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Can gold prices forecast the Australian dollar movements?

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ABSTRACT

This paper explores whether gold prices have a reliable out-of-sample relationship with the Australian dollar/US dollar nominal and real exchange rates using daily and quarterly data, respectively, spanning the period 2000–2012. Through an Error Correction Model (ECM), the empirical findings suggest that the out-of-sample predictive ability is strong and robust across short- and long-run horizons. The results could offer informational availability for monetary policymakers, hedge fund managers and international portfolio managers. They also provide additional support to the hypothesis that both markets are driven by the same information sets.

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1. Introduction and literature

The breakdown of the Bretton Woods System on August 15, 1971 and the adoption of the regime of the freely floating exchange rates generated an increasing interest in the examination of the relationship between currency exchange rate movements and economic parameters such as supply, demand, interest rates, economic growth, inflation rates and other macroeconomic fundamentals (Sercu & Uppal, 1995). The relationship between economic parameters and exchange rates has been one of the most controversial issues in international economics and a long-standing puzzle.

On the first hand, Meese and Rogoff (1983) are the first who show that it is virtually impossible to explain or predict nominal exchange rates using standard macroeconomic models and fundamental variables to short term periods, though they find that accuracy generally increases at longer periods and demonstrate that a variety of linear structural exchange rate models fail to forecast more accurately than a naive random walk model. Frankel and Rose (1995) conclude with doubts about the value of further time series modeling of exchange rates at high or medium frequencies using macroeconomic models and summarize the various difficulties in empirically relating exchange rate behavior to shocks in macroeconomic fundamentals. Moreover, empirical evidence in favor of predictive ability of macroeconomic fundamentals has been mainly found at longer horizons (Engel, Mark, & West, 2007). Cheung, Chinn and Pascual (2005) conclude that models with macroeconomic fundamentals cannot outperform the random walk and only models with Taylor rule fundamentals can have some predictive merit (Molodtsova & Papell, 2009; Wang & Wu, 2012).

The primary goal of this empirical paper is to examine, for the first time, the predictive ability of gold prices for the nominal/real exchange rate of the Australian dollar (with respect to the US dollar). The fluctuations of gold prices are crucial for the value of the AU

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dollar. This is because once foreign exchange traders know whether this commodity is strongly correlated with the production and export potential characteristics, they can better predict how gold prices could affect the exchange rate. Our empirical findings suggest that we find a strong systematic relation between gold prices and the exchange rate. In other words, we conjecture that the mechanism leading to these results is the fact that, for an open economy exporting gold, the exchange rate should reflect fluctuations in gold prices (Obstfeld & Rogoff, 1996). Our empirical work is closely related to the literature on using commodity prices to predict exchange rates. Chen, Rogoff, and Rossi (2010) provide evidence in favor of the fact that the out-of-sample predictive ability of commodity prices for nominal exchange rates is minimal, while Chen and Rogoff (2003) consider commodity price indices and find in-sample empirical evidence for predicting real exchange rates. Beckmann and Czudaj (in press) investigate the association between oil and effective dollar prices through a nonlinear adjustment model and they document causality runs from exchange rates to oil prices and not vice versa. In terms of volatility transmissions, Hammoudeh, Yuan, McAleer, and Thompson (2010) show how the conditional volatility of a number of precious metals, including gold, affects the volatility of the US dollar/Euro exchange rate, with their results documenting that there exist interdependencies between the volatility coming from the previous metal price and the relevant exchange rate. Finally, Ewing and Malik (2013) also find strong evidence of a strong volatility transmission mechanism between gold and oil future prices, supporting cross-market hedging strategies and sharing common information sets across markets.

