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## From Gibson to Fisher

Writing in 1896, Irving Fisher showed that interest rates could be expected to be related to the rate of change of prices, not the level of prices. He defined the real interest rate as the nominal rate—the rate observed on the market—minus the *anticipated* rate of change of prices.

Writing in 1930, J. M. Keynes termed the "tendency of prices and interest rates to rise together . . . and to fall together . . ." the "Gibson Paradox" and described it as "one of the most completely established empirical facts within the whole field of quantitative economics."

Fisher tried to reconcile the empirical generalization with his theory by interpreting the Gibson phenomenon as reflecting a slow adjustment of anticipations of inflation to actual changes in prices. Unfortunately, that explanation has proved unsatisfactory.

A very different explanation, offered at the turn of the century by Knut Wicksell, and in 1930 by Keynes, was that the Gibson phenomenon reflected the delayed reaction of commercial banks to changes in the real rate of interest. This too has proved unsatisfactory.

The Gibson paradox remains an empirical phenomenon without a theoretical explanation.

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**NOTE:** These remarks are a by-product of our study of "Monetary Trends in the United States and the United Kingdom," wherein we document the unsupported statements made here. We are publishing these remarks simply to call attention to a striking empirical phenomenon. These remarks have not been officially reviewed by the National Bureau's Board of Directors.

The accompanying chart suggests that a dramatic shift in the relation between interest rates and prices occurred in the late 1960s.

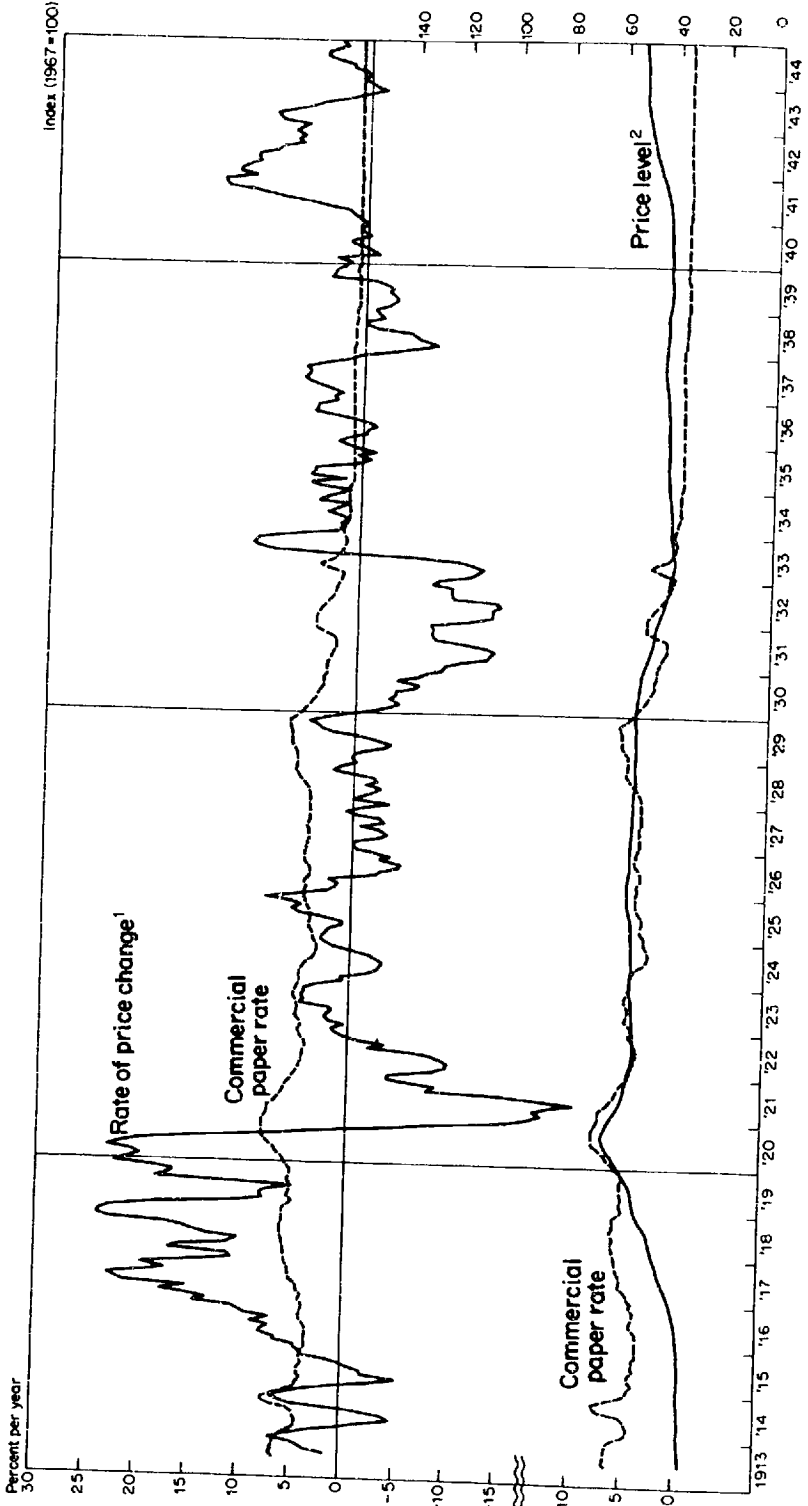
The lower pair of curves shows that there was a very close relation between the commercial paper rate in the United States and the *level* of prices in the 1920s and 1930s and also the 1950s and 1960s—though a shift in the relation occurred between these two pairs of decades. This is simply the Gibson phenomenon. It was alive and well until about 1970. But then it completely disappears in the 1970s.

