THE MACMILLAN COMPANY
NEW YORK · BOSTON · CHICAGO
ATLANTA · SAN FRANCISCO

MACMILLAN & CO., LIMITED
LONDON · BOMBAY · CALCUTTA
MELBOURNE

THE MACMILLAN CO. OF CANADA, LTD.
TORONTO

THE RATE OF INTEREST

ITS NATURE, DETERMINATION AND RELATION TO ECONOMIC PHENOMENA

BY

IRVING FISHER, PH.D.

PROFESSOR OF POLITICAL ECONOMY, YALE UNIVERSITY

New York
THE MACMILLAN COMPANY
1907

All rights reserved

Copyright, 1907,
By THE MACMILLAN COMPANY.

Set up and printed. Published October, 1907.

Norwood Press
J S Cushing Co. — Berwick & Smith Co.
Norwood, Mass., U.S.A.

TO

The Memory

OF

JOHN RAE

WHO LAID THE FOUNDATIONS

UPON WHICH

I HAVE ENDEAVORED

TO BUILD

PREFACE

THE problem of interest has engaged the attention of writers for two thousand years, and of economists since economics began. And yet, with the exception of what has been accomplished by Rae, Böhm-Bawerk, Landry, and some others, very little progress has been made toward a satisfactory solution. Even these writers can scarcely claim to have established a definitive theory of interest. While the value of their work is great, it is chiefly negative. They have cleared the way to a true theory by removing the confusions and fallacies which have beset the subject, and have pointed out that the rate of interest is not a phenomenon restricted to money markets, but is omnipresent in economic relations.

The theory of interest here presented is largely based upon the theories of the three writers above mentioned, and may therefore be called, in deference to Böhm-Bawerk, an "agio theory." But it differs from former versions of that theory by the introduction explicitly of an *income concept*. This concept, which I have developed at length in *The Nature of Capital and Income*, is found to play a central rôle in the theory of interest. The difficult problem is not whether the rate of interest *is* an agio, or premium, for of this there can be no question, but upon what does that agio depend and in what manner? Does it depend, for instance, on the volume of money, the amount of capital, the productivity of capital, the "superior productivity of roundabout processes," the labor of the capitalist, the helplessness of the laborer, or upon some other condition?

The solution here offered is that the rate of interest depends on the character of the income-stream, — its size, composition, probability, and above all, its distribution in time. It might be called a theory of *prospective provision of income*.

As in *The Nature of Capital and Income*, mathematics have here been relegated to appendices. These appendices are not, however, mere translations into mathematical language of the theory verbally expressed in the text. Mathematics can properly claim no place in economic discussions except as they add something not expressible, or at any rate only imperfectly expressible, in ordinary language.

Parts of Chapters V and XIV with their appendices have appeared in somewhat different forms in *Appreciation and Interest*. My thanks are due to the American Economic Association for permission to use portions of this monograph unaltered. Since it appeared a decade ago, the view expressed in it, to the effect that appreciation of money should, and to some extent does, lower the rate of interest expressed in money, has gained considerable currency, though it is still unfamiliar to most persons. It has been thought wise to present again the statistical evidence in its favor, and to bring the statistics down to date.

In the preparation of this book I have received important aid from many persons. For general criticism I am indebted to my wife, to my colleagues, Professors H. C. Emery and J. P. Norton, and to my friend Richard M. Hurd, President of the Mortgage-Bond Company of New York City. My thanks are also due to Finance Minister Böhm-Bawerk for his kindness in reading and criticising the chapter devoted to his theory of interest; to Professor Clive Day for facts and references on the history of interest rates; to Dr. Lester W. Zartman for a large part of

the statistical computation and for many helpful criticisms; to two of my students, Mr. Harry G. Brown and Mr. J. H. Parmelee, for valuable aid in proof-reading, including many keen and fruitful suggestions; and to my brother, Herbert W. Fisher, for a most searching and valuable criticism of the mode of expression and exposition.

IRVING FISHER.

