

# The Dynamics of Chinese Purchases of U.S. Securities

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**Abstract.** A significant amount of academic literature exists on the United States' trade deficit, and its financing through foreigners' purchases of U.S. securities. Over the last several years, the trade relationship between The U.S. and China has received considerable attention as China has acquired large positions in U.S. securities. This study examines the dynamics of how China has allocated its portfolio of short-term and long-term U.S. Treasury securities relative to its holdings of U.S. equity, corporate debt, and asset-backed securities. We find that changes in Chinese holdings of short-term Treasuries are well explained through portfolio allocation dynamics, while changes in Chinese holdings of long-term Treasuries are not well explained by portfolio allocation dynamics.

## 1. Introduction

China is the largest foreign holder of long-term U.S. Treasury securities. As of June 30, 2010, China held \$1.2 trillion, or 35% of all long-term Treasuries held by foreigners, in addition to holding \$93 billion, or 9.7% of all short-term Treasuries outstanding [1]. Because China has emerged as the largest foreign creditor of the U.S., a significant amount of academic research has been done to understand how this situation developed over time, as well as to predict the impact of the U.S. trade deficit going forward. This study seeks to add to this literature by exploring China's investment portfolio choices as the security-type level, allowing a more granular analysis of Chinese investment behavior.

## 2. Experiment, Results, Discussion, and Significance

Foreign purchases of U.S. securities are tracked by the Federal Reserve through its Treasury International Capital (TIC) data system. Each month, the Federal Reserve publishes data on the purchases of U.S. securities, and this data is broken down by country, as well as by security type. The securities that are tracked by the TIC system are long-term Treasuries, short-term Treasuries, equity securities, corporate debt securities, and asset-backed securities. This set of securities comprises the universe of U.S. securities that are available for purchase by foreigners and is the dataset for this analysis.

The hypothesis of this experiment is that Chinese purchases of U.S. long-term and short-term Treasury securities can be explained in relation to Chinese purchases of other U.S. securities. That is, a regression of Treasury purchases on the purchases of other U.S. securities will yield coefficients that are statistically different than zero. Further, because each of the security types represents an alternative, or substitute investment vehicle, portfolio theory suggests that these coefficients should be negative. To estimate the portfolio dynamics of Chinese investment behavior in Treasury securities with respect to other security types, the following equation is estimated using ordinary least squares with data from 1995Q1 to 2011Q2:

$$\Delta\text{Treasury} = \alpha + \beta_1 * \Delta\text{Treasury} + \beta_2 * \Delta\text{Equity} + \beta_3 * \Delta\text{Corporate Debt} + \beta_4 * \Delta\text{Asset-Backed} + \varepsilon \quad (1)$$

The estimation of equation (1) with short-term Treasuries and long-term Treasuries as the dependent variable is:

Table 1: Summarized Regression Results From Equation (1)

Dependent Variable: $\Delta$ Short-Term Treasuries			Dependent Variable: $\Delta$ Long-Term Treasuries		
Sample: 1995Q1 - 2011Q2			Sample: 1995Q1 - 2011Q2		
Model A			Model B		
Independent Variable	Coefficient	P-Value	Independent Variable	Coefficient	P-Value
Constant	-1780	0.07	Constant	39.72	0.96
$\Delta$ Long-Term Treasuries	-0.04	0.74	$\Delta$ Short-Term Treasuries	-0.08	0.64
$\Delta$ Equity	-1.93	0.00	$\Delta$ Equity	-1.87	0.03
$\Delta$ Corp Debt	1.66	0.00	$\Delta$ Corp Debt	1.28	0.06
$\Delta$ Asset-Backed Securities	-0.79	0.00	$\Delta$ Asset-Backed Securities	-0.34	0.26
R-Squared	0.84		R-Squared	0.43	
Adjusted R-Squared	0.80		Adjusted R-Squared	0.30	

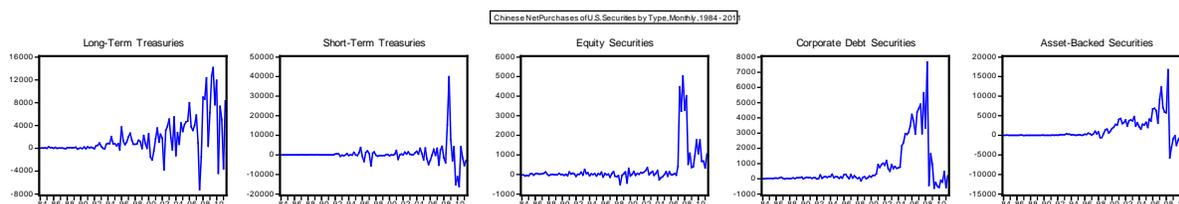
The above results show that portfolio dynamics can explain about 84% of the variation of short-term Treasury purchases, but only 43% of the variation in long-term Treasury purchases. This result likely stems from the fact that short-term Treasury securities is defined as Treasuries with an original maturity of less than one year, while long-term Treasuries are defined as having an original maturity of more than one year. Because the TIC data reporting system uses this broad definition for long-term Treasuries, this variable may be too blunt to be explained using this dataset, while the change in short-term Treasury purchases appears to be granular enough to be estimated with a fairly high degree of accuracy.

From Model A, the results show that the change in long-term Treasury purchases have no statistically significant explanatory power with respect to explaining the change in short-term Treasuries. Likewise, Model B shows that short-term Treasury purchases have no statistically significant impact on the purchases of long-term Treasuries. This result is a little surprising, but, again, is likely the result of long-term Treasuries having a broad definition that may limit its explanatory usefulness in these models.

In Model A, the coefficients for change in equity, corporate debt, and asset-backed securities are all statistically significant at the 99% level of confidence. Except for Corp Debt, the coefficients are negative which is consistent with portfolio theory that these securities are substitutes to some degree. The positive coefficient for Corp Debt suggests that corporate debt and short-term U.S. Treasuries are compliments to one another. The remaining coefficients for Model B are not highly statistically significant, and reflect the lack of predictive power these variables have on the purchases of the broadly defined long-term Treasury securities.

### 3. Conclusions

The results of this research show that Chinese purchases of short-term Treasuries is fairly well explained by portfolio dynamics in alternative securities, while portfolio dynamics do not explain the purchases of long-term Treasuries well. This is likely the result of the broad definition for long-term Treasuries, which translates into its weak predictive power. Equity securities and asset-based securities appear to be substitutes for short-term Treasury securities, while corporate debt securities appear to be compliments to short-term Treasuries.



### 4. Acknowledgements

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[1] U.S. Government, Department of Treasury, Federal Reserve Bank of New York, Board of Governors of the Federal Reserve System, "Report on Foreign Portfolio Holdings of U.S. Securities as of June 30, 2010", Web.