A study of the consumption function in Canada.

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A STUDY OF THE CONSUMPTION FUNCTION

IN CANADA

A Thesis
Submitted to the Faculty of Graduate Studies through the Department of Economics and Political Science in Partial Fulfillment of the Requirements for the Degree of Master of Arts at the University of Windsor

by

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ABSTRACT

Generally speaking, there is always a need for surveying contributions in a field of theory that is quickly expanding. In particular, this is so in the field of the theory of the consumption function. A number of hypotheses have been advanced to explain the relationship between consumption and income. Keynes considered absolute income to be the prime determinant of current consumption. Duesenberry took relative income as the main independent variable. Friedman considered permanent income as the chief variable upon which consumption depended. Others believed that current consumption was determined by past income or consumption standards. Still other theorists believed that the consumption function continually shifted upwards, thus tending to explain the long-run proportionality.

In testing some of these hypotheses with observed data in Canada, it was found that there was a very close relationship between current consumption expenditures and disposable income over the long-run. The addition of a lagged variable, particularly, past consumption improved this relationship. Furthermore, it was concluded that the proportion of disposable income devoted to consumption expenditures has not varied in Canada during full-employment, peacetime years, even though a number of long-run institutional developments have occurred over a long period of time. In fact, there did not seem to be any great difference between the proportion of income consumed in Canada and that of other industrialized countries.
PREFACE

It would seem natural to begin this investigation by a review of the theoretical foundations of consumption and savings analysis. On the theoretical basis thus obtained, it should be possible to proceed with empirical studies in the field, the consumption structure of Canada offering some interesting aspects with regard to the empirical analysis.

The purpose of the first section of this study is to give a critical survey of the present position of the theory of the consumption function and to develop some new lines of approach. Here I shall not be involved with the historical evolution of ideas. The material instead will be presented according to certain functional categories.

Part II is concerned with research on the form of the consumption function in Canada with a description of the historic trends in aggregate consumer expenditures and personal saving in Canada, focusing attention on the long-run consumption and saving habits over a period of almost forty years.

In making my acknowledgments, I am indebted to the members of my thesis committee: Dr. P. Shontz, Assistant Professor of Economics and chairman of my committee, Mr. P. B. Buchan, Assistant Professor in Business Administration, and Mr. W. J. Gillen, Assistant Professor of Economics, for whom I owe my initial interest in the subject. I am also grateful to Dr. Z. M. Fallenbucucl, Associate Professor of Economics,
who acted as an adviser. My thanks may also be extended to the staff of the University of Windsor Library. Finally, I would like to express appreciation to A.H.I.B. for assistance in drawing the graphs of the Appendix, and to Mrs. Lorraine Kufner for typing my thesis.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>iii</td>
</tr>
<tr>
<td>PREFACE</td>
<td>iv</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td><strong>PART ONE: THE THEORY OF THE CONSUMPTION FUNCTION</strong></td>
<td></td>
</tr>
<tr>
<td>I. The Absolute Income Hypothesis</td>
<td>5</td>
</tr>
<tr>
<td>The Keynesian consumption function</td>
<td></td>
</tr>
<tr>
<td>Empirical support from budget studies and time series data</td>
<td></td>
</tr>
<tr>
<td>II. The Consumption Lag Hypothesis</td>
<td>11</td>
</tr>
<tr>
<td>Reasons why consumption depends on past income</td>
<td></td>
</tr>
<tr>
<td>The psychological adjustment lag</td>
<td></td>
</tr>
<tr>
<td>III. The Relative Income Hypothesis</td>
<td>16</td>
</tr>
<tr>
<td>Duesenberry's theory of consumption</td>
<td></td>
</tr>
<tr>
<td>The interrelation of income expectations</td>
<td></td>
</tr>
<tr>
<td>IV. The Permanent Income Hypothesis</td>
<td>23</td>
</tr>
<tr>
<td>Friedman's theory of consumption</td>
<td></td>
</tr>
<tr>
<td>Modigliani-Brumberg's explanation</td>
<td></td>
</tr>
<tr>
<td>V. The Trend Hypothesis</td>
<td>31</td>
</tr>
<tr>
<td>The upward shift of the consumption function</td>
<td></td>
</tr>
<tr>
<td>Reasons for the trend development</td>
<td></td>
</tr>
<tr>
<td>Summary</td>
<td>35</td>
</tr>
<tr>
<td><strong>PART TWO: THE CANADIAN CONSUMPTION FUNCTION</strong></td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td>38</td>
</tr>
<tr>
<td>VI. Regressions Of Consumption On Current Income</td>
<td>40</td>
</tr>
<tr>
<td>A. 1926-1963: Non war years</td>
<td></td>
</tr>
<tr>
<td>1. Behaviour of Residuals</td>
<td></td>
</tr>
<tr>
<td>a) pre-war period</td>
<td></td>
</tr>
<tr>
<td>b) post-war period</td>
<td></td>
</tr>
<tr>
<td>2. Comparison of pre-war and post-war regressions</td>
<td></td>
</tr>
</tbody>
</table>

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B. Simultaneous estimation of parameters
   1. Regression of consumption on savings: non-war years
   2. Regression of consumption on savings: war and peace years

VII. Regressions Of Consumption On Current Income And Other Variables
     A. The influence of past income
        1. Previous year's income
        2. Previous peak income
     B. The influence of past consumption
        1. Previous year's consumption
        2. Previous peak consumption
     C. Conclusion

VIII. Consumption-Income Ratios In Canada
     A. Is there a decline in the average propensity to consume
     B. Comparison of the Canadian consumption-income ratio with other countries
        1. Historical evidence of long-run constancy
        2. Reasons for differences of the ratio in Canada, United States, and Great Britain
           a) amounts consumed (or saved)
              (i) distribution of incomes
              (ii) rate of increase in incomes
              (iii) other factors
           b) forms of savings
     C. Behaviour of the consumption-income ratio in Canada

IX. Factors Affecting The Aggregate Consumption-Income Ratio In Canada
     A. Subjective factors
        1. Precautionary motives
        2. Attitudes toward leisure
     B. Objective factors
        1. Factors which appear to have increased the consumption ratio
           a) shifts in the location of the population
           b) changes in the age structure of the population
           c) changes in the composition of the population
           d) changes in income distribution
           e) social security measures
           f) increasing availability of consumer credit
           g) decline of non-farm unincorporated businesses
           h) the development of new goods
2. Factors which appear to have decreased the consumption ratio
   a) decline in the average family size
   b) shorter working life
   c) longer retirement

3. Factors which appear to have little net effect on the consumption ratio
   a) changes in the rate of interest
   b) changes in the ratio of non-human wealth to income
INTRODUCTION

Surveying the development of economic analysis over the last few decades, one of the most striking features is the appearance of a vast body of research work in the field of consumption theory. Originally initiated by the theoretical hypotheses of Keynes and the empirical studies by Kuznets, these works often are said to form a completely new area in economic theory, namely, the theory of the consumption function.

In the study of consumption data at the theoretical level, two approaches can be used - the macro-economic, and the micro-economic. This paper will be concerned with the former method, where aggregate behaviour of consumption is studied. Our hypothesis is one of establishing a relationship between income and consumption or what is known as the consumption function. By plotting two sets of figures over time, one for income and one for consumption, a linear relationship is noted, and this is satisfactory for those who are studying aggregates. It should be mentioned that the two approaches are not in conflict, but rather that they approach the problem from different points of view. In each instance an attempt is being made to discover the function of consumption, and what forces bear upon it to make it change.

The theory of the consumption function has been path-breaking in aggregated macro-economics. The consumption function is among the first macro-economic relationships to be studied empirically. It is perhaps the first economic relation where the aggregation procedure micro-macro

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has been studied carefully. Keynes started his theory with a micro-theory of the consumer's behaviour, generalizing it to a macro-relationship. Since then it has become standard procedure to start a theory of the consumption function with a micro-theory of the individual consumer's behaviour and develop the theory by aggregation over the categories of consumers. Hence, the logical way of building up a theory of the consumption function is to apply the micro-theory to each unit of the vertical income distribution at a certain point of time. This will provide us with a cross-section theory. As the next step, the cross-section theory is developed over time and this produces the aggregate time-series theory.

Having considered the impact of the theory of the consumption function on economic theory in general, let us now proceed to a first glimpse of the body of doctrines surrounding the theory of the consumption function. A number of contributions come to mind. Among these are Keynes' hypothesis about the marginal propensity to consume, Kuznets' empirical result of a secularly constant savings ratio, Modigliani's "last peak of income," Duesenberry's "demonstration effect," and so on. All these theories will be dealt with in Part One.

On proceeding to measure the consumption function in Canada, there are basically two procedures which can be used. First of all, one can accept the generally accepted importance of income as "the prime determinant of consumption expenditure" and attempt to make improvements on the measurement of the relationship between consumption and income. Secondly, one can introduce other variables as determinants of consumption. If the latter procedure is adopted, the problem becomes one of testing and estimating
more complex relationships.

Before embarking upon any kind of empirical research in which Canadian data are collected, it is necessary to state a hypothesis. The hypothesis to be tested is the most simple and direct: consumption is a linear function of total disposable income. After the results are interpreted, this function may need modification. If this is the case, the next problem in connection with the hypothesis is the selection of additional variables which are to be used in the testing process. Since it would be virtually impossible to include all variables which affect consumption, the variables selected will be those which previous observers have classified as being important or possessing some relationship. This is done for purposes of comparison with previous studies. Statistically, this explanation proceeds in terms of regression analysis, where consumption is to be explained by a number of cause variables. Theoretically, the explanation takes the form of an econometric model for the determination of consumption.

In working with data of this kind a number of statistical methods are available. One of the chief statistical methods at the present time is "Analysis of Variance". Single or multiple variance can be computed to determine the degree of variance between two or more variables. Significance tests can be used to determine the existence of relationships. Simple correlation and its more complex method, multiple correlation, computes the relationships between two variables, or in the case of the multiple type, several variables. Partial correlation holds one variable constant, and computes the influence of the other variables used. These methods will be used to test several hypotheses in the second part of this paper.
PART ONE

THE THEORY OF THE CONSUMPTION FUNCTION
CHAPTER I

THE ABSOLUTE INCOME HYPOTHESIS

The Keynesian Consumption Function

The absolute income hypothesis was the mainspring to the whole body of theories on the consumption function and none has made a clearer statement of it than its founder, J. M. Keynes. Keynes' basic hypothesis with respect to the level of consumption expenditure in the economy is that income is the prime determinant of consumption expenditure. This is the case for the individual and for the economy as a whole. Keynes stated, "aggregate income . . . is, as a rule, the principal variable upon which the consumption-constituent of the aggregate demand function will depend." ¹ To say that income is the prime determinant of consumption expenditure is not to say that there may not be other determinants. For the moment, however, we shall put aside any other possible determinants and concentrate on the variable of income.

In the General Theory Keynes made two propositions which are vital to his theory. In the first place, he stated that consumption expenditure is related to income in a systematic and dependable way. Symbolically, we have the equation \( C = f(Y) \). Keynes defined the functional relationship between a given level of income and the consumption expenditure out

of the level of income as the "propensity to consume." When introducing this function, Keynes protected it by a number of reservations.

The amount that the community spends on consumption obviously depends (i) partly on the amount of its income (ii) partly on the subjective needs and the psychological propensities and habits of the individuals composing it and the principles on which the income is divided between them. It may be noted that the functional relationship postulated by Keynes is one that concerns real consumption and real income. "Consumption," he warned, "is obviously much more a function of real income than of money-income," and "may be considered a fairly stable function" only in a "given situation."

The second key idea that Keynes advanced in connection with the relationship between income and consumption is known as his "fundamental psychological law."

The fundamental psychological law, upon which we are entitled to depend with great confidence both a priori from our knowledge of human nature and from the detailed facts of experience, is that men are disposed as a rule and on the average, to increase their consumption as their income increases, but not by as much as the increase in their income. Basically what Keynes meant is that when an individual's income increases he will spend more for consumption because of the increase, but he will not spend the whole of the increase. Some portion of the increase,

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2 Ibid., p.90
3 Ibid., pp.90-91
4 Ibid., p.91
5 Ibid., p.95
6 Ibid., p.96
in other words, will be saved. It may be noted that Keynes supported his hypothesis with an analysis of saving decisions and factors affecting them.

... it is also obvious that a higher absolute level of income will tend, as a rule, to widen the gap between income and consumption. For the satisfaction of the immediate primary needs of a man and his family is usually a stronger motive than the motives towards accumulation, which only acquire effective sway when a margin of comfort has been attained. These reasons will lead, as a rule to a greater proportion of income being saved as real income increases.7

Here it may be observed that the simple motivation for the hypothesis in the middle of the quotation refers to Keynes' general analysis of "the subjective factors" affecting consumption in his subsequent Chapter 9. It is in fact a general theory of individual saving that is presented there. Eight motives for individual saving are distinguished, the motives of pre­caution, foresight, calculation, improvement, independence, enterprise, pride, and avarice. Commenting upon the eight motives for saving, Keynes finally concludes:

Now the strength of all these motives will vary enormously according to the institutions and organization of the economic society which we presume, according to habits formed by race, education, convention, religion and current morals, according to present hopes and past experiences, according to the prevailing distribution of wealth and the established standards of life.8

Therefore, when Keynes proceeds to formulate the absolute income hypothesis, written as \( C = f(Y) \), \( \frac{dC}{dY} < 1 \), positive, and decreasing, he must have arrived at it from a careful study of the step from his saving theory to his fundamental consumption function hypothesis.

