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Limits to Arbitrage and Interest Rates: a Debate between Hawtrey, Hicks and Keynes

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Introduction

- Why studying interest rates?

- A recent issue
  - Spreads between public bonds' yields
  - Outright monetary transactions
  - Debate on the liquidity contraints of arbitragers

- A recurring debate from 1930 to nowadays
  - To what extent the central bank can influence the term structure of interest rates?

Introduction

- Keynes-Hawtrey-Hicks's controversy
  - ➢ The first version of the theory of the term structure of interest rates

Hawtrey (1919)
Currency and Credit

Keynes (1930, 1936)
A Treatise on Money
The General Theory

Hawtrey (1938)
A Century of Bank Rate

Hicks (1939)
Value and Capital

↓

Hicks (1939)
Reviewed this book

↓

Two replies from
Hawtrey (1939)

↓

Two replies from
Hicks (1939)

Introduction

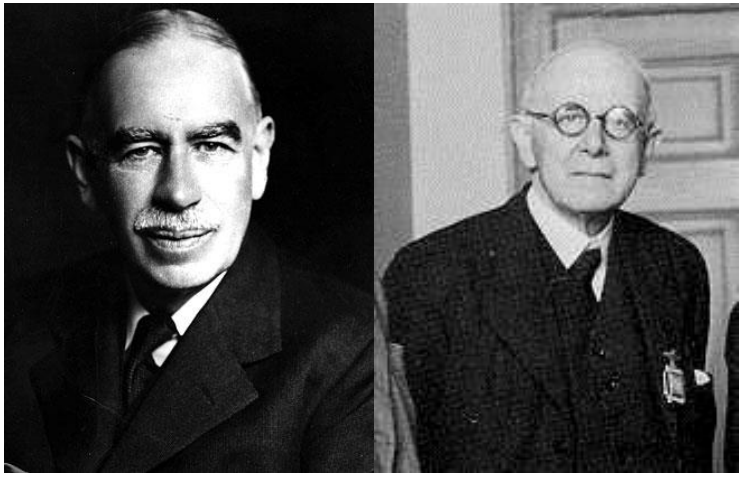
- Our interpretation of the Keynes-Hawtrey-Hicks's controversy:
  - The central bank can impact the term structure of interest rates
  - The liquidity and expectations of arbitragers are determinant

PLAN

1. **Hawtrey and Keynes: discount rate, short-term and long-term rates**
2. Hawtrey: the long-term rate and the trade cycle
3. Hawtrey's treatment of expectations
4. Hicks on the limits to arbitrage

HAWTREY AND KEYNES ON THE LINK BETWEEN THE DISCOUNT RATE, THE SHORT TERM AND THE LONG-TERM RATES

1



Hawtrey and Keynes: discount rate, short-term and long-term rates

The central bank can control short-term rates

Effect on investments:

Hawtrey: ↓ short-term rates => ↑ investments

Keynes: ↓ short-term rates => ↓ long-term rate => ↑ investments

"[In] the long run the banking system can affect the long-term rate by obstinately adhering to the correct policy in regard to the short-term rate." (Keynes, 1931, p.366)

Hawtrey and Keynes: discount rate, short-term and long-term rates

Keynes's ambition

- To give a « better » theory than Marshall and Hawtrey about the link between short-term rates and new investments

Whilst Marshall, unless I have misunderstood him, regarded the influence of bank-rate on investments as the means by which an increase of purhasing power got into the world, and Mr Hawtrey has limited its influence to one particular kind of investments, namely investments by dealers in stocks of liquid goods, **Wicksell (…) was closer to the fundamental conception of bank-rate as affecting the relationship between investment and saving** (Keynes, 1930, p.175-176)

Hawtrey and Keynes: discount rate, short-term and long-term rates

Keynes's ambition

- To give a « better » theory than Marshall and Hawtrey about the link between short-term rates and new investments
- To complete Wicksell's theory of the long-term rate

This, it may be noted, is in itself a reason for not expecting any precise correlation between movements in the discount rate and in commodity prices. The direct influence of the one on the other is at first trivial and may easily be masked by other factors or altogether annulled. **But as soon as the long-term rate of interest moves in sympathy, and provided that conditions remain otherwise unaltered, prices suddenly rise ad the whole world knows that « the upward phase » has started** (Wicksell, 1898, p.92-93)

Hawtrey and Keynes: discount rate, short-term and long-term rates

Keynes focused on bond markets

- Expectations of financial intermediaries
- Arbitrage between short and long-term securities
- The long-term rate follows the average of short-term rates

