KEYNES AND THE DOLLAR IN 1933

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ABSTRACT

On December 1933, John Maynard Keyes published an open letter to President Roosevelt, where he wrote: "The recent gyrations of the dollar have looked to me more like a gold standard on the booze than the ideal managed currency of my dreams." In this paper I use high frequency data to investigate whether the gyrations of the dollar were unusually high throughout this period. My results show that although volatility was pronounced, it was not higher than during October 1931-July 1933. I analyze Keynes writings on the international monetary system in an effort to understand what he meant in his letter. I compare Keynes's "The means to prosperity" with James P. Warburg's plan for a "modified international standard."

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1. **Introduction**

On December 31 1933, *The New York Times* published an open letter from John Maynard Keynes to President Franklin D. Roosevelt. The note contained the sentence that many people remember today: "The recent gyrations of the dollar have looked to me more like a gold standard on the booze than the ideal managed currency of my dreams."[1]

This was a direct reference to the Administration's "gold buying program," launched on October 25 1933.[2] According to this plan, the Reconstruction Finance Corporation (RFC) was allowed to purchase gold at prices determined periodically by the Secretary of the Treasury and the President. As Roosevelt explained in his Fourth Fireside Chat, the purpose of this policy was to raise the international price of gold and, in that way, generate a dollar devaluation and, ultimately, higher commodity prices. The rationale behind the program was given by the theories of George F. Warren, a professor of agricultural economics at Cornell, who after analyzing large volumes of data for over two centuries concluded that there was a close relation between the price of gold and commodity prices.[3]

Most analysts interpreted Keynes words as asserting that during the gold buying program the dollar exchange rate was excessively volatile, and that this volatility was harmful for the recovery.[4] Keynes told the President that it was time to make policy changes. He wrote (see Appendix B):

> "In the field of gold-devaluation and exchange policy the time has come when uncertainty should be ended. This game of blind man's buff with exchange speculators serves no useful purpose and is extremely undignified. It upsets confidence, hinders business decisions, occupies the public attention in a measure far exceeding its real importance, and is responsible both for the irritation and for a certain lack of respect which exists abroad."

In this paper I use high frequency data to analyze the behavior of the dollar in the 1920s and 1930s. I am particularly interested in establishing whether volatility was higher in the last nine weeks of 1933 – the time of operation of the gold buying program –, than during the rest of the

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[1] The New York Times (NYT), December 31, 1933, p. 2 XX. See Appendix B of this paper.
[2] As explained below, there were two phases for the gold buying program. Generally, the second phase, which started in late October, is singled out as "the gold buying program."
[3] Warren and Pearson (1935). For an in depth analysis of the work of George F. Warren and the gold buying program, see Chapter 7 of Sumner (2015). For a discussion of Warren's ideas in the context of the policy views of the early 1930s, see Edwards (2017).
[4] See, for example, Ahmed (2009). See Rauchway (2015) for a comprehensive discussion about this period. See Obstfeld and Taylor (2003) for an analysis that put this era in historical context. See Bordo and Sinha (2016) for the Fed's policy during this period. For an analysis of this period see Eichengreen (1992,) and Eichengreen and Mitchener (2004). See Mitchener and Weidenmeier (2009) for an analysis of the mechanics of the gold standard in a large number of countries in both the center and the periphery. .

period. In the analysis I use weekly data for 1921 through 1936, a time of vast changes in the international monetary system. During this time the U.K. and France returned to the gold standard – in 1925 and 1926 respectively –, the U.K. went off gold (1931), the U.S. imposed a gold embargo and abandoned the gold standard (1933), the London World Conference failed to achieve stabilization (1933), the U.S. devalued the dollar and adopted a new system with a fixed exchange rate relative to gold (1934), and France got off gold (1936). I estimate Markov-switching regressions with regime-dependent variances to identify periods with different exchange rate volatility. For 1921-1936 it is possible to identify three regimes. I find that when the gold buying program was launched the exchange rate moved to the "high volatility" regime, as suggested by Keynes. The extent of turbulence, however, was not higher than in late 1931, immediately after the U.K. got off gold. Moreover, towards the end of the gold buying program, the probability of being in the high volatility regime declined significantly; the exchange rate moved to the "intermediate" regime.

The rest of the paper is organized as follows: In Section 2 I provide some historical background. I describe the gold buying program and I discuss the theories of George F. Warren and his co-author Frank A. Pearson. In Section 3 I present the basic data, and I provide some preliminary analysis. In Section 4 I use Markov switching regressions with regime-dependent variances to analyze whether the extent of volatility during the gold buying program was higher than during other times within the 1926-1936 period. Section 5 deals with Keynes views on the international monetary system in 1933, in light of the empirical findings in this paper. I argue that Keynes's plan at the time was similar to a plan developed by James P. Warburg, a close adviser of President Roosevelt. Finally, Section 6 contains conclusions and closing remarks. There are also two appendixes.

2. <u>The gold buying program of 1933</u>

During his first year in office, President Roosevelt repeatedly stated that one of the most important goals of his administration was to raise commodity prices, which had declined precipitously since 1920. For example, on April 19 1933, after announcing that the U.S. was abandoning the gold standard, he said: [5]

> "The whole problem before us is to raise commodity prices. For the last year, the dollar has been shooting up [this was a reference to the depreciating pound sterling] and we decided to quit competition. The general effect probably will be an increase in commodity prices. It might well be called the next step in the general program."

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[5] Roosevelt (1938), p. 137.

In mid-July commodity prices were much higher than what they had been a month earlier. In four weeks the price of cotton increased by 22%, from 9.4 to 11.5 cents a pound; the price of corn by 42%, wheat by 38%, and rye by a remarkable 55%. In addition, the dollar depreciated very significantly with respect to the pound; the exchange rate went from 4.18 dollars per pound on June 12, to 4.75 on July 12, a depreciation of 12%. In relation to March 3, the day before Inauguration, the dollar had weakened by 30% relative to sterling. There were reasons for the President to be confident and satisfied.

A few days later he suffered a reality check. Suddenly things started to move in reverse. The dollar strengthened swiftly and commodity prices began to fall at a surprisingly rapid clip. Between July 17 and July 31 the price of corn declined by 28%, that of cotton by 15%, and the price of wheat dropped by 24%. During the same period the dollar strengthened by 11% with respect to the pound. It appeared that everything had been an illusion, and that the improvements of the last few weeks were just the handiwork of speculators.

The agricultural lobby reacted with fury to the collapse in prices. FDR was painfully aware of the situation. He feared that if prices didn't increase again soon there would be political riots, with hundreds of thousands of farmers marching on Washington. On July 22, he told one of his aides that he was increasingly concerned about the news of farmers "stopping milk trucks and pouring their contents in the gutters."[6]

During the first half of August 1933 the president met several times with George F. Warren, a professor of agricultural economics at Cornell, to discuss commodity markets. In 1931 Warren and his colleague Frank I. Pearson had published a book, *Prices*, where they had analyzed price behavior for a score of products and countries during more than one hundred years. Their conclusion was that individual commodity prices went up and down because the world's stock of monetary gold increased and decreased through time. This meant that the solution for the deflation was rather simple: the value of monetary gold had to increase dramatically. The easiest ways of doing this, declared Warren, was by increasing the dollar price of gold. Warren and Pearson emphasized that their approach had nothing to do with traditional monetary theory.[7] For them, what the Federal Reserve did was rather irrelevant, as were the quantity theory of money and the equation of exchange. After explaining their basic equation, Warren and Pearson wrote that their analysis "has no relationship to the formula $MV = PT$… No one of [our]… factors correspond to any factor in $MV = PT$."[8]

In mid-August President Roosevelt decided to put Warren's theories to work, and asked Dean Acheson, the Acting Secretary of the Treasury, to "try his hand at a draft (for discussion only) of

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[6] Acheson (1965), p. 174.