It may be noted that Keynes regarded this relationship as a typical

7Ibid., p.97
8Ibid., p.109
short-run function. Although he thought that a similar relationship is characteristic of long-run changes in the level of real national income, he eliminated this relationship from the list of his fundamental assumptions.

Whether or not a greater proportion is saved ... we take it as a fundamental psychological rule of any modern community that when its real income is increased, it will not increase its consumption by an equal absolute amount, so that a greater absolute amount must be saved, unless a large and unusual change is occurring at the same time in other factors.9

Empirical Support from Budget Studies and Time Series Data

Turning now to a general evaluation of the Keynesian consumption function, especially in the light of the developments which have taken place since the General Theory was first published, the first step would appear to be a check of the theory against available empirical data. There is no doubt that Keynes had certain budget studies at his disposal when he was working on the General Theory, but there is little in his work to show that he paid much attention to such evidence. Says Gardner Ackley:

Keynes’ consumption function hypothesis was ... based neither on an extended chain of reasoning from a priori postulates nor upon any statistical study. It was neither a good example of inductive nor of deductive reasoning.10

From this, "one who reads his argument can only conclude that his consumption hypotheses were based largely upon introspection and the most casual observation."

9Ibid., p.97
11Ibid., p.219
The budget studies which became available later showed a close relationship between family income and total family expenditures similar to that which Keynes proposed for the economy as a whole. Families with low incomes typically dissave, while those with high incomes save. In fact, all of Keynes' propositions seem to be consistent with the empirical data from budget studies. The marginal propensity to consume is positive, less than one, and declines as income increases. However, the data concerned here comes from a cross-section of households, that is, it shows how consumption changes as income varies at different income levels. Keynes' hypothesis, however, shows us the relationship between aggregate consumption and aggregate income.12

By 1942 statistical evidence for the years 1929-1941 became available which could test Keynes' hypothesis.13 All except one of Keynes' propositions appeared to be conclusively proven. Expenditures on consumption did follow the level of income, the marginal propensity to consume was less than the average propensity to consume, and the marginal propensity was less than one. However, the marginal propensity to consume did not decline as income rose. The latter proposition is not essential to his argument.

In 1946 Simon Kuznets published estimates of National Income and Consumption Expenditures in the United States between 1869 and 1938.14 Kuznets' data were consistent with the view that consumption is a stable function of income with a marginal propensity to consume of less than one.

12See Ackley, op.cit., pp.221-224
13Ibid., pp.224-227
However, he showed that the consumption ratio $C/Y$ (average propensity to consume) has remained constant over the last hundred years. This last observation was inconsistent with the consumption function derived from annual data from the pre-World War II period. Economists suspected that we should talk of a long run consumption function with $APC=MPC$ and a short run consumption function with $APC>MPC$.

The later fate of the absolute income hypothesis is well-known. Post-war consumption forecasts founded on it turned out to be very misleading. However, it does not logically follow from this that Keynes' hypothesis has to be discarded. The failure of the post-war forecast might be due to an underestimation of the trend factor which leads to higher consumption. It is a major aim of this present study to stress the importance of this trend factor. Before embarking on a study of later theories of the consumption function, it is the present writer's view that the criticism of Keynes' fundamental hypothesis in general has been too detailed (Duesenberry, Modigliani-Brumberg, Friedman, etc.). A limited acceptance of the hypothesis, with due regard to additional influence of past incomes, assets, consumer liquidity, etc., is in complete agreement with theoretical and empirical evidence.

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16 The trend hypothesis holds that there have been upward shifts in the consumption function over the decades, thus accounting for a long-run proportional relationship between consumption and income.
CHAPTER II

THE CONSUMPTION LAG HYPOTHESIS

Reasons Why Consumption Depends on Past Income

There exist a large number of different reasons why present consumption ought to show some causal dependence on past income levels. First of all, consumption habits are stickier than saving habits and some time is required before consumption levels are adjusted to changed income. This argument can be used both for upward and downward changes in income.

Secondly, income expectations are to a considerable extent influenced by the past income development. Here it is argued that expectations are largely determined by the past long-term trend development of incomes. A recent income change will only slightly affect income expectations, the effect on present consumption not being very great.

Thirdly, present assets built up by savings in earlier periods, are one of the determinants of present consumption. Hence, present consumption depends on earlier savings or on earlier incomes. This argument was used by Modigliani-Brumberg.\(^1\)

Another reason why present consumption depends on past income levels was given by D. H. Robertson.\(^2\) He stated that the actual income during an income period, for large classes of income receivers, cannot be clearly


\(^2\)See Ackley, op.cit., pp.255-257, 322

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estimated until the income period has passed. Furthermore, incomes are usually paid after the work period. Consequently, it takes some time before income increases reach the consumer and become available for consumption.

If we accept the absolute income hypothesis, it is assumed that present consumption depends on expected present income. This theory does not tell us how consumption takes place out of unforeseen income gains. However, there are both theoretical reasons and empirical evidence that the propensity to consume unforeseen income gains is different from the propensity to consume expected income. If all income increases are unforeseen and enter individual budget balances as windfalls, we can follow Tinbergen and write:

\[ C_t = aY_t + b(Y_t - Y_{t-1}) \]

where \((Y_t - Y_{t-1})\) represents unforeseen changes in income.

Another argument why consumption can be expected to depend on the rate of increase of income has been forwarded by James Duesenberry. He believed that it was reasonable to assume for certain expensive consumer goods that a certain socially determined income level exists when these goods first are bought. Below this income level the consumer considers himself as not able to afford the good (e.g., an automobile). Every consumer who gets increased income and passes this level buys it. Duesenberry called such an income level "the critical income" of the good in


question. It is now clear that total consumption of such a good will depend on the number of consumers that pass its corresponding critical income. Consumption will depend on the rate of increase of income.

Duesenberry later argued that during depressions, consumers adjust their consumption not only to current income but also to previous income, particularly previous peak income. Consumers, having become accustomed to the level of the previous boom, will strongly resist any reduction in their standard of consumption as income falls, and thus saving is sharply reduced. Therefore, according to Duesenberry, consumption is not a function of current income alone, as the purely Keynesian view would have it, but rather a function of a relationship between current income and the highest income that consumers have ever previously reached.5

A similar conclusion has been reached by Franco Modigliani. Modigliani also suggests that the ratio between income and saving (or consumption) has to be linked not merely to current income but to a ratio or index that includes both current income and the highest income previously reached. He attributes this not only to consumer resistance to a reduction in acquired consumption habits, but also to the growth in unemployment in the downward phase of the cycle and to the redistribution of income that occurs when the income level falls.6

5Ibid., pp.76-89. Duesenberry's proposed consumption function is of the following form: St/Yt = aYt/Yo + b, where S and Y represent saving and income respectively. The subscript "t" is the current period, and the subscript "o" refers to the previous peak.

The Psychological Adjustment Lag

The arguments, thus far, have given some reason why present consumption should depend on past incomes. However, empirical evidence has shown that there is a higher dependence of present consumption in terms of past consumption than that based on past income. In the theoretical discussion, also, analysis based on past consumption has been more rewarding than that based on past income. The argument on the stickiness of consumption habits is the one most commonly used and deserves some further comments. It goes back to Keynes himself who noted:

This is especially the case [dC/dY is positive and less than unity] where we have short periods in view, as in the case of the so-called cyclical fluctuations of employment during which habits, as distinct from more permanent psychological propensities, are not given time enough to adapt themselves to changed objective circumstances. For a man's habitual standard of life usually has the first claim on his income, and he is apt to save the difference which discovers itself between his actual income and the expenses of his habitual standard; or, if he does adjust his expenditure to changes in his income, he will over short periods do so imperfectly. Thus a rising income will often be accompanied by increased saving, and a falling income by decreased saving, on a greater scale at first than subsequently.

Keynes' argument in terms of a psychological adjustment lag can then be supported by analyzing downward changes in disposable income. Consumption lags as a result of a downward change in income can be understood in terms of the occurrence of consumption habit formation, so that the consumer tries to maintain his former consumption standard.


8 Keynes, op.cit., p.97

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Although the Keynesian hypothesis is a short-run phenomenon, and it usually has been assumed that the dependence on past consumption levels slowly "fades away", it has been suggested that the hypothesis can also be used for systematic long term changes. Says Duesenberry,

The process of habit formation . . . is a genetic process which begins in childhood. At any one moment a consumer already has a well-established set of consumption habits.9

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9Duesenberry, op.cit., p.24

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CHAPTER III

THE RELATIVE INCOME HYPOTHESIS

This hypothesis says that a consumer's spending habits do not depend on the absolute amount of his income but rather on the magnitude of his income as compared with his fellow-neighbour's income. Thus, it is the position of the individual in the vertical income distribution that matters. As long as the distribution of income does not change, the average propensity to consume for the economy as a whole will not change. For example, if the income level of the whole economy rises and all spending units enjoy a higher absolute level of income, the same proportion of income will be consumed as long as the relative position of each group does not change. Therefore, the basic relationship between income and consumption is one of proportionality.

Duesenberry's Theory of Consumption

The chief proponent of the relative income hypothesis is James Duesenberry.\(^1\) He calls it a theory of "the social significance of consumption."\(^2\) Consumption in itself does not create utility, only consumption in relation to what other people consume. Duesenberry assumes that consumer preferences are interdependent rather than independent of one another.

\(^{1}\) See Duesenberry, op.cit., Chapter III, pp.17-46
\(^{2}\) Ibid., pp.28-32

16

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another. He says, "for one consumer, the number and strength of impulses to consume more depends on the ratio of his expenditures by other individuals." This effect works more strongly in lower-income brackets than in higher ones because lower bracket income receivers more often get in touch with consumers of superior consumption habits than high income bracket receivers. He says:

We can maintain then that the frequency and strength of impulses to increase expenditure depends on frequency of contact with goods superior to those habitually consumed.

Duesenberry refers to this last statement as "the demonstration effect." The demonstration effect comes from consumers on a consumption standard next above one's own. This is a sort of "Keeping-up-with-the-Joneses" theory of consumption where there is a narrowing of the gap between the consumer and surrounding consumers on a higher consumption standard. The "Jones" with whom the individual tries to keep up are not the "Jones" who are considerably wealthier than he, but the ones whose incomes are only slightly higher and who are either in the same social class or the one immediately higher. Thus the individual's desires, which are translated into spending, may continue to rise as he grows wealthier. For this reason, in any one social group the wealthiest people in that class will spend the same proportion of their income and this will not vary whether the wealthiest in any one social group earn, say, $3,000 per annum or $10,000 per annum. Similarly, people at each level on the ladder of incomes will consume a proportion of their income which is determined by

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3 Ibid., p.32
4 Ibid., p.27
In concluding, Duesenberry summarizes his results as follows:

(1) The aggregate savings ratio is independent of the absolute level of aggregate income.

(2) The aggregate savings ratio is dependent on:
   a) interest rates,
   b) the relation between current and expected future incomes,
   c) the distribution of income,
   d) the age distribution of the population,
   e) the rate of growth of income.

(3) Ceteris paribus the propensity to save of an individual can be regarded as a rising function of his percentile position in the income distribution. The parameters of that function will change with changes in the shape of the income distribution.

The theory presented must, however, not be taken at its face value. Duesenberry himself admits later that "Partly for reasons of exposition we have stated the case in a somewhat bald and uncompromising way."7

The first criticism which may be directed against his hypothesis concerns the nature of the consumption goods examined. Although no one would deny that large parts of the individual's consumption budget has a social consumption significance, it is difficult to believe that all consumption items have such a character. For instance, it is doubtful whether the argument has much bearing on consumption of one's basic needs. A second

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5For an alternative theory of consumer behaviour, see Thorstein Veblen, The Theory of the Leisure Class, (New York: The Modern Library, 1931) Chapter IV, pp.68-101. According to the theory developed by Veblen, any standard of "ordinary comfortable living" would not be constant, but would move upward as previously unsatisfied wants were slowly transformed into necessities. This occurred through the continual competition of individuals to buy, and to show to their neighbours, objects which were simply an obvious parade of their wealth. In contrast to Duesenberry's theory, the consumer is trying to maintain a higher level of consumption than his neighbour on a lower consumption standard.

6Duesenberry, op.cit., p.45

7Ibid., p.112
point worth mentioning is the fact that the social reference group for one commodity may be different from that of another commodity. For example, the social reference group for the purchase of a car may be the business associates of the husband, while the reference group for expenditures on children may be the parents who live on the same school district. To specify a certain reference group for each commodity would be virtually impossible. What remains then is to mention a general reference group for the determination of consumption. Income levels would seem to be the most appropriate reference group since it is reasonable to assume that people mainly associate with people in about the same income class as themselves, although Duesenberry says on one occasion:

"Moreover, our society is not stratified; that is, it does not maintain any strong barriers against association among individuals of different status."

