STAFF STUDY No. 26

Personal Consumer Expenditures in Canada, 1926-75 Part 3

by

Thomas T. Schweitzer

prepared for the Economic Council of Canada

PERSONAL CONSUMER EXPENDITURES IN CANADA, 1926-75

Part 3:

Recreation, Entertainment and Cultural Services
Education
Other Goods and Services
Net Expenditure Abroad

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CONTENTS

1. INTRODUCTION

This is the third Part of Staff Study No. 26, and concludes the analysis begun in Parts 1 and 2.[1] Part 1 dealt with

1. Food, Beverages and Tobacco
2. Clothing, Footwear and Accessories
3. Gross Rent, Fuel and Light.

Part 2 discussed

4. Furniture, Furnishings, Household Equipment and Household Operation
5. Medical Care and Health Expenses
6. Transportation and Communications.

This third and final Part analyses

7. Recreation, Entertainment and Cultural Services
8. Education
9. Other Goods and Services
10. Net Expenditure Abroad.

In order to keep Part 3 as self-contained as possible, we are repeating, with minor appropriate modifications, Chapters 1 to 3 of Part 1. These chapters deal with the description of the model, and aspects of estimation. Chapters 4 to 8 are new and deal with the analysis and projections of the consumer items to which this Part is devoted.

Chapters 2 and 3, which discuss the method followed and the problems of estimation, are somewhat difficult and technical. For those who wish to skip these chapters and proceed immediately to our findings, beginning in Chapter 4, the following informal introduction may be useful.

The research addressed itself to a deceptively simple problem: if "normal" or "permanent" personal income after taxes (per capita, adjusted for price changes) changes by 1 per cent, by what percentage will consumption of item *i* change? If the price of item *i* changes by 1 per cent relative to the price of total consumer expenditure, what will be the percentage change in the consumption of item *i*? (In the jargon of the professional economist, what are the elasticities of consumption of item *i* with respect to "income" and to relative price?) Also, what do these elasticities imply for 1975 – provided the potential consumer expenditure described in *Perspective 1975*[2] is realized.

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[1] Thomas T. Schweitzer, *Personal Consumer Expenditures in Canada, 1926-75,* Economic Council of Canada Staff Study No. 26, *Part 1* and *Part 2,* Ottawa, Queen's Printer, 1969 and 1970, respectively.

[2] Economic Council of Canada, *Sixth Annual Review,* Ottawa, Queen's Printer, 1969.

The expression "deceptively simple" was used intentionally, because the question immediately arises: elasticities – but over what time period? This problem can be illustrated by an example. Assume that "income" rises in some year in which a great number of automobiles are bought by consumers. They will have now a larger number of new cars – in other words, the (depreciated) stock of new cars in the consumers' hands will be high. Even if the new, higher "income" persists next year, it is unlikely that most of the purchasers of the first year will be in the market for cars again in the second year. We must distinguish between the "short-term" elasticity of consumption – *the instantaneous change* – and the "long-term" elasticity, the new equilibrium level to which consumption of item *i* would settle down, *after all the dynamic reactions to the initial change have worked themselves through the system,* provided that "income" would remain stable into the indefinite future after the initial change. What we observe in our historical data is the result of these two forces – the short-term effect of this year's change and the long-term effect of all previous changes. These forces sometimes counteract and sometimes reinforce each other. Our task was to distinguish and measure them for the purpose of projecting the structure of consumer expenditure.

In general, the short-term elasticities of durables and semidurables are considerably higher than their long-term elasticities. In 1966, the last year included in our historical analysis, the short-term elasticity of Recreation Durables – i.e. radios, television sets, boats, photographic equipment, sporting goods, etc. – (item 0711+0712+0713+0714+0715+0717+0718) with respect to "income" was 2.02. The corresponding long-term elasticity was 1.27. One would expect – and this Study confirms it – that in analysing consumption, one must take into account not only current "income" and prices, but also the effects of past consumption, as reflected in the form of stocks in the hands of the consumers and the speed with which these stocks depreciate.

In the case of nondurables and services, the effect of stocks is negligible or nonexistent. Nevertheless here, too, we find that the short- and long-term elasticities differ. It is a case of *habit-formation.* When habit-formation is present, a change of total consumer expenditure does not result in an immediate adjustment of the consumption level of nondurables and services to a new equilibrium. Old habits of consumption linger, and the change goes only part way towards the new equilibrium. Should "income" stabilize at a new and higher level, the consumption of the typical nondurable or service item would continue to rise, though at a decreasing rate, until the effect of past consumption habits has worn off. Only then would the consumption of the nondurable, or service, level off at the new equilibrium. For instance, in the case of Financial Services (item 1930) we found that the short-term elasticity with respect to "income" in 1966 was 0.62, while the corresponding long-term elasticity was 1.44.

In Chapter 5, the reader will find a set of statistics: α, β, γ, γ', δ, η, and η'. The symbol α is not meaningful to the nontechnical reader. The meaning of the others is as follows:

β measures the effect of past consumption on current consumption. Generally it is expected to be negative in the case of a durable

or semidurable item, and positive in the case of nondurables and services.

γ and γ' measure the short- and long-term effect that a one-dollar change of "income" has on the consumption of the item discussed.

δ is the depreciation rate of the stocks in the hands of consumers (in the case of a durable or semidurable item) or the rate at which past consumption habits wear off (in the case of nondurables and services).

η and η' measure the short- and long-term effect of a one-point change in the relative price of the item discussed on the consumption of that item.

Before turning to the discussion of the individual consumer items, it is advisable to read Chapter 4 and the glossary at the beginning of Chapter 5.

The Dominion Bureau of Statistics recently released its decennial revision of the National Accounts.[3] The publication contains major revisions as far back as 1926. This Study is based on unpublished background data of the revised National Accounts. Chapter 4 of *Perspective 1975,* published in September 1969, contained a summary of consumer-expenditure projections based on the revised data, but this was prepared under considerable time pressure. Findings of the present Study are based on further intensive work and additional information that was not available when *Perspective 1975* was written, and may from time to time deviate somewhat from those reported in the latter publication.

The Houthakker-Taylor[4] model adopted in this Study is only one of the many interesting methods discussed in current economic literature.[5] A comparative evaluation of these methods would be a fascinating and valuable research project that could well repay the considerable time and research input needed. In view of the great dearth of detailed knowledge concerning disaggregated consumer expenditures in Canada, it was thought to be more urgent to have at least the results obtained by the use of one of these modern methods.

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[3]Dominion Bureau of Statistics, *System of National Accounts, National Income and Expenditure Accounts 1926-68,* August 1969.

[4]H. S. Houthakker and Lester D. Taylor, *Consumer Demand in the United States: Analyses and Projections,* Second and Enlarged Edition, Cambridge, Harvard University Press, 1970.

[5]See, e.g., R. Stone, A. Brown, and D. A. Rowe, "Demand Analysis and Projections for Britain: 1900-1970", in *Europe's Future Consumption* (J. Sandee, Ed.), Amsterdam, North-Holland Publishing Co., 1964, Chapter 8; A. P. Barten, "Consumer Demand Functions under Conditions of Almost Additive Preferences", *Econometrica,* Vol. 32, April 1964, pp. 1-38; and C. Almon, *The American Economy to 1975,* New York, Harper & Row, 1966, pp. 24-53.

2. THE MODEL

The approach of our Study is that of Houthakker and Taylor,[6] and can be summarized as follows:

Assume for a start that consumer expenditure for a particular good (or group of goods) – say, automobiles – in time period t is determined by the income of the consumers and by the (depreciated) stock of automobiles held by consumers. (This is an extremely simplified assumption. Refinements will be introduced later on.) The starting assumption can be expressed symbolically as:

$$(1) \quad q_t = \alpha + \beta s_t + \gamma x_t$$

where q_t = consumer expenditures on automobiles in constant (1961) dollars per capita of Canada's population during the time interval from t to $t+1$,

s_t = average depreciated inventory of automobiles in the hands of consumers during the interval in constant dollars per capita,

x_t = personal disposable income in constant dollars per capita during the interval.

s_t is usually not known, but it can be eliminated in the following manner:

$$(2) \quad \Delta^* s_t = q_t - w_t$$

where $\Delta^* s_t$ = change in stock of automobiles in the hands of consumers *during* the time period t,

w_t = using up, or "depreciation" of this stock during the same time interval.

Assume further

$$(3) \quad w_t = \delta s_t$$

where δ is a constant depreciation rate. Substituting (3) into (2) gives

$$(4) \quad \Delta^* s_t = q_t - \delta s_t.$$

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[6] *Op. cit.* This work gives the model both in continuous and discrete form. Our summary is in discrete form. It should be pointed out that our notation differs slightly from that of Houthakker and Taylor.

Rearranging (1) we get

$$(5) \quad s_t = \frac{1}{\beta}(q_t - \alpha - \gamma x_t)$$

and substituting (5) into (4),

$$(6) \quad \Delta^* s_t = \left(1 - \frac{\delta}{\beta}\right) q_t + \frac{\alpha\delta}{\beta} + \frac{\gamma\delta}{\beta} x_t.$$

Lagging equation (1) by one time period

$$(7) \quad q_{t-1} = \alpha + \beta s_{t-1} + \gamma x_{t-1}$$

and subtracting (7) from (1) we obtain

$$(8) \quad q_t - q_{t-1} = \beta(s_t - s_{t-1}) + \gamma(x_t - x_{t-1}).$$

Assume that $s_t - s_{t-1}$ can be approximated in the following manner:

$$(9) \quad s_t - s_{t-1} \simeq \tfrac{1}{2}(\Delta^* s_t + \Delta^* s_{t-1}).$$

(The exact equality holds true if the behaviour of the s variable is linear within each time period.) Then

$$(10) \quad q_t - q_{t-1} = \frac{\beta}{2}(\Delta^* s_t + \Delta^* s_{t-1}) + \gamma(x_t - x_{t-1})$$

Substituting (6) into (10) we obtain

$$(11) \quad q_t - q_{t-1} = \frac{\beta}{2}\left[\left(1 - \frac{\delta}{\beta}\right) q_t + \frac{\alpha\delta}{\beta} + \frac{\gamma\delta}{\beta} x_t + \left(1 - \frac{\delta}{\beta}\right) q_{t-1} + \frac{\alpha\delta}{\beta} + \frac{\gamma\delta}{\beta} x_{t-1}\right] + \gamma(x_t - x_{t-1}).$$

This can be simplified (provided $\beta - \delta \neq 2$) to

$$(12) \quad q_t = \frac{\alpha\delta}{1 - \tfrac{1}{2}(\beta - \delta)} + \frac{1 + \tfrac{1}{2}(\beta - \delta)}{1 - \tfrac{1}{2}(\beta - \delta)} q_{t-1} + \frac{\gamma(1 + \tfrac{1}{2}\delta)}{1 - \tfrac{1}{2}(\beta - \delta)} x_t - \frac{\gamma(1 - \tfrac{1}{2}\delta)}{1 - \tfrac{1}{2}(\beta - \delta)} x_{t-1}.$$

s_t has disappeared from the equation and the remaining variables are now the directly observable quantities q_{t-1}, x_t and x_{t-1}.

