used in this analysis. Section 4 discusses the issues involved in the choice of break points for the given sample, the econometric methodology used for estimating and testing a model with structural breaks, and the demand system specification. Section 5 discusses the results for the three-commodity dynamic demand model and the final section concludes the paper.

2. Changes In Consumption Patterns: the Indian Case

Since the mid-seventies shifts in consumption patterns for the Indian population have been noted, by Meenakshi (1996a, 1996b); Perspective Planning Division (1993); Radhakrishna (1991); Radhakrishna and Ravi (1990, 1992); and Suryanarayana (1995). All these studies report shifts in consumption patterns (in per capita terms) away from food items in general to non food items, from cereals to non-cereal food items within the food group, and from coarse cereals to superior cereals like wheat and rice within the cereal group. However, the choice of variables to address the issue of shifts in consumption patterns and the possible underlying causes vary across these studies.

Radhakrishna and Ravi (1990) (RR, henceforth) have analysed this issue based on a (hierarchic) demand system using the dummy variable approach, for the period 1964-'65 (19^{th} round of the NSS) to 1986-'87 (42^{nd} round of the NSS) with a pre-determined break point in the year 1973-74 (28^{th} round of the NSS).[1] The results show the dummy coefficients to be significant for all the expenditure groups and for all the commodities, with a decrease in the marginal budget share (MBS) of cereals and an increase in that of the non-food items during the second period. Further, within the food group there has been a shift from the coarse cereals towards rice and wheat for all the population groups considered by them, and these have been attributed to changes in tastes.

Based on a trend analysis of consumption patterns, Radhakrishna (1991) has observed similar shifts, since mid 1970s, uniformly across all expenditure groups including the the poorer groups in rural areas, and larger shifts in states with higher per capita incomes. The cause for the changes in consumption patterns have been noted as the changes in tastes particularly for the cereal items. This has been based on the observation that the quantity of per capita cereal consumption of the poor had not shown any increase in spite of the improvements in their incomes and decline in relative price of cereals. A further analysis into this aspect in Radhakrishna and Ravi (1992) has indicated adverse effects of the shift away from cereals on the nutritional intake of the rural poor. It has been noted that for the period between 1970-71 and 1987-88, the overall per capita total consumer expenditure improved with increases in non cereal and non food consumption and decreases in the total cereal consumption particularly for the rural sector. The factors that contribute towards the positive effects have been noted as growth and relative price changes and the adverse effect due to taste changes.[2]

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[1] The first stage of the demand model is at the seven-commodity classification ('cereals', 'milk and milk products', 'edible oil', 'meat, egg and fish' 'sugar, gur, etc.', 'other food' and 'non food') based on the linear expenditure system (LES). Dummies are also introduced at the subgroup level where the 'cereal' group is further classified into 'rice', 'wheat' and 'other cereals' and the demand model is based on the Nasse's linear expenditure system (NLES). The analysis is carried out for various expenditure groups formed on the basis of the poverty line (PL) adopted by the Government of India. The groups are: below 75% of PL = v. poor; 75% of PL to PL = moderately poor; PL to 150% of PL = mid strata and above 150% of PL = rich.

[2] The changes in aggregate per capita consumption and the expenditure on various commodity groups have been decomposed on the basis that the change between two periods may be due to changes in: real mean expenditure (growth component) or inequality (redistributive component) or relative prices or consumer preferences (taste change). The study first estimates a hierarchic demand model as in RR (1990) and has noticed similar results. This study also addresses the effect of such changes on the nutrient intake of the different population groups in both the rural and the urban sectors.

The Expert Group on the Estimation of Proportion and Number of Poor (Perspective Planning Division, 1993) has noted that the shifts in consumption patterns involving reduction in shares of cereals and foodgrains is the cause of reduction in average calorie intake across expenditure classes since the mid seventies. But the Expert Group estimates have been based on consumer expenditure proportions at current prices and this may perhaps exaggerate the changes, as the associated relative price changes have not been accounted for. Suryanarayana (1995) has partly overcome this problem by examining the changes in aggregate consumer expenditure at constant prices with the possible appropriate fractile-group specific price adjustments and commodity specific price adjustments, and changes in size and composition of cereal consumption in physical terms. In this study changes in consumption patterns have been observed since 1977-'78. The change particularly among the poor has been towards a larger variety of food items with a marginal shift towards non cereal items, and towards a better quality with a shift away from coarse cereals towards superior cereals like rice and wheat, within the cereal group. Interestingly enough these changes have been noticed during a period with limited increases in aggregate real consumption and also when the consumption levels happened to be still below the subsistence levels in terms of calorie intake. However, unlike Radhakrishna (1991), these changes in the composition of consumption basket have been attributed partly in response to changing tastes, changing relative prices and their substitution effects on consumer choices, increasing market dependence on superior but costly cereals and decreasing per capita availability of coarse cereals due to a decline in production.[3]

All the studies mentioned above are at the all India level. Meenakshi (1996a) has looked at the trend changes in consumption pattern for five different regions of India (formed by grouping different states) between the period 1972-73 and 1987-88. Broadly the changes are similar to those at the national level but certain differences across regions and quartile groups have been highlighted. The important findings include: operation of Engel's law uniformly across regions and across quartile groups

[3] These changes were perhaps due to the changes in the rural labour market which involved a decrease in self-employment and increase in wage employment and growing casualisation of wage labour coupled with the fact that coarse cereals were grown largely for self-consumption whose production had declined.

in each region, decrease in cereal consumption within the food group with the exception of the lowest quartile in the Eastern and the Southern regions of rural India, substitution of costlier cereals like rice and wheat in place of the coarse cereals. The causes of these changes have been primarily attributed to the effect of income changes and in some regions to changes in relative prices. In Meenakshi (1996b), the changes in food consumption has been analysed for different states, based on the LES with time trends either for the 'subsistence' coefficient or the MBS. With a few exceptions, in both the rural and the urban sectors, the expenditure elasticity for the cereals has been found to be lower in the dynamic model.

These studies are important in that they indicate the direction of change for various commodities and possible underlying causes of these shifts. However, the analyses in all these studies are based either on the trends in consumption patterns for various items or the dynamic demand model based on the LES. The former approach is restrictive as it is difficult to dissociate the changes in demand occurring due to changes in income or relative prices (or both), from those occurring due to changes in tastes or other factors. Therefore, a system of demand equations (derived from the neo-classical theory of consumer behaviour) is appropriate to address the problem of changing consumption patterns. Even the existing studies based on demand system give little attention to account for dynamic structure in consumption patterns that are likely to be affected by the various factors mentioned above. Moreover, the functional form chosen to estimate the demand systems are all based on the LES, which is restrictive due to its additively separable preference structure and linear Engel curves.[4]

Keeping in view the gaps in the existing studies this paper tries to improve upon the methodology and the framework to analyse the consumer behaviour in India over a period of time. The objectives of this study are: (i) to test for structural breaks in consumption pattern in a demand system framework, as revealed by the NSS data;

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[4]As the LES is derived from an additively separable utility function, the price effects are directly proportional to the income effects. This imposes a structure on the price elasticities, independent of the nature of the data set. However, the sub-group model (NLES) in RR performs better in capturing the price responses as the coefficients representing committed quantities in the latter are specified as functions of prices. This captures the substitution effects between commodities appropriately (see., Brown and Deaton, 1972, pp.1197). Further, Majumder (1986), Ray (1986) and Viswanathan (1998) show that the linearity of Engel curves and the additive separablity assumption of the LES are restrictive in the Indian context.

(ii) to explore the underlying causes of the changes; and (iii) to re-estimate the demand system incorporating these changes. The issue of shifts in consumption pattern is being addressed at the all-India level for four ordinal groups of population and all-groups combined, at the three-commodity classification; for the rural and the urban sectors separately.

3. Data

The consumer expenditure data from 4^{th} (Apr.-Sep. 1952) to 47^{th} round (Jul.-Dec. 1991) is used and the price variables are the Wholesale Price Indices.[5] The expenditure data is obtained form various NSS reports and the price series are obtained from Chandolk (1978) and Government of India (1987).

3.1. Commodity groups

The commodity classification in the published NSS reports varies over the rounds. Hence, 'consistent' commodity groups are formed by aggregating substitutes and near substitutes. The choice of the commodity classification is governed by the availability of the data uniformly across all the rounds for rural and urban all-India data. In this paper the analysis is carried out at the *three-commodity* classification comprising:[6]

(1) *Food:* consisting of (i) cereals and cereal substitutes and gram, (ii) milk and milk products and (iii) meat, egg and fish;

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[5] Ideally, in estimating the demand system, one should use the prices that the NSS uses to value the expenditure. However, this is not reported and there is no other source which reports data on retail prices for the period of analysis. Another series on prices is the consumer price index but this series is available only from 1964-'65. A series for some of these commodities was constructed by Jain and Minhas, (1991) and Tendulkar and Jain (1993) which is also available only for the later rounds of the NSS. Hence, the Wholesale Price Index is used for the price series.

