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IRVING FISHER, DEBT DEFLATION, AND CRISES

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This article reconsiders, in the light of the current financial turmoil, Irving Fisher's 1911 theory of financial crises and his 1933 debt-deflation theory of Great Depressions. Particular attention is given to the role of high debt ratios, high leverage ratios, and changes in the purchasing power of money in Fisher's analysis, and to Fisher's compensated dollar plan to stabilize the purchasing power of money. It is argued that indexing the unit of account would accomplish Fisher's goal of stabilization without the practical difficulties of Fisher's compensated dollar plan.

It is the 100th anniversary of Irving Fisher's 1911 book *The Purchasing Power of Money*. But, more important than that, it is a good time, during the current financial turmoil, to reconsider some of his theories again, in light of current events. And I think some of his theories about variations in the purchasing power of money are very important today, have been underappreciated, and are worthy of considering anew.[1]

In that 1911 book, he described a theory of financial crises that tied them to over-borrowing during the expansion phase that preceded the crisis, and to the changes in the purchasing power of money that this expansion causes, then to the collapse in credit and the drop in the price level. This idea reached its best exposition in his 1933 article "The Debt Deflation Theory of Great Depressions." Irving Fisher said there that the causes of all great depressions appear to be "over-indebtedness to start with and deflation following soon after; that where any of the other factors do become conspicuous, they are often merely effects of symptoms of these two."[2]

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[1]A good account of Irving Fisher's legacy can be found in the collection of essays edited by Dimand and Geanakoplos (2005).

[2]Fisher (1933, p. 341).

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Indeed, the role of high debt ratios, and high leverage ratios, has been very much the subject of attention in the current financial crisis, which began in 2007 and continues today. The potential for deflation has been discussed, too, recently but has not been seen, as yet, as a major causal force in explaining the severity of the current crisis. For Fisher, debt and deflation were importantly connected in producing depressions. He wrote:

> Each dollar of debt still unpaid becomes a bigger dollar, and if the over-indebtedness with which we started was great enough, the liquidation of debts cannot keep up with the fall of prices which it causes. In that case, the liquidation defeats itself. While it diminishes the number of dollars owed, it may not do so as fast, as it increases the value of each dollar owed. Then, the very effort of individuals to lessen their burden of debts increases it, because of the mass effect of the stampede to liquidate in swelling each dollar owed.[3]

The initial buildup of debt, Fisher argued, is related to certain changes in psychology, and his analysis anticipated much subsequent discussion in the tradition of behavioral economics:

> The public psychology of going into debt for gain passes through several more or less distinct phases: (a) the lure of big prospective dividends or gains in income in the remote future; (b) the hope of selling at a profit, and realizing a capital gain in the immediate future; (c) the vogue of reckless promotions, taking advantage of the habituation of the public to great expectations; (d) the development of downright fraud, imposing on a public which had grown credulous and gullible.[4]

Fisher made his debt-deflation theory about depressions based on just three observations: the depression of 1837–41, the depression of 1873–79, and the depression he was living through, which began in 1929. He apparently thought that the depression of the 1890s did not rank in severity enough to be included in the list. His theory is, therefore, not based on enough data that any claim could be made for statistical significance.

Some would say that the current financial crisis, since 2007, is evidence against his theory, for it did not entail significant deflation in consumer prices. In fact, the US consumer price index fell 2.1% in the year ending July 2009, but it was an isolated event, caused substantially by a sudden and catastrophic drop in commodity prices. So, one could say that in this event there was not significant deflation. One might hypothesize that the Federal Reserve had learned the lesson that Irving Fisher had taught, and conducted monetary and fiscal policy to prevent the debt deflation that Irving Fisher thought so important.

Still, the rate of annual inflation measured by the consumer price index did fall from the 3.44% average for the four years between September 2004 until the Lehman crisis September 2008, down to 0.70% for the two years from October 2008 to October 2010. If people expected the 2004–08 rate of inflation to continue, then the decline of nearly three percentage points in inflation for the last two years has already, as of this, date magnified the real value of debts by over 5%.

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[3]Ibid., p. 344.
[4]Ibid., p. 349.

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Moreover, if the low inflation is widely expected to continue for a while, it will lower long-term bond yields, amplifying the real value of debts relative to pre-crisis expectations by even more. Declining long-term bond yields push up the real value of long-term debts immediately, even more than the immediate decline in prices affects the real value of money today. The effects on balance sheets are, of course, disruptive to business, to confidence, and, thus, to the aggregate economy.

That is probably enough to give substantial impact to Fisher's debt-deflation theory in the current episode. And it leads to a curious question: why haven't we yet taken on some obvious institutional changes to prevent exactly the same problem from happening again?

The severity of this effect of deflation on the real value of long-term debts is mitigated by call provisions on the debt. These are commonplace in long-term corporate debt. It is particularly notable that in the recent crisis there has been a mortgage refinancing boom. People reduced the otherwise large effect of inflation's falling short of expectations by exercising the call option on their mortgages and moving to a mortgage with a lower interest rate. But, call provisions are not the solution we would invent to deal with instability of purchasing power. Because they are one-sided, protecting borrowers against the risk of declining inflation but not protecting lenders against the risk of increasing inflation, they have the distortionary effect of increasing the cost of borrowing. The call provisions did nothing to protect a serious effect of increasing inflation on investors that occurred with the buildup of US inflation from 1955 to 1980, and the "lesson" that investors learned from that experience must have raised the cost of borrowing since then.

