Consumer Demand and Labor Supply in Sweden 1980-2003

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Abstract

This paper analyses the demand for consumer goods and leisure in Sweden for the period 1980-2003. A dynamic version of the AIDS demand system is used. An error correction model is used where a form of habit formation is applied. The results show reasonable estimates of price and income elasticities for the consumer goods. Also, the labor supply elasticity is in line with previous results using micro data.

1 Introduction

The estimation of demand elasticities has a long tradition in applied economics. During the 1970ies and 1980ies demand systems based on specific utility or cost functions were estimated and effort was put on deriving attractive functional forms of these systems. The most successful demand systems were those with a flexible functional form, such as the Translog[1] or the AIDS (Almost Ideal Demand System)[2]. Demand systems were often estimated with aggregate time series data, though the theory from which the systems were derived considered the behavior of a single consumer or household. Initially, systems like the Translog and AIDS were static. Later, dynamic versions of these models were used and fit the data better.

The purpose of this paper is to estimate demand elasticities for the most recent Swedish aggregate consumption data. The elasticities can be used for example for estimating deadweight losses for different tax schedules or for computing optimal tax rates according to the *Ramsey or inverse rule*[3], i.e. tax rates being set inversely to the *compensated price elasticity of demand*[4]. These elasticities must also include the price elasticities (own and cross price elasticities) of leisure time. If leisure time is excluded, the implicit assumption is that the cross-price elasticities between leisure and other goods is zero, in which case a uniform tax is optimal. Therefore, the estimated demand systems include Swedish consumption goods and leisure time.

The paper is organized as follows. The next section gives a brief introduction to the theory of consumer demand and some of the problems that occur in this type of exercise. The third section discusses the problems of specifying the demand system, which in this case is a dynamic version of the AIDS model. The fourth section gives a detailed description of the data and how the treatment of leisure time is done. The fifth section gives the main empirical results, while detailed tables can be found in the Data appendix. The last section gives the conclusions.

2 Theory of consumer demand

A general description of the consumer's decision problem is given in the life cycle hypothesis. There, the consumer maximizes expected discounted utility from a bundle of consumption goods and services as well as leisure time - given an intertemporal budget constraint. With many goods and services and demand dependent on many expected future discounted prices this problem becomes very complex and difficult to handle in empirical applications. Various assumptions have to be done in order to keep the problem manageable. Rather than starting from the most general and compley theory, here the most simple static model is used but extended with some dynamics. This is one of the ways in which the

[1] See Christensen, Jorgensen and Lau (1979).

[2] See Deaton and Muellbauer (1980).

[3] See Atkinson and Stiglitz (1980), p. 369.

[4] The compensated price elasticity of demand for good i with respect to a change in the price of good j is defined as $\varepsilon_{ij} = \frac{\partial \bar{q}_i}{\partial p_j} \frac{p_j}{\bar{q}_i}$, where $\bar{q_i}$ belongs to a bundle of goods, $\bar{q}$, which gives the same utility as before the price change, i.e. $u(\bar{q}) = u(q^0)$.

development has proceeded in the literature[5].

Generally, the consumer maximises the expected utility

$$\max \sum_{\tau=0}^{T-t} (1+r)^{-(1+\rho)} E_t \left\{ u(q_{t+\tau}) \right\} \tag{1}$$

subject to an intertemporal budget constraint

$$A_{t+1} = A_t + \omega_t h_t - p_t q_t \tag{2}$$

where the horizon is from t to T, r is the real rate of interest, ρ is the rate of time preference, E is the expectations operator, u is the utitilty function, A_t is wealth at time t, ω_t is the wage rate, h_t is the number of hours worked, $p_t = p_{1t}, ..., p_{nt}$ is a vector of prices and $q_t = q_{1t}, ..., q_{nt}$ a vector of quantities. Assuming intertemporal separability, and for convenience dropping the time subscript, the problem can be stated

$$\max \ u(q) \text{ subject to } x = \sum p_i q_i \tag{3}$$

where x is total expenditure. The solution to this problem gives the Marshallian demand functions $q_i^* = g_i(x, p)$. If these demand functions are substituted into the direct utility function $u(q)$ the indirect utility function $u = \varphi(x, p)$ is obtained. The indirect utility function shows the highest possible utility that can be attained for alternative prices and total expenditure. The dual problem is to minimize the total expenditure required to obtain a given utility level, which can be stated as

$$\min x = pq \tag{4}$$

subject to

$$u = v(q) \tag{5}$$

The solution to this problem gives the Hicksian demand functions as $q_i^* = h_i(u, p)$ which may simply be derived as the partial derivative of the cost function $x = c(u, p)$ w.r.t. p_i. The cost function shows the minimum cost to obtain utility level u at prices p. Substituting the indirect utility function (which is the inverse of the cost function) into the Hicksian demand functions gives the Marshallian demand functions. In this paper the dual approach to obtain the demand functions is used.

The *total expenditure elasticity* is defined as $E_i = \frac{\partial q_i}{\partial x} \frac{x}{q_i}$ and shows the percentage change of the demand for good i following a one percentage change in total expenditure (often also referred to as the income elasticity). Letting $w_i = \frac{p_i q_i}{\sum p_j q_j}$ denote the budget share of the i-th good we have the general property that $\sum w_i E_i = 1$. The *uncompensated*[6] *price elasticity* of demand is defined as $e_{ij} = \frac{\partial q_i}{\partial p_j} \frac{p_j}{q_i}$ and shows the percentage change of the demand for good i following a one percentage change in the price of good j. For $i = j$ we refer to the *own-price elasticity* and for $i \neq j$ to the *cross-price elasticity.* Another general

[5] See Deaton and Muellbauer (1980b) and Edgerton et al (1996) where various dynamic versions of the AIDS model were developed.

[6] Uncompensated implies that the consumer is not compensated for the loss in income induced by a price increase.

property is that $\sum_j e_{ij} + E_i = 0$. Finally, the *compensated*[7] *price elasticity* is defined as $\widetilde{e}_{ij} = e_{ij} + w_j E_i$ which shows the percentage change of the demand for good i following a one percentage change in the price of good j - at constant utility.

2.1 Static and dynamic model

The consumer's decision problem with respect to both consumption goods and leisure is dynamic and is probably best analysed within the life-cycle model framework. The literature using aggregate data however tend to divide the problem into a dynamic optimization problem about aggregate consumption and a (more or less) static optimization problem about the allocation between different consumer goods. Once leisure - or labor supply - is considered the problem is clearly a dynamic one. Typical for the aggregate consumption problem is the constant marginal utility condition governing the Euler equations in this area. This condition can also be used for the allocation of the individual consumption items, i.e. the demand functions could be stated in terms of marginal utility as $q_i = h_i^*(\frac{\partial u}{\partial c}, p)$, as in Blundell et al (1994). However, here we follow the simpler route and introduce simple dynamics in an otherwise static framework.

Particular problems also arise in the context of durable goods, i.e. goods which are not consumed within the data period one quarter of a year. The consumption of Housing is for rental apartments estimated as rents in nominal and fixed prices, while for owner-occupied housing a rental equivalent is computed. However, capital gains are not included. For other durables like vehicles, household equipment, etc. consumption is estimated as purchases in current and fixed prices. Some studies have chosen to exclude durables and some to include them as here. In this study durables measured as purchases account for approximately 8-9 percent of total expenditure including Leisure.

2.2 Utility tree and multi-stage budgeting

The number of goods available to the consumer and the number of observations present in the data obviously poses a problem, particularly to the researcher occupied with time-series data. At the most there are about 90 observations available in this study (75 for the data up to 1998). This put a restriction on the number of goods that can be included. A system with 10 goods to be estimated with FIML has 10·10+20=120 free parameters to estimate without any dynamics. Various +restrictions therefore must be imposed on the systems in order to make estimation possible. Restrictions like Slutsky symmetry clearly helps to some extent. A more radical approach is the idea of multi-stage budgeting, a procedure previously dealt with in the literature[8]. Consider a two-stage budgeting process in which the consumer is supposed to decide in two different stages. The first stage considers n groups of goods, r=1,...n and in the second stage the rth group consists of i=1,...,m goods. Then the consumer's preferences

[7] Compensated implies that the demand is calculated at the point where the consumer is compensated for the loss in income induced by the price change so that the utility is the same as before the price change. The compensated demand hence measures the pure price effect.

[8] See Gorman (1959), Pollak (1971), Deaton and Muellbauer (1980a, Ch. 5.2), Pudney (1981), Varian (1982), Laisney (1991) or Edgerton *et al.*(1996).

are said to be *weakly separable* if they can be represented by a utility function of the form

$$u = f\left[v_1(\mathbf{q}_1), ..., v_n(\mathbf{q}_n)\right] \tag{6}$$

where $\mathbf{q}_r$ represents the vector of quantities in the rth group. Utility maximization now means maximizing the functions $v_r(\mathbf{q}_r)$ separately, using the standard tools of demand analysis but replacing total expenditure by group expenditure x_r. The Marshallian demand functions now can be written

$$q_{ri} = g_{ri}(\mathbf{p}_1, ..., \mathbf{p}_n, x_r) \tag{7}$$

where $\mathbf{p}_r$ denotes the price vector of the rth group and $x_r = \sum_i p_{ri}q_{ri}$ is the total expenditure of the group. The first stage allocation of total expenditure into group expenditure is a problem since the price vectors $\mathbf{p}_r$ must be replaced by some price indices p_r. Deaton and Muellbauer (1980a) show that an approximation exists such that the demand function above can be replaced by

$$Q_r = g_r(P_1, ..., P_n, x) \tag{8}$$

where Q_r is a quantity index - or expenditures expressed in constant prices - and P_r a price index, where the latter could be an approximation to a true cost of living index. Though the assumption of weak separability means that one can study the consumer's optimization problem at separate stages it has implications for the effect of a price change on a certain group belonging to group r on the demand for another good belonging to another group s. In addition, the expenditure elasticity depends both on the first stage elasticity and the elasticity within the group at lower stages of the budgeting process. If a price of a particual good increases it will affect the demand for all goods in the group to which the good belong. But the price index of the group - P_r - is also affected and hence the demand for all other goods belonging to groups outside r. The relationships are uncovered in Edgerton (1992, 1993) and Edgerton *et al* (1996, p. 71-72). If q_{ri} is expenditure in constant prices and p_{ri} the implicit price derived by dividing expenditure in current prices with expenditure in constant prices then the price index can be written

$$P_r = \frac{c(u, \mathbf{p}_r)}{c(u, \boldsymbol{\iota})} \tag{9}$$

where $\boldsymbol{\iota}$ is the unit vector, $x_r = P_r Q_r$, $x = \sum_r x_r$ and $Q_r = \sum_i Q_{ri}$. By substitution we obtain the Marshallian demand as

$$q_{ri} = g_{ri}\left[\mathbf{p}_r, P_r g_r(P_1, ..., P_n, x)\right] = g^*_{ri}(\mathbf{p}_1, ..., \mathbf{p}_n, x). \tag{10}$$

Following Edgerton *et al* (1996) and using the definitions $E_{(r)i}$ for the *within group* expenditure elasticity, $E_{(r)}$ for the *group* expenditure elasticity, and E_i for the *total* expenditure elasticity and similarly for price elasticities - e_{ij} for the uncompensated and $\widetilde{e}_{ij}$for the compensated price elasticity - and budget shares we obtain the following definition of elasticities:

$$\begin{aligned} E_i &= E_{(r)}E_{(r)i} \qquad (11) \\ e_{ij} &= \xi_{rs}e_{(r)ij} + E_{(r)i}w_{(s)j}(\xi_{rs} + e_{(r)(s)}) \\ &= \xi_{rs}\widetilde{e}_{ij} + E_{(r)i}w_{(s)j}e_{(r)(s)} \\ \widetilde{e}_{ij} &= \xi_{rs}\widetilde{e}_{(r)ij} + E_{(r)i}w_{(s)j}\widetilde{e}_{(r)(s)} \end{aligned}$$

where $\xi_{rs} = 1$ for r=s and zero otherwise[9]. How should these definitions be interpreted? The expenditure elasticities are straightforward. The price elasticity is composed of two parts which can be labelled the direct and indirect effects. The direct effect - $\xi_{rs} e_{(r)ij}$ - is the within group price elasticity measured in the usual way. The indirect effect measures how much the price change of a certain good affects the allocation among groups. It depends on the three factors

$E_{(r)i}$ - the within group expenditure elasticity
$w_{(s)j}$ - the budget share of the good which price changes and
$\xi_{rs} + e_{(r)(s)}$ - the price elasticity between groups r and s

The first factor measures the effect of the change in group expenditure (due to the price change) on the expenditure on the ith good. The second factor measures the relative change of the group price index caused by the change of the price of the ith good, which is measured by the budget share of the price changing good. The third factor measures the effect on the demand for group r - on Q_r - of a change in the price index of group s - of P_r.

Note that if the latter own price elasticity equals -1 the elasticity collapses to $e_{ij} = e_{(r)ij}$. On the other hand, if $e_{(r)(r)} = 0$ then the price change implies a proportional change in the expenditure of the group and $e_{ij} = \widetilde{e}_{(r)ij}$. Note also that the total price elasticity is well approximated by the within group price elasticity if the within group budget share of the price changing good is small or within group expenditure elasticities are small.

3 Specification of demand system

The estimation of elasticities requires a specification of the demand model. Several alternatives exist in the literature. In Edgerton *et al* (1996) different specifications are evaluated empirically. The finally chosen model is the AIDS (Almost Ideal Demand System) model which is commonly applied in the empirical literature.

3.1 The AIDS model

The AIDS uses the time period t cost function

$$\log c(u_t, p_t) = \alpha_0 + \sum_k \alpha_k \log p_{kt} + \frac{1}{2} \sum_k \sum_j \gamma^*_{kj} \log p_{kt} \log p_{jt} + u\beta_0 \prod_k p_{kt}^{\beta_k} \quad (12)$$

where u is the utility level, p is a price vector, p_{kt} is the price of the k-th good. If prices are normalised to unity (12) collapses into $\alpha_0 + \beta_0$. u then can be seen as an index of utility, $0 \leq u \leq 1$, where for $u = 0$, α_0 can be seen as the cost of subsistence while for $u = 1$, $\alpha_0 + \beta_0$ can be seen as the cost of bliss.

