P-STAR MODEL APPROACH OF LINKING MONEY AND PRICE IN THAILAND

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P-STAR MODEL APPROACH OF LINKING MONEY AND PRICES
IN THAILAND

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This project is submitted in partial fulfillment of
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Statement of Originality

The work described in this Final Year Project, entitled

“P-Star Model Approach of Linking Money and Prices in Thailand”

is to that best of the author’s knowledge that of the author except

where due reference is made.

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(Date submitted)                                                                 Maggie Tang May Jean
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P-STAR MODEL APPROACH OF LINKING MONEY AND PRICES IN THAILAND

By

Maggie Tang May Jean

Simple sum monetary aggregate is the traditional monetary aggregate that is used by central banks in the world in monetary policy. The relationship between simple sum monetary aggregate and inflation had been proven by many past studies. However, the increasing of financial liberalization in 1980s has blurred the relationship between money and price. Many alternative monetary aggregates have been introduced. One of them is Divisia monetary aggregate. This study compares the performance of simple sum and Divisia monetary aggregates in Thailand by using P-Star model. Using quarterly data from 1993:1 to 2005:4, the result in this study illustrated that simple sum M2 contains more information in predicting inflationary movement in Thailand compared to other monetary aggregates. In addition, P-Star model can perform well in tracking inflation in Thailand.
PENGUNAAN KAEDAH P-STAR UNTUK MENGAITKAN WANG DAN HARGA DI THAILAND

Oleh

Maggie Tang May Jean

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CHAPTER ONE
INTRODUCTION

1.0 Thailand’s Economic Background

During the early 1970s, US posted a set of import quota towards Japan. This created opportunities to Thailand to enter the US markets. In 1972, textile industries were growing speedily when US became the main importer of textile from Thailand. Besides the textile industry, cement industry experienced a boom in Thailand during 1975. It became the largest cement industry in Southeast Asia and the net exporter of cement.

In the late 1970s, the world fuel price increased and it caused demand for Thailand’s export to drop. Thus, Thailand’s economy slumped. The Thai government started to freeze the commodities prices in order to control inflation. This action caused the investors in commodities sectors to draw out their capital from Thailand. Cement industries were seriously affected.

The Thailand currency was not stable at that period as it was affected by the world major currencies. In 1978, the Thai government decided to peg the baht to the US Dollar. From 1981 to 1984, Thailand government devalued the baht three times. In May and July 1981, the baht had been devalued 1.083% and 8.7% respectively (Phongpaichit and Baker, 2002, pp. 153). In November 1984, the Thai government

1 The discussion in this section is adopted from Lepoer (1987), Phongpaichit and Baker (1998), and Phongpaichit and Baker (2002).
devalued the baht by 14.9% and fixed the exchange rate to basket system with 25 baht per Dollar. The devaluation of the baht helped Thailand’s export boost again. Cement based industries recovered and back to the net exporter a year after the baht was devalued. The devaluation of baht also created opportunities for Thailand to attract foreign direct investment (FDI).

In 1985, Japan was forced by the US to revalue the Yen in the Plaza Accord. As a result, Yen rose 89% against US Dollar (Phongpaichit and Baker, 2002, pp. 156). The revaluation of Yen caused a lot of investors who had invested in Europe and US to draw their investment back and invest in Southeast Asia due to the low cost labour and natural resources. The devaluation of the baht and revaluation of the Yen caused FDI to deluge into Thailand. Construction sectors in Thailand also expanded well due to the high FDI.

Table 1 shows the Thailand FDI inflow from the year 1981 to 1995. In the mid 1980s, the FDI inflow grew rapidly from 6.6 billion baht to 30.9 billion baht. The main reason of this dynamic growth was the devaluation of Thai baht in 1984. Japan was the biggest FDI investor in Thailand. However, in the early 1990s, the total percentage of FDI that Japan invested in Thailand had dropped due to the revaluation of the Yen. The main inflow of FDI in Thailand was for industrial and manufacturing sectors.

