

Thomas Edison's Monetary Option

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Abstract

One of Thomas Edison's lesser-known 'inventions' was a "commodity reserve" monetary plan proposed in 1922 to guarantee price stability. Our paper outlines Edison's plan, provides a modern interpretation, and summarizes contemporary comments about his idea.

Edison proposed that U.S. currency should be backed by the agricultural production of American farmers. Money would be injected into the economy by "interest free" loans to farmers and canceled within the year. We show that Edison's plan amounted to farmers selling their produce to the government in exchange for cash and an American call option.

JEL classification: B31, E42, E51

Introduction

In 1922, Thomas Edison publicly introduced his latest invention – a new type of money, a commodity-backed currency that he believed was the long-term solution to America’s monetary woes. “I want to cast the variable out of money. This gold money is not good enough. It’s a fiction.”, he boldly proclaimed.¹

According to Edison: “...the relative value of the earth’s produce appears to be constant, a money unit representing basic commodities and nothing else would be equally constant, that...and further, since the relative value of the earth’s produce is constant there is no reason why the farmer should not finance himself, as the gold miner does, simply by turning his output into money directly.” (*New York Times*, 1922, emphasis in original).

While Edison was far from first to propose a commodity-backed currency he did propose something unique and distinguishable from plans advocated before and after.² The purpose of this paper is to ground Edison’s plan in the monetary thinking of the day,

¹ See the Special Features section of the July 16 1922 *New York Times*. The plan was explained in an article by **Garet Garrett** followed by an analysis by Mr. Garrett.

² His plan has some similarities to the “Sub-Treasury” plan proposed in the 1880s by C.W. Macune and others (Hicks, 1928). The authors thank Steven C. Hammes for making this connection. Commodity backed currencies became a subject of some academic interest over the next several decades with a series of articles by Clark (1933), Benjamin Graham (1937), Frank Graham (1940), Beale, Kennedy, and Winn (1942), Hayek (1943), Friedman (1951), Nash (2001), and Boyle (2002). Few of these authors even mention, let alone explicitly analyze Edison’s plan, although Benjamin Graham does approvingly cite him (Graham 1937 p. x). Most of these later works deal with a “composite” commodity currency in which the monetary unit is backed by a fixed ratio of different commodities.

analyze his plan, and present heretofore unseen contemporary comments he received on his plan.

Monetary Thought in the 1920s

New monetary proposals were not particularly unusual in the early part of the 20th Century. Monetary issues had been at the forefront of public debates since the introduction of greenbacks and even the creation of the Federal Reserve System failed to put the issue to rest.³ To the public, given the erratic performance of the post-World War I U.S. economy, the monetary system seemed as unstable as ever. In addition to dramatic busts and booms in economic performance, the price level rose by nearly 100% in the five years prior to 1921, followed by 11% deflation in 1921, and another 7% decline in prices in 1922.

Solutions to this instability came from all corners. From academe, solutions were grounded in two long-standing and distinct approaches to monetary issues, the Banking School and the Currency (or quantity theory) School.⁴ J. Laurence Laughlin was the leading American proponent of the former and it was still the operating philosophy of most officials in the Federal Reserve.⁵ Crucial to this approach are the convertibility of the medium of exchange into a monetary standard, e.g. a fixed amount of gold, and the

³ See Mehrling, 2002, on the monetary debates that led up to the formation of the Federal Reserve System.

⁴ See Mehrling 1997 and Laidler 1999. Following Laidler we include adherents to “real bills” in the Banking School.

⁵ Of course, one of Laughlin’s students, H. Parker Willis, was instrumental in drafting the House version of the act creating the Federal Reserve System. In the WWI period, Willis was the Board’s first Secretary, and he was its first Director of Research.

banking system's *passive* provision of currency through the extension of credit on goods in production.

The best known advocate of the quantity theory was Irving Fisher. He argued that monetary mismanagement created price level instability and price level instability caused output fluctuations. Hence, a rule assuring price level stability through the changing gold value of the dollar, determined by the general level of prices, was "...sufficient, for stabilization of business activity in general" (Laidler, 1999, page 185). Thus, Fisher argued that the central bank should *actively* manage the money supply in order to attain and maintain stability of the general level of prices.

