THE DEMAND FOR CONSUMER CREDIT:
ITS RESPONSE TO ECONOMIC CONDITIONS IN CANADA

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Abstract

While previous analyses of the consumer credit market have allowed for a rationing of funds between potential borrowers by means of models reflecting the retail market for funds, this paper examines the consumer credit market from the perspective of the derived demand for funds by the financial institutions who supply consumer credit. It is found that the real cost of credit and the price of durable goods are the most important variables in determining the demand for consumer credit. The empirical results also indicate that an increase in the growth rate of real government debt held by the public will cause a crowding out effect on consumer credit of approximately 6% of the increase in the real value of the debt.
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I. Introduction

The market for consumer credit is one of the channels through which monetary and fiscal policies affect the level of economic activity in a country. Due to the degree of regulation and high costs of intermediation, this market has been usually analyzed in terms of a credit rationing situation where the price of credit contains a number of elements other than the interest rate charged on loans. As a result, it has been difficult to undertake a satisfactory empirical evaluation of the manner in which monetary and fiscal policy affect the ultimate demand and supply of these loans.¹

In this paper, we attempt to assess the relative importance of the various determinants of the demand for consumer loans and the way in which government policies impact on this market by examining the derived demand for funds ultimately employed to finance consumer credit. In this way we can measure the effect of changes in the cost of funds—as determined in the capital markets—as on the demand for consumer credit without modelling the specific institutional processes used to allocate credit to the ultimate consumer.

A better understanding of this market is particularly important for the prediction of changes in economic activity when a government is operating at a relatively large deficit and/or relatively tight monetary policy. The timing of the impact of such monetary and fiscal policies will be determined to a significant extent by their effects on the
demand for consumer durables which in turn is an important element in
the demand for consumer credit.

Following a brief description of the consumer loan market in
Canada, a model is developed and estimated that enables us to evaluate
the impact of fiscal and monetary policies on the demand for funds for
consumer loans. The last section simulates the effects of changes in
economic conditions and policies on the market for consumer credit.

II. Description of the Consumer Credit Market in Canada

The consumer credit market in Canada represented $43 billion
of outstanding loans by the beginning of 1981 or 9.8% of all assets held
by financial institutions in Canada. As a benchmark for comparison,
government debt held by the private sector was equal to approximately
13.6% of the assets held by financial institutions. 2 Institutionalized
consumer credit markets in Canada grew out of the need to finance the
purchase of automobiles in the early 1930's and since then has grown
steadily: Since 1962, consumer credit outstanding has grown in real
terms at a compound annual rate of 8.2%. According to the surveys of
c consumer loans carried out in 1956, 1963, 1970 and 1977, the proportion
of all families and unattached individuals using consumer credit has
been rising from 49% in 1956 to 53.2% in 1977 and the size of average
c consumer debt has increased from $629 in 1956 to $3468 in 1977. 3

Consumer credit includes two types of credit: vendor credit
and cash loans. Vendor credit includes conditional agreements held by
financial corporations; credit extended by department stores, furniture
and appliance stores, other retail dealers, credit card issuers (marketing
a specific product such as oil companies and airlines); and credit
extended by public utilities. Cash loans include credit extended by the
following financial institutions: the chartered banks, the credit
unions and caisses populaires, financial corporations, trust companies,
life insurance companies, and Quebec savings banks. Most of these loans
are considered instalment credit, being paid back in equal instalments
over time. Demand for cash loans has increased dramatically relative to
vendor credit: Whereas, in 1958 vendor credit comprised 51% of total
consumer credit outstanding, by 1978, its share had fallen to 13%.

