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China's Monetary Transmission Mechanisms before and after

the Financial Tsunami: The VAR Analysis

Che-Cheong Poon[1]

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From 2000 onwards, when the Chinese economy has consistently maintained its rapid growth momentum, it has been suffering a high degree of volatility that may be mainly due to the overheating economy and the shock originated from the 2008 global financial tsunami. This paper examines empirical evidence on the effectiveness of China's monetary policy to dampen the swing of economic cycles. In light of the recent research on China's monetary transmission mechanisms[2] and taking into account the sequel of the financial sector reform as well as the recent financial tsunami, we use the Vector Autoregression (VAR) model to facilitate our analysis. In the following sections, we first provide a brief description of the VAR model. Then we explain the empirical procedures and data collection. After conducting a series of VAR analysis, we produce two sects of impulse response functions from which the monetary transmission channels over the period January 2000 to August 2008 and the period January 2000 to August 2009 can be derived. Lastly, we conclude that the

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[2] See for examples: Zhang & Sun (2006), Yue & Zhou (2007), Yi (2008)

major monetary transmission mechanism functioning in China before the financial tsunami was the traditional Keynesian interest-rate channel and had changed to asset price effects after the financial tsunami.

Methodology and Data

The use of VAR model to analyze the effect of monetary policy on major macroeconomic variables can be traced back to 1980, Professor Christopher Sims (1986) used a six-variable[3] unrestricted VAR of quarterly data over the period 1948 to 1979 with four lags and a constant term. The estimates suggested that a money supply shock had little effect on prices, output, or the interest rate. The VAR approach has been further developed by Johansen (1988) and Johansen and Juselius (1990 and 1992) and since then, VAR studies have increased in frequency and importance during the past 20 years. Leeper, Sims and Zha (1996), Hafer and Kutan (1997), Schmidt and McCarty (1997), Ramaswamy and Slok (1998), Mojon and Peersman (2001), Chien (2002), and Kaufmann and Kugler (2008) are good examples.

The VAR is commonly used for forecasting systems of interrelated time series and for analyzing the dynamic impact of random disturbances on the system of variables, it sidesteps the need for structural modeling by treating every endogenous variable in the system as a function of the lagged values of all of the k endogenous variables in the system. The model is written as

[3] These variables are real GNP, real business fixed investment, the GNP deflator, the money supply, unemployment, and the Treasury Bill rate.

$$\boldsymbol{y_t} = \boldsymbol{A}_1\boldsymbol{y}_{t-1} + \boldsymbol{A}_2\boldsymbol{y}_{t-2} + \ldots + \boldsymbol{A}_p\boldsymbol{y}_{t-p} + \mathbf{c}_t + \boldsymbol{\varepsilon}_t$$

where $\boldsymbol{y}_t$ is a k vector of endogenous variables, $\mathbf{c}_t$ is a k vector of the constant term, $\boldsymbol{A}_1$, $\boldsymbol{A}_2$,…, and $\boldsymbol{A}_p$ are matrices of coefficients to be estimated, and $\boldsymbol{\varepsilon}_t$ is a vector of innovations that may be contemporaneously correlated but are uncorrelated with their own lagged values and uncorrelated with all of the right-hand side variables. Since only lagged values of the endogenous variables appear on the right-hand side of the equations, simultaneity is not an issue and OLS yields consistent estimates. Moreover, even though the innovations $\boldsymbol{\varepsilon}_t$ may be contemporaneously correlated, OLS is efficient and equivalent to GLS since all equations have identical regressors (EViews 5 User's Guide, 2004. p717)

After calculating the VAR for different lags, we use a seven-variable VAR of monthly data over the period January 2000 to August 2009. The variable included in the study are the money supply as measured by M1 (Y_1), Total Loans (Y_2), Total Deposits (Y_3), Consumer Price Inflation[4] (Y_4), the Benchmark 6-month Interest Rate for RMB-denominated Loans (Y_5), SSE Composite Index (Y_6), and Total Retail Sales of Consumer Goods (Y_7). In order to filter out the trend and seasonal effects from the observed time series, except for the Lending Interest Rate (Y_5), we use the year-on-year rates of change in the variables, and therefore the number of monthly observations is reduced from 116 to 104. Figure 1 shows the time movement pattern (in percent) of these seven time series.

In order to demonstrate the pattern of correlation between paired variables before

[4] Since the CPI for the same month last year = 100, we can take as the year-on-year inflation rate.

and after the financial tsunami, we have calculated a correlation matrix[5] of these seven variables over the 12-month period September 2007 to August 2008 and the period September 2008 to August 2009. The results are listed in Tables 2 and 3 below. Besides the marked difference between the corresponding correlation coefficients appearing in these two tables, we note in particular that there has been a drastic change in the relationship (the correlation coefficients are in boldface) between the rate of change in Total Loans (Y_2) and each of the other six endogenous variables in these two observed periods. Thus, we have the reason to believe that there should be a significant change in monetary transmission mechanism before and after the financial tsunami. In the following sections, we use the VAR model to capture the evolution and the interdependencies between these seven time series in the hope of identifying the major monetary transmission mechanism functioning in China before and after the financial tsunami.