NEW HAVEN, July, 1907.

CONTENTS

FIRST SUMMARY

		CHAPTERS
PART I.	CRITICISM OF PREVIOUS THEORIES .	I–IV
PART II.	FIRST APPROXIMATION	V–VII
PART III.	SECOND AND THIRD APPROXIMATIONS	VIII–XI
PART IV.	CONCLUSIONS	XII–XVII

SECOND SUMMARY

PART I. CRITICISM OF PREVIOUS THEORIES

CHAPTER		PAGE
I.	CRUDE THEORIES	3
II.	PRODUCTIVITY THEORIES	10
III.	COST THEORIES	29
IV.	BÖHM-BAWERK'S THEORY	53

PART II. FIRST APPROXIMATION

V.	APPRECIATION AND INTEREST	77
VI.	TIME-PREFERENCE	87
VII.	FIRST APPROXIMATION (RIGID INCOME)	117

PART III. SECOND AND THIRD APPROXIMATIONS

VIII.	SECOND APPROXIMATION (FLEXIBLE INCOME)	137
IX.	CLASSES OF OPTIONS	178
X.	INVENTION	198
XI.	THIRD APPROXIMATION (UNCERTAIN INCOME)	207

PART IV. CONCLUSIONS

XII.	RÔLE OF INTEREST IN ECONOMIC THEORY	225
XIII.	APPLICATION TO ACTUAL CONDITIONS	236
XIV.	INDUCTIVE VERIFICATION (MONETARY)	257
XV.	INDUCTIVE VERIFICATION (ECONOMIC)	289
XVI.	INDUCTIVE REFUTATION OF "MONEY THEORY"	317
XVII.	SUMMARY	327
GLOSSARY		337
APPENDICES		345
INDEX		429

ANALYTICAL TABLE OF CONTENTS

CHAPTER I

CRUDE THEORIES

		PAGE
§ 1.	Introduction	3
§ 2.	Early theories	4
§ 3.	"Supply and demand" theory	6
§ 4.	"Use of money" theory	7

CHAPTER II

PRODUCTIVITY THEORIES

§ 1.	Distinction between explicit and implicit interest	10
§ 2.	Turgot's productivity theory based on land	11
§ 3.	Common form of productivity theory	12
§ 4.	True sequence: capital-goods, income-services, income-value, capital-value	14
§ 5.	To increase productivity will not increase interest	15
§ 6.	Case of ten replaceable machines examined	16
§ 7.	The same when the rate of interest is zero	20
§ 8.	Reproductivity theory of Del Mar and Henry George	22
§ 9.	Example of growing timber	23
§ 10.	Conclusions	28

CHAPTER III

COST THEORIES

§ 1.	Cost theories overlook the fact that cost is usually discounted return	29
§ 2.	Case when rate of return on cost exceeds rate of interest	31
§ 3.	Roscher's fishing net, where sacrifice and return are both measured in fish	33
§ 4.	Theory that capital "saves labor"	35
§ 5.	Case where sacrifice and return are both measured subjectively	36

PAGE

§ 6. Socialist exploitation theory, correct in claim that value exceeds cost 38
§ 7. Socialist theory incorrect in claim that laborers are defrauded 40
§ 8. Theory that interest is wages of labor of "managing" capital 42
§ 9. Abstinence theory. "Labor of waiting" not a true cost, because not discounted 43
§ 10. Answer that no costs need be discounted, examined . . 45
§ 11. If the answer be accepted, capital-value is equal to its expected income 48
§ 12. Interest is not a cost of production 50
§ 13. Summary 51

CHAPTER IV

Böhm-Bawerk's Theory

§ 1. Statement of Böhm-Bawerk's agio theory of interest . . 53
§ 2. Criticism of Böhm-Bawerk's concept of an average production period 55
§ 3. Statement of Böhm-Bawerk's theory of "technical superiority of present over future goods" 58
§ 4. Error of Böhm-Bawerk in ascribing to "technical superiority" of present goods, effects actually due to other factors, *viz.* underestimation of and overprovision for future . . 61
§ 5. Error best seen by supposing these other factors absent . . 63
§ 6. Error made still clearer if we suppose increase of productivity not to go on indefinitely 68
§ 7. Final criticisms 71