[6] Though the maximum possible commodity disaggregation that could be obtained from published NSS reports is the nine-commodity level, the analysis here is carried out in terms of a three-commodity group specification. This choice is governed largely by data availability considerations since for a system like the AIDS, given the limited sample size the degrees of freedom will be substantially larger for a three-commodity than for a nine-commodity classification. This is particularly important for measuring the price responses and addressing dynamic issues like changes in consumption patterns. However, the tests for structural breaks have also been carried out at the nine-commodity level but could not be analysed in such detail due to the lack of sufficient degrees of freedom as required for such an analysis.

(2) *Other food:* consisting of (i) edible oils, (ii) sugar, 'gur', etc. and (iii) miscellaneous other food like fruits and vegetables, spices and condiments, pulses and its products, beverages and refreshments etc. and

(3) *Non food:* consisting of (i) clothing and footwear, (ii) fuel and light and (iii) miscellaneous goods and services, inclusive of durable goods.

3.2. Formation of ordinal groups

The consumption data as published by the NSS is in the form of size distribution of households and population across 11 to 14 monthly per capita total consumer expenditure (MPCTCE) classes with corresponding MPCTCE and its break up into a number of broad commodity groups at current prices. These expenditure classes are not updated systematically in keeping with changing prices.[7] Therefore, the average expenditure on a particular item in a given expenditure class will not be comparable over time due to (a) inflation; and (b) varying population frequencies (Suryanarayana, 1991). In order to facilitate comparison of the NSS consumer expenditure distributions, the data set has been reconstructed to form ordinal (population) groups, separately for the rural and the urban sectors. The ordinal groups are defined with reference to total per capita consumer expenditure and are identified by ranking the persons by level of per capita expenditure (PCE); based on quadratic interpolation.

The ordinal groups are:

group 1: bottom 30 % (< 30%); *group 2:* next 20% (30-50 %); *group 3:* middle 30% (50-80%); *group 4:* richest 20% (> 80%) top most 20 per cent; and *all-groups:* all the ordinal classes combined.

The economic reasoning underlying the choice of the ordinal groups is as

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[7] The NSS expenditure class intervals were kept invariant till the 28th rounds (1973-'74) even though the consumer expenditures were collected and published at current prices. The limited changes in class intervals that have been attempted since then are *ad hoc* and are not decided statistically taking into account the accompanying changes in prices. The lack of an 'appropriate' price series for deflation leads to the incomparability of the nominal consumption expenditure classes over time.

follows. Estimates of poverty for India vary between 30 and 50 per cent depending upon the method of estimation (Ahluwalia, 1978, Suryanarayana and Geetha, 1996 and Tendulkar, *et al.*, 1993). However, almost all the studies show that about 30 per cent of the population have been perpetually in poverty. This finding motivated the choice of the bottom 30 per cent as one ordinal group. Further, the studies cited above also show fluctuations in poverty in the range 30 to 50 per cent implying possibly that this group bears the brunt of fluctuations in economic performance. This factor motivated the choice of the second ordinal group as 30 to 50 per cent. These two ordinal groups thus, constitute the 'poorest' and the 'poor' segments respectively of the population for whom a major constraint binding consumer choice and hence consumption pattern would be income. The top 50 per cent of the population is broken up into two groups-middle 30 per cent and the topmost 20 per cent. The former class could be taken to represent the consumption pattern of the 'middle class'; and the latter one with the largest proportion of expenditure spent on non-food items (and hence a larger variety in consumption) would have a distinct pattern of consumption in comparison to all the other groups. Thus, one expects that the formation of population groups in this manner would allow for the consumption pattern to be heterogeneous between groups and homogeneous within each group. The ordinal groups are formed based on the ranking by level of per capita total consumer expenditure based on quadratic interpolation.

4. Methodology

4.1. Nature of the data set and the choice of regimes

Instead of testing each of the sample point for a break *a priori* information based on the nature of the data set is used to demarcate the different regimes. The literature on the limitations of the database discuss as to how the reported values of consumption for the different items are affected by the changes in the methodology of data collection which in turn would (a) bias the estimates of poverty measures (Suryanarayana, 1996) (b) bias aggregate consumption or consumer expenditure for different commodities (see Minhas, 1988; Mukherjee, 1986; Vaidyanathan, 1986 and the references therein), and (c) bias the Engel elasticities of various commodities

(Ghose and Bhattacharya, 1994). These studies further indicate that the use of the NSS data to assess changes over time may be beset with problems. The surveys by the NSSO are not conducted with a view to form a time-series but to construct aggregates at different points of time. Further, the scope, concept and design of surveys, the way questionnaires are structured and information is elicited have changed over time. For instance, changes in the reference period for consumption items, shift from consumer expenditure to multi-purpose integrated household surveys and back, combining employment and consumption enquiries, changes in the schedules, frequency of data collection, seem to affect comparability. Therefore some of these aspects related to the data base would also affect the estimates of a demand system. This study for the first time, tries to examine the effect of changes in methodology of data collection by the NSS from a demand system perspective.

In this study the first break point is taken at the beginning of the integrated household surveys (IHS, henceforth). This is done on the basis of the plots of budget shares for various commodities, over the NSS rounds as in Viswanathan (1998).[8] For groups 3, 4 and all-groups in both the rural and the urban sector, there is an upward shift in the budget shares of the 'food' group and a downward shift in the budget shares of the 'non food' group for the three-commodity classification. For the nine-commodity classification during the same period, the 'foodgrains' group and the 'miscellaneous non food' group show the upward and downward shifts respectively. In addition, the consumption pattern of group 4 of urban all-India is also marked by an upward shift in the 'other food' shares at the three-commodity level which is due to the shift in shares of the 'miscellaneous other food' group. Therefore, the IHS rounds have been chosen as a separate regime (called as the IHS regime) to be tested for parameter equality with the previous regime.

After these rounds no such unusual shift in the budget shares of some of the commodity groups (for some of the ordinal groups) is observed. However, the data following the IHS are not continuous in time due to the introduction of the quinquennial surveys (QS, henceforth). The rounds 27th and 28th are chosen as one

[8] Mukherjee (1986) observes that during the IHS rounds the aggregate household consumer expenditure is consistently less than the private final consumption estimated in the National Account Statistics.

regime and each of the rounds 32 and 38 is chosen as a separate regime - referred as QS1, QS2 and QS3, respectively. This choice is done to test the possibility of changes in the consumption pattern firstly, due to the data gaps between these surveys which put together cover a period of 15 years and secondly, as they are based on very large samples compared to the other surveys (Ray and Bhattacharya, 1992).

Finally, with the availability of yearly data after the third quinquennial survey, the rounds 42^{nd} to 47^{th} are chosen as a separate regime. This regime is referred to as the post-QS3. The schedules for these rounds are similar to the first regime considered above. Moreover, it is to be noted that this regime covers the decade of 1980's when the poverty levels in India were the lowest (Ravallion and Datt, 1996), the annual growth rate of real per capita GDP doubled (Tendulkar and Jain, 1995) and the household savings rate showed large improvements. Simultaneously, during this decade substantial improvements in the per capita consumer expenditures for the poorest deciles with a more diversified consumption basket for all expenditure groups is noted, for both the rural and the urban sectors (Suryanarayana, 1995). It is likely that these economy-wide changes would alter the consumption patterns and hence affect the parameters in the demand model.

Based on the above observations about the database, the anticipated break points are:

Table 1. Choice of Regimes Over the NSS Rounds

Regimes	Rounds	Year
1.Pre-IHS regime	4^{th} - 17^{th}	Apr. - Sep. 1952 to Sep. 1961 - Jul. 1962
2. IHS regime	19^{th} - 25^{th}	Jul. 1967 - Jun. 1968 to Jul. 1970 - Jun. 1971
3. QS1	27^{th} -28^{th}	Oct. 1972-Sept.'73 to Oct.'73-Jun.'74
4. QS2	32^{nd}	Jun. 1977 - Jun. 1978
5. QS3	38^{th}	Jan. - Dec. 1983
6. post-QS3	42^{nd} - 47^{th}	Jul. 1986 - Jun.1987 to Jul. - Dec. 1991

Note: IHS: Integrated Household Surveys; QS: Quinquennial Surveys

It is important to note that this choice of regimes is *ad hoc* that is, it may or may not determine the final combination of the break points for a particular ordinal group. In order to test the validity of these break points, statistical tests are carried out. The estimation procedure and the tests are described below.

4.2. Empirical specification of the demand model

In this study, the functional form used to estimate the demand system is the linear approximate almost ideal demand system (LA-AIDS). The functional form is a linear approximation of the AIDS model of Deaton and Muellbauer (1980).[9] The choice of this specification for the demand system overcomes the limitations of the LES (used in RR) in that it does not have constant marginal budget shares and the underlying preference structure is not limited by additive separability.

The model with dummy variables attached to all the coefficients is as follows:

$$w_i = \alpha_i^1 + d\alpha_i^h D^h + \sum_{i=1}^{n} \gamma_{ij}^1 \log p_j + \sum_{j=1}^{n} d\gamma_{ij}^h \log F_j^h + \beta_i^1 \log\left(\frac{Y}{P^*}\right) + d\beta_i^h \log G^h \qquad (1)$$

where, $h \neq 1$

$w_i =$ *budget share of the i^{th} commodity*

$p_i =$ *price of the i^{th} commodity,*

$X =$ *total expenditure on all the commodities.*

$\log P^* = \text{Stone's index} = \sum_{j=1}^{n} w_j \log p_j$.