In 1990s, Thailand’s economy had grown dramatically. Tourisms, exportations and investments became the main factors in leading Thailand’s economic growth. The exclusion of the capital control over financial capital market allowed
foreign capital flow in and out Thailand easily. In addition, the abundance supplies of agriculture products in Thailand caused the export in manufacturing to increase as well. The manufacturing export accounted for more than 81% of total export. In 1992, Thailand signed ASEAN Free Trade Area (AFTA) with ASEAN countries. This caused the export to ASEAN to become larger than EU and Japan during the 1990s.

### Table 1: Net Flow of FDI, 1981-1995

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Total (billion baht)</td>
<td>6.6</td>
<td>30.9</td>
<td>46.4</td>
</tr>
<tr>
<td>Total as % of GDP</td>
<td>0.7</td>
<td>1.9</td>
<td>1.4</td>
</tr>
<tr>
<td>Japan</td>
<td>27</td>
<td>44</td>
<td>21</td>
</tr>
<tr>
<td>Korea</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>8</td>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>Taiwan</td>
<td>1</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Total North Asia</td>
<td>37</td>
<td>66</td>
<td>46</td>
</tr>
<tr>
<td>Singapore</td>
<td>4</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>USA</td>
<td>32</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>UK</td>
<td>5</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Industry</td>
<td>33</td>
<td>49</td>
<td>31</td>
</tr>
<tr>
<td>Finance</td>
<td>0</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Construction</td>
<td>16</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Real Estate</td>
<td>3</td>
<td>11</td>
<td>28</td>
</tr>
</tbody>
</table>

Source: Adopted from Phonpaichit and Bakar (2002, pp. 161, Table 5.5).

In the late 1990s, Thailand’s economic performance began to slow down. Thailand was facing surpluses of building due to the speedy growth of construction sectors. A lot of properties in Thailand had no demand. Most of the banks in Thailand borrowed short term credit from oversea banks with low interest rate. The money was lent to businessmen and developers in Thailand with high interest rate. The flatted of property markets caused property developers to be unable to pay back their loan. In 1997, Thailand’s biggest property developer was declared a bankrupt. Few months later, Financial One, Thailand’s famous financial institution was also declared a bankrupt. Non performance loan in Thailand doubled.
At the same time, Thailand’s balance of payment became worsen. This is because Thailand imported a lot of material and capital equipment for building infrastructures, offices and factories. The weak performance of financial institutions and the poor balance of payments caused the speculators to find out that the baht fixed rate was overvalued. Thus, speculator began to speculate the baht. The stock price in Thailand dropped. Thailand spent US$ 33 billion of the bank reserve in controlling the fixed value of the baht. However, the pressure of speculation and maturity of foreign debt caused the Thai government to fail to adjust the value. Thus, in 2 July 1997, Thailand floated the baht value. The baht dropped from 25 per dollar to the lowest rate at 56 per Dollar in January 1998. Thailand suffered in the financial crisis. The investment demand dropped sharply during the crisis and this led to high unemployment rate.

Thailand sought help from the International Monetary Fund (IMF) to overcome the financial crisis. IMF agreed to assist Thailand with the condition where Thailand was required to follow the rules that were set by the IMF. The IMF suggested Thailand to reduce government budget in order to reduce inefficiency and wastage among government agency. IMF also insisted that Thailand should raise taxes and interest rate to reduce the money movement in the market.

In March 30, 1999, the Thai government implemented an economic stimulus package to boost aggregate demand in the market. Expenditure measures were designed to increase employment and income. Fund for support this component mainly come from Oversea Economic Cooperation Fund of Japan, the Japanese Export-Import bank and the International Bank for Reconstruction and Development.
Another method is tax measure. The main function of tax measure was to reduce tax burden which was important for small enterprises and public to survive in the crisis due to the small amount of taxation.

After launching an economic stimulus package, the government had also introduced another package on 10 August 1999 to encourage private investment. This package is aimed to further stimulate economic recovery, economic restructuring process and long run competitiveness of the private sector. There were basically 3 main components namely tax and tariff measures, equity investment measures and real estate recovery measures to support the package.

**Figure 1: The Gross Domestic Saving and Investment, 1980-2005**

From Figure 1, it is clearly shown that during the mid 1980s the domestic investment in Thailand grew rapidly. However, from the year 1995 to 1997, investment dropped sharply. This became one of the reasons that lead Thailand to a financial crisis. After the reformations were implemented during the financial crisis,
domestic investment in Thailand showed an increasing trend. The growth of saving rate is quite stable in Thailand. Yet, it still showed a growing trend in the early 1990s.