Among the seven financial institutions which supply consumer
credit, the chartered banks dominate with a 67% share of the market.
There is intense competition among the other participants for the rest
of the business. Before the chartered banks' entry into the consumer
credit market in 1958, the financial corporations, which had specialized
in vendor credit, held nearly 40% of the market. They have now declined
to a 7% share as cash loans have overtaken vendor credit. Although the
financial corporations have become a reduced force in the consumer
credit market they remain extremely dependent on this market: 33.2% of
their total receivables and 31.2% of their total assets originated from
the consumer credit market in 1979. The chartered banks' entry into
the consumer credit market affected the structure of financial corporations'
liabilities. Bank loans were their main source of funds, representing
14% of their total liabilities in 1965. The financial corporations
increased their dependence on the money markets by issuing finance
company paper, i.e. short term notes, and long term debt as bank loans
became scarcer. By 1978, bank loans represented only 4% of their liabili-
ties.
The other competing suppliers of consumer credit serve particular segments of the market. Credit unions and caisses populaires have now a 14% market share and cater only to member depositors. With a lower risk factor, they tend to offer lower interest rates than banks or financial corporations. Life insurance companies offer consumer credit through policy loans which represent 4.6% of the market. This type of loan has been used as emergency credit. Trust companies are new competitors and are offering very competitive rates however they deal in secured loans. They can be more flexible in their financial operations than other institutions due to their legal monopoly of corporate trustee powers. Quebec savings banks, a group of savings and loan institutions in the province of Quebec, represent only a small and low growth segment of the market.

III. Development of the Model

The cost of consumer credit to borrowers is a combination of the interest rate, the downpayment and the repayment conditions of the loan. Due to the absence of a single monetary price for consumer credit, empirical studies on consumer credit have tried to specify the consumer credit market from the point of view of a rationed disequilibrium market. In general, they have not been very successful in gauging the effect of interest rates on the demand for funds in this market and hence have tried to examine the effect of variables other than interest rates. The study of the Canadian consumer credit market by Harnarinc (1976) shows that borrowers respond significantly to changes in monetary conditions. However, in his study, the cost of funds was modelled by using a proxy of changes in the monetary and credit conditions in the demand function rather than the direct use of an interest rate series.
In this paper we avoid the problem of trying to specify how the funds for consumer credit are allocated at the retail stage by focussing instead on the derived demand for funds of the financial institutions providing consumer credit. Regardless of the way the cost of credit is imposed on the final consumer, the final demand for consumer credit will be reflected in the derived demand for funds expressed by the financial institutions competing for funds to be reloaned to consumers. Hence, the response in the quantity of consumer loans demanded by the ultimate customer to a change in the "price" of credit will be directly related to the change in quantity of borrowed funds demanded by financial institutions arising from a change in the interest rate they must pay for funds. If the firms engaged in consumer loan activities are characterized by competition and constant production costs with respect to scale, then the retail "price" of consumer credit should directly reflect the cost of borrowed funds to these financial intermediaries. With competition the retail "price" of credit will be the interest cost of their funds plus an additional amount to cover the cost of intermediation including risk. The non-price terms of loans will move in parallel with the cost of borrowing of these financial institutions. As the financial corporations are most dependent on the market for consumer credit, the price they pay for funds will most closely reflect the supply price of funds to institutions engaged in providing consumer credit. Hence, the 90-day finance company paper rate is used in the study to reflect the cost of funds to those who supply consumer credit in the retail market.

In completing the empirical investigation we first estimate how monetary and fiscal policies affect the interest rate charged to those borrowing to provide consumer credit. We assume that the demand and supply of consumer credit do not independently determine the finance
company paper rate, rather that it is dependent on the demand and supply of funds in the capital market as a whole. The demand for consumer credit is also specified as a function of the demand for consumer durables since consumer durable purchases are the major use of consumer credit. The causal relationship between these two variables goes in both directions. Hence, an exogenous determination of this variable is needed to avoid simultaneous equation bias (i.e. the correlation of the consumer durable variable with the error term in the credit demand equation). The complete model for the consumer credit market consists of three equations: a consumer credit demand equation (consumer credit is aggregated over all sources and uses), an interest rate equation, and a consumer durable demand equation. The model is estimated using quarterly data over the sixteen year observation period, 1964:1 to 1980:1.