$D^h = 1$ *for regime 'h'*

$= 0$ *otherwise*

$F_j^h = p_j$ *price of the j^{th} commodity in regime 'h'*

$= 0$ *otherwise*

$G^h = \left(\frac{Y}{P^*}\right)$ *'real' total expenditure for regime 'h'*

$= 0$ *otherwise*

For the full rank regime, the estimated coefficient (except regime one) is obtained by

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[9] This choice of the functional form has been found to be preferred over the LES. Also the linear approximation of the AIDS model (as in Deaton and Muellbauer, 1980) has been empirically justified. For details on this see Viswanathan (1998).

the sum of the coefficient in the first regime with the corresponding dummy coefficient in that regime as shown in equation A.7a.

4.3. Tests for model stability and modelling the dynamic structure

From Table 1 it is noticed that for the given sample there could be several break points (different for different ordinal group) with some of the sub-samples being undersized to allow the estimation of coefficients. The *generalised Chow-test* as in Dufour (1982) allows 'testing of the equality of coefficient vectors in several regressions when the design matrices have arbitrary ranks'. For the samples with sufficient size, the test for structural breaks is reduced to a problem of testing the equality of some or all the coefficients in several regimes. However, in this test the interpretation of the null hypothesis for the undersized samples is not very clear.

Cantrell, Burrows and Vuong (1991) (CBV, henceforth) formalise the implicit null hypothesis of the generalised Chow-test. CBV show that this test is equivalent to introducing a dummy that jointly tests the hypothesis of equality of coefficients across the full rank regimes and the equality of the predictions for the rank deficient regimes with the estimator obtained from the *first* full rank regime. For the rank deficient regimes this test indicates whether the observation(s) has (have) the mean value to be different from that obtained from the first sample. Thus, the analysis is performed via the dummy variable approach. The significance of the dummy coefficients automatically produces indications on the commodities which show a regime shift, and the coefficients that differ between any two regimes. The dummy variable approach can be used to test for equality between the subset of coefficients for the sufficient sized samples. The LA-AIDS specification with the homogeneity and symmetry restrictions (of consumer theory) imposed is estimated in the seemingly unrelated regression equations (SURE) framework. The test as in CBV (is for a single equation linear model) for the SURE framework is briefly described in Appendix A.[10]

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[10] The tests for structural breaks assume that the variance-covariance matrix (only for the full rank regimes) is the same across the regimes, but this may not be true in reality. However, if this is incorporated in the SURE framework in the dummy variable approach the structure of the variance-covariance matrix would become very complicated and also the number of parameters to be estimated would increase but this aspect could be pursued in a theoretical framework.

The test to identify structural breaks is performed as follows. First the sample period from 4^{th} to the 25^{th} is tested for model stability. If the tests reject the null hypothesis then the sample is partitioned at the point when IHS rounds begin (that is, the 19^{th} round). Within each of these partitioned sub-samples, the test for structural breaks is carried out to ensure that there are no more break points. Also, for the same period an alternative break point is chosen which is one round before the IHS rounds (that is, the 18^{th} round). Between the two variants the one which maximises the log-likelihood value is chosen as the model for further tests. Then the next set of sample points belonging to a particular regime are included in the model which is again subjected to the tests for structural breaks. This process continues till all the sample points are exhausted, Also within each of the regimes the test for model stability is performed to ascertain if there are any more break points than the ones anticipated in the beginning. This procedure is repeated for two cases: one, for which a subset of coefficients differ across regimes (referred as model B) and one, for which all the coefficients differ across the regimes (referred as model C). The static model (without dummy variables) is referred as model A. The results on model stability and the changes in the coefficients across regimes are reported in the next section.

5. Results

5.1. Main Findings

The results for the final set of tests for overall model stability are reported in Table 2. This test is to compare the likelihood values in the static model (or the restricted model as all the coefficients are restricted to be the same across regimes) with the model incorporating the dummy coefficients. The test statistic follows a chi-square distribution. In columns 2 to 4 a significant (at 5% level of significance) likelihood ratio value indicates that the dynamic model is superior to the static model. In columns 6 and 7 a significant likelihood ratio value indicates that the model that allows for a subset of coefficients to change across regimes is rejected in favour of the one where all the coefficients changes.

Table 2. Likelihood Ratio Test for Overall Model Stability

	Variant A Vs. B		Variant A Vs. C		Variant B Vs. C*	
	Rural	Urban	Rural	Urban	Rural	Urban
Group 1	96.29*	78.45*	87.33*	76.84*	8.45	2.02
Group 2	133.18*	56.55*	121.2*	53.33*	12.01*	3.21
Group 3	98.41*	66.43*	88.51*	60.21*	9.90	6.20
Group 4	88.97*	82.11*	74.79*	76.90*	14.17*	5.32
All groups	93.33*	64.09*	83.69*	62.20*	9.63	1.89

Note: (1) Variant A: Static model without any dummy variables; Variant B: Dynamic model allowing intercept and total expenditure coefficients to change across regimes; Variant C: Dynamic model allowing intercept, total expenditure and price coefficients to change across regimes.

(2) The test statistic follows a χ^2 distribution.

*For rural Group-1 Model B allows only the price coefficients to change across regimes.

The results for overall model stability indicates that for all the ordinal groups and all-groups in both the rural and urban sector the static model is rejected. However, with the exception of two ordinal groups in the rural sector all of them indicate that the model allowing the intercept and the total expenditure coefficients to vary across the sub-samples (of sufficient size) performs better than the model that allows all the coefficients to vary across these regimes. This is true for both the rural and the urban sectors. The inference on which of the coefficients vary across regimes in a particular commodity equation can be had only for the sufficient sized regime, as the coefficients cannot be estimated for the undersized samples. For the latter case, a significant dummy coefficient is interpreted as the deviations from the mean corresponding to the first regime (see equation A.7b of Appendix A). The following table indicates the rank deficient regimes.

Table 3. Rank Deficient Rounds for Different Ordinal Groups

	Rural	Urban
Group 1	32, and 38	28, 32, and 38
Group 2	27 to 28, 32, and 38	32, 38, and 42
Group 3	28, 32, and 38	27 to 28, 32, and 38
Group 4	28, 32, and 38	28, 32, and 38
All-groups	28, 32, and 38	28, 32, and 38

Note: These regimes are identified based on the predictive test as explained in Appendix A and the detailed results are given in the Tables B.1 in Appendix B.

As noted in Table 3, the rank deficient regimes are not uniform across the ordinal groups for any given sector and also that for some of the ordinal groups the rank deficient regimes are not the same as chosen in the beginning. However, the 32nd (Jul.'77 - Jun.'78) and the 38th (Jan.'83 - Dec.'83) rounds uniformly appear as break points. Also, with the exception of group 1 in the rural sector and group 2 in the urban sector, all the other ordinal groups and all-groups show either the 27th round (Oct.'72 - Sept.'73) or the 28th (Oct.'73 - Jun.'74) round as a break point. As noted before, each of these rounds is a separate regime which could be either due to the data gaps or the larger samples compared to the other rounds. In the absence of information for the intermediate rounds between the quinquennial surveys it is difficult to attribute a particular reason for the occurrence of such departures.

For the full rank regimes the estimates of the coefficients are given in Tables B.2 and B.3 of Appendix B for the rural and the urban sector respectively and the results are discussed below.

The results indicate three regimes for all the ordinal groups and all-groups in both the sectors with the exception of group 1 in the rural sector and groups 1 and 2 in the urban sector. However there are differences between the ordinal groups and between the two sectors with respect to the regime length and the coefficients that vary across the regimes.

Group 1

In the rural sector, the first full rank regime covers the rounds from 4 to 28 and in the urban sector it covers the rounds 4 to 27. Though for both the rural and the urban sectors the second regime is from 42 to 47, there are differences in the coefficients that change. In the rural sector only the price responses change over the two periods but for the urban sector the dummy coefficient for the intercept and the total expenditure show a change. For the rural sector the model without accounting for the breaks show that 'food' and 'other food' are complements to each other whereas after the dynamic structure is incorporated these groups appear as substitutes in both the regimes. The 'non food' and 'other food' groups are complements in regime 1 (as in the model without structural breaks) but is a substitute in regime 2. The 'food' and the 'non food' groups remain as substitutes with or without dynamic structure. For the rural sector, this could mean that with increases in real income there is perhaps a diversification in the commodity basket and hence the prices have a larger role to play in the decision making process.

Group 2

For group 2 in both the rural and urban sectors, though the price responses are significant there are no changes across the regimes. The intercept, the total expenditure coefficients and the dummy coefficients attached to them explain most of the variation in consumption for the three-commodity grouping. For the rural sector the first full rank regime covers the rounds 4 to 17; the second full rank regime corresponds to the IHS rounds 19 to 25; and the third full rank regime covers the rounds 42 to 47. For the first regime, the 'food' and 'other food' groups are necessary goods and the 'non food' is a luxury good.[11] In regime 2 the dummy coefficients for the intercept and the total expenditure is significant for the 'food' and the 'non food' groups with a positive sign for the former and a negative sign for the latter commodity group. For regime 3 the intercepts in the 'other food' and the 'non food' is significantly different from regime 1 and unlike regime 1 the 'non food' group appears

[11] In the LA-AIDS model a negative sign for the total expenditure coefficient in a particular commodity equation indicates the good to be a necessity and a positive sign indicates the good be a luxury item.

as a necessity, indicating the increased importance of this group in the budget set.