It is convenient to express

$$(13) \quad x_t = x_{t-1} + (x_t - x_{t-1})$$

which leads to

$$(14) \quad q_t = \frac{\alpha\delta}{1 - \tfrac{1}{2}(\beta - \delta)} + \frac{1 + \tfrac{1}{2}(\beta - \delta)}{1 - \tfrac{1}{2}(\beta - \delta)} q_{t-1} + \frac{\gamma\delta}{1 - \tfrac{1}{2}(\beta - \delta)} x_{t-1} + \frac{\gamma(1 + \tfrac{1}{2}\delta)}{1 - \tfrac{1}{2}(\beta - \delta)}(x_t - x_{t-1})$$

or simply

$$(14a) \quad q_t = A_0 + A_1 q_{t-1} + A_2 x_{t-1} + A_3 \Delta x_t.$$

Here Δx_t stands for the difference in x *between* the two time periods t and $t-1$. The parameters α, β, γ and δ of equation (1) and (3) can be obtained from the coefficients of (14a) as follows:

$$(15)\quad \alpha = \frac{2A_0(A_3 - \tfrac{1}{2}A_2)}{A_2(A_1+1)}$$

$$(16)\quad \beta = \frac{2(A_1-1)}{A_1+1} + \frac{A_2}{A_3-\tfrac{1}{2}A_2}$$

$$(17)\quad \gamma = \frac{2(A_3-\tfrac{1}{2}A_2)}{A_1+1}$$

$$(18)\quad \delta = \frac{A_2}{A_3-\tfrac{1}{2}A_2}$$

β, γ and δ are of particular interest. β, the stock coefficient, can be expected to be negative in the case of consumer durables. However, β is meaningful also in the case of nondurables and services. It should be recalled that in our calculations we never deal with the variable s directly – we infer its existence from the behaviour of the variables used in (14a) and expect a negative β in the case of durables and semidurables on the basis of practical experience. In fact, s can be regarded as an unspecified "state variable", the coefficient of which will normally have a negative sign in the case of those goods where inventories currently in the hands of consumers have a depressing effect on consumer expenditure in the next time period.

We can also visualize cases in which the state variable would normally have a positive coefficient. Essentially, s_t stands for the (not directly measurable) effect of *past* consumer expenditures on *current* expenditures. This can manifest itself in the form of stocks in the hands of consumers, or in the form of consumers' habits. Consumption theory has long postulated the existence of habit formation, i.e., a relevant variable which is not directly measurable, and which will result in a lagged adjustment of consumption to income changes. (It will be demonstrated later that in most cases this is equivalent to $\beta > 0$.) This is particularly true in the case of nondurables and services. Here the nonmeasurable state variable, which in the case of durables stands for physical stocks, represents habit formation, or a psychological stock of habits. Similarly δ, which in the case of durables and semidurables measures the depreciation rate of physical stocks, measures, in the case of nondurables and services, the depreciation or "wearing off" of consumption habits.

It should be pointed out that the above-mentioned dichotomy between "stock affected" durables and semidurables with negative betas on the one hand and "habit affected" nondurables and services with positive betas on the other is an oversimplification. In most cases both the "stock effect" and the "habit effect" are at work simultaneously in the consumption pattern of any consumption item, and β *measures their joint influence.* It would be desirable to separate the "stock effect" from the "habit effect" but we don't know of any model that can accomplish this.

In the case of durables and to a lesser degree of semidurables the stock effect usually predominates and β is, therefore, negative. However, there are cases when a highly successful new durable product breaks into the market. Then a kind of nation-wide habit formation develops and outweighs the stock effect. In such a

case a durable good may show a positive β until the market is "saturated". U.S. experience yields a positive β for radio and television receivers, records and musical instruments.[7] Again, nondurable products and services, which for reasons of technology, social and institutional developments or changes in taste have lost favour with the consuming public and are regarded as inferior, may show negative habit formation and thus a negative β. A U.S. example for such a product group is "fuels other than electricity and natural gas, and ice".[8]

γ measures the short-range effect of a unit change in x on q. The long-term effect of a change in x can be also calculated. This is the entire change in consumption caused by a once-for-all change in x, including the lagged effects caused by changes of the state variable.

Let us define long-term equilibrium in which q, s and x all remain constant over time and denote these long-term levels as $\hat{q}$, $\hat{s}$ and $\hat{x}$. Then $\Delta^* \hat{s} = 0$ and it follows from (4)

$$(19)\quad \hat{q} = \delta \hat{s}.$$

Substitution of (19) into (1) yields

$$(20)\quad \hat{q} = \alpha + \frac{\beta}{\delta}\hat{q} + \gamma \hat{x}$$

and assuming $\beta \neq \delta$

$$(21)\quad \hat{q} = \frac{\alpha \delta}{\delta - \beta} + \frac{\gamma \delta}{\delta - \beta}\hat{x}.$$

The derivative of $\hat{q}$ with respect to $\hat{x}$ is then

$$(22)\quad \gamma' = \frac{\gamma \delta}{\delta - \beta},$$

the long-term coefficient.

It should be pointed out that γ and γ' *are not elasticities.*[9] Since equation (1) is a linear model, the elasticities will therefore be different at each point along the curve.[10] However, it is easy to calculate the short- and long-term elasticities once γ and γ' are obtained. In most cases γ and δ will be positive. From this it follows that a negative β (i.e., "stock effect" predominates) will result in $\gamma' < \gamma$, and a positive β (i.e., "habit formation" predominates) in $\gamma' > \gamma$. A positive β is thus equivalent to a lagged adjustment of consumption to income changes, while a negative β implies an initial overshooting of the equilibrium consumption level, followed by subsequent correction.

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[7] Houthakker and Taylor, *op. cit.*, p. 126.

[8] *Ibid.*, p. 90.

[9] The short-term elasticity with respect to x is defined as $\frac{\partial q}{\partial x} \cdot \frac{x}{q}$ and the long-term elasticity as $\frac{\partial q}{\partial \hat{x}} \cdot \frac{\hat{x}}{\hat{q}}$. (Here ∂ means the partial derivative. It should not be confused with the depreciation rate of equation (3) and passim.)

[10] In Chapter 5 we have calculated the elasticities for the mean of the historical range and also for the most recent time period of the regression fit (i.e., 1966).

Additional variables can be introduced into an equation of the type (1). For instance, the introduction of relative price p (implicit price deflator of the product group divided by implicit price deflator of total consumer expenditures) leads to

$$(23)\quad q = \alpha + \beta s_t + \gamma x_t + \eta p_t \text{ (the structural equation),}$$

$$(23a)\quad q_t = A_0 + A_1 q_{t-1} + A_2 x_{t-1} + A_3 \Delta x_t + A_4 p_{t-1} + A_5 \Delta p_t \text{ (the estimating equation).}$$

By analogy we obtain counterparts to (17) and (22):

$$(24)\quad \eta = \frac{2(A_5 - \tfrac{1}{2}A_4)}{A_1 + 1},$$

$$(25)\quad \eta'' = \frac{\eta\,\delta}{\delta - \beta} \text{ (see footnote 11).}$$

[11] By analogy to footnote 9 the elasticities with respect to p are $\frac{\partial q}{\partial p}\frac{p}{q}$ and $\frac{\partial \hat{q}}{\partial \hat{p}}\frac{\hat{p}}{\hat{q}}$.

3. ASPECTS OF ESTIMATION

The computer program used for estimation was the DATABANK-MASSAGER system designed by Michael C. McCracken and described in his article, "A Computer System for Econometric Research", *Social Science Information*, Vol. VI, No. 5, October 1967, pp. 151-158.

The Problem of Over-identification

With the introduction of the additional variable p a complication arises because δ becomes over-identified. In addition to

$$(18)\quad \delta = \frac{A_2}{A_3 - \tfrac{1}{2}A_2},$$

(23) and (23a) yield

$$(26)\quad \delta = \frac{A_4}{A_5 - \tfrac{1}{2}A_4}.$$

These two estimates of δ are not necessarily the same. In order to derive a unique estimate of δ, which yields also a unique estimate of δ and β, we set

$$(27)\quad \frac{A_2}{A_3 - \tfrac{1}{2}A_2} = \frac{A_4}{A_5 - \tfrac{1}{2}A_4}, \quad \text{i.e.,} A_2A_5 = A_3A_4.$$

This is an additional nonlinear restriction which has to be imposed on equation (23a), when performing our least-squares estimate. The method employed in this Study is that of D. W. Marquardt.[12]

The Problem of Autocorrelation

In estimating least-squares regressions of the type (23a) which contains a lagged dependent variable, one frequently encounters a high degree of autocorrelation in the residuals. This is undesirable for a variety of statistical reasons. Houthakker and Taylor adopted the method developed by L. D. Taylor and T. A. Wilson for dealing with this problem.[13]

To summarize its essential point, we assume that the error term u_t of equation (23a) can be approximated by the expression

$$(28)\quad u_t = \lambda u_{t-1} + \epsilon_t$$

[12] D. W. Marquardt, "An Algorithm for Least-Squares Estimation of Nonlinear Parameters", *Journal of the Society for Industrial and Applied Mathematics*, Vol. 1, No. 2, June 1963; Duane Meeter and Peter Wolfe, "Nonlinear Least Squares (GAUSHAUS)", University of Wisconsin Computing Centre, 1966 (mimeo.).

[13] For a detailed description see L. D. Taylor and T. A. Wilson, "Three Pass Least Squares: A Method for Estimating Models with a Lagged Dependent Variable", *Review of Economics and Statistics*, Vol. XLVI, No. 4, Nov. 1964.

where ϵ_t is independently distributed, i.e., $E(\epsilon_t \epsilon_{t'}) = 0$ for all t and t' $(t \neq t')$. The method consists of computing a time-series for u_{t-1} (hereafter referred to as the three-pass variable) and introducing it as an additional variable in (23a).[14]

When preparing a projection, the value of the three-pass variable for the first projection time unit can be obtained from the last observation of the historical period. For subsequent time units the historical mean of the three-pass variable should be used.[15]

Special Cases

Equation (23a) is a very flexible framework for analysing consumer expenditure. This can be demonstrated by discussing some special cases, many of which we have encountered in our work:

1) $A_1 = 1$.

This implies $\beta = \delta$. See equations (16) and (18). In this case q_{t-1} can be carried over to the left side of the equation (23a) and the equation is estimated with Δq as dependent variable. The long-run coefficients γ' and η' and the corresponding elasticities can no longer be estimated, due to the required division by $\delta - \beta$ in equation (22). The equation, however, can still be used for projection purposes.

2) $A_2 = A_4 = 0$.

This implies $\delta = 0$. See equation (18). In this case omit x_{t-1} and p_{t-1} and the constant term from the equation. The long-run interpretation breaks down, because according to (21) this case implies $\hat{q} = 0$, which is implausible.

3) $A_1 = 0$.

This implies $\delta = \beta + 2$. See equation (16). If this occurs when $A_2 = A_3$ and $A_4 = A_5$ (see below), the case reduces itself to an ordinary static equation.

4) $A_2 = A_3, A_4 = A_5$.

This implies $\delta = 2$. Only current income and price are included in the equation. Equation (19) shows that δ can also be regarded as a consumption-inventory ratio. In this case $\delta = 2$ would arise when a commodity of the lifetime of one year is bought once a year.

A more useful interpretation, however, is the following: Houthakker and Taylor have demonstrated[16] that $\delta = 2$ is equivalent to the classical distributed-lag model of Koyck,

$$(29) \quad q_t = \alpha + \beta \sum_{i=0}^{\infty} \psi^i x_{t-i}.$$

[14] The three-pass method, for which Houthakker and Taylor claim good small-sample properties, has been subject to criticism in recent statistical literature. Nevertheless, the second edition of Houthakker and Taylor, in which they re-estimate their equations on the basis of the revised U.S. National Accounts data, uses the three-pass method.

[15] Houthakker and Taylor, *op. cit.*, p. 46.

[16] *Ibid.*, pp. 24-26.

