If You're So Smart: The Currency Trading Record of John Maynard Keynes*

Olivier Accominotti
London School of Economics

David Chambers
Cambridge Judge Business School

September 2014

Abstract

This paper provides the first micro-study of the risks and returns to currency speculation during the 1920s and 1930s. Relying on archival research, we analyze in detail the trading record of one prominent currency speculator of this period: John Maynard Keynes. Our analysis reveals that Keynes used his knowledge of macroeconomics and the international financial and political scene to speculate in foreign exchange markets. His trading strategy was based on a sophisticated analysis of macroeconomic fundamentals in contrast to the simple rules-based strategies characteristic of modern currency markets, namely, the carry trade and momentum. We find that Keynes's risk-adjusted returns were low compared to those on UK stocks and bonds and on the simple carry and momentum strategies. Whilst he exhibited some skill in forecasting the direction of currencies, Keynes found great difficulty in timing his trades. Overall, our findings indicate that Keynes's economic expertise was of little benefit for speculating in currencies.

Keywords: Keynes, currency speculation, carry trade, momentum, naïve rules-based strategies

JEL classification: N20, F31, G12, G15

---

* Olivier Accominotti is Assistant Professor of Economic History at the London School of Economics and Political Science, Houghton Street, London, WC2A 2AE, United Kingdom and CEPR Research Affiliate. Email: o.accominotti@lse.ac.uk. David Chambers is Reader in Finance at the Judge Business School, University of Cambridge, Trumpington Street, Cambridge, CB2 1AG, United Kingdom. Email: d.chambers@jbs.cam.ac.uk. We thank Nick Crafts, Norman Cumming, Elroy Dimson, Marc Flandreau, Tim Guinnane, Mike Humphries, Antti Ilmanen, Naomi Lamoreaux, Richard Levich, Momtchil Pojarliev, Raghu Rau, Pedro Saffi, Lucio Sarno, Maik Schmeling, Christophe Spaenjers, Dick Sylla, Alan Taylor and Niko Wolf, as well as participants at the LBS-Inquire Conference, London FRESH Conference, Northern Finance Association Meeting (Ottawa), and Money Macro and Finance Conference (Durham), and in seminars at ICMA Centre (University of Reading), Humboldt University, NYU Stern School of Business, Warwick University and Yale University, for advice and comments. Christopher Adan, Adam Denny, Carlo Tanghetti and Giorgio Vintani are also thanked for excellent research assistance. All errors are ours.

1. Introduction

The interwar period was the most turbulent in the history of currency markets. The floating exchange rate era of the 1920s was marked by unprecedented foreign exchange volatility and the large depreciation of European currencies, whilst the 1930s are remembered for the successive waves of speculative attacks, which eventually brought down the gold standard system (Eichengreen, 1992). The interwar years also witnessed a major transformation in the practice of foreign exchange trading with the spread of dealings by telegraphic transfer and of the use of forward contracts. A large-scale spot and forward exchange market emerged for the first time in London. Anecdotal evidence from contemporaries suggests that currency trading became a substantial activity starting in the 1920s, as speculators sought to exploit the new profit opportunities associated with floating exchange rates (Einzig, 1937). However, whilst the literature on the causes and consequences of interwar currency instability is prolific, little is known about the risks and returns and the nature of speculating in currencies during this period.

This paper looks at interwar currency markets from an investor perspective and provides the first micro-study of the returns to currency speculation during the 1920s and 1930s. We ask two main questions. First, how profitable was currency speculation during the interwar period and what trading strategies were pursued? Second, we consider more generally what is the value of economic expertise in foreign exchange markets? The uncertainty surrounding the foreign exchange market and choice of regime make the interwar years a particularly intriguing background against which to examine this question.

Our analysis is based on a unique and previously unexploited source: the trading record of one prominent speculator of this period: John Maynard Keynes. Keynes's contributions to exchange rate theory and his writings on exchange rate policy are well known to economists and economic historians. Less well known is that he was also an active currency trader (Moggridge, 1992, Skidelsky, 1992). Between August 1919 and May 1927, and again between October 1932 and August 1939, he made full use of the newly-emerged forward market to bet on the evolution of spot exchange rates. Keynes's trading record provides invaluable insights into the practice of foreign exchange trading at the very onset of modern currency markets. Although anecdotes about his speculative activities abound in the historical literature, this paper is the first to analyze his trading record in detail and in its entirety. Drawing upon archival research and compiling a comprehensive dataset of Keynes's trades, we first describe his approach to currency speculation and explore the motivations behind his currency trading decisions. We then proceed to analyze Keynes's currency trading performance. Using a hand-collected dataset of month-end spot and forward bid and ask quotations for all major currencies of the period, we benchmark his returns against the risk-adjusted

returns available from other assets, stocks and bonds, as well as against two alternative naïve currency strategies whose performance has been widely documented in the modern period. The two strategies are the carry trade (which shorts low-interest rate currencies and goes long high interest rate currencies) and the momentum strategy (which shorts currencies which have recently depreciated and goes long currencies which have appreciated).

Our first finding is that Keynes's currency trading strategy was based on a sophisticated analysis of macroeconomic fundamentals such as expected changes in official interest rates, the inflation outlook, and the level of European reparations and international capital flows. His currency positions were consistent with the currency views he expressed in newspaper articles and other publications at the time. His strategy therefore eschewed trading rules such as carry and momentum in favour of a discretionary approach where he relied on exercising his own judgment.

Our second discovery is that Keynes's performance as a currency trader was relatively poor. Although his strategy yielded positive average returns over the period he traded, these returns were highly volatile. Hence, when benchmarking his risk-adjusted performance against stocks and bonds and then against the simple carry and momentum strategies popular among modern traders, we find that he underperformed. Both strategies achieved Sharpe ratios superior to Keynes' discretionary, fundamentals-based strategy during the 1920s and 1930s. Any investor following these simple strategies would therefore have achieved higher returns while taking considerably less risk than following the advice of Keynes.

Our paper is related to McCloskey's (1988, 1990) conjectures on the value of economic expertise. According to McCloskey, economists' predictions and advice to investors should be considered with skepticism. Economists who can predict exchange rates better than the forward market would avoid sharing such tips with other investors and instead trade to exploit any forward rate mispricing themselves (McCloskey, 1988, p. 395). Hence, upon encountering any expert airing their views, the question arises "If You're So Smart, Why Ain't You Rich?" Our analysis of Keynes' currency trading record provides an ideal case study of the value of the predictions of expert economists. Keynes was undoubtedly the leading expert of his time on currency markets. He published extensively on exchange rate theory and policy in both newspapers and academic journals. He demonstrated both innovative ideas (Chambers and Dimson, 2013) and considerable expertise in trading stocks (Chambers, Dimson and Foo, 2014). One might therefore think that Keynes was particularly well placed to exploit any profitable trading opportunities in exchange rate markets. Furthermore, currency markets are thought to be a truer test of the value of expert knowledge than stock markets both because they are driven by macroeconomic events which are less prone to inside

information and because currency market insiders require such knowledge of the order flows as banks possess and individual currency traders would not.

Our study is also relevant to a large and growing literature in finance on the returns to currency speculation. Until recently, standard finance theory and the risk-neutral efficient market hypothesis assumed that currency trading was a zero sum game and that the expected return from currency speculation was zero. Yet, recent research has demonstrated that currency trading strategies such as the carry trade and momentum have yielded sizable excess returns since the collapse of Bretton Woods in the 1970s (Lustig and Verdelhan, 2007, 2011, Brunnermeier et al., 2009, Burnside et al. 2010, 2011, Jorda and Taylor, 2011, 2012, Menkhoff et al., 2012a, 2012b). Our paper contributes to this literature by exploring the performance of these strategies out of sample, in the 1920s and 1930s. We show that the returns to naïve currency speculation even after accounting for trading costs were also high in the interwar period.

Our finding that Keynes's results trading currencies, whilst profitable, underperformed a range of benchmarks supports the McCloskey conjecture. Where though did Keynes's expertise come unstuck? On the one hand, his predictions about the direction of exchange rate moves generally proved correct in the medium or long term and allowed him to achieve positive cumulative returns in each decade he traded. On the other hand, his difficulties in predicting the precise timing of currency movements forced him to endure substantial losses in both the 1920s and 1930s. This would in all likelihood have made his strategy unattractive to the majority of investors wishing to generate trading profits on a consistent basis. For those relatively few investors possessing a longer time horizon, the very modest Sharpe ratio exhibited by Keynes' currency trading would have been less than compelling. In short, Keynes's expertise on currency issues would not have made most currency investors of the interwar period rich.

The remainder of the paper is structured as follows. Section 2 describes the development of foreign exchange trading in the 1920s. Section 3 discusses our data and sources. Section 4 documents Keynes's currency trading strategy and analyzes his trading style. Section 5 analyzes Keynes's performance as a currency trader and benchmarks his returns against those obtained on other asset classes and on the simple carry and momentum strategies. Section 6 discusses our results. Section 7 concludes.

2. Currency trading in the 1920s and 1930s

2.1. The emergence of modern foreign exchange trading

The decade following WW1 saw a profound transformation of foreign exchange markets and a boom in currency speculation. During WW1, fluctuations in the belligerent countries' currencies

had been dampened through a combination of exchange restrictions and official foreign exchange market interventions. The end of wartime capital controls in Britain in 1919 and the unpegging of exchange rates led to a resurgence of foreign exchange activity with London becoming the major center of trading (Atkin, 2005: pp. 40-41). This renewal was also associated with two institutional evolutions on currency markets. First, transactions in bills of exchange, which were the norm until WW1, were soon replaced by dealings in telegraphic transfers and the modern spot market with which we are familiar today emerged (Einzig, 1937: p.57). At the same time, a large-scale forward currency market was also established in London. Although forward transactions were undertaken before WW1 in such financial centers as Vienna and Berlin (Miller, 1929: pp. 102-103, Einzig, 1937: p. 37-38, Flandreau and Komlos, 2006), the volume of activity was considerably surpassed by London after 1919. Both spot and forward currency deals were conducted by telephone between banks and foreign exchange brokers either executing customer orders undertaken in order to hedge trade or investment transactions, to arbitrage or to speculate (Einzig, 1937: p.85-94).

Foreign exchange trading surged in the mid-1920s, when European currencies depreciated sharply against the US Dollar. Whereas, in the early post-war years, currency speculation was largely the preserve of professional investors, considerable retail investor interest was to emerge thereafter (Keynes, 1923: p. 132, Einzig, 1937: p.69 and 145). According to Einzig, retail speculation boomed in 1923-1924 when "the Forward Market attracted many thousands of gamblers in every country" (Einzig, 1937: p.69). Although contemporary sources claim that currency trading activity was substantial in the 1920s, the precise volume of market turnover in different years remains unknown. An internal document found at the Bank of England archives and dated January 1928 estimated daily foreign exchange turnover on the London market between £4.9 and £5.5 million, equivalent to 30% of British GDP and 20% of the volume of world trade on an annual basis.[1] USD - Sterling £ transactions dominated, representing between 73% and 82% of all transactions. The other major European currencies together accounted for between 7% and 11% of currency turnover.

The mid-1920s were then marked by the stabilization of exchange rates and the return of most European countries to the gold standard. The German stabilization was achieved in 1924 with the help of US credits. Despite Keynes' (1925) criticisms, the British pound returned to gold at its pre-war parity in April 1925 and the French franc and Italian lira were stabilized at devalued rates in 1926 and 1927 respectively. By this time, all major currencies (except the Spanish peseta) had switched from floating to fixed exchange rates (Eichengreen, 1992). As a consequence, the volume of currency trading fell dramatically (Einzig, 1937: p.70).

[1] The estimate of foreign exchange turnover is from Archives, Bank of England, EID3/281, "Approximate amount of foreign currency changing hands on the London market". The GDP estimate and estimate of the volume of world trade for 1928 are respectively from Mitchell (2007) and Maddison (1995). We assume 250 trading days per year.

Currency speculation in the forward exchange market resumed in the 1930s when most countries successively threw away their "golden fetters" following the onset of the Great Depression and switched to a managed floating regime. Britain left the gold standard in September 1931 followed by the United States in April 1933, Belgium in May 1935, and France, the Netherlands and Switzerland in September 1936. Currency trading recovered strongly on the London market following the end of UK Treasury foreign exchange restrictions in March 1932. However, activity remained subdued compared to the 1920s. Both the emergence of a Sterling Bloc, comprising mainly the Dominion and Scandinavian countries, pegging their currencies to sterling and the adoption of exchange controls by Germany and Italy considerably reduced the number of trading opportunities to the currencies of Britain, the United States, Canada, France, the Netherlands, Belgium and Switzerland (Atkin, 2005: 69-72). Attempts were also made by the authorities in London and Paris to enforce embargos on forward exchange transactions undertaken for purely speculative purposes from July 1935 onwards (Einzig, 1937: p.79). Nevertheless, this does not seem to have prevented traders from betting on exchange rates during such episodes as the attack on the Belgian belga of March-May 1935 or the French franc in June-September 1936 (Einzig, 1937: pp.79-80).