[5] $|r| > 0.55$ implies $\rho \neq 0$ at 5% significance level.

Figure 1 Year-on-year rates of change of the seven variables: January 2001 to August 2009

Figure 1a: M1 (Y_1) and Total Loans (Y_2)

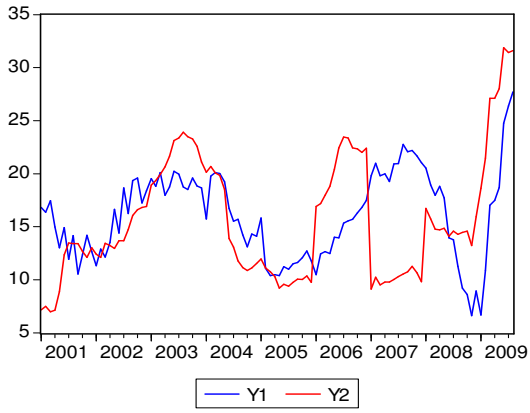


Figure 1b: M1 (Y_1) and Total Deposits (Y_3)

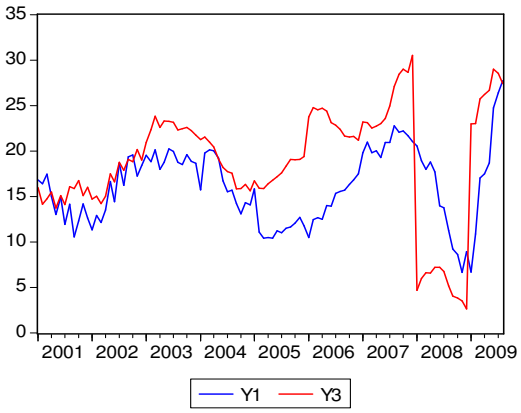


Figure 1c: M1 (Y_1) and CPI inflation rate (Y_4)

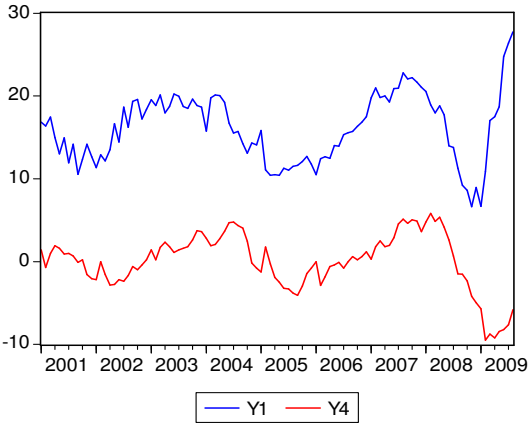


Figure 1d: M1 (Y_1) and Lending interest rates (Y_5)

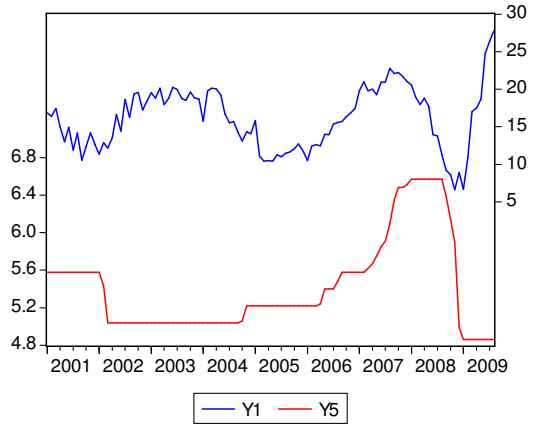


Figure 1e: M1 (Y_1) and Stock Price Index (Y_6)