5) $A_3 = A_5 = 0$.
This implies $\delta = -2$. Only lagged values of income and price are included in the equation. This is equivalent to the Koyck-type model

$$(30) \qquad q_t = \alpha + \beta \sum_{i=1}^{\infty} \psi^{i-1} x_{t-i} \ .$$

In this case the short-term income coefficient can be negative and the long-term coefficient positive.
6) δ is very large.
This is the "Bergstrom case"[17] (named after A. R. Bergstrom of the London School of Economics), which arises when A_2 (A_4) does not significantly differ from $2A_3$ $(2A_5)$. It is equivalent to a model which assumes that the consumer is attempting to change his actual level of consumption towards a desired level which is determined by his income (and by other relevant variables). This can be expressed in algebraic form as:

$$(31) \quad \Delta^* q = \theta (\tilde{q} - q)$$
$$\tilde{q} = \xi + \mu x$$

where $\tilde{q}$ is the desired level of consumption. Assuming

$$(32) \quad q_t - q_{t-1} = \tfrac{1}{2} (\Delta^* q_t + \Delta^* q_{t-1})$$

the estimating equation becomes

$$(33) \quad q_t = A_0 + A_1 q_{t-1} + A_2 (x_t + x_{t-1}) .$$

From (33) follows that

$$(34) \quad \text{the constant term } \xi = \frac{A_0}{1 - A_1}$$
$$(35) \quad \text{the adjustment coefficient } \theta = \frac{2 (1 - A_1)}{1 + A_1}$$
$$(36) \quad \text{the income coefficient } \mu = \frac{2A_2}{1 - A_1} \ .$$

After inclusion of the price term, the estimating equation becomes

$$(37) \quad q_t = A_0 + A_1 q_{t-1} + A_2 (x_t + x_{t-1}) +$$
$$A_3 (p_t + p_{t-1})$$

and by analogy to (36)

$$(38) \quad \text{the price coefficient } \lambda = \frac{2A_3}{1 - A_1}$$

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[17] *Ibid.*, pp. 26-27.

4. THE DATA FOR ESTIMATION AND PROJECTION

The data on consumption are on a per capita constant (1961) dollar basis. The source of the data is the 1969 historical revision of the DBS National Income and Expenditure Accounts.[18] The DBS available series were disaggregated by us, with the help of certain unpublished DBS data as a guide. Our disaggregation does not necessarily reflect the judgment of DBS on the quality of the data at the level of aggregation being used in the present Study. The method in this Study is that of time series analysis, using in the main the period 1926-66, with the war years 1940-45 omitted. In a few instances where circumstances justified it, additional years were omitted. These cases will be clearly indicated in the discussion of the individual consumer items.

The most important independent variable, x, is total consumer expenditure per capita, in constant dollars. This is a better approximation to "normal" or "permanent" income than is the "measured" income reported by DBS.[19]

Starting with 1961 it was necessary to make an adjustment to the published DBS personal consumer expenditure data. From 1961 on, DBS has transferred a part of medical care and health expenses from personal consumer expenditures to government expenditures. This causes a discontinuity in the published personal consumer data. To avoid the discontinuity, we have transferred hospital insurance and medicare back into personal consumer expenditure.

In this Study, p stands for the relative price of the product group investigated, i.e. the implicit price deflator of the group divided by the implicit price deflator of total consumption expenditure.

We made frequent use of a dummy variable d with the value 0 in the 1926-39 period and with the value 1 in 1946-66. This dummy variable is assumed to measure the influence of social, institutional and taste changes between the prewar and postwar period.

The three-pass least-squares method was adopted whenever the coefficient of the three-pass variable was larger than its standard error or if the Durbin-Watson statistic of ordinary least squares was outside the range 1.6 and 2.4. This occurred in 6 instances out of 12 consumer items.

Whenever additional variables have been used, their explanation will be given in the discussion of the individual product group.

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[18] In classifying consumer expenditure items and deciding which should be regarded as durables, semidurables, nondurables or services, DBS has in the main followed the recommendations of the United Nations document: *Proposal for Revising the SNA*, 1952, E/CN. 3/345.

[19] For the concept of permanent income see M. Friedman, *The Theory of the Consumption Function*, Princeton, Princeton University Press, 1957.

In general, we retained a variable whenever its coefficient was larger than its standard error. However, this rule was not observed rigidly, but tempered by judgment. Also, a variable was omitted if the sign of its coefficient was judged incorrect on basic theoretical reasoning. The most frequent occurrence of this kind was that of a positive coefficient for p.[20]

Projections of the individual consumption items by our equations would not forcibly add up to total consumption, even if we had derived equations for all components of consumer expenditure. A method to solve this problem by adjusting total consumer expenditure until the components add up to the original unadjusted consumer expenditure is described in Houthakker and Taylor.[21]

TABLE 1

VALUES OF INDEPENDENT VARIABLES, 1969 and 1975

Variable	1969	1975	Method of Extrapolation
x (in 1961 dollars)	$1,862.19	$2,355.50*	exponential
p of item 0730 Books, Newspapers & Magazines	113.5	122.5	linear
1910 Personal Care Services	121.8	139.8	"
1920 Expenditure in Restaurants, Cafés & Hotels	118.4	130.4	"
1930 Financial Services	127.6	150.4	"
1940 Other Services N.E.S.	117.4	130.0	"
2001 Personal Portion of Tourist & Travel Payments	106.1	103.1	"
2004 Tourist & Travel Receipts	109.8	118.8	"
Households with TV sets per 100 households	95.5	96.9	asymptotic
University enrolment per 1,000 population	13.32	21.13	
Women aged 15-59 per 100 population	28.75	29.40	

*This value is equivalent to that given in 1967 dollars in *Perspective 1975, op. cit. p. 55.*

[20]We have calculated only the standard errors of the coefficients of the estimating equations. It would be, of course, desirable to obtain also the standard errors of the structural equations, but lack of time and resources have made this impossible.

[21]*Op. cit.*, pp. 52-54.

Our regression analysis is based on the period 1926-66. We have omitted from our analysis the available data for 1967-69 in order to be able to test the forecasting ability of our regressions (see Chapter 7). However, we have used the 1969 DBS data as the starting point of our projections to 1975.

To prepare these projections, it was necessary to make certain assumptions regarding the future course of the independent variables. These assumptions are summarized in Table 1. The historic means of the three-pass variables, needed for projection purposes, are to be found in Table 2.

TABLE 2

HISTORIC MEAN OF THE THREE-PASS VARIABLES

Item	Mean
0730 Books, Newspapers & Magazines	+ 1.36
0910 Cosmetics	+ 1.56
1720 Entertainment, Recreation & Cultural Services	− 2.59
1800 Education	−11.66
1910 Personal Care Services	− 1.95
2001 Personal Portion of Tourist & Travel Payments	− 3.55

The DBS consumer expenditure data are derived with great diligence, clarity and careful judgment. They contain much valuable and useful material. At the same time DBS would be the first to agree that there is scope for improvement, particularly at the widely disaggregated level. In general, DBS follows the reasonable practice of devoting more resources to the estimation of big and important consumer items than to the smaller ones. While in theoretical economic work it is not regarded as fair play to criticize the underlying data, in applied work it is necessary to point out such weaknesses in order to warn the private and public policy-makers. We shall point out some of our doubts in the discussion of the individual consumer items. Two general remarks have to be made, however, at the very beginning.

First, current dollar expenditures on the individual consumption items as reported by DBS do *not* contain the retail sales tax. The price deflators, on the other hand, *do* contain the tax. To this extent the real expenditures on items subject to the tax are under-reported.

Second, total consumer expenditure contains an item called "Miscellaneous Goods and Adjusting Entries". Under this heading are reported (among others) those consumer expenditures that DBS cannot at this time – for one reason or another – assign to the individual disaggregated items. This item has grown very rapidly since 1951:

MISCELLANEOUS GOODS AND ADJUSTING ENTRIES

	Index 1961=100
1951	46.9
1961	100.0
1969	479.0

Ultimately a large part of "Miscellaneous Goods" will be assigned to individual consumer items. In the meantime, however, these items remain under-reported.

5. EXPENDITURE EQUATIONS AND PROJECTIONS FOR DETAILED ITEMS OF EXPENDITURE

Glossary

d.	durable consumer good expenditure.
s.d.	semidurable consumer good expenditure.
n.d.	nondurable consumer good expenditure.
s.	consumer service expenditure.
q_t	consumer expenditure on the item in question in constant (1961) dollars per capita in year t.
Δq_t	$q_t - q_{t-1}$
x_t	total consumer expenditure in constant (1961) dollars in year t.
Δx_t	$x_t - x_{t-1}$
p_t	relative price of the item in year t (1961=100), i.e., implicit price index of the item divided by the implicit price index of total consumer expenditure multiplied by 100.
Δp_t	$p_t - p_{t-1}$.
d_t	prewar-postwar dummy (takes value 0 in the period 1926-39 and value 1 in the period 1946-66).
z_t	three-pass variable.
$\bar{R}^2$	coefficient of multiple determination corrected for degrees of freedom.
S.E.E.	standard error of estimate.
D-W	Durbin-Watson coefficient.
α	intercept in structural equation.
β	state variable coefficient in structural equation.
γ	short-run total consumer expenditure coefficient of structural equation.
γ'	long-run total consumer expenditure coefficient of structural equation.
δ	depreciation rate.
η	short-run relative price coefficient of structural equation.

η' long-run relative price coefficient of structural equation.

ξ intercept in Bergstrom model.

θ adjustment coefficient in Bergstrom model.

μ total consumer expenditure coefficient in Bergstrom model.

λ relative price coefficient in Bergstrom model.

A_0 intercept in estimating equation.

A_1 coefficient of q_{t-1} in estimating equation.

A_2 coefficient of x_{t-1} in estimating equation.

A_3 coefficient of Δx_t in estimating equation.

A_4 coefficient of p_{t-1} in estimating equation.

A_5 coefficient of Δp_t in estimating equation.

A_6 coefficient of d_t in estimating equation.

A_7 coefficient of z_t in estimating equation.

A_8 coefficient of other variables in estimating equation.

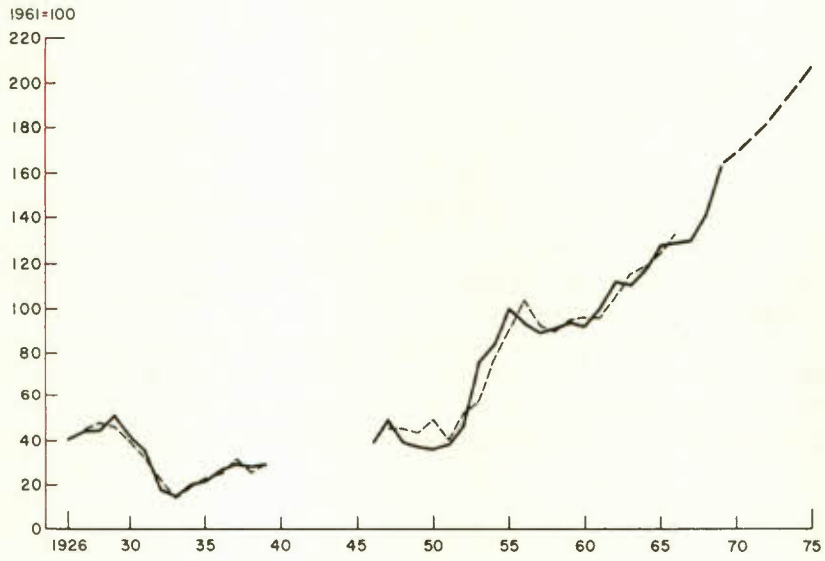
Numbers in parentheses under coefficients are the respective standard errors.

——— Solid line on charts = observed magnitudes.

- - - - - - Short broken line on charts = calculated historical magnitudes.

— — Long broken line on charts = projected magnitudes.

