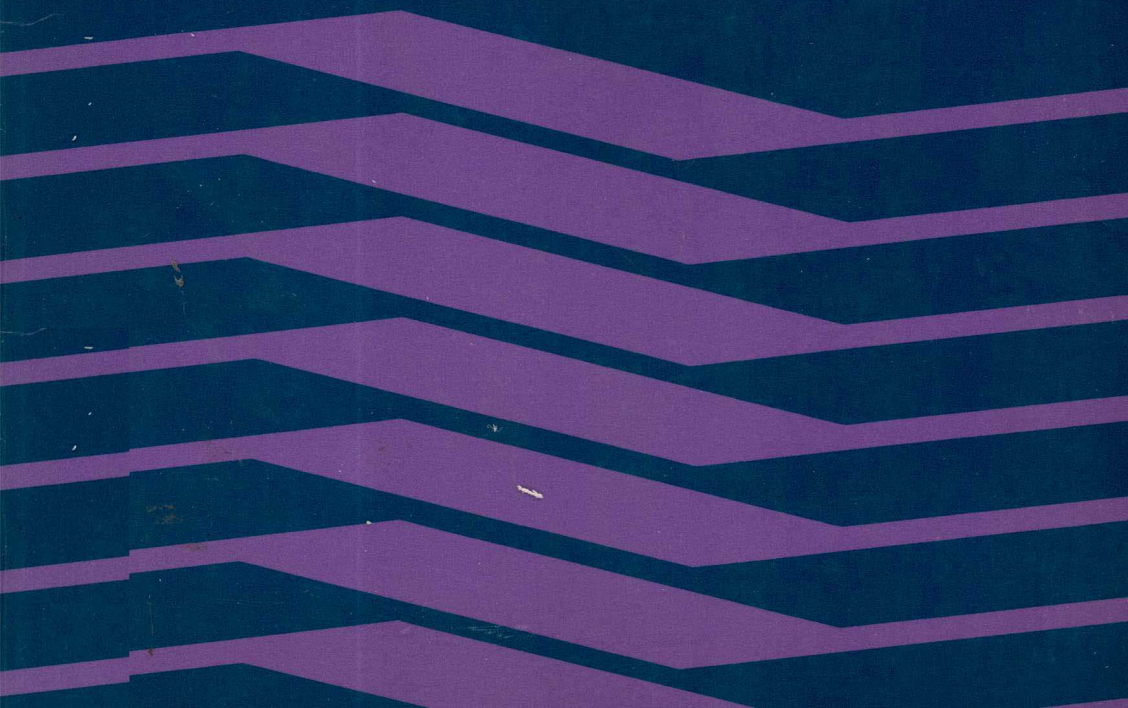


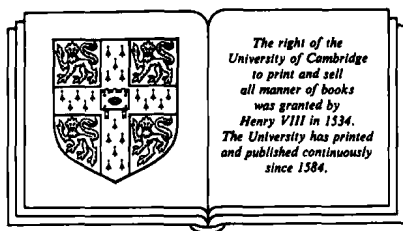
Money in the macroeconomy

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Money in the macroeconomy

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This is a textbook designed for senior undergraduate courses in monetary economics, advanced macroeconomics, or macroeconomic policy. Students will feel comfortable with this material if they have completed an intermediate course in macroeconomics, relying on one of the more demanding texts in this field. The prime focus of the book is on the role of money in the macroeconomy and on the place of monetary policy as an instrument for controlling inflation and unemployment. There are only three important macrovariables that are featured: the rate of inflation, the interest rate, and output or income. Behavioral relationships in the goods, money, and labor markets determine these variables, using only the now common *IS-LM-AS* model. The model is not ideological, but opposing views of the efficacy of stabilization policy are allowed to confront each other. There is a great deal of emphasis on relating the theoretical propositions to recent Canadian and U.S. macroeconomic performance. To expose students to diversity of experience, both countries receive equal treatment, one to serve as an example of a closed economy and the other as an example of an open economy.