A completely satisfactory discussion of Duesenberry's hypothesis would demand some sort of empirical verification. However, it is doubtful whether a statistical investigation could ever give any answer to the problems here. How can we empirically assess what part of an individual's consumption is due to social influence? It seems that statements like "the demonstration effect works more strongly in low-income brackets" can never be tested empirically.

Support for this kind of theory is found in the writings of economists who have been influenced by modern theories of social psychology. While the Keynesian theory of saving was based upon the traditional assumption that only the wants of an individual himself were at the basis of his economic behaviour, this school of thought considers a person's relations...
with other people to be a primary influence on his actions. His goals as regards income and expenditure are thus largely dependent on the achievements of others.

The Interrelation of Income Expectations

There are other reasons why one would expect individual consumption to be highly correlated with prevailing consumption standards in the population. Duesenberry's argument is that the utility functions are socially interdependent. Another argument which has been proposed is that individual's income expectations are highly socially interrelated.\(^9\)

This argument can be worked out along two different lines. First, it can be maintained that there always exists a large degree of social interrelation between people's aspirations, hopes and outlook for the future. People with lower incomes receive a continuous social stimulus to believe that they ought to be able to do as well as those better off within the immediate future. Income expectations grow out of "the general milieu" of what is called "the state of confidence" for the future. If the low-income receiver notices that the general state of confidence is strong and that his neighbours are able to advance their consumption standards, there is reason for him to believe that he too will soon get some share of the increasing prosperity.

Secondly, there is the argument that such interrelationship of income expectations is from the point of view of the individual income-receiver perfectly rational, as far as an advancing average income in the economy

can be taken to indicate improving possibilities to the individual to earn a higher income. The increasing average income in the modern economy reflects the secular improvement of productivity in agriculture and industry.

Current research in the measurement of consumer expectations, particularly at the University of Michigan Consumer Survey Research Centre, has shed considerable light on forecasting total spending. In summarizing the evidence both from aggregate data and surveys, they conclude:

We are not in a position yet to offer an answer to the basic question regarding the conditions under which changes in consumer attitudes occur. The origin of changes in consumer attitudes is still shrouded in uncertainty. But consumers are accessible; their attitudes and expectations can be measured; and there is reason to view these attitudes as advance indications of consumer action.10

Keynes apparently seemed to feel that expectations could be ignored in the analysis of aggregate consumption because, he said, with reference to income expectations, such expectations probably would cancel out.11 At any given moment, some families would expect higher incomes while others would expect lower incomes. Here, he was referring to the family life cycle. Other theorists have not treated expectations in the same manner as Keynes. Members of the "Stockholm School" of Swedish economists, for example, explained the relationship between "expected" income and consumption.12


11 Although Keynes referred to expectations as affecting business spending, he made no such mention in the case of consumers.


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It remains to mention a special argument for the relative income hypothesis, suggested by Modigliani and Brumberg.¹³ This argument is related to the permanent income hypothesis which I shall discuss next. In short, the argument says that certain short-term adjustments occur systematically in the vertical income distribution. Hence, the consumption-income ratio will vary with the percentile position of the consumer in the income distribution. This is identical to Duesenberry's result that the propensity to consume of an individual is a falling function of his percentile position in the income distribution.¹⁴ I shall return to this point in the next chapter.


CHAPTER IV

THE PERMANENT INCOME HYPOTHESIS

This hypothesis says that measured consumption data always contain temporary fluctuations around the long run "permanent" consumption function. The true long run consumption function, therefore, can only be arrived at when these transitory components are eliminated. The hypothesis has been elaborated independently by Modigliani-Brumberg\(^1\) and Milton Friedman.\(^2\)

Friedman's Theory of Consumption

Friedman argues that the basic form of the consumption function is one of proportionality. He assumes that both the actual measured income and consumption expenditures of any period, for the individual and the economy as a whole, are each made up of "permanent" and "transitory" components. Thus, he writes:

\[
\begin{align*}
Y_{\text{observed}} &= Y_{\text{permanent}} + Y_{\text{transitory}} \\
C_{\text{observed}} &= C_{\text{permanent}} + C_{\text{transitory}}
\end{align*}
\]

Permanent income or consumption is that which is reasonably expected to be received or spent over a period of at least several years. Later in

\(^1\)Modigliani-Brumberg, *op. cit.*, pp. 393-436


\(^3\)Ibid., pp. 21-22

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the book we are told that permanent income "is to be interpreted as the mean income regarded as permanent by the consumer unit in question, which in turn depends on its horizon and foresightedness."\(^4\) This, says Friedman, will depend on his accumulated or inherited wealth, occupation, environment, etc.

The transitory components, which have to be added to the permanent components in order to make up the observed data, are composed of unexpected or unforeseen additions or subtractions to consumption or income. Over the long run such additions and subtractions should cancel out. Friedman further assumes that C transitory and Y transitory are uncorrelated with each other and with the corresponding permanent components.\(^5\)

Friedman makes the assumption that people will have one marginal propensity to consume for the permanent part of their income and another marginal propensity to consume for the transitory part of income. The negative transitory income components are more likely to occur in lower income brackets which include many victims of temporary bad luck. On the other hand, families with higher incomes are more likely to experience temporary windfall gains and thus have positive income transitory components. Consequently, for higher observed incomes there is a tendency for Y permanent to lie below Y observed. Such individuals are not yet permanently adjusted to their low incomes. Their consumption will lie above normal in their present income bracket.

To sum up, when income declines, consumption is not likely to decline unless there is a radical change in the long-term income outlook. Rising income does not alter the level of consumption spending very much either,

\(^4\)Ibid., p.93

\(^5\)This assumption, which is the main feature of his argument, is the most criticized by other economists.
because temporary positive changes in income are not looked upon as permanent additions to the spending potential of the household. Once they are, however, consumption spending will adjust to the higher level of permanent income.

Friedman finally arrives at his fundamental proportional relation between permanent consumption and permanent income: \( C_{\text{permanent}} = k(i, w, u, ) Y_{\text{permanent}} \). This equation shows that the relationship between permanent consumption and permanent income is supposed to be dependent only on the rate of interest \((i)\), the ratio of nonhuman wealth to income \((w)\), and the individuals' tastes \((u)\).

Friedman subjects his hypothesis to a detailed statistical verification and obtains very good results. Since the publication of his book in 1957, however, several economists, including Houthakker and Bodkin, have stated that the marginal propensity to consume out of transitory income, far from being zero as Friedman maintained, is actually greater than the marginal propensity to consume out of permanent income. Nevertheless, they point out that "we cannot conclude, that in the entire population, the marginal propensity to consume out of windfall income exceeds the marginal propensity to consume out of regular income."

Other economists, on the other hand, have lent support to the permanent income hypothesis by showing that the marginal propensity to consume out of windfall income is extremely small in comparison with figures of

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6 Friedman, op.cit., p.17


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The main problem in attempting to verify the permanent income hypothesis, such as that of Friedman, seems to be in assessing statistically whether an occurred income change is foreseen or not. Although Friedman's conclusion that permanent consumption is a constant function of the level of permanent income has already been subjected to a number of empirical tests, the evidence presented, in general, does not constitute strong support of his hypothesis. Even though his hypothesis is consistent with the data he examines, one wonders about it. Not only does it require the household to view the future with certainty but it also requires that it save all or most of the transitory gains in income.

Modigliani-Brumberg's Explanation

Modigliani-Brumberg have exactly the same hypothesis, although it is not in correlation terms. They assume that consumers with recently increased incomes are mainly to be found in upper income brackets and that consumers with recently decreased incomes are mainly to be found in lower income brackets. Turning to the question of why newcomers rising into a higher income bracket (or falling into a lower income bracket) can be supposed to consume differently than permanent inhabitants of the income bracket do, Modigliani-Brumberg first use the argument of the low short-run marginal elasticity of income expectations. They claimed to have

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9 See Modigliani-Brumberg, op.cit., p.409
innovated this idea: "notice that our model suggest an explanation of the consumption lag that is quite different from the one usually advanced."^{10} "The one usually advanced" refers to Keynes' explanation for consumption lags which has since been referred to as the "persistency effect."^{11}

The explanation, however, had been clearly stated earlier by Duesenberry, who discussing the reasons for newcomers descending into low-income brackets to maintain temporarily a high consumption standard, said:

Then there are three possible explanations.

(1) The families with temporarily low incomes were technically in a better position to have deficits. That is, they were not more willing to run deficits but more able to get the resources to do so.

(2) The families with temporarily low incomes had expectations of reemployment and higher income in the future.

(3) These families had had higher living standards in the past and were therefore more willing to have deficits to protect their living standards.^{12}

Of the three motives listed by Duesenberry above, the first is a particular argument on the availability of credit. The second is the same as Modigliani-Brumberg's maintained-income expectations motive and the third is the same as Keynes' "persistency effect."

We now turn to a second argument employed by Modigliani-Brumberg in order to explain the transitory deviations from permanent consumption.

^{10}Ibid., p.407

^{11}See Keynes, loc.cit., p.97

^{12}Duesenberry, op.cit., p.82
It is of particular interest and reads:

In our model . . . initial asset holdings are now out of line with the revised outlook. If the outlook has improved, assets are too low to enable the household to live for the rest of its expected life on a scale commensurate with the new level of income; if the income outlook has deteriorated, then, in order for the household to achieve the optimum consumption plan consistent with the new outlook, it is not necessary to add to assets at the same rate as before, and perhaps even immediate drawing down of assets to support consumption may be called for.13

Here Modigliani-Brumberg have touched upon a very important point. Consumption is the only planned variable in their model. Thus, consumption always stands in a definite relationship to intertemporal wealth. But the relationship between assets and intertemporal wealth is only the result of past consumption decisions.

The hypothesis of direct relationship between consumer spending and holdings of financial or liquid assets is subject to several reservations. For one thing, the distribution of ownership of liquid assets will have an effect upon their overall impact on consumer spending. For example, if ownership is concentrated in the upper-income groups, it is doubtful that the size or value of such holdings will have much impact upon the level of consumption for the whole economy, since high-income earners as a group tend to save a large proportion of their incomes at all times. In fact, it has been suggested that large holdings of liquid assets result from past saving and the people who have been able to save and accumulate are most likely to be the people who will save in the future.14

13 Modigliani-Brumberg, op.cit., p.407
If this point of view is valid, then it follows that holdings of liquid assets will not necessarily tend to raise the consumption function. Lawrence Klein has suggested that existing empirical evidence does not show conclusively that holdings of liquid assets exert an influence on consumer spending in one direction or another.  

In addition to the distribution of ownership, it has been pointed out that changes in the real value of liquid assets may affect consumption spending. The possibility of a relationship between the real value of the stock of liquid assets, the general level of prices, and the position of the consumption function has come to be known as the "Pigou effect", after A. C. Pigou, a British economist and loyal defender of the classical analysis. Pigou argued that a fall in the general level of prices would stimulate the economy by tending to shift the consumption function upward. The price drop would increase the real value of the consumer's financial assets and thereby lessen his need to save. It is difficult to say how this effect may be considered very influential today.

Before leaving the discussion of the permanent income hypothesis and liquid asset holdings, it may be noted that the permanent income hypothesis is not as original as it might first seem. The fundamental principle that observed consumption data only partly reveal the long-run consumption function and that they are partly hidden by short-run


adjustments was already seen by Keynes. A rediscovery of this fact seems to be the main merit of the approach.

17 See Keynes, loc.cit., p.97
CHAPTER V

THE TREND HYPOTHESIS

This explanation argues that long-term changes occur over time which cause a departure of the aggregate time-series consumption function from the cross-section relationship. All explanations of aggregate time-series data pay some regard to the trend factors. Some authors are inclined to attach more importance to the argument than others. At an early date Tinbergen and later Klein used calendar time as an explanatory variable in their regression explanations of aggregate consumption. In the literature, the trend hypothesis has come to be associated in particular with what we have called above the absolute income hypothesis. The reason is that the trend-factor explanation has been used mainly by Keynesians wanting to save Keynes' fundamental psychological law.¹

The Upward Shift of the Consumption Function

The reasoning behind this hypothesis is that the consumption function, which is basically a nonproportional relationship, has been slowly drifting upward over time as income gradually increases. The upward drift of the consumption function just about exactly offsets the tendency for the average propensity to consume to decline. Thus, income has

increased during this period so that the actual time-path of the consumption-income relationship shows a constant average propensity to consume.

The main criticism against the trend hypothesis is that it does not adequately explain why the consumption ratio has remained almost secularly constant. That is to say, it does not imply that the consumption ratio must remain constant over time. It can only explain such a fact as a historical coincidence.