2.2. Keynes the currency speculator

John Maynard Keynes was certainly the most famous currency speculator of the interwar period. As an academic, Keynes wrote extensively on currency issues. He was one of the first economists to study the functioning of the new forward exchange market in the early post-WW1 years. In his *Tract on Monetary Reform*, written in 1922 and published in 1923, he analyzed the behavior of forward exchange rates and presented the first explicit formulation of the covered interest parity (CIP) condition as well as empirical evidence on the purchasing power parity (PPP) theory (Keynes, 1923). Keynes is also famous for his strong currency views during the interwar period. The commercial success of his 1919 book, *The Economic Consequences of the Peace*, gave him access to a wide audience beyond academia (Keynes, 1919). He became an active commentator on monetary and exchange rate policies and expressed his opinions in his columns published regularly in the *Manchester Guardian*, *The Economist* and *The Times*. Hence, Keynes shared his pessimism towards continental European economies both in his 1919 book and in several newspaper articles published in the early 1920s. He also famously criticized the British decision to return to the gold standard at pre-war parity in April 1925 and subsequently commented on other currency events such as the French franc stabilization of 1926-1928 and the sterling crisis of September 1931 (Keynes, 1925).

There is also ample anecdotal evidence in the historical literature about Keynes' currency trading activities. Moggridge (1992) and Skidelsky (1992) both tell the story of how he started trading currencies on his own account in September 1919 after his resignation from the Treasury in June. Following the early success of his speculative activities, Keynes then attempted to speculate on a larger scale. Beginning in January 1920, as well as trading on his own account, he traded on behalf of a syndicate, managed together with O.T. Falk and comprising their own capital and that of friends and family (CWKXII: p.5-6). This syndicate soon ran up considerable losses and was closed down in May 1920. However, he remained continuously active trading currencies for his own account across two periods, from August 1919 to April 1927 and from October 1932 to February 1939. The only interruption to his trading coincides with the period of the return to the gold standard.

3. Data

Did Keynes's knowledge of exchange rate theory and of the intimate workings of currency markets make him a successful trader? What currency speculation strategy did he pursue and how did this strategy perform? In order to answer these questions, we construct a comprehensive dataset of his currency trades undertaken for his personal account in the 1920s and 1930s.

Typically, Keynes took out a forward contract to buy or sell a currency and then chose one of three options: (i) to close the position with a spot purchase in the days immediately before the delivery date; (ii) to close the position well before the delivery date; and (iii) to maintain the position by renewing the forward contract. He recorded all his spot and forward purchases in his personal investment ledgers kept in the archives at King's College, Cambridge. In total, we compile 354 currency trades on his personal account. For each spot and forward transaction, we record the date of the transaction, the nominal value of the contract, and the exchange rate versus sterling at which he contracted. For each forward transaction, we also record the date on which delivery was to take place and from the latter we calculate the duration of each of his forwards.

We also compare Keynes's currency positions on his personal account with those of his currency syndicate reconstructed from the weekly balance sheets over the January-May 1920 period. The trading positions undertaken for the syndicate are similar to those undertaken for his own account. In addition, Keynes traded currencies for the endowment of his Cambridge College where he was bursar. Since, he only traded for his college during the 1930s and his trading was dominated by the US dollar/sterling contract, which accounted for 80% of his positions, we choose to concentrate on his record trading for his own account.

Finally, we compare the exchange rates at which Keynes transacted with the closing bid and ask rates quoted on the market both on the transaction day and on the previous day for a random sample of trades in 1935. We find that the differences between the exchange rates at which he transacted and the prevailing market rates are randomly distributed and not statistically significant. Thus, Keynes seemed to obtain the same rates as the average investor in the foreign exchange market.

Table 1 summarizes all his currency trades. For each year, we report the number of trades in each currency, the average sterling value and the average duration in number of days of the nominal forward position. In the 1920s, he mainly traded US dollars (USD), German marks (DEM), French francs (FRF), and Italian liras (ITL) versus the sterling pound (GBP). We do not believe Keynes employed currency overlay strategies. In the 1920s, his stock portfolio consisted largely of UK stocks; in the 1930s, whilst he did have a substantial long position in US stocks, there is no evidence that he pursued an overlay strategy.

[Table 1 about here]

Consistent with our discussion in the previous section, Keynes's investment opportunity set shrank in the 1930s due to the introduction of exchange and capital controls. He only traded 3 currencies, the USD, FRF and NLG against the GBP and his trading was dominated by his USD position. He did not trade the Belgian franc, Spanish peseta or Swiss franc in either the 1920s or 1930s.

In order to mark-to-market Keynes's currency positions and benchmark his returns, we also hand-collect a monthly dataset of spot and forward bid and ask quotations (against sterling) for all main currencies traded in London in 1920-1939: the Belgian franc (BEF), the Swiss franc (CHF), the German mark (DEM), the Spanish peseta (ESP), the French franc (FRF), the Pound Sterling (GBP), the Italian lire (ITL), the Dutch guilder (NLG) and the US dollar (USD). These nine currencies were those for which an active forward market existed in London, according to the leading interwar foreign exchange commentator Paul Einzig (1937: p. 104). Although spot rates were published prior to this date, forward rates were not and so our return estimates start in 1920, the first year in which forward rates become available. Our primary source for exchange rate data is the *Financial Times* and the *Manchester Guardian* supplemented with data from Keynes (1923) and Einzig (1937, pp. 450-481) for 1920-1922. All exchange rates are those for the last trading day of each month, or for the trading day closest to the month-end when none is available. Unfortunately,

we have been unable to uncover any published data on trading volumes in the market to accompany our exchange rate quotes.

Out of a theoretical maximum of 2,115 (9 currencies×235 months), we have data for 1,701 currency-months. The missing currency months occur for two reasons. First, several currencies only enter the sample later in the 1920s as forward exchange quotations became publicly available. Second, a few currencies exit the sample due to the introduction of exchange controls. For example, the German mark is excluded for all 33 months from February 1922 to October 1924. There were no sterling/mark forward quotations during the German hyperinflation period from September 1923 onwards. In addition, the introduction of restrictions on currency trading activities by the German Government in February 1922 made it virtually impossible to trade the German mark in the run-up to hyperinflation.[2] Exchange controls were also introduced in Germany in July 1931, in Spain in May 1931 and in Italy in May 1934.

[Table 2 about here]

Table 2 summarizes the descriptive statistics for each currency in the sample. Excess return and forward discount are defined respectively as the annualized return on buying a currency this month and selling it forward next month before transaction costs and the annualized log difference between the one-month forward rate and the spot rate of a currency in a given month. Excess returns vary between +2.29% for the NLG and -18.40% for the DEM, and forward discounts range between -1.83% (premium) in the case of the ESP and +3.36% for the FRF with most currencies trading at a small discount against the GBP on average. Bid-ask spreads indicate that the foreign exchange market was relatively liquid, the USD and FRF being the most liquid currencies and the ITL and DEM the most illiquid ones.

4. Keynes's FX Trading Strategy

4.1. FX trading positions

In this section, we first describe Keynes's currency trading strategy in the 1920s and 1930s. **Figure 1** displays his cumulative gross position from summing the nominal value of his long and short positions across all foreign currencies in pounds sterling from August 1919 to March 1939. His position fluctuated between zero and £100,000 over 1919-1927, peaking in August 1923. He stopped trading completely in May 1927 and returned to the market only in October 1932.

[2] Between 3 February 1922 and 21 December 1923, 44 measures were enacted to restrict foreign currency trading and related activities in Germany. See Reichsregierung (1924). We thank Carsten Burhop for pointing us towards this source.

Thereafter, the value of his cumulative gross position progressively increased until it reached £250,000 in December 1936. The higher level of activity in the 1930s compared with the 1920s reflects Keynes increased personal wealth which averaged over £150,000 in the 1930s compared to slightly more than £40,000 in the 1920s (CWK XII: 11, Table 3). From December 1936 onwards, he progressively reduced the volume of his position and he definitively stopped trading in March 1939.

[Figure 1 about here]

A total of 343 out of his 354 transactions were in five currencies: the DEM, FRF, ITL, NLG and USD. From January 1920 to May 1927 he traded the DEM, FRF, ITL, and USD and from October 1932 to March 1939 the FRF, NLG and USD. We break down Keynes's monthly positions into long (+) and short (-) by individual currency (**Figure 2**). We infer his long (short) GBP position from his net short (long) position in all other currencies. In 1919-1927 (Panel A), Keynes constantly shorted the French franc, German mark and Italian lira from 1919 to 1925 with few exceptions, whilst his trading of the US dollar appears more tactical. In general, he was long the US dollar and sterling in this period, but briefly adopted a short dollar position in 1921, 1922 and 1924. In 1932-1939 (Panel B), he mainly traded in the US dollar where he alternated between short and long positions. His other trades were short positions in the French franc and the Dutch florin from mid-1933 until September 1936, balanced by a long position in sterling.

[Figure 2 about here]

Figure 3 plots his position in each currency traded along with the relevant spot exchange rate against sterling. His short positions in the French franc, German mark and Italian lira in April and May 1920 proved disastrous as all three currencies strengthened against sterling (**Figure 3 (ii), (iii), (iv)**). However, his resumption of these short positions then proved profitable when all three depreciated. They then continued to be profitable as they fell over the first half of the 1920s, the exception being the German mark, where he closed out his short position in July 1921 being unable to trade this currency in any size. Interestingly, Keynes also interrupted his trading in the French franc during the speculative attack of November 1923-March 1924 and took small long positions in the French franc and Italian lire in July 1926 at the very height of another speculative attack against these two currencies, presumably believing that they had over-depreciated.

When Keynes resumed currency trading at the end of 1932, he initially alternated between short and long positions in the US dollar, French franc and Dutch florin. Having shorted the dollar

in October 1932-February 1933, he closed his position on 2 March 1933, just eight days before the suspension of the US dollar's gold convertibility (**Figure 3 (v)**). Believing the depreciation following departure from the gold standard to be overdone, he went long the dollar between April and June 1933 only to see the currency continue to depreciate. Although he switched to shorting the dollar in July, his positions were of modest size when the exchange rate reached its low of $5.20 against sterling in November. Thereafter, although he consistently adopted a short dollar position increasing to a maximum in December 1936, the pound fluctuated around the $5.00 level.

[Figure 3 about here]

Expecting them to follow the US dollar off gold, Keynes shorted the French franc and Dutch florin from March 1933 to December 1933, only to be frustrated by the franc remaining stable and the florin strengthening (**Figure 3 (vi) and (vii)**). After a pause, he resumed his short positions in July 1934 and consistently added to them until in September 1936 both were eventually devalued and he was able to show a profit on both trades. Keynes immediately closed out his franc and florin positions after the devaluations and did not trade these currencies again in the years that followed.

4.2. Understanding Keynes's strategy

How did Keynes formulate his currency trading strategy? In the following, we review the qualitative evidence from his correspondence in order to identify the motivations behind his currency decisions. We find that he did not rely on any specific trading rule but was a discretionary trader using his personal analysis of macroeconomic fundamentals and monetary policies in order to establish his exchange rate forecasts.

In 1919 and 1920, much of Keynes's correspondence on currencies was with his then investment confidant, syndicate partner and stockbroker O.T. Falk (PP/JMK/SE/2). His exchange of letters with Falk in 1919 and 1920 (King's Archives, PP/JMK/SE/2) clearly illustrates his focus on such macro-economic fundamentals as expected changes in official interest rates, the level of European reparations and international capital flows and the inflation outlook. He also took into account political factors. Hence, when discussing prospects for the German mark in September 1919, he noted that: "Something political will happen in Germany one of these days which will cause foreign holders to unload wildly." (British Library, MS57923, 1 September 1919). Macroeconomic and political factors remained Keynes's primary focus throughout his currency trading career. In February 1932, he produced for the board of a large UK-quoted closed-end fund a detailed investment note on the sterling exchange rate which provides the best example of his

fundamentals-based approach (King's Archives, PP/BM/6/6-18). In it, he calibrates his own expectations, relative to the market consensus, as to future changes in the UK trade account and invisibles account and in capital flows. In addition, his note also discusses the interventionist policies of both the Bank of England and Bank of France and places great weight on the particular willingness of the former to intervene in support of sterling.