[7] In that sense, in spite of some superficial similarities, the Warren view differed significantly from Irving Fisher's "compensated dollar" proposal.

[8] Warren and Pearson (1935), p. 94.

an Executive Order offering to buy newly minted gold for 30 days at a fixed price say $28 an ounce and an offer to sell gold to the arts and dentists et at the same price."[9] At the time the official price of gold was $20.67.

Two weeks later, on August 29, Executive Order No. 6261 was issued. It invoked the economy's state of emergency, and authorized the Secretary of the Treasury to accept newly minted gold for sale on consignment. The metal could be sold to individuals authorized to acquire gold – artists and dentists –, and to foreigners. The purchase price would be "equal to the best price obtainable in the free market of the world after taking into consideration any incidental expenses such as shipping costs and insurance."[10]

By September 29, commodity markets continued to be depressed. The price of corn was 28% lower than on July 15; the prices of cotton, rye and wheat had declined by 13%, 30%, and 21% relative to that date. The plan was not working as George F. Warren had anticipated, and the President decided to make some adjustments and to expand the gold-buying program.

On Sunday October 22, FDR delivered his Fourth Fireside Chat. He opened by summarizing his Administration's accomplishments, and told the American public that things were improving. He asserted that since he had become president 4 million people had found work. He reiterated that the definitive goal of the government was to "restore commodity price levels, [and] to make possible the payment of public and private debts more nearly at the price level at which they were incurred."[11]

Towards the end of the presentation the President said that in order to accomplish the goal of raising commodity prices he was establishing a market for gold in the United States. The Reconstruction Finance Corporation (RFC) would buy newly minted gold at prices determined from time to time by the Secretary of the Treasury and the President. If needed, the RFC would also buy and sell gold in the world market at these prices. After reviewing the President speech, analysts determined that the most important difference between this gold-buying program and the one established on August 29 was that under the original plan gold purchases were at

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[9] Acheson (1965), p. 177-178.

[10] A rough summary of gold-related policies during this period is this: On March 6 a gold embargo was declared; on April 5 people were ordered to sell all their gold holdings to the Federal Reserve at the official price of $20.67 per ounce; on April 19 the President forbade all gold exports and announced that the country was off the gold standard; on June 5 gold clauses on debt contracts were annulled retroactively; on July 3 FDR announced that the U.S. was not going to negotiate with the U.K. and France the "stabilization of the exchanges" within the context of the London Economic Conference. Executive Order No. 6261 may be found in Acheson (1965), p. 258-259. Interestingly, it is not in FDR's Public Papers compilation.

[11] Roosevelt (1938), Vol. 2, p. 426.

ongoing world prices, while the new initiative permitted the government to set any price it wanted and to alter it as frequently as it desired.[12]

On October 25, the first day of the program, the RFC paid $31.36 per ounce of gold, 27 cents above the world price. During the next 45 days or so, FDR, with George F. Warren's assistance, determined every morning the price at which the RFC would buy gold during that day; almost always at a premium over the world price. In Figure 1 I present the daily RFC and world prices for gold during October 25 December 31, 1933.

The RFC made its first international purchase on November 1, when it bought a small batch of gold in France at $32.36 an ounce. According to *The New York Times* the size of the deal was not known exactly.[13] As days went by bankers and reporters began to wonder about the scale of the program. The Administration, however, was secretive regarding international transactions.[14] On November 9, Jesse Jones, the Chairman of the RFC, informed the press that since the launching of the program the Corporation had bought 213,000 ounces of newly minted gold domestically. He stated that the amount of gold bought in global markets was modest, but refused to divulge the exact amount.[15] That day the price offered was $33.15 per ounce, 10 cents higher than the international market price. On November 15, an informed source who did not want to be identified stated that to that date purchases abroad had amounted to only $6 million. By late December the RFC was paying $32.61 per ounce of gold.

At the end of 1933, almost coincidentally with the publication of Keynes open letter to the President, the program was effectively ended.[16] On January 30, 1934, and after an intense debate in Congress, the Gold Act of 1934 was signed into law. The next day the President set the new official price of gold at $35 an ounce. The Treasury announced that it was willing to buy and sell any amount of metal at that price, internationally. U.S. residents, however, were not allowed to hold gold. The Gold Acts also created the Exchange Stabilization Fund, originally funded with $2 billion from the governments "profits" from the devaluation of the dollar. This official price of $35 an ounce was in effect until August 1971, when Richard Nixon closed the Treasury's "gold window."

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[12] In order to get around the fact that the official price of gold was still $20.67 an ounce, the RFC paid with its own discounted debentures, which were immediately bought by the Treasury at par. See Acheson (1965).

[13] NYT, "First gold buying puzzling to Paris," November 3, 193, p. 8.

[14] NYT, "Price is advanced on domestic gold," November 4, 1933, p. 8. NYT, "RFC gold buying a 'substantial' sum," November 7, 1933, p. 37.

[15] NYT, "Fluctuations surprise the capital," November 10, 1933, p. 2

[16] Formally, the program continued through January 1934, but there was only one price change, on January 16 from $34.06 to $34.45 per ounce. As I point out below, if I extend the period considered under the program, the results are virtually identical.

3. <u>Dollar gyrations in the 1920s and 1930s: Preliminary Analysis</u>

Figure 2.1 and 2.2 present weekly data for the British pound-dollar and French franc-dollar exchange rates for 1921-1936 (see the Appendix A for data sources). These data are measured as dollars per unit of foreign currency; higher values, then, represent dollar depreciation. Much of the history of the international financial system during this period is captured by these two figures. In Figure 2.1 it is possible to see the U.K. return to the gold standard in May 1925 at the historical parity of $4.87 per pound, and the subsequent abandonment of gold in September 1931. In both figures it is possible to see the depreciation of the U.S. dollar in April 1933. Figure 2.2 for the franc shows the return of France to the gold standard in December 1926 at a much weaker parity than the pre-World War I level, as well as the abandonment of gold by France in March 1936. Figure 2.2 also show the adoption by the U.S. of a new official price of gold – $35 per ounce – on the last day of January 1934.

In the analysis that follows I concentrate on the dollar-pound exchange rate, the variable Keynes referred to in his open *New York Times* letter. The results for the franc yield similar results and are available on request.