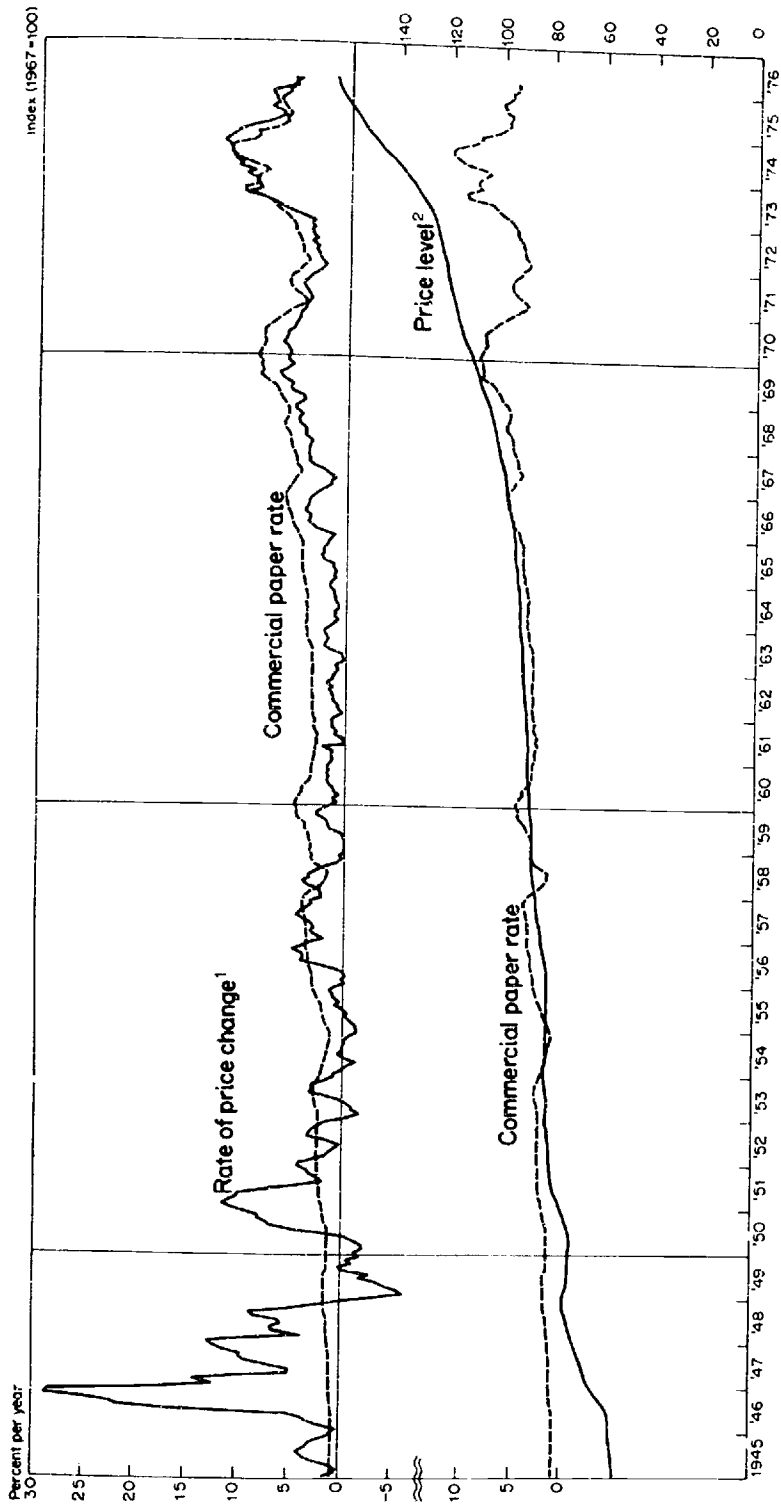
By contrast, the upper pair of curves shows that, before about 1965, there was a negligible relation between the commercial paper rate in the United States and the immediately preceding *rate of change* of prices. No direct Fisher effect. But for the 1970s, there is a very close correlation. 1965–1970 is a transition period—the Gibson phenomenon exists side by side with an increasing correlation between contemporary inflation and interest rates.

Experience has finally caught up with Fisher's theory!

A decade is too short to be sure—but perhaps the Gibson phenomenon is no longer: with us now that the markets have learned their Fisher.

CHART 1 Commercial Paper Rate, Consumer Price Level, and Rate of Consumer Price Change





<sup>1</sup> Continuously compounded annual rates of change of the consumer price index over the previous six months.

<sup>2</sup> Average of the consumer price index over the previous six months.