CHAPTER V

Appreciation and Interest

§ 1. The rate of interest dependent on monetary appreciation or depreciation 77
§ 2. Appreciation or depreciation, to affect interest, must be foreseen 78
§ 3. Relation between interest and appreciation or depreciation illustrated 80
§ 4. Case where interest and appreciation are compounded momently 81
§ 5. Limits imposed on rates of interest in two standards and the appreciation between them 82
§ 6. There is no "absolute" interest in some "absolute" standard 84

CHAPTER VI

Time-preference

PAGE

§ 1. "Time-preference" is a particular species of "desirability". 87
§ 2. This preference applies to all goods, but in the last analysis only to final income 89
§ 3. The rate of interest enters into all prices except the price of final services 90
§ 4. Time-preference depends on income 92
§ 5. Time-preference depends on size of income 94
§ 6. Time-preference depends on time-shape of income . . . 95
§ 7. Time-preference depends on composition of income . . 98
§ 8. Time-preference depends on probability of income . . . 99
§ 9. The character of the dependence of time-preference on income varies with five human characteristics 102
§ 10. Summary 109
§ 11. Shortcomings of statement that interest depends on abundance of capital 109
§ 12. Schedule of relation between time-preference and income . 113

CHAPTER VII

First Approximation to the Theory of Interest (Assuming Income Rigid)

§ 1. Introductory 117
§ 2. Equalization of individual rates of preference, by borrowing and lending 118
§ 3. Diagrammatic illustration 120
§ 4. Equalization of preference rates by buying and selling . . 125
§ 5. Futility of socialistic suppression of interest 127
§ 6. Equalization of preference rates means maximizing "desirability" 129
§ 7. Formulation of the first approximation to the theory of interest 130

CHAPTER VIII

Second Approximation to the Theory of Interest (Assuming Income Flexible)

§ 1. Introductory 137
§ 2. Choice of optional income-streams depends on maximum present value 139
§ 3. Any resulting inconvenience in time-shape of income may be offset by borrowing or lending 141
§ 4. A change in the rate of interest produces a change in choice . 145

PAGE

§ 5. Although interest depends on income-stream, and the choice of income-stream depends on interest, yet interest is determinate 147
§ 6. Statement of the interest-determining condition relating to optional employments of capital 149
§ 7. A second method of stating this interest-determining condition 150
§ 8. A third method of stating this interest-determining condition 152
§ 9. The third method, when the range of choice is infinite. Marginal rate of return on sacrifice equals the rate of interest . 156
§ 10. Similarity to Rae's theory that instruments are "wrought up" to a point corresponding to the "effective desire of accumulation." Landry's theory 159
§ 11. The relation of the author's theory to Henry George's theory 161
§ 12. The relation of the author's theory to Böhm-Bawerk's theory 163
§ 13. Summary of relation of author's theory to previous theories . 164
§ 14. *Range* of choice (as well as the choice itself) depends on rate of interest 167
§ 15. But this fact does not materially affect the statement of the theory 171
§ 16. The existence of a range of choice prevents wide fluctuations in the rate of interest 175

CHAPTER IX

Classes of Options

§ 1. Three groups of options 178
§ 2. Options as to time of using capital 180
§ 3. The effect of the slowness of Nature on interest . . . 185
§ 4. The effect of the productivity of Nature on interest . . 186
§ 5. Case of perishable goods 187
§ 6. Case of renewable goods 188
§ 7. Case of repairs and betterments 190
§ 8. Case of optional methods of production 191
§ 9. Case of optional employments of labor 193
§ 10. Selection of option varies with rate of interest . . . 195