Keynes also leveraged his contacts when forming his currency views. For example, one exchange of letters with his close friend and investment partner, O.T. Falk, refers to a private lunch in September 1919 with US diplomats and bankers at the center of international financial negotiations at the Versailles Conference. Falk's impression was that "it [was] less likely than ever that the Americans [would] grant large scale credits to Europe at an early date" (King's Archives, PP/JMK/SE/2/1/13-14). This view confirmed Keynes's own concerns about the performance of European economies and currencies struggling under the reparations burden. Another letter dated June 1924 refers to Keynes having dinner with the director of Westminster Bank (one of the largest British banks), who "gave [him] to understand that the governor strongly sympathise[d]" with the idea of raising the discount rate in order to support sterling in its return to the gold standard (British Library, Add. Ms57923, 20 June 1924). Did his connections deliver him private information? We cannot be sure. However, we do not find in his correspondence any clear evidence that he consistently had privileged access to private information.

Finally, Keynes's correspondence reveals that he was frequently highly confident of his own economic expertise and the accuracy of his exchange rate forecasts. For example, in September 1919, he commented on his decision to go long the US Dollar: "I feel absolutely confident that the right thing is to be bull of dollars, and it is really silly from the purely rational point of view (as distinct from amusement) to plank one's money on anything else whatever. However people may talk, I don't see how anything short of a miracle can keep sterling above 4" (British Library, MS57923, 1 September 1919). In May 1920, just after having endured a dramatic exchange loss on his shorting of European currencies which led to the closure of his currency syndicate, Keynes offered the City financier, Sir Ernest Cassel, with whom he was acquainted the opportunity to join him in a speculative venture consisting in "sell[ing] marks, francs and lire forward". His confidence seemingly unaffected by his recent run of large losses, he wrote to Cassell as follows: "I anticipate very substantial profits with very good probability if you are prepared to stand the racket for perhaps a couple of months" (CWKXII: p.7).

Keynes's forecasts generally proved correct in the medium or long term but there were also a few exceptions. For example, his views on the US dollar once it had come off gold were proven wrong. Just one month before the US devaluation, he offered the following advice to one Australian

investor for whom he consulted on a regular basis: "Taking a slightly longer view, I should expect the dollar to appreciate in terms of sterling rather than otherwise" (King's Archives, PP/BM/1/67-68). The following month, he confessed that "I am still very much in the dark and apart from the opinions in the press have nothing to help me except my own ideas", although he remained "pretty certain that the dollar will be devalued.....not less than 15%" (King's Archives, PP/BM/1/78-79). As of 1934, Keynes also became very confident that France and the Netherlands would at some point leave the gold standard but he recognized the great difficulty in forecasting the timing of large currency moves stating that: "Nothing is more rash than a forecast with regard to dates on this matter. The event when it comes will come suddenly. The best thing is to allow for probability and put little trust in forecasts of the date, whether soon or late" (King's Archives, PP/BM/1/178).

4.3. Did Keynes Influence the Market?

Keynes wrote numerous newspaper and magazine articles on the international financial situation in the interwar years, mainly but not exclusively, in the *Manchester Guardian*, *The Times* and the *Nation and Athenaeum*. In the 1920s, when he was most prolific, his comments regarding the prospects for the continental European economies and their currencies were consistently negative and would have left the reader in no doubt as to his general view. Similarly, his articles in the 1930s were characterized by similarly bearish views on the prospects for the gold standard. Given his rise to prominence following the release of *The Economic Consequences of the Peace* and the many opportunities he then had to air his views in the press, it might be argued that he had more opportunity than most other currency traders to influence the market to the resulting benefit of his own trading performance.

Notwithstanding the clarity with which he articulated his overall view of the international financial scene, it would not, however, have been possible to reconstruct the detail of his discretionary trading approach from his publications. Out of more than 50 articles he penned related to currency issues, only on ten occasions did he give a clear buy or sell signal in respect of the currencies he traded. Furthermore, since none of these ten instances coincided with his having a started a trading position prior to publication of the articles, he could not be accused of trying to influence the currency markets to his pecuniary benefit. In other words, he did not attempt to front-run any of these publications.

Of course it remains possible that Keynes could have influenced the market by other means - the many dinners, speeches and other influential gatherings he attended – which we cannot fully document. If this were true, then our estimate of the extent of his trading skill in the next section would be biased upwards.

5. Keynes's Currency Trading Performance

McCloskey (1988, p. 398) describes Keynes as a poor speculator who "lost money regularly before breakfast". Other authors have noted that his speculative activities provided him with a substantial source of income (CWKXII: p.2) and most recently it has been shown that Keynes was indeed a talented stock trader (Chambers and Dimson, 2013). In this section, we assess Keynes's currency trading performance in detail by comparing him to two different benchmarks. First, we compare his performance against that of the other two main tradable asset classes available to UK investors during this period, namely, stocks, represented by the total return on the equally-weighted 100 Share UK equity index series estimated by Dimson, Marsh and Staunton (DMS) (2002) and bonds, represented by British Consols.[3]

Second, we compare Keynes's performance against two simple currency trading strategies, namely, the carry trade and momentum. The *carry trade* goes long high interest rate currencies and short low interest rate currencies; and the *momentum* strategy goes long currencies which have recently appreciated and short currencies which have recently depreciated. Both strategies were easily implementable by investors and only required them to look at the end of each month at spot and forward exchange rate quotations published in the main British newspapers in order to decide their currency trading positions by ranking currencies by their forward discounts (or interest rate differentials) and by their recent spot rate appreciation.

Recent research in empirical finance has shown that these two naïve rules-based trading strategies have performed particularly well on currency markets in the post-Bretton Woods era (Lustig and Verdelhan, 2007, 2011, Brunnermeier et al., 2009, Burnside et al. 2011, Jorda and Taylor, 2011, 2012, Menkhoff et al., 2012a, 2012b). The outsized returns to these strategies over the last thirty years can be viewed as compensation for the systematic risk factors which exist in currency trading and have therefore become a common way of benchmarking the performance of modern currency managers (Pojarliev and Levich, 2008, 2010, 2012). Hence, we follow the same approach in benchmarking Keynes because the two strategies represented investable alternatives at the time.

[3] Excess return on stocks and bonds are calculated by deducting the 1-month T-bill rate from the raw total return.

5.1. Returns to Carry and Momentum Strategies 1920-39

We compute for the first time the returns to pursuing the same naïve carry and momentum strategies over the 1920-1939 period, both before and after transaction costs.[4] We assume investors could speculate in the nine currencies for which an active forward exchange market existed.[5]

On the basis of spot and forward exchange rate quotations reported in newspapers, we rank these nine currencies at the end of each month by either:

(i) their forward discount (or interest rate differential) against sterling (CARRY); or

(ii) their spot exchange rate appreciation (against sterling) over the preceding 1 month (MOM1) and over the preceding 3 months (MOM3).

For each strategy, we then go long the two highest ranking currencies and short the two lowest ranking currencies in equal proportions on the forward market at the end of each month. We follow the recent literature when estimating the returns to carry and momentum strategies (Lustig and Verdelhan, 2007, Lustig et al., 2011, Menkhoff et al. 2012a, 2012b). **Appendix A** describes the methodology for computing their returns.[6]

The carry strategy is equivalent to borrowing in low interest rate currencies and investing in high interest rate currencies. Indeed, when covered interest parity (CIP) holds, the forward discount is equal to the differential between foreign and domestic (risk-free) interest rates.[7] Momentum strategies rank currencies according to their past performance and are equivalent to buying past winners and selling past losers. Although we have no direct evidence that contemporary traders followed these strategies, it would be surprising if they did not do so. For example, stock market investors employed similar trend-following and momentum techniques during the 1920s and 1930s (Schabaker, 1932, Gartley, 1935).

[4] Cen and Marsh (2013) have also estimated returns to carry and momentum strategies in this period and reported similar results, although they do not account for transaction costs.

[5] These currencies correspond to the eight currencies listed in table 2 as well as the GBP. Indeed, we also include the GBP in the sample of tradable currencies. Of course, the GBP's forward discount and spot rate appreciation (over 1 or 3 months) are always equal to zero. See Burnside (2012).

[6] We did not report the performance of a third rules-based currency strategy, namely, value, which ranks currencies according to the degree of undervaluation of their current real exchange rate compared to the long run equilibrium real exchange rate. Following Cassel (1919) and Keynes (1923), we take the latter to be the real exchange rate in 1913 since this was the benchmark contemporaries had in mind. Estimation of the prevailing real exchange rate requires investor knowledge of the monthly wholesale price indices published in contemporary sources. However, due to the considerable delays in the publication of monthly price indices, we do not believe this strategy was implementable by investors unlike the carry and momentum strategies. Our results show that the value strategy yielded negative excess returns across both the 1920s and 1930s and are available upon request.

[7] There is evidence that deviations from CIP were arbitraged between the London and New York markets during the 1920s when an annualized profit of at least 0.5% was available (Peel and Taylor, 2002). However, we believe it is preferable to sort currencies by their forward discounts rather than their interest rate differentials. The use of forward-implied interest rate differentials indeed avoids the considerable problems of obtaining risk-free interest rates for comparable short-term investment instruments in all currencies during this period (Einzig, 1937: pp. 265, 277, 295).

An important issue when estimating carry and momentum returns is to account for the costs of implementing these strategies. Transaction costs on currency markets mainly arise from spreads between bid and ask exchange rate quotations. We therefore estimate the returns to currency strategies after adjusting for bid-ask spreads. **Appendix A** provides full details regarding the computation of excess returns net of transaction costs.

Our results, summarized in **Table 3**, indicate that carry and momentum strategies both yielded high excess returns when implemented over the whole 1920-1939 period. The two simple zero-cost strategies CARRY and MOM1 generated mean annualized excess returns of 10.11% and 12.47% and these returns are statistically significantly different from zero at the 5% level of confidence. Moreover, their risk-adjusted performance also looks impressive. A standard measure of risk-adjusted performance is the Sharpe ratio (SR), defined as the ratio of annualized excess returns to their annualized standard deviation. CARRY and MOM1 exhibited Sharpe ratios of respectively 0.57 and 0.63 over 1920-1939. These compare favorably with the Sharpe ratios of the exact same strategies when implemented on G10 currencies during the 1985-2012 period (respectively 0.56 and 0.24). Both strategies also display higher excess returns and Sharpe Ratios than those available on UK stocks over 1920-39. **Figure 4** displays the cumulative excess returns of the CARRY and MOM1 strategies (before transaction costs) against those on UK stocks.

[Table 3 about here]

[Figure 4 about here]

These findings are robust to controlling for transaction costs, which account for no more than one-third of the gross excess returns to carry and momentum. These results imply that the returns to currency speculation were potentially high in the 1920s and 1930s and that, as in the post-Bretton Woods era, the simple carry and momentum strategies constitute an appropriate benchmark to assess the performance of interwar currency traders.[8]

5.2. Benchmarking Keynes

How did Keynes perform relative to the benchmarks defined above? To answer this question, we first mark-to-market his currency positions using forward exchange rates and estimate his monthly cumulative gains and losses in sterling pounds from August 1919 to May 1927 and from October 1932 to March 1939 (**Figure 5**). Consistent with the description of his trading in section 4, his shorting continental European currencies and going long the US Dollar registered a substantial

[8] See Accominotti and Chambers (2014) for a full set of results for the 1920-1939 period.

loss of £21,000 in May 1920, when European currencies appreciated against sterling. This loss was over ten times his income at the time and he was probably very close to being technically bankrupt. Thereafter, despite his losses the fact that he stuck with his currency views stood him in good stead over the rest of the 1920s and he recovered to make a cumulative profit by the time he stopped trading in 1927. A similar pattern emerges in the 1930s. His bets against the French franc and Dutch florin incurred cumulative losses of £6,000 by the end of August 1936. However, when both currencies were devalued the following month he more than recovered his losses to generate a cumulative gain of £10,000.

[Figure 5 about here]

Next, we convert Keynes's monthly gains and losses in sterling pounds into a rate of return. Since he did not operate a fund, we infer his notional equity from the 20 per cent margin required by his broker on his forward currency transactions. Hence, we estimate Keynes's equity as 20 per cent of his maximum gross position in each of the two periods he traded continuously, 1920-27 and 1932-39. Whilst the assumed level of implied equity affects any estimate of his average return and standard deviation, it does not affect the Sharpe ratio.