Example

r_1 = the short term rate for a one-year loan

r^e_2 = the expected short term rate for a one-year loan in a year

R_2 = the long term rate of a two-years loan

$r_1 = 1\%$ $\qquad$ $r^e_2 = 1\%$

$R_2 = 1\%$

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$R_2 =$ 1% **0.825%**

Hawtrey and Keynes: discount rate, short-term and long-term rates

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$$(1 + R_2)^2 = (1 + r_1)(1 + r_2^e)$$

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$R_2 = 1\%$ **0.825%**

Hawtrey and Keynes: discount rate, short-term and long-term rates

Keynes's double nature of premiums

- Liquidity premium on cash
- Risk premium on bonds:
  - preferred habitat of lenders
  - Bullish and bearish feelings

…If a need for liquid cash may conceivably arise before the expiry of n years, there is **a risk of a loss being** incurred in purchasing a long-term debt and subsequentaly turning it into cash, as compared with holding cash (Keynes, 1936, p.168-169)

Hawtrey and Keynes: discount rate, short-term and long-term rates

If arbitragers are still reluctant to purchase long-term maturities despite low short-term rates managed by the central bank…

… the central bank should directly intervene and purchase long-term maturity in order to diminish the long-term rate of interest

"My remedy in the event of the obstinate persistence of a slump would consist, therefore, in the purchase of securities by the central bank until the long-term market-rate of interest has been brought down to the limiting point…" (Keynes, 1930, p.371)

Hawtrey and Keynes: discount rate, short-term and long-term rates

"In the last quarter of 1932 the Bank of England's open market policy had the effect of **increasing the volume of bank deposits** to a total 12 per cent higher than in the last quarter of the preceding year… As a result the price of fixed-interest securities rose during this period by 33 per cent." (Keynes in Moggridge, 1982, p.376)

PLAN

1. Hawtrey and Keynes: discount rate, short-term and long-term rates
2. **Hawtrey: the long-term rate and the trade cycle**
3. Hawtrey's treatment of expectations
4. Hicks on the limits to arbitrage

2

HAWTREY: THE LONG-TERM RATE AND THE TRADE CYCLE

Hawtrey: the long-term rate and the trade cycle

Short and long rates are not connected according to Hawtrey

It is often assumed that … there will be a marked tendency for the long-term rate of interest to move up and down with the short-term rate. There is little foundation for this view. (1937, p.88)

Hawtrey: the long-term rate and the trade cycle

- Hawtrey disagreed with Keynes on the influence of short-term rates over long-term rates
  - Commercial banks finance traders and stock jobbers
  - But only traders respond to short-term rates variations

- The breaking point with Hawtrey

  - Weak effects of the long-term rate on new investments
  - Weak impact of short-term rates over long-term bonds
    - expectations of stock-jobbers are short-lived only

Hawtrey: the long-term rate and the trade cycle

Professor Hicks describes the long-term and short-term rates as "close substitutes for important classes of borrowers and lenders." But the competition between them is conditioned by the fact that **it is impossible to forecast the short-term rate for more than a few months**. (Hawtrey, 1939a, p.156)

It [the short-term rate of interest] **has little influence** on the temporary borrowing of speculators and promoters, or therefore on the resource of the investment market. (Hawtrey, 1938, p.189)

Hawtrey: the long-term rate and the trade cycle

Real forces affecting the long-term rate

- Expectations on economic depression (declining profits)
  - ➢ stock jobbers sell stocks and buy Consols
- Expectations on economic recovery (rising profits)
  - ➢ Stock jobbers buy stocks and sell Consols

If short and long rates seem to be connected, it is because they are affected by common forces

Conditions of activity, with rising prices and high profits, send up both long-term and short-term rates. (1938, p.187)

Hawtrey: the long-term rate and the trade cycle

The fall of the long-term rate was mainly linked with the « extreme stagnation of business and to the suspension of the gold standard (Hawtrey, 1938, p.164)

1930-1931

3 historical experiences studied by Hawtrey

1920-1928

The high level of the long-term rate was due to an « insistent need » to sell Consols in order to purchase stocks (Hawtrey, 1939a, p.152)

1874-1896

The fall of the long-term rate was due to the fall of commodity prices (Hawtrey, 1939a, p.147-8)

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HAWTREY'S TREATMENT OF EXPECTATIONS

Hawtrey's treatment of expectations

- Hawtrey's psychological expectations
  - Trader's expectations on futur discount rates

