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Do precious and industrial metals act as hedges and safe havens for currency portfolios?☆

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ABSTRACT

This study explores whether metals act as hedges and safe havens for currency investing portfolios. Three widely used currency investment strategies: carry, momentum and value are adopted. The empirical results argue that gold and silver do exhibit hedge and safe haven properties for all three strategies. Silver works as a strong hedge during extreme market conditions. However, these hedge and safe haven properties became weaker after the year 2000. We also find that industrial metals do not work as either hedges or safe havens for carry portfolios.

1. Introduction

Precious metals have often been used to store value against shocks suffered by other assets. In particular, gold showed a good performance during the global financial crisis of 2008. Thus the hedge and safe haven statuses of gold have been investigated in the past. For instance, Baur and Lucey (2010) defined the concepts of hedge and safe haven, and Baur and McDermott (2010) tested whether gold acts as a hedge and a safe haven during stock market turmoil. They found that gold is indeed a safe haven asset in relation to European and U.S. stock markets. Other precious metals also have diversification benefits; Hillier et al., (2006) demonstrate that silver and platinum prices are not correlated with stock market indices, and hence proposed that such precious metals should be included in portfolios. Further, gold acts as a hedge against U.S. dollar depreciation (Reboredo, 2013), while this relation varies over time (Joy, 2011). Although gold works as a hedge tool for currency investors, they may not invest in a single currency rather invest in a currency portfolio.

Recently, a portfolio approach has become widely used in currency investing, and it is considered advantageous to average out any currency specific component. For instance, Lustig et al. (2011) sort currencies based upon interest rate differences from a base country and construct carry portfolios. Carry is the most popular currency investing strategy, while currency momentum and value portfolios have also been investigated (e.g. Kroencke et al. 2014; Barroso and Santa-Clara 2015). Pojarliev and Levich (2010) report that carry, momentum and value strategies have been widely adopted by currency fund managers. The aim of this study is to investigate whether metals provide hedge and safe haven properties for currency portfolio investors.

The first contribution of this study, therefore, is that of extending the hedge and safe haven literature in relation to currency markets and exploring whether precious metals act as hedges and/or safe havens for currency portfolios. This issue is particularly important for carry trades since the high average return of carry trades is compensation for risk, and carry trades entail crash risk as

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pointed out by Brunnermeier et al. (2009). The second contribution is that here we employ not only precious metals but also industrial metals. Industrial metals may have stronger hedging properties than precious metals. Indeed, Agyei-Ampomah et al. (2014) show that portfolios consisting of bond and industrial metals outperform those of bond and precious metals in the bear market.

The outline of this paper is as follows: Section 2 describes currency portfolio constructions; Section 3 explains the econometric methodology; Section 4 presents the data; Section 5 displays the empirical results; and Section 6 concludes.

2. Currency portfolio

This study computes a currency excess return using spot and forward rates and assuming U.S. investors. The currency excess return $r_{j,t}$ for currency j at time t is defined as:

$$r_{j,t} = \frac{F_{j,t-1} - S_{j,t}}{S_{j,t}} \tag{1}$$

where $F_{j,t-1}$ is the forward price of foreign currency j per unit of U.S. dollar and this price is agreed at $t-1$ and delivered at t, and $S_{j,t}$ is the spot price of foreign currency j at t. Following Lustig et al. (2011), we take into account transaction costs using bid-ask prices.

This study considers carry, momentum and value strategies at a monthly frequency. At the end of each month, currencies are sorted by a characteristic and the k highest currencies are in the long, and k lowest currencies are in the short positions. This is the same as the approach proposed by Bakshi and Panayotov (2013), and for example, we denote by carry (2, 2), a carry trade portfolio under which two currencies are bought and two currencies are sold.

2.1. Carry strategy

Carry trade portfolios are constructed based upon forward discounts. This strategy exploits deviations from the uncovered interest rate parity. In other words, a high interest rate currency generates a higher return than a low interest rate currency because the interest rate difference is not offset by the change in the spot exchange rate. Following Lustig et al. (2011), a forward discount $FD_{j,t}$ is computed as the difference between forward and spot rates at time t:

$$FD_{j,t} = \frac{F_{j,t} - S_{j,t}}{S_{j,t}}. \tag{2}$$

When $FD_{j,t}$ is positive, this means that the interest rate in the foreign country j is higher than that in U.S., since we assume that the covered interest rate parity condition is satisfied (e.g. Akram et al., 2008). In carry portfolios, investors go long (short) in currencies when there are high (low) forward discounts.

2.2. Momentum strategy

A momentum strategy uses a past return as a characteristic, instead of a forward discount. Here, we employ a past three months cumulative currency excess return. Kroencke et al. (2014) and Barroso and Santa-Clara (2015) also adopted this definition, since Menkhoff et al. (2012) reported that momentum has persistence, but that including longer than the past three months did not provide a higher return. In momentum portfolios, long (short) currencies have high (low) past excess returns.

2.3. Value strategy

A value strategy exploits information of a fundamental value: and if the price of currency j is undervalued compared with what is considered its fundamental value, then investors invest in the currency j. The fundamental value is computed as the cumulative five year change of the real exchange rate as in Kroencke et al. (2014) and Barroso and Santa-Clara (2015). The fundamental value $VA_{j,t}$ is computed as:

$$VA_{j,t} = \frac{S_{j,t-3} CPI_{j,t-60} CPI_{US,t-3}}{S_{j,t-60} CPI_{j,t-3} CPI_{US,t-60}} \tag{3}$$

where $CPI_{j,t-3}$ is the price level of consumer goods in country j at t-3, and $CPI_{US,t-3}$ is the price level in the U.S. We follow Kroencke et al. (2014) and employ a three month lag to avoid overlaps between momentum and value strategies. Further, Barroso and Santa-Clara (2015) stated that a lag value is appropriate since there is a time lag involved in the observation of price levels. If $VA_{j,t}$ is higher (lower) than one, then this it indicates that the currency is overvalued (undervalued), and thus is in the short (long) position.

3. Econometrics methodology

In this section, we present an econometrics model which will allow us to explore a hedge and a safe haven. Following Baur and McDermott (2010), a metal excess return rm_t is dependent upon a currency portfolio excess return rcp_t and extreme market conditions