As described in section 2, taking the partial derivative w.r.t. the k-th price gives the Hicksian demand for the k-th good, which upon substitution of the indirect utility function gives the Marshallian demand as

[9] ξ_{rs} is the so called Kronecker's delta.

$$w_{it} = \alpha_i + \sum_j \gamma_{ij} \log p_{jt} + \beta_i \left(\log x_t - \log P_t^*\right) \tag{13}$$

where $P_t^* = \alpha_0 + \sum_k \alpha_k \log p_{kt} + \frac{1}{2} \sum_k \sum_j \gamma_{kj} \log p_k \log p_j$. $\gamma_{kj} = \frac{1}{2}\left(\gamma_{ij}^* + \gamma_{ji}^*\right)$ and $w_{it} = \frac{p_{it} q_{it}}{\sum p_{jt} q_{jt}}$ is the budget share for the i-th good.

3.2 Linear AIDS

A linear version of the AIDS model was suggested by Deaton and Muellbauer (1980) where the price index P_t^* was replaced by the index

$$P_t = \alpha_0 + \sum_k w_{kt} \log p_{kt} \tag{14}$$

This approximation has become very popular in the literature. Here, both linear and nonlinear versions have been used. Though the linear version of AIDS has proven accurate in a number of studies[10] I have finally chosen the nonlinear version. The additional computational burden is small and the results not particularly sensitive to the *a priori* choice of the parameter α_0.[11]. The linear version was evaluated here but it was the nonlinear version that was finally chosen.

3.3 Dynamic AIDS

The simplest static model is not likely to perform well with time series data. Different dynamic versions of the model have been used in the literature. A

dynamic demand system suggested by Assarsson (1991), Alessie and Kapteyn (1991) and Kesavan et al (1993) can be derived from a dynamic form of the cost function. Using the principle of demographic translation, as suggested by Pollak and Wales (1981), results in demand functions

$$w_{it} = \alpha_i + \sum_j \theta_{ij} w_{jt-1} + \sum_j \gamma_{ij} \log p_{jt} + \beta_i \left(\log x_t - \log P_t^*\right) \tag{15}$$

where

$$P_t^* = \alpha_0 + \sum_k \left(\alpha_k + \sum_j \theta_{kj} w_{jt-1}\right) + \sum_k \alpha_k \log p_{kt} + \frac{1}{2} \sum_k \sum_j \gamma_{kj} \log p_k \log p_j \tag{16}$$

This type of system was evaluated here and short and long run elasticities were derived. The restriction $\sum_k \theta_{kj} = \sum_j \theta_{kj} = 0$ was used, where the first

[10] See for example Chalfant (1987), Alston *et al* (1994),Buse (1994) or Edgerton *et al* (1996).

[11] The parameter α_0 was set to 30 percent of the log of total expenditure in 1995, the base year in which prices was normalised to unity.

sum implies adding-up and the second identification. The restriction $\theta_{kj} = \theta_{jk}$, for all k,j, was rejected and the further restriction that θ is diagonal, was also rejected in this particular specification.

3.4 AIDS in error correction form

Another alternative, which was finally chosen, is the error correction form, which has become very popular recently and seems to fit the data well. It allows both short term and long term as well as feedback responses to be estimated and it can be derived from the basically static AIDS framework through the method of demographic translation. The long run equilibrium can be desribed by (13) above and the error correction form as

$$
\begin{aligned}
\Delta w_{it} &= \sum\nolimits_j \varkappa_{ij} \Delta \log p_{jt} + \varphi_i \Delta \log(x/P)_t + \sum\nolimits_j \delta_{ij} \mu_{it-1} && (17) \\
\text{where } P_t &= \alpha_0 + \sum_k \alpha_k \log p_{kt} + \frac{1}{2} \sum_k \sum_j \gamma_{kj} \log p_k \log p_j && (18) \\
\gamma_{kj} &= \frac{1}{2} \left(\gamma^*_{ij} + \gamma^*_{ji} \right) && (19) \\
\text{and } \mu_{it-1} &= w_{it-1} - \alpha_i - \sum_j \gamma_{ij} \log p_{jt-1} - \beta_i \left(\log x_{t-1} - \log P_{t-1} \right) && (20)
\end{aligned}
$$

The matrix $\boldsymbol{\delta}$ should be restricted in order for the system to be theoretically consistent. In particular, it is sufficient if $\sum_i \delta_{ij} = \sum_j \delta_{ij} = 0$ for adding up and identification to hold. For the system to be coherent (and possible to estimate e.g. with Full Information Maximum Likelihood) parameters have to be further restricted. Different specifications were tested and the finally chosen system is a restricted version which allows six commodity groups to be included. The preferred specification use a single scalar δ as the error correction term. The model can be rewritten in level form as

$$
\begin{aligned}
w_{it} = {} & \alpha_i + \sum\nolimits_j \varkappa_{ij} \Delta \log p_{jt} + \varphi_i \log(x/P)_t + (1+\delta) w_{it-1} + \\
& \sum\nolimits_j \theta_{ij} \log p_{jt-1} + \psi_i \log(x/P)_{t-1} \qquad (21)
\end{aligned}
$$

which can be derived from the AIDS expenditure function (12) by translating the parameter α_i into

$$\alpha_i = \alpha^*_i + (1+\delta) w_{it-1} + \sum\nolimits_j \theta_{kj} \log p_{jt-1} + \psi_i \log(x/P)_{t-1} \qquad (22)$$

and the long run parameters be derived as

$$\gamma_{ij} = \frac{\varkappa_{ij} + \theta_{ij}}{-\delta}, \beta_i = \frac{\varphi_i + \psi_i}{-\delta}. \qquad (23)$$

This is the specification finally used for estimating the elasticities and can be viewed as a compromise which on the one hand saves parameters through various restrictions derived from economic theory but on the other hand is flexible enough to allow for the most important dynamics.

3.5 Elasticities

The long run elasticities in the model are then given by (22) - (26):

$$E_i^l = 1 + \frac{\beta_i}{w_i} \tag{24}$$

$$e_{ij}^l = \frac{\gamma_{ij} - \beta_i \left[\alpha_j + \frac{1}{2}\sum_k \left(\gamma_{kj} + \gamma_{jk}\right) \log p_k\right]}{w_i} - \xi_{ij} \tag{25}$$

$$\tilde{e}^l_{ij} = e_{ij}^l + w_j E_i^l \tag{26}$$

and the short run elasticities by (27) - (29):

$$E_i^s = 1 + \frac{\varphi_i}{w_i} \tag{27}$$

$$e_{ij}^s = \frac{\varkappa_{ij} - \varphi_i \left[\alpha_j + \frac{1}{2}\sum_k \left(\varkappa_{kj} + \varkappa_{jk}\right) \log p_k\right]}{w_i} - \xi_{ij} \tag{28}$$

$$\tilde{e}^s_{ij} = e_{ij}^s + w_j E_i^s \tag{29}$$

where ξ_{ij} is Kroneckers delta. Seasonal dummies are included in the estimations but for simplicity have been excluded in the formulas above.

Note that the short run elasticities are not directly identified due to the loss of the constant term in the difference form. The parameter α_i is interpreted as the budget share for a household at the subsistence level and is identified in the derivation of the long run elasticities. The short run elasticities are identified by assuming that α_i in the short run is equal to the long run value.

4 Data

The data used is quarterly national accounts running from 1980-2003. For the period 1980-1998 data are from the old SNA definitions and the base year is 1991. For the period 1993-2003 data are based on the latest SNA definitions and comply better with international accounting systems. The definitions in some commodity groups are quite different and it has not been possible to adjust the data for the earlier period so that it completely matches with data for the later period. However, the best possible revisions were done and the data for the earlier period linked with the later period to give a longer data series. The series were then used in the estimations and compared with estimations run for the period 1980-1998. It turned out that the estimates with the consistent data series for 1980-1998 were more reasonable, both in terms of fit and theoretical consistency[12].

[12] Compensated own-price elasticities were negative and the goodness of fit were better for most equations. It could not be ruled out that this result were due to the inability to consistently link the old with the new series. Hence, the older but longer series was chosen.

4.1 Utility tree and specification of categories

With quarterly data for the period 1980-1998 there are 76 observations. The static AIDS model with seasonal dummies and no theoretical restrictions implies 40 parameters in a system with 5 goods and 135 parameters in a system with 10 goods. Hence, it is clear that the dimension of the system must be kept small. With the dynamic specification, 6 goods appear to be the limit, but the theoretical homogeneity and symmetry restrictions were applied and the dynamics kept simple.

The design of the two-stage budgeting system is governed by the demand from the public inquiry (Mervärdesskattesatsutredningen). It takes account of the design of the present system of the VAT system in which some goods are exempted, and tax rates vary across different commodities and services. Some *a priori* considerations are also done and some aggregation as done by Statistics Sweden in the SNA is kept here. Some different aggregations were tried and in particular estimates where some groups tend to have positive own-price elasticities were avoided. The aggregation finally considered is

Table 1. Goods in two-stage budgeting system

1 Food, beverages, and health care	1_1	Food including light beer
	1_2	Alchohol and tobacco
	1_3	Restaurant
	1_4	Health care
2 Housing, fuel, and furniture	2_1	Housing, fuel, and furniture
3 Household and personal care	3_1	Clothing and shoes
	3_2	Household utensils
	3_3	Post and telephone
	3_4	Hotels
4 Transports, vacation travel	4_1	Vehicles including fuel
	4_2	Transports
	4_3	Foreign travel and consumption
	4_4	Recreation including cultural activities
5 Miscellaneous goods and services	5_1	Goods for recreation
	5_2	Games
	5_3	Books and magazines
	5_4	Miscellaneous goods
	5_5	Insurance
6 Leisure	6_1	Leisure

with budgeting in two stages. The first-stage has 6 goods and the second stage betweem one and five goods in each category. Leisure is obviously a single good and the good with largest budget share. We now turn to its measurement, which is an important issue.

4.2 The measurement and treatment of leisure

Suppose the n-th good in the system of demand equations above is leisure time, such that p_n is the price of leisure and q_n the number of leisure hours. The budget share of leisure then is $w_n = \frac{p_n q_n}{\sum_j p_j q_j}$. The price of leisure has been measured as the wage rate less the average marginal tax rate[13]. The budget restriction then can be written

$$\sum_{i=1}^{n-1} p_i q_i = p_n h + A, \tag{30}$$

where $p_n h$ is labor income, h is the total number of hours worked and A is non-labor income[14]. The budget restriction can be rewritten by taking account of the time restriction $T = ml + z + s + n + q_n$, where T is the total number of hours available, $ml = h$ is total numbers of hours, where m is mean hours and l the number of employed. z is the number of hours used for home production, s is the number of hours used for labor search, n is the number of subsistence hours and q_n is leisure time. The budget restriction then becomes

$$\sum_{i=1}^{n} p_i q_i = p_n(T - ml - z - s - n) + A \equiv M \tag{31}$$

where M usually is referred to as full or potential income[15]. The problem then is how to estimate leisure time. The daily budget for an individual consumer could simply be determined as (24-h-0-0-8), the number of total hours less the number of hours worked less the assumed 8 hours used for sleeping[16].

The number of daily hours is then aggregated to the total number of quarterly leisure hours for the adult population, b. The conversion factor from daily to quarterly hours is τ, the number of days each quarter. These have been estimated as the number of ordinary working days, i.e. five days for an ordinary week and also exclusive of all "red" days. The simplest measure of the total number of quarterly leisure hours is therefore $(24-8)\tau b - ml$. However, we also assume that some of the time of the unemployed is used for home production and labor search. If the the number of unemployed persons are labelled u, then the labor force is $l + u$ and we assume that $\lambda_1 mu$ hours is used for home production and labor search. Similarly, we assume that the elderly - or the adult population outside the labor force - use some time for home production and labor search, which is $\lambda_2 m(b - (l + u))$. Finally, there is the number of subsistence hours, which are related to sleeping, eating and for some health care, etc. which are difficult to determine. We denote this by τbn. The total number of quarterly leisure hours then can be determined as

$$24\tau b - ml - \lambda_1 mu - \lambda_2 m(b - (l + u)) - \tau nb \tag{32}$$

where the respective terms are

[13] The hourly compensation paid by employers have been obtained as the total compensation divided by the total number of hours worked, as described in the National Accounts. The data on average marginal tax rates have been obtained from Gunnar du Rietz, Ratio. The relative price of leisure is determined by $\frac{\frac{wage}{(1+t_1)}(1-t_2)}{p_f(1+t_3)} = \frac{wage}{p_f}\frac{1-t_2}{(1+t_1)(1+t_3)} = \frac{p_n}{p_i}$ where $\frac{1-t_2}{(1+t_1)(1+t_3)}$ is the total tax wedge., where $wage$ is the compensation paid by the employer, t_1 is the payroll tax rate, t_2 is the income tax rate and t_3 is the indirect tax rate. All prices in this study are measured including indirect taxes and wages excluding payroll taxes. The price on leisure is therefore simply the wage rate net of the average marginal tax rate.

[14] The simplest formulation would be to use the budget restriction $\sum_{i=1}^{n} p_i q_i = p_n T + A$, for $T = h + q_n$.

[15] See Dowd (1992) or Madden (1995) for similar treatments.

[16] An alternative would be to measure non-labor income as is done by Dowd (1992). He measures A as the difference between private disposable income and labor income and sets $T = 24$.