- Hawtrey's description of arbitrage operations

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$r_1 = 3\%$ $\qquad$ $r^e_2 = \cancel{3\%}$ 7%

$R_2 = \cancel{3\%}$ **4,9%**

Hawtrey's treatment of expectations

The actual effect of the short-term rate of interest on the prices of long-term securities depends upon the time for which the short-term rate ***is expected to continue***. (Hawtrey's italics, 1937, p.88)

PLAN

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HICKS ON THE LIMITS TO ARBITRAGE

Hicks on the limits to arbitrage

Hicks's entry into the controversy

- Reaction against Hawtrey's « A century of Bank Rate » (1938)

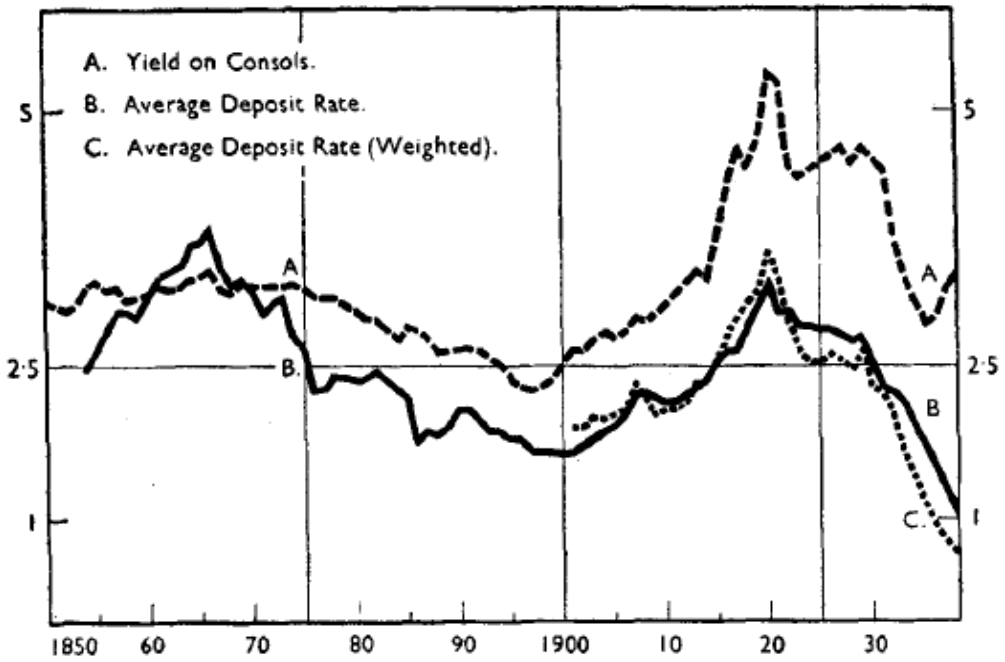
> The long-term rate of interest is not one of those things… which swing about violently in the course of a Trade Cycle. It is quite **extraordinarily insensitive to the Cycle**. (Hicks, 1939b, p.24)

- Hicks thought, as Keynes, that long-term rates are determined by the average of short-term rates

Hicks on the limits to arbitrage

Hicks's empirical findings

The long-term rate is influenced by the average of short-term rates



Source: *The Manchester School of Economics and Social Studies, Juin 1939*

Hicks on the limits to arbitrage

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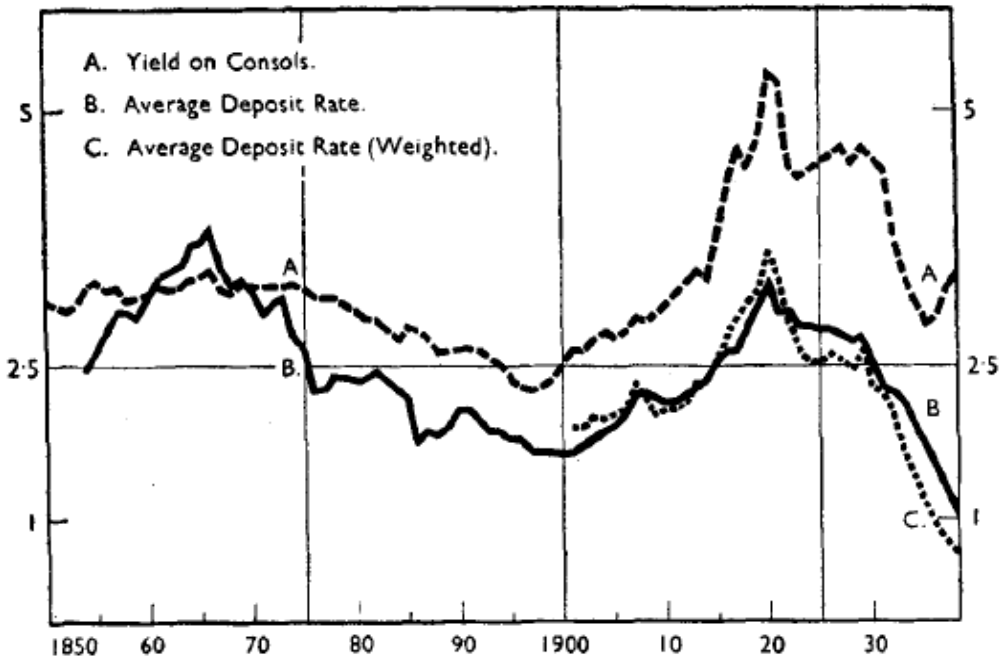