Figure 3 presents the weekly percentage change of the pound-dollar exchange rate. Simple visual inspection suggests four chronological phases. (1) A volatile period before the return of the U.K. to gold. This phase goes from January 1921 to April 1925. (2) A (very) tranquil period corresponding to the time when the two countries were on the gold standard, from May 1925 to September 1931. During this phase exchange rate changes were minimal and stayed within the "gold points." (3) A turbulent period following the abandonment of gold by the U.K. in September 1931. This volatile period continued after the abandonment of gold by the U.S. in April 1933, and lasted until late January 1934. Notice that the "gold buying" program takes place towards the end of this phase, and is highlighted by a shade area in Figure 3 (October 25-December 31 1933). And (4), a period of limited variability which took place after the Gold Act was passed by the U.S. Congress on January 30, 1934.

In Table 1 I present descriptive statistics for these four chronological phases, and for the complete period. Two things stand up from these figures: First, the mean weekly change for the dollar-pound rate was highest during the gold-buying program, at just over 1% per week. This captures the fact that one of the goals of the program was, indeed, to raise the exchange rate (i.e. depreciate the USD). Second, during this period the degree of volatility, measured by the standard deviation of percentage changes, was the second highest. It was slightly lower than that in the period immediately following the U.K.'s abandonment of the gold standard (9/21/31 to 10/21/33).

In Table 2 I present a battery of tests for the equality of variances between the gold buying program (October 25-December 31, 1933) and the two phases with market determined rates in

1921-25 and 1931-1933. The results in Panel A indicate that the null hypothesis of equality of variances is rejected under all tests for the comparison of the gold buying program and the period before the U.K. returned to gold (1921-1925). On the other hand, as may be seen in Panel B, the null of equality of variance during the gold buying program and the post-United Kingdom gold period (September 1931 through October 1933) cannot be rejected in three of the four tests.[17]

These results confirm that dollar volatility was high during the gold buying program signaled out by Keynes in his letter. However, they also suggest that it was not higher than during the period comprised between September 1931 and September 1933. That is, according to these preliminary results the system may have been "on the booze" for much longer than Keynes suggested. The purpose of the Section that follows is to analyze these data in greater detail and to investigate whether this preliminary chronological volatility classification is supported by formal analyses.

4. Markov Switching Regressions: Weekly Data, 1921-1936

In this Section I present the results from the estimation of Markov switching regressions with regime-dependent variances to identify periods of different degrees of exchange rate volatility. As noted, I use weekly data for 1921-1936. The aim of this analysis is to determine whether volatility was higher during the gold buying program than during the rest of the off-gold period. The basic Markov-switching model with regime dependent variances has the following form:[18]

$$(1) \qquad dlog\ x_t = \gamma(k) + \sigma(k)\varepsilon_t$$

Where $dlog\ x_t$ is the weekly percentage change of the pound-dollar rate, $\gamma(k)$ is a linear regression function that may depend on the k regimes, ε_t is an iid normally distributed error term, with a standard deviation that is also regime dependent and may exhibit some form of autocorrelation. This type of switching volatility model was developed by Hamilton and Susmel (1994), and has been used by Edwards and Susmel (2001), among others, to analyze exchange rate volatility around turbulent periods. In Markov models the regime probabilities $p(k)$ are assumed to depend on the previous state (Hamilton, 1989):

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[17] Notice that in this comparison the devaluation of the pound on September 21 1931 – which resulted in a negative spike equal to -0.27 –, is part of the post-gold sample. If this specific observation is removed from the sample, and the analysis is started on September 28, the standard deviation for the post-gold period becomes 0.02170, slightly lower than that of the gold-buying program. In this case it is not possible to reject, with any of the four tests, the null hypothesis of equality of variance across these two periods.

[18] See Hamilton (1989), Hamilton and Susmel (1994).

(2) $P(s_t = i | s_{t-1} = j) = p_{ji}(t) = p_{ji}(t).$

We anticipate that in the case at hand there will be, at least, two regimes: one corresponding to the period when both the U.S. and the U.K. were on the gold standard, with very low volatility (from May 1925 through September 1931), and a different state when one of the two nations (or both of them) was off gold. The key question in this analysis is whether it is possible to identify more than one turbulent regime. If this is the case, we are interested in understanding to which of these volatile regimes the gold-buying program belongs to. More specifically, the question is whether the gold buying period corresponds, as Keynes suggests in his letter, to the regime with the highest volatility or whether, on the contrary, it falls in the regime with intermediate volatility.

4.1 *Base case results*

In the base case estimates I allow for a regime-dependent intercept, a lagged dependent variable and regime-dependent variance. The error is assumed to have a common AR(1) term. Hansen likelihood tests indicate that the best characterization of the period under study corresponds to three regimes.[19] The results for the Markov regressions are in Table 3: Regime 1 corresponds to intermediate volatility; Regime 2 to low volatility, and Regime 3 to high volatility. All estimates of the regime-dependent variance, *log (sigma)*, are significant at conventional levels, as are the coefficients for the lagged dependent variables and the common AR(1) term. When slightly different specifications were used, three regimes were still identified and the relative values of the three regimes was maintained (more on this below).

As may be seen in Table 3, the differences in the extent of volatility across the three regimes are significant: the estimated variance during the high volatility regime is 7.3 times higher than the estimated variance for the intermediate volatility regime. The latter is, in turn, 8.4 times higher than the estimated variance during the tranquil period.

Table 4 provides a summary of the transitional probabilities and the regimes' duration. As may be seen, the diagonal probabilities are very high, indicating that there is significant regime persistence. This Table also shows that there is a 17.5% probability that if the system is in the high volatility regime, the following week it will be in the intermediate volatility one. The probabilities of moving from some degree of volatility (either intermediate or high) to tranquility, or vice versa, are very low. As anticipated, the low volatility regime has the longest expected duration, at 139 weeks. The expected duration of high volatility regimes is 18.2 weeks, and that of intermediate volatility is only 5.7 weeks.

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[19] Hansen (1992, 1994). See Edwards and Susmel (2001) for a discussion of this test.

Figure 4 contains the smoothed regime probabilities corresponding to the base-case estimates. As expected, the low volatility regime (Regime 2) is correctly identified as the period when both nations were on the gold standard and the exchange rate moved within the gold points. Also, as expected, the post-Gold Act of 1934 period – when a new official price of gold in the U.S. was set at $35 an ounce – corresponds to intermediate volatility; during this period the pound was still off gold and fluctuated according to market forces (although the British intervened from time to time through their Exchange Equalization Account, established in mid-1932). As may be seen, the period between September 1931 and January 1934, shifts, several times, from intermediate to high volatility, and back to intermediate. In addition, and as is shown in greater detail below, the system moves into high volatility at the beginning of the gold buying period, but towards the end of it, it switches back to intermediate volatility.

In order to analyze in greater detail regime switches during the latter part of 1933, in Figure 5 I zoom on the probabilities for the intermediate and high volatility regimes between August 1 and December 31, 1933. For expository reasons I have excluded the low volatility probabilities; they are mostly zero during these 24 weeks. This Figure shows that the system moved into the high volatility regime during the last week of August, at the time the original gold buying program, which purchased metal at ongoing world prices, was announced and launched (Executive Order No. 6261). It stayed on the high volatility regime until the last week of November, when it switched to intermediate volatility. That is, Keynes was right in pointing out that the gold buying program generated high dollar "gyrations," but what he failed to notice (or to mention) is that towards the end of the period this volatility had abated, and that the pound-dollar rate was back to an intermediate volatility regime. Keynes also failed to mention that although the gold buying program was characterized by high volatility, this was not higher than during other periods around that time. Indeed, as may be seen in Figure 4, the system was also in a high volatility regime during several weeks after the U.K. abandoned gold in September 1931. According to this analysis it is not possible to identify a different regime (with even higher volatility) during the gold buying program.