Reasons for the Trend Development

Thus far, we have been concerned with the effect of the trend-factor, simply taking its existence for granted. It remains to explain why this trend-development occurs. Two commonly cited causes of the trend hypothesis include the effects of urbanization and the levelling of incomes. Urbanization tends to lead to a higher aggregate consumption ratio because farmers and households since the mid-thirties in the agricultural sector have had a higher propensity to save than corresponding urban income groups.2

The same result follows from the levelling of incomes in the vertical income distribution, at least so long as the absolute income hypothesis is accepted. When the absolute income hypothesis in its Keynesian form is not accepted, the consumption stimulating effect of the levelling of incomes is not so clear any longer. Duesenberry, for instance, is of the

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opinion that the levelling of incomes would rather decrease the average propensity to consume.\textsuperscript{3} Duesenberry's reasoning here is that if income and consumption of groups in the upper-income brackets are reduced, the pressure toward consumption spending for groups situated at lower levels in the income distribution will lessen. The standards of consumption that such groups imitate have been lowered and thus their own consumption standards will follow suit.

Other long-run institutional developments, frequently mentioned in the literature, include the increasing availability of consumer credit, the increased life expectancy, the diminution of the average household, the diminished wage-gap between apprentices and masters in most trades, the longer schooling period of younger people, and so on and so forth. Of course, not all of these factors have been consumption stimulating.

Another factor that may help to explain the secular upward drift of the consumption function is the introduction of new products such as television or compact cars which may change consumer preferences in such a way that they are willing to revise their expenditure plans and purchase the new commodity at the expense of savings. This latter hypothesis has been tested by T. F. Dernberg.\textsuperscript{4}

To sum up, all such changes may be included in the term "the drive

\textsuperscript{3}See Duesenberry, \textit{op.cit.}, p.44

towards higher consumption." Considering the weight of the arguments, the case for this drive really is impressive. It must be considered to be one of the major powers directing the development of the consumption function today.  

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5 Ibid., p. 25

SUMMARY

From the foregoing analysis, it appears that two questions about the consumption function are of particular significance. The first is whether consumption is proportional to income, so that the average and marginal propensities to consume are identical. Keynes himself had suggested that the average propensity would normally exceed the marginal propensity to consume. The second question is whether income, the major determinant of consumer spending should be regarded as past, current or expected, or as some combination of the three.

Much empirical research has been devoted to these questions, especially to the first one. At first family budget studies were the chief source of information, and the consumption functions derived from them seemed to bear out Keynes' postulate of disproportionality. The short time series available until 1940 led to much the same conclusion. Then, however, Simon Kuznets' estimates of savings going back to the end of the nineteenth century became available and presented quite a different picture. If Keynes had been correct the ratio of consumption to income should have been higher fifty years ago than it is now. Yet the long-run estimates revealed no significant change in that ratio. The dilemma faced by economists was how to reconcile statistical evidence on the long-run constancy of the average propensity to consume with equally worthy statistical evidence which shows that in the short-run the consumption-income ratio is not constant.
The proposed solutions to this contradiction have all taken the form of a re-evaluation of the independent variable in the consumption function. Duesenberry, for example, took income to mean the relative income position of a household in its community. Friedman, on the other hand, took income as that which the consumer regarded as permanent. Other economists believed that past or expected income should be the primary independent variable. Another way in which empirical findings may be reconciled with respect to the short and long-run average propensities to consume is to postulate the hypothesis of an upward shift of the consumption function over time. The reconciliation might also be attained by adding the influence of other variables to the absolute income hypothesis. Closest to the original Keynesian formulation is Tobin's approach, which introduces assets as additional explanatory variables.

To sum up, there have been a number of approaches which have attempted to explain the behaviour of the consumption function, such as Duesenberry's and Modigliani's "past-peak-of-income" hypothesis, Hick's lagged consumption function, and Friedman's permanent income model. There is some empirical support for each of these approaches but it hardly can be said that they have been definitely established. Given the state of evidence, there is no clear way of demonstrating the validity or superiority of any one of them. In any case, it is clear that current consumption is not simply a function of current income, but also is related to some more complicated measure of past and expected income and consumption. Moreover, it seems likely that factors in addition to an income variable will have to be included before there can be a full explanation of the behaviour of the consumption function.
PART TWO

THE CANADIAN CONSUMPTION FUNCTION
INTRODUCTION

The main source of consumer expenditure data in Canada is provided by the National Accounts, prepared by the Dominion Bureau of Statistics.¹ The current dollar estimates of consumer expenditure in the National Accounts can be a misleading measure of changes in the real level of consumption if there are wide fluctuations in consumer good prices over the years. The data were, therefore, deflated into 1949 dollars because all years between 1930 and 1945 were unusual in some respect, and the raw data of those years might provide some misleading information as to the long-run trends of consumer expenditure.

Several things should be kept in mind when using the concepts of disposable income, consumption expenditure, and personal savings² in any analysis of aggregate consumer behaviour in Canada. First of all, reasonably reliable estimates of income, consumption and saving are only available for the period beginning with 1926. This is barely a sufficient period from which to derive a general trend, in view of the fact that many of the years since 1926 were abnormal in some way or other. Secondly, many of the statistics on personal saving may be subject to considerable margins of error. In Canada's National Accounts, personal

¹See Dominion Bureau of Statistics, National Accounts, Income and Expenditure (Ottawa), various years

²See Appendix, Table 1, for definitions of these concepts.
savings estimates are calculated as the difference between independent estimates of personal disposable income and personal expenditure on consumer goods and services. These "residual" estimates of personal savings will reflect any errors in the income and consumption statistics.\(^3\) Thirdly, we can expect considerable short-run variations in savings over the years. For one reason, personal savings include the net accumulation of all unincorporated businesses, the most important of which is the farm sector whose savings vary sharply during unusual conditions.\(^4\) In addition, short-run changes in savings are associated with general business fluctuations and other factors.

Another factor to be kept in mind in interpreting Canada's National Accounts is the fact that expenditure on consumer durables is included within the estimates of current consumption. This means that personal consumption expenditures may be overstated since a large number of durable items are regarded by many people as a form of personal capital and may be considered as savings. It may also be noted that the National Accounts in Canada exclude net accumulation of owner occupied housing from personal saving, this item being included as part of business saving. All these factors must be explicitly noted while interpreting the given data.


\(^4\)Farm income fluctuated to such a large extent, for example, in Australia the only stable relationship obtained was between personal consumption expenditures and non-farm personal disposable income. See H. W. Arndt, and B. Cameron, "An Australian Consumption Function," Economic Record, Vol. 33 (April, 1957) pp.108-15
CHAPTER VI

REGRESSIONS OF CONSUMPTION ON CURRENT INCOME

The purpose of this chapter is to look for a form of consumption function which will be in agreement with general observations of consumer behaviour and which will also give a good fit to the observed data. All variables considered are aggregative over the whole Canadian economy and are in millions of constant 1949 dollars. The observations used in the analysis were mainly for the years 1926-1941 and 1946-1963, inclusive. Thus, those war years in which it was believed that there had been a considerable change in the structure of consumer behaviour,\(^1\) were excluded from part of the analysis.

The experimental work was carried out by testing some of the more interesting hypotheses in consumption theory. The method used was mainly that of classical single-equation least-squares. Later an accounting identity was added, and the parameters were estimated again.

A. 1926-1963: Non-War Years

The first hypothesis which was tested is the most simple and direct,

\(^1\)Keynes argued that the stability of the consumption function depended upon the existence of normal conditions, by which he meant the absence of wars, revolutions, or any form of social upheaval that might seriously distort the consumption-income relationship.
namely, consumption is a linear function of total disposable income.\(^2\) In algebraic form, we have:

\[
C = a + bY + u
\]

where "u" is a random disturbance or residual. This equation is based on the absolute income hypothesis.\(^3\) Fitting a regression line to the Canadian data for the years 1926-41, and 1946-63 inclusive, by the method of least squares,\(^4\) the following regression was obtained:

\[
C = 546 + .90Y
\]

This means that the slope (marginal propensity to consume) is .90, and the intercept is $546 million in 1949 prices. Another way of putting it is that annual consumer expenditures appear to be divisible into two parts. One part ($546 million) is independent of income and a second part consists of nine-tenths of whatever disposable income may be.

\(^2\)The above remarks do not necessarily imply that the consumption-income relationship must be linear. The consumption function may have a shape such that the marginal as well as the average propensity to consume declines as income rises. For reasons of simplicity in analysis, however, most economists operate on the assumption that the consumption function is linear.


\(^4\)This means that we have found that line, among all possible lines, which has the following property: if we measure the difference between actual consumption in each year and the consumption estimated by this line for the income of that year, and if we square each of these deviations, the sum of these squared deviations is at a minimum.

\(^5\)Using current dollars, the following regressions were obtained:

for 1926-1955 inclusive,

\[
C = 149 + .91Y \quad (r^2=.9902, \ r=.995);
\]

for 1926-1962 inclusive,

\[
C = 29 + .93Y \quad (r^2=.9967, \ r=.998)\]
The coefficient of correlation (r) for this regression is .998
\(r^2 = .9967\).\(^6\)

It is evident from Chart 2 (Appendix) that the deviations of actual consumption from consumption estimated by the 1926-41, 1946-63 regression line are small both in absolute and in percentage terms. One must take into consideration in evaluating these deviations, however, that: "Income, in short, is a function of consumption, just as truly as consumption is a function of income,"\(^7\) thus reducing the tendency for large deviations from the estimated regression line.

1. Behaviour of Residuals

Analysis of the time-series residuals from the estimated regression line, as illustrated in Chart 3 of the Appendix, reveals an interesting relationship. The first thing that one notices in the time graph is that the residuals are definitely non-random over time. They display a clear cyclical pattern that is in some way related to the business cycle.

a) Pre-War Period. There is a definite pattern for the residuals of the pre-war period. During the late 1920's while income was rising the residuals were negative, but decreasing in absolute value. In the early 1930's while income was declining the residuals became positive and increasing. After 1933 income increased steadily to 1941, except for one reversal in the year 1938,\(^8\) while the residuals declined steadily.

From 1926 to 1941 the relationship is quite clear. When income

\(^6\)This means that 99.67% of the observed variation in consumer expenditure for the period 1926-41 and 1946-63 can be "explained" by differences in income, leaving 0.33% to be explained by other factors.

\(^7\)Ruth Mack, op.cit., p.58

is rising, consumer expenditures lag behind the relationship:

\[ C = a + bY + u \]

and we have negative residuals. When income is falling, once again consumer expenditures lag behind and we have positive residuals. Thus, during these years consumer demand appeared to be related in some way to the income of a previous period.

b) Post-War Period. In the post-war period the residuals would have been negative if they had followed the pre-war relationship, since this was a period of rising income. But the residuals of the immediate post-war period turned out to be distinctly positive indicating that either the pre-war relationship had changed, or that some new influence had been imposed on it. The latter suggestion appeared to be quite plausible since it was well-known that consumers had deferred their wants and needs (particularly for durables) during the war, and had at the same time, through saving, accumulated large stocks of liquid assets. Thus we could expect considerable consumer spending out of these past savings in the early post-war period.

2. Comparison of Pre-War and Post-War Regressions

Considering the fact that World War II brought many profound changes in the Canadian economy, it would seem logical to examine the pre-war and post-war data separately. On fitting a regression line to each of the periods 1926-1941 and 1946-1963 separately, it is apparent that the post-war schedule can be distinguished from the pre-war schedule in both level and shape. The regression line obtained for the period 1926-41 was:

\[ C = 1,805 + .70Y \]

This compares with the function fitted to 1946-63 data:
\[ C = -1 + .93Y \]

In order to compare the two regressions, the pre-war curve has been extended throughout the post-war years to emphasize the upward shift of the consumption function.⁹

Two observations may be made from Chart 2. First of all, consumption expenditures during the war period were considerably below the levels that would have been expected on the basis of the extended pre-war relationship. This assumes that the purchases people wished to make are shown by the extension of the pre-war regression line. The difference between the desired and actual purchases during the war years represents their suppressed demand for consumer products and services. This can be explained by the existing rationing and price controls, limited production of many consumer goods, appeals to save, all of which curtailed consumers' desired purchases at the existing high-income levels.¹⁰ A second point to be noted is that aggregate consumer expenditures during the post-war years are considerably higher than would be expected on the basis of comparison with the extended pre-war regression line. The higher slope and smaller intercept of the post-war regression represents an almost perfectly proportional relationship between income and consumption.

Several factors may have accounted for the considerable shift in the level of the consumption function between the pre-war and post-war.

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⁹See Appendix, Chart 2

periods in Canada. First of all, the large jump in the level of consumer asset holdings during the war period allowed people to spend more in the immediate post-war years. This deferred demand during the war years resulted in large increases in the sale of durable goods in the post-war years. In addition, many goods which couldn't be replaced during the war created a backlog of unsatisfied needs. Consequently, the combination of "forced saving" and "deferred demand" during the war resulted in a permanently higher level of consumption relative to income than could have been predicted on the basis of pre-war data.

B. Simultaneous Estimation of Parameters

Thus far, we have focused our attention upon the estimation of a single equation, namely the consumption function. In order to build a more complete model around the consumption function it is necessary to add an income identity into the system. Hence, we have two equations:

\[ C = a + bY + u \]
\[ Y = C + Z \]

where \( Z \) is equal to non-consumption expenditure in the private sector, that is, net investment (net home investment, plus net foreign investment, plus the government deficit) or if we prefer, personal saving. Therefore, we shall use the symbol \( S \) in place of \( Z \) in what follows. In the ex post sense, we always have, of course, \( S = Y - C \).