0711 + 0712 + 0713 + 0714 + 0715 + 0717 + 0718 RECREATIONAL DURABLES (d.)



$$q_t = -\underset{(1.27700)}{2.68503} + \underset{(0.08428)}{0.76406}q_{t-1} + \underset{(0.00213)}{0.00553}x_{t-1} + \underset{(0.00780)}{0.03571}\Delta x_t$$

$\alpha = -18.1424$
$\beta = -0.0997$
$\gamma = +0.0374$
$\delta = +0.1678$
$\eta =$

$\gamma' = +0.0234$

$\eta' =$

$\bar{R}^2 = 0.970$
S.E.E. = 1.45
D-W = 1.80

Consumption Elasticities

with respect to	short-term	long-term
x at mean	+2.74	+1.72
x in 1966	+2.02	+1.27
p at mean		
p in 1966		

	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	162.7	187.9
1975	207.1	264.4
1975/1969	+ 27.3%	+ 40.7%

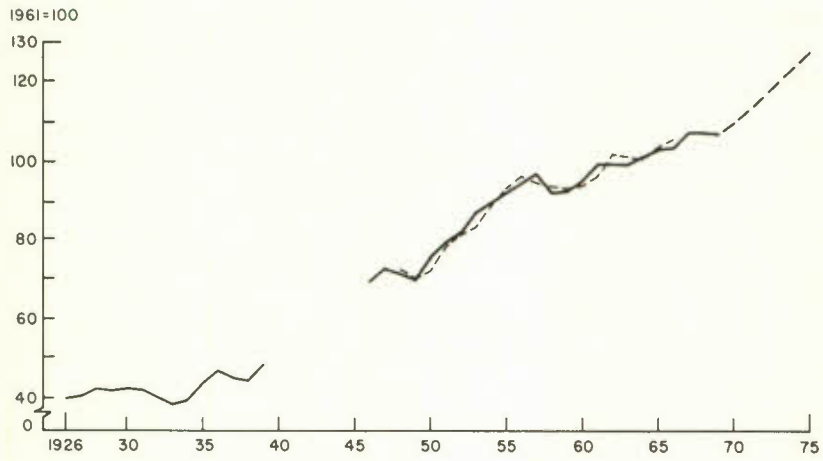
This group contains radios and phonographs, television sets, boats, outboard motors and boating accessories, cameras and photographic accessories, films and supplies, sporting goods and camping equipment, musical instruments and supplies, and repairs to the items mentioned.

The coefficients of the p terms had the wrong sign, and therefore these variables were discarded. It is gratifying to see that this group shows a negative β, as expected in the case of durables. The long- and especially the short-term elasticities with respect to x are well above unity, as one would expect with luxury-type goods.

0716 TOYS AND GAMES (s.d.)
0719 FLOWERS (n.d.)

These items were deemed too small to justify an intensive research effort. However, these items form part of section 7 (Entertainment, Recreation and Cultural Services), and also of the major aggregates Semidurable Goods and Nondurable Goods, which are projected to 1975 in Chapter 8, pp. 57-58. In consequence it became necessary to project Toys and Games, and Flowers on the basis of subjective judgment. Our projections on pp. 57-58 incorporate our judgment on the future demand for items 0716 and 0719.

0730 BOOKS, NEWSPAPERS, MAGAZINES, STATIONERY AND SUPPLIES (n.d.)



$$q_t = + 0.96672q_{t-1} + 0.01022\Delta x_t - 0.07739\Delta p_t + 0.35263z_t$$
$$\quad\quad (0.02912) \quad\quad (0.00343) \quad\quad (0.03020) \quad\quad (0.28852)$$

α = indeterminate
β = − 0.0338
γ = + 0.0104
δ = 0
η = − 0.0787

γ' =

η' =

$\bar{R}^2$ = 0.956
S.E.E. = 0.36
D-W = 1.79

Consumption Elasticities

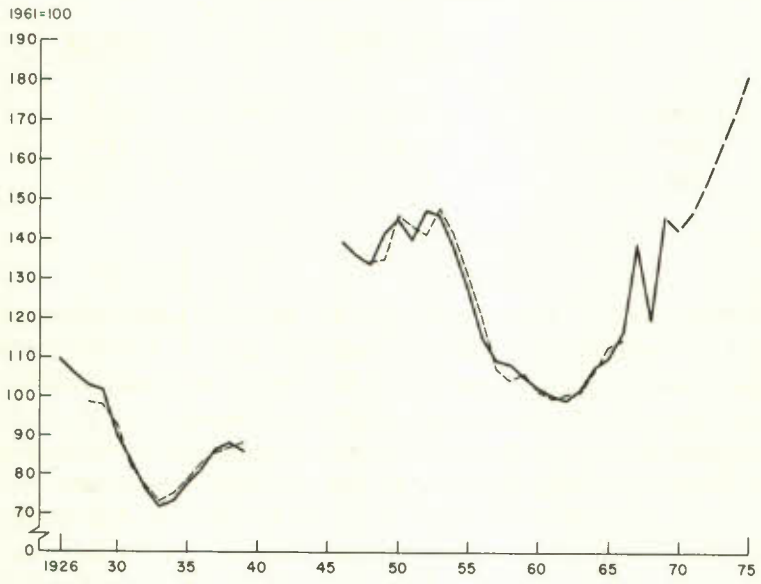
with respect to	short-term	long-term
x at mean	+ 0.90	
x in 1966	+ 1.00	
p at mean	− 0.50	
p in 1966	− 0.48	

	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	107.0	123.6
1975	127.5	162.8
1975/1969	+ 19.1%	+ 31.7%

This item caused us much trouble. Attempts to fit a regression to the 1926-66 period led to absurd results ($A_1 > 1$). This led us to experiments with the postwar period only. Initial computer-runs with the 1946-66 period yielded negative δ and non-significant coefficients for x_{t-1} and p_{t-1}. Constraining δ to zero yielded the equation quoted above. It is difficult to say what sign one should expect for β with this item. Some people may regard reading and writing habit-forming, which would require a positive β. On the other hand, well-produced books can be very durable. It is interesting to see that Houthakker and Taylor obtained a β of −0.1024 for Books and Maps and a β of zero for Newspapers and Magazines.[22]

[22] *Op. cit.*, pp. 122-123.

1720 ENTERTAINMENT, RECREATION AND CULTURAL SERVICES (s.)



$$q_t = + 1.93715 + 0.27765q_{t-1} + 0.01356x_t + 2.75230d_t$$
$$(1.36446) \quad (0.10870) \quad (0.00265) \quad (0.80730)$$
$$- 0.12261 \text{ (households with TV sets/100 households)}_t$$
$$(0.02020)$$
$$+ 0.52747z_t$$
$$(0.13014)$$

$\alpha = +1.5162$
$\beta = +0.8692$
$\gamma = +0.0106$
$\delta = +2$
$\eta =$

$\gamma' = + 0.0188$

$\eta' =$

$\bar{R}^2 = 0.981$
S.E.E. = 0.56
D-W = 2.01

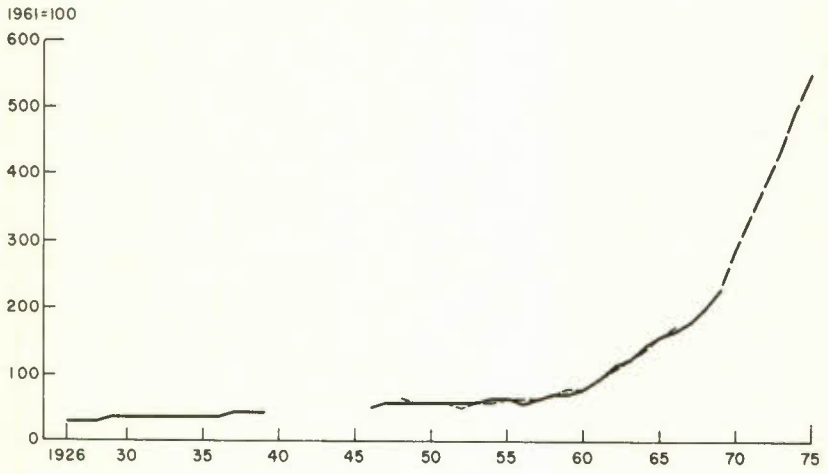
Consumption Elasticities

with respect to	short-term	long-term
x at mean	+0.83	+1.07
x in 1966	+1.19	+1.54
p at mean		
p in 1966		

	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	145.7	168.3
1975	181.1	231.2
1975/1969	+ 24.3%	+ 37.4%

The introduction of households with TV sets as an additional variable was prompted by the hypothesis that TV ownership tends to reduce spending on entertainment services. It was gratifying to find that the additional variable proved significant, displayed the expected sign, and improved the regression fit. At the same time it became necessary to discard the p variables, because their retention resulted in q_{t-1} becoming non-significant. In the end the choice boiled down to having *either* the p variables in the equation *or* the TV variable. The final decision was based on the better fit due to the TV variable and also on the fact that the p variables led to what appeared to us unrealistically high long-term price elasticities (−3.30 in 1966).

1800 EDUCATION (s.)



$$q_t = -1.25663 + 0.71056q_{t-1} + 1.52848 \text{ (non-veteran university enrolment/1,000 population)}_t$$
$$(0.47002) \quad (0.18601) \quad (0.41243)$$
$$+ \ 0.29685z_t$$
$$(0.11657)$$

$\bar{R}^2 = 0.993$
S.E.E. = 0.45
D-W = 1.93

Real Consumption

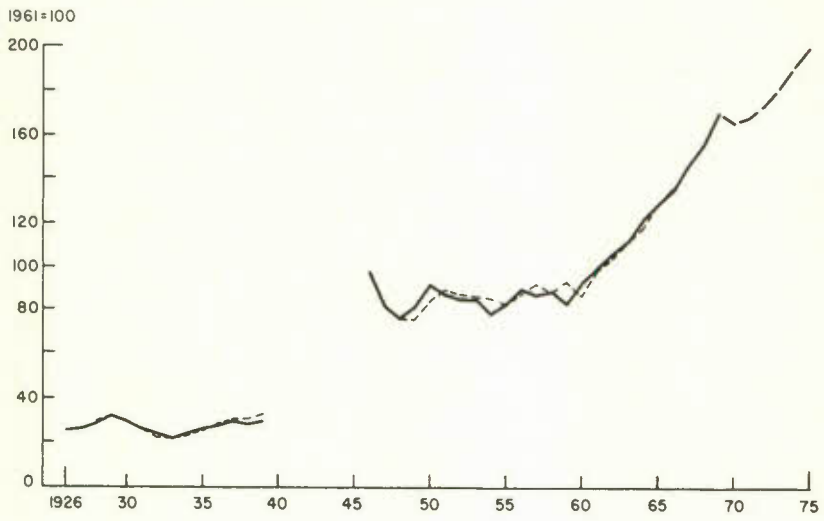
	per capita	aggregate
1969	234.3	270.6
1975	556.2	710.2
1975/1969	+137.4%	+162.4%

This item contains expenditure on private schools operated for profit and the operating cost of nonprofit schools and of universities. It does not contain the costs of the public school system, community colleges, CEGEP's, etc.

Little variation occurred in this item prior to 1939, so it was decided to fit our regression to the 1946-66 period. University enrolment as an additional variable proved highly significant, but it was interesting to see that its introduction resulted in the x and p variables either becoming non-significant or having the wrong sign. Thus our equation merely calculates the relationship between real consumer expenditure on education and university enrolment. The projection of this item to 1975, based on recent enrolment projections prepared for the Economic Council of Canada,[23] yields extremely high increases.

[23] Z. E. Zsigmond and C. J. Wenaas, *Enrolment in Educational Institutions by Province, 1951-52 to 1980-81*, Economic Council of Canada Staff Study No. 25, Ottawa, Queen's Printer, 1970.