How so?

Source: *The Manchester School of Economics and Social Studies, Juin 1939*

Hicks on the limits to arbitrage

- The central bank
  - announces its monetary policy
  - If it is credible, arbitrages happen and short-term rates are transmitted to long-term rates

> The important part played by banks and public authorities in **determining the system of interest rates** has, of course, a great bearing upon the possibility of controlling that system; a possibility much exploited in recent years. (Hicks, 1939, p.170)

- Hicks's interpretation of risk-premiums
  - The impact of short-term rates over the long-term rate is limited to the extent to which arbitragers are willing to take risks
  - Importance of expectations on future rates of arbitragers (Hicks, 1939)

Hicks on the limits to arbitrage

- Hicks's definition of risk-premiums

Dealer…		t_1	t_2
… of goods	Spot prices	$P_1 = 100£$	$P^e_2 = 100$
	Forward prices	$P_F = 98£$	
On good market, there is a spread between P_1 and P_F because producers prefer hedging their sales at a lower price instead of selling at an uncertain expected spot price.			
… of debts	Spot rate	$P_1 = 100$ $R_1 = 3\%$	$P^e_2 = 100$
	Forward rate	$P_F = 98$ $R_F = 3.2\%$	$r^e = 3\%$
On loan markets, borrowers prefer borrowing forward at a high rate instead of renewing their debt at uncertain spot rates. This why $R_F > R_1$			

Hicks on the limits to arbitrage

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Hicks on the limits to arbitrage