1. Regression of Consumption on Savings: Non-War Years

It is not difficult to show that the existence of a consumption-income relationship infers a consumption-saving relationship, if it is

not intuitively obvious. Since

\[ C = a + bY \]

and \( S \) (saving) is defined as \( Y - C \), then

\[ C = \frac{1}{1-b} (a + bS) \]

or

\[ C = A + BS \]

where \( A = \frac{a}{1-b} \), and \( B = \frac{b}{1-b} \)

An evaluation of the existence and stability of the consumption function can best be made by looking at data illustrating the relation between consumption and savings. A scatter diagram is illustrated in Chart 4 of the Appendix for the period 1926-1963, where personal savings are measured on the horizontal axis and personal consumption expenditures on the vertical axis. From the graph it is obvious that there is a significant relationship between consumption and savings, and therefore a relationship between consumption and income.

The regression equation for the period 1926-41, 1946-63 is:

\[ C = 6,496 + 6.77S \]

Substituting these two coefficients into the previous two equations we get:

\[ A = \frac{a}{1-b} = 6,496 \text{ and } B = \frac{b}{1-b} = 6.77 \]

from which \( a = 836 \) and \( b = .87 \)

Hence, our estimated consumption function for the period 1926-41, 1946-63, obtained by indirect least squares is:

\[ C = 836 + .87Y \]

This regression is fairly close to the previously estimated consumption function, obtained by ordinary least squares, which was:

\[ C = 546 + .90Y \]
The intercept of the new estimated consumption function is $290 million higher and the marginal propensity to consume is 3% lower. It can be shown that the present estimate obtained by indirect least squares is a more consistent estimate than the estimate obtained by ordinary least squares.\(^\text{12}\)

2. Regression of Consumption on Savings: War and Peace Years

Thus far, our system of equations has only been fitted to peacet ime years. To make the model more complete, suppose consumption expenditure is linearly related to income and that in wartime there is a downward shift in the function. Assuming that the marginal propensity to consume varies with each period, we may write the hypothesis:

\[
C = a_1 + b_1 S + (a_2 + b_2 S)X + u
\]

where \(X = \)

\(0\) in each peacetime year

\(1\) in each wartime year \(^\text{13}\)

This gives the peacetime function as

\[
C = A_1 + B_1 Y
\]

and the wartime function as

\[
C = (A_1 + A_2) + (B_1 + B_2)Y
\]

Substituting the definitional identity \(Y = C + S\) into each of these two previous equations, the reduced form of the model is:

For peace

\[
C = \frac{a_1}{1-b_1} + \frac{b_1}{1-b_1} S
\]


\(^\text{13}\)See Johnston, op.cit., pp.221-223. The use of the dummy variable \((X)\) is represented here to show the shift in the consumption function between wartime and peacetime years.
For war \[ C = \frac{a_1 + a_2}{1 - b_1 - b_2} + \frac{b_1 + b_2}{1 - b_1 - b_2} S \]

where \[ A_1 = \frac{a_1}{1 - b_1} , B_1 = \frac{b_1}{1 - b_1} \]

\[ A_1 + A_2 = \frac{a_1 + a_2}{1 - b_1 - b_2} \quad \text{and} \quad B_1 + B_2 = \frac{b_1 + b_2}{1 - b_1 - b_2} \]

Solving for the parameters in equation (1), the following values were obtained:

\[ a_1 = 6,496 \quad a_2 = 3,809 \]
\[ b_1 = 6.767 \quad b_2 = -7.734 \]

Substituting these values into the last four equations, we get:

\[ A_1 = 836 \quad B_1 = .87 \]
\[ A_1 + A_2 = -.49 \quad B_1 + B_2 = 5,240 \]

Hence, our estimated peacetime and wartime consumption functions are:

For peace \[ C = 836 + .87Y \]

For war \[ C = 5,240 - .49Y \]

From the latter equation, one can observe the irregular slope and intercept of the wartime function. Because of the unusual behaviour of the consumption-income relationship during wartime, data for the war years will not be included in the next chapter.

\[ ^{14} \text{A similar regression was obtained for the years 1926-1955, using current dollars. The peacetime regression line was estimated as:} \]
\[ C = 454 + .89Y \]

and the wartime function was:

\[ C = -292,780 - 1.00Y \]
CHAPTER VII

REGRESSIONS OF CONSUMPTION ON CURRENT INCOME
AND OTHER VARIABLES

A. The Influence of Past Income

1. Previous Year's Income

While other factors enter into the explanation of consumption, we can retain the simple hypothesis that consumption is a function of current disposable income, since the testing of this hypothesis in the previous chapter gave excellent results. A second hypothesis which was tested is the relationship between consumer demand, current disposable income, and some lagged cyclical variable such as disposable income.¹

The simplest linear relationship of this sort would be one in which the total disposable income of the previous year, Yt-1, is added as an additional variable to the absolute income hypothesis. In algebraic form, we have the equation:

\[ C = a + bY + cY_{t-1} + u \]

This hypothesis suggests that consumers are slow to adjust to current income changes because of some lag in their responses to these changes.²


The regression equation obtained for consumption on present income and
the previous year's income for the period 1927-41, 1946-63\(^2\) is:

\[ C = 587 + 0.42Y + 0.49Y_{t-1} \]

The statistical goodness of fit of this hypothesis was much better than
that for the simple absolute income hypothesis in Chapter VI, demonstrat­
ing that a lagged value of one of the variables involved exerts an
important influence on current consumer behaviour in Canada.

### Table 1

**Analysis of Variance**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Y_{t-1})</td>
<td>758,033,989.3</td>
<td>1</td>
<td>758,033,989.3</td>
</tr>
<tr>
<td>Addition of (Y_{t-1})</td>
<td>- 5,987,271.5</td>
<td>1</td>
<td>5,987,271.5</td>
</tr>
<tr>
<td>(Y) and (Y_{t-1})</td>
<td>752,046,717.8</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>8,271,507.2</td>
<td>30</td>
<td>275,716.906</td>
</tr>
<tr>
<td>Total</td>
<td>760,318,225.0</td>
<td>32</td>
<td></td>
</tr>
</tbody>
</table>

The explained sum of squares due to \(Y\) alone is: 758,033,989.3

The total sum of squares due to \(Y\) and \(Y_{t-1}\) is: 752,046,717.8

The \(Y\) sum of squares due to \(Y\) and \(Y_{t-1}\) is: 758,033,989.3

and the additional effect due to the inclusion of \(Y_{t-1}\) is: - 5,987,271

The additional effect is then tested by the F ratio with (1, 30) degrees
do freedom.

\[ F = 21.7 \]

The results were highly significant.

\(^2\)It may be noted that the previous year's income for the year 1946
was taken as 1945, a war year.
2. Previous Peak Income

Another hypothesis which is related to this problem assumes that the lag mentioned above is due to consumer's memories of the highest previous level of disposable income which they have attained in the past. This theory was developed by Franco Modigliani and James Duesenberry. According to this hypothesis consumers try to maintain the standard of this peak year, until some higher level is reached which sets a new standard. Expressing the hypothesis in linear form, we have:

\[ C = a + bY + cY_p + u \]

where \( Y_p \) is the highest previous total disposable income. Looking at Chart 1 in the Appendix, it can be seen that the highest previous income was the preceding year except during the periods 1928 to 1936, 1937 to 1938, 1946 to 1947, and 1953 to 1954 where the influence of \( Y_{1928}, Y_{1937}, Y_{1946}, \) and \( Y_{1953} \) persisted more than one year. Since \( Y_p \) was constant during each of these periods the only variation in the above equation occurred in the variable \( Y \). The regression equation of consumption on present income and the highest previous income for the years 1927-41, 1946-63 is:

\[ C = 303 + .58Y + .34Y_p \]

It hardly seems likely on a priori grounds that this is the best

---

4See Franco Modigliani, op.cit., p.379, and James Duesenberry, op.cit., p.107

5Modern consumption theories pay more attention to historical and sociological factors, such as those which appear in Duesenberry's and Modigliani's models, where income peaks reached in the past influence the propensity to consume.

6Each of the multivariable regressions in this chapter were solved by using the Doolittle Method for solving normal equations. See E. E. Lewis, Methods of Statistical Analysis in Economics and Business (Boston: Houghton-Mifflin, 1963) pp.617-23
hypothesis of the lag effect in consumer behaviour, yet in the statistical testing this hypothesis produced an equation which "explained" the observed data very closely.\(^7\) (\(F = 21.6\))

B. The Influence of Past Consumption

1. Previous Year's Consumption

Another hypothesis which had gradually suggested itself was that the lag effect in consumer demand was produced by the consumption habits which people formed as a result of past consumption. The habits, customs, standards, and levels associated with real consumption previously enjoyed became impressed on the human psychological systems and this produces a lag in consumer behaviour. Because of this lag, consumer demand reacts to changes in consumer income with a certain slowness, and thus past real consumption exerts a stabilizing effect on current consumption. In order to test the agreement of this hypothesis with the observed data it is evident that it is not previous income, but rather previous real consumption actually experienced, which will be the appropriate lagged variable.

\(^7\)See Vely LeRoy, "La Propension a Consommer au Canada" (The Propensity to Consume in Canada), 1947-1960, Actualite Economique, Vol. 37, 1961-62, pp.628-34. LeRoy tests Duesenberry's and Modigliani's proposed consumption function:

\[
C_t = a - b \frac{Y_t - Y_t^o}{Y_t}
\]

\((Y_t^o\) is previous peak income) using Canadian data for the period 1947-1960. Applying per capita figures for real consumption and income (1949 = 100), he obtains the equation:

\[
C_t = .9339 - .076 \frac{Y_t - Y_t^o}{Y_t}
\]

with \(\sigma_r\) (variance of the residuals) = .014, \(r^2 = .2108\), and \(r = -.46\). LeRoy concludes that the average propensity to consume \((C_t/Y_t)\), which is a function of the ratio of current to previous peak income, fluctuates very little around the value of .9339.
The rationale behind this suggestion is that consumption habits are acquired only as actual consumption takes place so that people become adjusted to a certain standard of consumption, and hence it is past consumption expenditures rather than past income that influences current consumption. In the pre-war period, this distinction would not be of much practical importance, because years of peak income and peak consumption occurred at the same time. However, in the early post World War II years, such a distinction can lead to substantial differences in predictions of consumption.

The question is raised as to the appropriate time that real consumption should be lagged in the consumer behaviour equation. It would seem likely that the habitual effect induced on current behaviour by past consumption would be strongest when "t" is small and gradually dies away as "t" becomes larger. Since the present study was carried out with annual observations, a lag of one year was used. Lawrence Klein and Arthur Goldberger explain the introduction of the previous year's consumption as follows:

It is generally recognized that consumers do not react immediately to changes in income; hence some lagged, as well as current, values of income are used [ by others] as variables. In our model, the influence of the past on present consumer behaviour will be represented by lagged consumption, not lagged income. Our hypothesis will be that consumer behaviour tends to be repetitive to some extent, but that adjustments will be made in accordance with the income situation and other variables.

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8 See Appendix, Chart 1


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Summarizing this hypothesis into a form in which it can be tested with the observed data, we have:

\[ C_t = a + bY + cC_{t-1} + u \]

If we fit a regression to Canadian annual data for the years 1927-41 and 1946-63, we obtain the following:

\[ C_t = 288 + .51Y + .45C_{t-1} \]

In this equation the short-run marginal propensity to consume is .51, but the long-run marginal propensity to consume \(10\) is: \( \frac{.51}{1 - .45} = .93 \)

2. Previous Peak Consumption

The last hypothesis to be tested with respect to lag effects was that in which consumption is related to present income plus the highest previous level of real consumption experienced. This hypothesis may be represented in equation form as follows:

\[ C = a + bY + cC_p + u \]

where \( C_p \) is the highest previous peak consumption. The regression equation obtained using Canadian data for the years 1927-41, 1946-63 is:

\[ C = 181 + .62Y + .33C_p \]

The statistical goodness of fit of this hypothesis did not prove to be as good \( (F = 46.8) \) as that in which previous year's consumption expenditures were used. \( (F = 49.3) \)

C. Conclusion

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and income for the period 1927-41, 1946-63 is:

\[ C = 288 + .51Y + .45C_{t-1} \]

which gives us a long-run marginal propensity to consume of .93. This hypothesis suggests that the personal consumption expenditures of Canadians not only depend on current income but also on their past consumption standards. A value of .93 was also obtained for the marginal propensity to consume in a regression for the post-war period using constant (1949) dollars and also for the period 1926-62 using current dollars. In the last two cases consumption was only a function of present income. Small intercepts were obtained in all cases indicating a proportional relationship between consumption and income over the long run. Having established the best fit for the consumption function in Canada and determining the main variables upon which consumption depends, the next chapter shall be concerned with the behaviour of the average propensity to consume in Canada.
CHAPTER VIII

CONSUMPTION-INCOME RATIOS IN CANADA

This chapter is devoted to the question of whether the relationship between personal disposable income and consumption expenditures on goods and services in Canada is one of proportionality. That is to say, has the average propensity to consume remained secularly constant over the period of years from 1926 to 1963, or is there more or less of total disposable income devoted to consumption activities in Canada now than in the past? This question forms the main body of Chapter 8. If there is any trend of change in the proportion of disposable incomes which Canadians spend on consumer goods and services, what are the underlying causes of such a trend? Even if the consumption-income ratio has remained constant over this period, we must still ask ourselves what is the reason for this constancy when a number of long-run sociological changes have occurred which are of fundamental importance for the determination of consumption. These last two questions will be answered in the next and final chapter.