A. The Consumer Credit Demand Function

In this model, consumer credit is measured by the net change in real consumer credit outstanding. Credit demand is negatively related to the real price of credit, REALR; positively affected by the desire to buy consumer durables, CD; and is affected by the level of national wealth, WR. This latter variable acts as a proxy for personal savings or liquid assets in the portfolio of the household. Much like the wealth effect in the consumption function, one would expect that it enters positively in the credit demand function. However, one might argue that it should be a negative influence on the demand for consumer credit because the higher the wealth position of the household, the more likely it is to internally finance its consumption and the less need it has for consumer credit.
The implicit function for the demand for credit can be written as:

\[ CCR = f(REALR, CD, WR) \]  \( (1) \)

B. The Interest Rate Equation

Since the demand for consumer credit is part of a general equilibrium system of economic activity, we estimate this relationship using instrumental variables. In this model, we create a limited linkage to the rest of the economy by incorporating the effect of macroeconomic variables on the estimated real interest rate and on the estimated demand for consumer durables which are then used to estimate the demand for credit.

The estimated 90-day finance company paper rate \((\hat{R})\) is used as the nominal interest rate, to which we subtract the expected rate of inflation to arrive at the real price of credit, \(REALR\).\(^{11}\) The use of an estimated real rate of interest in equation (1) avoids a possible simultaneous equation bias. Given the structure of the Canadian capital market, it seems reasonable to assume that the demand and supply of consumer credit do not independently determine the finance company paper rate, rather, that this rate is dependent on the forces of the capital market as a whole. The implicit function used in our estimation of nominal and real interest rates is as follows:\(^{12}\)

\[ R = f(CHY, ACCM, CHC, EX, DEX, CHP) \]  \( (2) \)
where $R$ is the nominal 90-day finance company paper rate; $CHY$ is the change in real national income; $ACCM$ is the acceleration of the nominal money supply defined by $M2$; $CHG$ is the change in real government spending; and $EX$ is the expected change in the exchange rate for fixed exchange rate periods. During periods of flexible exchange rates (1972:1 to 1980:1), an additional variable, $DEX$, is included so that the combined coefficients on $EX$ and $DEX$ reflect the effect of expected changes in the exchange rate in interest rates. $CHP$ is the expected inflation rate.\textsuperscript{13}

C. The Consumer Durable Expenditures Equation

Just as in the interest rate equation, the independent variables in the consumer durable expenditure equation model links this market to the rest of the economy. The independent variables chosen are real disposable income, $DY$, the unemployment rate, $U$, and the relative price of consumer durables, $RELP$.\textsuperscript{14}

It is expected that demand for consumer durables will be positively related to real disposable income. Unemployment is expected to have a negative coefficient as will the relative price term which is measured by the price index for consumer durable expenditures divided by the gross national expenditures implicit price deflator. The general form of the function is:

$$CD = f(DY, U, RELP)$$  \hspace{1cm} (3)
IV. Estimation of the Model and Results

A. The Interest Rate Equation

The estimated interest rate equation is presented in Table I. The growth in real income proved to be one of the most important explanatory variables. It has maximum effect after three quarters indicating that a 1% increase in real income would, at that time, result in a 0.06 of a point increase in the finance company paper rate.

The acceleration of the money supply, ACCM, does not initially have a significant impact on this short term interest rate. When lagged, the coefficients in the first lagged periods have a low degree of significance and are acceptable at only a 90% level of confidence. The impact becomes stronger and more significant, reaching a peak after a year when a 1% increase in the growth of the money stock would cause a 0.08 of a point decrease in the finance company paper rate. This effect then decreases and becomes insignificant by the ninth period. Experimenting with different lag structures showed that this variable continues to affect interest rates up to two years after the change in monetary policy.