An interesting question is why volatility declined towards the end of November. The most plausible explanation is that at that time the administration – and possibly FDR himself – realized that the discretionary way in which the RFC purchase prices were determined was generating heightened uncertainty. It was around that time when Jacob Viner wrote a longish memorandum to Henry Morgenthau, Jr. (then the Acting Secretary of the Treasury) where he explained that the gold-buying program was not working as promised. A serious problem, Viner asserted, was that the purchases abroad were too small, and did not really change the international price of gold. In addition, the discretionary changes in the price of gold and the absence of a clear program geared at stabilization were encouraging speculation, and negatively affecting investment decisions.[20] A regression – admittedly with very few observations – of the

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[20] Blum (1959), p. 121. Jacob Viner Papers, Princeton University, Box 49, Folder 1.

probability of being in a high volatility regime on the weekly percentage change of the RFC gold price provides some support to this view. The coefficient of the log differential of the weekly prices for newly minted gold is positive (point estimate 0.182), and marginally significant (t=1.98).

4.2 *Robustness and extensions*

In order to test for the robustness of the results, I estimated a number of Markov-switching regressions with alternative specifications. In particular, I introduced additional regressors, including the one month forward premium in the exchange rate market (see Appendix A for data sources). As may be seen from Table 5, the coefficient for this variable is significantly positive. More important, the results regarding the number of regimes and the relative sizes of the variance in each of them are very similar from those reported in the base case estimates and discussed above, and provide support to the main conclusions of the analysis. The estimated regime probabilities also confirm the conclusions discussed above.

Notice that in Table 5 the forward premium was introduced as a regressor that is not regime-dependent. However, if it is included as depending on the regime, the results are very similar, and don't affect the conclusions in any significant way (results available on request).

Markov switching regressions with regime-dependent variances are not the only method to analyze changing volatility through time; a number of other techniques may be used. An alternative, for example, is to estimate EGARCH models. When this is done – results available upon request – the main conclusions of this analysis are maintained: volatility was high during the earlier part of the gold buying program, but it was not higher than after the U.K. abandoned the gold standard in 1931; in fact, it was somewhat smaller. In addition, the EGARCH analysis also confirms that during the last month of the gold buying program, exchange rate volatility tended to decline significantly.

The analysis presented above may be extended in several ways. For instance, the estimated regime probabilities may be used to analyze the way in which other political and financial developments during these 16 years affected currency markets. For example, it is possible to inquire how the inauguration, and eventual failure, of the London Economic Conference of June-July 1933 impacted on exchange rate instability. Another interesting episode is the end of the intergovernmental wars moratorium in November 1932, and the 1932 Ottawa Conference on imperial preferences. Yet another one is the way in which the creation of the British Exchange Equalization Account in mid-1932 affected exchange rate behavior. All of these are questions for future research.

5. **The Keynes and Warburg plans**

When Keynes wrote his *New York Times* letter he already had a clear idea of the type of international monetary system that he wanted to see in place. He had discussed the problem in a

number of his writings, including *A Tract on Monetary Reform* (1923) *and A Treatise on Money* (1930). But for the purpose of this paper the most relevant exposition of Keynes's ideas is the one he presented in the 1933 pamphlet *The Means to Prosperity*, which reproduced in a revised and enlarged fashion four articles published in the *Times* of London during 1933. It is here where he describes the "ideal managed currency" system of his dreams, and where he lays down the bases of what would eventually become the "Keynes Plan" discussed during the Bretton Woods Conference in 1944.[21]

In 1923, in *A Tract on Monetary Reform,* Keynes wrote what became a famous quote: "In truth, the gold standard is already a barbarous relic… [I]n the modern world of paper currency and bank credit there is no escape from a 'managed' currency, whether we wish it or not…"[22] However, Keynes views evolved, and by late 1932 they were more nuanced. In Chapter V of *The Means to Prosperity* he suggests that all major powers adopt a new standard and create an "international note issue" linked to gold. Keynes wrote: [23]

> "[T]he notes would be gold-notes and the participants would agree to accept them as the equivalent of gold. This implies that the national currencies of each participant would stand in some defined relationship to gold. It involves, that is to say, a *qualified return to the gold standard*."

According to Keynes' plan, central banks would have greater flexibility to undertake countercyclical policies.[24] More importantly, his "international notes" would greatly increase worldwide liquidity, and reduce central bankers' apprehensions about "free gold," or amount of bullion over and above what was required to back the bank's monetary liabilities. Keynes also believed that a once and for all depreciation of "national currencies" with respect to gold – notice the plural, "currencies" – would help increase "loan-expenditure," as central banks would be "be satisfied with a smaller reserve of international money."[25] In the managed currency system of Keyes's dreams currency values would be linked to the "gold notes," and thus pegged to each other; in this world there would not be excessive gyrations in the pound-dollar rate. It was with respect to this ideal system that Keynes remarked that in late 1933 the dollar was "on the booze."

Keyes plan was similar to a plan developed, somewhat independently, in 1933 by James P. Warburg, a banker and adviser to President Roosevelt. In preparation to the London Economic

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[21] On Bretton Woods and Keynes and Harry Dexter White's confrontations see, for example, Steil (2013).
[22] Keynes (1924), p. 170.
[23] Keynes (1933), p. 30. Emphasis added. Chapter IV contains Keynes proposal for the World Economic Conference. This pamphlet put together (somewhat) revised versions of four articles that Keynes published in The Times of London in March 1933. The gold notes were a precursor of the *Bancor,* the international currency he proposed in the 1940s.
[24] Already in 1932 a number of economists were critical of the Fed for not undertaking counter cyclical policy. See Appendix I in Wright (1932). In mid-1933 a group of Chicago economists made a more specific proposal for reforming the monetary system, which they sent to the Secretary of Agriculture Henry A. Wallace. This scheme received the name of the "Chicago Plan." See Tavlas (1997).
[25] Keynes (1933), p. 20

Conference – which was inaugurated on June 12, 1933 –, Warburg drafted a proposal for a new "international standard" to be adopted by all nations. Gold would continue to be at the center of the global system, but the rules of the game would be different. There would be more flexibility and bullion itself would not be physically shipped from place to place. Silver would also have a role; up to 20% of central bank reserves could be maintained in the white metal. There would be no gold clauses, which tied debt contracts to the price of gold, and the "cover ratio" would be reduced significantly in every country. The proposed new cover ratio was 25%, which in the U.S. represented an important reduction relative to the existing 40%. This "modified gold standard" would reestablish exchange rate order and would allow exporters, importers, bankers and investors to plan ahead their international businesses. Every country would declare a new parity and exchange rates would be pegged to each other. Competitive devaluation would be ruled out, and with the lower cover ratio central banks would have the ability to undertake expansive monetary policy during downturns, and thus avoid cycles of deflation. [26]