Table 4 compares the returns on Keynes's strategy with those of the two carry and momentum strategies and then with UK stocks and bonds. We present the results over the entire period during which Keynes traded and when forward exchange rates data are available (Panel A) as well as for the two sub periods January 1920 to May 1927 (Panel B) and October 1932 to March 1939 (Panel C). For each asset class and currency trading strategy, the table reports the mean annualized excess return, the annualized standard deviation of excess returns and the risk-adjusted performance (Sharpe ratio), and the skewness and kurtosis of excess returns. Returns to currency trading strategies are reported both before and after adjusting for transaction costs. In the latter case, returns are computed from bid and ask spot and forward quotations as described above. However, since bid-ask spreads reported in newspapers can overestimate the actual bid-ask spreads faced by traders, we should consider the returns after transaction costs as a lower bound of the actual carry and momentum returns.

The mean and standard deviation of returns exhibited by individual currency managers are affected by variations in their leverage ratio (Pojarliev and Levich, 2008). Therefore, when assessing Keynes's performance relative to other asset classes and currency strategies, we prefer to focus on a risk-adjusted performance measure such as the Sharpe ratio which is unaffected by leverage.

Our results indicate that Keynes's fundamentals-based strategy yielded returns in excess of the risk-free rate on average over the period he traded. However, when compared to both UK stocks and bonds and to the simple carry and momentum strategies, the performance of Keynes's strategy looks relatively poor. He achieved an unimpressive Sharpe ratio of 0.16 over the 1920-1939 period, compared with 0.56 for UK stocks and with 0.43, 0.57 and 0.42 for the CARRY, MOM1 and MOM3 strategies respectively (after transaction costs). Keynes's risk-adjusted performance was even lower than that of the UK Consol bonds (0.24). Furthermore, his returns exhibited much greater negative skewness and kurtosis than the carry and momentum strategies, in large part a reflection of his substantial loss in 1920.

[Table 4 about here]

When we decompose returns into the two sub-periods, we find that Keynes's underperformance relative to the carry and momentum strategies is mostly concentrated in the 1920s (Panel B). Despite achieving positive returns, his Sharpe ratio remained low during the 1930s (0.17) in comparison to UK stocks and bonds (0.63 and 0.23) and the MOM1 strategy (0.46), although he did outperform the carry strategy (-0.51) (Panel C). This strategy required going long the high-yielding currencies, the FFR and NLG, which were exactly those currencies fighting to stay on the gold standard and which ultimately were forced to capitulate and devalue. Since Keynes took the opposite approach to the carry strategy, he continually lost money in paying the forward discount when shorting the FRF and NLG until in 1936 their sudden devaluation enabled him to generate positive returns and offset his earlier losses. These results therefore suggest that, despite achieving positive excess returns, Keynes did not perform particularly well in trading currencies in the 1920s and 1930s and certainly nowhere near as well as when he traded stocks (Chambers and Dimson 2013).

5.3. Decomposing Keynes' returns

The returns to carry and momentum can be interpreted as returns to systematic risk factor exposures in the foreign exchange market. Accordingly the performance of any active currency trader can be decomposed into a systematic (beta) and an idiosyncratic (alpha) component, where the latter is a measure of trading skill. In order to decompose Keynes's trading performance in this same way, we follow Pojarliev and Levich (2008, 2010, 2012) and regress his monthly excess returns against the estimated returns on the CARRY and MOM1 factors described above. We therefore estimate the following factor model:

$$R_{KEYNES,t} = \alpha + \boldsymbol{\beta F}_t + \varepsilon_t \quad (2)$$

where R_{KEYNES} is Keynes's monthly excess return and $\boldsymbol{F}$ is a vector of monthly factor returns including the rates of return on the CARRY and MOM1 strategies (after transaction costs). In this model, $\boldsymbol{\beta}$ is a vector of factor loadings measuring Keynes's exposure to the carry and momentum factors, whilst α, the constant, measures any active trading skill. The results for each of the whole sample period and the two sub-periods 01/1920-5/1927 and 10/1932-03/1939 are summarized in **Table 5**.

[Table 5 about here]

Although Keynes's correspondence indicates he did not follow any explicit trend-following rule, we find that his returns over the whole sample period are partly explained by beta exposure to the MOM1 factor. His exposure to the CARRY factor varied over the period. In the 1920s, we find that he had positive exposure to CARRY, although the coefficient is not statistically significant. This reflects Keynes's strategy of going short the low-interest rate European currencies and long the high-interest rate US Dollar during the early 1920s. Indeed, until mid-1924, the US Dollar almost always exhibited a positive forward discount (or interest rate differential) against sterling on the market whereas continental European currencies exhibited a forward premium. In the regressions on the 1932-1939 period however, the coefficient on CARRY turns negative and statistically significant. This negative beta exposure reflects Keynes's decision to short the high-yielding French franc and Dutch florin in 1934-1936. Exposure to the carry and momentum factors also accounted for a much larger share of Keynes's returns in 1932-1939 (72%) than in 1920-1927 (20%).

Is there any evidence of Keynes's trading skill? After controlling for the carry and momentum factors, we find that that none of the alpha estimates are either positive or statistically significant at standard levels of confidence. These results taken together with the performance comparison in the previous section therefore confirm that Keynes's currency trading record does not reveal evidence of exceptional trading skills.

6. Discussion

How should we assess Keynes's performance as a currency speculator? First and foremost, he appeared to have some skill in predicting the direction of currency movements over the longer term, as reflected in his trading positions and public views. His pessimism towards continental European

currencies after the Versailles Treaty was ultimately revealed to be correct when the French franc and Italian lire depreciated sharply as of 1922 and then the German mark slid into hyperinflation in 1923. Similarly, his belief that France and the Netherlands would follow the dollar off gold was also proven to be right following the French devaluation of September 1936 and the subsequent collapse of the Gold Bloc currencies. In a few cases, Keynes's forecasts never came good. In particular, his opinions about the US dollar/£ exchange rate were consistently wrong throughout the 1930s. However, Keynes's error in forecasting the US dollar in the 1930s stands as an exception and his analysis of macroeconomic fundamentals most often brought him to the right conclusions about future exchange rates.

The fact that Keynes generated considerable profits from his currency speculation would appear to substantiate his ability to predict currency movements over the longer-run. We estimate that his cumulative profits amounted to £14,576 and £22,740 respectively, in 1920-1927 and 1932-1939. When compared with his total academic revenues (including income from his books and articles) of £18,402 and £17,118 over the same periods, we can see that currency speculation made a substantial contribution to Keynes's overall income (CWKXII: p.2). His cumulative profit also amounted to £2,260,000 in constant pounds of 2013 when deflated using the Retail Price Index.[9] Currency speculation therefore helped to make Keynes a wealthy man.

How then do we reconcile Keynes's skill in forecasting the direction of currency movements with his low risk-adjusted return, Sharpe ratio, and an absence of alpha return? The problem as he himself recognized in his correspondence was his difficulty in timing these currency movements. Hence, his performance in the 1920s was severely undermined by the gigantic loss he made in May 1920 when the European currencies he had shorted temporarily appreciated against the US dollar, notwithstanding the fact that he was eventually proven correct. The loss of a single month, May 1920, alone accounts for his poor performance over the 1920-1927 period and it took him several years to recover from it.[10] Keynes encountered a similar timing problem in the 1930s when his shorting of the French franc and Netherlands guilder from August 1934 caused him to have to endure a long period of losses before this strategy eventually paid off fully two years later. Overall, Keynes's difficulties in timing currency movements contributed to an increased volatility in his returns and to his low Sharpe ratio.

This high annual volatility (33%) and low Sharpe ratio imply that an investor following Keynes's strategy would have had to withstand long periods of losses This would have been unattractive to most investors with shorter-term horizons. For example, most investors would not have survived a loss of the magnitude he suffered in May 1920; Keynes was able to return to the

[9] The computation was made using the website http://www.measuringworth.com/
[10] Only in July 1923 did Keynes's cumulative Profit and Loss reach its April 1920 level again.

market almost immediately and began shorting European currencies again in June 1920 thanks to his relationship with his broker and close friend, Oswald Falk, and to his wealthy social connections from whom he was able to borrow additional funds with which to speculate.[11]

For most investors therefore, Keynes's sophisticated strategy would have looked quite unattractive compared to the much more simple carry and momentum strategies or to alternative asset classes available at that time. These other currency strategies and asset classes indeed generated profits while offering a much better risk-return profile.

7. Conclusion

This paper provides the first detailed study of currency trading during the 1920s and 1930s. Much has been written on currency markets and the role of speculation during the unstable interwar period but little in the way of micro-level evidence on currency speculation has been advanced so far in the literature. Through the analysis of Keynes's trading record, we provide such evidence of one informed and sophisticated speculator. In the process, we consider how profitable was currency speculation in the interwar period and the value of economic expertise in foreign exchange trading.

Currency speculation was a profitable activity during the interwar years. The recent empirical literature has documented large excess returns to two naïve rules-based strategies, carry and momentum, during the post-Bretton Woods period. We demonstrate for the first time that these strategies, which were easily implementable, were also highly profitable in the interwar years even after transaction costs. In contrast to these naïve rules-based strategies, we describe how Keynes employed his expert knowledge of macroeconomics and international finance to pursue a discretionary, fundamentals-based strategy. We show that although Keynes made money, he performed relatively poorly in terms of risk-adjusted returns compared to UK stocks and bonds and to the carry and momentum strategies. Furthermore, the average investor would in all probability not have been able to stay the course as Keynes did thanks to the long investment horizon which enabled him to withstand considerable losses and maintain his positions until they finally came right.

What does the example of Keynes tell us about the value of economic expertise in currency speculation? First, we find that his expertise did enable him to predict correctly the direction of currency movements. There is now a large consensus in the literature that the poor management of the reparations issue in the early 1920s would only undermine European economies and currencies and that the interwar gold exchange standard was bound to fail during the Great Depression due to its considerable defects. From this perspective, Keynes' strategy of shorting continental European currencies in the 1920s and of betting against France's and the Netherlands' adherence to the gold

[11] In order to rebuild his position, Keynes borrowed £5,000 from Sir Ernest Cassel ((CWKXII: p.11).

standard in 1934-1936 seems both far-sighted and reasonable to today's economic historians. However, our paper also illustrates the limits of Keynes's expertise and, specifically, the difficulties which even experts face in timing currency markets when relying on fundamental analysis. Even a smart economist such as Keynes found translating his macroeconomic insights into a highly profitable currency trading strategy problematic.

References

Atkin, John (2005), *The Foreign Exchange Market of London*, New York: Routledge.

Brunnermeier, Markus K., Stefan Nagel, and Lasse H. Pedersen (2009), "Carry Trades and Currency Crashes", *NBER Macroeconomics Annual*, vol. 23, pp. 313-347.

Burnside, Craig (2012), "Carry Trades and Risk", in Jessica James, Ian Marsh, and Lucio Sarno (eds.), *The Handbook of Exchange Rates*, Hoboken, New Jersey: John Wiley and Sons.

Burnside, Craig, Martin Eichenbaum, Isaac Kleshchelski, and Sergio Rebelo (2010), "Do Peso Problems Explain the Returns to the Carry Trade", *Review of Financial Studies*, vol. 24, pp. 853-891.

Burnside, Craig, Martin Eichenbaum, and Sergio Rebelo (2011), "Carry Trade and Momentum in Currency Markets", *Annual Review of Financial Economics*, vol. 3, pp. 511-535.

Cassel, Gustav (1919), "The Depreciation of the German Mark", *The Economic Journal*, vol. 29, pp. 492-496.

Cen, Jason, and Ian W. Marsh (2013), "Off the Golden Fetters: Examining Interwar Carry Trade and Momentum", available at SSRN: http://ssrn.com/abstract=2358456

Chambers, David, and Elroy Dimson (2013), "John Maynard Keynes: Investment Innovator", *Journal of Economic Perspectives,* vol. 27, pp. 213–228.

Chambers, David, Elroy Dimson, and Justin Foo (2014), "Keynes the Stock Market Investor: A Quantitative Analysis", *Journal of Financial and Quantitative Analysis* (Forthcoming), available at http://ssrn.com/abstract=2023011

Dimson, Elroy, Paul Marsh, and Mike Staunton (2002), *Triumph of the Optimists: 101 Years of Global Investment Returns*, Princeton: Princeton University Press.

Eichengreen, Barry (1992), *Golden Fetters: The Gold Standard and the Great Depression, 1919-1939*, Oxford: Oxford University Press.