Other proposals came from non-academics. Keynes' "great Trinity of crankdom" of Taylor J. Peddie, Arthur Kitson, and Major Clifford H. Douglas (Skidelsky, 1995, page 416) independently proposed variants of fiat money plans.⁶ Carl Strover, a lawyer from Chicago, published *Monetary Reconstruction* in 1922 advocating a fiat currency system. These (and other) advocates of fiat money schemes were sometimes derisively referred to as "unsound money men" and "inflationists".⁷

⁶ Kitson was influential in British monetary debates and the work of Major Douglas influenced political movements in the Canadian and American mid-west.

⁷ See Irving Fisher, *Stable Money: A History of the Movement*, 1934, for a thorough exposition of the many monetary proposals of this time.

If there was one distinguishing feature between these individuals and the academics--of both schools—it was that the latter believed in the gold backing of the currency.⁸

Of all these reformers, no one of that time had the public profile and admiration accorded Edison. Unaware of recent monetary history or of these academic debates, Edison barged onto this tri-fissured plane that featured quarrels among and between: (1) academics and non-academics, (2) proponents of, and those antagonistic to, gold backing for the currency, and (3) those believing that the Federal Reserve should passively respond to the ‘needs of business’ or actively manage the money supply in order to attain a price level target.⁹

Edison’s Proposal

Edison claimed his system would help farmers by stabilizing prices and protect them from opportunistic bankers. In his plan, currency would be backed by specific commodities, yet it avoided the problem of different and varying exchange rates between commodities, a common criticism of such plans (e.g. bimetallism; see Reeve 1943, page 361). At its heart was the belief that for money to be “sound” it had to be based on something of constant value like, in Edison’s opinion, the commodities produced by American farmers.

⁸ And, sometimes more than gold. See Mehrling (1997, page 36) who states that Laughlin “went much farther than the original Banking School...Monetization of *any* form of real property, he insisted, is perfectly safe...and is merely a way of transforming disparate goods into mobile form so that they can meet for exchange in the market.” (emphasis in original).

⁹ This suggests an extension of the matrix in Mehrling, 2002, page 216.

The plan was simple in design but complicated and expensive to put into practice. Edison first outlined his plan in May 1922 in: “A Proposed Amendment to the Federal Reserve Banking System” (Edison, 1922). In this 15-point plan, he proposed that the government issue Federal Reserve currency in the form of interest-free loans to farmers based on the value of newly produced commodities. To obtain this loan the government would store the commodities during the term—for up to one year—of the loan. The per unit price of the commodity determining the amount of the loan would be its average price over the most recent twenty-five year period.

For example, suppose the current world price of a bushel of wheat is \$1.00, the 25-year average price is \$1.50 and that a farmer harvests 1,000 bushels of wheat. Under Edison’s plan this farmer could store the wheat (at no cost to the farmer) in a government warehouse for up to one year in exchange for (1) a mortgage certificate specifying the quality and quantity of the wheat and (2) an equity certificate stipulating ownership of the wheat. Both certificates could be broken into standardized units and were transferable.

The farmer could take the mortgage certificate and exchange it for Federal Reserve currency of 50% of the historic value (in this example, \$750). National Banks would be required to exchange the mortgage certificate for the specified amount of currency. The equity certificate would be necessary to reclaim the wheat. Therefore, the farmer has stored \$1,000 worth of wheat with the government in exchange for a \$750 ‘loan’ and the promise to reclaim the wheat within one year.¹⁰ When the farmer wanted to sell the wheat, he could reclaim it from the warehouse by producing the equity certificate

¹⁰ The government becomes a type of pawn broker but doesn’t have the right to sell the good until after one year.

and \$500. Any unclaimed wheat would be sold at the current market price by the government.

Edison thought he had accomplished his dual goals of stabilizing the currency and helping the farmer. The currency would be backed by something of value and would not, in Edison's opinion, be inflationary because it was self-canceling when the farmer reclaimed the wheat. He believed this self-limiting feature would restrain note issue and that the tie to the historical value of commodities would anchor the value of the currency better than the gold-backed system of the day.