The growth in the real level of government debt also proves to be an important variable to explain the finance company paper interest rate. Its coefficients are all positive except for the first one which is negative and insignificant. The use of the Cochrane-Orcutt technique reduces the size and significance of this coefficient which may suggest that it is picking up the effect of a missing variable. The eight period lag is the best formulation of this variable; that is, overall,
Table I
THE ESTIMATED INTEREST RATE EQUATION

\[
R_t = 2.187 + \sum_{i=2}^{4} a_i \text{CHY}_{t-i} - \sum_{i=0}^{8} b_i \text{ACCM}_{t-i} + \sum_{i=0}^{8} c_i \text{CHG}_{t-i} - 0.648 \text{EX}_t + 0.721 \text{DEX}_t + \sum_{i=0}^{6} f_i \text{CHP}_{t-i}
\]

\[
a_2 = 0.045 \quad b_0 = -0.14 \quad c_0 = -0.005 \quad f_0 = 0.093 \\
(1.76) \quad (-0.76) \quad (-0.48) \quad (2.42)
\]

\[
a_3 = 0.063 \quad b_1 = -0.036 \quad c_1 = 0.009 \quad f_1 = 0.118 \\
(2.57) \quad (-1.32) \quad (0.86) \quad (4.29)
\]

\[
a_4 = 0.048 \quad b_2 = -0.055 \quad c_2 = 0.020 \quad f_2 = 0.131 \\
(2.44) \quad (-1.32) \quad (1.72) \quad (4.60)
\]

\[
\begin{array}{llll}
\text{Mean Values:} \\
\sum a = 0.157 & \sum b = -0.564 & \sum c = 0.180 & \sum f = 0.731 \\
dop = 2 & dop = 3 & dop = 2 & dop = 2
\end{array}
\]

\[
\tilde{R} = 7.27 \quad \text{CHY} = 4.73 \quad \text{ACCM} = 0.177 \quad \text{CHG} = 1.94 \quad \text{CHP} = 6.29
\]

Where:
- CHY is the growth of real income (percent at annual rates)
- ACCM is the acceleration in the money supply
- CHG is the change in government debt held by the private sector (percent at annual rates)
- EX and DEX are the expected change in the exchange rate (percent at annual rates)
- CHP is the expected inflation rate (percent at annual rates)
- dop is the degree of the polynomial
- R is the 90-day finance company paper rate

Sample period 1963:1 to 1980:2

\[
\tilde{R}^2 = 0.9088 \quad \text{SEE} = 0.7666 \quad \text{D.W.} = 1.86
\]

The Cochrane-Orcutt technique was used to correct for serial correlation where \( \rho = 0.866 \) \( t = 14.36 \)
it yields the most significant set of coefficients. The maximum impact is in the third and fourth quarters when a 1% increase in real government debt held by the private sector will bring about a 0.03 of a point increase in the finance company paper rate.

The coefficients on the variables measuring expected future changes in the exchange rate have the expected signs. During periods of fixed exchange rates the coefficient of -0.65 on EX indicates an expected appreciation of Canadian currency by 1% reduces nominal interest rates in Canada by 0.65 of a percentage point. During flexible exchange rate periods, the sum of the coefficients of EX and DEX amount to 0.07. This indicates that during this period, expected changes in the exchange rate have had only a minor effect on Canadian short term interest rates.

The historical experience of inflation, CHP, is also very important in explaining variations in the nominal interest rate over time. The estimated value of expected inflation is the sum of lagged coefficients times the rate of inflation experienced in the corresponding period. The past experience with inflation could become fully expected and reflected in the interest rate if the sum of the estimated coefficients on the lagged values of inflation equals one. The sum of its lagged coefficients over eight periods implies however that 73% of the historical rates of inflation is built into expectations of future inflation and reflected in the nominal interest rate indicating a less than full adjustment of expectations to the historical experience of inflation.
The equation performed well explaining approximately 92% of the variation in the finance company paper interest rate. The standard error of estimate of 0.76 is approximately 10% of the mean value of the dependent variable. Using the Cochrane-Orcutt technique to correct for serial correlation in the error terms, the model performed better yielding a Durbin-Watson statistic of 1.86.