Einzig, Paul (1937), *The Theory of Forward Exchange*, London: Macmillan.

Flandreau, Marc, and John Komlos (2006), "Target Zones in Theory and History", *Journal of Monetary Economics*, vol. 53, pp. 1979-1995.

Gartley, H. M. (1935), *Profits in the Stock Market*, Pomeroy: Lambert-Gann Pub. Co.

Jorda, Oscar, and Alan M. Taylor (2011), "Performance Evaluation of Zero Net-Investment Strategies", NBER Working Paper No 17150, June 2011.

Jorda, Oscar, and Alan M. Taylor (2012), "The Carry Trade and Fundamentals: Nothing to Fear but the FEER itself", *Journal of International Economics*, vol. 88, pp. 74-90.

Keynes, John M. (1919), *The Economic Consequences of the Peace*, London: Macmillan.

Keynes, John M. (1923), *A Tract on Monetary Reform*, London: Macmillan.

Keynes, John M. (1925), *The Economic Consequences of Mr. Churchill,* London: Hogarth Press.

Lustig, Hanno, and Adrien Verdelhan (2007), "The Cross-Section of Foreign Currency Risk Premia and Consumption Growth Risk", *American Economic Review*, vol. 97, pp. 89-117.

Lustig, Hanno, Roussanov, Nikolai, and Adrien Verdelhan (2011), "Common Risk Factors in Currency Markets", *Review of Financial Studies*, vol. 24, pp. 3731-3777.

Maddison, Angus (1995), *Monitoring the World Economy, 1820-1992,* OECD: OECD Development Centre.

McCloskey, Deirdre (1988), "The Limits of Expertise: If You're So Smart, Why Ain't You Rich?", *The American Scholar*, vol. 57, pp. 393-406.

McCloskey, Deirdre (1990), *If You're So Smart: The Narrative of Economic Expertise*, Chicago: University of Chicago Press.

Menkhoff, Lukas, Lucio Sarno, Maik Schmeling, and Andreas Schrimpf (2012a), "Carry Trades and Global Foreign Exchange Volatility", *Journal of Finance*, vol. 67, pp. 681-718.

Menkhoff, Lukas, Lucio Sarno, Maik Schmeling, and Andreas Schrimpf (2012b), "Currency Momentum Strategies", *Journal of Financial Economics*, vol. 106, pp. 660-684.

Miller, Hugh (1929), *The foreign exchange market: a practical treatise on post-war foreign exchange*, London: E. Arnold & Co.

Mitchell, Brian R. (2007), *International Historical Statistics: Europe 1750-2005*, London: Macmillan.

Moggridge, Donald E. (ed.) (1982), *The Collected Writings of John Maynard Keynes*, Cambridge: Cambridge University Press.

Moggridge, Donald E. (1992), *Maynard Keynes: an economist's biography*, London: Routledge.

Peel, David A., and Mark P, Taylor (2002), "Covered Interest Rate Arbitrage in the Interwar Period and the Keynes-Einzig Conjecture", *Journal of Money, Credit and Banking*, vol. 34, pp. 51-75.

Pojarliev, Momtchil, and Richard M. Levich (2008), "Do Professional Currency Managers Beat the Benchmark", *Financial Analysis Journal*, vol. 64, pp. 18-32.

Pojarliev, Momtchil, and Richard M. Levich (2010), "Trades of the living dead: style differences, style persistence and performance of currency fund managers", *Journal of International Money and Finance*, vol. 29, pp. 1752-1775.

Pojarliev, Momtchil, and Richard M. Levich (2012), "Is There Skill or Alpha in Currency Investing?", in Jessica James, Ian Marsh, and Lucio Sarno (eds.), *The Handbook of Exchange Rates*, Hoboken, New Jersey: John Wiley and Sons.

Reichsregierung (1924), *Material für ein Studium von Deutschlands Wirtschaft, Währung und Finanzen*, Berlin: Reichsdruckerei.

Schabaker, Richard W. (1932), *Technical Analysis and Stock Market Profits*, Petersfield: Harriman House Ltd.

Skidelsky, Robert (1992), *John Maynard Keynes: The Economist as Saviour, 1920-1937*, London: Macmillan.

Appendix A

This appendix describes the methodology for computing the returns on carry and momentum strategies. The strategies are implemented on a sample of nine currencies during the 1/1920-7/1939 period: the Belgian franc (BEF), the Swiss franc (CHF), the German mark (DEM), the Spanish peseta (ESP), the French franc (FRF), the Pound sterling (GBP), the Italian lire (ITL), the Dutch guilder (NLG) and the US dollar (USD).

We denote s as the log of the spot exchange rate (in units of foreign currency per sterling pound) and f as the log of the 1-month forward exchange rate (also in units of foreign currency per sterling pound). The forward discount is defined as the log difference between the forward and spot rate $f - s$.

A1. Currency Excess Returns

The log excess return on buying a given currency in period t on the forward market and selling it on the spot market in period t+1 (before transaction costs) is given by:

$$rx_{t+1} = f_t - s_{t+1} \quad \text{(A1)}$$

Using bid and ask exchange rate quotations, we compute currency excess returns adjusted for transaction costs. Following Lustig et al. (2011), we define the log excess return of taking a long position in a given currency in period t net of transaction costs as:

$$rx^l_{t+1} = f^b_t - s^a_{t+1} \quad \text{(A2)}$$

where a and b subscripts refer to the bid and ask exchange rate quotations respectively. Similarly, the net log excess return of taking a short position in a given currency is given by:

$$rx^s_{t+1} = -f^a_t + s^b_{t+1} \quad \text{(A3)}$$

Spot rate bid-ask spreads are available across the whole period, whilst those for forward rates are first quoted in May 1922. We estimate forward bid-ask spreads in any given month from January 1920 to April 1922 by adding the mean difference between the forward

and spot bid-ask spreads from May 1922 to December 1927 to the spot bid-ask spread at the month-end.

A2. Ranking Currencies

In order to compute the strategies' returns, we construct monthly portfolios of currencies sorted on currency characteristics. At the end of each period t, we rank the nine currencies in our sample (including the GBP) according to carry and momentum criteria.

The CARRY strategy ranks currencies according to their forward discount against sterling: $f - s$. When covered interest parity (CIP) holds, the forward discount is equal to the interest rate differential: $f - s = i^* - i$, where i^* and i are respectively the foreign and domestic risk-free nominal interest rates over the same horizon as the forward exchange rate.

Momentum strategies rank currencies by their spot exchange rate appreciation against sterling over the previous k months: $s_{t-k} - s_t$. We report below the performance of these strategies for k =1 month (MOM1) and k =3 months (MOM3).

A3. High minus Low Strategies

For each currency strategy, we construct a *High* and a *Low* currency portfolio at the end of each period t. The *High* portfolio is formed from the two highest ranking currencies and the *Low* portfolio from the two lowest ranking currencies. We compute the log excess return on the *High* and *Low* portfolios, rx_{t+1}^H and rx_{t+1}^L respectively, by equally weighting the log excess returns on the individual currencies in each portfolio. The portfolios are rebalanced every month. Finally, we compute the monthly excess returns on the ("High minus Low") currency strategy, rx_{t+1}^{HL}, which takes a long position in the *High* portfolio and a short position in the *Low* portfolio at the end of each month:

$$rx_{t+1}^{HL} = rx_{t+1}^H - rx_{t+1}^L \quad \text{(A4)}$$

One important characteristic of the carry, momentum "High minus Low" strategies is that they are zero-cost investment strategies, since they borrow in the lowest ranking currencies and invest in highest ranking currencies. Therefore, we can compare the returns on these strategies with excess returns on other asset classes, namely UK stocks and bonds.

Table 1. Descriptive Statistics: Keynes' Currency Trades, 1919-1939

Reported are the number of trades (N), the average trade size in pounds (SIZE£), and the average duration of forward contracts (DAYS). "Other" includes Rupees, Norwegian Krone and Danish Krone. Source: see text.

	ALL			USD			FRF			DEM			ITL			NLG			OTHER		
	N	SIZE£	DAYS	N	SIZE£	DAYS	N	SIZE£	DAYS	N	SIZE£	DAYS	N	SIZE£	DAYS	N	SIZE£	DAYS	N	SIZE£	DAYS
1919-1938	354	8203.0	106	138	9622.8	128	97	7773.7	86	40	3210.7	60	39	6842.7	98	29	8328.8	149	11	9099.5	98
1919-1927	176	7702.7	81	28	12996.8	77	55	6722.7	84	40	3210.7	60	39	6842.7	98	3	13906.1	26	11	9099.5	98
1932-1938	178	8697.7	132	110	8763.9	141	42	9150.1	88	0	-	-	0	-	-	26	7686.9	164	0	-	-
1919	33	12185.1	42	10	15333.8	49	9	11909.5	34	3	3644.6	84	6	10550.0	31	3	13892.2	26	2	12837.0	38
1920	49	10062.2	53	3	20066.6	60	10	12058.2	68	22	3788.0	47	12	8135.8	46	0	-	-	2	23177.2	55
1921	33	3542.7	107	9	2658.7	90	4	4339.0	146	11	3012.2	77	5	4568.8	128	0	-	-	4	4912.0	161
1922	12	6150.5	139	1	33296.3	61	5	3648.9	113	2	270.3	62	4	5431.1	229	0	-	-	0	-	-
1923	22	6635.4	117	3	16520.7	146	10	5373.6	107	2	242.0	60	7	6028.2	135	0	-	-	0	-	-
1924	18	5665.7	92	2	21793.7	91	11	3203.7	86	0	-	-	2	7368.0	138	0	-	-	3	2806.1	82
1925	3	5411.8	69	0	-	-	3	5411.8	69	0	-	-	0	-	-	0	-	-	0	-	-
1926	5	546.0	95	0	-	-	3	389.2	94	0	-	-	2	781.3	97	0	-	-	0	-	-
1927	1	2873.6	91	0	-	-	0	-	-	0	-	-	1	2873.6	91	0	-	-	0	-	-
1932	2	4617.2	NA	2	4617.2	NA	0	-	-	0	-	-	0	-	-	0	-	-	0	-	-
1933	16	4597.1	93	5	3142.9	95	9	5437.0	93	0	-	-	0	-	-	2	4452.8	NA	0	-	-
1934	25	6574.2	100	17	5615.5	93	6	9794.1	92	0	-	-	0	-	-	2	5063.4	185	0	-	-
1935	51	7580.3	123	28	6676.6	126	13	10196.0	94	0	-	-	0	-	-	10	6710.3	151	0	-	-
1936	47	12836.3	139	21	16453.4	161	14	10290.0	79	0	-	-	0	-	-	12	9477.0	172	0	-	-
1937	14	13086.8	183	14	13086.8	183	0	-	-	0	-	-	0	-	-	0	-	-	0	-	-
1938	23	5562.6	160	23	5562.6	160	0	-	-	0	-	-	0	-	-	0	-	-	0	-	-

Table 2. Descriptive Statistics: Sample Currencies 1920-39

The table provides descriptive statistics of annualized log excess returns (%), annualized one-month forward discounts (%) and spot bid-ask spreads (basis points) for 8 exchange rates against the sterling pound (GBP) in the period 1920-1939: the Belgian Franc (BEF), Swiss Franc (CHF), German Mark (DEM), Spanish Peseta (ESP), French franc (FRF), Italian Lira (ITL), Dutch florin (NLG) and US Dollar (USD). Sources: see text.