It was not until late January 1934, with the passage of the Gold Act that the U.S. moved in the direction suggested by Keynes and Warburg. Indeed, as the results reported above indicate (Figure 4), after that date exchange rate volatility switched to the intermediate regime and stayed there until the end of the sample. The world, however, would have to wait until 1944 and the Bretton Woods conference to start moving in the direction of a new international standard with managed currencies that was closer to Keynes's "dreams."[27]

6. **Concluding Remarks**

The analysis presented in this paper shows that during the early weeks of the U.S. gold-buying program of 1933, exchange rate volatility increased significantly, as pointed out by Keynes in his open letter to FDR; indeed according to my estimates at the end of August 1933 the system moved from intermediate to high volatility regime. However, the results show two additional features of this period not mentioned by Keynes. (1) During the gold-buying program volatility was not higher than immediately after the UK abandoned the gold standard in September 1931. In fact, it was somewhat lower. In that sense, exchange rates may have been "on the booze" for longer than what Keynes pointed out. (2) Towards the latter part of the gold-buying program exchange rate instability declined significantly, with the system moving decisively from a high volatility regime to an intermediate volatility one. This move was related to a change in policy by the RFC regarding the purchase prices of gold. As noted, these results are robust to the specification of the Markov switching regressions. They are also maintained if alternative volatility techniques, such as EGARCH models, are used.

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[26] Warburg (1934), p. 111-113. On the London Conference, see Edwards (2017).

[27] In 1892, German economist Julius Wolf wrote a memorandum for the International Monetary Conference in Brussels where he suggested a world international system with bank notes linked to gold, which were to be deposited at a clearing house that was supposed to work in a way similar to the Universal Postal Union. This plan was a clear predecessor to the Keynes, Warburg and White plans. For details see Haines (1943).

Appendix A
Data Sources

Spot exchange rates: Paul Einzig, *The Theory of Forward Exchanges*, Macmillan, London, 1937, Appendix I.

Forward exchange rates: Paul Einzig, *The Theory of Forward Exchanges*, Macmillan, London, 1937, Appendix I.

World price of gold: George F. Warren and Frank A. Pearson, *Gold and Prices*, Wiley, 1935, Table 9, page 169.

RFC price of gold: George F. Warren and Frank A. Pearson, *Gold and Prices*, Wiley, 1935, Table 8, page 168.

Appendix B:
Keynes Open Letter to President Roosevelt

2 XX THE NEW YORK TIMES, SUNDAY, DECEMBER 31,

FROM KEYNES TO ROOSEVELT: OUR RECOVERY PLAN ASSAYED

The British Economist Writes an Open Letter to the President Finding Reasons, in Our Policies, for Both Hopes and Fears

In the following open letter to the President, a noted British economist comments on the Roosevelt program. Mr. Keynes, a fellow of King's College, Cambridge, is a member of the Economic Advisory Council and secretary of the Royal Economic Society. He was the chief representative of the British Treasury at the Peace Conference.

An Open Letter.

By JOHN MAYNARD KEYNES.

Copyright, 1933, by the North American Newspaper Alliance, Inc.

London, Dec. 30.

Dear Mr. President:

YOU have made yourself the trustee for those in every country who seek to mend the evils of our condition by reasoned experiment within the framework of the existing social system.

If you fail, rational change will be gravely prejudiced throughout the world, leaving orthodoxy and revolution to fight it out.

But if you succeed, new and bolder methods will be tried everywhere, and we may date the first chapter of a new economic era from your accession to office.

This is a sufficient reason why I should venture to lay my reflections before you, though under the disadvantages of distance and partial knowledge.

Opinion in England.

At the moment your sympathizers in England are nervous and sometimes despondent. We wonder whether the order of different urgencies is rightly understood, whether there is a confusion of aims, and whether some of the advice you get is not crack-brained and queer.

If we are disconcerted when we defend you, this is partly due to the influence of our environment in London. For almost every one here has a wildly distorted view of what is happening in the United States.

The average City man believes you are engaged on a hare-brained expedition in face of competent advice, that the best hope lies in your ridding yourself of your present advisers to return to the old ways, and that otherwise the United States is heading for some ghastly breakdown. That is what they say they smell.

There is a recrudescence of wise head-wagging by those who believe the nose is a nobler organ than the brain. London is convinced that we only have to sit back and wait to see what we shall see. May I crave your attention, while I put my own view?

The Present Task.

You are engaged on a double task, recovery and reform—recovery from the slump, and the passage of those business and social reforms which are long overdue. For the first, speed and quick results are essential. The second may be urgent, too; but haste will be injurious, and wisdom of long-range purpose is more necessary than immediate achievement. It will be through raising high the prestige of your administration by success in short-range recovery that you will have the driving force to accomplish long-range reforms.

the prospects or by a lower rate of interest, to create additional current incomes in the hands of their employes, which is what happens when either the working or the fixed capital of the country is being increased; or public authority must be called in aid to create additional current incomes through the expenditure of borrowed or printed money.

In bad times the first factor cannot be expected to work on a sufficient scale. The second factor will only come in as the second wave of attack on the slump, after the tide has been turned by the expenditures of public authority. It is, therefore, only from the third factor that we can expect the initial major impulse.

Now there are indications that two technical fallacies may have affected the policy of your administration. The first relates to the part played in recovery by rising prices. Rising prices are to be welcomed because they are usually a symptom of rising output and employment. When more purchasing power is spent, one expects rising output at rising prices. Since there cannot be rising output without rising prices, it is essential to insure that the recovery shall not be held back by the insufficiency of the supply of money to support the increased monetary turnover.

The Problem of Rising Prices.

But there is much less to be said in favor of rising prices if they are brought about at the expense of rising output. Some debtors may be helped, but the national recovery as a whole will be retarded. Thus rising prices caused by deliberately increasing prime costs or by restricting output have a vastly inferior value to rising prices which are the natural result of an increase in the nation's purchasing power.

Times Wide World.

John Maynard Keynes.

I do not mean to impugn the social justice and social expediency of the redistribution of incomes aimed at by the NRA and by the various schemes for agricultural restriction. The latter, in particular, I should strongly support in princi-

program of public works. I do not blame Secretary Ickes for being cautious and careful. But the risks of less speed must be weighed against those of more haste. He must get across the crevasses before it is dark.

The other set of fallacies, of which I fear the influence, arises out of a crude economic doctrine commonly known as the quantity theory of money. Rising output and rising incomes will suffer a set-back sooner or later if the quantity of money is rigidly fixed. Some people seem to infer from this that output and income can be raised by increasing the quantity of money. But this is like trying to get fat by buying a larger belt. In the United States today your belt is plenty big enough for your belly. It is a most misleading thing to stress the quantity of money, which is only a limiting factor, rather than the volume of expenditure, which is the operative factor.