1.1 Thailand Financial Development

Since 1970s, Thailand has performed a good management in monetary and banking issues. The financial institutions in Thailand were successfully developed. Bank of Thailand (BOT), the central bank in Thailand had performed its responsibilities well in controlling monetary policy. One of the reasons of this good performance is that BOT and the Ministry of Finance are separated in Thailand. Thus, BOT can bring out its decision at appropriate time without the political interference.

The Security Exchange of Thailand (SET) was founded in 1974 due to the inactiveness of Bangkok Stock Exchange. In 1976, the expansionary monetary policy brought an increase for SET. However, SET failed due to the price swings in 1979. The inadequate regulation and supervision of the market and speculation caused uncertainty to the trade in the market. Thus, this problem damaged investors confidence (Lepoer, 1987).

In April 1979, a bond repurchase market was established to increase the liquidity of government bonds (Lepoer, 1987). Repurchase market was mainly founded to improve the money market condition in Thailand during that time. Its purpose is to create a more opened market and enable BOT to intervene and monitor

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the money market. However, in repurchase market, most of the bonds are 1-day and
14-days maturities which accounted 90% of all volume (Valdepenas, 1995). This
prohibited the BOT in controlling or influencing liquidity in the long term.

In the early 1980s, financial institutions were regulated strictly. A lot of
economic agents searched for other alternatives to invest and finance in orders to
escape from the regulation and interest rate risk. This phenomenon brought rapid
growth to non-banking financial intermediaries and caused the traditional roles of
bank sectors to drop. In the same time, money and capital markets went through a
speedy development and became important in Thailand. Financial Institution Lending
Rate Act B.E 2523 (1980) was established in 1980 due to the high ceiling lending rate
during that time (Soekarni, 1995). It was founded and operated by the Ministry of
Finance. The purpose of this Act was to lift the lending rate ceiling in Thailand so that
BOT had more flexibility in setting the interest rate ceiling.

In the late 1980s, financial markets in Thailand were still being regulated.
Government used direct method to control the financial system and imposed interest
ceiling. On the loaning side, agricultural sector experienced selective credit. They
have priority in borrowing. However, the interest rate imposed on this kind of loan is
much lower than market interest rate. Therefore, it influenced the development of
credit service. Besides, due to the fixed rate to US dollar, currency exchange also had
been regulated strictly.

As a result, Thailand government started the planning of 3 years duration
financial reform plans. The first phase of financial reform was implemented in 1989.
This financial reform plan focused on enhancing the supervision and monitory of financial system. It was also used to increase the competitiveness of banking system. Through these, Thailand’s financial market became deregulated and more liberalized. Payment system and financial instrument were also boosted and developed.

Interest rate ceiling began to lift gradually since the inception of financial reform plan. In June 1989, interest rate ceiling for deposits more than one year were eliminated to encourage long term money movement in the market (Soekarni, 1995). These changes gave commercial banks more flexibility in adjusting interest rates by themselves and reducing the problem of saving-investment imbalances. Besides, it also increased the competition in financial market.

In 1992, the interest rate ceiling was completely abandoned due to its inflexibility and inconvenience toward the market. A few regulations were also changed. For instance, holding certain limit of government bond for opening branch were no longer required. Besides, selective credits for agricultural and currency control also greatly relaxed. In the same time, enactment of the securities and exchange Act 1992 was introduced (Valdepenas, 1995). This Act allowed debt instruments to mobilize funds directly from public without complicated processes. On the other hand, short term liquidity and other money market transaction can be done by repurchase market. Negotiated Certificates of Deposits (NCDs) were also introduced in 1992 to cover the failure of issues transferred Certificates of Deposit (TCDs).
In the mid 1990s, a second phase was introduced to enhance financial development in order to maintain the market growth. The government emphasized on raising financial efficiency by setting up banking system to support and enlarge the export growth rate. They also encouraged mobilizing domestic saving where citizens from rural areas were exposed to financial market. Lastly, the government also helped to accelerate the development of Thailand financial system into a regional financial centre.

