# CALIFORNIA STATE SCIENCE FAIR
# 2005 PROJECT SUMMARY

**Name(s)**

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**Project Number**

**S1218**

**Project Title**

## The Effect of Nominal Interest Rates, Real Interest Rates, and Trade Balance on the Exchange Rate of the US Dollar

**Abstract**

**Objectives/Goals**

The objective was to determine the effect of nominal interest rates, real interest rates (rates corrected for inflation measures) and trade balance (exports minus imports) on the exchange rate of the US dollar. The project also looked to determine the percentage correlation that each variable had with the exchange rate of the US dollar.

**Methods/Materials**

Data was gathered on nominal and real interest rates in the US and five other foreign countries (Canada, Mexico, UK, Japan and Germany), as well as export and import trade data between the US an each of these countries over the past 20 years. The gap in real and nominal interest rates between the US and each foreign country was calculated as well as the trade balance. Then each variable was compared to the exchange rate by deriving a correlation coefficient. The percent correlation between interest rates and exchange rates was calculated on a quarterly basis while percentage changes for trade balance were evaluated monthly.

**Results**

Nominal interest rates had the largest influence on the exchange rate, with a 64.54% correlation average for the two highest trading partners of the US. Other variables proved to be exchange rate determents while real interest rates had the lowest correlation with the exchange rate.

**Conclusions/Discussion**

Contrary to the hypothesis that real interest rates would have the strongest positive correlation with the value of the US dollar against foreign currencies, (which was based on the fact that real interest rates reflect the real return on the investment), nominal interest rates proved to be the strongest determinant. Changes in nominal interest rates cause quick and substantial movement of capital between countries, increasing or decreasing the demand for the US dollar and thus affecting the exchange rate. Trade balance, although proven to be an exchange rate determinant, was less influential because of the observed lag affect: the exchange rate values changed a few months after trade balance figures were released.

**Summary Statement**

This project tests the effect of different economic variables on the exchange rate of the US dollar.

**Help Received**

none