Farmers gained as they were not obligated to sell the wheat immediately upon harvesting in order to obtain funds. Farmers could let the government store their products and obtain an interest free loan for up to 50% of the historically determined value until they chose to sell it. Farmers would therefore not have to sell their product when prices were low and could still obtain funds without being at the mercy of the bankers. Money would be injected into the economy when commodities were put into the warehouse and exactly the same amount of money would be withdrawn when the farmers came to reclaim their products.

As for the operation of the plan, Edison proposed that twelve warehouses be constructed throughout the country (six in the "cotton states" and six in the "wheat states"). He designated thirty-six different commodities that would be eligible for storage with the requirement that these commodities must be newly produced within the United States.¹¹

¹¹ The proposed commodities were cotton, wheat, barley, rye, hay, oats, buckwheat, flaxseed, flax, rice, American sugar, cloverseed, wool, peanuts, onions, soy and lima beans, cow peas, Porto Rico coffee,

Plan Operation

If the plan had been put into practice then it probably would have operated much as Edison envisioned. However, what would have been created was substantially different from the simple “interest free loan” mechanism of the original design. To demonstrate, continue the above example from the point at which the wheat is deposited in the warehouse – the farmer has exchanged 1,000 bushels of wheat for a mortgage certificate worth \$750 and an equity certificate that entitles him to reclaim 1,000 bushels at any time over the next year for \$750.

The mortgage certificate, a transferable financial instrument that by law must be redeemed for a specific amount of currency is, in effect, money. The mortgage certificate is equivalent to currency, in our example \$750.

The equity certificate, a transferable financial instrument that gives the owner the right, but not the obligation, claim a specified amount of a good at a specified price is, in effect, an American call option.¹² The equity certificate is equivalent to an American call option with an expiry date of one year and a strike price equal to the value of the mortgage certificate. In our example, the farmer ‘sells’ his 1,000 bushels to the

linseed, linen, almonds, English walnuts, pecans, cheese, tallow, lard, hams, bacon, rosin, bituminous coal, prunes, dried apples, dried apricots, raisins, and degerminated corn.

Twelve of the fifteen points dealt with the specification, location, construction, and operation of the warehouses. Topics Edison seemed more comfortable with.

¹² An “American” call option can be exercised at any point up to the expiration date whereas a “European” option can only be exercised on the expiration date.

government in exchange for \$500 and a one-year call option to buy 1,000 bushels for \$500.

What Edison intended as a plan to provide free storage and interest free loans to farmers is a program that is economically equivalent to the farmer selling his product to the government for cash and a call option – quite ironic for a plan to help “financially naïve” farmers!

Would farmers have used this plan? That depends on the market value of the call option (i.e. the Equity Certificate). The owner of the call option has the right to purchase the specified quantity for the strike price at any point up until the expiration date. On the expiration date, the call option must be worth the world price less the strike price. In the example above, if the world price is \$1300 on the expiration date then the call option must be worth \$550. If the option sells for less than \$550, say \$500, then one could buy 1000 bushels of wheat for \$1250 and immediately sell it for \$1300 locking in a riskless profit. If the owner of the option tries to sell it for more than \$550, say \$600, then there will be no buyers for the option.

Given that the equity certificate could be exercised at any point within one year, arbitrage would ensure that the combined value of the mortgage certificate and the equity certificate would never be less than the world price of the commodity. If the combined value was less, then investors could purchase equity certificates, immediately exercise them and lock in risk-free profits.

Farmers would ‘sell’ their product to the government because at the time of issue the combined value of the certificates would always be above the world price. Users of the product would value the call option because it would lock in a price, allow them to

manage risk, and provide free storage. Speculators would also purchase options depending on their expectations of future prices. The value of the equity certificate would fluctuate for the same reasons options prices fluctuate today (underlying asset price, variance of prices, time to expiry, etc.).

Farmers would use this system even if the world price were never expected to rise above the strike price. Suppose the world price of 1000 bushels of wheat was \$200 and that no one believed the price would rise to \$750 over the next year. Then the equity certificate would be worthless. The farmer would 'sell' his wheat to the government for \$500 and the option would never be exercised. In this case, the twenty-five year average price becomes a price floor.

Edison arbitrarily chose 50% of the 25-year average price. Changing either variable would not have any impact on whether farmers would use the plan; it would only change the value of the call option. Furthermore, the relative level of the 25-year average price to current world price would also have no impact other than changing the value of the call option. In all cases, cash plus the value of the call option would be greater than or equal to the world price.