For the urban sector, the results are similar to group 1. There are two regimes and the regimes differ in the intercept and total expenditure coefficients. Regime 1 covers the rounds 4 to 16, regime 2, 17 to 28 and regime 3, 43 to 47. For the second regime the dummy coefficient for the total expenditure is different from the previous regime with a significant value in the 'other food' (negative dummy coefficient) and 'non food' (positive dummy coefficient) equations. This has resulted in the expenditure elasticity of 'other food' to be necessity. For the third regime, the dummy coefficients for the intercept and the total expenditure are significant for the 'food' and the 'other food' groups, with a positive sign for the former and a negative sign for the latter commodity group. For the urban sector it is the 'other food' group (luxury good in the first regime and a necessity in the third regime) that assumes importance in the budget set.

Group 3

For the rural sector, in the second regime (rounds 17 to 27) the 'food' group is estimated to be a luxury good compared to it being a necessary good in the first regime (rounds 4 to 16). This is a counter-intuitive result and occurs due to a large and significant positive dummy coefficient for total expenditure in the 'food' equation. In the third regime, covering the rounds 42 to 47, the dummy coefficient for the total expenditure is significant for the 'food' group (with a negative sign) and for the 'non food' group (with a positive sign). This result for the total expenditure shows that though the 'food' and the 'other food' groups are necessities as in the first regime, their magnitudes are much lesser showing that they are more (income) elastic than before. Similarly, the 'non food' group remains to be a luxury good but with a lesser magnitude than in regime 1.

In the urban sector, for regime 2 (rounds 19 to 25), the results show that the dummy coefficients are significant for the intercept and total expenditure with a positive for the 'other food' group and a negative sign for the 'non food' group. For regime 3 (rounds 42 to 47) dummy coefficients for the intercept are significant for all the commodity groups but the dummy coefficients for the total expenditure are significant for the 'food' (positive sign) and the 'non food' groups (negative sign).

Group 4

For the rural sector, there are three regimes with respect to the intercept and total expenditure coefficients; rounds 4 to 16 belong to the first regime, rounds 17 to 27 belong to the second and rounds 42 to 47 to the third. The dummy coefficients for the intercept are significant for the 'food' group with a positive sign and the 'non food' group with a negative sign. The dummy coefficients for total expenditure are significant for all the three commodity groups with a positive sign for the 'food' group and with a negative sign for the 'other food' (though at 10 per cent level of significance) and 'non food' groups. In regime 3 covering the rounds 42 to 47, the dummy coefficient for the intercept is significant only for the 'food' group and has a negative sign. This perhaps indicates a shift in preference away from the 'food' group. The price coefficients do not show any change during the period 17 to 27 but for the rounds 42 to 47 there are significant changes in the dummy coefficient for the own prices of 'food', cross price of 'food' with 'other food' and 'non food' groups. With regard to the price coefficients, regime 1 covers the rounds 4 to the 27 and regime 2, 42 to 47.

For the urban sector, the rounds 17 to 27 form regime 2. The dummy coefficients for the intercept is significant (with a positive sign) only for the 'other food' group; and the dummy coefficients for the total expenditure is significant with a positive sign for the 'other food' group and with a negative sign for the 'non food' group. Thus, the 'other food' group is a luxury good for this regime whereas it is a necessity in regime 1; the 'non food' group is a necessity good for this regime whereas it is a luxury in regime 1. The rounds belonging to the third regime are 42 to 47. The dummy coefficient for the intercept is significant only for the 'food' group but the price response for the 'food' group changes for the third regime.

All groups

For the rural sector, the price coefficients show no change across any of the regimes. For regime two covering the rounds 17 to 27, the intercept dummy is significant in the 'food' (positive sign) and the 'non food' (negative sign) groups and so is the case with the 'real' expenditure coefficient. When compared to regime 1 the expenditure elasticity for 'food' increases and that for 'non food' group decreases. With a positive value for the dummy coefficient added to the negative coefficient value in the first regime, we obtain such a result and similarly for the 'non food' group. Regime 3 covers the rounds 42 to 47 with the intercept being significant for all the commodity groups and having a negative value for the 'food' and the 'other food' groups and a positive value for the 'non food' group. This indicates an increase in the average budget share towards the 'non food' group, away from the 'food' and 'other food' groups. The dummy coefficient for 'real' expenditure is significant and positive in the 'food' and the 'non food' groups but is significant and negative for the 'other food' group. The expenditure elasticity in this case does not alter much for the 'food' group but the 'other food' group is less elastic than before.

For the urban sector, regime 2 covers the rounds 17 to 27 with the intercept dummy being significant in the 'other food' (positive sign) and the 'non food' (negative sign) equations. The 'real' expenditure coefficient is significant for all the commodity groups with a negative sign for the 'non food' group and a positive sign otherwise. Further, the expenditure elasticity for the 'food' and the 'other food' groups increases in magnitude compared to regime 1 whereas this value decreases for the 'non food' group. However, the 'food' and 'other food' groups are both necessities and the 'non food' group a luxury in both the regimes. Regime 3 covers the rounds 42 to 47. The intercept dummies are significant for all the commodity groups but has a negative sign for the 'food' and the 'non food' groups. The dummy coefficient for 'real' expenditure is significant for the 'food' (positive sign) and the 'other food' (negative sign) groups.

5.2. *Discussion of Results*

(1) The IHS rounds:

- It is noticed that for the regime coinciding with the IHS rounds (19 to 25) or for the regime that includes the IHS rounds (17 to 27), there is a positive sign for the dummy coefficient for the 'food' group and negative sign for the dummy coefficient for the 'non food' group. Sometimes positive change is also observed for the 'other food' groups.

- These changes mentioned are restricted only to the upper expenditure classes and only to the intercept and total expenditure coefficients.

This result is due to the sudden upward (downward) shift in budget shares of the 'food' ('non food') group, increasing the relative importance of the 'food' group in the commodity basket as noted in Viswanathan (1998). During the IHS rounds an integrated schedule was used to gather information on all the socio-economic aspects of a household, namely, demography, employment and unemployment, consumer expenditure and enterprise (Dandekar, 1996 Vaidyanathan, 1986 and Mukherjee, 1986).[12] This resulted in the NSSO collecting both the total expenditure and 'income' together which may have led to some distortions in the responses by the households. Due to this perhaps there was under-reporting of income and hence the total consumption by the respondents. The scope for under-reporting income and expenditure by under-stating 'food' consumption is quite limited because 'food' is a necessary good. The nature of items in the 'miscellaneous non food' category (like durable goods and consumer services), on the other hand, is such that the expenditure on these items could be consistently under reported along with total income and expenditure. As a result, the proportion of 'food' consumption might have got inflated due to the scaling down of the 'non food' expenditure and hence the total expenditure.[13] This may explain why the observed changes in the dummy coefficients is confined to upper ordinal groups because the shares of durables and consumer services in their total expenditure is relatively larger compared to that of the poorer groups. Further, as the distortion is due to the under reporting of total expenditure the econometric results do not show changes in the price coefficients during this period.

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[12] In the surveys prior to this period the schedules relating to different socio-economic aspects were canvassed in relation to different sets of samples. The IHS was discontinued from the 26th round (July 1971 to Sept. 1972).

[13] The budget shares add up to one. So a decrease in the budget share of one commodity would be offset by the increase in budget share of some other commodity.

(2) The quinquennial rounds: The data gaps due to the quinquennial surveys show up as break points in the time-series for all the expenditure groups in both the sectors except rural group 1.

For the quinquennial rounds, the absence of a continuous time series expenditure data does not enable us to study the consumer behaviour during this period. Moreover, it has also not been possible to study the effect of a larger sample size during these rounds, an issue that has been discussed in studies related to poverty (Ray and Bhattacharya, 1992). As the estimates of the coefficients cannot be obtained for these regimes it is not possible to explore the underlying reasons for the changes to occur.

(3) After the 38th round:

- For the period beginning from the 42nd round, there are changes for the lowest ordinal group in both the rural and the urban sectors. In the rural sector the changes in consumption pattern is reflected as a change in the price responses but in the urban sector this is reflected as a change in the total expenditure coefficients.
- For groups 2 and 3 in the urban sector and group 2 in rural sector the dummy coefficients are positive (significant) for the intercept and total expenditure for the 'food' and 'other food' groups. This may be due to the shift away from cereal to non-cereal food items like meat, egg and fish, and milk and milk products within the 'food' group as noted by Suryanarayana (1995) and Meenakhsi (1996a). These commodities are aggregated into 'food' group in this analysis which may be the reason for a positive dummy coefficient. Also the positive dummy coefficient for the 'other food' group may be due to a significant shift in the expenditure proportions towards vegetables, etc. (included in this group) as noted in the studies mentioned above.
- For group 4 in both the sectors the price responses have changed along with the intercept and total expenditure coefficients. The shift is away from 'food' towards 'non food' and is reflected by a negative dummy coefficient for the intercept and total expenditure for the 'food' group and a positive dummy coefficient for the 'non food' group.
- For all-groups the response is mixed. The intercept and total expenditure coefficients move in opposite directions in both the sectors. For the 'food' group the dummy coefficient is negative for the intercept but positive for the total expenditure variable. This perhaps indicates that though the preferences have

shifted away from the 'food' group there could be changes in the composition within the 'food' group due to the income effect. Also, for the rural sector the 'non food' dummy coefficient for both the intercept and total expenditure is positive indicating that shift towards the 'non food' group could be both due to changes in preferences and due to the income effect.