0910 COSMETICS (n.d.)



$$q_t = -11.09099 + 0.53279q_{t-1} + 0.00435x_{t-1} + 0.00663\Delta x_t$$
$$(6.46857) \quad (0.21555) \quad (0.00184) \quad (0.00197)$$
$$+ 0.30528 \text{ (women aged 15-59/100 population)}_t$$
$$(0.19416)$$
$$+ 0.43139z_t$$
$$(0.31211)$$

$\alpha = -14.8291$
$\beta = +0.3663$
$\gamma = +0.0058$
$\delta = +0.9759$
$\eta =$

$\gamma' = +0.0093$

$\eta' =$

$\bar{R}^2 = 0.989$
S.E.E. = 0.34
D-W = 2.14

Consumption Elasticities

with respect to	short-term	long-term
x at mean	+ 0.99	+ 1.59
x in 1966	+ 0.79	+ 1.26
p at mean		
p in 1966		

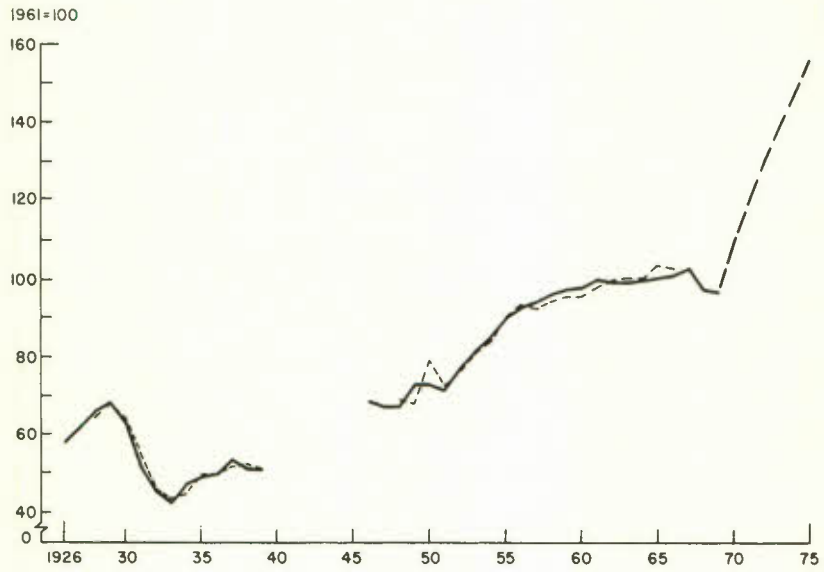
Real Consumption
(1961 = 100)

	per capita	aggregate
1969	170.3	196.7
1975	200.4	255.9
1975/1969	+ 17.7%	+ 30.1%

The regression for this item was substantially improved by adding a variable reflecting the changing age-composition of Canadian women.[24] The p variables proved non-significant and were therefore discarded. Beta is positive, as expected with nondurable goods, but the habit-formation wears off rapidly ($\delta = 0.98$).

[24] For this suggestion the author is indebted to Miss Dorothy Walters of the Economic Council of Canada.

1910 PERSONAL CARE SERVICES (s.)



$$q_t = + 1.53945 + 0.70205q_{t-1} + 0.00535x_{t-1} + 0.01070\Delta x_t$$
$$(0.51600) \quad (0.09550) \quad (0.00149) \quad (0.00834)$$
$$- 0.03914p_{t-1} - 0.07832\Delta p_t + 0.2973z_t$$
$$(0.01578) \quad (0.02728) \quad (0.1914)$$

$\alpha = +2.7152$
$\beta = +0.3161$
$\gamma = +0.0094$
$\delta = +0.6662$
$\eta = -0.0690$

$\gamma' = +0.0180$

$\eta' = -0.1314$

$\bar{R}^2 = 0.986$
S.E.E. = 0.39
D-W = 2.16

Consumption Elasticities

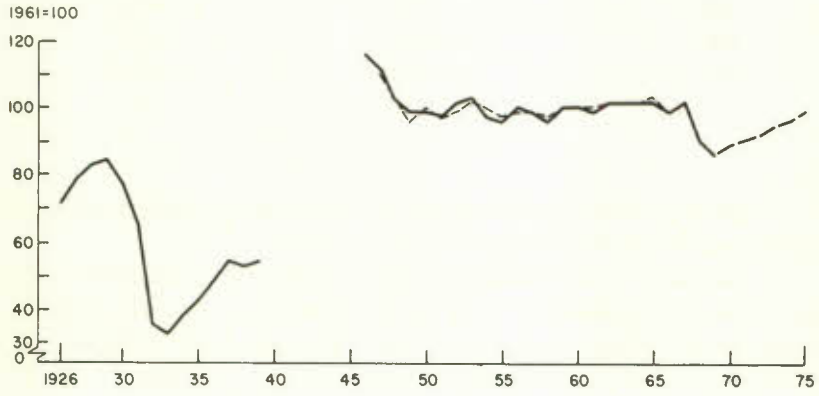
with respect to	short-term	long-term
x at mean	+ 0.84	+ 1.60
x in 1966	+ 0.96	+ 1.82
p at mean	− 0.44	− 0.85
p in 1966	− 0.47	− 0.90

	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	97.1	112.2
1975	156.3	199.5
1975/1969	+ 60.9%	+ 77.9%

This item consists of expenditures on barber shops, beauty parlours and miscellaneous personal care services.

On the whole, this is an attractive equation. The coefficients of the structural parameters look reasonable and so do the elasticities. The forecasting ability of the equation for the 1966-69 period may appear worrisome (see Chapter 7, p. 53). However, past revisions of the data give us confidence that the revised 1966-69 data will vindicate our projection.

1920 EXPENDITURE IN RESTAURANTS, CAFÉS AND HOTELS (s.)



$$q_t = + 45.25891 + 0.73235q_{t-1} + 0.01582x_{t-1} + 0.03836\Delta x_t - 0.48563p_{t-1} - 1.17770\Delta p_t$$

(27.95000) (0.19250) (0.00854) (0.01038) (0.28808) (0.31550)

$\alpha = +100.5891$
$\beta = + 0.2104$
$\gamma = + 0.0352$
$\delta = + 0.5195$
$\eta = - 1.0793$

$\gamma' = + 0.0591$

$\eta' = - 1.8144$

$\bar{R}^2 = 0.703$
S.E.E. = 1.31
D-W = 2.17

Consumption Elasticities

with respect to	short-term	long-term
x at mean	+ 0.65	+ 1.09
x in 1966	+ 0.86	+ 1.44
p at mean	− 1.49	− 2.50
p in 1966	− 1.72	− 2.89

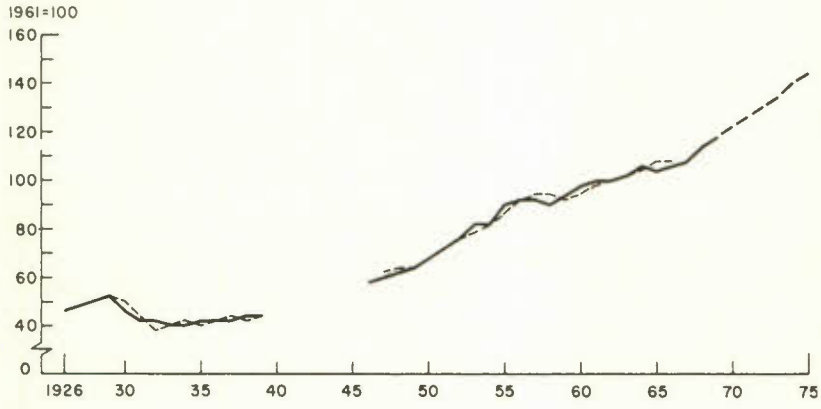
	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	87.1	100.5
1975	100.1	127.8
1975/1969	+ 14.9%	+ 27.1%

This group consists of meals, including tips, the service portion of alcoholic beverages, hotel rooms, and the board portion of board and lodging.

The postwar behaviour of this series differs greatly from the prewar one. We decided to fit our regression to the postwar period only, even though the $\bar{R}^2$ is poor. The standard error of estimate, on the other hand, is only 1.31, while it was 3.05 when fitted to the 1926-66 period.

The β and δ of our regression seems reasonable. The long-term elasticity with respect to x is well above unity in 1966. The most noteworthy aspects of our results, however, are the very high elasticities with respect to p. This suggests that the absence of growth for this series between the late 1940's and mid-1960's was due to the increase in its relative price.

1930 FINANCIAL SERVICES (s.)



$$q_t = 1.84891 + 0.85779q_{t-1} + 0.00662x_{t-1} + 0.02175\Delta x_t$$
$$(1.03950) \quad (0.09075) \quad (0.00315) \quad (0.00543)$$
$$-0.03953p_{t-1} - 0.12995\Delta p_t$$
$$(0.01413) \quad (0.06144)$$

$\alpha = +5.5482$
$\beta = +0.2057$
$\gamma = +0.0199$
$\delta = +0.3588$
$\eta = -0.1186$

$\gamma' = +0.0465$

$\eta' = -0.2780$

$\bar{R}^2 = 0.994$
S.E.E. = 0.95
D-W = 2.13

Consumption Elasticities

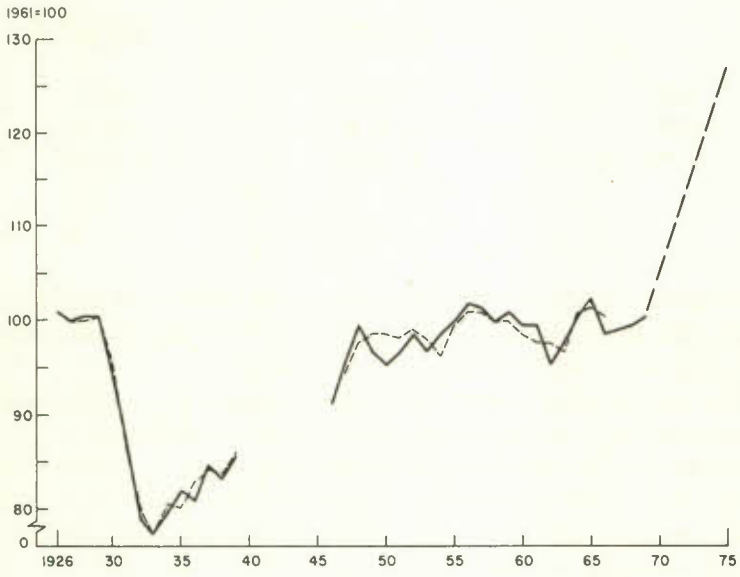
with respect to	short-term	long-term
x at mean	+0.60	+1.41
x in 1966	+0.62	+1.44
p at mean	−0.30	−0.69
p in 1966	−0.25	−0.60

	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	118.5	136.9
1975	144.9	185.0
1975/1969	+ 22.2%	+ 35.1%

This group contains imputed interest to trust companies and to the Bank of Canada, stock and bond commissions, administrative charges on consumer debts, imputed interest to credit unions, expenses of insurance companies, bank service charges paid and imputed, cost of service of trusteed pension plans, the expenses of credit unions, mutual fund charges and other similar financial items.

This attractive equation implies a moderate degree of habit formation. The fit of the regression is satisfactory. The long-term elasticity with respect to x indicates the plausible result that, *ceteris paribus,* with growing "income" the demand for financial services increases more than proportionately. However, over the postwar period *cetera* were certainly not *paria*: this is suggested by our linear model yielding slightly lower elasticities at the mean than in 1966. The growth of demand for financial services was held back by the very rapid growth of its relative price, which increased from 72 in 1951 to 117 in 1966.