Under this system, regardless of the world price, farmers are always better off selling their wheat to the government. If a farmer did not want to speculate on future price movement then he could simply sell his equity certificate and walk away. Therefore, Edison would have accomplished his goal of helping the farmer, albeit for very different reasons. Instead of the intended benefit of interest free loans, Edison's plan would have provided a price floor and subsidized storage services.¹³

¹³ There is the possibility of another one-time benefit to farmers. When the plan is first introduced all of the new produced output would go into storage. This would likely cause an increase in the world price as

The program would probably have worked something like the following. After harvest the farmer would take the produce to the government warehouse in exchange for the mortgage certificate (cash) and the equity certificate (call option). The money supply increases accordingly. An organized market would have no doubt quickly developed where the equity certificates could be bought and sold. If the farmer did not want to speculate on the future price of his product, then the farmer would sell the equity certificate. At this point the farmer has effectively sold his produce and has no further obligation to the government.

As mentioned above, one of two groups would buy the certificates. One group would be speculators who would buy and sell certificates throughout the year based on their expectations of future prices. The second group would be users of the product. These users would buy the certificate to lock in a price for when they needed the product. As such, users would be reclaiming the product for a specified price (in our previous example, \$500) throughout the course of the year when they need it and thus the money supply would be reduced accordingly.¹⁴

Example of a Transaction

The call option (i.e. Equity Certificate) is created by the warehouse and then given to the farmer in exchange for the farmer's agricultural product. The warehouse does not set the exercise price; the exercise price is determined by 50% of the 25-year average price of the specific product. The warehouse does not bear any financial liability by the creation of the call option; it simply stores the product and returns it when the option is exercised.

current demanders of the good would have to go to world markets (equivalent to a harvest failure caused by an early frost). As the world price rose the market value of the equity certificate would rise as well.

¹⁴ There is the possibility of a third group, the open market committee of the FED. The impact of this rather intriguing aspect of the plan is, however, beyond the scope of this paper.

At expiry the value of the option is $\text{MAX}(0, P_W - EX)$ where P_W is the current world price and EX is the exercise price. The current market value of the call is a function of length of time till expiry, current interest rates, and the volatility of the price of the product.¹⁵

For example, assume the current price of wheat is \$1.00, the 25-year average is \$1.50, and the (one period) interest rate is 7%. The exercise price will be \$0.75. Using a simplified one-period binominal model where P_W will either be \$1.25 or \$0.80 at the end of the period, a call option on one bushel of wheat will be worth \$0.30. In other words, a buyer would be willing to spend \$0.30 to obtain the right to buy a bushel of wheat for \$0.75 at any time over the next year.

Suppose a farmer stores 1,000 bushels at the warehouse. Assuming the farmer immediately converts the mortgage certificate into cash, the following transactions would be recorded.¹⁶

Warehouse			Farmer			FED		
Assets		Liabilities	Assets		Liabilities	Assets		Liabilities
Wheat	\$1,000	\$750 M.C.	Cash	\$750		M.C.	\$750	\$750 Cash
		\$250 E.C.	E.C.	\$250				
			Inventory	-\$X				

The monetary base increases by the value of the mortgage certificate. The gain or loss from the call option is not recognized until the farmer sells the call option. If the farmer immediately sells the options for market value then he will realize a gain of \$50 and have no further involvement in this transaction.

Farmer	
Assets	Liabilities
Cash	\$300
E.C.	(\$250)

Suppose at expiry $P_W = \$1.25$ and the owner exercises the call options. The transactions would be recorded as follows:

Warehouse		Option Owner	
Assets	Liabilities	Assets	Liabilities
Wheat	(\$1,000)	Cash	(\$750)
Cash	\$750	E.C.	(\$300)
		Wheat	\$1,250

¹⁵ The example will ignore storage costs.

¹⁶ The Equity Certificate is a contingent liability and how exactly that would be depicted on a balance sheet is not entirely clear. For illustrative purposes however we will have the warehouse fully disclose the liability immediately on the books.

The option owner realizes a gain of \$200. Assuming that the Warehouse is required to return cash immediately to the FED the entire transaction is completed with the following transactions.