The Export and Import Bank (EXIM) was established in February 1994 to promote Thailand’s export and investment as well as provide exporters loan, loan guarantee, insurance and other financial services. Generally, sources of fund of EXIM bank come mainly from domestic and foreign borrowing and issuance of financial instrument. This bank also received loan from BOT by selling the export bill. However, deposits from the general public were not accepted due to its policy.

Besides EXIM bank, Exchange Equalization Fund (EEF) was another mechanism used by Thailand to control liquidity in the market. EEF would announce its daily mid rate for US dollar in order to let banks to sell or buy the US dollar unlimited within a certain range. Usually, banks would buy the US dollar from EEF when liquidity is high and interest rate is low and vice versa. It was an easy and safety method that bank used to manage their liquidity.

In March 1993, government gave licenses to 46 commercial banks in Thailand to operate the International Banking Facilities (IBF) which took the responsibility in out-out and out-in transaction in foreign currencies. It also provided cheaper
borrowing for foreign funds. This participation was expanded to foreign financial institution in the year 1994 to promote the trade integration between Thailand and its nearby countries. Moreover, foreign financial institutions were encouraged to open branches outside Bangkok to develop the financial sector in rural areas.

With the aim to accelerate the financial market, the government provided varying degree of direct lending through Specialized Financial Institution (SFI) under the monitor of Ministry of Finance (MOF). Some banks participated in this institution mainly Bank for Agriculture and Agricultural Cooperation (BAAC), EXIM bank and Small Industrial Finance Corporation (SIFC). They carried their responsibility in providing loan to the agricultural sector, exporters and small industries. Moreover, BOT also expanded its function in being the lender of the last resort to financial companies with the purpose to enhance competitiveness in financial markets. The amount of the loan depended on the size of the deposit and borrowing of the public.

During the financial crisis, Thailand also asked for help from IMF to solve the problem which occurred in the financial sectors. IMF agreed to lend US$17.2 billion to Thailand to reform her economy over 34 months (Phongpaichit and Baker, 2002). Besides this, the Thai government had implemented a few strategies to rehabilitate its financial sector.

When Thailand allowed the floating of exchange rate in 1997, the value of baht depreciated. Therefore, the government came out with a plan to control the amount of baht in the exchange market. This plan controlled the speculation by setting a 2 tier foreign markets where one market held onshore and one offshore. The baht
could only be traded in this 2 tier markets where the baht supply was limited. However, this method seemed to be useful only in initial stage. Therefore, the government came out with another strategy called 50 million baht guideline policy in January 1998. The main purpose of this policy was to increase confidence and convenience of investors to invest in Thailand. This plan also aimed to reduce the speculation in the offshore market.

At the same time, the government simultaneously launched some plans which mainly emphasized on solving problem, enhancing supervision and recapitalizing financial institutions. In October 1997, the government planned to close down 56 of the financial institutions that had been badly affected by the financial crisis. Due to this, the Financial Sector Restructuring Authority (FRA) was established. The main duty of the FRA was to protect the interest of the depositors and creditors of those closed institutions by auctioned the institutions’ assets and supervision the rehabilitation. In addition, the government came out with two new Acts namely the Financial Institution Act and Bank of Thailand Act to standardize the regulation and supervision framework among the banks and financial institutions. Moreover, there were some other plans taken by the government to reform the financial sector in Thailand. With those recovering plans, Thailand’s financial sector gradually recovered from the financial crisis.
1.2 Thailand Monetary Policy Development

In the early 1980s, Thailand faced an economic imbalance. The deficit of current account was caused by the decline of saving rate. The decline of saving rates increased foreign debts that were used for filling the investment and saving gaps. The total debt ratio increased from 17.3% to more than 25% in the mid of 1980s. The worsen balance of payment caused inflation increase in Thailand. In 1981, the inflation rate was 13% (Lepoer, 1987).

Hence, BOT decided to use money supply targeting to control the inflation. Under the money supply targeting, monetary authorities must achieve three basic properties. First is that the relationship between money supply and inflation must be stable in long run. This means that any exogenous shocks will not affect the relationship between these two components. Second, monetary authorities must be able to control the money supply. Third, monetary authorities must be able to measure the money supply quickly and accurately (Hataiseere, 1999).

