

***Comments on Money Market Integration during the
Global Financial Crisis: Evidence from the Interbank
Markets in Tokyo and London by Schin-ichi Fukuda***

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The purpose of this paper is twofold. First, this paper investigates the degree of integration between the London and Tokyo interbank markets, and with particular interest in exploring how the Global Financial Crisis (GFC) affects the degree of integration between these two markets. Second, the paper is concerned with the relative role of the *counterparty risk* and the *liquidity risk* in explaining the TIBOR-LIBOR spread (termed *Japan Premium*) during the GFC period.

I think this paper is on an important topic given the influence of the GFC and the importance of Tokyo and London interbank money markets. Furthermore, because liquidity risk is usually associated with currencies, the idea of exploring the influence of GFC in both the dollar denominated market and the yen-denominated market may potentially be important. Nevertheless, I think this paper can be strengthened from several aspects.

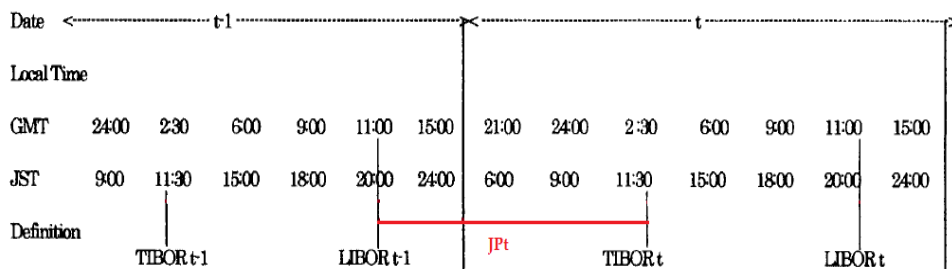
1 NON-SYNCHRONOUS TRADING

We know that the British Bankers Association publishes TIBOR at 11:00am (**JST**) and the Japanese Bankers Association publishes LIBOR at 11:00am (**GMT**). In other words, the trading behaviors of these two data series are non-synchronous.

The conventional way for resolving this non-synchronous trading problem in the

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Fig. 1. Non-synchronous trading between TIBOR and LIBOR (Ito and Harada, 2005)



literature is to calculate the Japan Premium (JP) as the difference between the current TIBOR and last period's LIBOR (Covrig, Low and Melvin, 2004, Batten and Covrig, 2004 and Ito and Harada, 2005, among others). Namely,

$$JP_t = TIBOR_t - LIBOR_{t-1}. \quad (1)$$

Nevertheless, Japan Premium is calculated as the contemporary difference between TIBOR and LIBOR in this paper, denoted by JP_t^* . More specifically,

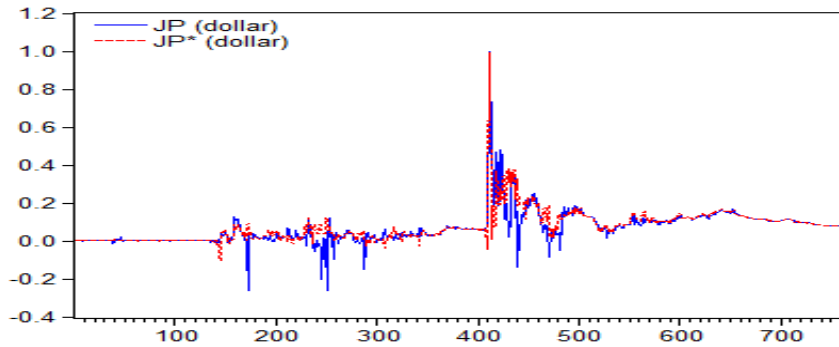
$$JP_t^* = TIBOR_t - LIBOR_t. \quad (2)$$

Figure 2 illustrates the Japan Premium obtained from equation (1) and (2) respectively for the period of January 2007 - January 2010. From Figure 2, we can see that JP_t and JP_t^* behave differently in the Eurodollar market (especially for the turbulent periods). The difference in the Euroyen market is not as significant as that in the Eurodollar market.

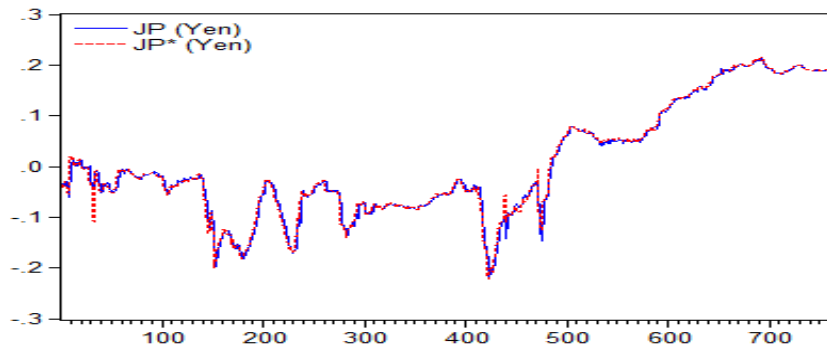
Therefore, I would either calculate the Japan Premium based on equation (1) or perform a sensitivity analysis of JP_t and JP_t^* . Of course, there are other methods to address the issue of non-synchronicity, such as the bias correlation approach by Lo and MacKinlay (1990) and the statistical synchronization method by Burns, Engle, and Mezrich (1998).