$24\tau b$= the total number of hours available

ml= the number of hours worked

$\lambda_1 mu$= the number of hours worked in home production and labor search by those unemployed

$\lambda_2 m(b-(l+u))$= the number of hours worked in home production and labor search by those outside the labor force

τnb= the number of subsistence hours worked in home production, sleeping, etc. by the adult population

The formula can be simplified to

$$(24-n)\tau b - m\left[l - \lambda_1 u - \lambda_2(b-(l+u))\right] \tag{33}$$

Data are available on all variables less λ_i and n, for which some assumptions are necessary. The basic assumption is ($\lambda_1 = 0.5, \lambda_2 = 0.2, n = 12$). For a fully employed person this means that the daily leisure time is (24-12-8=4) hours, for an unemployed person it is (24-12-4=8) hours and for a pensionist (24-12-1.6=10.4) hours. As alternatives in a sensitivity analysis we also use $\lambda_1 = 0.4\&0.6, \lambda_2 = 0.1\&0,3, n = 11\&13$, a total of 27 combinations. On the whole, elasticities were not very sensitive to this choice. The final choice was done on a judgemental basis in which the requirement of theoretically correct signs on the parameters was the most important.

5 Empirical results

5.1 Estimated equations

The empirical results are presented extensively in the data appendix. Here some summary results from the estimations are presented. In general the goodness of fit of the estimated equations are satisfactory, which can be seen in Table 2.

Table 2. Summary statistics for estimated demand systems.

System	$\bar{R}^2$	Mean of dep. var.	Standard error of regression	p-value in autocorrelation test
Stage 1: 1	0.97	0.15	0.0036	0.08
2	0.95	0.16	0.0037	0.31
3	0.95	0.08	0.0029	0.08
4	0.70	0.11	0.0060	0.08
5	0.94	0.07	0.0031	0.63
6	0.97	0.43	0.0065	0.68
Group 1: 1_1	0.90	0.65	0.0077	0.01
1_2	0.79	0.18	0.0059	0.36
1_3	0.78	0.14	0.0088	0.02
1_4	0.96	0.03	0.0016	0.18
Group 2: 2_1	0.95	0.16	0.0037	0.31
Group 3: 3_1	0.55	0.47	0.0130	0.11
3_2	0.41	0.40	0.0093	0.11
3_3	0.79	0.11	0.0057	0.29
3_4	0.91	0.03	0.0010	0.14
Group 4: 4_1	0.89	0.56	0.0127	0.82
4_2	0.68	0.11	0.0043	0.05
4_3	0.85	0.23	0.0130	0.19
4_4	0.96	0.10	0.0031	0.13
Group 5: 5_1	0.92	0.42	0.0098	0.03
5_2	0.89	0.11	0.0064	0.11
5_3	0.98	0.14	0.0050	0.07
5_4	0.72	0.25	0.0067	0.00
5_5	0.92	0.08	0.0034	0.04
Group 6: 6_1	0.97	0.43	0.0065	0.68

The first column shows the goodness of fit of the individual equations in each system. In stage 1 $\bar{R}^2$ for all equations except Transports are around 0.95. For Transports it is 0.70. The second column shows the mean of the dependent variable revaling that the mean of the budget share of goods consumption for 1980-1998 is 57 percent while for leisure it is 43 percent. The percentage standard error (of the regression) is around 0.35 for all goods except Transports for which it is 0.6 percent. For leisure the standard error is 0.65 percent. The fourth column of Table 2 shows tests for autocorrelation in the individual equations. This test is done by running an unrestricted VAR with 2 lags on the estimated residuals of the systems. The number of observations times R^2 is then treated as chi-square distributed with degrees of freedom equal to the number of variables on the right-hand side of each equation, i.e. a LM test[17]. The autocorrelation tests show no sign of autocorrelation in the six equations in Stage 1.

Turning to Stage 2 it can be noted that the fit is generally somewhat lower. In Group 1 Food is the biggest category, accounting for 65 percent within the group and totally $(0.65 \cdot 0.15) \cdot 100 = 9.8$ percent with a 0.8 percent standard error. The $\bar{R}^2 = 0.9$ for Food but there is some autocorrelation in this equation.

[17] See Engle (1984).

However, the other equations in Group 1 show no sign of autocorrelation so that autocorrelation in the group as a whole can be statistically rejected.

The fit of the Housing - Group 2 - equation is 0.95 and the standard error is 0.4 percent. The budget share is 16 percent, 28 percent of total consumption (less leisure). In Group 3 autocorrelation is rejected in all equations. However, the fit is rather poor in this group. In Group 4 there is autocorrelation in 4_2 - Transports. The fit is rather poor in this category - 0.68. Finally, in Group 5 there is autocorrelation in three of the five groups: 5_1, 5_4 and 5_5, while there is no sign of autocorrelation in the aggregate as revealed in the equation for Group 5 in the Stage 1 estimation.

5.2 Estimated elasticities

Estimated elasticities are presented in the data appendix. Here, some summary results are presented. In Table 3, the *total elasticitie*s defined in (11) are shown. The *within-group elasticities* - also defined in (11) - are presented in the data appendix.

Table 3. Total long run compensated own-price and total expenditure elasticities. Estimated at mean values for the period 1994-1998.

Item	Compensated own-price elasticity	Total expen-diture elasticity
Food including light beer	-0.36	0.55
Alchohol and tobacco	-0.88	0.58
Restaurant	-0.43	0.96
Health care	-0.36	0.53
Housing, fuel, and furniture	-0.28	0.21
Clothing and shoes	-0.26	2.61
Household utensils	-0.31	2.65
Post and telephone	-0.72	1.80
Hotels	-0.52	2.29
Vehicles including fuel	-1.87	2.30
Transports	-1.39	2.99
Foreign travel and consumption	-1.56	5.40
Recreation including cultural activities	-1.57	2.93
Goods for recreation	-1.19	2.35
Games	-1.30	1.83
Books and magazines	-1.55	1.94
Miscellaneous goods	-0.79	1.69
Insurance	-0.80	4.62
Leisure	-0.09	0.49

All compensated own-price elasticities are negative and all total expenditure elasticities are positive. Food, Housing and Leisure are necessities and all other goods luxuries. Price elasticities are relatively low for necessities and relatively high for luxuries which is in line with the intuition. The demand is price inelastic for all goods belonging to the first three groups of Stage 1 and for Miscellaneous goods, Insurance and Leisure. It is elastic for Travel and recreation and for

Books and magazines. The VAT on books were recently reduced from 25 to 6 percent which eventually would lower prices by some 15 percent and consequently increase demand by almost 25 percent in the long run (the compensated own-price elasticity is -1.55). However, notice in Table 4 below that the short run elasticity is only -0.15.

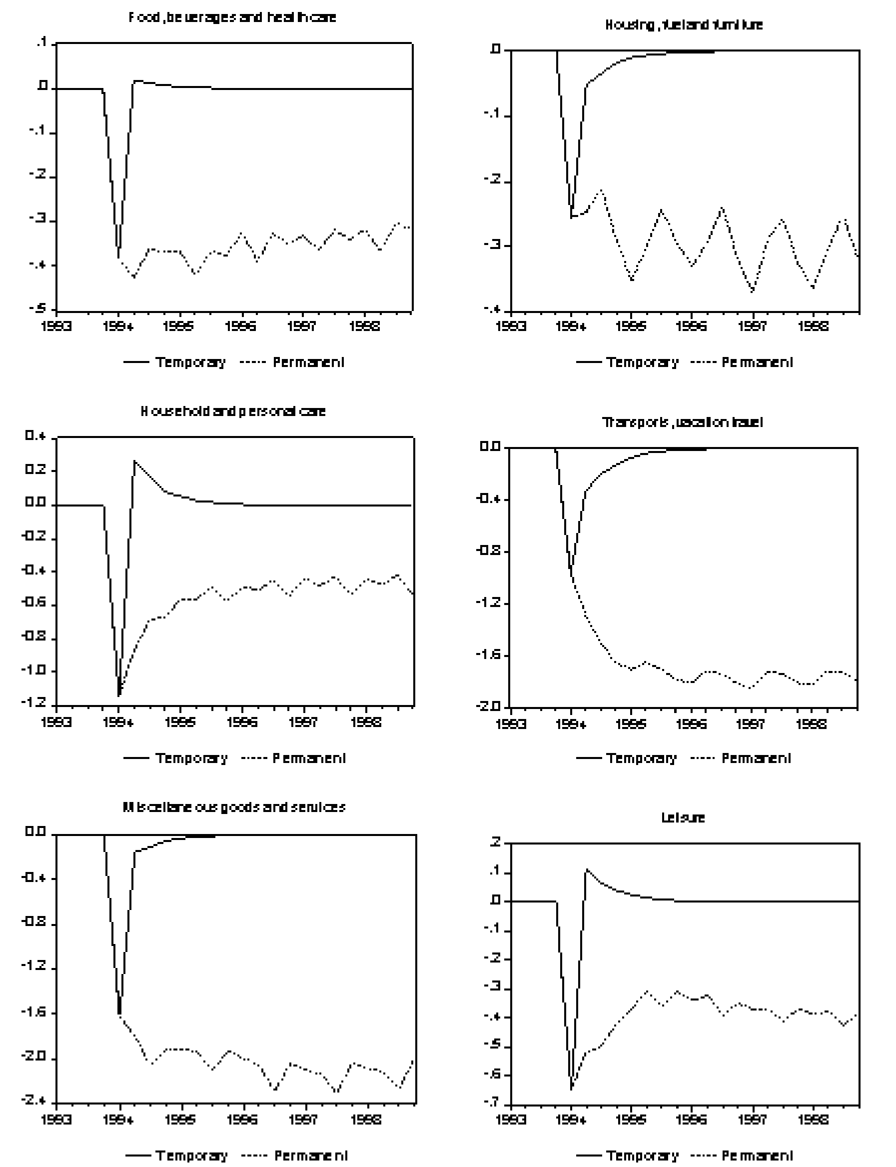
Table 4. Total short run compensated own-price and total expenditure elasticities. Estimated at mean values for the period 1994-1998.

Item	Compensated own-price elasticity	Total expenditure elasticity
Food including light beer	-0.34	0.30
Alchohol and tobacco	-0.40	0.59
Restaurant	-0.62	0.82
Health care	-0.62	0.38
Housing, fuel, and furniture	-0.16	0.23
Clothing and shoes	-0.82	1.50
Household utensils	-1.19	1.37
Post and telephone	-0.64	1.27
Hotels	-1.21	1.22
Vehicles including fuel	-0.88	2.16
Transports	-0.72	0.80
Foreign travel and consumption	-1.09	0.84
Recreation including cultural activities	-0.35	1.00
Goods for recreation	-1.68	1.18
Games	-0.99	0.92
Books and magazines	-0.15	0.98
Miscellaneous goods	-1.27	0.85
Insurance	-0.65	2.32
Leisure	-0.09	1.23

Table 4 shows the corresponding short run elasticities. These are the direct effects of changes in prices and total expenditure, i.e. that occur within a quarter. In most cases the absolute value of the elasticity is smaller in the short than in the long run. This supports the interpretation of adjustment costs or habit formation in the demand for these goods. This applies to all total expenditure elasticities except Leisure for which the short run elasticity is 1.23 - a luxury - while being only 0.49 in the long run - a necessity. The short run compensated own-price elasticities are abolutely higher than the corresponding long run elasticities for 8 of the 19 goods, i.e. for all goods in Group 3.

Why would the short run elasticity overshoot and exceed the long run elasticity? This would likely occur for goods where demand is very flexible and the degree of habit formation low. These effects are particularly strong for Clothing and shoes, Household utensils, and Hotels. For these categories the response to a change in the relative price has a large immediate effect but declines in the long run. For the categories Housing, Transports and Miscellaneous the initial response is instead relatively small but increases to reach a peak at the long run value.

Figure 1. Short and long run own-price elasticities at temporary and permanent price changes.



We can distinguish not only between long and short run elasticities but also between the response to *temporary* and *permanent* changes in prices and total expenditure (full income). In Figure 1 the dynamic response to relative price changes are shown. The charts show the own-price elasticities as a response to temporary and permanent changes in relative prices[18]. The elasticities in the figure converge to the long run uncompensated own-price elasticities estimated

[18] The shocks are one-percentage shocks in the relative prices in the first quarter in 1994 and the responses are measured as the percentage change in demand and shown for the remainder of the sample period (elasticities).As can be seen in the charts, the long run effects are reached within approximately 2 years.

in Stage 1 and given in Table B1 in the data appendix. A temporary price change has a temporary demand effect which lasts for about 2 years. The overshooting property can be seen particularly for Household and personal care and Leisure. The response which could be expected due to the presence of adjustment costs can be noticed in particular for Housing, fuel and furniture, Transports and vacation travel and Miscellaneous goods and services.

The elasticities also vary over time due to variations in budget shares, prices and full income, as apparent from the definitions of elasticities in (22) - (29). These variations are illustrated in Figures 2 and 3 which show long run compensated own-price elasticities and total expenditure elasticities, respectively.

As can be seen in Figure 2 the long run compensated own-price elasticities are all negative and fairly stable during the sample period. For some categories there seems to be a shift in the beginning of the 90ie. In absolute terms, the elasticity decreases for Food and Household and personal care and increases for Transports, Miscellaneous and Leisure. For Food and Household and personal care the elasticity decreases from approximately -0.4 to -0.25 while for Miscellaneous goods and services the elasticity decreases from about -1.6 to -2.1. The labor supply elasticity is low but become more elastic during the sample period and increases from about 0.05 to 0.1. This could be due to the tax reform in the beginning of the 90ies which shifted taxes from labor to goods. We tried to include a dummy for the period before 1990 but it was not statistically significant.

In Figure 3 the long run total expenditure elasticities are shown. They are all positive and lowest for the Food, Housing and Leisure categories. The elasticity drops from about 0.75 to 0.6 for Food, increases from .1 to .2 for Housing and from .4 to .5 for Leisure. Though the elasticities vary they are fairly stable during the sample period.

5.3 Labor supply elasticities

The responses shown in Figure 1 indicate that the initial labor supply response is quite large but declines in the long run. The short run uncompensated response is about -.6 while in the long run the elasticity is about -.4. The compensated response is quite lower - around -.09. The relatively high short run figures may be interpreted as a response in hours to temporary changes in demand with a corresponding change in compensation. In many occupations this increase in compensation may be more or less automatic (and negotiated) and hence both wages and labor supply become flexible with respect to excess demand in the short run. These results are in line with what previously have been found by Blomquist (1983) and Blomquist and Hansson-Brusewitz (1990) for Swedish household data on mens' and womens' labor supply[19].