The book relies mostly on verbal and diagrammatical exposition; equations are used to show why and how curves shift in the diagrams. Also, numerical examples are provided in “boxes” at appropriate places in the text, and exercises are given at the end of most chapters. A booklet containing answers to these exercises is available to instructors on request to the author.

Martin F. J. Prachowny is professor of economics at Queen’s University, where he has taught since 1967. He is the author of four previous books (most recently *Macroeconomic Analysis for Small Open Economies*), and is a member of the American Economic Association, the Canadian Economic Association, and the Royal Economic Society.

Preface

This textbook is intended to serve courses in monetary economics, advanced macroeconomics, or macroeconomic policy. Students will feel comfortable with this material if they have completed an intermediate course in macroeconomics relying on one of the more demanding textbooks in this field.

The book focuses primarily on the role of money in the macroeconomy and on the place of monetary policy as an instrument for controlling inflation and unemployment. From beginning to end there is only one macroeconomic model that the student must understand: the now common *IS-LM-AS* model. The three behavioral relationships in this model determine the three important variables in the macroeconomy: the rate of inflation, the interest rate, and income or output.

Although there is great temptation to take sides on the ideological issues in macroeconomics, the *IS-LM-AS* model is a middle-of-the-road approach that allows both monetarist and institutionalist views of the world to be incorporated. In fact, these views are allowed to confront each other, especially in Chapters 3 and 4, but no winner can be declared in this debate. This may be frustrating to an undergraduate student who expects only indisputable facts in a textbook, but controversy cannot be avoided, because macroeconomics now relies so heavily on unobservable variables such as expected inflation and the natural rate of unemployment. If we cannot measure these variables with any confidence, then we cannot verify or reject competing hypotheses that involve behavioral relationships among these and other variables, and we cannot conclude that empirical evidence favors one side or the other.

The book is designed for both American and Canadian students. In economics we learn from diversity; from that perspective it is useful to compare the monetary experience of Canada and that of the United States

since 1975, not only because one is an “open” economy and the other is “closed” but also, and more important, because they have tried to reach similar goals, with essentially similar methods but not always with uniform results. Data from both countries will be presented and applied to the theoretical and policy issues that arise from the analysis. Only those events through the end of 1982 are treated in these applied sections of the book; by the time these sections are read, the discussion may appear somewhat “dated,” but the role of empirical evidence here is to test the model, not to provide definitive judgments on the latest developments and policies.

It is customary for writers of textbooks to apologize for the heavy use of difficult mathematics. No such apology is necessary here, because the exposition is mainly verbal and diagrammatic. Some equations are used, but their manipulation requires only high-school algebra, and they help the student to understand how and why curves shift. Calculus is used in only two minor instances. However, natural logs are an important feature of the *IS-LM-AS* model, because they make it easier to explain inflation in equilibrium; an appendix to Chapter 2, where they first appear, explains the use of logs in simple terms and with illustrations. As a further aid to understanding abstract theory, numerical examples are provided in “boxes” at appropriate places in the text, and exercises are given at the ends of most chapters. Finally, to avoid confusion regarding what each symbol means, a complete list of definitions of symbols is provided.

A final word of advice. An economics textbook is not bedtime reading. A student should not expect to *understand* the material in this book without manipulating the equations and curves over and over again, without making copious notes in the margins and figures, and without working through each argument carefully.

After three years of writing this book I am no longer certain that I can remember all those who made the process less difficult or more pleasant or both, and so this is, at best, an incomplete list of my acknowledgments. First, I would like to thank all my mentors in monetary economics, especially the late Warren Smith of the University of Michigan, whose enthusiasm for the subject remains infectious to this day. Next, my colleague Neil Bruce should be credited with creating the elegant simplicity of the open-economy model in Chapter 9. Further, I would like to extend my gratitude to Christopher Holling, who kindly provided some econometric results for use in Chapter 5. My debates with Murray Frank on macro-economic ideology led me to take a more even-handed approach than I might have otherwise. Also, anonymous editorial readers fortunately caused me to rethink some of the more muddled material in earlier drafts of the manuscript. My wife, Marguerite Prachowny, not just “le chef de

cuisine'' in our household, made indispensable editorial contributions for which the reader will certainly be grateful, as am I. Last, my students in Economics 322 at Queen's University stimulated me to try the herculean task of making monetary economics both fascinating and rigorous. Even though I may not have succeeded, to them this book is dedicated.