CURRENCY	PERIOD	EXCESS RETURN (%)				FORWARD DISCOUNT (%)				BID-ASK SPREADS (basis points)			
		MEAN	SD	MIN	MAX	MEAN	SD	MIN	MAX	MEAN	SD	MIN	MAX
BEF	1921:02-1939:07	-4.15	17.34	-315.57	261.76	1.13	1.73	-8.60	60.93	10.98	16.63	0.36	178.57
CHF	1922:01-1939:07	0.71	10.98	-396.98	264.89	0.49	1.08	-4.32	42.23	10.89	20.33	0.99	250.00
DEM	1920:04-1922:01 1924:11-1931:06	-18.40	29.07	-594.04	441.88	-0.17	0.96	-12.81	3.70	15.37	25.66	1.22	131.58
ESP	1925:12-1931:05	-11.27	14.97	-266.08	105.74	-1.83	0.38	-4.32	1.59	9.66	5.66	2.91	22.99
FRF	1920:01-1939:07	-4.11	20.90	-384.52	343.10	3.36	2.44	-5.97	62.19	8.74	7.07	0.81	51.28
ITL	1920:01-1934:05	0.13	19.42	-303.71	260.97	1.32	1.83	-9.25	48.79	19.22	17.04	2.15	103.09
NLG	1921:02-1939:07	2.29	8.48	-227.77	259.94	0.90	1.00	-2.49	34.61	9.90	17.59	1.03	148.15
USD	1920:01-1939:07	-0.69	9.27	-161.21	256.78	0.39	0.48	-2.43	11.26	5.42	6.55	0.64	51.02

Table 3. Carry and Momentum Strategy Returns 1920-39

This table summarizes the performance of carry and momentum strategies implemented on a sample of 9 currencies (BEF, CHF, DEM, ESP, FRF, GBP, ITL, NLG and USD) between January 1920 and August 1939. STOCKS and BONDS refer to the excess returns on the DMS UK equity index and UK Consol Bond respectively. Excess return on stocks and bonds are calculated by deducting the 1-month T-bill rate from the raw total return. Excess returns on the CARRY, MOM1 and MOM3 strategies are reported before and after transaction costs (bid-ask spreads). For each asset class and strategy, the table reports the annualized Sharpe ratio, mean annualized return (and t-statistic), annualized standard deviation of monthly returns, skewness and kurtosis coefficients. Source: authors' computations (see text).

	CARRY		MOM1		MOM3		STOCKS	BONDS
	Before TC	After TC	Before TC	After TC	Before TC	After TC		
Sharpe Ratio	**0.57**	**0.38**	**0.63**	**0.47**	**0.50**	**0.33**	**0.31**	**0.36**
Mean annualized return (%)	10.11	6.65	12.47	9.20	9.59	6.34	4.22	3.17
t-statistic	(2.54)	(1.67)	(2.80)	(2.07)	(2.20)	(1.46)	(1.36)	(1.61)
Annualized St.Dev. (%)	17.65	17.59	19.72	19.72	19.27	19.23	13.76	8.69
Skewness	0.18	0.09	0.52	0.44	0.26	0.19	-0.03	0.37
Kurtosis	8.51	8.50	5.96	5.87	5.00	4.98	1.19	3.03

Table 4. Benchmarking Keynes's Performance, 1920-1939

The table compares the performance of Keynes's currency trading strategy (KEYNES) with the performance of UK STOCKS and BONDS and with that of the CARRY, MOM1 and MOM3 currency trading strategies over the periods during which Keynes traded, January 1920 to March 1939 (Panel A), January 1920 to May 1927 (Panel B) and October 1932 to March 1939 (Panel C). Keynes did not trade during the period June 1927 to September 1932. STOCKS and BONDS refer to the excess returns on the DMS UK equity index and UK Consol Bond respectively. Excess return on stocks and bonds are calculated by deducting the 1-month T-bill rate from the raw total return. Excess returns on the CARRY, MOM1 and MOM3 strategies are reported before and after transaction costs (bid-ask spreads). For each asset class and strategy, the table reports the annualized Sharpe ratio, mean annualized return, annualized standard deviation of monthly returns, skewness and kurtosis coefficients. % Months Up and % Months Down show the proportion of months in each period when a strategy records a positive and negative return respectively. For Keynes, % Months Up and % Months Down do not add up to 100% as he did not trade in every month. Source: authors' computations (see text).

	KEYNES	CARRY		MOM1		MOM3		STOCKS	BONDS
		Before TC	After TC	Before TC	After TC	Before TC	After TC		
PANEL A: 1920:01-1927:05; 1932:10-1939:03									
Sharpe Ratio	**0.16**	**0.59**	**0.43**	**0.71**	**0.57**	**0.57**	**0.42**	**0.54**	**0.24**
Mean annualized return (%)	5.39	12.14	8.66	16.17	12.91	12.59	9.32	6.40	1.84
Annualized St.Dev. (%)	33.66	20.45	20.35	22.65	22.60	22.10	22.08	11.85	7.66
Skewness	-7.98	0.12	0.05	0.37	0.31	0.15	0.08	-0.19	0.09
Kurtosis	91.41	5.93	5.99	4.11	4.07	3.40	3.37	1.23	2.38
% Months Up	46.71	67.66	62.87	58.08	53.29	56.89	51.50	59.28	50.30
% Months Down	36.53	32.34	37.13	41.92	46.71	43.11	48.50	40.72	49.70
PANEL B: 1920:01-1927:05									
Sharpe Ratio	**0.18**	**1.06**	**0.90**	**0.80**	**0.67**	**0.69**	**0.56**	**0.48**	**0.25**
Mean annualized return (%)	7.95	26.03	22.05	22.92	19.04	20.31	16.36	6.18	1.79
Annualized St.Dev. (%)	44.18	24.61	24.49	28.50	28.45	29.28	29.28	12.97	7.06
Skewness	-6.95	0.45	0.39	-0.16	-0.20	-0.08	-0.11	-0.22	0.90
Kurtosis	58.97	1.60	1.67	1.27	1.21	0.90	0.88	1.48	1.43
% Months Up	49.44	67.42	66.29	58.43	58.43	62.92	59.55	60.67	46.07
% Months Down	19.10	32.58	33.71	41.57	41.57	37.08	40.45	39.33	53.93
PANEL C: 1932:10-1939:03									
Sharpe Ratio	**0.17**	**-0.28**	**-0.51**	**0.65**	**0.46**	**0.48**	**0.17**	**0.63**	**0.23**
Mean annualized return (%)	2.46	-3.70	-6.62	8.48	5.91	3.79	1.30	6.66	1.89
Annualized St.Dev. (%)	14.53	13.05	13.03	12.96	12.98	7.81	7.79	10.50	8.35
Skewness	5.56	-5.18	-5.19	4.18	4.14	-0.97	-1.11	-0.09	-0.48
Kurtosis	41.43	34.76	34.68	32.40	32.44	9.41	10.17	0.16	2.89
% Months Up	43.59	67.95	58.97	57.69	47.44	50.00	42.31	57.69	55.13
% Months Down	56.41	32.05	41.03	42.31	52.56	50.00	57.69	42.31	44.87

Table 5. Decomposing Keynes's Returns

The table presents the results of regressions of Keynes's currency trading returns on carry and momentum factors. The dependent variable is Keynes's monthly rate of return. from January 1920 to May 1927 and from October 1932 to March 1939. The explanatory variables are monthly returns to the CARRY and MOM1 strategies (net of transaction costs). Columns (1) to (3) present results obtained on the whole period during which Keynes traded. Columns (4)-(6) and (7)-(8) present results for, respectively, the 1/1920-5/1927 and 10/1932-3/1939 sub-periods. Keynes did not trade during the period June 1927 to September 1932. Robust t-statistics are in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

	A. 1920-1927; 1932-1939			B. 1920-1927			B. 1932-1939		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Alpha	0.00	0.00	-0.00	-0.01	0.00	-0.01	-0.00	-0.00	-0.00
	(0.14)	(0.02)	(-0.26)	(-0.37)	(0.10)	(-0.48)	(-1.10)	(-0.67)	(-1.36)
CARRY	0.43		0.41	0.76		0.72	-0.88***		-0.57***
	(1.04)		(1.08)	(1.65)		(1.61)	(-3.88)		(-6.28)
MOM1		0.40**	0.39**		0.32*	0.22		0.84***	0.46***
		(2.48)	(2.10)		(1.85)	(1.48)		(3.31)	(5.31)
N	167	167	167	89	89	89	78	78	78
R^2	0.07	0.07	0.13	0.18	0.04	0.20	0.62	0.57	0.72

Figure 1. Keynes's Overall Currency Trading Position in Sterling £, 1919-39

The graph displays Keynes's monthly overall trading positions in sterling pounds estimated by marking-to-market each month all his currency positions using end-of-month forward exchange rates. Source: authors' computations (see text).

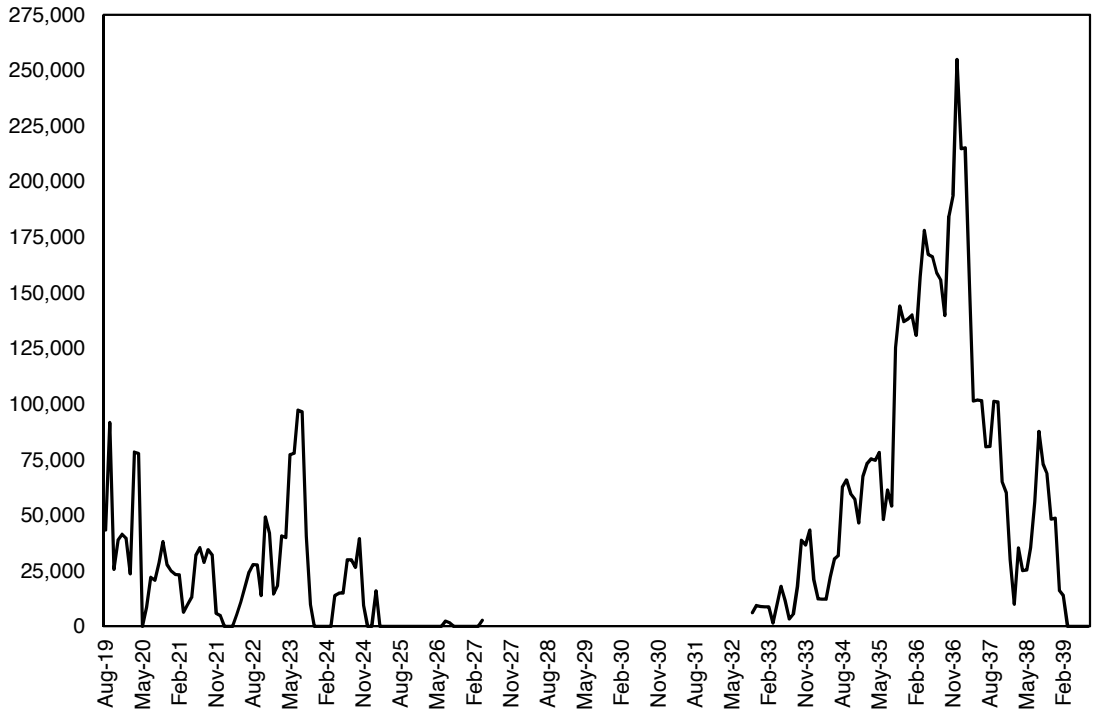
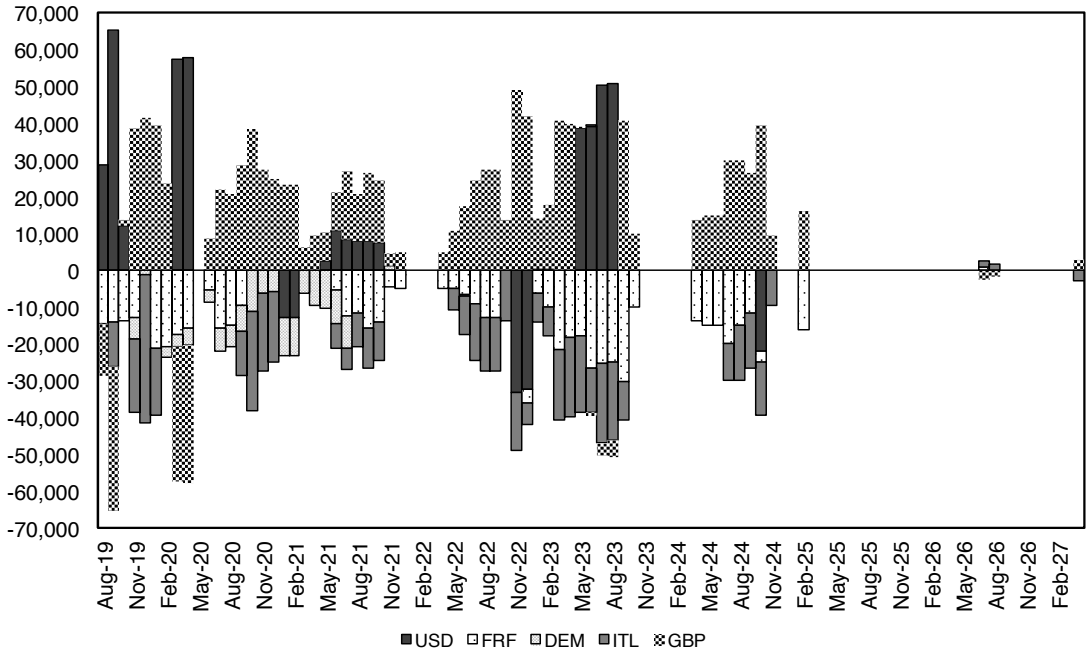


Figure 2. Keynes's Long and Short Portfolios in £, 1919-39

The bars describe the long (+) and short (-) positions, marked-to-market in sterling pounds, of all currencies traded by Keynes from August 1919 to May 1927 and October 1932 to March 1939. The GBP position is equivalent to his net long or short position in all other currencies. Sources: authors' computations (see text).

