
The Real Interest Rate and the Insolvency Crisis
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Prologue

This paper updates a presentation which I made at Brighton, England in April 1991. It measures the absolute real rate of return at 4.40%, determined over a 102-year period.

During 1991 an insolvency crisis struck the Life Insurance Industry in the U.S.A. The crisis can be viewed in the light of the absolute real rate of return. Substantial departure from that rate, as occurred in the 1980's, led to unbearable strains.

Introduction

I have been studying the difficult subject of inflation ever since developing the Cost-of-Living Policy for Life Insurance Company of Georgia in 1968. Inflation is now ingrained worldwide, in good times and bad. It is a challenge which needs response. Buyers of financial services products will increasingly feel entitled to protection of purchasing power. Such protection is already required by law in some instances, and this requirement is likely to grow in importance. I have one book and seven published articles dealing with inflation and related subjects; they are identified in the bibliography. My work has brought exciting new insights into the system of the economics/investments world, investment strategy, and asset allocation. It now gains insight into the insolvency crisis.

I. Importance of the Real Interest Rate

The real interest rate is the rate which can or has been earned over-and-above the inflation rate. Its importance can be summarized as follows:

(1) There are prospects of counteracting inflation if a satisfactory real interest rate can be earned.

(2) If a fund is expected to throw off a permanent income stream in constant purchasing power, then only the real interest, equivalent to its total earnings, may be withdrawn; if this happens the fund will continue to consist of "real capital"; this is a point which is crucial to numerous educational and other endowment funds, and should be crucial for pension funds and life insurance products which seek to maintain purchasing power payouts.

(3) A point similar to (2) applies to national social security systems for retirees; such systems can work in the long run only through real interest earnings on the nation's stock of real capital.

(4) If a financial services product is to be denominated entirely in "purchasing power units", then the correct interest rate to use in the funding of it is similar to the real interest rate.

(5) If a satisfactory savings rate is to be expected, savers must receive a reasonable real interest rate over-and-above inflation.

(6) If real rates depart significantly from their long term average, known as the absolute real rate of return, unbearable strains will occur.

II. What Real Interest Rate Has Been Earned?

The real interest rate obviously depends on the degree of inflation and the actual interest rate earned; the latter, in turn, depends on the investment strategy employed. One hundred years of data have been summarized in Exhibit A.

Exhibit A
Actual and Real Interest Rates Earned - USA
(by Investment Strategy)

<u>Strategy</u>	1890-1989 (100 years)		1983-1989 (seven years)	
	<u>Actual</u>	<u>Real</u>	<u>Actual</u>	<u>Real</u>
Retrospective Worst	- .99%	-3.69%	4.43%	.80%
3-Month Treasury Bills	3.88	1.05	7.47	3.74
3-month Commercial Paper	4.33	1.49	8.13	4.37
Long-Term Treasury's	4.71	1.86	13.50	9.56
Corporate Bonds	5.09	2.23	14.60	10.62
Common Stocks	10.50	7.49	18.93	14.80
Prudent Mixture Strategy	10.18	7.18	15.60	11.58
Mean Prudent Mix. Strategy	7.76	4.82	15.21	11.21
All-Out Strategy	12.25	9.19	15.84	11.81
Retrospective Best	<u>15.30</u>	<u>12.16</u>	<u>20.93</u>	<u>16.73</u>
Averages	7.30%	4.38%	13.46%	9.52%

Sources: See Endnotes, Source 11 AFIR paper.

Readers are referred to Source 1, chapter 2 for a detailed discussion of the various strategies. Suffice it to say here that the Mean Prudent Mixture Strategy is a balanced portfolio consisting of 22% three month Treasury's; 22% long-term Treasury's; and 56% common stocks. Henceforth in this article this strategy will be called the "Balanced Portfolio". Real interest rate has been calculated by the formula on page 25 of Source 1.

It is worth noting that all strategies are based on "total yield" - i.e. on purchase January 1 and sale on December 31; all results are arithmetic averages of the results for individual calendar years. The author believes that total yield is the proper way to look at investment results. Furthermore, the year-by-year strategy is in keeping with the consistent object of counteracting current inflation.

If there is one average real rate earned, then it is probably a composite of the rates earned by various strategies - good, bad, and indifferent. The averages in Exhibit A estimate such a result; it was 4.38% for the 100-year period and 9.52% for 1983 - 1989. (The fact that the latter result is much higher will be commented upon later.)