Warehouse		FED	
Assets	Liabilities	Assets	Liabilities
Cash (\$750)	(\$750) M.C.	M.C. (\$750)	(\$750) Cash

From the warehouse’s perspective after they return the cash to the FED they have no further assets or liabilities. The same is true for the FED. The farmer is gained from the transaction by \$50 and the Option Owner gained by \$200. The taxpayers subsidized the operation of the warehouse.

Contemporary Comments on the Plan

Far from being the stereotypical inventor working alone, Edison aggressively sought the opinions of others no matter what the project. As one biographer writes, “As he invented a system of electric lighting, Edison was simultaneously reinventing the system of invention.” (Israel 1998, pages 167-8.). Edison’s success depended not only on his own creativity and cognitive style but in using a research team to thoroughly vet ideas.

In 1921 and 1922 he thought “on this subject [of money] steadily for several months” (Garrett 1922), writing to Pierre Jay, Chair of the Federal Reserve Bank of New York: “I am studying the whole question starting with the first recorded panics in Europe and to-date, and hope some day to get something out of the Complex which may be of some value, there appear to be many conflicting opinions.”¹⁷ He also stated in the preamble to his “Proposed Amendment” that: “I have approached the matter in the same

¹⁷ Notes handwritten by Edison, April 1922, to an assistant for communication to Jay.

way that I do with a mechanical or other invention, namely, get all the facts as far as possible, and then see what can be done to solve the problem.” (Edison 1922)

What Edison fails to mention is the extensive correspondence he undertook with many of the leading academic and financial figures of the day. He met with Irving Fisher and their on-going correspondence covered everything from Fisher’s latest book on stabilizing the dollar to mutual health concerns. Edison received extensive comments on his plan from two other academic economists, Princeton’s E.W. Kemmerer, and E.M. Patterson from the University of Pennsylvania.¹⁸ W.P.G. Harding, Governor (Chairman) of the Federal Reserve Board and Pierre Jay, Chairman of the New York Federal Reserve, also privately provided evaluations of the plan as did numerous presidents of national banks.

While Edison sought the opinion of these, and other, experts he was not always eager to take their advice: “All new things about money and banking, all the great reforms, come from the outside. I find that in the books.”¹⁹ In fact, when he personally contacted seventeen experts (i.e. his “research team”) with specific questions on his proposal there wasn’t one who provided support. Kemmerer, provided the following analysis:

“The most important single desideratum for sound money...is stability of value, namely of purchasing power...our present system would be greatly improved by...a variable

¹⁸ Edison’s request for input on his plan was not always warmly received from academics. See Hammes and Wills (2004) for an account of some responses.

¹⁹ *New York Times*, July 16 1922. The article by Garrett begins with several Edison quotes including this one.

bullion dollar...as...advocated by Irving Fisher...I do not believe that your plan would provide...for adjusting the supply of currency to the demands of trade necessary for the maintenance of stability of monetary value...The administrative expenses of the plan would be heavy...much more expensive than the Fisher plan and more complicated in its operation.”

Kemmerer also thought that Edison’s plan would be subject to political manipulation:

“Inflation would result...[it would be] politically [im]possible to hold the currency issues down to the basis of the commodity prices of the selected group of commodities for the period of 25 years you mention...and that once made, an endless circle of the type so common in paper money schemes of the kind where money is backed by land, products, government bonds etc., would follow,---more money leading to higher prices and higher prices with the resulting popular inference of monetary scarcity leading to more money.”

Patterson echoes Kemmerer’s concerns:

“The multiple standard...possesses many distinct merits. It does not, however, escape the use of gold as a measure of value...Its chief weakness lies in the fact that it proposes a new and very unsatisfactory way of supplying the community with a medium of exchange...we shall have a badly adjusted volume of circulating medium...your proposal has...this weakness...it would perform the money functions very poorly...very much more poorly than does our present system.”

Neither Kemmerer nor Patterson leaves the slightest chance that Edison can misconstrue their responses as favorable to his proposal. Yet, neither believes that the gold standard is some utopian ideal without flaw, rather, given its drawbacks, they saw it as the best standard for the time.