- Another important finding is that when the structural breaks are accounted for using the dummy variables, the curvature conditions are satisfied for all the points in the sample space except the rank deficient regimes where no such information could be obtained. This is true for both the rural and urban consumers.

This perhaps indicates that in the demand system without structural changes, the curvature condition was not satisfied because of dynamic mispecification. When the coefficients are estimated the curvature condition was satisfied at all the sample points.

For the post-QS3 rounds the results are similar to the other studies using different methodologies. The study by RR is comparable with the present one as it addresses the issue of changes in consumption pattern based on a (hierarchic) demand system using the dummy variable approach and covers a long enough time period. RR is probably the first attempt to examine the question of changes in tastes within a theoretically and methodologically rigorous framework and is a significant contribution to the consumer behaviour analysis in India. However, the same issue is addressed here in a much larger perspective by improving the methodology that takes into account the following factors.

For India the consumption pattern for the majority of the population in the initial years was at the subsistence level of consumption. In such a case the only constraint binding a consumer's decision would be his income level. But with improvements in the living standards, prices would also appear in a big way. In such a case not only the price variables would appear significant in the econometric model for consumption demand but also substitution possibilities may arise between commodities. The former would rule out Engel curve estimations, requiring a demand system framework and the latter would mean that the functional form specification used for the estimation of the demand system should be effective in modelling this aspect. Therefore, the choice of the LES with additively separable preferences may not be an appropriate specification as the effect of relative price changes are not measured adequately. The LA-AIDS model being a flexible functional form, the price responses are measured effectively, distinguishing it from the income responses, and without any pre-conditions on the parameters prior to the estimation.

Also, with the process of development there would be changes in consumption demand due to the Engel's law (over time), that is, a decrease in the budget shares of food and an increase in the budget shares of non food.[14] Such changes in consumption pattern are a natural occurrence and cannot be interpreted as due to changes in preferences. However the LES with constant marginal budget shares would not permit capturing the changes in demand due to Engel's law and the use of this model may show dynamic effects due to mispecification. Therefore, the specification of the functional form should be such that these changes would be precluded and other causes of structural breaks could be identified and modelled. Again the LA-AIDS functional form overcomes this problem as it is derived from the price independent generalised logarithmic cost function that allows for non-linear Engel curves.

The dummy variable approach is appropriate to capture regime shifts in a linear (in parameters) model. It clearly brings out the differences in coefficients between two regimes and permits identification of the regressors that account for such breaks. Further in a linear model, a significant dummy for the constant term would perhaps suggest a change in taste and significant dummies for prices and income would indicate that the changes in demand might have occurred due to some abrupt changes in these variables. With a non-linear model like the LES, such interpretations of dummy coefficients may not be possible.

Finally the break points are tested for their validity unlike in RR where 1973-74 was a pre-determined one. Also, the present study shows that there could be other causes of breaks induced by extraneous factors like changes in methodology of data collection which indirectly affect the independent variables. This is true particularly for the study by RR where the data set includes the rounds belonging to the integrated

[14] With increase in incomes the consumers would also prefer to use better quality of the same cereal but such issues are not addressed in any of the studies due to the lack of adequate information.

household survey unlike the other studies mentioned above where the analysis is for the period beginning from 1972-73.

The results here are different from RR: there are multiple break points in the consumption for all the ordinal groups and all-India for both rural and urban consumers; the independent variables that contribute towards the break and the commodities which show breaks in consumption demand vary between the four ordinal groups; and the breaks cannot be attributed to gradual changes in tastes in the conventional sense.

6. Conclusion

The present study improves upon the econometric modelling for testing and incorporating structural breaks for an analysis of consumption patterns and also explores the causes of such breaks in the Indian context. In this study it has not been possible to analyse the changes in cereal composition - decline in the budget share of coarse cereals and an increase in the budget share of rice and wheat – an important issue for a developing country. The break-up of the expenditure data on 'foodgrains' into 'cereals' and 'cereal substitutes' is not reported for all the NSS rounds from the beginning. Thus with the data gaps being more frequent and not matching with the gaps in the aggregate 'foodgrains' series, it has not been possible to address this issue in detail at a further level of disaggregation for the corresponding rounds, in an econometric framework. Also, given the small sample covering 32 rounds of the NSS a larger commodity disaggregation would lead to a degrees of freedom problem in order to estimate a demand model like the AIDS.

The results of this study imply that for policy models requiring demand forecasting, the pooling of the data set over the NSS rounds would be inappropriate.. The results for the lowest ordinal group in the rural as well as the urban sectors show a decline in the budget shares of food after the 27th round (after taking into account the substitution effect). This perhaps is an indication that the calculation of poverty measures should be based on a wider basket of consumption rather than on food-energy-intake method alone because with changing consumption patterns these measures may not adequately capture the living standards of the population

(Perspective Planning Division, 1993). The results highlight the differences in consumption patterns of the different economic sections of the population and hence their differences in responses to 'income' and price changes. Therefore, for the policy models that address redistributive issues the consumption model based on disaggregate (forming either decile groups or ordinal classes) rather than a pooled data set (taking all expenditure classes together) would be an effective one.

This study as it is based on all India data is only indicative of the causes of dynamic structure in the consumption patterns. A state level analysis would be more informative to understand the underlying process and the changes over time. Further to measure the price responses adequately, it would be appropriate to use the retail prices. However, such a series is available for a shorter period of time. Therefore one may attempt to measure the price responses and address related issues by estimating a model using the regional level data on consumer expenditures. This extension would also take care of the limitation posed by the reduced sample size.

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APPENDIX A

Let there be P commodities (or cross-sections) each with T observations and K parameters (regressors) to be estimated in the demand model. For the purpose of demand system estimation suppose each of these P commodity equations (with T observations each) represent each of the (n-1) commodities. Then the SURE model (Zellner, 1962) is commonly represented as follows:

$$Y_{0(PT\times 1)}=X_{0(PT\times PK)}\beta_{0(PK\times 1)}+u_{(PT\times 1)} \qquad \text{A.1}$$

The vector of disturbances has a covariance matrix:

$$E(uu')=\begin{bmatrix} \sigma_{11}I_T & \sigma_{12}I_T & . & . & \sigma_{1P}I_T \\ \sigma_{21}I_T & \sigma_{22}I_T & . & . & \sigma_{21}I_T \\ . & . & . & . & . \\ . & . & . & . & . \\ \sigma_{1P}I_T & \sigma_{2P}I_T & . & . & \sigma_{PP}I_T \end{bmatrix} = \Sigma_0 \otimes I = \Gamma_{PT\times PT} \qquad \text{A.2}$$

where, the correlations between the disturbances in different equations is expressed as:

$$E\ (u_{it}u_{js})=\sigma_{ij} \quad t=s$$
$$E\ (u_{it}u_{js})=0 \quad t\neq s \quad for\ i,j=1,2,\ldots\ldots,P$$

Σ_0 = the variance-covariance matrix of contemporaneous correlation and

I_T = identity matrix of order T.

The estimator of the coefficient in the SURE model is given by

$$\hat{\beta}_0=(X_0'\Gamma^{-1}X_0)(X_0'\Gamma^{-1}Y_0) \qquad \text{A.3}$$

Suppose the hypothesised structural change occurs at L-1 different points that is, there are L regimes, with T_h observations in each of them. This model is represented as:

$$Y^{*(h)}=X^{*(h)}\beta^{*(h)}+e^{*(h)}, \quad h=1,2,\ldots\ldots,L \qquad \text{A.4}$$

It is possible that some of the regimes may have a rank deficient design matrix. In such regimes it is not possible to estimate the β coefficients. If $X^{*(h)}$ is of full rank then the corresponding $\beta^{*(h)}$ can be estimated as a SURE model for each of the regime as in equation A.3.

The L regimes could be stacked to obtain a single model and represented as:

$$Y^{*} = X^{*}\beta^{*} + e \qquad \text{A.5}$$

where,

$$X^{*} = \begin{bmatrix} X^{(1)} & & & & \\ & X^{(2)} & & & \\ & & \cdot & & \\ & & & \cdot & \\ & & & & \cdot \\ & & & & & X^{(L)} \end{bmatrix}_{PT \times LPK} \quad \text{and} \quad \beta^{*} = \begin{pmatrix} \beta^{(1)} \\ \beta^{(2)} \\ \cdot \\ \cdot \\ \cdot \\ \beta^{(L)} \end{pmatrix}_{LPK \times 1}$$

The model in equation A.5 is referred to as *unrestricted model* and the model in equation A.1 is referred to as the *restricted model.* In order to test for the model stability, identify the location of breaks and explanatory variables contributing towards these breaks the methodology suggested by Cantrell *et al.*, (1991) is used. In this a likelihood-ratio test is constructed that jointly tests the hypothesis of equality of β coefficients across the full rank regimes and the equality of the predictions for the rank deficient regimes with the estimate obtained from the *first* regime (which is essentially of full rank).