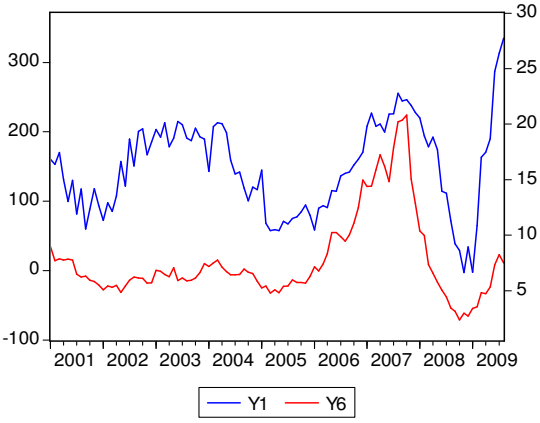
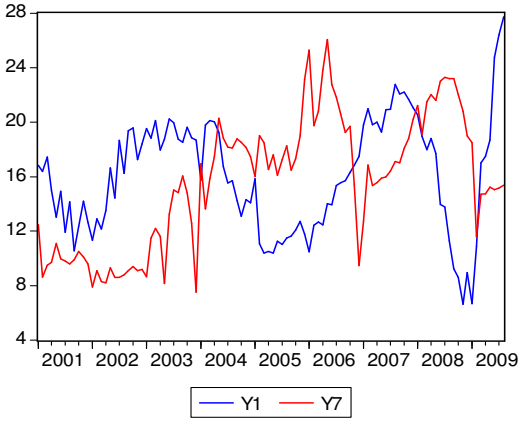


Figure 1f: M1 (Y_1) and Retail Sales (Y_7)



Y_1 was extracted from:
http://www.pbc.gov.cn/english/diaochatongji/tongjishuju/gofile.asp?file=2009S03.htm
Y_2 and Y_3 were extracted from:
http://www.pbc.gov.cn/english/diaochatongji/tongjishuju/gofile.asp?file=2009S03.htm
Y_4 and Y_7 were extracted from: http://www.stats.gov.cn/english/statisticaldata/index.htm
Y_6 was extracted from: http://yahoo.compass.cn/stock/history.php?code=sh000001&type=history
Y_5 was extracted from: http://www.pbc.gov.cn/detail.asp?col=462&ID=2480

Table 1 Correlation matrix of the seven variables, September 2007 to August 2008

	Y1	Y2	Y3	Y4	Y5	Y6	Y7
Y1	1						
Y2	-0.48541	1					
Y3	0.688287	**-0.95735**	1				
Y4	0.833529	**-0.0782**	0.27398	1			
Y5	-0.6074	**0.763548**	-0.81635	-0.25273	1		
Y6	0.849415	**-0.69419**	0.854754	0.535201	-0.85219	1	
Y7	-0.85381	**0.596436**	-0.76094	-0.63895	0.812541	-0.94252	1

Table 2 Correlation matrix of the seven variables, September 2008 to August 2009

	Y1	Y2	Y3	Y4	Y5	Y6	Y7
Y1	1						
Y2	0.94588	1					
Y3	0.753842	**0.913972**	1				
Y4	-0.50647	**-0.72815**	-0.82764	1			
Y5	-0.54529	**-0.73538**	-0.81142	0.863407	1		
Y6	0.970944	**0.928367**	0.781325	-0.50162	-0.56166	1	
Y7	-0.59141	**-0.76982**	-0.84689	0.953649	0.86763	-0.57615	1

Empirical Results

After examining the adjusted R-squared, the Akaike and Schwarz information criteria for all the estimated equations in the VAR output statistics for different lags, we decided to use an unrestricted VAR with 5 lags of each variables and a constant term over the period January 2001 to August 2009. Table 3 is the Eviews 5 VAR estimation output in which each column corresponds to an equation in the VAR: the variable on the column head is the dependent variable, and the variables with five lags on the stub are independent variables. In the model, we have seven columns (or seven autoregression equations) and 35 independent variables and a constant term on the

stub.