It is interesting to compare the results for demand systems with and without Leisure, since the measurement of Leisure in itself seems uncertain. We do that by estimating the Stage 1 demand system with and without Leisure. The results are presented in Table 5.

[19] Surveys of labor supply are Pencavel (1986) and Killingsworth and Heckman (1986).

Figure 2. Long run compensated own-price elasticities in Stage 1 1980-1998

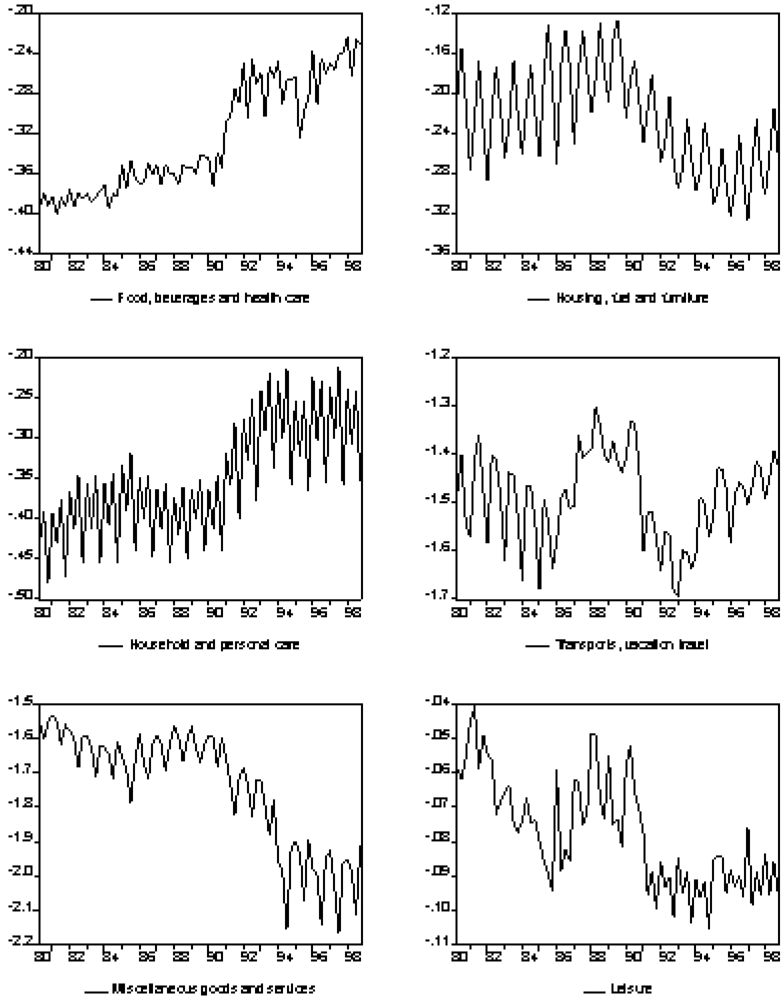


Figure 3. Long run total expenditure elasticities in Stage 1 1980-1998

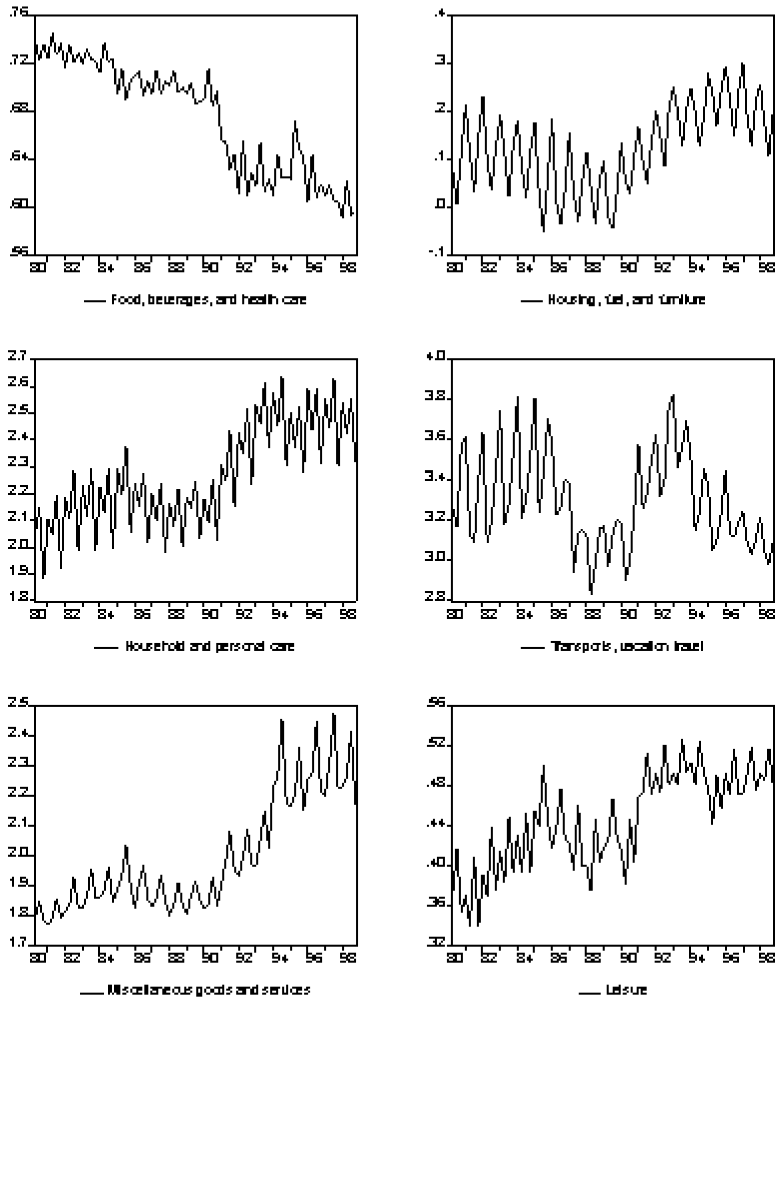


Table 5. Comparison of uncompensated price and total expenditure elasticities with and without Leisure in Stage 1. At mean values 1994-1998.

	1	2	3	4	5	6
1	-0.34	-0.12	-0.25	-0.15	0.53	-0.28
	-0.44	*-0.01*	*0.09*	*0.19*	*0.17*	
2	-0.07	-0.31	-0.29	0.07	0.05	0.33
	-0.00	*0.08*	*-0.15*	*-0.03*	*0.11*	
3	-0.54	-0.87	-0.45	0.53	0.15	-1.28
	0.25	*-0.27*	*-0.67*	*0.21*	*0.47*	
4	-0.30	-0.10	0.31	-1.84	0.11	-1.37
	0.34	*0.13*	*0.15*	*-0.42*	*-0.19*	
5	1.09	0.04	0.18	0.23	-2.12	-1.70
	-0.01	*-0.13*	*0.82*	*0.25*	*-0.93*	
6	-0.13	-0.07	-0.00	0.11	-0.08	-0.32
x/P	0.62	0.21	2.47	3.19	2.27	0.49
	0.45	*0.53*	*1.45*	*1.80*	*1.50*	

First, the classification of necessities and luxuries are the same[20], though the total expenditure elasticities are higher particularly for the groups 3, 4, and 5. This depends on Leisure being classified as a necessity with a large budget share. Own-price elasticitities are all negative in the system with Leisure but 2 - Housing, fuel and furniture - has a positive, but insignificant, elasticity in the system without Leisure. Own-price elasticities for groups 4 and 5 are more elastic in the system with Leisure. Notice also that the high positive cross-price elasticity between 5 and 1 - 1.09 - is -0.01 in the system without Leisure. Another high cross-price elasticity in the system with Leisure is between 3 and 2 - -0.87 - which is lower, -0.27, in the system without Leisure.

5.4 Comparison with previous results

The results are compared to previous empirical results in Table 6. The table is incomplete and only presents a small sample from the literature. Generally, it seems as if the elasticities estimated here are fairly reasonable.

[20]Note however that strictly the classification should be done with respect to the compensated elasticities.

Table 6. Comparison of uncompensated price and total expenditure elasticities estimated in different models in Stage 1.

	1	2	3	4	5	6
1	-0.34	-0.12	-0.25	-0.15	0.53	-0.28
a	-0.54		-0.01	0.27	0.23	
b	-0.32					
c	-0.45					
d	-0.65					
e	-0.20					
2	-0.07	-0.31	-0.29	0.07	0.05	0.33
a						
b		-0.15				
d		-0.7				
3	-0.54	-0.87	-0.45	0.53	0.15	-1.28
a	-0.64		-0.81	0.04	0.48	
b			-0.57			
c			-0.96			
4	-0.30	-0.10	0.31	-1.84	0.11	-1.37
a	-0.04		-0.14	-0.71	-0.44	
b				-0.34		
c				-1.09		
5	1.09	0.04	0.18	0.23	-2.12	-1.70
a	-0.18		-0.04		-0.90	
c					-1.62	
6	-0.13	-0.07	-0.00	0.11	-0.08	-0.32
c						-0.06
x/P	0.62	0.21	2.47	3.19	2.27	0.49
a	0.27		0.04	1.57	1.58	
b	0.37		0.75	0.44		
e	0.96					

Note. a) Anderson and Blundell (1983)
b) Blanciforti and Green (1983)
c) Kaiser (1993)
d) Pollak and Wales (1992)
e) Assarsson (1996)

The own-price elasticities for Food and Housing are similar to those found in other studies. This is true also for Household and personal care though this category is probably not directly comparable with other studies. The Transports and Miscellaneous categories turn out to be relatively elastic here with the elasticities -1.84 and -2.12 respectively, which can be compared to the next highest which are -1.09 and -1.62 in Kaiser (1993). Again, these categories may not be directly comparable.

The total expenditure elasticity for Food is in line with other studies while those for Household and personal care, Transports and Miscellaneous seem to be relatively high here. Again, this is not quite comparable to the results in other studies since most of them use total expenditure less the consumption value of Leisure, while here full income is used.

6 Summary and conclusions

This paper has analysed the demand for consumer goods and services as well as the demand for leisure in a simultaneous equations model for Swedish aggregate time series data. The usual weak separability assumption between leisure and consumption goods has not been adopted here. A dynamic version of the Almost Ideal Demand System in error correction form has been estimated and price and total expenditure elasticities for consumption goods and leisure have been estimated simultaneously. All goods and leisure have been divided into 19 categories in a two-stage budgeting process in which the first stage comprises 6 categories of which Leisure is one.

The price of leisure time is estimated as the wage rate net of the average marginal tax rate. The estimate of 'full' income is then conditional on the measurement of leisure time which is subject to a sensitivity analysis in which the number of hours used for home work and labor search is varied across different population groups.

Even if weak separability is assumed when demand is estimated within the different consumption categories there are relationships beween the categories that can be explored. This is done here and within-group elasticities as well as total elasticities are estimated. Estimations are carried out with the dynamics specified as an error correction model. Homogeneity as well as symmetry restrictions are imposed. Restrictions are also imposed on the dynamic specification in order to arrive at a coherent system. A weak test of weak separability is done in the form of Hausman-Wu tests for simultaneity bias. Tests for autocorrelation is also carried out. Equations - in budget share form - are with some exceptions estimated with good fit and the elasticities turn out with the correct signs and with reasonable precision. All long run as well as short run compensated as well as uncompensated own-price elasticities are negative and all total expenditure elasticities are positive. Categories classified as necessities with total expenditure elasticities less than one have generally lower price elasticities than luxury goods, as is usually the case also in other studies. Necessities are typically Food and Housing. On the other hand, categories like Travel or Books are classified as luxury goods and have long run compensated price elasticities well above minus unity.

The price elasticity for Leisure is the labor supply elasticity (with opposite sign). The long run compensated labor supply elasticity is here 0.1 which is in line with previous estimates for Swedish households on micro data. The short run elasticity is higher than the long run elasticity which might reflect strong short run intertemporal substitution.

In the context of optimal taxation the cross-price elasticities are interesting, especially those between Leisure and the various consumption goods. Generally, these elasticities use to be estimated with much less precision than the own-price elasticities and this is the case here also. Most of the cross-price elasticities are fairly close to zero with some notable exceptions.

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Data appendix

Table	Type of elasticity	At value
A1	Long run uncompensated price elasticities	Mean
	Long run total expenditure elasticities	Mean
A2	Long run compensated price elasticities	Mean
A3	Long run uncompensated price elasticities	1994-1998
	Long run total expenditure elasticities	1994-1998
A4	Long run compensated price elasticities	1994-1998
A5	Short run uncompensated price elasticities	Mean
	Short run total expenditure elasticities	Mean
A6	Short run compensated price elasticities	Mean
A7	Short run uncompensated price elasticities	1994-1998
	Short run total expenditure elasticities	1994-1998
A8	Short run compensated price elasticities	1994-1998
A9	Stage 1. Long run uncompensated price elasticities	1994-1998
	Stage 1. Long run total expenditure elasticities	1994-1998
	Stage 1. Long run compensated price elasticities	1994-1998
B1	Stage 1. Standard errors of uncompensated price elasticities	1994-1998
	Stage 1. Standard errors of total expenditure elasticities	1994-1998
B2	Stage 1. Standard errors of compensated price elasticities	1994-1998
B3	Stage 2. Group 1. Standard errors of uncompensated price elasticities	1994-1998
	Stage 2. Group 1. Standard errors of total expenditure elasticities	1994-1998
B4	Stage 2. Group 1. Standard errors of compensated price elasticities	1994-1998
B5	Stage 2. Group 3. Standard errors of uncompensated price elasticities	1994-1998
	Stage 2. Group 3. Standard errors of total expenditure elasticities	1994-1998
B6	Stage 2. Group 3. Standard errors of compensated price elasticities	1994-1998
B7	Stage 2. Group 4. Standard errors of uncompensated price elasticities	1994-1998
	Stage 2. Group 4. Standard errors of total expenditure elasticities	1994-1998
B8	Stage 2. Group 4. Standard errors of compensated price elasticities	1994-1998
B9	Stage 2. Group 5. Standard errors of uncompensated price elasticities	1994-1998
	Stage 2. Group 5. Standard errors of total expenditure elasticities	1994-1998
B10	Stage 2. Group 5. Standard errors of compensated price elasticities	1994-1998

Table A1. Long run uncompensated price elasticities. Calculated at mean values.