It is an even more foolish application of the same ideas to believe that there is a mathematical relation between the price of gold and the prices of other things. It is true that the value of the dollar in terms of foreign currencies will affect the prices of those goods which enter into international trade. In so far as an overvaluation of the dollar was impeding the freedom of domestic price-raising policies or disturbing the balance of payments with foreign countries, it was advisable to depreciate it. But exchange depreciation should follow the success of your domestic price-raising policy as its natural consequence, and should not be allowed to disturb the whole world by preceding its justification at an entirely arbitrary pace. This is another example of trying to put on flesh by letting out the belt.

Currency and Exchange.

These criticisms do not mean that I have weakened in my advocacy of a managed currency or in preferring stable prices to stable exchanges. The currency and exchange policy of a country should be entirely subservient to the aim of raising output and employment to the right level. But the recent gyrations of the dollar have looked to me more like a gold standard on the booze than the ideal managed currency of my dreams.

You may be feeling by now, Mr. President, that my criticism is more obvious than my sympathy. Yet truly that is not so. You remain for me the ruler whose general outlook and attitude to the tasks of government are the most sympathetic in the world. You are the only one who sees the necessity of a profound change of methods and is attempting it without intolerance, tyranny or destruction. You are feeling your way by trial and error, and are felt to be, as you should be, entirely uncommitted in your own person to the details of a particular technique. In my country, as in your own, your position remains singularly untouched by criticism of this or the other detail. Our hope and our faith are based on broader considerations.

If you were to ask me what I

PUBLIC WORKS: THE WAY OUT?

Ewing Galloway.

Slum Clearance, a Type of Expenditure Which Mr. Keynes Recommends as the Best Sort of Recovery Measure.

mate solution; but it is not practical politics at the moment, unless you are prepared to talk in terms of an initial value of sterling well below $5 pending the realization of a marked rise in your domestic price level.

Lastly, you can announce that you will control the dollar exchange by buying and selling gold and foreign currencies at a definite figure so as to avoid wide or meaningless fluctuations, with a right to shift the parities at any time, but with a declared intention only so to do either to correct a serious want of balance in America's international receipts and payments or to meet a shift in your domestic price level relative to price levels abroad.

The Favored Policy.

This appears to me your best policy during the transitional period. You would be waiving your right to make future arbitrary changes which did not correspond to any relevant change in the facts, but in other respects you would retain your liberty to make your exchange policy subservient to the needs of your domestic policy—free to let out your belt in proportion as you put on flesh.

In the field of domestic policy, I put in the forefront, for the reasons given above, a large volume of loan expenditure under government auspices. It is beyond my province to choose particular objects of expenditure. But preference should be given to those which can be made to mature quickly on a large scale, as, for example, the rehabilitation of the physical condition of the railroads. The object is to start the ball rolling.

The United States is ready to roll toward prosperity, if a good hard shove can be given in the next six months. Could not the energy and enthusiasm which launched the NRA in its early days be put behind a campaign for accelerating capital expenditures, as wisely chosen as the pressure of circumstances permits? You can at least feel sure that the country will be better enriched by such projects than by the involuntary idleness of millions.

Plenty of Cheap Credit.

I put in the second place the maintenance of cheap and abundant credit, in particular the reduction of the long-term rate of interest. The turn of the tide in Great Britain is largely attributable to the reduction in the long-term rate of interest which ensued on the success of the conversion of the war loan. This was deliberately engineered by the open-market policy of the Bank of England.

I see no reason why you should not reduce the rate of interest on your long-term government bonds to 2½ per cent or less, with favorable repercussions on the whole bond market, if only the Federal Reserve System would replace its present holdings of short-dated Treasury issues by purchasing long-dated issues in exchange. Such a policy might become effective in a few months, and I attach great importance to it.

With these adaptations or enlargements of your existing policies, I should expect a successful outcome with great confidence. How much that would mean, not only to the material prosperity of the United States and the whole world, but in comfort to men's minds through a restoration of their faith in the wisdom and the power of government!

With great respect,

Your obedient servant,

J. M. KEYNES.

NEWFOUNDLAND'S NEW STATUS

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Table 1
Dollar-Pound Exchange Rate, 1921-1936
Weekly Percentage Changes*

	Mean	Median	Maximum	Minimum	Standard Deviation
01/081921 to 4/25/1925	0.00127	0.00046	0.06630	-0.05115	0.00995
5/05/1925 to 9/15/1931	0.00000	0.00000	0.00206	-0.00355	0.00062
9/21/1931 to 10/21/1933	-0.00033	-0.00028	0.10071	-0.25928	0.03315
Gold buying program	0.01004	-0.001923	0.04633	-0.01147	0.02216
Complete period	0.00036	0.00000	0.10070	-0.25921	0.01339

* A positive number denotes a depreciation of the dollar; a negative number is an appreciation of the dollar and a depreciation of the pound.

Table 2
Test of Equality of Variances

A.- Between 01/081921 to 5/25/1925 period, and gold-buying program

Method	df	Value	Probability
F-test	(224, 10)	4.960527	0.0080
Siegel-Tukey		2.822474	0.0048
Bartlett	1	19.90946	0.0000
Levene	(1, 234)	32.61339	0.0000
Brown-Forsythe	(1, 234)	16.44937	0.0001

B.- Between 9/21/1931 to 10/20/1933 period, and gold-buying program

Method	df	Value	Probability
F-test	(10, 107)	2.239431	0.0412
Siegel-Tukey		0.564250	0.5726
Bartlett	1	2.314681	0.1282
Levene	(1, 117)	0.174920	0.6765
Brown-Forsythe	(1, 117)	0.005899	0.9389

TABLE 3
Markov Switching Regression:
1921-1936, Regime-Dependent Variances

Sample (adjusted): 1/29/1921 8/22/1936
Included observations: 813 after adjustments
Number of states: 3

Variable	Coefficient	Std. Error	z-Statistic	Prob.
Regime 1				
C	5.40E-05	5.72E-05	0.944858	0.3447
INTER_POUND(-1)	-0.242835	0.069892	-3.474439	0.0005
LOG(SIGMA)	-5.320473	0.105962	-50.21133	0.0000
Regime 2				
C	1.94E-05	2.46E-05	0.785776	0.4320
INTER_POUND(-1)	-0.343724	0.073102	-4.701950	0.0000
LOG(SIGMA)	-7.459224	0.051695	-144.2939	0.0000
Regime 3				
C	-0.001158	0.002224	-0.520850	0.6025
INTER_POUND(-1)	-0.282052	0.121289	-2.325460	0.0200
LOG(SIGMA)	-3.338908	0.313940	-10.63550	0.0000
Common				
AR(1)	0.332117	0.064297	5.165352	0.0000
Transition Matrix Parameters				
P11-C	2.938974	0.325846	9.019517	0.0000
P12-C	-2.291792	1.057459	-2.167263	0.0302
P21-C	-0.001054	1.96E-05	-53.62954	0.0000
P22-C	5.620594	0.656243	8.564812	0.0000
P31-C	-1.553699	0.416306	-3.732108	0.0002
P32-C	-20.08926	0.056927	-352.8968	0.0000

Mean dependent var	0.000354	S.D. dependent var	0.013479
S.E. of regression	0.013565	Sum squared resid	0.147756
Durbin-Watson stat	2.049301	Log likelihood	3552.688
Akaike info criterion	-8.700338	Schwarz criterion	-8.607827
Hannan-Quinn criter.	-8.664827		