1940 OTHER SERVICES N.E.S. (s.)



$$q_t = + 6.50398 + 0.75344q_{t-1} + 0.00392x_{t-1} + 0.01104\Delta x_t$$
$$(2.04750) \quad (0.07750) \quad (0.00150) \quad (0.00134)$$
$$- 0.05711p_{t-1} - 0.16095\Delta p_t - 1.234d_t$$
$$(0.02105) \quad (0.01850) \quad (0.6835)$$

$\alpha = + 17.1989$
$\beta = + 0.1501$
$\gamma = + 0.0104$
$\delta = + 0.4313$
$\eta = - 0.1510$

$\gamma' = + 0.0159$

$\eta' = - 0.2316$

$\bar{R}^2 = 0.967$
S.E.E. = 0.31
D-W = 2.10

Consumption Elasticities

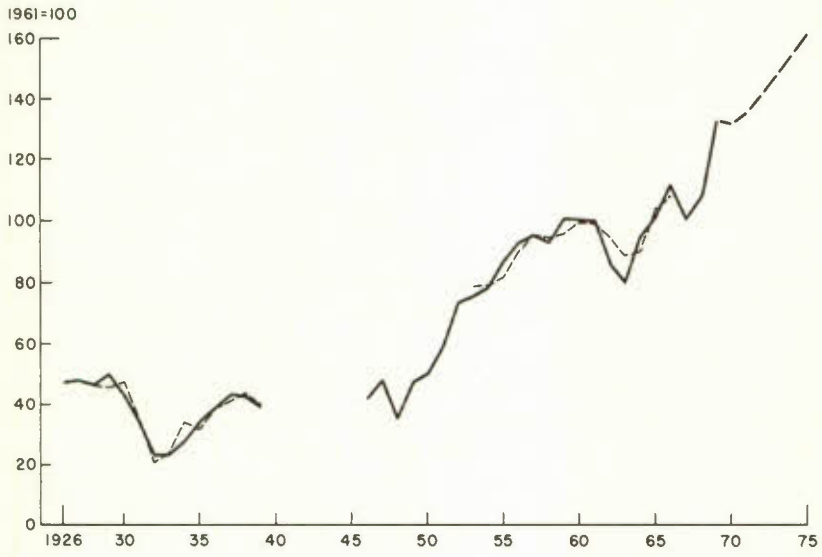
with respect to	short-term	long-term
x at mean	+ 0.54	+ 0.83
x in 1966	+ 0.80	+ 1.23
p at mean	− 0.64	− 0.98
p in 1966	− 0.79	− 1.21

	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	100.9	116.5
1975	126.8	161.9
1975/1969	+ 25.6%	+ 38.9%

This group consists of expenditures on lawyers, funeral and burial expenses, crematoria, miscellaneous services, charitable welfare and religious institutions, and the cost of administration of unions.

While the statistics quoted above would suggest that our equation is a reasonably good one, the projection renders the verdict doubtful. In effect, the postwar behaviour of this series differs so much from the prewar one that estimation based on the shorter time period appears justified, just as it did with item 1920 on p. 34. However, our attempts to obtain a usable equation on a postwar basis were unsuccessful.

2001 PERSONAL PORTION OF TOURIST AND TRAVEL PAYMENTS (s.)



$$q_t = +\ 32.54093 + 0.34222q_{t-1} + 0.01508x_t - 0.31623p_t + 0.33989z_t$$
$$(8.94972) \quad (0.11517) \quad (0.00283) \quad (0.07692) \quad (0.19733)$$

$\alpha = +24.2440$
$\beta = +\ 1.0199$
$\gamma = +\ 0.0112$ $\qquad \gamma' = +\ 0.0229$
$\delta = +\ 2$
$\eta = -\ 0.2356$ $\qquad \eta' = -\ 0.4808$

$\bar{R}^2 = 0.980$
S.E.E. = 1.32
D-W = 2.07

Consumption Elasticities

with respect to	short-term	long-term
x at mean	+ 0.58	+ 1.18
x in 1966	+ 0.56	+ 1.13
p at mean	− 1.18	− 2.41
p in 1966	− 0.72	− 1.47

	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	132.0	152.4
1975	160.6	205.1
1975/1969	+ 21.7%	+ 34.6%

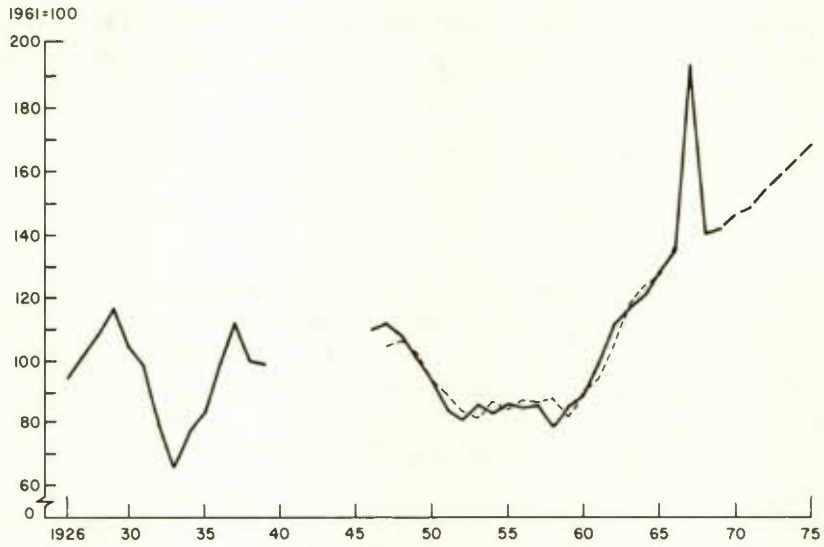
In addition to the war years, we also omitted the 1946-50 period from our regression, because foreign exchange controls were in force during those years.

This consumption item is one of the few which yield higher consumption elasticities with respect to p than to x. The high price elasticity is probably due to the fact that holidays within Canada are a ready and obvious substitute for holidays abroad, when the latter become too expensive.

2002 MILITARY PAY AND ALLOWANCES PAID ABROAD (s.)
2003 GIFTS IN KIND SENT ABROAD (s.)

These items are too small to justify intensive research effort. The comments on Toys and Games and on Flowers (p. 23) apply with appropriate modification here as well.

2004 TOURIST AND TRAVEL RECEIPTS (s.)



$$\Delta q_t = + 25.95563 + 0.00674x_{t-1} - 0.34052p_{t-1}$$
$$(20.33646) \quad (0.00151) \quad (0.20422)$$

$\alpha = -12.97782$
$\beta = -2$
$\gamma = -0.0034$ $\quad \gamma' =$
$\delta = -2$
$\eta = +0.1703$ $\quad \eta' =$

$\bar{R}^2 = 0.501$
S.E.E. = 1.17
D-W = 2.06

	Elasticities	
with respect to	short-term	long-term
x at mean	− 0.17	
x in 1966	− 0.16	
p at mean	+ 0.61	
p in 1966	+ 0.50	

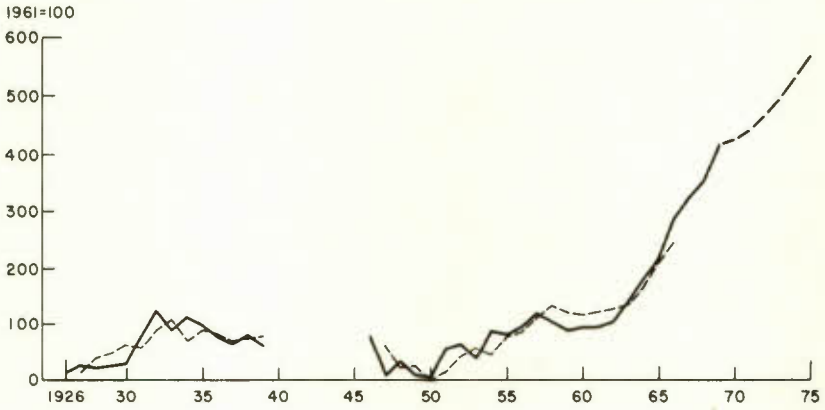
Personal Consumer Expenditures

	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	142.3	164.3
1975	168.8	215.5
1975/1969	+ 18.6%	+ 31.2%

This item enters our National Accounts with a negative sign.

Even though poor results forced us to discard the prewar portion of our data and to fit our regression to the 1946-66 period, the result is not very satisfactory. This may be partly due to our attempt to stay within the theoretical and data framework used in this Study and thereby to explain the foreign tourists' spending in Canada by the Canadian x. The low $\bar{R}^2$ is by itself not worrisome, as the dependent variable is Δq_t. In terms of levels, $\bar{R}^2$ is about .93. More troublesome is the interpretation of β and δ. With $\delta = -2$ the negative short-term elasticity with respect to x and the positive one with respect to p is not surprising (see Special Case 5 on p. 13) but $\beta = \delta$ makes the calculation of the long-term elasticities impossible (see Special Case 1 on p. 12). In view of all these difficulties it is comforting to find that our equation forecasted the 1969 level reasonably well and that the projection to 1975 looks plausible.

0002 MISCELLANEOUS GOODS AND ADJUSTING ENTRIES (n.d.)



$$q_t - \underset{(6.67687)}{21.53752} + \underset{(0.13484)}{0.71621}q_{t-1} + \underset{(0.01072)}{0.03746}x_{t-1} - \underset{(5.97303)}{17.90611}d_t$$

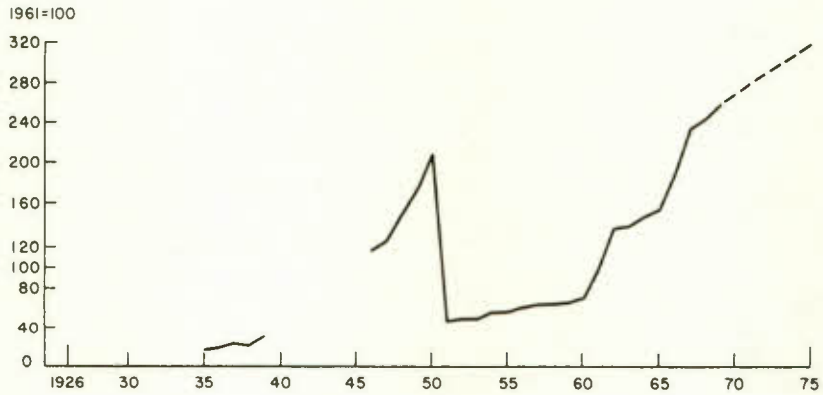
$\bar{R}^2 = 0.803$
S.E.E. = 6.33
D-W = 1.74

	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	414.8	479.0
1975	571.6	729.8
1975/1969	+ 37.8%	+ 52.4%

Personal Consumer Expenditures

The questionable nature of this item (see p. 17) makes one wonder whether an equation should be calculated for it at all. However, sometimes it may be necessary to project *all* consumer items into the future. To emphasize our doubts about the reliability of the projection, we have refrained from quoting the structural parameters and elasticities implied in the equation quoted above.

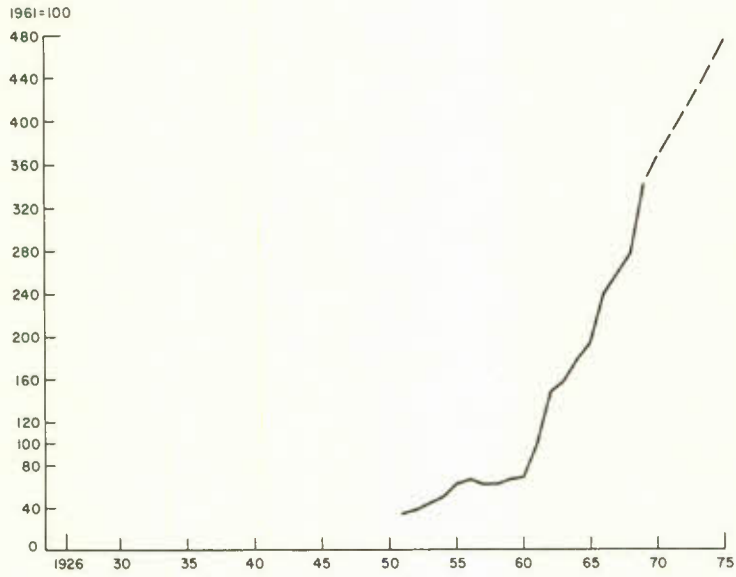
0005 SALES TAX ON SEMIDURABLES (s.d.)