(i) Aug 1919 - May 1927



(ii) Oct 1932 – Mar 1939

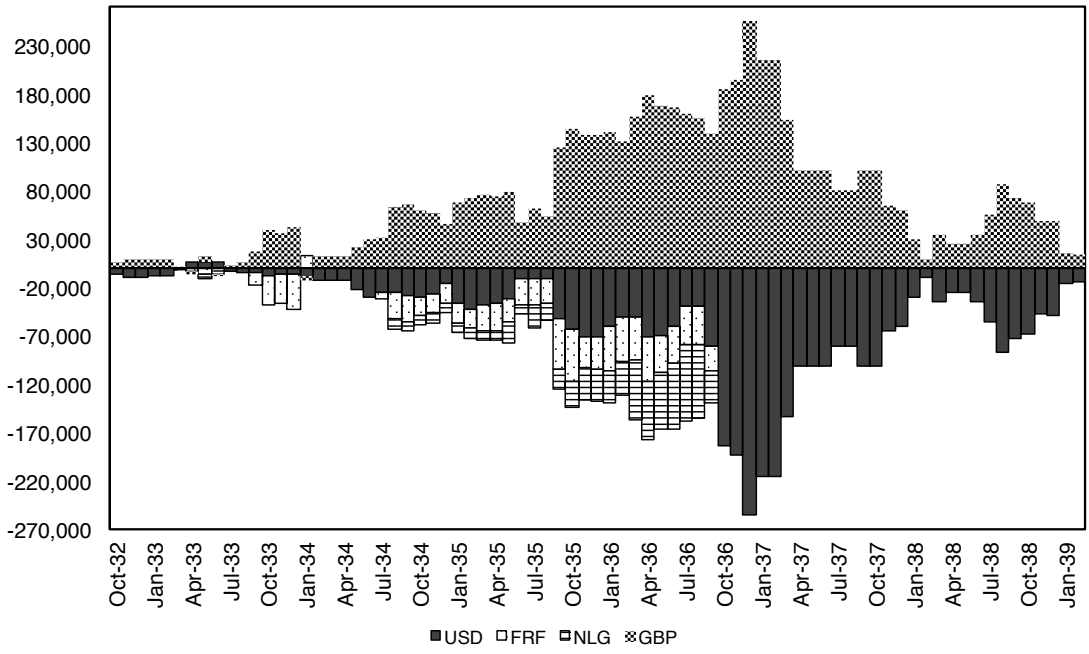
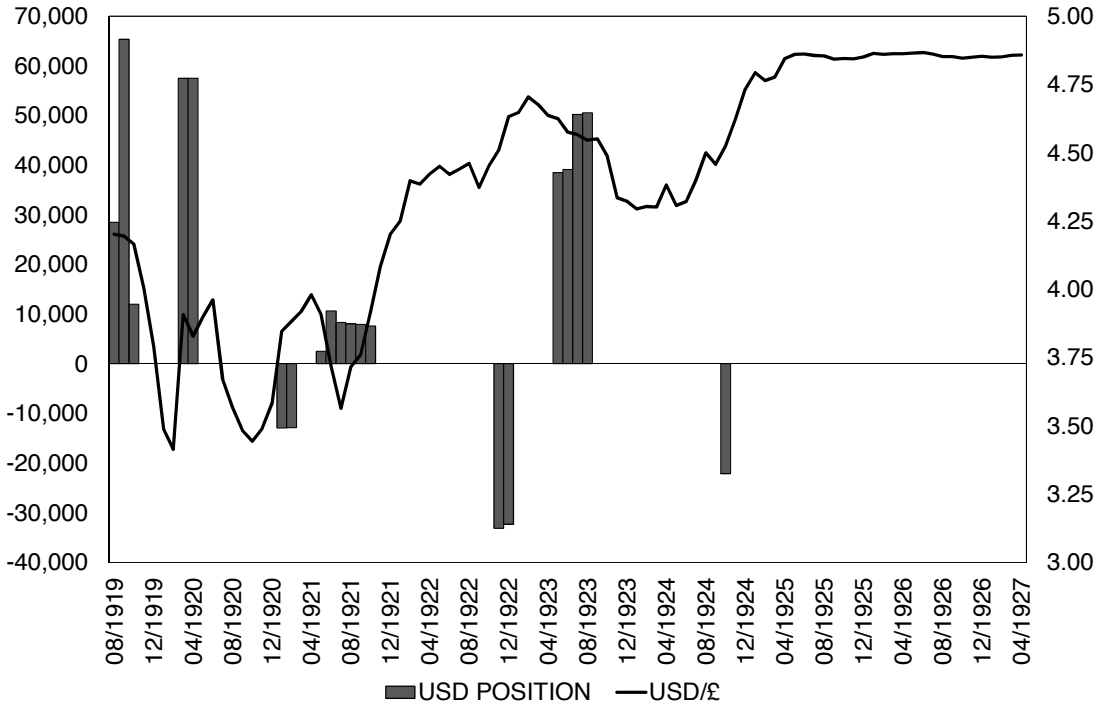


Figure 3. Keynes' Trading Positions by Currency

The bars describe the long (+) and short (-) positions of each currency traded by Keynes from August 1919 to May 1927 and October 1932 to March 1939 (left scale). The solid line shows each currency's exchange rate against sterling (in units of foreign currency per pound sterling, right scale). Sources: authors' computations (see text).

(i) USD 1919-27



(ii) FRF 1919-27

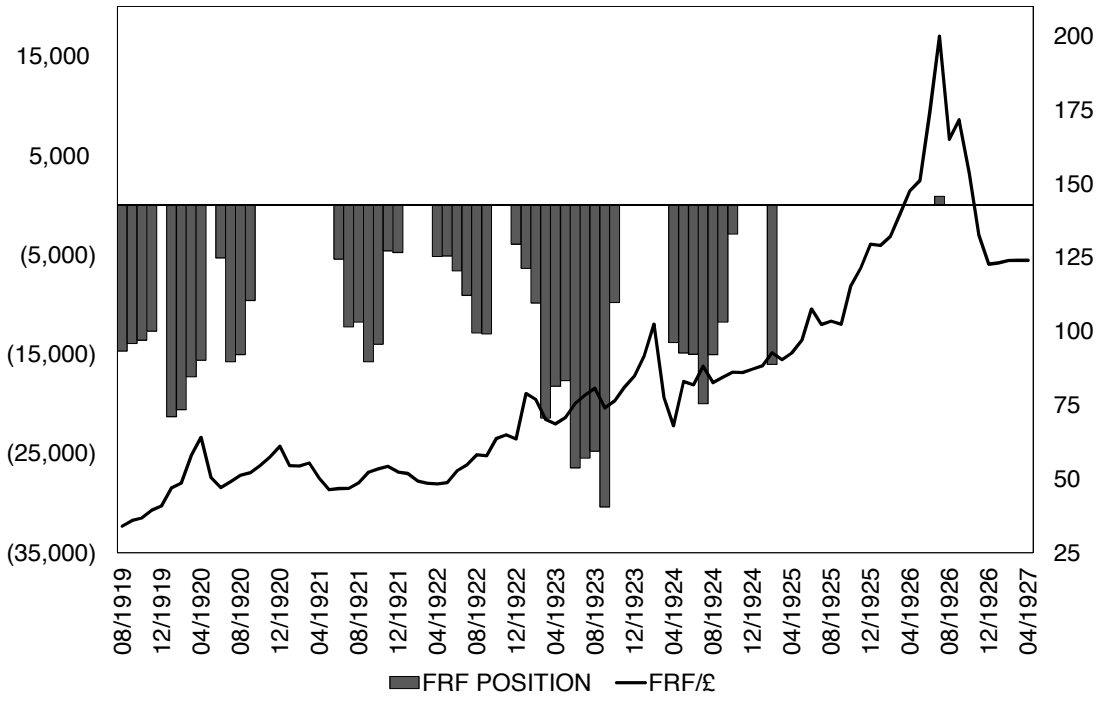
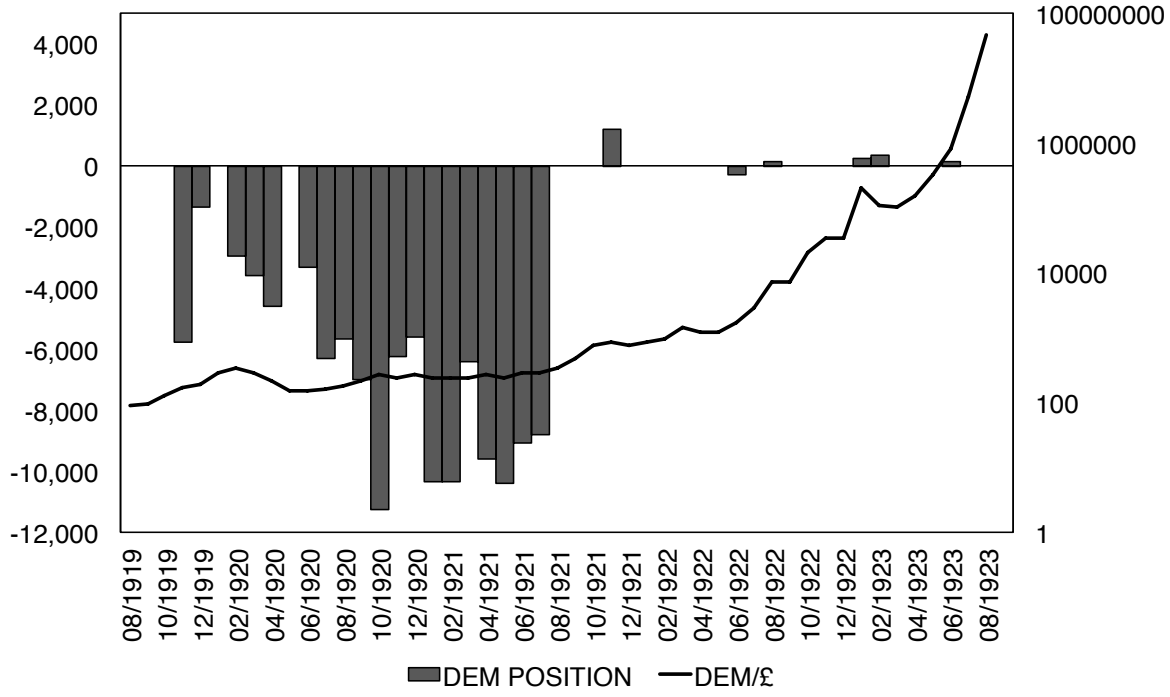


Figure 3 (cont.)