Inverted AR Roots	.33

TABLE 4
Markov Transition Summary:
Transition Probabilities and Regime Duration

Transition summary: Constant Markov transition probabilities and
expected durations
Sample (adjusted): 1/29/1921 8/22/1936
Included observations: 813 after adjustments

Constant transition probabilities:
$P(i, k) = P(s(t) = k \mid s(t-1) = i)$
(row = i / column = j)

	1	2	3
1	0.944939	0.005055	0.050006
2	0.003593	0.992811	0.003596
3	0.174553	1.56E-09	0.825447

Constant expected durations:

	1	2	3
	18.16167	139.0994	5.728931

TABLE 5
Markov Switching Regression:
1921-1936, Regime-Dependent Variances,
Alternative Specification

Sample (adjusted): 1/29/1921 8/22/1936
Included observations: 811 after adjustments
Number of states: 3

Variable	Coefficient	Std. Error	z-Statistic	Prob.
Regime 1				
C	0.000160	0.000316	0.507207	0.6120
INTER_POUND(-1)	-0.259786	0.056558	-4.593273	0.0000
LOG(SIGMA)	-5.336555	0.058729	-90.86681	0.0000
Regime 2				
C	-2.76E-05	3.80E-05	-0.726664	0.4674
INTER_POUND(-1)	-0.376494	0.058864	-6.396056	0.0000
LOG(SIGMA)	-7.487127	0.040911	-183.0090	0.0000
Regime 3				
C	-0.000619	0.001257	-0.492474	0.6224
INTER_POUND(-1)	-0.289452	0.098957	-2.925027	0.0034
LOG(SIGMA)	-3.342148	0.076533	-43.66944	0.0000
Common				
NYFWD1M	0.000859	0.000196	4.375655	0.0000
AR(1)	0.341201	0.046958	7.266057	0.0000
Transition Matrix Parameters				
P11-C	5.592946	0.654975	8.539176	0.0000
P12-C	-0.023410	0.095268	-0.245725	0.8059
P21-C	-17.64594	71.61799	-0.246390	0.8054
P22-C	1.536399	0.325615	4.718461	0.0000
P31-C	-5.182928	0.765087	-6.774299	0.0000
P32-C	-2.875805	0.298437	-9.636229	0.0000

Mean dependent var	0.000351	S.D. dependent var		0.013494
S.E. of regression	0.013676	Sum squared resid		0.149624
Durbin-Watson stat	2.045112	Log likelihood		3555.318
Akaike info criterion	-8.725814	Schwarz criterion		-8.627330
Hannan-Quinn criter.	-8.688006			

Inverted AR Roots	.34

Figure 1: Gold Prices in World Market and in
Gold-Buying Program (Daily Data)

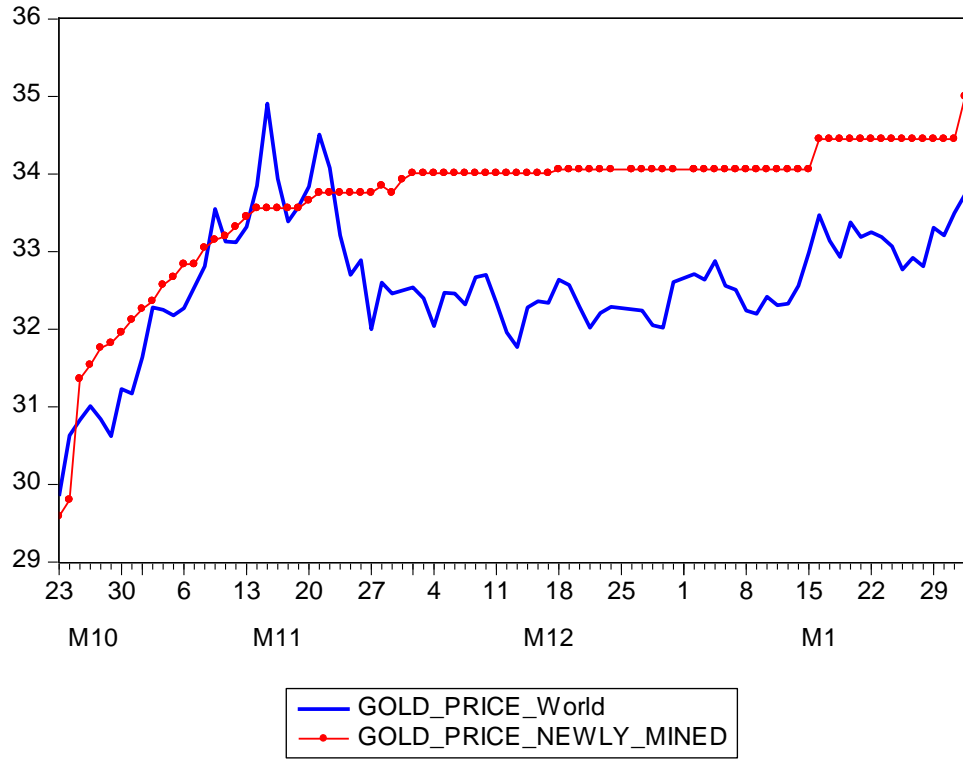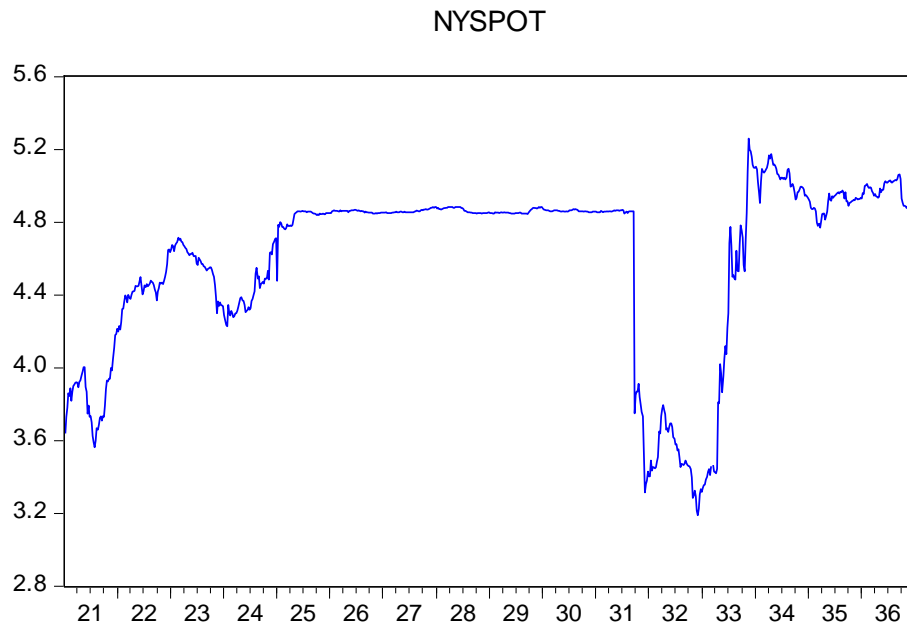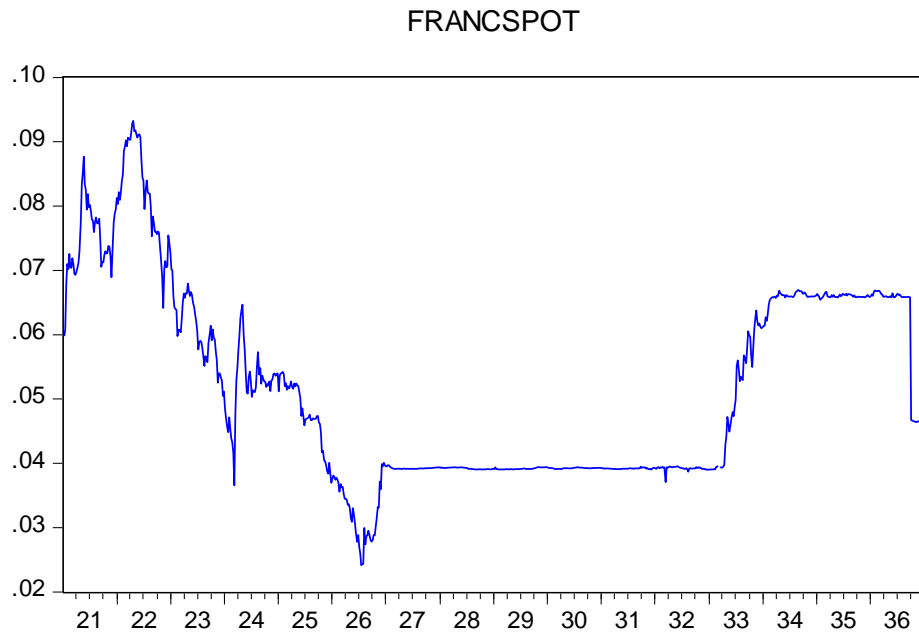*Figure 2.1 Pound-Dollar Exchange Rate, Spot 1921-1936 (Weekly Data)*