	1_1	1_2	1_3	1_4	2_1	3_1	3_2	3_3	3_4	4_1	4_2	4_3	4_4	5_1	5_2	5_3	5_4	5_5	6_1
1_1	-0.448225	0.118271	-0.033555	-0.020143	-0.095611	-0.085266	-0.075873	-0.026533	-0.004936	-0.067569	-0.013220	-0.027922	-0.012865	0.168872	0.044326	0.058058	0.102253	0.032629	-0.219177
1_2	0.437165	-0.902909	-0.022525	0.094479	-0.098183	-0.087564	-0.077912	-0.027238	-0.005066	-0.069382	-0.013578	-0.028683	-0.013205	0.173466	0.045535	0.059532	0.105019	0.033514	-0.225086
1_3	-0.172767	-0.031848	-0.422304	-0.074093	-0.172760	-0.154243	-0.137094	-0.047554	-0.008904	-0.122362	-0.023903	-0.050300	-0.023254	0.305338	0.079618	0.105183	0.184931	0.058663	-0.396261
1_4	-1.306355	0.318120	0.824625	-0.181017	-0.086881	-0.077452	-0.068991	-0.024383	-0.004479	-0.061407	-0.012039	-0.025400	-0.011718	0.153432	0.040613	0.052760	0.092975	0.029795	-0.199416
2_1	-0.033293	-0.009025	-0.007480	-0.001842	-0.247773	-0.139790	-0.123592	-0.040947	-0.008055	0.035044	0.006826	0.014624	0.006548	0.029474	0.007269	0.009890	0.017699	0.005428	0.354049
3_1	-0.337674	-0.091219	-0.073238	-0.017908	-0.777453	-0.394171	-0.153953	-0.060311	0.044606	0.276361	0.054187	0.114625	0.052885	0.051208	0.013734	0.017778	0.031114	0.010114	-1.142741
3_2	-0.343984	-0.092928	-0.074593	-0.018238	-0.791876	-0.175581	-0.424276	0.130077	-0.104809	0.281527	0.055192	0.116742	0.053855	0.052160	0.013985	0.018102	0.031691	0.010298	-1.163913
3_3	-0.194416	-0.052386	-0.042739	-0.010555	-0.452427	-0.214830	0.416496	-0.689223	0.173237	0.158870	0.031505	0.066720	0.030848	0.029899	0.008264	0.010530	0.018246	0.006058	-0.665916
3_4	-0.297803	-0.080415	-0.064573	-0.015767	-0.685308	1.167471	-1.171452	0.030933	-0.523916	0.243631	0.047758	0.101090	0.046612	0.045148	0.012102	0.015672	0.027430	0.008916	-1.007526
4_1	-0.176687	-0.047760	-0.037133	-0.009092	-0.066248	0.102177	0.090692	0.030726	0.005876	-1.996960	0.104168	0.160538	0.379566	0.027008	0.007172	0.009345	0.016405	0.005267	-1.028290
4_2	-0.224550	-0.060709	-0.047281	-0.011573	-0.084515	0.130330	0.115773	0.039391	0.007506	0.411491	-1.437583	-0.430576	-0.267863	0.034542	0.009210	0.011972	0.020994	0.006766	-1.311953
4_3	-0.420920	-0.113704	-0.088160	-0.021661	-0.158496	0.242831	0.215455	0.072820	0.013929	-0.258634	-0.306768	-1.718644	-0.924651	0.063818	0.016924	0.022207	0.038797	0.012407	-2.441924
4_4	-0.219858	-0.059415	-0.046291	-0.011332	-0.082909	0.127722	0.113496	0.038640	0.007359	0.946193	-0.324142	-0.688106	-1.622606	0.033814	0.009027	0.011756	0.020559	0.006630	-1.285406
5_1	0.554654	0.150605	0.122685	0.030337	0.042044	0.062401	0.055754	0.020000	0.003667	0.109958	0.021534	0.045543	0.020926	-1.176970	-0.257902	-0.176276	-0.216589	-0.119443	-1.349936
5_2	0.407308	0.110673	0.090703	0.022510	0.030673	0.045809	0.040986	0.014890	0.002699	0.080369	0.015793	0.033475	0.015359	-0.863059	-1.323463	1.010034	-0.078059	-0.168760	-0.992239
5_3	0.462637	0.125414	0.102108	0.025241	0.034961	0.052096	0.046568	0.016703	0.003063	0.091717	0.017969	0.037941	0.017519	-0.429179	0.755445	-1.518805	-0.485472	0.053848	-1.125435
5_4	0.404094	0.109792	0.089261	0.022065	0.030708	0.045451	0.040577	0.014507	0.002668	0.080207	0.015697	0.033176	0.015227	-0.208318	-0.040110	-0.245297	-0.792080	-0.134167	-0.983390
5_5	1.174490	0.318715	0.257227	0.063595	0.089461	0.132061	0.117606	0.041401	0.007707	0.234838	0.045729	0.095951	0.044361	-1.147075	-0.605477	-0.300789	-1.398194	-0.696398	-2.854161
6_1	-0.082497	-0.022299	-0.017840	-0.004381	-0.085079	-0.000331	-0.000414	-0.000280	-3.78E-05	0.063531	0.012276	0.025812	0.011846	-0.031457	-0.007999	-0.010676	-0.018960	-0.005943	-0.269607

Long run total expenditure elasticities. Calculated at mean values.

0.606488	0.622620	1.103916	0.547218	0.124946	2.382054	2.426567	1.371819	2.099997	2.423232	3.088628	5.754376	3.024870	2.057008	1.504297	1.715660	1.499930	4.378952	0.444333

Table A2. Long run compensated price elasticities. Calculated at mean values.

	1_1	1_2	1_3	1_4	2_1	3_1	3_2	3_3	3_4	4_1	4_2	4_3	4_4	5_1	5_2	5_3	5_4	5_5	6_1
1_1	-0.388986	0.134276	-0.021124	-0.017144	-9.56E-05	-0.062463	-0.055850	-0.020144	-0.003648	-0.030749	-0.006139	-0.012883	-0.006042	0.188001	0.048988	0.064564	0.113744	0.036125	0.039570
1_2	0.497956	-0.886472	-0.009762	0.097558	-0.000143	-0.064148	-0.057352	-0.020681	-0.003744	-0.031581	-0.006306	-0.013238	-0.006202	0.193103	0.050320	0.066198	0.116813	0.037103	0.040579
1_3	-0.064249	-0.002527	-0.399707	-0.068641	0.000962	-0.112531	-0.100501	-0.035963	-0.006555	-0.055378	-0.011038	-0.023078	-0.010862	0.340350	0.088101	0.117115	0.205970	0.065031	0.073502
1_4	-1.253274	0.332477	0.835831	-0.178295	-0.000392	-0.056951	-0.050979	-0.018588	-0.003324	-0.028225	-0.005644	-0.011836	-0.005554	0.170582	0.044823	0.058594	0.103287	0.032942	0.034526
2_1	-0.021878	-0.005981	-0.005016	-0.001188	-0.226619	-0.135462	-0.119711	-0.039502	-0.007810	0.042371	0.008292	0.017558	0.007997	0.033040	0.008238	0.011259	0.019908	0.006127	0.408376
3_1	-0.110260	-0.029803	-0.024741	-0.006139	-0.399340	-0.307222	-0.077178	-0.034852	0.049571	0.419914	0.082151	0.174376	0.079969	0.124038	0.032025	0.042880	0.075054	0.023750	-0.114192
3_2	-0.112274	-0.030349	-0.025189	-0.006250	-0.406744	-0.086971	-0.346051	0.156007	-0.099751	0.427775	0.083677	0.177599	0.081438	0.126375	0.032618	0.043670	0.076465	0.024189	-0.116235
3_3	-0.066018	-0.017812	-0.015007	-0.003767	-0.232141	-0.166329	0.459625	-0.674173	0.176053	0.241214	0.047737	0.101440	0.046615	0.070558	0.018774	0.024760	0.042883	0.013861	-0.068275
3_4	-0.097184	-0.026260	-0.021801	-0.005403	-0.352136	1.244112	-1.103778	0.053369	-0.519535	0.370237	0.072415	0.153807	0.070494	0.109373	0.028223	0.037810	0.066177	0.020941	-0.100861
4_1	0.058005	0.015634	0.012236	0.002949	0.317879	0.192661	0.170213	0.056342	0.010961	-1.851061	0.132370	0.219953	0.406833	0.102673	0.025839	0.035452	0.062047	0.019164	0.009851
4_2	0.073733	0.019879	0.015584	0.003755	0.405311	0.245172	0.216796	0.072077	0.013971	0.597111	-1.401598	-0.354585	-0.233041	0.130593	0.032994	0.045175	0.078970	0.024476	0.013629
4_3	0.137731	0.037094	0.028958	0.007003	0.755260	0.458355	0.404759	0.133619	0.026003	0.087392	-0.239955	-1.578746	-0.859966	0.243854	0.061282	0.084678	0.147518	0.045369	0.019791
4_4	0.072183	0.019453	0.015257	0.003677	0.397010	0.240096	0.212383	0.070651	0.013687	1.127843	-0.288914	-0.613717	-1.588469	0.127801	0.032326	0.044349	0.077313	0.023978	0.013095
5_1	0.750581	0.203651	0.164612	0.040542	0.368630	0.137582	0.122087	0.042044	0.007951	0.234193	0.045731	0.097258	0.044297	-1.114189	-0.242131	-0.154851	-0.178754	-0.107706	-0.461526
5_2	0.549429	0.149167	0.121315	0.029986	0.270147	0.100305	0.089133	0.031094	0.005813	0.171093	0.033525	0.071452	0.032502	-0.817634	-1.311922	1.025558	-0.050651	-0.160205	-0.340106
5_3	0.626211	0.169630	0.137039	0.033742	0.307630	0.114729	0.101858	0.035075	0.006634	0.195132	0.038119	0.080939	0.037046	-0.376852	0.768606	-1.500776	-0.453897	0.063643	-0.384507
5_4	0.547187	0.148557	0.119845	0.029508	0.268637	0.100408	0.089031	0.030560	0.005796	0.170843	0.033338	0.070855	0.032237	-0.162433	-0.028615	-0.229695	-0.764432	-0.125610	-0.336019
5_5	1.595897	0.432766	0.346577	0.085349	0.782985	0.294381	0.260307	0.087948	0.016884	0.499536	0.096992	0.204677	0.093783	-1.011647	-0.571867	-0.254686	-1.316622	-0.671450	-0.971810
6_1	-0.040271	-0.010877	-0.008798	-0.002185	-0.014639	0.015869	0.013884	0.004457	0.000885	0.090260	0.017490	0.036977	0.016891	-0.017909	-0.004587	-0.006030	-0.010785	-0.003405	-0.077226

Table A3. Long run uncompensated price elasticities. Calculated at 1994-1998 mean values.

	1_1	1_2	1_3	1_4	2_1	3_1	3_2	3_3	3_4	4_1	4_2	4_3	4_4	5_1	5_2	5_3	5_4	5_5	6_1
1_1	-0.404202	0.130199	-0.014933	-0.012761	-0.108791	-0.091947	-0.086122	-0.042391	-0.005893	-0.073185	-0.015316	-0.033169	-0.015200	0.185218	0.062189	0.065389	0.114216	0.043000	-0.250577
1_2	0.477653	-0.891326	-0.001908	0.105132	-0.111936	-0.094622	-0.088617	-0.043569	-0.006061	-0.075301	-0.015759	-0.034133	-0.015630	0.190633	0.063998	0.067168	0.117534	0.044241	-0.257813
1_3	-0.024345	0.007313	-0.453544	-0.053921	-0.188651	-0.159546	-0.149334	-0.073477	-0.010206	-0.127110	-0.026578	-0.057361	-0.026375	0.321109	0.107728	0.113798	0.198183	0.074451	-0.434795
1_4	-0.871735	0.276410	0.669282	-0.362975	-0.104351	-0.088187	-0.082632	-0.040679	-0.005646	-0.070242	-0.014693	-0.031830	-0.014576	0.177810	0.059707	0.062651	0.109583	0.041243	-0.240478
2_1	-0.041792	-0.011469	-0.010710	-0.002914	-0.312351	-0.116901	-0.109295	-0.053497	-0.007514	0.037428	0.007868	0.017188	0.007719	0.021019	0.007011	0.007253	0.012948	0.004841	0.334372
3_1	-0.358787	-0.098008	-0.090851	-0.024725	-0.918709	-0.338630	-0.159745	-0.031955	0.050077	0.297622	0.062440	0.135255	0.062224	0.063558	0.021406	0.022761	0.039311	0.014920	-1.355090
3_2	-0.364794	-0.099653	-0.092359	-0.025135	-0.934010	-0.171897	-0.382846	0.173286	-0.106871	0.302595	0.063482	0.137496	0.063249	0.064621	0.021760	0.023135	0.039971	0.015169	-1.377646
3_3	-0.247713	-0.067424	-0.062698	-0.017071	-0.633917	-0.071202	0.358398	-0.740365	0.123171	0.205025	0.043031	0.093395	0.042993	0.043820	0.014770	0.015805	0.027131	0.010322	-0.935313
3_4	-0.315349	-0.086138	-0.079870	-0.021716	-0.807332	1.167450	-1.127660	0.067362	-0.528818	0.261463	0.054872	0.118917	0.054675	0.055878	0.018816	0.020004	0.034566	0.013125	-1.191033
4_1	-0.134685	-0.036819	-0.033728	-0.009312	-0.075704	0.090997	0.085141	0.041925	0.005824	-2.006127	0.111567	0.168793	0.397719	0.031668	0.010641	0.011355	0.019600	0.007390	-0.990528
4_2	-0.174549	-0.047712	-0.043780	-0.012063	-0.098009	0.118083	0.110529	0.054481	0.007573	0.399026	-1.426531	-0.431185	-0.264456	0.041138	0.013830	0.014752	0.025455	0.009616	-1.285348
4_3	-0.316092	-0.086347	-0.078932	-0.021843	-0.178133	0.213483	0.199712	0.098264	0.013633	-0.223383	-0.298458	-1.707033	-0.881024	0.074042	0.024892	0.026737	0.045858	0.017261	-2.321870
4_4	-0.171327	-0.046808	-0.042970	-0.011837	-0.096300	0.115997	0.108611	0.053564	0.007441	0.888850	-0.313151	-0.670373	-1.596716	0.040378	0.013586	0.014529	0.024988	0.009446	-1.262291
5_1	0.707266	0.193977	0.180256	0.048915	0.043836	0.076701	0.071813	0.035383	0.004965	0.125802	0.026389	0.057254	0.026147	-1.241913	-0.321148	-0.209508	-0.267725	-0.155030	-1.754118
5_2	0.549827	0.150885	0.140345	0.038065	0.034054	0.059648	0.055867	0.027490	0.003859	0.097832	0.020521	0.044566	0.020337	-0.822043	-1.309687	0.747179	-0.150009	-0.172324	-1.364163
5_3	0.585420	0.160289	0.148913	0.040406	0.036140	0.063544	0.059520	0.029381	0.004116	0.104076	0.021835	0.047297	0.021726	-0.498310	0.752903	-1.562299	-0.541112	0.032938	-1.451246
5_4	0.508540	0.139585	0.129572	0.035170	0.031602	0.055122	0.051574	0.025393	0.003568	0.090484	0.018978	0.041159	0.018755	-0.263093	-0.068504	-0.272595	-0.815668	-0.159071	-1.261246
5_5	1.387323	0.380607	0.352471	0.096093	0.085237	0.150292	0.140648	0.069087	0.009682	0.247561	0.051837	0.111913	0.051324	-1.164668	-0.671396	-0.332797	-1.319993	-0.822099	-3.438299
6_1	-0.081713	-0.022337	-0.020685	-0.005692	-0.073809	-0.001593	-0.001532	-0.000832	-0.000114	0.060671	0.012697	0.027434	0.012498	-0.029843	-0.009990	-0.010487	-0.018439	-0.006924	-0.316765