CHAPTER X

Invention

§ 1. Inventions widen range of choice of alternative income-streams 198
§ 2. Inventions depress present income and raise future income . 199
§ 3. Effect of invention on interest not registered by insiders' profits 201
§ 4. Inventions raise interest only temporarily 203
§ 5. Conditions which facilitate invention 204

CHAPTER XI

Third Approximation to the Theory of Interest (assuming Income Uncertain)

PAGE

§ 1. Possibilities of borrowing and lending limited by necessity of giving security 207
§ 2. One consequence is divergences in rates of preference, interest, and return on sacrifice 210
§ 3. Another consequence of risk is variation in duration of loans 211
§ 4. Another consequence of risk is divergence between expected and realized return 212
§ 5. Effect of risk on rate of interest on riskless loans . . . 213
§ 6. Differentiation of risky and safe investments and investors, bonds and stocks 215
§ 7. Effect of the introduction of element of risk upon the interest-determining conditions 217
§ 8. Summary 220

CHAPTER XII

Rôle of Interest in Economic Theory

§ 1. The interest rate plays a rôle in determining the prices of capital 225
§ 2. The interest rate plays a rôle in determining the prices of general services 226
§ 3. The interest rate plays a rôle in determining wages in particular 228
§ 4. The problem of distribution usually misconceived . . . 229
§ 5. The interest rate plays a rôle in distribution 231
§ 6. Inequality in distribution of capital due to opportunity to exchange income 234

CHAPTER XIII

Application to Actual Conditions

§ 1. Application of the theory of interest to personal loans . . 236
§ 2. Application of the theory of interest to public loans . . 238
§ 3. Application of the theory of interest to business loans in general 240
§ 4. Application of the theory of interest to short-term loans . 242
§ 5. Application of the theory of interest to long-term loans . . 244
§ 6. Business loans not "productive" except as they enable merchants to choose "productive" options 246
§ 7. Classification of loans 252

PAGE
§ 8. Interplay between borrowers and lenders 253
§ 9. Sale of loans before maturity 254
§ 10. Explicit and implicit interest. Risk 255

CHAPTER XIV

Inductive Verification (Monetary)

§ 1. Appreciation is foreseen under the disguise of changes in prices 257
§ 2. Statistical evidence from simultaneous loan contracts in United States "coin" and "currency" 258
§ 3. Measure of foreseen appreciation based on preceding evidence 261
§ 4. Evidence from India "rupee paper" and gold bonds . . 265
§ 5. Evidence from price-movements and interest in England . 270
§ 6. Evidence from price-movements and interest in Germany, France, and the United States 273
§ 7. Evidence from price-movements and interest in India, Japan, and China 276
§ 8. Proof that interest does not fully adjust itself to monetary changes 277
§ 9. Errors due to mistaking high or low rates in money for rates absolutely high or low 280
§ 10. When long periods of time are taken, the relation between appreciation and interest is more definite 282
§ 11. Manner in which, in any price-movement, the rate of interest is gradually adjusted 284
§ 12. Application to theory of "credit cycles" 285
§ 13. Conclusions 287

CHAPTER XV

Inductive Verification (Economic)

§ 1. Similar significance of low interest, lending, accumulation, and durability of instruments 289
§ 2. Where foresight, self-control, and regard for posterity are present, interest tends to be low 290
§ 3. In some of these cases other explanations may enter . . 294
§ 4. Disregard of posterity during decline of Roman Empire . . 296
§ 5. Foresight, self-control, and regard for posterity partly natural and partly acquired 297
§ 6. Where incomes are low, interest tends to be high . . . 299
§ 7. Where incomes are low in the food elements, interest tends to be high 301
§ 8. Where incomes are risky, commercial interest tends to be high, riskless or pure interest low, and reversely . . 302
§ 9. Where incomes are ascending, interest tends to be high; case of United States 304

PAGE
§ 10. Ditto, case of particular parts of United States . . . 306
§ 11. Ditto, case of other countries 309
§ 12. Ditto, case of misfortune and invention 311
§ 13. Ditto, case of rhythmic changes in income 314
§ 14. Summary 316