A. Is There a Decline in the Average Propensity to Consume?

In studying the growth of consumption and saving, many economists have expected a long-run trend of decline in the average propensity to consume as incomes increase. This proposition was expressed by Alfred
Marshall and was long accepted for its a priori plausibility. Later, it was thought for a number of years that the inhabitants of a country would spend a fixed minimum sum (in real terms) on consumption, whatever their income, plus a certain proportion of the income they received. Thus at low levels of income, people would be living off their savings or those of others. A little higher would come the break-even point, above which consumption would become a steadily decreasing proportion of total income. Testing and measurement of the Keynesian consumption function along with family budget studies seemed to confirm the proposition that the average propensity to consume would fall as incomes increase.

The amounts consumed in Canada in the 1930's also appeared to support this belief. It was as if Canadians had some kind of idea of a minimum acceptable standard of living to achieve which they would if necessary spend all their incomes or exceed them. If incomes rose above the level which could provide this degree of comfort, people would increase their spending, but less rapidly than their incomes increased. There was great fear among economists in the later 1930's that, if this theory was as true as it appeared to be, the inhabitants of countries which had reached a certain stage of prosperity would not spend enough on consumption for all the labour force to be employed, and that these countries would sink into economic stagnation with a high level of unemployment. This has evidently not occurred in the years since the end of World War II, and there is controversy over the question whether


2This is based on the absolute income hypothesis.
attitudes to income and consumption have changed, whether the decade of the 1930's was quite exceptional, or whether a passive tendency to oversave still exists but is offset by other factors. Now it is generally recognized that the consumption-income ratio has practically shown no secular change over a long period of time.

B. Comparison of the Canadian Consumption-Income Ratio with Other Countries

1. Historical evidence of long-run constancy

What evidence is there in support of the long-run constancy of the average propensity to consume?

A great deal of professional work of widely varying degrees of sophistication has gone into this field in other countries during the past two centuries, but surprisingly little has been done in Canada.3

The main evidence is the historical record in the United States. In a study of aggregate consumption-income ratios in the United States, Raymond Goldsmith concludes that:

The personal saving ratio including consumer durables has failed to show a marked upward or downward trend during the past half century. In particular, the average level of the personal saving ratio has been approximately the same in the four to seven years after World War II as during the twenties and during the two decades before World War I. Although the evidence is much less satisfactory for the nineteenth century the average level of the personal saving ratio from the Civil War to the end of the century does not seem to have differed considerably from the level of the last fifty years.4

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3David W. Slater, Consumption Expenditures in Canada, (Ottawa: Royal Commission on Canada's Economic Prospects, 1957) p.71


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There also appears to be a strong tendency for a constant proportion of consumption to income in other countries. This result has been obtained by Richard Stone in Great Britain.\(^5\) A limited amount of Canadian data seem to indicate little long-run change in the proportion of personal disposable income devoted to expenditure on consumer goods and services "although there is a surprisingly small body of published work on the level and distribution of consumer expenditure in Canada."\(^6\)

In summarizing the trends in the saving-income or consumption income ratios in various countries, Moses Abramovitz concludes that:

> The a priori expectation that the proportion of aggregate income saved would tend to increase as per capita incomes rose has been belied by observation. Relative constancy or decline in the ratio of saving to income seems to be the long-run rule for the few countries for which data are available.\(^7\)

2. Reasons for differences of the ratio in Canada, United States and Great Britain

a) **Amounts Consumed (or Saved)**

   i) **Distribution of incomes.** If the spending habits of individuals depend on their relationship with those of other income groups, the distribution of incomes will affect the total amount saved in a country. Since a wealthy man will save a larger proportion of his income than someone who is less well-off, the more unequal the distribution of incomes, the larger are likely to be total savings. While it might be thought that there are considerable differences in the distribution of incomes in the United States, Canada and the United

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\(^6\) Slater, *op.cit.*, p.2


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Kingdom, because of differences in the socio-economic structures of the three countries, according to a number of surveys, the post-war distribution of income has been very similar. While there have been differences in saving between these countries, during the years since the Korean war the ratio of saving to income in all three countries has averaged close to seven per cent, with Canada and the United Kingdom saving slightly less and the United States slightly more.

ii) Rate of increase in incomes. It would be drawing too broad a conclusion to say that the similarity of distribution of incomes entirely accounts for the similarity of the ratio of savings to income in the three countries. The speed at which incomes increase also affects consumption and savings. The greater the increase in incomes over what had previously been known, and the more uncertain the recipients are that the increase is not a windfall, the more is likely to be saved. Although incomes increased more rapidly in the United States than in Canada in the post-war period, there was no comparable difference in the savings ratio. 8 It may be that Americans generally have expectations of continually increasing incomes and so did not delay in adjusting their consumption. They may also have become accustomed to anticipating their incomes to a greater extent than Canadians.

iii) Other factors. Another contributing factor may be the greater fear of seasonal unemployment in Canada and the initial feelings of insecurity which newcomers to the country may have. These fears may

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cause Canadians to save more, even if they do not have as large un-
expected increments in income as Americans. However, the slight tendency
to save more that may arise from these factors may be offset to some
degree by the increased desires aroused from watching their American
neighbours.

b) **Forms of Savings.** Not only the amounts saved, but also the
form that savings take, vary between people of different incomes and
between affluent and less affluent societies. It is the well-to-do
who can afford to tie up their reserves in ways which produce more
wealth. In general, the less well-to-do the person, the more likely he
is to hold what savings he has in a liquid form such as currency, bank
deposits, and savings bonds while wealthier people keep only a smaller
fraction of their savings in these ways. At the end of September 1959,
6.3 million of the 12.2 million deposit accounts at Canadian chartered
banks were for amounts of less than $100. Another 3.9 million accounts
held between $100 and $1,000. Houses and life insurance policies are
very widely owned in Canada. These are amongst the most important assets
of middle-income families, but are less important in relation to the
total for wealthy people. About two-thirds of Canadian families owned
their own homes in 1959, while in 1955, 75 per cent of a sample of
households with incomes between $3,000 and $4,000 paid insurance premiums.
Stocks are still owned more extensively by people in the higher income
brackets. Fifty per cent of the households with incomes exceeding
$10,000, an income group which was made up of three per cent of the
population, owned stock in public corporations in 1956. Only about five
per cent of those in the large group earning incomes of close to the
national average, or between $3,000 and $4,000, owned any stock in
that year. It is believed that stock ownership has become more widespread but no series of studies is yet available to bear this out.

The forms that savings take in Canada are roughly similar to that of United States and Great Britain. Some differences exist. For instance, ownership of houses is less extensive in the United Kingdom. Stock holdings are more widespread in the United States. There are also variations in the ownership of the assets of private businesses. Significant differences in the uses to which savings are put do occur in societies of varying degrees of wealth, as well as amongst individuals in different income groups.

C. Behaviour of the Consumption-Income Ratio in Canada

While real personal disposable income in Canada has increased almost four times between 1926 and 1963, the proportion spent on consumption over this long period has remained relatively constant at approximately 94.6%. During peacetime and full-employment conditions, however, the ratio is slightly lower at 93%. This excludes major business cycles, major military mobilizations and short-run changes.

Although there is considerable evidence regarding the stability of the long-run consumption-income ratio in Canada, this does not deny the possibility of short-run variation either of a random or of a

9 Figures from this section were taken from various issues of the Canada Year Book, published by the Dominion Bureau of Statistics (Ottawa)

10 See Appendix, Table 1, showing the percentage of disposable income spent on consumption goods and services in each of the years from 1926 to 1963.
systematic type. There have been quite large systematic increases in the consumption ratio in times of depression and the reverse in times of prosperity. In each of the depression years between 1929 and 1936, the consumption-income ratio exceeded 100%. In addition, there have been significant changes in the ratio between two consecutive years of prosperity, for example, between 1950 and 1951, where the consumption-income ratio fell by 3.8%.

There is considerable evidence showing that the consumption-income ratio falls with cyclical increases in income and increases with falling income in Canada. For example, from 1930 to 1933 disposable income declined from $6061 to $4807 million, but the average propensity to consume rose from 102.3 to 109.7%. From 1936 to 1941, a period in which disposable income rose from $5871 to $6133 million, with the exception of the minor recession of 1937 to 1938, the average propensity to consume declined from 102.8 to 91.9%. Between 1942 and 1945 the figures, which range from 78.2% to 83.8%, lose much of their value since these were war years, and consumption expenditures as a per cent of disposable income fell sharply because of wartime rationing, cutbacks in the production of consumer durables, pressures on the consumer to save and purchase war bonds, and general shortages of consumer goods and services. For the post-war period, beginning in 1946, disposable income has risen in relatively steady fashion. Consumption expenditures have also increased, but the average propensity to consume has shown a somewhat

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greater tendency toward a constant value than was true of the pre-war years.

To sum up, Canadians have each year since the end of World War II, spent on consumption between 90.00 and 95.3 per cent of their incomes after taxes, almost the same proportion as they consumed in the years before the depression (89.4 to 96.0%). In the intervening years the ratio of consumption to personal disposable income was quite different, due to a series of extraordinary economic circumstances. During the 1930's consumption expenditures formed an unusually high proportion of disposable income, and for eight years more was spent than was available out of current income. With the onset of the war the situation changed abruptly and savings began to rise. While there have also been short-term fluctuations in the ratio of consumption to disposable income, which occur with the fluctuations of the business cycle, the long-term stability of the consumption ratio in Canada is quite remarkable when we consider the diverse reasons which motivate people to save.
CHAPTER IX

FACTORs AFFECTING THE AGGREGATE CONSUMPTION-INCOME RATIO IN CANADA

Before examining the various objective factors which may explain the long-run constancy of the consumption ratio in the past, let us first consider whether there have been any marked differences in the subjective attitudes toward saving and consuming in Canada.

A. Subjective Factors

1. Precautionary Motives

One factor often cited as a reason for the ratio of savings to income not increasing today is the diminishing concern with precautionary saving motives on the part of consumers. It is argued that there has been a significant change in the psychological attitudes of consumers in that there is much less concern or expectation of a rainy day in Canada now than there was three or four decades ago. Two possible reasons are the increasing stability of farm income and confidence in the maintenance of full employment. In addition, there are more stabilizing elements in the income of the average urban worker than there used to be, such as old age pensions, family allowances, unemployment insurance benefits and so on. People may be less interested in saving now than they used to be because of these developments.
2. Attitudes toward Leisure

Another changed aspect of life today which has been reflected in consumer attitudes in Canada is the growth of leisure. While people may save if they consider their incomes more than sufficient for their wants, they are often likely to choose not to increase their incomes so rapidly. It is generally true that as incomes rise, increased leisure becomes more valuable than additional purchasing power. Between 1926 and 1964, the average number of hours worked each week in Canadian manufacturing has fallen almost 20 per cent. The changes are shown in Table 2.

Table 2
Average Canadian Work Week in Manufacturing

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1926</td>
<td>49.8</td>
</tr>
<tr>
<td>1930</td>
<td>48.2</td>
</tr>
<tr>
<td>1945</td>
<td>44.1</td>
</tr>
<tr>
<td>1950</td>
<td>42.3</td>
</tr>
<tr>
<td>1955</td>
<td>41.0</td>
</tr>
<tr>
<td>1960</td>
<td>40.4</td>
</tr>
<tr>
<td>1964</td>
<td>41.0</td>
</tr>
</tbody>
</table>


Although these differences in the number of hours worked reflect changing attitudes to work itself, on the other hand, they also show differences in people's estimation of what they need to earn, or what they want to spend. Had everyone preferred to continue working the same hours as before, Canadians would no doubt be earning considerably more...
today than they in fact do. However, it is not necessarily true that increased affluence induces people to consider their incomes adequate and thus to save more or work less. In spite of higher incomes in the United States, just over one-third of the adult female population of that country is in the labour force, compared with approximately one-quarter in Canada. Although in many cases the incentive has probably been to improve family living standards, generally the added income has often provided the means of securing extra luxuries.

B. Objective Factors

Let us now turn to the objective circumstances which have been advanced to explain changes in the consumption-income ratio and the way in which these factors may influence the ratio in Canada.