Fig. 2. The TIBOIR-LIBOR Spread in the period of GFC

(a) Eurodollar



(b) Euroyen



2 THE COINTEGRATION RELATIONSHIP BETWEEN TIBOR AND LIBOR

To explore the degree of integration, this paper relies on two measures, namely the annual average of Japan Premium and the correlation coefficients between TIBOR and LIBOR for the tranquil periods and the turbulent periods.

Given that cointegration relationship has been recognized as an important measurement for the degree of integration in the interbank money market (for instance, Batten and Covrig, 2004), it will be useful to conduct respective analysis (with consideration of structure break) for the period of GFC.

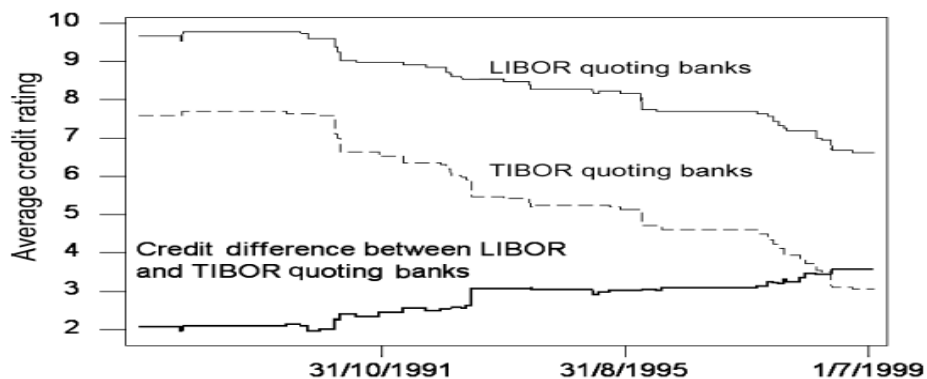
3 AVERAGE CREDIT RATING OF LIBOR AND TIBOR QUOTING BANKS

The paper states that *during the global financial crisis, the credit quality of European and US banks deteriorated substantially, but that of Japanese banks did not, ...*

It would be nice if one can provide some evidence to support this argument. One possible way is to calculate the average credit rating of LIBOR and TIBOR quoting banks as in Batten and Covrig (2004). The average credit rating is calculated by assigning numeric values from 12 (AAA) to 1 (BB) based on the long-term credit ratings by Standard & Poor's and averaging the credit ratings of institutions within each group for the period.

For example, Figure 3 (from Batten and Covrig, 2004) demonstrates that the average credit ratings of both TIBOR and LIBOR quoting banks deteriorate over the period of Jan 1988 - Jul 1999. Furthermore, compared with LIBOR quoting banks, the credit deterioration of TIBOR quoting banks is more severe.

Fig. 3. The average credit ratings of LIBOR and TIBOR quoting banks for the period of Jan 1988 - Jul 1999 (Batten and Covrig, 2004)



Correspondingly, one can calculate the average credit ratings of LIBOR and TIBOR quoting banks for the period of GFC to illustrate the role of counterparty risk.

4 UNIT ROOT TESTS AND SERIAL CORRELATION TEST

Batten and Covrig (2004) show that JP is stationary until 1995 and it becomes non-stationary after that. Therefore, to avoid running spurious regressions, one can perform unit root tests (allow for unknown structural break in the sample period) for both the dollar-denominated and yen denominated Japan Premium before running regressions.

Furthermore, it is also important to perform unit root tests for other variables in the regression (excluding dummies). For example, the Credit Default Spread (CDS) and the Overnight Index Swap (OIS) may be non-stationary as advised in the literature.

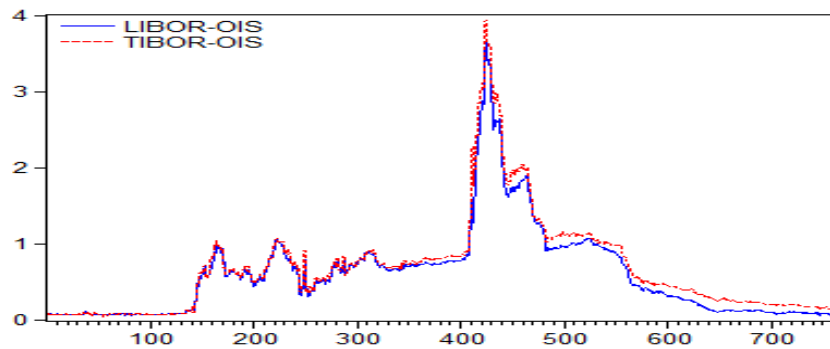
If some of the data series are found non-stationary, one can take first difference of these variables or seek for alternative modeling techniques (for example, error correction model).

In addition, when there are lag of dependent variables on the right-hand side of the regression, Durbin-Watson statistic is no longer valid. Instead, one can conduct the Durbin-h Test or the Lagrange multiplier test.

5 AN ALTERNATIVE FRAMEWORK

An alternative framework for analyzing the interbank money market is proposed by Morana and Cassola (2010). Instead of working on the interbank money market rate (i.e. LIBOR and TIBOR) directly, Morana and Cassola (2010) resort to the Fractionally Integrated Heteroskedastic Factor Vector Autoregressive (FI-HFVAR) model to explore the dynamic relationship between EURIBOR-OIS (EO) spread and LIBOR-OIS (LO) spread. Similarly, one can explore the relationship between TIBOR-OIS (TO) spread and LO spread, which are illustrated in Figure 4.

Fig. 4. The LIBOR-OIS and TIBOR-OIS spread for the period of GFC



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