Without loss of generality, we can stack the full column rank matrices together and keep the rank deficient ones below. Then the model can be stacked as:

$$\begin{bmatrix} Y_1 \\ Y_2 \\ \cdot \\ \cdot \\ Y_q \\ Y_{q+1} \\ \cdot \\ \cdot \\ Y_L \end{bmatrix} = \begin{bmatrix} X^{(1)} & 0 & \cdot\ \cdot & & & & \\ X^{(2)} & X^{(2)} & & & & & \\ \cdot & & & & & & \\ \cdot & & & & & & \\ X^{(q)} & 0 & \cdot\ \cdot & X^{(q)} & & & \\ X^{(q+1)} & & 0 & & I_{T_{q+1}} & & \\ \cdot & & & & & & \\ \cdot & & & & & & \\ X^{(L)} & & 0 & \cdot\ \cdot\ \cdot\ \cdot & & 0 & I_{T_L} \end{bmatrix} \begin{bmatrix} \beta^{(1)} \\ \alpha^{(2)} \\ \cdot \\ \cdot \\ \alpha^{(q)} \\ \alpha^{(q+1)} \\ \cdot \\ \cdot \\ \alpha^{(L)} \end{bmatrix} + e \qquad \text{A.6}$$

For the full rank regimes the SURE estimators is obtained as in equation A.3:

$\hat{\beta}^{(1)}, \quad \hat{\alpha}^{(i)} = (\hat{\beta}^{(i)} - \hat{\beta}^{(1)})$ for i = 2,..., q and A.7a

for the rank deficient regimes:

$\hat{\alpha}^{(i)} = (Y^{(i)} - X^{(i)}\hat{\beta}^{(1)})$ for i = q+1,...., L. A.7b

Therefore, the joint test is to test the nullity of $\alpha^{(2)}, \ldots, \alpha^{(L)}$. In order to do this a likelihood ratio test comparing the unrestricted model in equation A.6 with the restricted model in equation A.1 is used. The rejection of the joint null hypothesis would imply that the coefficients are not stable over the entire sample period. Further, for each of the full rank regimes the significance of the dummy coefficients attached to the different regressors give information on whether the coefficients for a particular commodity group differs from the first regime or not. For each of the rank deficient regimes depending on the predictive test one can infer whether the particular commodity group belongs to the first regime or not.

APPENDIX B

Table B.1. NSS Round-wise Predictive Test Results to Identify Rank Deficient Regimes

	Rural			Urban		
Group 1	32nd	38th		28th	32nd	38th
Food	-0.032**	-0.071*		0.011	-0.028	-0.086
	(-1.74)	(-3.65)		(0.6)	(-1.1)	(-4.4)
Other Food	0.039*	0.045*		0.047*	0.021	0.050
	(3.35)	(3.21)		(2.64)	(1.87)	(2.69)
Non Food	-0.006	0.026		-0.058	0.007	0.036
	(-0.04)	(0.15)		(-0.27)	(2.03)	(0.17)
Group 2	27 to 28th	32nd	38th	32nd	38th	42nd
Food	-0.039*	-0.086*	-0.126*	-0.004	-0.081*	-0.051*
	(-2.01)	(-4.68)	(-7.00)	(-0.21)	(-4.12)	(-2.21)
Other Food	0.031*	0.033*	0.050*	0.043**	0.055*	0.061*
	(2.33)	(2.54)	(3.60)	(1.88)	(2.05)	(2.26)
Non Food	0.008	0.053	0.076	-0.039	0.026	-0.010
	(0.07)	(0.46)	(0.66)	(1.22)	(0.88)	(-0.27)
Group 3	28th	32nd	38th	27 to 28th	32nd	38th
Food	-0.039**	-0.053*	-0.125*	0.018	-0.015	-0.063*
	(-1.89)	(-3.27)	(-7.79)	(1.00)	(0.94)	(-3.33)
Other Food	-0.005	0.046*	0.048*	0.018	0.034*	0.052*
	(-0.28)	(3.27)	(3.41)	(1.15)	(2.56)	(3.23)
Non Food	0.044	0.006	0.078	-0.036*	-0.019	-0.010
	(0.46)	(0.07)	(0.79)	(-2.33)	(-0.18)	(0.10)
Group 4	28th	32nd	38th	28th	32nd	38th
Food	-0.038*	-0.111*	-0.137*	-0.002	-0.068*	-0.118*
	(-2.26)	(-5.49)	(-6.43)	(-0.09)	(-3.21)	(-7.02)
Other Food	0.023	-0.013	0.052*	0.015	-0.003	0.026
	(0.68)	(-0.67)	(2.31)	(0.046)	(-0.12)	(1.20)
Non Food	0.014	0.124*	0.084	-0.013*	0.072*	0.091*
	(0.26)	(2.29)	(1.57)	(-2.44)	(2.44)	(3.09)
All groups	28th	32nd	38th	28th	32nd	38th
Food	-0.026**	-0.078*	-0.121*	-0.006*	-0.035*	-0.088*
	(-1.94)	(-6.02)	(-7.77)	(-2.42)	(-3.24)	(-8.06)
Other Food	0.014*	0.021	0.051*	0.012	0.037*	0.054*
	(2.71)	(1.45)	(3.56)	(0.49)	(2.21)	(2.90)
Non Food	0.011	0.057	0.069	-0.006	-0.003	0.035
	(0.09)	(0.43)	(0.52)	(-0.06)	(-0.04)	(0.37)

Note: 1. The reported test results are the differences in the predicted values as in equation A.7b of Appendix A.
2. The values in brackets are the t-ratios.

Table B.2. Coefficients for Dynamic LA-AIDS Model: Rural

GROUP 1							
Intercepts (no change across regimes)							
Coeffs.	Food	Othfd	Nonfd				
α_i^1	0.442*	0.282*	0.275*				
	(4.5)	(5.54)	(3.00)				
Price coefficients							
Regime 1 (rounds 4 to 28)							
Coeffs.	Food	Othfd	Nonfd				
γ_{1i}^1	0.161*						
	(2.34)						
γ_{2i}^1	-0.107*	0.139*					
	(-2.38)	(3.86)					
γ_{3i}^1	-0.055	-0.032	0.086*				
	(-1.34)	(-1.64)	(2.37)				
Regime 2 (rounds 42 to 47)							
Dummy coefficients for price				Price coefficients			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
$d\gamma_{1i}^2$	0.965*			γ_{1i}^2	1.126*		
	(2.31)				(2.70)		
$d\gamma_{2i}^2$	-0.563*	0.306*		γ_{2i}^2	-0.670*	0.445*	
	(-5.2)	(4.54)			(-6.38)	(7.57)	
$d\gamma_{3i}^2$	-0.402	0.257*	0.145	γ_{3i}^2	-0.456	0.225	0.231
	(-0.92)	(2.19)	(0.29)		(-1.04)	(0.52)	(0.18)
Total expenditure coefficients (no change across regimes)							
Coeffs.	Food	Othfd	Nonfd				
β_i^1	-0.222	0.183	0.039				
	(-2.58)	(3.53)	(0.35)				

NOTE: (1)The Greek letters represent different coefficients for the different regimes as in equation 1. (2)The subscript refers to a particular commodity group and the superscript refers to the particular full rank regime as mentioned in the table.
(3) The coefficient for the first regime is represented with the superscript '1' and for the other regimes it is the sum of the dummy coefficient (preceeded by a 'd' as shown in equaiton 1) and the corresponding cofficient in the first regime as shown in equation A.7a.

Table B.2. Coefficients for Dynamic LA-AIDS Model: Rural (Contd.)

GROUP 2							
Intercepts							
Regime 1 (rounds 4 to 17)							
Coeffs.	Food	Othfd	Nonfd				
α_i^1	0.291*	0.118*	0.590*				
	(3.79)	(2.18)	(10.36)				
Dummy Coefficients for Intercept				Intercept			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 19 to 25)							
$d\alpha_i^2$	0.260**	0.106	-0.366*	α_i^2	0.552*	0.224*	0.224*
	(1.75)	(0.97)	(-3.18)		(4.11)	(2.32)	(2.18)
Regime 3 (rounds 42 to 47)							
$d\alpha_i^3$	0.091	0.285*	-0.376*	α_i^3	0.382*	0.404*	0.214*
	(0.54)	(2.48)	(-3.27*)		(2.72)	(4.22)	(2.18)
Price Coefficients (no change across regimes)							
Coeffs.	Food	Othfd	Nonfd				
γ_{1i}^1	0.101						
	(1.4)						
γ_{2i}^1	0.012	-0.010					
	(0.26)	(-0.31)					
γ_{3i}^1	-0.113*	0.002	0.113*				
	(-2.6)	(-0.02)	(3.21)				
Total expenditure coefficients							
Regime 1 (rounds 4 to 17)							
Coeffs.	Food	Othfd	Nonfd				
β_i^1	-0.268*	-0.045	0.313*				
	(-4.14)	(-1.00)	(6.52)				
Dummy coefficients for total expend.				Total expenditure coefficients			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 19 to 25)							
$d\beta_i^2$	0.235*	0.056	-0.291*	β_i^2	-0.034	0.011	0.022
	(2.07)	(0.67)	(-3.27)		(-0.34)	(0.16)	(0.29)
Regime 3 (rounds 42 to 47)							
$d\beta_i^3$	0.213**	0.148**	-0.361*	β_i^3	-0.055	0.103	-0.047
	(1.87)	(1.77)	(-3.74*)		(-0.48)	(1.31)	(-0.58)

Table B.2. Coefficients for Dynamic LA-AIDS Model: Rural (Contd.)