Long run total expenditure elasticities. Calculated at 1994-1998 mean values.

0.554274	0.570315	0.962661	0.531339	0.208797	2.606926	2.650449	1.797841	2.290790	2.304284	2.989149	5.399232	2.934384	2.350738	1.827750	1.944464	1.690676	4.615177	0.487457

Table A4. Long run compensated price elasticities. Calculated at 1994-1998 mean values.

	1_1	1_2	1_3	1_4	2_1	3_1	3_2	3_3	3_4	4_1	4_2	4_3	4_4	5_1	5_2	5_3	5_4	5_5	6_1
1_1	-0.360933	0.142048	-0.004040	-0.009774	-0.012375	-0.076106	-0.071342	-0.035178	-0.004885	-0.039577	-0.008273	-0.017882	-0.008286	0.197497	0.066287	0.069707	0.121804	0.045828	0.005481
1_2	0.522167	-0.879128	0.009305	0.108205	-0.012764	-0.078315	-0.073404	-0.036154	-0.005025	-0.040713	-0.008511	-0.018399	-0.008518	0.203269	0.068215	0.071603	0.125341	0.047150	0.005676
1_3	0.050928	0.027911	-0.434665	-0.048733	-0.021015	-0.132004	-0.123655	-0.060951	-0.008458	-0.068743	-0.014358	-0.030924	-0.014381	0.342455	0.114847	0.121330	0.211383	0.079361	0.009672
1_4	-0.830292	0.287759	0.679724	-0.360106	-0.011891	-0.072988	-0.068446	-0.033757	-0.004681	-0.038018	-0.007943	-0.017174	-0.007952	0.189595	0.063641	0.066787	0.116861	0.043954	0.004927
2_1	-0.025434	-0.007045	-0.006663	-0.001776	-0.275396	-0.110938	-0.103717	-0.050731	-0.007137	0.050051	0.010493	0.022775	0.010329	0.025668	0.008573	0.008977	0.015834	0.005908	0.430229
3_1	-0.155900	-0.042518	-0.039599	-0.010738	-0.465550	-0.264607	-0.090566	0.001940	0.054804	0.455236	0.095529	0.207390	0.094932	0.120967	0.040652	0.043215	0.074787	0.028222	-0.148196
3_2	-0.158495	-0.043228	-0.040252	-0.010916	-0.473298	-0.096630	-0.312513	0.207748	-0.102065	0.462851	0.097126	0.210828	0.096497	0.122992	0.041325	0.043925	0.076044	0.028692	-0.150629
3_3	-0.107781	-0.029289	-0.027364	-0.007425	-0.320927	-0.020378	0.405937	-0.716815	0.126441	0.313688	0.065855	0.143248	0.065603	0.083338	0.028034	0.030000	0.051582	0.019517	-0.103263
3_4	-0.137030	-0.037371	-0.034815	-0.009432	-0.409227	1.232460	-1.066910	0.097155	-0.524661	0.399971	0.083959	0.182356	0.083424	0.106301	0.035718	0.037966	0.065731	0.024815	-0.130408
4_1	0.044982	0.012334	0.011375	0.003115	0.326037	0.156889	0.146639	0.071862	0.009988	-1.866718	0.140734	0.231823	0.426464	0.082731	0.027715	0.029526	0.051153	0.019130	0.074221
4_2	0.058371	0.016004	0.014785	0.004041	0.422760	0.203421	0.190208	0.093320	0.012977	0.579785	-1.388675	-0.349197	-0.227114	0.107287	0.035960	0.038303	0.066325	0.024850	0.096587
4_3	0.105240	0.028838	0.026542	0.007285	0.764583	0.367948	0.343844	0.168341	0.023372	0.103018	-0.230227	-1.560127	-0.813669	0.193708	0.064926	0.069622	0.119852	0.044743	0.172161
4_4	0.057277	0.015697	0.014509	0.003964	0.415071	0.199691	0.186779	0.091686	0.012743	1.066195	-0.276005	-0.589918	-1.560017	0.105260	0.035312	0.037714	0.065081	0.024399	0.094561
5_1	0.890142	0.244113	0.226557	0.061536	0.451753	0.143617	0.134311	0.065897	0.009231	0.268130	0.056273	0.122483	0.055575	-1.190072	-0.303798	-0.191258	-0.235717	-0.143041	-0.665732
5_2	0.691897	0.189855	0.176368	0.047880	0.351107	0.111683	0.104486	0.051195	0.007174	0.208514	0.043759	0.095337	0.043229	-0.781738	-1.296185	0.761347	-0.125137	-0.163004	-0.517766
5_3	0.736746	0.201707	0.187154	0.050828	0.374027	0.118755	0.111107	0.054617	0.007639	0.221610	0.046515	0.101086	0.046131	-0.455527	0.767249	-1.547047	-0.514668	0.042851	-0.550780
5_4	0.640157	0.175697	0.162885	0.044252	0.324856	0.103322	0.096561	0.047343	0.006640	0.192943	0.040488	0.088088	0.039881	-0.225764	-0.056032	-0.259530	-0.792620	-0.150448	-0.478720
5_5	1.746695	0.479168	0.443184	0.120932	0.887480	0.282129	0.263719	0.128919	0.018039	0.527047	0.110413	0.239159	0.108972	-1.062589	-0.637253	-0.296827	-1.256969	-0.798594	-1.303624
6_1	-0.043821	-0.011955	-0.011099	-0.003073	0.010811	0.012286	0.011435	0.005494	0.000768	0.090158	0.018885	0.040934	0.018599	-0.019087	-0.006389	-0.006689	-0.011802	-0.004438	-0.091019

Table A5. Short run compensated price elasticities. Calculated at mean values.

	1_1	1_2	1_3	1_4	2_1	3_1	3_2	3_3	3_4	4_1	4_2	4_3	4_4	5_1	5_2	5_3	5_4	5_5	6_1
1_1	-0.392119	-0.021573	0.003704	0.072312	-0.016574	-0.019793	-0.017641	-0.006175	-0.001153	-0.003320	-0.000661	-0.001384	-0.000662	0.055480	0.014492	0.019098	0.033587	0.010675	-0.094832
1_2	-0.071136	-0.428579	-0.054568	-0.088110	-0.031692	-0.037796	-0.033711	-0.011855	-0.002204	-0.006367	-0.001268	-0.002658	-0.001271	0.105880	0.027751	0.036502	0.064110	0.020429	-0.180775
1_3	-0.082678	-0.035796	-0.634526	-0.210622	-0.046473	-0.055927	-0.049783	-0.017268	-0.003246	-0.009301	-0.001850	-0.003855	-0.001851	0.156905	0.040687	0.054078	0.095011	0.029997	-0.269397
1_4	-1.102920	0.305634	0.922220	-0.519518	-0.019560	-0.023339	-0.020825	-0.007373	-0.001358	-0.003999	-0.000797	-0.001668	-0.000797	0.065511	0.017267	0.022518	0.039682	0.012675	-0.111735
2_1	-0.000280	-7.58E-05	-0.000371	-0.000122	-0.114392	0.021209	0.018599	0.006052	0.001194	-0.051697	-0.010008	-0.021220	-0.009710	-0.012573	-0.003324	-0.004227	-0.007592	-0.002466	0.046979
3_1	-0.089878	-0.024279	-0.019491	-0.004767	0.079150	-0.873219	-0.021649	-0.262860	-0.033578	-0.005306	-0.001030	-0.002197	-0.000982	0.161211	0.042525	0.055981	0.097838	0.031372	-0.561894
3_2	-0.082675	-0.022335	-0.017921	-0.004382	0.072784	0.005085	-1.212402	0.088649	0.022581	-0.004881	-0.000947	-0.002020	-0.000903	0.148281	0.039080	0.051466	0.089981	0.028833	-0.516666
3_3	-0.072927	-0.019690	-0.015862	-0.003888	0.064374	-0.883780	0.328919	-0.477546	0.067744	-0.004307	-0.000838	-0.001788	-0.000800	0.130865	0.034755	0.045587	0.079499	0.025613	-0.457187
3_4	-0.073555	-0.019854	-0.015947	-0.003890	0.064786	-0.053985	0.253475	0.040307	-1.213827	-0.004357	-0.000846	-0.001805	-0.000806	0.131875	0.034761	0.045802	0.080031	0.025669	-0.459638
4_1	-0.017758	-0.004803	-0.003513	-0.000835	-0.172445	-0.009144	-0.007973	-0.002594	-0.000499	-1.005608	-0.011242	-0.021744	-0.304484	0.110283	0.028424	0.038304	0.066894	0.020966	-0.877262
4_2	-0.006330	-0.001713	-0.001248	-0.000299	-0.062227	-0.003299	-0.002879	-0.000944	-0.000180	0.050037	-0.724716	0.167614	0.025391	0.039668	0.010272	0.013844	0.024122	0.007554	-0.316113
4_3	-0.006307	-0.001706	-0.001257	-0.000295	-0.063205	-0.003298	-0.002887	-0.000956	-0.000182	0.116666	0.063627	-1.123679	0.444474	0.040755	0.010597	0.014000	0.024680	0.007853	-0.324433
4_4	-0.007966	-0.002150	-0.001570	-0.000375	-0.078752	-0.004075	-0.003560	-0.001162	-0.000222	-0.172830	-0.347332	0.242373	-0.330530	0.049957	0.012981	0.017736	0.030410	0.009554	-0.399841
5_1	0.250435	0.067996	0.055255	0.013646	-0.084615	0.188673	0.167954	0.059415	0.010992	0.171085	0.033637	0.071392	0.032629	-1.613771	-0.249829	0.187762	0.148098	-0.086656	-0.572020
5_2	0.183732	0.049919	0.040813	0.010116	-0.062136	0.138217	0.123219	0.044152	0.008074	0.125403	0.024741	0.052624	0.024020	-0.731014	-0.960924	-0.585562	1.316001	-0.217663	-0.420311
5_3	0.208887	0.056623	0.045988	0.011355	-0.070545	0.157239	0.140034	0.049530	0.009165	0.142588	0.028044	0.059425	0.027295	0.575748	-0.518973	-0.179871	-1.129338	-0.094301	-0.476804
5_4	0.182495	0.049581	0.040211	0.009928	-0.061654	0.137599	0.122393	0.043155	0.008007	0.124741	0.024508	0.051984	0.023731	0.232463	0.476317	-0.615446	-1.232295	-0.038460	-0.416767
5_5	0.530946	0.144074	0.115991	0.028642	-0.179220	0.401278	0.355962	0.123505	0.023202	0.363837	0.071118	0.149771	0.068867	-0.463898	-0.141127	-0.672400	-1.633193	-0.531502	-1.210262
6_1	-0.137429	-0.037160	-0.029281	-0.007142	-0.286500	-0.017430	-0.015356	-0.005060	-0.000990	-0.008997	-0.001725	-0.003625	-0.001654	-0.032371	-0.008088	-0.010987	-0.019487	-0.006021	-0.615450

Short run total expenditure elasticities. Calculated at mean values.

	0.366537	0.697319	1.045893	0.428384	0.144023	1.433055	1.318391	1.161258	1.171806	2.175032	0.781446	0.805554	0.987353	1.147921	0.836580	0.957911	0.837509	2.454409	1.244752

Table A6. Short run compensated price elasticities. Calculated at mean values.