The real interest rate (\( R_{\text{R}} \)) used in the consumer credit demand equation is derived by subtracting the estimated expected inflation term \( \sum_{i=0}^{6} f_i \text{CHP}_{t-i} \), estimated by the interest rate equation, from the estimated nominal rate, \( \hat{R}_t \).

B. The Consumer Durable Expenditure Equation

The consumer durable demand equation shown below performs well by all tests. The best results were obtained using a log linear formulation. The coefficients have the right signs and are significant. The income elasticity of consumer durable demand is estimated to be 1.2, an intuitively plausible result.

\[
\text{LCD}_t = -3.96 + 1.20 \text{LDY}_t - 0.14 \text{LU}_t - 0.867 \text{RELP}_t 
\]

(4)

\[ R^2 = 0.99 \quad \text{SEE} = 0.037 \quad \text{D.W.} = 1.15 \]

Mean Values:

\[
\begin{align*}
\text{LCD} & = 9.03 \\
\text{LDY} & = 11.52 \\
\text{LU} & = 1.65 \\
\text{RELP} & = -0.034 \\
\text{CD} & = \$9,057\text{MM} \\
\text{DY} & = \$61,943\text{MM} \\
\text{U} & = 5.65 \\
\text{RELP} & = 0.97
\end{align*}
\]
The consumer durable expenditure variable (CD) used in the consumer credit demand equation is derived by finding the antilogarithm of the estimated value of this consumer durable expenditure function.

C. The Consumer Credit Demand Equation

The results of the consumer credit demand equation are summarized on Table II. All of the coefficients have the right signs and are significant at the 99% level. The real interest rate variable does not become a significant explanatory factor until it is lagged two periods implying that there is approximately a six month period from the time when the cost of funds increases to financial corporations to the time when these costs affect the quantity of consumer credit demanded. The resulting interest elasticity of credit demand with respect to the expected real interest rate is -0.34.

Expenditures on consumer durables have a very significant positive coefficient as expected. It implies that a 1% increase in consumer durable expenditures will lead to a 1.2% increase in demand for consumer credit. This is consistent with the hypothesis that the marginal purchases of consumer durables are financed more by credit than are such expenditures on the average.

The wealth effect is positive and very significant for the first three lags. It becomes small and negative after that, remaining very significant. The total effect of a 1% increase in wealth results in a 1.5% increase in the demand for new consumer credit over a two-year
TABLE II
THE ESTIMATED CONSUMER CREDIT DEMAND EQUATION

\[ CCR_t = -303.098 - 27.609 \, RE\bar{ALR}_{t-2} + 0.029 \, CD_t + \sum_{i=0}^{7} \delta_i \, WR_{t-i} \]

\[ (-1.15) \quad (3.86) \quad (2.49) \]

- \delta_0 = 0.00379(4.41)
- \delta_1 = 0.00204(4.38)
- \delta_2 = 0.000646(3.33)
- \delta_3 = -0.00038(-1.98)
- \delta_4 = -0.00104(-3.44)
- \delta_5 = -0.00133(-3.78)
- \delta_6 = -0.00125(-3.92)
- \delta_7 = -0.00081(-3.99)

sum of lag coef = 0.0017
degree of polynomial = 2

Mean Values:
- \( CCR = 225.2\text{MM} \)
- \( \text{REALR} = 2.79\% \)
- \( CD = 9,548\text{MM} \)
- \( WR = 202,713\text{MM} \)

Sample period -- 1964:1 to 1980:1

- \( R^2 = 0.277 \)
- \( \text{SEE} = 126.721 \)
- \( D.W. = 1.79 \)
period. This implies that in aggregate the increase in wealth increases the collateral available for an expansion of consumer credit.

The coefficients proved to be very stable when the equation was estimated for different intervals within the sample period. Experimentation with other explanatory variables resulted in very little improvement in the overall accuracy of the equation.