(iii) DEM 1919-1923 (right axis in log scale)



(iv) ITL 1919-27

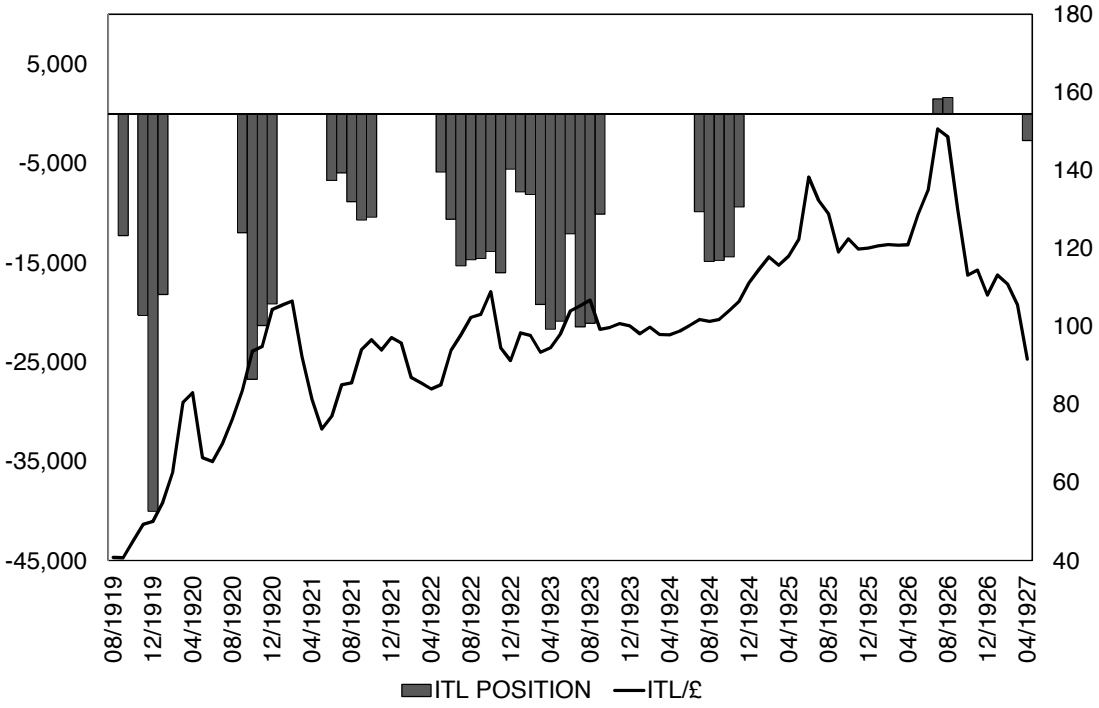
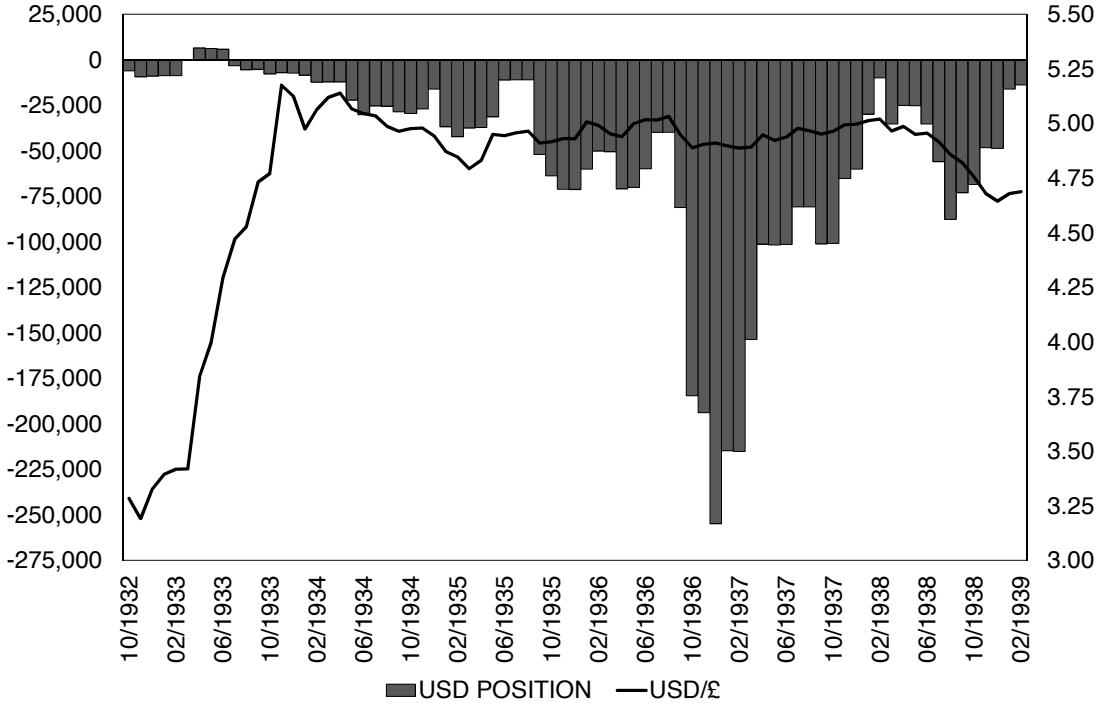


Figure 3 (cont.)

(v) USD 1932-39



(vi) NLG 1932-39

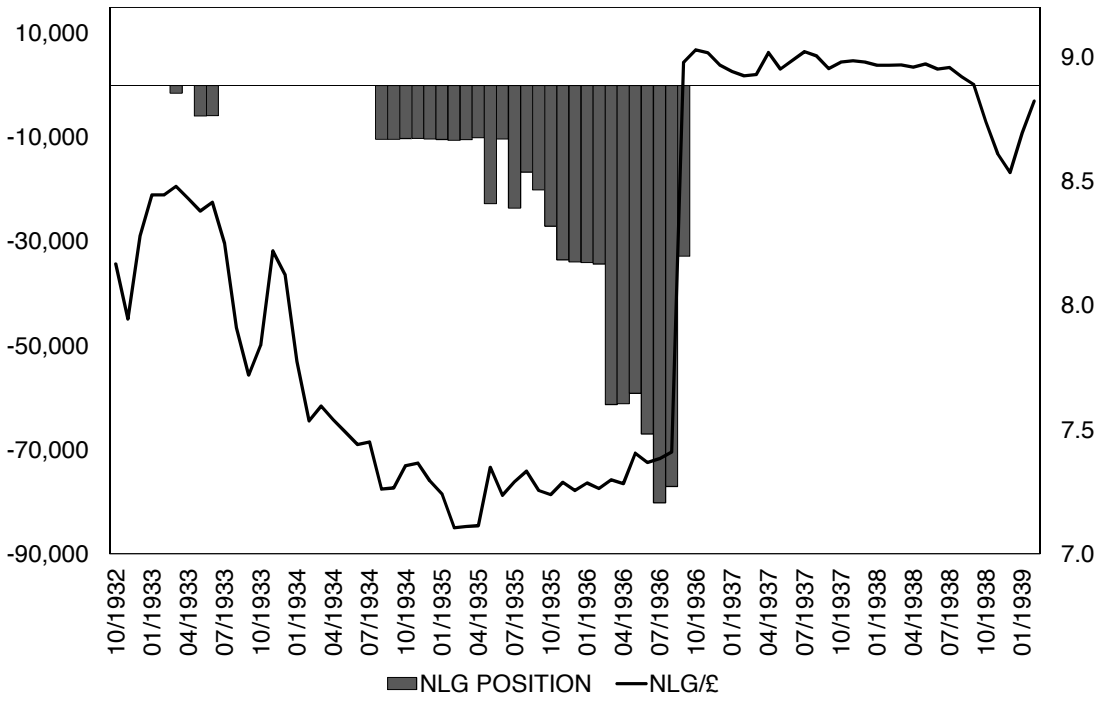


Figure 3 (cont.)

(vii) FRF 1932-39

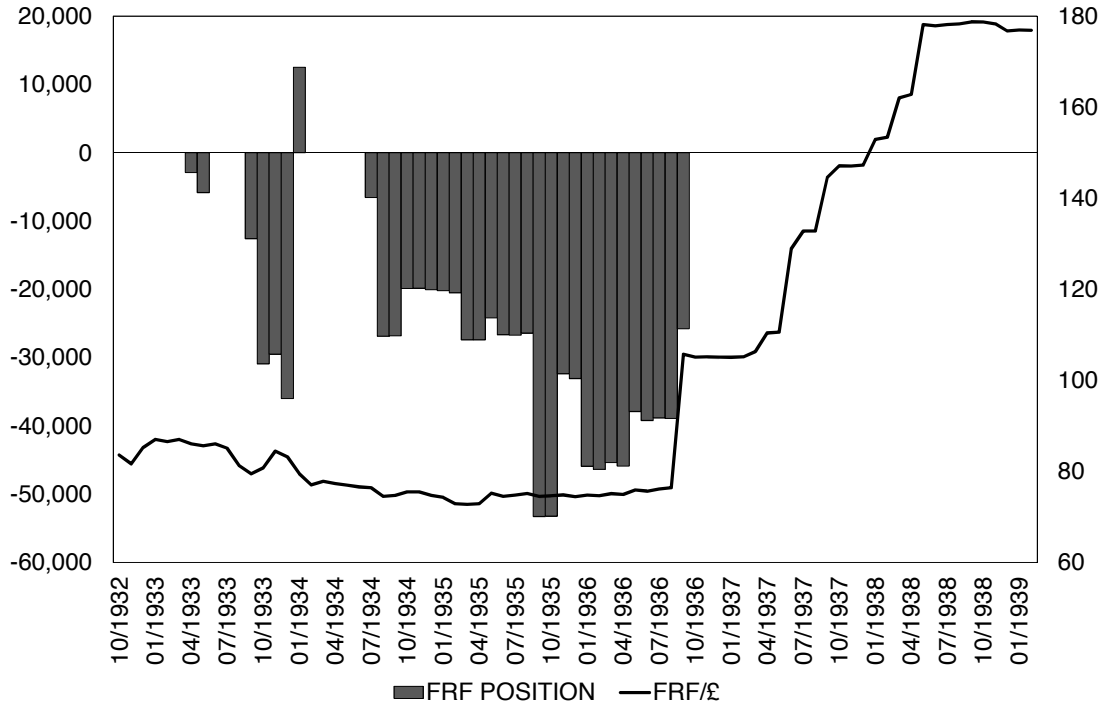


Figure 4. Cumulative Excess Returns to Carry and Momentum

The graph shows the cumulative log excess returns (%) on the DMS UK equity index and on the CARRY and MOM1 strategies (before transaction costs) from end December 1919 until July 1939. Source: authors' computations (see text).

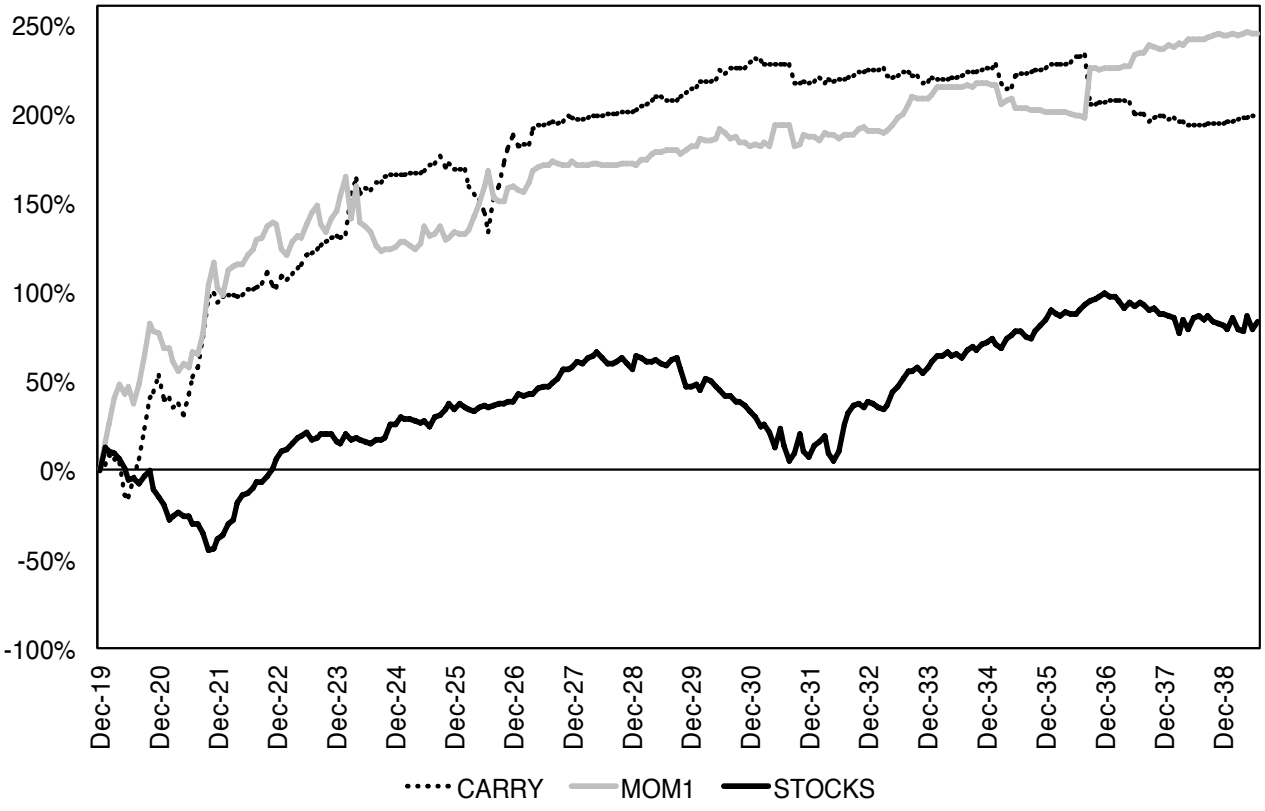


Figure 5. Keynes's Cumulative Gains (Losses) in £, 1919 to 1939

The graph displays Keynes's cumulative gains (losses) in sterling pounds from August 1919 to May 1927 and again from October 1932 to March 1939. Source: authors' computations (see text).