CHAPTER XVI

Inductive Refutation of "Money-theory"

§ 1. Statistical refutation of money-theory necessary for business man 317
§ 2. Table giving rate of interest in relation to price-level . . 318
§ 3. Table giving rate of interest in relation to money per capita . 320
§ 4. Relation of bank reserves to rate of interest explained . . 322
§ 5. Case of panics 324

CHAPTER XVII

Summary

§ 1. Appreciation and interest 327
§ 2. Enumeration of interest-determining conditions 328
§ 3. Possible future changes in range of choice 329
§ 4. Possible future changes in character of man 331
§ 5. The element of fashion as a factor in determining interest . 332
§ 6. Conclusion 334

GLOSSARY

Definitions of Technical Terms Used 337

APPENDICES

Appendix to Chapter II. Productivity Theories

PAGE

§ 1 (to Ch. II, § 6). Mathematical proof that the rate of net income from reconstituted capital is equal to the rate of interest employed in valuing the elements of which it is composed 347

§ 2 (to Ch. II, § 7). Discussion of the case of zero interest as applied to the valuation of reconstituted capital . . . 349

Appendix to Chapter IV. Böhm-Bawerk's Theory

§ 1 (to Ch. IV, § 2). Nature of various means, — arithmetical, geometrical, harmonical, etc. 351

§ 2 (to Ch. IV, § 2). Case illustrating futility of measuring average production period 352

§ 3 (to Ch. IV, § 3). Showing how periods of production which are relatively long but unproductive are eliminated . . 353

§ 4 (to Ch. IV, § 4). Mathematical refutation of Bohm-Bawerk's claim as to ground of preference for present over future investment of labor 354

Appendix to Chapter V. Appreciation and Interest

§ 1 (to Ch. V, § 2). History of theory of appreciation and interest 356

§ 2 (to Ch. V, § 3). Formula connecting the rates of interest in two diverging standards 358

§ 3 (to Ch. V, § 4). Formulæ, when rates of interest and of appreciation are reckoned oftener than yearly 360

§ 4 (to Ch. V, § 5). Case of partial payments 361

§ 5 (to Ch. V, § 5). Formulæ for cases of compound interest and partial payments 363

§ 6 (to Ch. V, § 5). Case of separate payments of interest and principal in one of the two standards and equivalent payments in the other 365

§ 7 (to Ch. V, § 5). Case of separate payments of interest and principal in both standards 366

§ 8 (to Ch. V, § 5). Case of perpetual annuity 367

§ 9 (to Ch. V, § 5). Case in which the rate of appreciation changes each year 369

APPENDIX TO CHAPTER VII. FIRST APPROXIMATION

PAGE
§ 1. Mathematical statement of the four conditions determining interest rate, when two years only are considered . . 374
§ 2. The number of equations is equal to the number of unknowns 376
§ 3. Transformation of formulæ for explicit determination of rate of interest 377
§ 4. Extension of the mathematical statement to apply to m years 380
§ 5. Reasons for steadiness of interest rates from year to year . 383
§ 6. The condition that rates of time-preference shall equal the rate of interest is equivalent to the condition that "total desirability" shall be a maximum 385
§ 7. Geometrically interpreted, the condition of maximum desirability is fulfilled at the point of tangency of an iso-desirability curve and a straight line the slope of which corresponds to the rate of interest 387
§ 8. The same geometrical construction interprets equality of time-preference and interest rate 390
§ 9. Extension from two to three or more years 392
§ 10. Geometrical solution of the rate of interest 394

APPENDIX TO CHAPTER VIII. SECOND APPROXIMATION

§ 1. The equations of the first approximation repeated and re-adapted 395
§ 2. The new equations peculiar to the second approximation . 397
§ 3. Geometrical representation in two dimensions of the range of choice 402
§ 4. Geometrical representation of the determination of choice for a given rate of interest 405
§ 5. Extension to three and more dimensions 407
§ 6. Geometrical determination of the rate of interest . . . 408
§ 7. The condition of maximum desirability includes that of maximum present value 411
§ 8. Summary 412