V. The Impact of Changes in Economic Conditions on the Demand for Consumer Credit

In this model of the demand for consumer credit, we have seven exogenous variables that are related to either government policy or current economic conditions. They are: the rate of unemployment, the relative price of consumer durables, the level of real disposable income, the growth in the gross national product, the expected real rate of interest, the growth in the real value of government debt held by the private sector, and changes in the growth of the money supply.

The rate of unemployment indirectly affects the demand for consumer credit by influencing the demand for consumer durables. A one percent increase in the rate of unemployment will decrease demand for new consumer durables by 0.14 percent. This translates into a 0.17 percent drop in the demand for new consumer credit. Hence, if the rate of unemployment in 1981 was increased by one percentage point for a year, the demand for credit would be decreased by $35.21 million in 1981 or by 3 percent of the actual expansion in the real value of consumer credit in the year.
Market forces and government commercial policies will affect the price of consumer durables relative to all other goods in the economy. This is an important factor in the demand for consumer durables. From equation 4 we find that the price elasticity of demand for consumer durables is -0.87. Combining this result with the relationship between the demand for consumer durables and consumer credit, shown in Table II, we find that a one percent increase in the relative price of durable goods will cause the demand for consumer credit to fall by 1.07 percent. Hence, if in 1981 there was a 10% increase in the relative price of durable goods (e.g. a levy of a 10% tariff on durable goods) it would have led to a $125.17 million fall in the demand for real consumer credit or 10.7 percent of the actual expansion in the real value of consumer credit in the year.

Income affects consumer credit in this model in two ways. It enters as real disposable income into the demand function for new purchases of consumer durables (equation 4) with an elasticity of demand of 1.2. From Table II, the elasticity of demand for consumer credit with respect to the purchase of consumer durables is 1.23. Hence, the elasticity of consumer credit demand with respect to real disposable income is 1.48. At the same time, changes in the real gross national product (GNP) have an impact on interest rates which in turn have an impact on the demand for consumer credit with a total lag of approximately 4 quarters. From Table I and Table II, we find that the interest rate effect of a one percentage point increase in the growth of real GNP for one year will reduce the demand for consumer credit by $39.89 million (1981 prices) over the following 18 month period. This effect offsets the impact that a one percentage point change in real disposable income has on the demand for consumer durables which increases the demand for real consumer
credit in the first year by $17.32 million. Hence the net effect of a one percentage point increase in the growth of real disposable income and GNP is to increase the demand for new consumer credit by 1.5 percent in the first year and to cause it to fall by 2.3 percent over the next 18 months.

The expected real interest rate also enters the consumer credit demand function directly. From Table II we find that a one percent increase in the expected real rate of interest will cause a 0.34% decrease in the demand for consumer credit six months later. Hence, in 1981 a one percentage point increase in the real rate of interest would have caused the real quantity of consumer credit demanded to diminish by $142.37 million or 12.2 percent.

Another way in which government policy can affect the demand for consumer credit is through the impact that the growth of real government debt has on the interest rate which in turn alters the quantity of consumer credit demanded. By simulating the impact of a billion dollar increase in the real value of the government debt (approximately 10 percent of the federal government deficit in 1981) we can estimate the impact that this intervention has on the demand for consumer credit. The effect on consumer credit lags the increase in the growth of the government debt by 6 months but then lasts approximately two years. Over the effective period the real increase in the quantity of consumer credit demanded is reduced by $61 million (1981 prices) or by approximately
2.6 percent. Hence, the additional real increase in the debt of the government causes a crowding out effect on the demand for consumer credit equal to approximately 6 per cent of that increase in the government's debt.

Finally monetary policy enters the model as the acceleration of M2 in the interest rate equation. If we increase the growth of money supply by one percentage point for one year (1981) we find that the real value of the demand for additional consumer credit is not affected until 6 months after the change. Then it increases by approximately $13.21 million or 0.75 percent for the following 18 months. It then declines over the periods following the eventual deceleration of the money supply.