GROUP 3							
Intercepts							
Regime 1 (rounds 4 to 16)							
Coeffs.	Food	Othfd	Nonfd				
α_i^1	0.447^*	0.112^*	0.441^*				
	(11.25)	(3.29)	(14.34)				
Dummy Coefficients for Intercept				Intercept			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 17 to 27)							
$d\alpha_i^2$	0.152	0.054	-0.206^*	α_i^2	0.600^*	0.166^{**}	0.234^*
	(1.32)	(0.55)	(-2.11)		(5.44)	(1.81)	(2.49)
Regime 3 (rounds 42 – 47)							
$d\alpha_i^3$	0.001	0.083	-0.085	α_i^3	0.449^*	0.196^*	0.356^*
	(0.02)	(1.06)	(-0.87)		(4.96)	(2.64)	(4.87)
Price coefficients (no change across regimes)							
Coeffs.	Food	Othfd	Nonfd				
γ_{1i}^1	0.113^*						
	(2.23)						
γ_{2i}^1	-0.016	0.045					
	(-0.45)	(1.29)					
γ_{3i}^1	-0.097^*	-0.029	0.126^*				
	(-3.14)	(-1.2)	(4.45)				
Total expenditure coefficients							
Regime 1 (rounds 4 to 16)							
Coeffs.	Food	Othfd	Nonfd				
β_i^1	-0.137^*	-0.083^*	0.219^*				
	(-3.11)	(-2.16)	(6.37)				
Dummy coefficients for total exp.				Total expenditure coefficients			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 17 to 27)							
$d\beta_i^2$	0.169	0.042	-0.212^*	β_i^2	0.032	-0.040	0.008
	(1.38)	(0.41)	(-2.01)		(0.29)	(-0.43)	(0.08)
Regime 3 (rounds 42 to 47)							
$d\beta_i^3$	-1.430	-0.011	0.154^{**}	β_i^3	-0.289	-0.094	0.373
	(1.51)	(-0.1)	(-1.77)		(0.44)	(-1.02)	(0.49)

Table B.2. Coefficients for Dynamic LA-AIDS Model: Rural (Contd.)

GROUP 4							
Intercepts							
Regime 1 (rounds 4 to 16)							
Coeffs.	Food	Othfd	Nonfd				
α_i^1	0.419*	0.182*	0.398*				
	(26.04)	(9.74)	(17.19)				
Dummy Coefficients for Intercept				Intercept			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 17 to 27)							
$d\alpha_i^2$	0.107*	-0.007	-0.010	α_i^2	0.526*	0.174*	0.299*
	(2.45)	(-0.14)	(-1.53)		(13.22)	(3.51)	(4.94)
Regime 3 (rounds 42 to 47)							
$d\alpha_i^3$	-0.109*	0.035	0.074	α_i^3	0.310*	0.216*	0.473*
	(-3.79)	(1.01)	(1.14)		(12.56)	(7.31)	(12.61)
Price coefficients							
Regime 1 (rounds 4 to 27)							
Coeffs.	Food	Othfd	Nonfd				
γ_{1i}^1	0.059**						
	(1.98)						
γ_{2i}^1	-0.043	-0.016					
	(-1.11)	(-0.62)					
γ_{3i}^1	0.078*	-0.008	0.051*				
	(3.27)	(-1.11)	(2.69)				
Dummy coefficients for price				Price coefficients			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 42 to 47)							
$d\gamma_{1i}^2$	0.124**			γ_{1i}^2	0.183*		
	(1.72)				(2.43)		
$d\gamma_{2i}^2$	0.132**	-0.146		γ_{2i}^2	0.089	-0.067	
	(1.77)	(-1.51)			(1.19)	(-0.802)	
$d\gamma_{3i}^2$	-0.256**	0.013	0.242	γ_{3i}^2	-0.272**	-0.021	0.293*
	(-3.65)	(0.10)	(1.54)		(-1.95)	(-0.24)	(2.01)
Total expenditure coefficients							
Regime 1 (rounds 4 to 16)							
Coeffs.	Food	Othfd	Nonfd				
β_i^1	-0.017*	0.016**	0.001*				
	(-2.34)	(1..99)	(3.02)				
Dummy coefficients for total exp.				Total expenditure coefficients			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 17 to 27)							
$d\beta_i^2$	0.229**	-0.101**	-0.128*	β_i^2	0.212**	-0.084*	-0.127*
	(-1.84)	(-1.96)	(-2.67)		(1.94)	(-2.15)	(2.55)
Regime 3 (rounds 42 to 47)							
$d\beta_i^3$	-0.006*	-0.081**	0.087*	β_i^3	-0.023*	-0.065**	0.088*
	(2.87)	(-1.85)	(2.59)		(3.20)	(-1.85)	(3.74)

Table B.2. Coefficients for Dynamic LA-AIDS Model: Rural (Contd.)

ALL-GROUPS							
Intercepts							
Regime 1 (rounds 4 to 16)							
Coeffs.	Food	Othfd	Nonfd				
α_i^1	0.399*	0.116*	0.485*				
	(7.33)	(2.27)	(8.60)				
Dummy Coefficients for Intercept				Intercept			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 17 to 27)							
$d\alpha_i^2$	0.058*	0.025	-0.083*	α_i^2	0.456*	0.140	0.403*
	(3.51)	(0.22)	(-2.62)		(4.96)	(1.39)	(3.47)
Regime 3 (rounds 42 to 47)							
$d\alpha_i^3$	-0.116*	-0.006**	0.122*	α_i^3	0.283	0.109	0.608**
	(-2.42)	(-1.92)	(3.91)		(1.02)	(0.39)	(1.95)
Price coefficients (no change across regimes)							
Coeffs.	Food	Othfd	Nonfd				
γ_{1i}^1	0.104*						
	(2.53)						
γ_{2i}^1	-0.006	-0.008					
	(-0.18)	(-0.29)					
γ_{3i}^1	-0.098*	0.014	0.074*				
	(-2.99)	(0.38)	(2.65				
Total expenditure coefficients							
Regime 1 (rounds 4 to 16)							
Coeffs.	Food	Othfd	Nonfd				
β_i^1	-0.140*	-0.063	0.203*				
	(-2.40)	(-1.13)	(3.30)				
Dummy coefficients for total expend.				Total expenditure coefficients			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 17 to 27)							
$d\beta_i^2$	0.067*	0.003	-0.071*	β_i^2	-0.073	-0.059	0.132*
	(2.59)	(0.02)	(-3.51)		(-0.83)	(-0.61)	(2.18)
Regime 3 (rounds 42 to 47)							
$d\beta_i^3$	0.011*	-0.115**	0.104*	β_i^3	-0.129*	-0.178	0.307**
	(2.10)	(-1.95)	(2.28)		(-2.40)	(-0.54)	(1.84)

Table B.3. Coefficients for Dynamic LA-AIDS Model: Urban

GROUP 1							
Intercepts							
Regime 1 (rounds 4 to 27)							
Coeffs.	Food	Othfd	Nonfd				
α_i^1	0.371*	0.379*	0.250				
	(3.78)	(4.16)	(1.57)				
Dummy coefficients for intercept				Intercept			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 42 to 47)							
$d\alpha_i^2$	-0.116*	0.113	0.003	α_i^2	0.254*	0.492*	0.254
	(-2.75)	(0.68)	(0.02)		(2.08)	(3.74)	(1.15)
Price coefficients (no change across regimes)							
Coeffs.	Food	Othfd	Nonfd				
γ_{1i}^1	0.024*						
	(2.64)						
γ_{2i}^1	-0.032*	0.030*					
	(-2.21)	(3.18)					
γ_{3i}^1	0.008	0.001	-0.009**				
	(0.23)	(0.04)	(-1.97)				
Total expenditure coefficients							
Regime 1 (rounds 4 to 27)							
Coeffs.	Food	Othfd	Nonfd				
β_i^1	-0.104	0.105**	-0.001				
	(-1.64)	(1.78)	(-0.01)				
Dummy coefficients for total exp.				Total expenditure coefficients			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 42 to 47)							
$d\beta_i^2$	-0.017	0.033*	-0.016*	β_i^2	-0.122	0.139	-0.017
	(-4.21)	(0.42)	(-1.98)		(-1.29)	(1.35)	(-0.1)

NOTE: (1)The Greek letters represent different coefficients for the different regimes as in equation 1.
(2)The subscript refers to a particular commodity group and the superscript refers to the particular full rank regime as mentioned in the table.
(3) The coefficient for the first regime is represented with the superscript '1' and for the other regimes it is the sum of the dummy coefficient (preceeded by a 'd' as shown in equaiton 1) and the corresponding cofficient in the first regime as shown in equation A.7a.