	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	260.8	301.4
1975	317.7	405.9
1975/1969	+ 21.8%	+ 34.7%

When projecting this item we have assumed that the ratio of the sales tax on semidurables to consumption of semidurables will remain unchanged between 1969 and 1975.

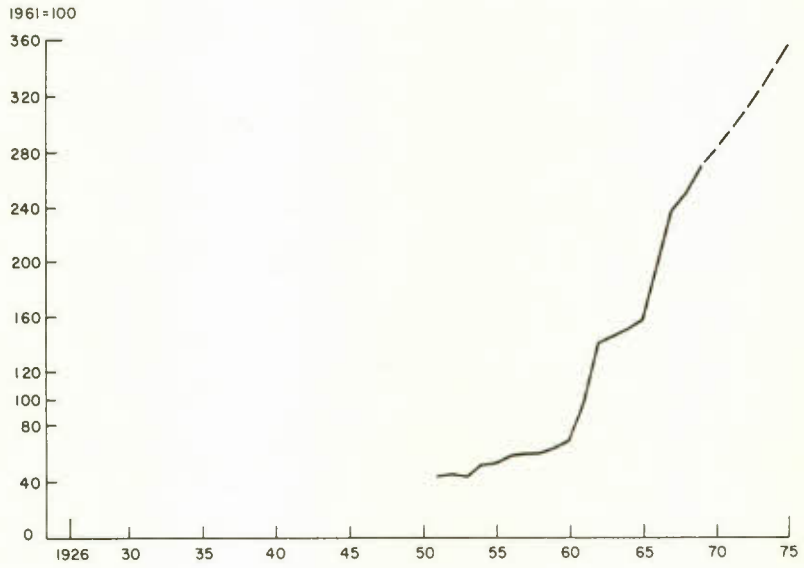
0006 SALES TAX ON DURABLES (d.)



	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	343.2	396.3
1975	474.8	606.0
1975/1969	+ 38.3%	+ 52.9%

When projecting this item we have assumed that the ratio between the sales tax on durables to consumption of durables will remain unchanged between 1969 and 1975.

0007 SALES TAX ON NONDURABLES (n.d.)



	Real Consumption (1961 = 100)	
	per capita	aggregate
1969	268.3	309.9
1975	356.4	455.1
1975/1969	+ 32.8%	+ 46.9%

When projecting this item we have assumed that the ratio of the sales tax on nondurables to consumption of nondurables excluding food will remain unchanged between 1969 and 1975.

6. DISCUSSION OF RESULTS

In Chapter 5 we have analysed 12 consumer expenditure groups – one durable, three nondurable and eight services. As pointed out in Chapter 2, we should in general expect durables and semidurables to show negative betas; and nondurables and services, positive betas. The consumption equations in this third part of our Study yield the results summarized in Table 3.

TABLE 3

SIGN OF BETA BY CONSUMER ITEM

Item	Positive	Negative	Not Applicable
Durables			
0711+0712+0713+0714+0715+0717+0718 Recreational Durables		x	
Nondurables			
0730 Books, Newspapers & Magazines		x	
0910 Cosmetics	x		
0002 Miscellaneous Goods & Adjusting Entries			x
Services			
1720 Entertainment, Recreation & Cultural Services	x		
1800 Education			x
1910 Personal Care Services	x		
1920 Expenditure in Restaurants, Cafés & Hotels	x		
1930 Financial Services	x		
1940 Other Services N.E.S.	x		
2001 Personal Portion of Tourist & Travel Payments	x		
2004 Tourist & Travel Receipts		x	

Among the 12 items discussed in Chapter 5, one (1800 Education) has no beta, because neither x nor p appears in the equation. In one other instance (0002 Miscellaneous Goods & Adjusting Entries) it is dubious what sign one should expect for beta, as the goods content of this item is, as of now, unknown (see pp. 17-18).

Out of the remaining 10 items, eight show the expected sign for beta. The exceptions are 0730 Books, Newspapers & Magazines, which has a very slight and probably not significant negative beta, and 2004 Tourist & Travel Receipts, the equation of which attempts to explain foreign tourist spending by means of average Canadian "income".

Altogether the three parts of this Study contain equations fitted to 50 consumer items. Five of these have formulations such that there is no beta. Among the remaining 45, the expected sign was found in 39 instances and only six (mostly minor) items had betas with the "unexpected" sign. We regard this as a strong argument in favour of the hypothesis underlying the Houthakker-Taylor model.

X proved to be the most important variable. It was accepted in 11 of the 12 equations in Part 3, usually with high significance. In all three parts of this Study, taken together, we find that X appears in 45 of the 50 equations.

P appears in seven equations in Part 3. It was rejected in five instances – twice because it had the wrong sign (Recreational Durables and Education), twice because it was not significant (Cosmetics and Miscellaneous Goods & Adjusting Entries), and once because its retention led to an absurd δ (Entertainment, Recreation and Cultural Services). The 50 equations of the three parts of this Study retain *p* in 33 cases and reject it in 17.

Auxiliary variables – other than the prewar-postwar dummy – appear in three equations in Part 3: Households with TV in Entertainment, Recreation & Cultural Services (1720), University Enrolment in Education (1800), and Women aged 15-59 in Cosmetics (0910). In the three parts of this Study, 15 equations use auxiliary variables.

The results of the goodness of fit of our 50 equations are summarized in Table 4.

TABLE 4
$\bar{R}^2$ OF THE EQUATIONS

$\bar{R}^2$	Frequency
0.70 – 0.75	1
0.75 – 0.80	0
0.80 – 0.85	1
0.85 – 0.90	1
0.90 – 0.95	2
0.95 – 0.96	8
0.96 – 0.97	5
0.97 – 0.98	8
0.98 – 0.99	7
0.99+	17
Total	50

The forecasting ability of our equations over the period 1966-69 will be discussed in Chapter 7.

7. FORECASTING THE 1966-69 PERIOD

Our regressions are calculated on data for the 1926-66 period.

To test the forecasting ability of the Houthakker-Taylor model, we have attempted to forecast the consumption of the items discussed in Part 3 of this Study for the 1966-69 period. We have also computed forecasts by means of two naive methods:

Naive I: The per capita real consumption of each item will grow in the three-year period 1966-69 by the same percentage as the corresponding percentage increase in the preceding period of equal length, i.e., 1963-66.

Naive II: The per capita real consumption of each item will grow in the three-year period 1966-69 at the same rate as per capita real total consumer expenditure.

The results of the calculations are contained in Table 5.

A convenient summary measure of the quality of forecasts in Theil's U.[25] This measure is defined as

$$U = \sqrt{\frac{\Sigma (P_i - A_i)^2}{\Sigma A_i^2}}$$

where P_i is the predicted change of item i and A_i the observed change. It is obvious that U equals zero in the case of a perfect forecast, equals unity in the case of a forecast that is no better than a "no change" prediction, and is bigger than unity if the forecast is worse than a "no change" prediction.

TABLE 5

ACTUAL AND FORECASTED PERCENTAGE CHANGES, 1966–69

Item	Actual	H-T*	Naive I	Naive II
0711+0712+0713+0714+0715+0717+0718 Recreational Durables	+26.1	+15.4	+ 17.1	+10.3
0730 Books, Newspapers & Magazines	+ 2.7	+ 5.6	+ 4.5	+10.3
1720 Entertainment, Recreation & Cultural Services	+25.1	+ 5.8	+ 14.1	+10.3
1800 Education	+35.2	+67.3	+ 34.3	+10.3
0910 Cosmetics	+26.2	+10.6	+ 19.9	+10.3
1910 Personal Care Services	– 4.3	+16.2	+ 2.2	+10.3
1920 Expenditure in Restaurants, Cafés & Hotels	–13.3	– 5.9	– 2.9	+10.3
1930 Financial Services	+11.0	+ 8.8	+ 3.9	+10.3
1940 Other Services N.E.S.	+ 1.9	+ 7.7	+ 0.9	+10.3
2001 Personal Portion of Tourist & Travel Payments	+18.3	+ 8.7	+ 39.1	+10.3
2004 Tourist & Travel Receipts	+ 4.9	+ 6.9	+ 15.5	+10.3
0002 Miscellaneous Goods & Adjusting Entries	+44.1	+20.9	+104.7	+10.3

*Houthakker and Taylor.

[25] For a detailed descriptions see H. Theil, *Applied Economic Forecasting*, Amsterdam, North-Holland Publishing Co., 1966, pp. 26-43.

After weighting our forecasts by the relative importance of the consumer items investigated (1966 weights), we have calculated the following U values for the items quoted in Table 5.

Houthakker-Taylor	$U = 0.62$
Naive I	$U = 1.10$
Naive II	$U = 0.80$

The U values for all the 50 items discussed in the three parts of this Study are

Houthakker-Taylor	$U = 0.64$
Naive I	$U = 1.02$
Naive II	$U = 0.78$

These U values indicate that the method used in our Study is superior to the two naive methods, even though a U of 0.64 is no reason for complacency. At the same time it should be kept in mind that the testing of the forecasting ability of our equations was performed on the most recent DBS data. Our experience with previous revisions, and in particular with the historical one released in 1969, suggests that future revisions of the 1966-69 period will be in the direction indicated by our forecasts.

8. DISCUSSION OF PROJECTIONS

The total projected growth of the consumer items discussed in the three parts of our Study for the 1969-75 period is contained in Table 6.

TABLE 6

PROJECTED PERCENTAGE GROWTH, 1969–75

No.	Item	Percentage Change 1969–75
1800	Education	+162.4
1315	Board & Lodging in Universities	+146.3
0310	Water Charges	+140.0
0412	Carpets & Other Floor Coverings	+ 90.4
1910	Personal Care Services	+ 77.9
0430	Household Appliances	+ 74.9
1630	Purchased Transportation	+ 73.1
1620	Operation of Personal Transportation Equipment	+ 64.8
0411 + 0413	Furniture, Upholstery & Furniture Repair	+ 63.9
1450	Household Operation Services	+ 56.0
0621	Gasoline, Oil & Grease	+ 55.9
0440	Glassware, Tableware & Household Utensils	+ 54.4
0002	Miscellaneous Goods & Adjusting Entries	+ 52.4
0321	Electricity	+ 52.0
1510	Medical Care & Health Services	+ 49.5
0122	Alcoholic Beverages	+ 49.3
0610 + 0622 + 0623	Personal Transportation Equipment, Auto Repairs & Maintenance, Auto Parts & Accessories	+ 47.3
1311	Gross Rents, Imputed	+ 44.5
0232	Precious Stones, Other Jewellery, Watches & Rings	+ 43.3
0121	Nonalcoholic Beverages	+ 42.3
0450	Household Operation Goods	+ 41.6
1640	Communications	+ 40.9
0711 + 0712 + 0713 + 0714 + 0715 + 0717 + 0718	Recreational Durables	+ 40.7
1312	Gross Rents, Paid	+ 40.5
0212	Women's & Children's Clothing	+ 40.3
	Total Consumer Expenditure	+ 39.8
1940	Other Services N.E.S.	+ 38.9
0420	Household Textiles & Other Furnishings	+ 38.2
1720	Entertainment, Recreation & Cultural Services	+ 37.4
0510	Medical & Pharmaceutical Products	+ 35.4
1930	Financial Services	+ 35.1
0221	Footwear	+ 34.7
2001	Personal Portion of Tourist & Travel Payments	+ 34.6
0130	Tobacco	+ 34.4
0322 + 0323	Gas & Other Fuels	+ 34.1
1316	House Maintenance Repairs	+ 33.6
0730	Books, Newspapers & Magazines	+ 31.7
2004	Tourist & Travel Receipts	+ 31.2
0910	Cosmetics	+ 30.1
0222	Shoe Repair	+ 29.1

TABLE 6 (Cont'd)

No.	Item	Percentage Change 1969–75
0111	Food Purchased at Retail	+ 28.9
1920	Expenditure in Restaurants, Cafés & Hotels	+ 27.1
0211	Men's & Boys' Clothing	+ 26.7
0231	Luggage & Leather Goods	+ 25.9
0213 + 0214	Notions & Piece Goods	+ 12.8
1313	Imputed Lodging N.E.S.	+ 7.7
1210	Dressmaking & Tailoring	+ 5.3
0113	Other Food	– 10.6
0215	Clothing in Kind, Armed Forces	– 12.2
0233	Jewellery Repair & Engraving	– 23.3
0112	Food Produced & Consumed on Farms	– 53.1

A word of caution is appropriate regarding the use of Table 6. Our experiments with projections using the Houthakker-Taylor model indicate that even substantial revisions of the 1969 data would have relatively little effect on the projected 1975 *levels* of the individual consumer items. On the other hand, such revisions could have a substantial effect on the 1969-75 *percentage change.*

For instance, assume that a future revision would raise the aggregate 1969 figure for Personal Care Services (1910) from 112.2 to 130.0 (i.e. the per capita consumption from 97.1 to 112.4). This revision would result in our projection for 1975 changing from 199.5 to 200.2. The 1975 *level* would change by only 0.4 per cent. The 1969-75 *percentage change* would be reduced from 78 per cent to 54 per cent!