1. Factors which appear to have increased the consumption ratio

   a) Shifts in the location of the population. Among the objective factors which have been influencing the consumption-income ratio in Canada through the past few decades, undoubtedly the most notable has been the shift in the location of the population from rural areas to large urban centres. The most pronounced changes have been the decline in the farm population on the one hand and the growth of major cities on the other. The movement of people from the country to urban areas, and from small towns to large cities, necessitates additional expenditure on a number of things, particularly housing, transportation and recreation but also clothing, furnishings and perhaps food. It may also discourage saving for investment purposes. The shift to towns has been very marked in Canada. Over seventy per cent of Canadians live in urban centres today compared with 63% in 1951.
Table 3

Recent Urban Growth, 1951-1961

<table>
<thead>
<tr>
<th>(Thousands)</th>
<th>1951</th>
<th>1956</th>
<th>% Incr. 1951-6</th>
<th>1961</th>
<th>% Incr. 1956-61</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total urban population</td>
<td>8,663</td>
<td>10,715</td>
<td>21.5</td>
<td>12,700</td>
<td>18.5</td>
</tr>
<tr>
<td>17 metropolitan areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of which central cities</td>
<td>5,637</td>
<td>6,806</td>
<td>20.7</td>
<td>8,164</td>
<td>20.0</td>
</tr>
<tr>
<td>fringe areas</td>
<td>1,953</td>
<td>2,780</td>
<td>42.4</td>
<td>3,701</td>
<td>33.1</td>
</tr>
<tr>
<td>20 other urban areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of which central cities</td>
<td>723</td>
<td>825</td>
<td>14.1</td>
<td>922</td>
<td>11.8</td>
</tr>
<tr>
<td>fringe areas</td>
<td>253</td>
<td>306</td>
<td>20.9</td>
<td>362</td>
<td>18.4</td>
</tr>
</tbody>
</table>


Since the turn of the century, the urban population has increased from three-eighths of the total in 1901 to one-half in 1921 to two-thirds in 1956. Also, the proportion of the male labour force engaged in the four major rural activities of farming, fishing, logging, and mining fell from just over one-half to not quite a quarter of the total population, between 1901 and 1951. Within the period 1931 to 1962, the proportion of the labour force in the agricultural sector alone has dropped from one-third to one-seventh of the total labour force. Since farmers and households in the rural areas have had higher saving ratios than urban groups, the effect of urbanization has tended to raise the consumption-income ratio.¹

¹ See Milton Friedman, op.cit., p.121. Friedman believes that this factor could not be responsible for more than a two per cent increase in the aggregate consumption-income ratio in the United States between 1900 and 1950.
b) **Changes in the age structure of the population.** Another factor which has tended to raise the consumption-income ratio in Canada, particularly since the end of World War II, is the lower average age of the population. Shifts in the age composition of the population can be expected to bring about changes in the ratio of consumption to income, because each person is likely to exceed his current income in youth and old age, live approximately up to his income in his twenties or early thirties, and only save from then on to retirement. In Canada today, with a large proportion of the population aged under 20, the savings ratio is likely to be lower than in periods when a larger percentage to the population is aged 35-40 and at the beginning of their peak income and peak saving years.

The economic impact of the post-war baby crop has been well publicized. What is revealing is the continued increasing trend. For more than twenty years, beginning in 1935, the number of Canadians in the 15-19 age group remained at about one million. Meanwhile, the total population increased from 10.8 million to over 16 million. Beginning in 1957, the number in this group started to rise and at present is about 2 million. Similarly, there are two million children today between 10 and 15 years of age, compared with about a million-and-a-half born in the immediate post-war period. In 1963, the 20-24 age group was nearly 9% larger than in 1957 while there were 31.5% more 15-19 year olds and 28.5% more in the 10-14 age group. Population under 20 years of age now constitutes 42.5%. These changes in age structure are having and will increasingly have a profound impact on aggregate consumer expenditures. Some recent changes in the age distribution of the population in Canada are shown in Table 4.
### Table 4

The Changing Age Distribution of the Population
1951-1961

<table>
<thead>
<tr>
<th>(000's)</th>
<th>1951</th>
<th>1956</th>
<th>% Incr. 1951-6</th>
<th>1961</th>
<th>% Incr. 1955-61</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 4</td>
<td>1,722</td>
<td>1,984</td>
<td>15.2</td>
<td>2,256</td>
<td>13.8</td>
</tr>
<tr>
<td>5 - 9</td>
<td>1,398</td>
<td>1,807</td>
<td>29.3</td>
<td>2,080</td>
<td>15.1</td>
</tr>
<tr>
<td>10-14</td>
<td>1,131</td>
<td>1,435</td>
<td>26.9</td>
<td>1,856</td>
<td>29.4</td>
</tr>
<tr>
<td>15-19</td>
<td>1,058</td>
<td>1,162</td>
<td>9.9</td>
<td>1,433</td>
<td>23.3</td>
</tr>
<tr>
<td>20-24</td>
<td>1,089</td>
<td>1,129</td>
<td>3.7</td>
<td>1,184</td>
<td>4.8</td>
</tr>
<tr>
<td>25-34</td>
<td>2,174</td>
<td>2,414</td>
<td>11.1</td>
<td>2,481</td>
<td>2.8</td>
</tr>
<tr>
<td>35-44</td>
<td>1,868</td>
<td>2,140</td>
<td>14.6</td>
<td>2,390</td>
<td>11.7</td>
</tr>
<tr>
<td>45-54</td>
<td>1,407</td>
<td>1,612</td>
<td>14.5</td>
<td>1,879</td>
<td>16.5</td>
</tr>
<tr>
<td>55-64</td>
<td>1,077</td>
<td>1,154</td>
<td>7.2</td>
<td>1,289</td>
<td>11.7</td>
</tr>
<tr>
<td>65-69</td>
<td>433</td>
<td>464</td>
<td>7.1</td>
<td>467</td>
<td>5.0</td>
</tr>
<tr>
<td>70 +</td>
<td>653</td>
<td>780</td>
<td>19.5</td>
<td>904</td>
<td>15.9</td>
</tr>
<tr>
<td>All Ages</td>
<td>14,009</td>
<td>16,081</td>
<td>14.8</td>
<td>18,238</td>
<td>13.4</td>
</tr>
</tbody>
</table>


c) Changes in the composition of the population. The proportion of recent immigrants in the population is also likely to affect the consumption ratio in Canada. If people are more influenced by the incomes to which they are accustomed when they consider how much they want to spend, it seems likely that recent immigrants may save more than the rest of the population. Those people may also be saving money for some special purpose. If, however, the strongest influence is the consumption patterns of other people, together with the ready availability of a variety of new products and easy credit with which to buy them, new immigrants may save less. Practical banking experience suggests that
immigrants to Canada since the war have saved rather more on the average than native Canadians or earlier immigrants. The influence of North American buying habits together with the increasing feeling of security may eventually break down this tendency and, as a result, over a long period the total saving of the Canadian community may not be affected markedly. Unfortunately, there is no means of judging the total effect of immigrant saving as there has been no budget survey which distinguishes the spending and saving habits of recent immigrants from people who were either born in Canada or have been resident in the country for some time.

d) Changes in income distribution. A considerable equalization of the distribution of incomes has apparently taken place in Canada over the last few decades. More recently, for example, the proportion of family units receiving an annual cash income of under $3,000 was 32.3% in 1961, as compared with 57.7% in 1951. Meanwhile, 17.7% were receiving over $7,000 in 1961 as compared with 14.2% receiving over $5,000 in 1951. In the 1951-61 decade, it is estimated that the average annual income of non-farm family units (including families proper and unattached individuals) rose from $3,185 to $4,815, a gain of more than 50%. Though this was in part offset by rising prices, the increase in real terms was still around 30%.

The most influential factor in the change has been the increase in importance of a progressively-structured income tax, along with an increase in the level of inheritance duties through the years. At one time it was thought that such an equalization would have a strong tendency to increase the aggregate consumption ratio. While the
evidence is not clear the present view is that the large change in the income distribution has had a relatively small net effect on the long-run consumption ratio. The net effect has been to increase the consumption ratio.

a) **Social security measures.** During the past four decades there have been substantial increases in the provision of social security measures in Canada, including health and unemployment insurance benefits, private and public old age pensions, family allowances, and measures to stabilize farm income. Just recently, a national public health insurance scheme has been proposed, public old age pensions without a means test are gradually being lowered from the qualifying age of 70 to 65, and the adoption of the Canada Pension Plan seems likely.

These developments reduce the uncertainties for which the individual must provide from his personal savings, thus tending to increase the consumption ratio. This appears to be a very important factor because the Canadian National Accounts exclude employer and employee contributions to social insurance and government pension funds and taxes designated for such purposes from disposable income.

f) **Increasing availability of consumer credit.** There has been a marked increase in the use of consumer credit in Canada over the past few decades. Data on the amount of consumer credit outstanding in Canada are only available since 1938. These data show that outstanding consumer debt has increased almost ten times in current dollars between pre-war years and the present. However, the growth of consumer credit must be judged in relation to personal disposable income and other factors. Over the years the growth of consumer credit has not been large relative to disposable income. In 1939, for example, the outstanding consumer
Credit in Canada was approximately 14.2% of disposable income as compared to 17.8% in 1963. These changes are shown in Table 5.

Table 5
Consumer Credit in Canada

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Consumer Credit Outstanding</th>
<th>Total PersonalDisposable Credit</th>
<th>Total Debt as a percentage of Disposable Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1939</td>
<td>592</td>
<td>4,178</td>
<td>14.2</td>
</tr>
<tr>
<td>1949</td>
<td>985</td>
<td>11,849</td>
<td>8.3</td>
</tr>
<tr>
<td>1954</td>
<td>2,136</td>
<td>16,984</td>
<td>12.6</td>
</tr>
<tr>
<td>1959</td>
<td>3,691</td>
<td>23,948</td>
<td>15.4</td>
</tr>
<tr>
<td>1963</td>
<td>5,326</td>
<td>29,861</td>
<td>17.8</td>
</tr>
</tbody>
</table>


The total amount of consumer credit outstanding just before the war had, of course, been influenced by the depressed conditions in the 1930's. During the war years the total amount of consumer credit outstanding declined. Under the War Measures Act, the Wartime Prices and Trade Board was given jurisdiction over consumer credit instalment buying.

The primary object in the regulation . . . was to reduce the pressure on the price level through a curtailment in the volume of floating credit. It also had the effect of conserving labour and certain materials through reduced consumer demand, reducing the costs of doing business arising from bad debts, interest and bookkeeping expenses; reducing the volume of outstanding debt of individuals, and accumulating a backlog of demand for industrial products for a later period when labour and materials would again be readily available for civilian needs.²

²Report of the Wartime Prices and Trade Board, September 3, 1939 to March 31, 1943, p.5
In the post-war period, the growth of consumer credit has been greatly influenced by the trend toward easier terms, the great change in the role of the chartered banks in consumer lending, and the development of new sources of funds by finance companies. All these developments have made it easier for consumers to increase expenditures, thus tending to increase the consumption-income ratio.

g) Decline of non-farm unincorporated businesses. Another factor which may have increased the consumption income ratio in Canada is the relative decline of non-farm unincorporated businesses. In 1929, for example, the net income of non-farm unincorporated businesses was approximately 13.6% of disposable income as compared to 8.2% in 1963. These changes are shown in Table 6.

Table 6
Net Income of Non-Farm Unincorporated Businesses*

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount (Millions of dollars)</th>
<th>Personal Disposable Income</th>
<th>Percentage of Disposable Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929</td>
<td>618</td>
<td>4,540</td>
<td>13.6</td>
</tr>
<tr>
<td>1939</td>
<td>475</td>
<td>4,178</td>
<td>11.4</td>
</tr>
<tr>
<td>1949</td>
<td>1,389</td>
<td>11,849</td>
<td>11.7</td>
</tr>
<tr>
<td>1959</td>
<td>2,210</td>
<td>23,948</td>
<td>9.2</td>
</tr>
<tr>
<td>1963</td>
<td>2,451</td>
<td>25,851</td>
<td>9.2</td>
</tr>
</tbody>
</table>

*Includes net income of independent professional practitioners


Since those in unincorporated business and independent professional
practice have higher savings ratios than those occupied as corporate or government employees, this declining trend would tend to raise the consumption-income ratio. This appears to have been a relatively small factor in the aggregate over the last thirty-five years.

h) The development of new goods. Interacting with the changing social and economic forces have been major technological influences. It has been argued that the development of new goods is an important factor tending to increase the consumption-income ratio. Many new products have appeared in Canada. One has only to think of such things as frozen foods, synthetic fibres and plastics. These demands will, no doubt, be further supported by the spread of other products such as automatic dishwashers, room air-conditioners and coloured T.V. The automobile, though not "new" in a technological sense, has probably done more through its mass use to change our way of life than any other single product. Older products also have been changed or improved. This has been particularly evident in the whole field of consumer durable goods, and few products have ever spread as rapidly as television in the 1950's. The effects of this new and powerful medium of communication have been apparent in many directions. It has added a new dimension to advertising endeavours to influence and create consumer wants.