In addition, money supply targeting was performed well with the fixed exchange rate regime which had been established since 1984. Hataiseere (1999) stated that monetary targeting was good for Thailand because M1 in Thailand had a strong and stable relationship with future inflation. However, financial liberalization caused M1 perform poorly in predicting inflation.

From 1985 to 1994, Thailand experienced financial liberalization. The deregulation of entry policies caused a lot of domestic and foreign non-bank financial
institutions to grow rapidly. The net foreign assets in monetary increased due to the increasing foreign borrowing. Thus, BOT faced difficulties to control money growth in the country. This had busted the properties of money supply targeting where monetary authorities must be able to control money supply.

Although financial liberalization benefitted to investors and consumers, it caused problems. Capital inflow in Thailand during that time increased in a great number. The increased capital caused labour shortage to happen and further brought to increase in real wage. At the same time domestic demand inflated, inflation increased and the baht was overvalued. The large amount of short-term foreign debt caused current account deficit.

Due to the financial liberalization, monetary authorities found that it was more effective if control on domestic credits growth. This was because interest rate target which can be tracked daily able to be measured more quickly and accurately than money supply. Thus, in 1995 BOT set 19% as the ceiling on lending growth and increased it to 21% in 1996. Thailand monetary authorities believed that this monetary policy would be able to control the current account deficit and inflation. However, BOT tightened credit policy did not apply on Bangkok International Banking Facilities (BIBF) borrowing. This caused the capital inflow increase beyond the expectation.

In July 1997, the Thailand baht was floated due to the crisis in current account deficit. So as the inflation was at a peak of 10.7%. IMF had involved in the reform program and monetary targeting regime had been adopted again. However, it did not
work well because the relationship between money and inflation was not stable during that period. From August 1997 to May 1998, IMF applied tight monetary and fiscal policies. In January 1998, the baht fell to a peak at 56 per dollar and inflation rose to 8.1% (Bangkok Post, 2007).

In March 1998, low interest policy was also adopted to stimulate domestic market spending and enhance business prospect. Another reason for adopting low interest policy was to gain faith and confidence from the public. In 1999, the economy of Thailand slightly recovered from the crisis. The domestic demand showed a positive trend and production in most sectors increased as well as the liquidity of monetary (Bangkok Post, 2007).

The changing of baht from basket peg system to manage floating system caused the monetary targeting less appropriate in controlling inflation. Therefore, in 1999 monetary authorities came out with an agreement that the policy regime should change to inflation targeting policy. Inflation targeting is a monetary policy that expects inflation and sets a target for future inflation. This kind of monetary policy can increase the confidence of investors and create economic stability in Thailand. The reason for changing monetary targeting to inflation targeting was because of the relationship between money and output growth became unstable over the time (Bank of Thailand Annual Economic Report, 1999).

In May 2001 Thailand began to implement inflation targeting monetary policy. Thailand used the core inflation as the target policy. Core inflation means inflation excluded the products that the prices are subject to external uncontrollable factors.
Those products included rice and cereal products, foods, electricity and gasoline. Monetary authorities projected the inflation for 1-2 years. Monetary authorities in Thailand set the core inflation targeting at the range between 0% – 3.5%. Monetary authorities must revise the appropriateness of target range annually. Once the inflation was out of range, the monetary authorities needed to adopt an appropriate monetary policy stance that could maintain the price stability and bring sustainable economic growth. Hataiseree (1999) stated that monetary policy that under inflation targeting is a forward looking policy. This is because monetary policy that is used to adjust the ‘desired’ inflation in the future (Bank of Thailand, 2008). Besides using core inflation targeting, Thailand monetary authorities used 14 days repurchase rate to indicate the monetary policy stance. Inflation targeting policy makes the monetary policies more transparent. Until today, Thailand still uses inflation targeting as its monetary policy.

Figure 2 shows the inflation rate in Thailand within the year 1980 to 2005. It is clear that in the early 1980s the inflation hit to the highest rate at 20% in 1980 and 13% in 1981. After BOT implementing monetary targeting, the inflation dropped sharply to 0.83% in the year 1984. However, the appearances of financial liberalization caused monetary targeting lose its ability to control inflation. This can be showed by the increase of inflation in mid 1990s. During that period, BOT used interest rate targeting to control inflation.