Comments from the Federal Reserve officials were no more encouraging. Harding comments:

“I do not think that currency issued in this way would be sound currency...The advantages of the gold standard are (1)...universally accepted., (2)...large value in small bulk, and (3) the supply of gold cannot be so greatly increased within a short period of time as to affect the value of that already produced.”

And on convertibility, Pierre Jay wrote:

“...if we built a high wall around this country and had no relations with other countries, we might conceivably get along with money based on goods and with no convertibility into gold. But the minute such a wall is done away with and we enter into relations with foreign countries...we must have some acceptable standard of value with which to pay or receive payment...Gold is now the accepted standard of value throughout the world...”

Four businessmen provided extensive comments to Edison: C.H. Crennan from the Continental and Commercial Bank of Chicago; J.B. Forgan, Chairman of First National Bank of Chicago; D.P. Kingsley President of New York Life Insurance; and C.E. Mitchell, President of National City Bank of New York. Edison found no supporters amongst them. All thought his plan inflationary, destabilizing, and expensive to operate.²⁰

²⁰ Mitchell's response was particularly blunt:

“...we would regard this scheme highly impracticable...it would be very expensive...It would lack elasticity – responsiveness to fluctuating demands...there would be great pressure upon the Congress to enlarge the list of eligible commodities. Every industry would want to have its products included...No method for keeping the currency true to any standard is given...the plan is inferior to the system in use now...”

Garrett's analysis in the *New York Times* is respectful, but equally critical.²¹

Garrett's unstated but clearly implied conclusion was that Edison simply didn't understand the monetary system. He was particularly critical of Edison's claim that his plan could be tried out as an experiment supplementing the current system.

In a reply published by the *Times*, Edison argued that Garrett did not understand his system: "What is really wanted is a single currency based entirely on mortgage loans...To do this it would be necessary to withdraw greenbacks and gold and silver notes, put these in the vaults and then issue a single currency representing loans on property of twice the value...We would then have all the sound currency desired." (*New York Times*, July 17 1922).

Ironically Irving Fisher was much more encouraging. He did not think Garrett's criticism did Edison's plan justice and that the concern that it would be inflationary was premature.²² He added: "...from Garrett's description of your plan, it would seem to me incomplete because of the failure to connect up banking reserves with it, or banking

And this comment from Kingsley summarizes his tone throughout:

"The world has tried many times to drop what you call a "fiction" and substitute so-called 'values' as a basis of money. Such attempts have always failed and always will...Of course the lessons of history mean little to the men who call all history 'bunk'."

Forgan, while negative over-all, did not think the plan necessarily inflationary.

²¹ The editor for the *Times* introduces Garrett as "...a writer of high repute, especially on financial subjects." Garrett's articles were a result of a series of conversations he had with Edison.

²² Correspondence between Fisher and Edison is in Banking 1922, Box 1, folder 21.

deposits.”²³ But he concludes, “I rather think that your plan and Merriam’s completely worked out may ideally be superior to mine...”²⁴

Fisher later expressed disappointment that the only copy of Edison’s plan is from the Garrett article: “I think I understand your plan but what I hoped you would be able to send me is your own most detailed statement of it...My own book on the subject is 300 pages...I have as yet seen nothing authoritative from you describing your plan.” All the evidence indicates that Garrett’s description is a complete description of Edison’s plan.

At a meeting of the Academy of Political Science in 1922 William T. Foster publicly criticized the plan for basing “...the issue of money on total production rather than on the rate of increase, and on past valuations rather than on volume, and on a few commodities rather than on all commodities.” (Foster 1922, page 11). He goes on to argue the plan would be destabilizing and challenged the legitimacy of granting special privileges to any one group of producers.²⁵

Evaluation

It is difficult to assess the impact of Edison’s plan because, as Fisher pointed out, it was incomplete. Edison himself was inconsistent on whether his plan was to supplant or merely supplement the monetary system. It is beyond the scope of this paper to fully

²³ Letter dated July 31, 1922.

²⁴ Fisher was referring to his “compensated dollar” plan and Merriam was a professor at the University of California. An intriguing suggestion from an anonymous referee is that here Fisher is “reveal[ing] his own doubts about the gold standard. “

²⁵ Only Arthur Kitson of Great Britain, who was not one of the original experts that Edison contacted, gave positive comments on his plan. See Hammes and Wills, 2005a.

work out all the implications under different assumptions, especially the implications of using options to control the money supply (Hammes and Wills, 2005b).

