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## Exchange Rate Movements And Adjustment of Balance Sheet in Japan

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### *Exchange Rate Movements under the Floating Exchange Rate Regime*

(Introduction)

Although the exchange rate is one of the most influential economic variables, its movements have proven to be difficult to explain empirically. Most theoretical models predict that the real exchange rate is determined by real interest rate differentials, balance of payments and other variables which affect market expectations. One of the difficulties of going from the theoretical model to empirical data appears to be due to the change in the relative importance of the determinants of the exchange rate over time. In the late 1970s, the sharp appreciation of the yen and the Deutsche Mark relative to the U.S. dollar were associated with the levels of the current account surpluses of Japan and Germany. However, in the early to mid-1980s, the U.S. dollar appreciated steadily against the yen even though Japan was accumulating a current account surplus. When the dollar appreciated, market participants paid much attention to the movement of the U.S interest rate. Regarding the depreciation of the yen after 1995, it does not seem to be related to Japan's accumulated current account surplus.

In this paper, we attempt to explain exchange rate fluctuations by taking into account factors that may have contributed to this apparent shift in the importance of its various determinants. In addition, we also try to estimate regression equations to explain the movements of real exchange rate with a rational expectation model.

In Part II the first part of this paper we examine the behavior of the exchange rate, the real interest rate, and the balance of payments under the floating exchange rate regime since 1973. We find that the effects of real interest rate differentials on the real exchange rates of the yen and DM to the dollar have become stronger, while the effects of disequilibrium in the balance of payments have weakened.

In Part III we show a simple portfolio balance model that was designed by Fukao (M. Fukao 1987) with an explicit risk premium term and parameters which are affected by a structural shift in the foreign exchange market. The model theoretically shows that the larger the international financial markets become, the smaller the required risk premium to finance the balance of payments disequilibrium by international investors would become. Because of this, the impact of the balance of payments disequilibrium on exchange rate decreases. The model also shows that the effects of the real interest rate differential on exchange rates increase (see M. Fukao, 1988).

Part IV empirically analyzes the actual movements in the real yen-dollar and DM-dollar exchange rates under the floating exchange rate regime. Regression equations are estimated to explain the movements of real exchange rates with real interest rate differentials and accumulated basic balances (equal to the accumulated current balance plus the direct investment). In order to measure changes in the relative importance of the determinants of the real exchange rate over time, we used an estimation procedure that allows changes in parameter values in the estimation period, i.e. Kalman filter method. Kalman Filter method differs from ordinary least square method in which parameter values in the estimation period remain unchanged. Moreover, these equations are also estimated with real interest rate differentials and accumulated basic balances that are amended in consideration of the larger international financial markets. The results of the estimation were consistent with the above theory: showing that the influence of the real interest rates differential has increased while that of the accumulated basic balance has declined.

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## ***Balance Sheet Adjustment of Japanese Companies in the 1990s***

(Introduction)

Recently, the expectation has been growing that the Japanese economy is taking off, and both the exchange rate of the Japanese yen against the US dollar and Japanese stock prices have been rapidly appreciating. Japanese GDP growth rate has been positive for the past two quarters.

However, the Japanese economy continues to be faced with the "balance sheet problem". Since the burst of the Japanese bubble economy, asset values, particularly land values, have been depreciating and many Japanese companies have been suffering from huge latent losses on their balance sheets. In the 1990s, although Japanese companies have been trying to improve their management style, they have not been successful in solving their management problems. Without adequate improvements in their management, Japanese companies were hit by a great recession in autumn of 1997, and they were forced to start a full-fledged restructuring of their management resources.

In this paper, we attempt to examine the behavior of these Japanese companies by each sector. We examine changes in their balance sheets after the collapse of the Japanese bubble economy in the 1990s, using the "Financial Statements Statistics of Corporations by Industry, Annually", published by the Ministry of Finance. We attempt to answer the following queries:

1. When did Japanese companies begin to shave their balance sheets? How was this done?
2. How did the "credit crunch" urge Japanese companies to reduce their liabilities?
3. How much is the real net worth of the real estate industry which has been hit hard by the deep decline of land prices? To answer this, we estimated the "latent profits and losses" caused by the price change of lands and of securities.

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## ***Fluctuation of Japanese Stock Market and the Cost of Capital***

(Introduction)

The Japanese stock market fluctuated dramatically during the growth and then the subsequent burst of the bubble economy. Due to the largest rise and fall of the current stock market, Japanese companies were forced to change their method of raising funds. Although equity finance was the most popular measure for corporate finance in the late 1980's, after the burst of the bubble, issuing bonds become the common method, and 80% of all corporate finance was done through these bonds.

The net asset value of listed companies decreased, as companies had to realize the latent assets of their stock or real estate holding in order to pay dividends under the worst profitability conditions. We believe that this was the reason for the lower stock prices. Moreover, the expected return declined due to the lower stock prices and it become difficult for companies to make new investment in plant and equipment.

In "II. Fluctuation of Stock Prices and Corporate Finance", we analyzed the fluctuation of the stock market and the trends in corporate finance from late 1980s. In addition, we took notice of whether the policy to pay stable dividends -- which is typical for Japanese companies -- was changed or not when net profits were negative after the burst of the bubble economy. In "III. Estimation of Cost of Capital", we evaluate the real cost of funds which was taken as the weighted average of the cost of equity. Finally, we estimated the net asset value calculated by total asset minus total liability in order to compare this with the total market value. We also analyzed which items on the balance sheet caused the fluctuation of stock prices in "IV. Net Asset Value and Total Market Value".