Irving Fisher spent much of his career in advocacy of price indexation schemes and the compensated dollar. And yet, indexation has become exceptional, not the norm.

His biggest success came in advocating inflation-indexed debt. The United States government now has issued indexed debt to a substantial level. As of 2006, Treasury Inflation Protected Securities amounted to $396 billion, or 8.2% of the total federal debt held by the public at that time. The success has not been diminished by the fact that the Treasury has chosen to put most of its additional debt issued during the financial crisis into nominal, unindexed, debt. Treasury inflation protected securities amount, as of March 2012, up to $769 billion, but down to 7.1% of the debt held by the public then.[5]

Unfortunately, the advent of indexed bonds did not come until 1997, eight-six years after *The Purchasing Power of Money* and fifty years after his death. Fisher never lived to see this success of his ideas.

But, even though he did not see the future, Irving Fisher offered a suggestion (1928) why it might take so long and why the public even today could be so lukewarm about public debt. The term he coined was "money illusion." The public does not understand or appreciate public debt. It does not even know that it needs it.

The "money illusion" story has been echoed in the "this time is different" theory that Carmen Reinhart and Kenneth Rogoff have presented in their recent book (2009) analyzing eight centuries of financial crises. The public does not always learn from their parents' or grandparents' crises, and thus are vulnerable to the same mistakes again.

[5]*Treasury Bulletin*, Table FD-2, *passim,* https://www.fms.treas.gov/bulletin/backissues.html.

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Because money illusion is such a problem, and public apathy about indexation so pervasive, Fisher also offered another route (1913) to helping to protect purchasing power. He called it the "compensated dollar." The idea was to issue paper money redeemable in gold, but to have the gold content of the money altered through time so as to preserve its real purchasing power. If this was done, then the public would very naturally write contracts that are defined in real terms.

The concept of a compensated dollar had already been exposited, in 1879, by the astronomer Simon Newcomb, to whom Fisher had already dedicated *The Purchasing Power of Money* because of Newcomb's 1885 statement of the Equation of Exchange. Newcomb, as a scientist, appreciated the importance of good units of measurement, and for him the compensated dollar was just a scientist's idea for applying the same principles of measurement to economics.

The compensated dollar had some conceptual problems. If the public could forecast changes in the price of gold, they might use redemptions of the compensated dollar to arbitrage the markets. But, it is not necessary to actually issue compensated dollars to achieve the core purpose that Newcomb and Fisher addressed. Today, in our modern electronic economy, we do not need to have a hand-to-hand currency of constant value, since we barely use hand-to-hand currency any more. All that we need to do to reduce the impact of inflation or deflation on the economy is to encourage people to rely on indexation more. And, with our efficient electronic payments system with ubiquitous computing, it ought to be very simple to make indexing for all important intertemporal contracts

I have proposed (2003, 2009) that nations adopt an indexed unit of account, like the *unidad de fomento* (UF) that was introduced in Chile in 1967 and that remains in wide use there today, that is sanctioned for use in setting prices and writing contracts. By giving an indexed unit of account a simple name, in their case the UF, they make indexation transparent and as easy as not indexing. Thus, Chile today appears to be the most inflation-indexed economy in the world. With an electronic payments system, payments made in an indexed unit of account can be translated into currency units and executed simply.

I have proposed that the contracts in the United States or the United Kingdom be called "Baskets," referring to the consumer basket that underlies the consumer price index. That way people would know that any contract they write in terms of the Baskets is executed in something real; namely, the market basket that represents our real needs as consumers. One of the great lessons of modern behavioral economics is that framing matters, and so the creation of a simple name for an inflation-indexed unit of account would be a major step forward.

I have argued (1993, 2003) for another simple new product that would effectively protect people against variations in the purchasing power of money, and would have other desirable features as well. Governments should issue, in place of conventional nominal debt, simple shares in their gross domestic products. My colleague Mark Kamstra (2010) and I proposed calling these shares "Trills" and making the shares pay an quarterly dividend equal to a trillionth of that quarter's nominal GDP. Thus, at the current time, a Trill would pay an annual dividend of about $15.00. The dividend would fluctuate through time either because the GDP deflator (a measure of inflation) changed, or because real GDP changed. Any massive changes in the purchasing power of money would be reflected in changes in the nominal values of Trills. The Trills have

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an additional advantage that they are risk-sharing devices for aggregate macroeconomic risk.

At the present time, when the national debt is rapidly increasing in the United States, and in other countries as well, reflecting the financial crisis, it is important to consider such an alternative. By issuing so much of the very imperfect instrument, the long-term bond, the government is saddling taxpayers and investors alike with unnecessary risks. Because of great uncertainty both about the outlook for inflation and about the prospects for real economic growth, it is important not to be issuing fixed nominal debts. It is important to try to design new economic institutions that can minimize arbitrary redistributions of risks and spread existing risks over willing investors as much as possible.

The intellectual outcome of Irving Fisher's 1911 book and his subsequent work along the same lines are still being worked out, and some of its ultimate successes are still in the future. We are still vulnerable to the very uncertainties that Fisher talked about, and we still need to take action against them.

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