Unsurprisingly, it is clear from the comments that no one recognized that the Equity Certificate was an American Call Option. Edison explicitly asked the bankers and academics whether it would be eligible for discount at a commercial bank. All the bankers were emphatic that no bank would discount such paper and that it might actually be against the law to do so. Forgan equated it to a second mortgage.

Where Edison's monetary system fits in within the range of monetary thought of the time is equally challenging to pin down. Edison never refers to different schools of thought and seems blissfully unaware of, or uninterested in, the academic debates still smoldering from the early years of the century.²⁶ While it remains unknown how he chose the seventeen original recipients of his questionnaire, it is highly unlikely that he leaned toward any school of thought or they to him.²⁷

²⁶ As noted by an anonymous referee: "The establishment of the Federal Reserve System...can be understood as the outcome of a decade long (or longer) monetary debate that in 1922 no [academic] one was willing to reopen...the central bank (Benjamin Strong) was just starting to think about how to use the new system for active management domestically while restoring the gold standard internationally. There was no room for Edison in that discussion."

²⁷ We found no evidence that Edison sought out members of one 'school' or another. That he had a longer correspondence with Fisher than any of the others no doubt reflects other common interests (e.g. health) and Fisher's out-going and zealous style. In fact, Fisher unsuccessfully used this opportunity to try and persuade Edison to present his plan to Congress's Goldsborough Committee. So, this short, but intense communication with Fisher should not be construed as Edison favoring the Quantity Theory. Had a 'real-bills man' like H. Parker Willis (who was one of the seventeen to whom Edison initially wrote) been more inclined, he, too, could have engaged Edison at more length (see Hammes and Wills, 2004).

Despite that, Edison's plan has a "real bills" flavor to it with respect to the emphasis on the currency being created by the production of real goods (crops) and then canceled within a specific time period. However, this similarity is more superficial than substantive. The rationale for the Real Bills doctrine is that money would be injected into the economy as the needs of trade expanded which was proxied by the amount of real bills. Therefore, changes in the money supply are positively correlated with changes in current (or near future) production (that the real bills were financing) and the central bank could regulate that growth by the rate at which it discounted real bills.

Under Edison's plan money would be created on completed (or past) production as crops come to the government warehouses, but there is no explicit mechanism for control of the amount of money through a discount rate. Instead, the government must respond passively and automatically according to the volume of crops brought to the warehouses and the twenty-five year average price. There is no additional role of monetary control—which real bills advocates saw as being crucial—for the central bank through manipulation of the discount rate.

Conclusion

Under the onslaught of criticism of his plan, a lack of popular support in response to Garrett's piece in the *New York Times*, lessening public pressure to "do something", and a heavy load of his on-going work, Edison soon gave up the monetary project.²⁸

²⁸ Dorfman, 1959, Vol.4, page 34, cites "sufficient legislation providing credit for farmers" as the reason for Ford's and Edison's lack of further interest. This legislation was the Agricultural Credit Act, passed in early 1923, amending section 13 of the Federal Reserve Act allowing agricultural paper of up to nine

However, he remained convinced he was correct having an assistant write to Irving Fisher on August 7, 1922 (Fisher, 1922):

“This [Edison’s commodity-backed money] is the idea that Mr. Edison has so far been unable to get any bankers or other persons to understand except one. He further thinks that a great many persons seem to be in a rut and their minds refuse to act...This work Mr. Edison says he did for Mr. Ford and he is not highly interested in urging it, but thinks in years to come people will come around to his views.”²⁹

While commentators were justifiably harsh in their criticism of his logic and of his ignoring the public cost of operating this plan, it is less clear that they were correct in their analysis of its implications. In light of the options interpretation of the plan it is not clear that the plan would have been either inflationary or destabilizing. And, of course, all the commentators entirely missed the benefits that would have flowed from the development of additional financial institutions, deeper markets in existing--and newly created markets in--standardized options contracts in the 1920s.

months’ maturity to be eligible for rediscount at Federal Reserve Banks. See Harding (1925), page 222; pps. 238-245.

²⁹ Kitson being the lone exception.

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