$$(1+R_2)^2 = (1 + r_1)(1 + r^e_2 + \boldsymbol{\rho_1})$$

Hicks's risk-premium

Where $(r^e_2 + \boldsymbol{\rho_1})$ is the forward rate

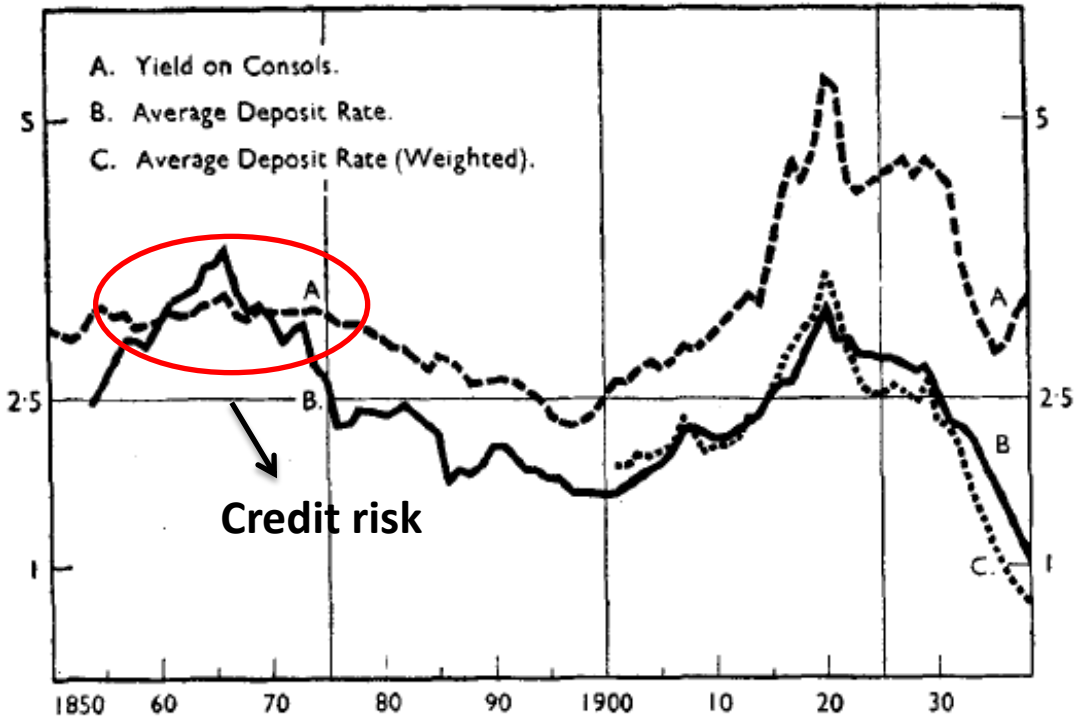
Hicks on the limits to arbitrage

Arbitragers make profit by taking advantage on spreads between the long-term and short-term rates of interest

- Their operations lead to the reduction of the risk premium
- Arbitragers are less risk-adverse than common lenders
- But risk premiums cannot be entirely eliminated

Hicks on the limits to arbitrage

The long-term rate and the long-term preferred habitat of **lenders**



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Hicks on the limits to arbitrage

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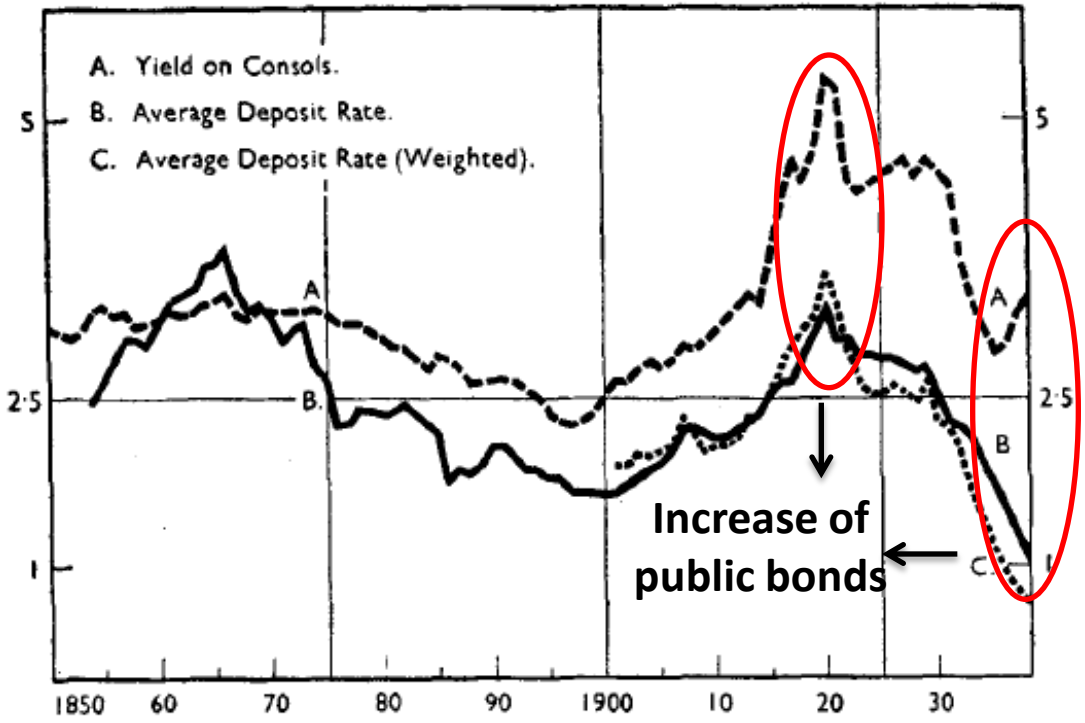

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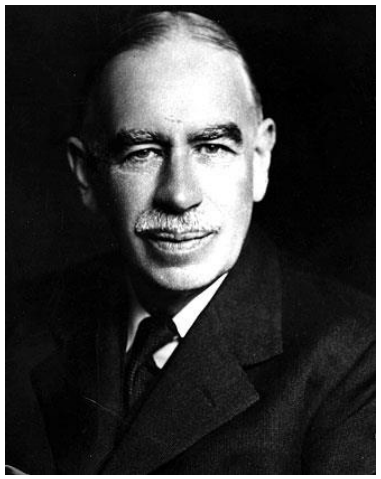
CONCLUSION



Conclusion

Thank You

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