Table B.3. Coefficients for Dynamic LA-AIDS Model: Urban (Contd.)

GROUP 2							
Intercepts							
Regime 1 (rounds 4 to 25)							
Coeffs.	Food	Othfd	Nonfd				
α_i^1	0.288*	0.254*	0.457*				
	(5.82)	(4.61)	(5.97)				
Regime 2 (rounds 42 to 47)							
Dummy coefficients for intercept				Intercept			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
$d\alpha_i^2$	0.245**	0.360*	-0.606*	α_i^2	0.408*	0.506*	0.086
	(1.93)	(2.55)	(-5.14)		(3.82)	(4.24)	(0.55)
Price coefficients (no change across regimes)							
Coeffs.	Food	Othfd	Nonfd				
γ_{1i}^1	-0.039*						
	(-2.8)						
γ_{2i}^1	-0.003*	0.039*					
	(-3.07)	(2.09)					
γ_{3i}^1	0.042**	-0.037*	-0.005*				
	(1.90)	(-3.06)	(-3.09)				
Total expenditure coefficients							
Regime 1 (rounds 4 to 16)							
Coeffs.	Food	Othfd	Nonfd				
β_i^1	-0.170*	0.014	0.156*				
	(-3.98)	(0.28)	(2.30)				
Dummy coefficients for total exp.				Total expenditure coefficients			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 17 to 28)							
$d\beta_i^2$	-0.005	-0.030*	0.035*	β_i^2	-0.175*	-0.016	0.191**
	(-0.50)	(-2.53)	(2.03)		(-4.02)	(0.27)	(1.85)
Regime 3 (rounds 43 to 47)							
$d\beta_i^3$	0.080*	-0.085*	0.005	β_i^3	-0.090**	-0.071	0.161
	(3.68)	(-3.35)	(0.14)		(-1.83)	(-1.03)	(1.36)

Table B.3. Coefficients for Dynamic LA-AIDS Model: Urban (Contd.)

GROUP 3							
Intercepts							
Regime 1 (rounds 4 to 17)							
Coeffs.	Food	Othfd	Nonfd				
α_i^1	0.219*	0.150*	0.631*				
	(5.06)	(4.31)	(12.32)				
Dummy coefficients for intercepts				Intercepts			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 19 to 25)							
$d\alpha_i^2$	-0.057	0.245*	-0.188**	α_i^2	0.162**	0.395*	0.443*
	(-0.62)	(3.06)	(-1.74)		(1.76)	(5.06)	(4.23)
Regime 3 (rounds 42 to 47)							
$d\alpha_i^3$	0.094**	0.123*	-0.217*	α_i^3	0.313*	0.273*	0.414*
	(1.91)	(3.04)	(-2.01)		(11.15)	(10.84)	(12.54)
Price coefficients (no change across regimes)							
Coeffs.	Food	Othfd	Nonfd				
γ_{1i}^1	-0.071						
	(-1.35)						
γ_{2i}^1	-0.051	0.061**					
	(-1.42)	(1.75)					
γ_{3i}^1	0.122*	-0.010	-0.112*				
	(2.97)	(-0.33)	(-2.32)				
Total expenditure coefficients							
Regime 1 (rounds 4 t0 17)							
Coeffs.	Food	Othfd	Nonfd				
β_i^1	-0.269*	-0.155*	0.424*				
	(-4.39)	(-3.06)	(5.81)				
Dummy coefficients for total exp.				Total expenditure coefficients			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 19 to 25)							
$d\beta_i^2$	-0.092	0.299*	-0.207*	β_i^2	-0.361*	0.143	0.217
	(-0.74)	(2.75)	(-1.92)		(-3.08)	(1.43)	(1.61)
Regime 3 (rounds 42 to 47)							
$d\beta_i^3$	0.244**	0.113	-0.357*	β_i^3	-0.025	-0.042	0.068
	(1.97)	(1.04)	(-3.46)		(-0.42)	(-0.73)	(0.91)

Table B.3. Coefficients for Dynamic LA-AIDS Model: Urban (Contd.)

GROUP 4

Intercepts

Regime 1 (rounds 4 to 16)			
Coeffs.	Food	Othfd	Nonfd
α_i^1	0.296*	0.259*	0.444*
	(17.53)	(12.03)	(14.74)

Dummy coefficients for intercept				Intercept			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 17 to 27)							
$d\alpha_i^2$	-0.003	0.046**	-0.042	α_i^2	0.293*	0.305*	0.402*
	(-0.21)	(1.94)	(-1.23)		(4.86)	(3.06)	(6.12)
Regime 3 (rounds 42 to 47)							
$d\alpha_i^3$	-0.116	0.113	0.003	α_i^3	0.237*	0.295*	0.468*
	(-0.75)	(0.68)	(0.02)		(9.78)	(9.59)	(10.50)

Price coefficients

Regime 1 (rounds 4 to 27)			
Coeffs.	Food	Othfd	Nonfd
γ_{1i}^1	-0.083**		
	(-1.78)		
γ_{2i}^1	0.098*	0.005	
	(2.22)	(0.08)	
γ_{3i}^1	-0.014	-0.103	0.117
	(-0.29)	(-1.54)	(1.30)

Dummy coefficients for price				Price coefficients			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 42 to 47)							
$d\gamma_{1i}^2$	0.206**			γ_{1i}^2	0.122		
	(1.98)				(1.19)		
$d\gamma_{2i}^2$	-0.155*	-0.157		γ_{2i}^2	-0.057	-0.152	
	(-1.84)	(-1.39)			(-0.64)	(-1.48)	
$d\gamma_{3i}^2$	-0.051	0.312	-0.261	γ_{3i}^2	-0.065	0.209	-0.144
	(-0.79)	(1.68)	(-1.35)		(-1.66)	(2.51)	(-1.11)

Total expenditure coefficients

Regime 1 (rounds 4 to 16)			
Coeffs.	Food	Othfd	Nonfd
β_i^1	0.007	-0.151*	0.144**
	(0.16)	(-2.65)	(1.89)

Dummy coefficients for total exp.				Total expenditure coefficients			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 17 to 27)							
$d\beta_i^2$	-0.064	0.156	-0.091	β_i^2	-0.057	0.005	0.051
	(-3.76)	(1.77)	(-0.57)		(-0.79)	(0.06)	(0.37)
Regime 3 (rounds 42 to 47)							
$d\beta_i^3$	-0.045	0.051	-0.005	β_i^3	-0.037	-0.101	0.137
	(-0.54)	(0.52)	(-0.04)		(-0.55)	(-1.21)	(1.25)

Table B.3. Coefficients for Dynamic LA-AIDS Model: Urban (Contd.)

ALL-GROUPS							
Intercepts							
Regime 1 (rounds 4 to 16)							
Coeffs.	Food	Othfd	Nonfd				
α_i^1	0.228*	0.102**	0.670*				
	(7.10)	(1.88)	(10.79)				
Dummy coefficients for intercept				Intercept			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 17 to 27)							
$d\alpha_i^2$	0.070	0.181*	-0.252*	α_i^2	0.299*	0.283*	0.418*
	(1.49)	(2.25)	(-2.64)		(7.81)	(4.28)	(5.30)
Regime 3 (rounds 42 to 47)							
$d\alpha_i^3$	-0.029**	0.092*	-0.062*	α_i^3	0.199*	0.193*	0.608*
	(-1.97)	(2.86)	(-3.65)		(3.80)	(2.23)	(5.81)
Price coefficients (no change across regimes)							
Coeffs.	Food	Othfd	Nonfd				
γ_{1i}^1	-0.048						
	(-1.53)						
γ_{2i}^1	0.029	0.021					
	(1.10)	(0.53)					
γ_{3i}^1	0.017*	-0.050	0.033**				
	(3.78)	(-1.35)	(1.74)				
Total expenditure coefficients							
Regime 1 (rounds 4 to 16)							
Coeffs.	Food	Othfd	Nonfd				
β_i^1	-0.236*	-0.210*	0.447*				
	(-4.74)	(-2.50)	(4.61)				
Dummy coefficients for total exp.				Total exp. coefficients			
Coeffs.	Food	Othfd	Nonfd	Coeffs.	Food	Othfd	Nonfd
Regime 2 (rounds 17 to 27)							
$d\beta_i^2$	0.118**	0.209*	-0.328*	β_i^2	-0.118*	-0.002	0.119**
	(1.96)	(3.72)	(-2.27)		(-2.29)	(-0.02)	(1.93)
Regime 3 (rounds 42 to 47)							
$d\beta_i^3$	0.031*	-0.004**	-0.026	β_i^3	-0.206	-0.214	0.420**
	(2.43)	(-1.93)	(-0.10)		(-1.65)	(-1.03)	(1.76)

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