There is an "absolute real rate of return", which is the real rate which money can be expected to earn on average measured over a very long period of time and based on a conglomerate of investment strategies - good, bad, and indifferent. Exhibit A would suggest 4.38% as the absolute real rate of return. The absolute real rate of return has very important implications related to savings and solvency. Also, it is similar to (and may be same as) the "risk free interest rate" used in many actuarial applications.

III. Variations by Era

Not surprisingly, the real interest rate has varied remarkably according to economic era. The ten economic eras shown in Exhibit B were selected on the basis of their widely different inflationary characteristics. I show real rates of return for two strategies: three month bills and the balanced portfolio. I show the former because there is a common propensity to compare inflation with short rates; and the latter because it came close to duplicating the absolute real rate over the 100-year period; furthermore, a balanced portfolio not unlike this one is representative of numerous foundation, endowment, and pension funds.

EXHIBIT B
Real Interest Rates Earned by Economic Era - USA

<u>Era</u>	<u>Comment</u>	<u>Infl.</u>	<u>Real Interest Rate</u>	
			<u>3-month bills</u>	<u>Balanced Portfolio</u>
1890-15	Very low infl	.5%	3.6%	5.2%
1916-20	Very high infl	14.7	-8.9	-8.5
1921-22	Deflation	-8.5	14.1	19.5
1923-30	Stability	-0-	3.6	12.2
1931-33	Deflation	-7.0	8.5	-.3
1934-40	Stability	1.1	-.9	5.0
1941-48	High Infl	7.1	-6.2	-1.4
1949-68	Moderate Infl	1.9	.8	7.7
1969-82	High Infl	7.6	.0	.3
1983-89	Moderate Infl	<u>3.6</u>	<u>3.7</u>	<u>11.2</u>
Averages (100 Years)		2.8%	1.05%	4.82%

Sources: See Endnote c) of original AFIR paper

The two World War periods resulted in high inflation and were devastating to the real interest rate. The high inflation period (1969-82) of recent memory, was also devastating to the real interest rate. Although real interest appears to suffer in high inflationary eras, there are better periods even within such eras; also it is possible to improve real interest in any period, by use of proper investment strategy. Such matters require further study.

In the seven year era, 1983-1989, real returns were unusually high and in marked contrast to those of the preceding era of high inflation (1969-1982). Results were very similar to those of the famous era of stability, 1923-1930 and are the best achieved since that long-ago era. A look at Exhibit B might have led to the conclusion: "The good times can't continue". They didn't, as we shall see.

IV. Recent Variations by Country

Real interest rates also varied by country, but not as widely as the results by era. I have obtained data similar to those shown in Exhibit B for seven countries. The data refer only to the recent period 1983-1989. Real returns from the balanced portfolio were approximated in the case of six countries, but are accurate for the USA.

EXHIBIT C
Real Interest Rates Earned by Country (1983-89)

<u>Country</u>	<u>Infl.</u>	<u>Real Interest Rate</u>	
		<u>3-month bills</u>	<u>Balanced Portfolio</u>
U.S.A.	3.6%	3.7	11.2%
Japan	1.4	3.7	17.8
Germany	1.7	3.0	15.7
United Kingdom	5.1	5.4	11.4
France	5.0	4.3	19.4
Spain	8.3	4.0	13.1
Canada	<u>4.5</u>	<u>5.0</u>	<u>8.8</u>
International Average	4.2%	4.2%	13.9%

Sources: see endnote d of AFIR paper.

Real interest rates arising from 3-month bills were relatively flat by country, despite marked differences in inflation rates. (The United Kingdom might be an exception on the high side. That country is the only one which rather consistently showed a "reverse yield curve", according to published information)

Real interest from the balanced portfolio was very high, reflecting stock market gains in all countries, especially France, Japan, and West Germany; also reflected were substantial market value gains in long-term bonds. (Incidentally, "junk bonds" were not taken into consideration in this article.) The conclusion could again be reached: "The good times can't continue". As we shall see, they didn't.

V. Recent Variations by Calendar Year

Exhibit D shows recent variations by calendar year, for the seven countries combined.