	1_1	1_2	1_3	1_4	2_1	3_1	3_2	3_3	3_4	4_1	4_2	4_3	4_4	5_1	5_2	5_3	5_4	5_5	6_1
1_1	-0.355896	-0.011796	0.011236	0.074120	0.040936	-0.005856	-0.005427	-0.002342	-0.000367	0.018996	0.003609	0.007658	0.003446	0.067191	0.017309	0.023074	0.040614	0.012796	0.060701
1_2	-0.002391	-0.410038	-0.040236	-0.084669	0.077820	-0.011347	-0.010519	-0.004548	-0.000712	0.036084	0.006858	0.014565	0.006555	0.128103	0.033113	0.044059	0.077447	0.024461	0.115393
1_3	0.021389	-0.007687	-0.613073	-0.205468	0.117508	-0.015939	-0.014774	-0.006366	-0.001001	0.054327	0.010309	0.021786	0.009842	0.190518	0.048722	0.065505	0.115185	0.036050	0.173167
1_4	-1.060899	0.316994	0.931017	-0.517391	0.047875	-0.007109	-0.006594	-0.002869	-0.000446	0.022054	0.004198	0.008905	0.004010	0.079109	0.020562	0.027129	0.047847	0.015147	0.070462
2_1	0.012991	0.003470	0.002485	0.000626	-0.090251	0.026252	0.023108	0.007697	0.001480	-0.043210	-0.008319	-0.017806	-0.008047	-0.008406	-0.002208	-0.002656	-0.005023	-0.001657	0.109474
3_1	0.047713	0.012898	0.009746	0.002324	0.306181	-0.820430	0.024883	-0.247598	-0.030577	0.081253	0.015767	0.033629	0.015257	0.205427	0.053536	0.071140	0.124474	0.039592	0.054786
3_2	0.043978	0.011889	0.008981	0.002141	0.281581	0.053694	-1.169564	0.102679	0.025343	0.074760	0.014503	0.030928	0.014031	0.188995	0.049210	0.065418	0.114504	0.036397	0.050531
3_3	0.038092	0.010288	0.007792	0.001859	0.248814	-0.841300	0.366420	-0.465107	0.070167	0.065772	0.012798	0.027301	0.012390	0.166455	0.043673	0.057828	0.100959	0.032264	0.043533
3_4	0.039059	0.010546	0.007977	0.001897	0.250281	-0.010855	0.291500	0.052783	-1.211369	0.066473	0.012896	0.027540	0.012480	0.168032	0.043761	0.058204	0.101811	0.032393	0.044591
4_1	0.191887	0.051859	0.040834	0.009939	0.171990	0.071498	0.063017	0.020461	0.004059	-0.874568	0.014171	0.032244	-0.279907	0.177787	0.045158	0.061515	0.107583	0.033452	0.057020
4_2	0.068789	0.018606	0.014617	0.003581	0.062049	0.025552	0.022538	0.007373	0.001448	0.096879	-0.715583	0.186882	0.034215	0.063789	0.016278	0.022182	0.038701	0.012022	0.020082
4_3	0.070605	0.019118	0.015189	0.003665	0.063886	0.026182	0.023137	0.007603	0.001501	0.165227	0.073104	-1.103187	0.453625	0.065504	0.016781	0.022417	0.039570	0.012491	0.023582
4_4	0.086999	0.023455	0.018486	0.004519	0.078325	0.032311	0.028545	0.009316	0.001835	-0.113742	-0.335828	0.266702	-0.319313	0.080394	0.020587	0.028439	0.048828	0.015217	0.024923
5_1	0.360928	0.097874	0.078704	0.019335	0.097061	0.231173	0.205375	0.071620	0.013401	0.240523	0.047085	0.100046	0.045613	-1.578198	-0.241008	0.199905	0.169508	-0.080069	-0.078874
5_2	0.263623	0.071529	0.057874	0.014269	0.070608	0.168926	0.150291	0.053091	0.009819	0.175934	0.034561	0.073590	0.033509	-0.705353	-0.954491	-0.576790	1.331463	-0.212878	-0.059576
5_3	0.301178	0.081539	0.065534	0.016096	0.081219	0.192661	0.171240	0.059707	0.011174	0.200416	0.039250	0.083261	0.038148	0.605410	-0.511608	-0.169648	-1.111463	-0.088801	-0.065315
5_4	0.263231	0.071425	0.057325	0.014080	0.070780	0.168681	0.149741	0.052049	0.009767	0.175428	0.034319	0.072873	0.033187	0.258473	0.482750	-0.606599	-1.216643	-0.033656	-0.057210
5_5	0.769536	0.208572	0.166183	0.040825	0.208322	0.493390	0.436780	0.149398	0.028385	0.512424	0.099739	0.210288	0.096448	-0.386887	-0.122249	-0.646178	-1.586865	-0.517446	-0.160665
6_1	-0.016978	-0.004599	-0.003817	-0.000972	-0.089778	0.028960	0.025446	0.008135	0.001633	0.066415	0.012837	0.027352	0.012394	0.006489	0.001484	0.002259	0.003880	0.001139	-0.082279

Table A7. Short run uncompensated price elasticities. Calculated at 1994-1998 mean values.

	1_1	1_2	1_3	1_4	2_1	3_1	3_2	3_3	3_4	4_1	4_2	4_3	4_4	5_1	5_2	5_3	5_4	5_5	6_1
1_1	-0.366802	-0.012518	0.018300	0.082457	-0.018925	-0.020976	-0.019668	-0.009728	-0.001350	-0.004395	-0.000913	-0.001966	-0.000925	0.059041	0.019817	0.020886	0.036419	0.013696	-0.095901
1_2	-0.018636	-0.408494	-0.031927	-0.083246	-0.036899	-0.040880	-0.038353	-0.018995	-0.002635	-0.008575	-0.001782	-0.003842	-0.001806	0.115072	0.038649	0.040718	0.070958	0.026714	-0.186801
1_3	0.073401	-0.014805	-0.637305	-0.175452	-0.050992	-0.056674	-0.053097	-0.026231	-0.003639	-0.011882	-0.002466	-0.005288	-0.002498	0.159498	0.053483	0.056592	0.098463	0.036931	-0.259613
1_4	-0.732091	0.266393	0.738806	-0.621932	-0.023709	-0.026283	-0.024656	-0.012188	-0.001691	-0.005545	-0.001151	-0.002481	-0.001164	0.074123	0.024884	0.026113	0.045681	0.017178	-0.120293
2_1	-0.012608	-0.003455	-0.003280	-0.000885	-0.198998	0.017301	0.016109	0.007782	0.001094	-0.046329	-0.009705	-0.021073	-0.009594	-0.014457	-0.004851	-0.005026	-0.008918	-0.003393	0.074242
3_1	-0.095400	-0.026060	-0.024156	-0.006577	0.092120	-0.859016	-0.025559	-0.296927	-0.036968	-0.005192	-0.001097	-0.002391	-0.001069	0.179991	0.060531	0.064349	0.111288	0.042075	-0.670446
3_2	-0.087203	-0.023827	-0.022080	-0.006012	0.084203	0.003653	-1.224176	0.083621	0.023011	-0.004744	-0.001002	-0.002184	-0.000976	0.164544	0.055332	0.058794	0.101733	0.038454	-0.612827
3_3	-0.080800	-0.022053	-0.020456	-0.005570	0.078020	-0.620567	0.203304	-0.658572	0.044327	-0.004408	-0.000931	-0.002030	-0.000907	0.152363	0.051249	0.054563	0.094234	0.035647	-0.567777
3_4	-0.077805	-0.021250	-0.019710	-0.005357	0.075170	-0.058713	0.244546	0.032426	-1.211195	-0.004258	-0.000900	-0.001963	-0.000876	0.146772	0.049349	0.052460	0.090778	0.034352	-0.546784
4_1	-0.004664	-0.001286	-0.001113	-0.000313	-0.165541	-0.007897	-0.007322	-0.003486	-0.000488	-1.006645	-0.012303	-0.021614	-0.316230	0.103664	0.034768	0.037003	0.064071	0.024056	-0.873480
4_2	-0.001758	-0.000485	-0.000420	-0.000118	-0.061041	-0.002932	-0.002716	-0.001291	-0.000181	0.049468	-0.733824	0.160920	0.023687	0.038227	0.012797	0.013625	0.023644	0.008852	-0.321862
4_3	-0.001768	-0.000487	-0.000424	-0.000119	-0.064122	-0.003049	-0.002831	-0.001358	-0.000190	0.110006	0.060563	-1.115346	0.414962	0.040392	0.013545	0.014212	0.024922	0.009417	-0.339660
4_4	-0.002108	-0.000580	-0.000502	-0.000141	-0.076971	-0.003585	-0.003327	-0.001585	-0.000222	-0.161806	-0.327631	0.228801	-0.367437	0.047935	0.016148	0.017485	0.029664	0.011159	-0.405831
5_1	0.313313	0.085933	0.079813	0.021659	-0.108744	0.223233	0.208700	0.102358	0.014366	0.211861	0.044484	0.096738	0.044000	-1.704034	-0.291674	0.182408	0.138425	-0.105713	-0.739965
5_2	0.243551	0.066838	0.062137	0.016853	-0.084565	0.173601	0.162361	0.079523	0.011164	0.164714	0.034583	0.075278	0.034217	-0.701165	-0.995176	-0.496764	0.994717	-0.185999	-0.575433
5_3	0.259330	0.071008	0.065934	0.017891	-0.089960	0.184545	0.172600	0.084807	0.011884	0.175215	0.036793	0.079885	0.036547	0.578871	-0.567754	-0.158035	-1.209104	-0.116860	-0.612075
5_4	0.225301	0.061843	0.057377	0.015574	-0.078200	0.160622	0.150062	0.073551	0.010335	0.152430	0.032002	0.069565	0.031570	0.240471	0.468940	-0.649430	-1.279416	-0.061200	-0.532136
5_5	0.614622	0.168625	0.156079	0.042552	-0.213351	0.438211	0.409481	0.200117	0.028053	0.416358	0.087266	0.188853	0.086264	-0.507815	-0.227208	-0.623578	-1.475273	-0.663293	-1.450870
6_1	-0.118398	-0.032375	-0.029887	-0.008227	-0.264198	-0.014556	-0.013586	-0.006646	-0.000927	-0.007436	-0.001559	-0.003368	-0.001525	-0.026938	-0.009003	-0.009440	-0.016636	-0.006218	-0.654835

Short run total expenditure elasticities. Calculated at 1994-1998 mean values.

0.303454	0.590762	0.821573	0.380007	0.226046	1.500506	1.371686	1.270363	1.222957	2.158821	0.795408	0.841334	1.000534	1.182840	0.919564	0.978478	0.850739	2.324909	1.225758

Table A8. Short run compensated price elasticities. Calculated at 1994-1998 mean values.

	1_1	1_2	1_3	1_4	2_1	3_1	3_2	3_3	3_4	4_1	4_2	4_3	4_4	5_1	5_2	5_3	5_4	5_5	6_1
1_1	-0.343045	-0.006013	0.024261	0.084092	0.033887	-0.012291	-0.011575	-0.005779	-0.000798	0.014022	0.002945	0.006384	0.002854	0.065770	0.022059	0.023249	0.040582	0.015243	0.044152
1_2	0.027579	-0.395845	-0.020316	-0.080062	0.065914	-0.023986	-0.022602	-0.011299	-0.001559	0.027274	0.005731	0.012437	0.005558	0.128168	0.043013	0.045320	0.079057	0.029729	0.085890
1_3	0.137833	0.002829	-0.621201	-0.171024	0.092139	-0.033124	-0.031169	-0.015544	-0.002144	0.037984	0.007970	0.017214	0.007717	0.177739	0.059553	0.063017	0.109756	0.041119	0.119333
1_4	-0.702379	0.274534	0.746275	-0.619881	0.042420	-0.015397	-0.014506	-0.007240	-0.000999	0.017526	0.003681	0.007986	0.003566	0.082559	0.027694	0.029065	0.050895	0.019116	0.055084
2_1	0.005092	0.001337	0.001108	0.000346	-0.159058	0.023756	0.022146	0.010771	0.001502	-0.032661	-0.006861	-0.015006	-0.006768	-0.009428	-0.003162	-0.003170	-0.005797	-0.002238	0.178088
3_1	0.021415	0.005903	0.005339	0.001491	0.353026	-0.816303	0.014348	-0.277403	-0.034247	0.085618	0.017952	0.039097	0.017718	0.213118	0.071623	0.076087	0.131750	0.049732	0.023736
3_2	0.019587	0.005401	0.004883	0.001364	0.322686	0.042712	-1.187687	0.101460	0.025499	0.078274	0.016412	0.035735	0.016194	0.194832	0.065472	0.069520	0.120439	0.045453	0.021765
3_3	0.018106	0.004987	0.004513	0.001260	0.298985	-0.584442	0.237061	-0.642014	0.046633	0.072471	0.015197	0.033112	0.015006	0.180397	0.060637	0.064515	0.111555	0.042133	0.019885
3_4	0.017437	0.004804	0.004348	0.001212	0.287726	-0.023944	0.277027	0.048350	-1.208973	0.069760	0.014637	0.031907	0.014445	0.173744	0.058378	0.062018	0.107445	0.040595	0.019084
4_1	0.163416	0.044707	0.041276	0.011309	0.210057	0.053652	0.050174	0.024590	0.003422	-0.876030	0.015081	0.037924	-0.289229	0.151393	0.050740	0.053919	0.093544	0.035068	0.124986
4_2	0.060276	0.016502	0.015186	0.004166	0.077397	0.019792	0.018487	0.009042	0.001260	0.097608	-0.723734	0.182780	0.033613	0.055834	0.018678	0.019855	0.034525	0.012906	0.045826
4_3	0.063556	0.017411	0.016186	0.004402	0.081659	0.020857	0.019527	0.009609	0.001341	0.160955	0.071279	-1.091799	0.425507	0.058951	0.019754	0.020698	0.036363	0.013720	0.050025
4_4	0.075766	0.020674	0.019101	0.005231	0.097483	0.024813	0.023233	0.011408	0.001583	-0.101473	-0.314978	0.256256	-0.354855	0.069962	0.023552	0.025467	0.043284	0.016258	0.057234
5_1	0.405409	0.111154	0.103070	0.028026	0.096874	0.256968	0.240207	0.117743	0.016512	0.283503	0.059506	0.129442	0.058786	-1.677879	-0.282926	0.191627	0.154573	-0.099678	-0.192918
5_2	0.315088	0.086439	0.080228	0.021805	0.075233	0.199831	0.186869	0.091473	0.012831	0.220419	0.046263	0.100729	0.045717	-0.680832	-0.988368	-0.489607	1.007263	-0.181308	-0.150074
5_3	0.335543	0.091843	0.085144	0.023149	0.080373	0.212379	0.198608	0.097532	0.013656	0.234379	0.049200	0.106854	0.048810	0.600456	-0.560520	-0.150328	-1.195762	-0.111870	-0.159447
5_4	0.291585	0.080010	0.074111	0.020157	0.069623	0.184923	0.172743	0.084618	0.011880	0.204006	0.042815	0.093095	0.042185	0.259305	0.475228	-0.642830	-1.267787	-0.056860	-0.138808
5_5	0.795803	0.218265	0.201698	0.055098	0.191476	0.504753	0.471599	0.230315	0.032261	0.557199	0.116746	0.252723	0.115262	-0.456257	-0.209973	-0.605388	-1.443442	-0.651449	-0.376686
6_1	-0.022907	-0.006233	-0.005799	-0.001619	-0.050962	0.020444	0.019100	0.009314	0.001297	0.066839	0.014006	0.030476	0.013783	0.000206	7.06E-05	0.000120	0.000123	3.75E-05	-0.088297

Table A9. Stage 1. Long run uncompensated price elasticities. Calculated at 1994-1998 mean values.