For Canada, Australia and New Zealand, countries that depend heavily on their commodity exports, the world price of commodities appears to have a strong and systematic relationship to their currencies (Chen & Rogoff, 2003). Chen (2004) extends his work to look at commodity-price augmented monetary models for nominal exchange rate determination and out-of-sample forecasts. He finds that the inclusion of a commodity price term can improve the forecast performance of these standard models dramatically. It has long been observed that there is a close relationship between the price of some primary commodities such as gold, oil, agricultural products and certain currencies, described as 'commodity currencies', with a large share of production and exports accounted by primary commodity products as the ones described before. The main idea behind 'commodity currencies' is that the value of a commodity currency usually rises and falls in relation with the value of the country's main commodity exports. Both the value of a commodity and the country's trade balance, with respect to the commodity, are significant factors in the valuation of commodity currencies. The most commonly traded 'commodity currencies' are those of the Canadian dollar, the New Zealand dollar and the Australian dollar. These three countries are highly integrated into global capital markets and are active participants in international trade.

Since 1983 the Australian dollar (AUD) has been floated, while core reforms, i.e. the development of an active local bond market and a non-deliverable forward currency market, led to the 'internationalization' of the currency and to a substantial rising of the living standards of Australians. This regime allowed the economy to absorb such shocks without the inflation changes that characterized the previous managed floating regime. Today the AUD is the sixth most traded currency globally, while the exchange rate between the AUD and the USD is the fourth most traded currency pair.

Commodity terms of trade have recently attracted renewed interest due to their wild fluctuations. Indeed, commodity prices are generally found to drive exchange rate fluctuations in commodity-exporting countries (Cashin, Cespedes, & Sahay, 2004; Chen & Rogoff, 2003) and econometric models of equilibrium exchange rates often include this series among their explanatory variables (Isard, 2007; Ricci, Milesi-Ferretti, & Lee, 2008). It has been also contended that movements in Australia's exchange rate are influenced substantially by changes in its terms of trade. This view has been corroborated by the work of Blundell-Wignall and Gregory (1990) and Gruen and Wilkinson (1994) who establish a long-run relationship between Australia's exchange rate and its terms of trade. This should be of interest to all those countries whose currencies seem to be susceptible to terms-of-trade shocks. The list of such countries includes not only small, open, commodity-exporting countries like Australia, Canada, and New Zealand whose terms of trade are shocked positively by rises in international commodity prices, but also the USA, Japan, and Germany whose terms of trade are shocked negatively by rises in international oil prices.

Australia is a major exporter of mining and agricultural commodities and it has long been observed that there is a close relationship between commodity prices and the AUD (Viney, 2000). According to Viney (2000), commodity prices, at least in the medium-term, affect the value of the AUD due to Australia's dependence on mining and farming exports. When the world price of commodities rises, the AUD tends to appreciate and vice versa. Blundell-Wignall and Gregory (1990), Blundell-Wignall, Fahrner, and Heath (1993) and Gruen and Wilkinson (1994) argue that the terms of trade are a fundamental determinant of the real exchange rate for a commodity exporting country like Australia, following the long literature that has studied the impact of exchange rate volatility and exchange rate regimes on trade flows. Sercu and Uppal (1999) conclude that even in a very simple model it is possible to have either a negative or a positive relation between trade and exchange rate volatility, depending on the source underlying the increase in exchange rate volatility. Moreover, Chen et al. (2010) support that price fluctuations in world commodity markets represent exogenous terms-of-trade shocks that impact a significant share of their country's exports.

After coal, iron ore, and crude petroleum, gold currently ranks fourth in value of all Australia's merchandise exports. There is perhaps no other industrial endeavor that has had such a profound effect on the Australian nation as gold economically and socially. Australia has had a productive and vibrant gold industry for over 150 years, while the extent of economic gold resources has always been a difficult issue to quantify; therefore, the fluctuations of international prices of gold are extremely crucial for the value of the AUD.

The increase in world gold prices to more than USD500 an ounce by the early 1980s and the widespread acceptance of exploration techniques, led to a rapid increase in gold production. It is true that gold in many cases characterized and as 'safe haven' for investors seeking protection from falling stock prices (Baur & Lucey, 2007). In other words, the presence of gold is likely to enhance the stability and resiliency of the financial system, because it dampens negative shocks falling on various assets

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