2. Factors which appear to have decreased the consumption ratio
   a) Decline in the average family size. One important ratio in Canada over the past few decades is the decline in the average size of

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Although there has been a trend toward fewer very large families in Canada, there are proportionally more families of three or four children rather than one or two. Milton Friedman points out that this has had a substantial effect in the United States and possibly accounts for a reduction of two percentage points in the consumption ratio between 1900 and 1950.5

b) **Shorter working life.** The length of the working life apparently has been markedly reduced in Canada over the past few decades. This is caused by earlier retirement and a later start due to the longer schooling period, meaning fewer years in which to accumulate retirement assets and estates. The result is that there may be a tendency for a higher saving ratio during the working life.

c) **Longer retirement.** The length of retirement has increased in Canada not only because of earlier retirement but also because of the increased life expectancy. By increasing the provision which must be made for retirement, the extent to which support is obtained from family and friends decreases. These factors increase the savings ratio. Raymond Goldsmith placed a good deal of emphasis on shortening the working life and increasing the period of retirement as forces toward a higher saving ratio in the United States.

3. Factors which appear to have little effect on the consumption ratio

Two factors which appear to have had little influence on the consumption ratio in the past include changes in the rates of interest and the ratio of non-human wealth to income.

   a) **Changes in the rate of interest.** The effect of changes in the

---

5See Friedman, op.cit., p.123.
rate of interest on the saving ratio is a very old debate. An increase in the rate of interest has opposing effects on the savings ratio. By making borrowing more costly it encourages saving. By increasing the yield on assets, it on the other hand encourages saving and making loans, and on the other hand reduces the rate of saving necessary to attain any given end such as a fixed income for retirement. The consensus of opinion seems to be that changes in the rate of interest have not substantially modified the long-run savings ratio.

b) Changes in the ratio of wealth to income. The ratio of wealth to income has apparently fallen in Canada over the years, as it did in the United States during the last half century, thus tending to decrease the consumption ratio. The argument here is that the more wealth one has, the less attractive is additional saving, that is, the higher is the consumption ratio. Friedman considers this to be a minor factor in the United States.7

While there is considerable evidence regarding the stability of the long-run personal saving ratio or consumption ratio in Canada, it should be mentioned that any explanation of the effects on the ratios by changes in such factors as income distribution, social security measures, interest rates and so on are not conclusive. With the large number of factors which appear to increase the consumption ratio, there would seem to be little chance of the ratio declining significantly in the future.

6See Keynes, op.cit., pp.93-94
7See Friedman, op.cit., p.124
SUMMARY AND CONCLUSION

In 1963, Canadians spent twenty billion dollars on consumer goods and services. Since 1946 these outlays have nearly doubled in real terms. What are the reasons for such a change? The most important cause is the continued rise in personal disposable incomes amounting to a doubling in constant dollars. Data on consumption in Canada reveal a fairly close correspondence between consumption and disposable income. In the post-war period, an almost perfectly proportional relationship between consumption and disposable income was obtained, giving us the equation:

\[ C = -1 + 0.93Y \]

The average consumption-income ratio, in addition to the marginal propensity to consume, was 0.93 for the period 1946-63, indicating that the average and marginal propensities were equal over a long period of time.

The long-run relation between the variables seems quite simple, with consumption absorbing a more or less constant share of the allocations out of income. In the short-run, however, the consumption-income ratio fluctuates considerably, increasing in periods of falling income and decreasing when income rises. Current income is, of course, only part of the picture. Expenditures are also influenced by past income and consumption standards and expectations regarding future income. The additional influence of previous year's consumption provided an excellent fit for the consumption function, resulting in a long-run marginal
A number of writers believe that the proportion of disposable income which is consumed has a tendency to decline in the long run but this is temporarily offset by other factors. A remarkable interplay of economic, social and technological forces have been operative in Canada towards maintaining a high consumption standard. The overall increase of populations has naturally had an important effect but the "mix" has also reflected the marked changes in age structure of the population, heavy immigration and the movement of people into urban centres. In addition, many other forces have been at work. In particular, the income of more and more Canadians has been reaching levels which allow for spending above necessary purchases. In fact, a general upward shift in incomes has brought a marked decline in the proportion of family units in the lowest income brackets and a corresponding rise at the other end of the scale. At the same time, a dramatic widening in the range of consumer purchases has been encouraged by the vast array of new products coming on the market, by reductions in costs of some products especially in the consumer durable field, by the growth of consumer credit, and by greater contacts with other parts of the world. An important part of consumer demands is directed toward foreign sources, reflecting not only the need to import products not grown or made in Canada but also the difference in relative levels of prices and the strong influence of the neighbouring United States on consumer tastes and habits.

To sum up, there can be no firm conclusion as to why people should consume the amount they do. There does not seem any reason to suppose that Canadians are any more spendthrift than they used to be, in the
sense that they are consuming more of their incomes. Out of their personal disposable incomes, the fractions devoted to consumption expenditures and to personal savings by Canadians appears to be about the same now as under full employment conditions in the past. In other words, as our standards of living have increased, there has been little change in the fraction of our personal disposable income which we save. Of course, there have been short-run fluctuations in the consumption ratio but our interest is primarily in the long-run trends. If personal disposable income rises in the future, there's every reason to believe that consumer expenditures will rise proportionately (approximately 93%) barring any major social changes. There seems to be no great difference between the consumption habits in Canada and other advanced countries. What is consumed and how savings are accumulated may differ from the pattern of other countries for a variety of social, geographical and financial reasons. But the way in which resources are allocated between spending and saving does not seem to differ very much from one industrialized country to another.
APPENDIX

Table 1
Disposable Income, Consumption Expenditures and Personal Savings, 1926-1963
(in millions of 1949 dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>Disposable Income</th>
<th>Consumption Expenditures</th>
<th>Personal Savings</th>
<th>Average Propensity to Consume (in per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Personal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Income1</td>
<td>Expenditures2</td>
<td>Savings3</td>
<td></td>
</tr>
<tr>
<td>1926</td>
<td>5,603</td>
<td>5,010</td>
<td>593</td>
<td>89.4</td>
</tr>
<tr>
<td>1927</td>
<td>5,981</td>
<td>5,577</td>
<td>404</td>
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</tr>
<tr>
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<td>6,128</td>
<td>257</td>
<td>96.0</td>
</tr>
<tr>
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<td>6,376</td>
<td>6,490</td>
<td>-114</td>
<td>107.8</td>
</tr>
<tr>
<td>1930</td>
<td>6,061</td>
<td>6,203</td>
<td>-142</td>
<td>102.3</td>
</tr>
<tr>
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<td>5,533</td>
<td>5,877</td>
<td>-344</td>
<td>106.2</td>
</tr>
<tr>
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<td>5,414</td>
<td>-412</td>
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</tr>
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<td>4,807</td>
<td>5,272</td>
<td>-465</td>
<td>109.7</td>
</tr>
<tr>
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<td>5,534</td>
<td>-195</td>
<td>103.7</td>
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<td>5,775</td>
<td>-121</td>
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</tr>
<tr>
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<td>6,420</td>
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</tr>
<tr>
<td>1938</td>
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<td>6,337</td>
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<td>98.6</td>
</tr>
<tr>
<td>1939</td>
<td>6,827</td>
<td>6,510</td>
<td>317</td>
<td>95.4</td>
</tr>
<tr>
<td>Year</td>
<td>Personal Disposable Income</td>
<td>Personal Consumption Expenditures</td>
<td>Personal Savings</td>
<td>(4) = (2) - (3)</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------</td>
<td>----------------------------------</td>
<td>-----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>1940</td>
<td>7,484</td>
<td>7,034</td>
<td>450</td>
<td></td>
</tr>
<tr>
<td>1941</td>
<td>8,133</td>
<td>7,471</td>
<td>662</td>
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<td>1942</td>
<td>9,648</td>
<td>7,692</td>
<td>1,956</td>
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</tr>
<tr>
<td>1943</td>
<td>9,992</td>
<td>7,902</td>
<td>2,090</td>
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<tr>
<td>1944</td>
<td>10,803</td>
<td>8,444</td>
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<td>1945</td>
<td>11,052</td>
<td>9,267</td>
<td>1,785</td>
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<td>1946</td>
<td>11,469</td>
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</tr>
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<td>1947</td>
<td>11,236</td>
<td>10,657</td>
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</tr>
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<td>1948</td>
<td>11,481</td>
<td>10,451</td>
<td>1,030</td>
<td></td>
</tr>
<tr>
<td>1949</td>
<td>11,849</td>
<td>10,923</td>
<td>926</td>
<td></td>
</tr>
<tr>
<td>1950</td>
<td>12,283</td>
<td>11,642</td>
<td>641</td>
<td></td>
</tr>
<tr>
<td>1951</td>
<td>12,989</td>
<td>11,817</td>
<td>1,172</td>
<td></td>
</tr>
<tr>
<td>1952</td>
<td>13,737</td>
<td>12,633</td>
<td>1,104</td>
<td></td>
</tr>
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<td>1953</td>
<td>14,460</td>
<td>13,338</td>
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</tr>
<tr>
<td>1954</td>
<td>14,332</td>
<td>13,650</td>
<td>682</td>
<td></td>
</tr>
<tr>
<td>1955</td>
<td>15,379</td>
<td>14,662</td>
<td>717</td>
<td></td>
</tr>
<tr>
<td>1956</td>
<td>16,697</td>
<td>15,603</td>
<td>1,094</td>
<td></td>
</tr>
<tr>
<td>1957</td>
<td>17,046</td>
<td>16,083</td>
<td>963</td>
<td></td>
</tr>
<tr>
<td>1958</td>
<td>17,861</td>
<td>16,585</td>
<td>1,276</td>
<td></td>
</tr>
<tr>
<td>1959</td>
<td>18,436</td>
<td>17,392</td>
<td>1,044</td>
<td></td>
</tr>
<tr>
<td>1960</td>
<td>19,112</td>
<td>17,945</td>
<td>1,167</td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Personal Disposable Income</td>
<td>Personal Consumption Expenditures</td>
<td>Personal Savings</td>
<td>Average Propensity to Consume (in per cent)</td>
</tr>
<tr>
<td>------</td>
<td>---------------------------</td>
<td>-----------------------------------</td>
<td>------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>1961</td>
<td>19,652</td>
<td>18,501</td>
<td>1,151</td>
<td>94.1</td>
</tr>
<tr>
<td>1962</td>
<td>20,984</td>
<td>19,220</td>
<td>1,764</td>
<td>91.6</td>
</tr>
<tr>
<td>1963</td>
<td>21,973</td>
<td>20,040</td>
<td>1,933</td>
<td>91.2</td>
</tr>
</tbody>
</table>

1Personal disposable income is equal to personal income, less direct taxes on individuals (income taxes, succession duties, motor vehicle licences, etc.) Disposable income is at present the best available measure of the size of the potential market for consumer goods and services. Although attempts have been made to arrive at a series for "personal discretionary income," in which essential outlays for food, etc., and fixed commitments such as rent, mortgage and debt payments, are excluded no continuously available statistics of this kind are yet published in Canada.

2Personal consumption expenditures cover consumer outlays for goods and services, including imputed expenditures. The estimate includes expenditures by Canadian residents temporarily abroad and excludes those by foreign residents temporarily in Canada. Purchases of houses are excluded, being shown under business gross fixed capital formation.

3Personal saving is equal to personal disposable income, less personal consumption expenditures. It, therefore, measures the net change in the assets and liabilities of persons and unincorporated businesses between the beginning and the end of an accounting period.

Source: Dominion Bureau of Statistics, National Accounts, Income and Expenditure, 1926-1956, 1962, and 1963, (Ottawa). D.B.S. estimates of Personal Disposable Income and Savings have been converted into 1949 dollars using the implicit price index for personal expenditure on consumer goods and services (1949=100).
CHART 1.
TRENDS IN CONSUMPTION & INCOME.
CHART 2 - RELATION BETWEEN CONSUMPTION & INCOME

AGGREGATE DISPOSABLE INCOME IN BILLIONS OF 1949 DOLLARS

AGGREGATE PERSONAL CONSUMPTION EXPENDITURE IN BILLIONS OF 1949 DOLLARS

REGRESSION FOR 1926-41
REGRESSION FOR 1926-41 & 1946-63
Chart 4 - Relation Between Consumption and Saving.

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CHART 5

Proportion of Personal Disposable Income
Spent on Consumption in Canada.
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Canadian Year Book, various issues, (Ottawa)
Incomes, Liquid Assets, and Indebtedness of Non-Farm Families in Canada, 1958 (Ottawa)
VITA

**Family**

James Jay Hadden, son of Mr. and Mrs. J.J. Hadden of Windsor, Ontario, born November 25, 1940 in Windsor, Ontario

**Education**

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
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<tr>
<td>1959-1963</td>
<td>Registered as an undergraduate in the Faculty of Arts and Science at Assumption University. Received Bachelor of Arts degree in October, 1963.</td>
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**Other Experience**

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<tr>
<td>1957-1961</td>
<td>Summer employment with the Canadian Pacific Railways, Chateau Lake Louise, Lake Louise, Alberta</td>
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<tr>
<td>1962</td>
<td>Summer employment with the Bank of Montreal, London, Ontario</td>
</tr>
<tr>
<td>1963-1965</td>
<td>During two years of graduate studies, granted a Graduate Assistantship by the Department of Economics and Political Science.</td>
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