APPENDIX TO CHAPTER XI. THIRD APPROXIMATION

§ 1 (to Ch. XI, § 8). Reasons for omitting mathematical statement of third approximation 416

APPENDIX TO CHAPTER XIV. STATISTICAL DATA

§ 1. Table of interest rates each year in seven countries . . 418
§ 2. References to other statistics of the rate of interest . . 421
§ 3. Index-numbers of prices 425
INDEX 429

PART I. CRITICISM

CHAPTER I. CRUDE THEORIES
CHAPTER II. PRODUCTIVITY THEORIES
CHAPTER III. COST THEORIES
CHAPTER IV. BÖHM-BAWERK'S THEORY

THE RATE OF INTEREST

CHAPTER I

CRUDE THEORIES

§ 1

IF the theory to be presented in this book is correct, the rate of interest in any community is an index of the preference, in that community, for a dollar of present over a dollar of future income. The task of justifying this theory will be facilitated by a brief preliminary review of rival theories. A complete history of theories of interest has been made unnecessary by Böhm-Bawerk's admirable *Capital and Interest*.[1] For the same reason, it is not necessary to combat many of the special theories advanced by individual writers. The theories which are here selected for criticism are for the most part those which have the greatest currency, either in economic literature or in the unexpressed but none the less firmly rooted ideas of business or professional men. Experience shows that nearly every student of economic science has almost unconsciously acquired a number of crude and usually false ideas on this important subject. Such, for instance, is the idea that interest is the price paid for the "use of money"; or that it represents the "productivity" of capital or the "fecundity" of plants and animals; or that it represents some

[1] English translation by Smart, (Macmillan) 1890. See also *Recent Literature on Interest*, English translation by Scott & Feilbogen, (Macmillan) 1903.

"cost" to the producer, such as the cost of the capitalist's personal exertion in controlling capital, or the "cost of waiting"; or that it constitutes a species of legalized plunder perpetrated by the employer on the employed. Before the correct theory of interest can be securely implanted in any mind, these ideas must first be eradicated. To accomplish this is the object of the present and of the next three chapters.[1]

§ 2

An objection, formerly common, to the practice of taking interest was that interest is "unnatural." The word employed among the Greeks to signify interest or usury was τόκος, "offspring"; and Aristotle declaimed against the taking of interest, on the ground that money could not have "offspring,"—a curious instance of the influence of terminology on thought.

Interest-taking between Jews was forbidden by the Mosaic laws, and similarly, in Rome, interest-taking between Romans was prohibited. Many biblical texts show the hostile attitude of the writers, both in the Old and New Testaments, toward the practice, and the Church Fathers through the Middle Ages for over a thousand years waged a ceaseless but fruitless war against interest-taking. St. Thomas Aquinas stated that interest was an attempt to extort a price for the use of things which had already been used up, as for instance, grain and wine.[2] He also declared that interest constituted a payment for *time*, and that time was a free gift of the Creator to which all have a natural right.[3]

[1] These chapters for the most part may be said to be a brief epitome, under a changed classification, of Böhm-Bawerk's exhaustive *Capital and Interest*.

[2] This criticism against the legitimacy of interest is very nearly revived by Böhm-Bawerk in his criticism of the modern "use" theory of interest. *Op. cit.*, Chap. VIII.

[3] This theory is not unlike one of the objections made to land-rent by the single-tax advocates; namely, that *space* is a free gift of nature.