EXHIBIT D Real Interest Rates Earned by Calendar Year - 7 Countries

	<u>Infl.</u>	<u>Real Interest Rate</u>	
		<u>3-Month Bills</u>	<u>Balanced Portfolio</u>
1983	5.8%	4.3%	15.5%
1984	5.3	4.1	12.4
1985	4.6	4.0	22.9
1986	3.0	4.1	20.2
1987	3.0	4.0	- .4
1988	3.2	4.1	14.0
1989	4.7	4.7	12.5
Average (7 years)	4.2%	4.2%	13.9%

Sources: see Endnote e of AFIR paper.

Considerable variation took place in inflation rates across this seven year period, and yet the real interest rate earned from 3-month bills was remarkably stable. There was considerable variation in the balanced portfolio rate; it did especially well in 1985, which was a very good year for stock market gains and was the maximum year for ride-up in long bond market values. The balanced portfolio suffered severely in 1987, which was the year of the stock market "crash".

VI. Strategies to Achieve Real Interest

Data shown in this paper are before the effect of expense and tax. Satisfactory real interest may be improved by using vehicles with low expense rates and which avoid or defer taxes. Investment strategy considerations are even more important, as is made clear by the vast differences between results from 3-month bills and from the balanced portfolio (both of which are fixed strategies). A "trading strategy" which varies asset allocation, by economic period, such as the Prudent Mixture Strategy described in Source 1, may improve results even more.

Epilogue

This paper was largely written in the fall of 1990 and presented at the AFIR meeting in Brighton, England. It turned out to be very appropriate, because the "absolute real rate of return", measured at 4.38% in the paper, was recognized as being similar to (and perhaps identical with) the "risk free rate of return" used in numerous theoretical writings presented at the meeting.

Yields shown in Exhibit A can be updated as follows:

	<u>Actual</u>	<u>Real</u>
1983 - 89	13.46%	9.52%
1990	3.48	- 1.82
1991	17.49	12.74
1890 - 1991 (102 years)	7.36%	4.40%

Exhibit B was highly praised, because it shows the extreme changes which have occurred historically over the last century. As one observer put it: "We're all in the habit of believing that what happened recently is the way that it always will be!"

It appears that the prediction made in the paper: "The good times can't continue" turned out to be correct. 1990 was disastrous. Taking 1990 and 1991 together, real yield was 5.46%, which would represent some return in the direction of the "normalcy" of 4.40%.

During the 1980's, life insurance companies paid or promised very high interest rates on such products as Universal Life, single premium annuity, and especially on Guaranteed Investment Contracts, which became very prominent in the business. GIC interest guarantees reached the level of 16 1/2 % in 1981 and were guaranteed for several years. This represented a real rate of return of about 9%.

It is a thesis of this paper that if real interest rates depart significantly from the absolute real rate of return (now measured at 4.40%) unbearable strains will occur. If the interest payer promises too high a real return he will be forced to default or go out of business; those paying interest to him will themselves default or go out of business. Something like that is responsible for the "insolvency crisis" which faced the life insurance industry in 1991.

An earlier crisis occurred in 1980, but it is now almost forgotten. Negative cash flows were encountered by some companies because of excessive policy loan and cash surrender demands. Asset liquidations became necessary at the worst possible time. Fortunately, inflation and interest rates declined just in time to avert major insolvencies. It was a close call. The 1980 situation was the opposite of the 1990 situation. Companies were promising too low a real rate of return (probably negative, because inflation was 13.5%, and the numerous interest-sensitive products (including Universal Life and G.I.C)) had not yet appeared. The unbearable strain in this case was: the public was forced to do negative saving.

In setting interest rates, companies seem mesmerized by long term bond coupon rates. They ignore total yield on bonds. (In 1980 the long term bond coupon rate was 12.23% but total yield, which includes change in market value, was - 4.5%) Companies also seem mesmerized by accounting rules, both statutory and GAAP, which permit long-term amortization of bonds; these accounting rules ignore market value changes. To add to the problem, the much-discussed "C-3 Risk" takes account only of "defaults", and ignores drops in market value. The public, which writes its own rules, is not so mesmerized, especially when considering withdrawal of demand funds.

There were a number of reasons for the insolvency crisis, not excluding bad management. However, a fundamental cause was this: If real interest rates, paid and promised, depart substantially from the absolute real rate of return (4.40%), as they did in the 1980's, unbearable strains will arise, including insolvency.

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