Universität Zürich[UZH]

COMMON DETERMINANTS AND SPILLOVERS IN AUSTRALIAN AND CHINESE STOCK PRICES, EXCHANGE RATES AND BILATERALLY TRADED COMMODITIES

MASTER'S THESIS

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Executive Summary

Over the last decades, China became Australia's biggest trading partner. The trade relationship has increased due to China's unique economic growth in the past and its continuous high demand for resources. Australia's economy has therefore been able to benefit from its exports and high commodity prices. Nevertheless, the strong ties between the two economies also mean that Australia is increasingly dependent on the future path of the Chinese economy. The aim of this thesis is to examine the trade relationship between Australia and China and its influence on key macrofinancial variables. The connection between the two countries is used to analyse the forecastability of related stock markets, the exchange rate and commodity prices.

There is a wide array of academic contributions discussing the predictability of economic key variables. In one of the most recognized works in the field, Chen et al. (1986) examine the significance of macroeconomic state variables in their ability to forecast price movements in the stock market. The link between commodity prices and commodity currencies is studied by Chen et al. (2010). They find evidence that exchange rates can predict price changes of commodities. However, a lot of studies report mixed results and it remains difficult to find stable and significant patterns.
The empirical part starts with the analysis of a set of macrofinancial variables, using a vector autoregressive (VAR) model. VAR models are a popular tool for data description, forecasting, structural inference and policy analysis (Stock and Watson, 2001). The four target variables that are analysed are the AUD/CNY exchange rate, the Chinese stock market, the Australian stock market and the Australian Index of Commodity Prices. Applying impulse response functions and forecast error variance decompositions, their reaction to changes in macrofinancial determinants is observed. It can be shown that some of the variables are indeed interconnected. The commodity prices react strongly to changes in the money supply of China, to name one example. The analysis of three different time periods, "Pre WTO" (1995-2001), "Pre GFC" (2002-2007) and "Post GFC" (2010-2016) sheds light on structural changes

in the determinants. As such, the Chinese Consumer Confidence Index reports a higher importance after the financial crisis for all target variables except the Australian Stock Index. The stronger response of the Australian Stock Index to shocks in the Shanghai Stock index after the financial crisis reflects the increased importance of China for the Australian economy.

The forecastability of the target variables is analysed by a procedure first introduced by the Swiss National Bank to forecast inflation. In this thesis, all possible combinations of one to four determinants plus the respective target variable are set up as VAR models and preliminary ranked by the lowest root mean squared error (RMSE). The best models are combined to produce a final forecast, that can be evaluated with the real value. The procedure leads to a considerable reduction of the RMSE, overperforming a "naive" no-change forecast. The forecasts deliver better results in times of lower volatility, whereas during the financial crisis no overperformance was achieved.

The empirical part is completed with the analysis of related sectors. Iron ore and coal are the two most exported commodities from Australia to China and are mostly used in the steel industry. Downstream segments of the Chinese steel industry are observed, as well as the Australian mining industry. Furthermore, the single stocks of the three biggest Australian mining companies and three of the biggest Chinese steel companies are analysed. The stock returns and stock sub-index returns are set up as dependent variables and the commodity returns as independent variables in an univariate regression setting. Both at the daily and weekly horizon, significant predictability is found.

This thesis shows that the trade relationship between China and Australia increased the interconnection of the two countries, affecting stock prices and commodity prices, but also the monetary policy and exchange rate. On industry level, the Australian mining industry as well as the Chinese importers of these resources are influenced by each other. The thesis has a broad setting and therefore is a good basis for a more detailed analysis of the target variables or the connection of commodity prices and stock prices of related industry sectors.