NYSPOT

Figure 2.2 Franc-Dollar Exchange Rate, Spot 1921-1936 (Weekly Data)

FRANCSPOT

Figure 3: Weekly percentage changes
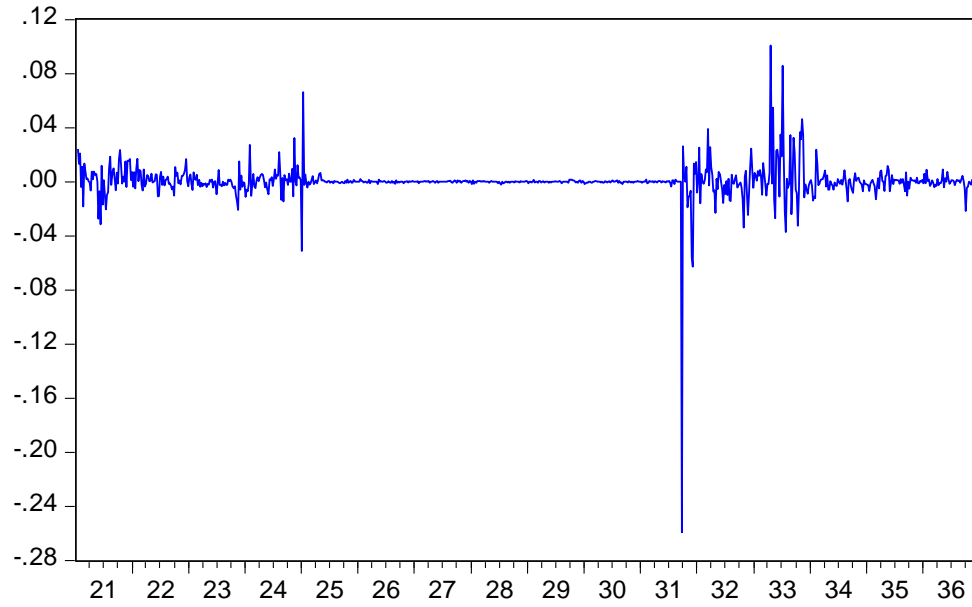## *in Pound-Dollar Rate, 1921-1936*
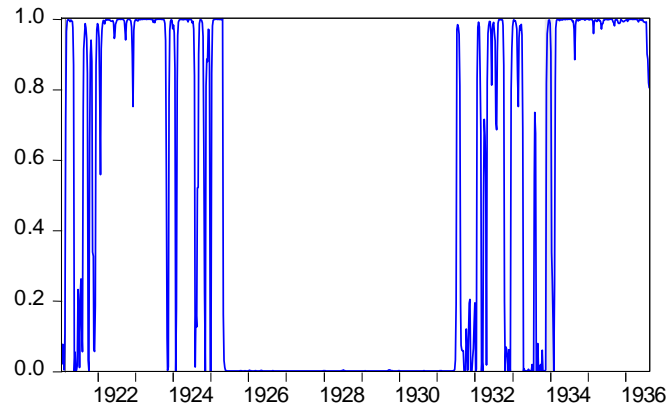
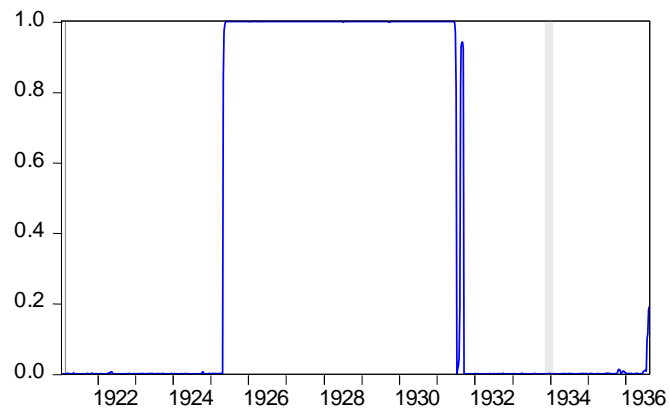Weekly percentage change pound-dollar rate

Figure 4
Regime Probabilities: Weekly Data

P(S(t)= 1): Intermediate Volatility
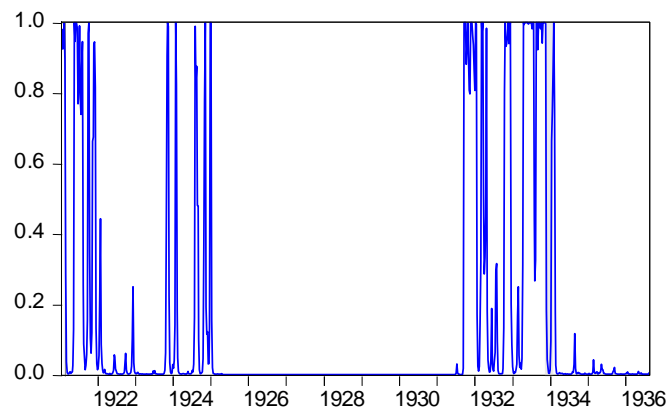

P(S(t)= 2): Low Volatility

P(S(t)= 3): High Volatility

FIGURE 5: Regime probabilities, August-December 1933

Regime 1: Intermediate volatility

Regime 3: High volatility