Similarly, assume that a downward revision would change the aggregate 1969 figure for Entertainment, Recreation and Cultural Services (1720) from 168.3 to 150 (i.e. the per capita consumption from 145.7 to 126.1). The revision would leave the *level* of our projection for 1975 unchanged, but would increase the 1969-75 *percentage change* from 37 per cent to 54 per cent.

Table 6 contains an exhaustive listing of all the consumer items discussed in this Study. For analytical purposes it may be useful to regroup the items according to major functional sectors (Table 7).

As pointed out on page 16, the Houthakker-Taylor model does not necessarily yield detailed projections which add up to the total consumption assumed in the regression equations. Indeed, our projections for 1975, summarized in Table 7, add up to $56,658.1 million, i.e. 3.3 per cent more than the total assumed. Houthakker and Taylor give an adjustment method to assure that the details add up to the total.[26] In this instance we did not follow their recommendation. Miscellaneous Goods & Adjusting Entries (0002), which are included in Section IX, amounted to more in 1969 than the projected discrepancy for 1975. In view of the dubious nature of the item (see pp. 17-18), we decided to forgo the adjusting and let the projection stand as above.

[26] *Op. cit.*, pp. 52-54.

TABLE 7

PERSONAL CONSUMER EXPENDITURE IN CANADA, SUBDIVIDED BY FUNCTION
1969 AND 1975

Section	Millions of 1961 Dollars		Percentage Change 1969-75
	1969	1975	
I Food, Beverages & Tobacco	8,326.8	10,905.9	+ 31.0
II Clothing, Footwear & Accessories	3,126.5	4,186.4	+ 33.9
III Gross Rent, Fuel & Light	7,307.7	10,601.3	+ 45.1
IV Furniture, Furnishings, Household Equipment & Household Operation	2,770.4	4,446.1	+ 60.5
V Medical Care & Health Expenses	2,813.3	4,116.1	+ 46.3
VI Transportation & Communication	5,479.2	8,305.1	+ 51.6
VII Entertainment, Recreation, etc.	1,919.1	2,610.7	+ 36.0
VIII Education	681.1	1,787.3	+162.4
IX Other Goods & Services, Adjusting Entries & Sales Tax	6,667.4	9,511.6	+ 42.7
X Net Expenditure Abroad	127.7	189.3	+ 48.2
Total	39,219.6*	54,847.8**	+ 39.8

*Details do not add to total because of rounding.
**See text below.

On the whole, the 1969-75 percentage changes in the last column of Table 7 look reasonable. The extremely high growth rate of Section VIII (Education) is the consequence of the assumed high enrolment in universities. The lower-than-average growth for Sections I and II (Food, Beverages & Tobacco; and Clothing, Footwear & Accessories) is as expected. The projected increase for Section I may even be too high, because our regression cannot properly allow for the change in smoking habits that got under way in recent years.

The projected increase of two sectors appears to us questionable. The growth of Section IV (Furniture, Furnishings, Household Equipment & Household Operation) seems too high, that of Section VII (Entertainment, Recreation, etc.) too low. It will be interesting to see whether future revisions of the 1969 data will not change the implied growth rates so as to render them more in line with our expectations. Such revisions, by the way, would also improve the *U* values of our forecasts for the 1966-69 period (see p. 52 of Part 2 and p. 53 of Part 3 of this Study).

Expressing the sections of Table 7 as percentages of total consumer expenditure, we obtain Table 8.

TABLE 8

PERCENTAGE COMPOSITION OF CONSUMER EXPENDITURE
1969 AND 1975

Section	1969	1975	Change in Percentage
I Food, Beverages, & Tobacco	21.2	19.9	– 1.3
II Clothing, Footwear & Accessories	8.0	7.6	– 0.4
III Gross Rent, Fuel & Light	18.6	19.3	+ 0.7
IV Furniture, Furnishings, Household Equipment & Household Operation	7.1	8.1	+ 1.0
V Medical Care & Health Expenses	7.2	7.5	+ 0.2
VI Transportation & Communication	14.0	15.1	+ 1.1
VII Entertainment, Recreation, etc.	4.9	4.8	– 0.1
VIII Education	1.7	3.3	+ 1.6
IX Other Goods & Services, Adjusting Entries & Sales Tax, etc.	17.0	17.3	+ 0.3
X Net Expenditure Abroad	0.3	0.3	–

Another convenient way to summarize the composition of consumer expenditure is by durability. Such a summary yields Table 9.

TABLE 9

PERSONAL CONSUMER EXPENDITURE IN CANADA,
SUBDIVIDED BY DURABILITY,
1969 AND 1975

	Millions of 1961 Dollars		Percentage Change 1969-75
	1969	1975	
Durable Goods	5,564	8,505	+52.9
Semidurable Goods	4,036	5,436	+34.7
Nondurable Goods	14,896	20,629	+38.5
Services	14,723	22,088	+50.0
	Percentage Composition of Consumer Expenditure		Change in Percentage
	1969	1975	
Durable Goods	14.2	15.5	+ 1.3
Semidurable Goods	10.3	9.9	– 0.4
Nondurable goods	38.0	37.6	– 0.4
Services	37.5	40.3	+ 2.8

The results of Table 9 are in accordance with historical experience; during periods of vigorous economic expansion – we assumed reaching the economic potential by 1975 – consumption of durables and of services tend to grow faster than of semidurables and nondurables.

PUBLICATIONS OF ECONOMIC
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PUBLICATIONS DU CONSEIL
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Annual Reviews	Author—Auteur	Exposés annuels
First Annual Review: Economic Goals for Canada to 1970 (EC21-1/1964, $3.50)	Council – Conseil	Premier exposé annuel: Objectifs économiques du Canada pour 1970 (EC21-1/1964F, $3.50)
Second Annual Review: Towards Sustained and Balanced Economic Growth (EC21-1/1965, $2.75)	Council – Conseil	Deuxième exposé annuel: Vers une croissance économique équilibrée et soutenue (EC21-1/1965F, $2.75)
Third Annual Review: Prices, Productivity and Employment (EC21-1/1966, $2.75)	Council – Conseil	Troisième exposé annuel: Les prix, la productivité et l'emploi (EC21-1/1966F, $2.75)
Fourth Annual Review: The Canadian Economy from the 1960's to the 1970's (EC21-1/1967, $2.75)	Council – Conseil	Quatrième exposé annuel: L'économie canadienne des années 1960 aux années 1970 (EC21-1/1967F, $2.75)
Fifth Annual Review: The Challenge of Growth and Change (EC21-1/1968, $2.75)	Council – Conseil	Cinquième exposé annuel: Défi posé par la croissance et le changement (EC21-1/1968F, $2.75)
Sixth Annual Review: Perspective 1975 (EC21-1/1969, $2.75)	Council – Conseil	Sixième exposé annuel: Perspectives 1975 (EC21-1/1969F, $2.75)
Seventh Annual Review: Patterns of Growth (EC21-1/1970, $2.50)	Council – Conseil	Septième exposé annuel: Les diverses formes de la croissance (EC21-1/1970F, $2.50)
Performance and Potential: Mid-1950's to Mid-1970's (EC21-1/1970-1, $1.50)	Council – Conseil	La tenue et le potentiel de l'économie: du milieu des années 1950 au milieu des années 1970 (EC21-1/1970-1F, $1.50)

Staff Studies	Author—Auteur	Études préparées par le personnel
1. Population and Labour Force Projections to 1970 (EC22-1/1, $.75)	Frank T. Denton Yoshiko Kasahara Sylvia Ostry	1. Projections de la population et de la main-d'œuvre jusqu'à 1970 (EC22-1/1F, $.75)
2. Potential Output, 1946 to 1970 (EC22-1/2, $1.00)	B. J. Drabble	2. Potentiel de production, 1946 à 1970 (EC22-1/2F, $1.00)
3. An Analysis of Post-War Unemployment (EC22-1/3, $.75)	Frank T. Denton Sylvia Ostry	3. Une analyse du chômage depuis la fin de la guerre (EC22-1/3F, $.75)
4. Housing Demand to 1970 (EC22-1/4, $.75)	Wolfgang M. Illing	4. Demande d'habitations pour 1970 (EC22-1/4F, $.75)
5. Business Investment to 1970 (EC22-1/5, $1.00)	Derek A. White	5. Investissements privés pour 1970 (EC22-1/5F, $1.00)
6. Special Survey of Longer Range Investment Outlook and Planning in Business (EC22-1/6, $.25)	B. A. Keys	6. Enquête spéciale sur les intentions et la programmation à moyen terme des entreprises privées (EC22-1/6F, $.25)
7. Canada and World Trade (EC22-1/7, $.50)	M. G. Clark	7. Le Canada et le commerce mondial (EC22-1/7F, $.50)
8. Export Projections to 1970 (EC22-1/8, $.75)	J. R. Downs	8. Projections des exportations jusqu'à 1970 (EC22-1/8F, $.75)
9. Federal Tax Revenues at Potential Output, 1960 and 1970 (EC22-1/9, $.50)	D. J. Daly	9. Rendement des impôts fédéraux dans l'hypothèse de la réalisation du potentiel de production, 1960 et 1970 (EC22-1/9F, $.50)
10. National Saving at Potential Output to 1970 (EC22-1/10, $.50)	Frank W. Wildgen	10. L'épargne nationale dans l'hypothèse de la réalisation du potentiel de production pour 1970 (EC22-1/10F, $.50)
11. Changes in Agriculture to 1970 (EC22-1/11, $.50)	John Dawson	11. Changements dans le secteur agricole jusqu'à 1970 (EC22-1/11F, $.50)
12. The Contribution of Education to Economic Growth (EC22-1/12, $1.50)	Gordon W. Bertram	12. Apport de l'éducation à la croissance économique (EC22-1/12F, $1.50)
13. Internal Migration in Canada, 1921-1961 (EC22-1/13, $1.60)	Isabel B. Anderson	13. Migration à l'intérieur du Canada, 1921-1961 (EC22-1/13F, $1.60)
14. Interregional Disparities in Income (EC22-1/14, $1.75)	S. E. Chernick	14. Disparités interrégionales du revenu (EC22-1/14F, $1.75)
15. An Analysis of Interregional Differences in Manpower Utilization and Earnings (EC22-1/15, $1.00)	Frank T. Denton	15. Analyse des différences interrégionales dans l'utilisation de la main-d'œuvre et le revenu gagné (EC22-1/15F, $1.00)

Staff Studies (*continued*)	Author—Auteur	Études préparées par le personnel (*suite*)
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Personal Consumer Expenditures in Canada, 1926-75
Part 3

by Thomas T. Schweitzer

Economic Council of Canada