VI. Conclusions

This analysis indicates that the expected real rate of interest has a major impact on the quantity of consumer credit demanded, while the relative price of consumer durable along with the level of unemployment are major determinants of changes in the level of demand. In addition, the growth in real income and changes in monetary and fiscal policy impact on the demand for consumer credit; however, their effects are either mitigated through time and/or are realized only after a considerable lag.

To place these results in the context of recent market experience, we find that since 1979 the real growth rate in consumer credit in Canada has fallen steeply from a rate of 7.16 percent in 1978 to 3.99 percent in 1979 to 0.22 and 0.65 percent in 1980 and 1981, respectively. During this period the expected real interest rate has risen by more than
6 percentage points. Even if all other variables including the dramatic
effect of increasing fuel prices on the demand for automobiles (the
principal durable good financed by consumer credit) are ignored, over
20% of the fall in the growth in demand for consumer credit can be
explained by this model through the increase in the expected real cost
of credit alone.


6 See Juster and Shay (1964) and Harnarine (1976).

7 The "price" of credit obtained by the ultimate borrowers is not just the interest rate charged on the loan. It includes the interest rate and other non-interest rate terms of credit such as the size of the loan, its term to maturity and the downpayment requirements since those terms play just as important a role in the allocation and demand for funds as the interest rate.

8 All data expressed in the numeraire are seasonnally adjusted quarterly values and expressed in real terms, 1971 Canadian dollars, unless stated otherwise. All growth rates are expressed in annual rates. The data were obtained both from the Cansim data base of Statistics Canada and from the Bank of Canada publications.
9. The net change in real consumer credit outstanding was derived by deflating consumer credit outstanding (Bank of Canada data series No. B117) by the implicit price index for personal expenditures on consumer goods and services (Statistics Canada Cansim series No. 40626) then taking the first difference of the resulting series.

10. The wealth data was taken from the Bank of Canada's RDX2 model in which wealth is defined as equal to: "(i) the value of the business capital stock plus the value of motor vehicles, other durables and houses; plus (ii) the value of total government liabilities (in the form of bonds, bills, Canada Savings Bonds, currency and Bank of Canada notes and deposits); minus (iii) government assets (excluding international reserves); plus claims on foreigners (excl. international reserves); minus (iv) liabilities to foreigners by Canadians."

11. The expected rate of inflation is determined by the lagged inflation coefficients of the interest rate equation, see Pesando (1976).


13. The nominal 90-day finance company paper rate is Bank of Canada series No. B14017; the change in real income is the percent change at annual rate of the Gross National Expenditures in constant 1971 dollars (Statistics Canada series No. B1603); CHG is the percent change at annual rates of the Canadian government debt direct and guaranteed securities and loans held by the chartered banks and the general public (Bank of Canada series No. B2402) deflated by the gross national expenditure implicit
price deflator (Statistics Canada Cansim series No. 40625); EX, the expected change in exchange rates expressed as an annual rate is the spot exchange rate (Bank of Canada series No. B3415) minus the 90-day forward exchange rate (Bank of Canada series No. BA9157) all divided by the spot exchange rate; DEX is the same as the above multiplied by 0 during the period 1962:1 to 1971:4 and multiplied by 1 during the period 1972:1 to 1980:1; the inflation rate is the percent change at annual rates of the Gross National Expenditure implicit price deflator (Statistics Canada Cansim series No. 40593).

The real personal expenditure on consumer durable goods is Statistics Canada Cansim series No. 40595; real disposable personal income is disposable personal income (from Statistics Canada Catalogue No. 13-001, Table 15) deflated by the implicit price deflator of personal expenditures on consumer goods and services (Statistics Canada Cansim series No. 40626); the unemployment rate is that of all persons 15 years of age and over (Statistics Canada Cansim series No. 767611); the relative price of consumer durable goods is the implicit price index of personal expenditure on consumer durables (Statistics Canada Cansim series No. 40627) divided by the gross national expenditure implicit price deflator.
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