	1	2	3	4	5
1	-0.437580	-0.014277	0.087275	0.190075	0.174507
2	-0.004937	0.076203	-0.154600	-0.028122	0.111457
3	0.247319	-0.266902	-0.666418	0.212633	0.473368
4	0.340672	0.128015	0.145438	-0.419951	-0.194173
5	-0.012697	-0.130663	0.824064	0.250909	-0.931612

Long run total expenditure elasticities. Calculated at 1994-1998 mean values.

0.453754	0.527394	1.451610	1.797440	1.503694

Long run compensated price elasticities. Calculated at 1994-1998 mean values.

	1	2	3	4	5
1	-0.542716	-0.160774	0.028263	0.094192	0.127281
2	-0.126692	-0.094742	-0.223159	-0.139209	0.056408
3	-0.088212	-0.736468	-0.855104	-0.093935	0.322108
4	-0.074627	-0.453923	-0.088514	-0.798582	-0.381794
5	-0.360368	-0.616612	0.628464	-0.066965	-1.088213

Statistical significance of elasticities

Stage 1: Standard errors and p-values evaluated at mean values for the period 1994-1998.

Table B1. Estimated uncompensated price elasticities and the total expenditure elasticity, standard errors (within parentheses) and p-values [within brackets] for the null hypothesis that the elasticity equals zero.

	1	2	3	4	5	6
1	-0.34 (0.16) [0.03]	-0.12 (0.12) [0.33]	-0.26 (0.13) [0.05]	-0.15 (0.18) [0.38]	0.53 (0.13) [0.00]	-0.27 (0.18) [0.14]
2	-0.07 (0.09) [0.41]	-0.31 (0.10) [0.00]	-0.26 (0.08) [0.00]	0.15 (0.11) [0.20]	0.07 (0.10) [0.45]	0.34 (0.15) [0.02]
3	-0.53 (0.24) [0.03]	-0.87 (0.20) [0.00]	-0.44 (0.35) [0.20]	0.53 (0.27) [0.05]	0.14 (0.38) [0.69]	-1.29 (0.29) [0.00]
4	-0.28 (0.20) [0.16]	-0.12 (0.18) [0.50]	0.34 (0.17) [0.05]	-1.83 (0.31) [0.00]	0.11 (0.18) [0.56]	-1.40 (0.30) [0.00]
5	1.10 (0.30) [0.00]	0.03 (0.28) [0.90]	0.20 (0.46) [0.67]	0.23 (0.37) [0.53]	-2.12 (0.56) [0.00]	-1.70 (0.37) [0.00]
6	-0.13 (0.02) [0.00]	-0.07 (0.03) [0.01]	-0.01 (0.02) [0.58]	0.11 (0.04) [0.00]	-0.07 (0.02) [0.00]	-0.31 (0.12) [0.01]
Total expenditure	0.62 (0.24) [0.01]	0.21 (0.18) [0.23]	2.46 (0.38) [0.00]	3.18 (0.40) [0.00]	2.27 (0.48) [0.00]	0.49 (0.16) [0.00]

Table B2. Estimated compensated price elasticities, standard errors (within parentheses) and p-values [within brackets] for the null hypothesis that the elasticity equals zero.

	1	2	3	4	5	6
1	-0.27 (0.15) [0.08]	-0.01 (0.12) [0.93]	-0.21 (0.14) [0.12]	-0.08 (0.18) [0.64]	0.56 (0.13) [0.00]	0.01 (0.09) [0.88]
2	-0.05 (0.08) [0.59]	-0.27 (0.10) [0.01]	-0.24 (-0.09) [0.00]	0.17 (0.11) [0.12]	0.08 (0.09) [0.37]	0.44 (0.08) [0.00]
3	-0.22 (0.22) [0.32]	-0.45 (0.20) [0.03]	-0.27 (0.36) [0.45]	0.81 (0.27) [0.00]	0.29 (0.37) [0.44]	-0.16 (0.14) [0.26]
4	0.12 (0.19) [0.55]	0.43 (0.18) [0.02]	0.56 (0.18) [0.00]	-1.47 (0.31) [0.00]	0.29 (0.18) [0.12]	0.07 (0.15) [0.63]
5	1.38 (0.28) [0.00]	0.43 (0.30) [0.15]	0.36 (0.48) [0.46]	0.49 (0.37) [0.18]	-1.99 (0.56) [0.00]	-0.66 (0.19) [0.00]
6	-0.07 (0.02) [0.00]	0.01 (0.03) [0.67]	0.02 (0.02) [0.23]	0.17 (0.03) [0.00]	-0.05 (0.02) [0.01]	-0.08 (0.05) [0.10]

Group 1: Standard errors and p-values evaluated at mean values for the period 1994-1998.

Table B3. Estimated uncompensated price elasticities and the total expenditure elasticity, standard errors (within parentheses) and p-values [within brackets] for the null hypothesis that the elasticity equals zero.				
	1	2	3	4
1	-0.77 (0.03) [0.00]	0.02 (0.03) [0.28]	-0.11 (0.05) [0.04]	-0.04 (0.06) [0.48]
2	0.10 (0.10) [0.33]	-1.00 (0.15) [0.00]	-0.10 (0.19) [0.60]	0.08 (0.22) [0.73]
3	-0.67 (0.13) [0.00]	-0.16 (0.16) [0.33]	-0.62 (0.36) [0.08]	-0.10 (0.32) [0.76]
4	-1.21 (0.40) [0.00]	0.17 (0.39) [0.66]	0.57 (0.36) [0.11]	-0.40 (0.37) [0.28]
Total expenditure	0.89 (0.12) [0.00]	0.92 (0.36) [0.01]	1.55 (0.62) [0.01]	0.86 (0.77) [0.27]

Table B4. Estimated compensated price elasticities, standard errors (within parentheses) and p-values [within brackets] for the null hypothesis that the elasticity equals zero.				
	1	2	3	4
1	-0.21 (0.06) [0.00]	0.18 (0.03) [0.00]	0.03 (0.04) [0.39]	0.00 (0.05) [0.99]
2	0.67 (0.16) [0.00]	-0.84 (0.17) [0.00]	0.05 (0.15) [0.74]	0.12 (0.21) [0.58]
3	0.30 (0.32) [0.35]	0.11 (0.21) [0.61]	-0.38 (0.28) [0.17]	-0.03 (0.30) [0.92]
4	-0.67 (0.32) [0.04]	0.32 (0.35) [0.36]	0.71 (0.28) [0.01]	-0.36 (0.37) [0.33]

Group 3: Standard errors and p-values evaluated at mean values for the period 1994-1998.

Table B5. Estimated uncompensated price elasticities and the total expenditure elasticity, standard errors (within parentheses) and p-values [within brackets] for the null hypothesis that the elasticity equals zero.				
	1	2	3	4
1	-0.57 (0.37) [0.13]	-0.38 (0.45) [0.40]	-0.14 (0.12) [0.22]	0.03 (0.17) [0.84]
2	-0.41 (0.38) [0.28]	-0.61 (0.54) [0.26]	0.06 (0.13) [0.62]	-0.12 (0.16) [0.44]
3	-0.23 (0.22) [0.30]	0.20 (0.30) [0.49]	-0.82 (0.12) [0.00]	0.11 (0.11) [0.33]
4	0.94 (1.10) [0.39]	-1.30 (1.40) [0.36]	-0.03 (0.42) [0.95]	-0.55 (0.67) [0.44]
Total expenditure	1.06 (0.23) [0.00]	1.07 (0.23) [0.00]	0.73 (0.15) [0.00]	0.93 (0.73) [0.20]

Table B6. Estimated compensated price elasticities, standard errors (within parentheses) and p-values [within brackets] for the null hypothesis that the elasticity equals zero.				
	1	2	3	4
1	-0.14 (0.46) [0.76]	0.02 (0.38) [0.95]	0.06 (0.12) [0.63]	0.06 (0.16) [0.70]
2	0.03 (0.47) [0.95]	-0.20 (0.47) [0.67]	0.26 (0.14) [0.07]	-0.09 (0.15) [0.54]
3	0.07 (0.27) [0.81]	0.48 (0.26) [0.06]	-0.68 (0.12) [0.00]	0.13 (0.11) [0.24]
4	1.32 (1.37) [0.33]	-0.94 (1.21) [0.44]	0.15 (0.42) [0.72]	-0.53 (0.65) [0.42]

Group 4: Standard errors and p-values evaluated at mean values for the period 1994-1998.

Table B7. Estimated uncompensated price elasticities and the total expenditure elasticity, standard errors (within parentheses) and p-values [within brackets] for the null hypothesis that the elasticity equals zero.

	1	2	3	4
1	-1.68 (0.17) [0.00]	0.18 (0.08) [0.02]	0.31 (0.13) [0.02]	0.47 (0.07) [0.00]
2	0.82 (0.38) [0.03]	-1.34 (0.36) [0.00]	-0.24 (0.23) [0.29]	-0.18 (0.30) [0.56]
3	0.54 (0.29) [0.06]	-0.14 (0.11) [0.21]	-1.36 (0.29) [0.00]	-0.73 (0.22) [0.00]
4	1.28 (0.27) [0.00]	-0.22 (0.22) [0.30]	-0.48 (0.19) [0.01]	-1.50 (0.20) [0.00]
Total expenditure	0.72 (0.06) [0.00]	0.94 (0.12) [0.00]	1.68 (0.14) [0.00]	0.92 (0.09) [0.00]

Table B8. Estimated compensated price elasticities, standard errors (within parentheses) and p-values [within brackets] for the null hypothesis that the elasticity equals zero.

	1	2	3	4
1	-1.29 (0.17) [0.00]	0.26 (0.08) [0.00]	0.49 (0.13) [0.00]	0.55 (0.07) [0.00]
2	1.32 (0.38) [0.00]	-1.23 (0.36) [0.00]	-0.02 (0.24) [0.95]	-0.07 (0.30) [0.81]
3	1.44 (0.29) [0.00]	0.05 (0.11) [0.63]	-0.95 (0.30) [0.00]	-0.54 (0.21) [0.01]
4	1.77 (0.27) [0.00]	-0.12 (0.21) [0.58]	-0.25 (0.19) [0.19]	-1.40 (0.20) [0.00]

Group 5: Standard errors and p-values evaluated at mean values for the period 1994-1998.

Table B9. Estimated uncompensated price elasticities and the total expenditure elasticity, standard errors (within parentheses) and p-values [within brackets] for the null hypothesis that the elasticity equals zero.

	1	2	3	4	5
1	-0.78 (0.05) [0.00]	-0.17 (0.07) [0.00]	-0.05 (0.05) [0.27]	0.02 (0.10) [0.87]	-0.05 (0.04) [0.20]
2	-0.47 (0.20) [0.02]	-1.19 (0.66) [0.07]	0.88 (0.25) [0.00]	0.06 (0.65) [0.92]	-0.09 (0.10) [0.36]
3	-0.12 (0.13) [0.36]	0.83 (0.25) [0.00]	-1.39 (0.16) [0.00]	-0.29 (0.29) [0.31]	0.11 (0.07) [0.10]
4	0.05 (0.14) [0.70]	0.04 (0.35) [0.90]	-0.14 (0.15) [0.35]	-0.62 (0.52) [0.24]	-0.08 (0.06) [0.15]
5	-0.21 (0.16) [0.19]	-0.37 (0.27) [0.17]	-0.09 (0.18) [0.61]	-0.73 (0.35) [0.04]	-0.62 (0.16) [0.00]
Total expenditure	1.03 (0.07) [0.00]	0.80 (0.25) [0.00]	0.86 (0.15) [0.00]	0.74 (0.18) [0.00]	2.02 (0.31) [0.00]

Table B10. Estimated compensated price elasticities, standard errors (within parentheses) and p-values [within brackets] for the null hypothesis that the elasticity equals zero

	1	2	3	4	5
1	-0.38 (0.06) [0.00]	-0.03 (0.07) [0.67]	0.09 (0.05) [0.06]	0.27 (0.09) [0.00]	0.05 (0.03) [0.18]
2	-0.16 (0.26) [0.55]	-1.08 (0.66) [0.10]	0.99 (0.26) [0.00]	0.26 (0.61) [0.67]	-0.02 (0.10) [0.88]
3	0.22 (0.16) [0.17]	0.94 (0.24) [0.00]	-1.27 (0.17) [0.00]	-0.08 (0.27) [0.76}	0.19 (0.07) [0.01]
4	0.35 (0.19) [0.07]	0.14 (0.35) [0.69]	-0.04 (0.16) [0.82]	-0.44 (0.49) [0.37]	-0.01 (0.06) [0.81]
5	0.59 (0.20) [0.00]	-0.11 (0.27) [0.69]	0.19 (0.17) [0.27]	-0.24 (0.32) [0.46]	-0.43 (0.16) [0.01]