The unpopularity of interest-taking increased until the thirteenth century; but the practice persisted, and as business operations increased in importance, certain exemptions and exceptions from its general prohibition were secured. Pawnshops, banks, and money-lenders were specially licensed, and permission was granted for buying annuities, and taking land on mortgage for money loaned. One of the subterfuges by which the allowance of interest was excused suggests the true idea of interest as an index of the relative preference for present over future goods. It was conceded that, whereas a loan should be nominally without interest, yet when the debtor delayed payment, he should be fined for his delay (*mora*), and the creditor should receive compensation in the form of "*interesse*." Through this loophole it became common to make an understanding in advance, by which the payment of a loan should be "delayed" year after year, and with every such postponement a "fine" should become payable.

Some of the Protestant reformers, while not denying that interest-taking was wrong, admitted that it was impossible to suppress it, and that it should therefore be tolerated. This toleration was in the same spirit as that in which many reformers to-day defend the licensing of vicious institutions, such as saloons, racetracks, lotteries, and houses of prostitution.

In the sixteenth century interest-taking began to find some definite champions. Calvin attempted to discriminate between interest-taking which was right and interest-taking which was wrong. Among the wrong kinds he classed the taking of interest from the poor and from those in urgent need, and the taking of interest in excess of a legal maximum.

In order to defend interest, its champions began to construct theories to account for the phenomenon. Most of these early theories were little more than a shifting of the problem. It was seen that capital earned income whether it was lent or not. The income which a lender obtains

through a loan contract may be called *explicit interest;* but it was clear that the borrower was enabled to pay this interest because the capital which he borrowed earned it for him. The income which capital thus earns may be called *implicit interest.* The earliest attempt to construct a theory of interest merely explained explicit interest in terms of implicit interest. Salmasius and Locke, both in the seventeenth century, attempted thus to explain interest. They tried to justify the taking of interest in a loan on the ground that an equivalent to that interest was obtained by the borrower from the capital he borrowed, and might have been obtained by the lender of the capital had he retained it. If, they said, a man lends $1000, he is entitled to interest upon it because, had he used it in business himself, he could have made profits by means of it. But beyond the bare statement that unlent capital yields income, these theories did not go. The real problem—"why capital yields income to the user"—was left untouched.

§ 3

The theories just described are for the most part obsolete to-day; yet we have a number of other theories almost equally crude. If a modern business man is asked what determines the rate of interest, he may usually be expected to answer, "the supply and demand of loanable money." But "supply and demand" is a phrase which has been too often forced into service to cover up difficult problems. Even economists have been prone to employ it to describe economic causation which they could not unravel. It was once wittily remarked of the early writers on economic problems, "Catch a parrot and teach him to say 'supply and demand,' and you have an excellent economist." Prices, wages, rent, interest, and profits were thought to be fully "explained" by this glib phrase. It is true that every ratio of exchange is due to the resultant of causes

operating on the buyer and seller, and we may classify these as "demand" and "supply." But this fact does not relieve us of the necessity of examining specifically the two sets of causes, including utility in its effect on demand, and cost in its effect on supply. Consequently, when we say that the rate of interest is due to the supply and demand of "capital" or of "money" or of "loans," we are very far from having an adequate explanation. It is true that when merchants seek to discount bills at a bank in large numbers and for large amounts, the rate of interest will tend to be high, and that when merchants do not apply in large numbers and for large amounts, the rate of interest will tend to be low. But we must inquire for what purposes and from what causes merchants thus apply to a bank for the discount of loans, and why it is that some apply to the bank for loans and others supply the bank with the funds to be loaned. The real problem is: What causes make the demand for loans, and what causes make the supply? This question is not answered by the summary "supply and demand" theory. The explanation is not simply that those who have much capital supply the loans and those who have little capital demand them. In fact, the contrary is quite often the case. The depositors in savings banks are the lenders, and they are usually poor, whereas those to whom the savings bank in turn lends the funds are relatively rich.

§ 4

There is another phrase often employed by business men to explain the rate of interest or, at all events, its existence. It is often said that interest is the price paid for the "use of money." As an explanation this is almost as superficial as "supply and demand"; for it is clear that the "use" of money is to facilitate exchange, and that, except in rare instances (as when a bank borrows a chest of gold to reinforce its cash reserve), the money borrowed