Martin F. J. Prachowny

Kingston, Ontario

List of symbols

a_0	natural log of exogenous expenditures in the <i>IS</i> curve
a_1	interest elasticity of investment in the <i>IS</i> curve
a_2	income elasticity of the demand for money in the <i>LM</i> curve
a_3	interest (semi)elasticity of the demand for money in the <i>LM</i> curve
a_4	price elasticity of output in the <i>AS</i> curve
a_5	price elasticity of demand for home goods in the open-economy <i>IS</i> curve
$b_0 \dots b_{15}$	parameters in the behavioral relationships underlying the <i>IS-LM-AS</i> model
b_g, b_m, b_s	coefficients capturing the pervasiveness of previous shocks to goods, money, and labor markets
C_b, C_p	currency held by the banks and by the public
$c_0 \dots c_9$	contrived coefficients required to calculate rational expectations
D_b, D_p	demand and time deposits held by the public at commercial banks
D_t	deposits of the commercial banks at the central bank
e_d, e_t	reserve ratios for demand and time deposits
f	indexation factor
G_1, G_2	individual commodities
g	coefficient of adjustment in money holdings
h	weight attached to home goods in the consumption bundle of an open economy
h^*	weight attached to home goods in the consumption bundle of the foreign economy
I	natural log of investment and government expenditures (and exports in an open economy)

i	interest rate, sometimes the natural log of the interest rate
i_B, i_K	rate of return to bonds and equities
i^*	foreign interest rate
J	per-unit cost of exchanging money and bonds
j	coefficient of adaptive expectations
K	natural log of capital-stock services
k	natural log of the money multiplier
L	natural log of units of labor supplied
M	nominal money balances
m	natural log of nominal money balances
m_b	natural log of monetary base
μ	growth rate of nominal money balances
μ_1, μ_2, μ_3	growth rate of M1, M2, and M3
μ_b	growth rate of the monetary base
μ_s, μ_r	growth rate of central bank holdings of government securities and international reserves
N	natural log of units of labor demanded
n	number of goods or time periods
P	price level
P_1, P_2	price of individual goods
p	natural log of the price level
p^*	natural log of foreign price level
p_c	natural log of domestic Consumer Price Index
p_c^*	natural log of foreign Consumer Price Index
π	inflation rate
π^*	foreign inflation rate
π_c	rate of increase of consumer prices
π_c^*	rate of increase of foreign consumer prices
π^e	expected rate of inflation
π_o^e, π_n^e	expected rate of inflation in old and new labor contracts
π^{*e}	expected rate of inflation in the rest of the world
π_c^e	expected rate of increase of consumer prices
Q	real income or output
q_c, q_t, q_e	currency ratio, time deposit ratio, and excess reserve ratio
r	natural log of exchange rate
r^e	natural log of expected exchange rate
ρ	rate of change of exchange rate
ρ^e	expected rate of change of the exchange rate
S	natural log of saving and taxes (and imports in an open economy)
s	proportion of government securities in the monetary base

xx List of symbols

t	natural log of the terms of trade
t_e	natural log of equilibrium terms of trade
u	unemployment rate
V	income velocity of money
v	natural log of income velocity of money
w	natural log of nominal wage rate
ω	rate of change of nominal wage rate
ω_o, ω_n	rate of change of nominal wage rate specified in old and new labor contracts
x_b	monetary-base shock
x_g	goods-market shock
x_{i^*}	foreign interest-rate shock
x_k	money-multiplier shock
x_m	money-market shock
x_{π^*}	foreign inflation-rate shock
x_s	supply shock
Y	nominal income
y	natural log of real income or output
y_e	natural log of equilibrium income
y^d	natural log of output demanded
y^s	natural log of output supplied
z_g, z_m, z_s	new components of shocks to goods, money, and labor markets

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