Table 3 Vector Autoregression Estimates, from June 2001 to August 2009

	Y1	Y2	Y3	Y4	Y5	Y6	Y7
Y1(-1)	0.219208	0.020117	-0.116367	0.182843	0.007869	-0.053076	0.524002
	[1.88947]	[0.12545]	[-0.57150]	[2.29829]	[0.94678]	[-0.03985]	[2.90723]
Y1(-2)	0.240602	-0.036651	0.114234	-0.078354	0.011648	-2.871189	0.121912
	[1.82633]	[-0.20128]	[0.49406]	[-0.86733]	[1.23422]	[-1.89836]	[0.59565]
Y1(-3)	0.280926	0.086164	0.216517	-0.028775	0.007844	-0.260126	0.064519
	[2.27784]	[0.50547]	[1.00029]	[-0.34024]	[0.88784]	[-0.18372]	[0.33673]
Y1(-4)	-0.019275	-0.091263	0.127456	-0.012716	-0.012022	0.389286	-0.229247
	[-0.16412]	[-0.56221]	[0.61835]	[-0.15790]	[-1.42884]	[0.28872]	[-1.25643]
Y1(-5)	0.198030	0.124460	-0.250989	0.003011	-0.015187	0.796408	-0.037504
	[1.68367]	[0.76559]	[-1.21587]	[0.03733]	[-1.80236]	[0.58979]	[-0.20524]
Y2(-1)	0.102617	0.788802	0.169663	-0.176499	0.002764	-0.639959	-0.391896
	[1.09785]	[6.10564]	[1.03423]	[-2.75366]	[0.41275]	[-0.59637]	[-2.69872]
Y2(-2)	0.018464	0.251923	0.030518	0.207085	-0.008575	-0.094406	0.199173
	[0.14884]	[1.46925]	[0.14017]	[2.43435]	[-0.96487]	[-0.06629]	[1.03344]
Y2(-3)	-0.036166	-0.148964	0.124360	-0.022176	0.005121	1.870461	-0.093163
	[-0.27262]	[-0.81240]	[0.53411]	[-0.24377]	[0.53886]	[1.22810]	[-0.45202]
Y2(-4)	0.241728	0.005123	-0.091603	0.001702	0.002751	1.572308	-0.023367
	[1.84492]	[0.02829]	[-0.39835]	[0.01894]	[0.29306]	[1.04526]	[-0.11479]
Y2(-5)	-0.181532	-0.072900	-0.294330	-0.032156	-0.009524	-0.890596	-0.137961
	[-1.92517]	[-0.55935]	[-1.77851]	[-0.49730]	[-1.40991]	[-0.82269]	[-0.94175]
Y3(-1)	0.012705	0.187289	0.530136	-0.138598	0.009635	-0.894404	0.052797
	[0.17533]	[1.86986]	[4.16820]	[-2.78907]	[1.85596]	[-1.07505]	[0.46895]
Y3(-2)	0.060318	0.086571	-0.028706	0.194222	-0.002869	1.737412	0.040791
	[0.70755]	[0.73471]	[-0.19186]	[3.32236]	[-0.46969]	[1.77519]	[0.30799]
Y3(-3)	-0.174177	-0.050726	-0.028673	-0.146039	-0.003806	-2.386129	0.196526
	[-2.10359]	[-0.44324]	[-0.19731]	[-2.57207]	[-0.64170]	[-2.51016]	[1.52776]
Y3(-4)	0.051568	0.041634	-0.104855	0.113701	-0.000180	-0.175947	0.129734
	[0.66146]	[0.38638]	[-0.76634]	[2.12684]	[-0.03219]	[-0.19658]	[1.07113]
Y3(-5)	0.102509	-0.017824	0.045043	-0.031793	-0.001049	-0.859751	0.008580
	[1.55713]	[-0.19588]	[0.38985]	[-0.70426]	[-0.22236]	[-1.13756]	[0.08389]
Y4(-1)	-0.547016	-0.324180	0.327129	0.964061	-0.009740	2.986192	-0.014768
	[-2.79135]	[-1.19685]	[0.95113]	[7.17402]	[-0.69375]	[1.32730]	[-0.04851]
Y4(-2)	-0.061581	0.240558	-0.480416	-0.158029	0.008327	-2.330487	0.315172
	[-0.24328]	[0.68757]	[-1.08139]	[-0.91042]	[0.45922]	[-0.80194]	[0.80144]
Y4(-3)	0.040439	0.283637	0.120589	0.011227	0.014894	-4.916467	0.181592
	[0.16322]	[0.82826]	[0.27732]	[0.06608]	[0.83911]	[-1.72844]	[0.47176]
Y4(-4)	-0.047930	-0.452628	0.278079	0.109188	0.027104	4.128133	-0.386768
	[-0.19931]	[-1.36180]	[0.65888]	[0.66214]	[1.57333]	[1.49528]	[-1.03525]

Y4(-5)	0.054319	0.063151	-0.169425	-0.070924	-0.021513	-2.523703	0.320599
	[0.32536]	[0.27368]	[-0.57823]	[-0.61952]	[-1.79874]	[-1.31671]	[1.23607]
Y5(-1)	1.145068	-4.048605	-13.77917	-0.235216	0.963719	-1.204304	-1.406290
	[0.66728]	[-1.70696]	[-4.57517]	[-0.19989]	[7.83939]	[-0.06113]	[-0.52749]
Y5(-2)	-2.827185	5.236212	10.65356	-0.267400	-0.050133	-21.80442	5.018134
	[-1.02946]	[1.37947]	[2.21032]	[-0.14199]	[-0.25482]	[-0.69157]	[1.17615]
Y5(-3)	-2.142919	-5.147700	-3.324111	0.516182	0.067900	13.86925	-5.966850
	[-0.73665]	[-1.28028]	[-0.65108]	[0.25876]	[0.32582]	[0.41528]	[-1.32027]
Y5(-4)	-0.866806	4.374466	-1.527348	-0.943833	-0.112574	-5.383012	4.319332
	[-0.29847]	[1.08978]	[-0.29965]	[-0.47393]	[-0.54109]	[-0.16145]	[0.95732]
Y5(-5)	3.077022	0.704735	2.914316	0.158608	-0.019829	-20.93414	1.887441
	[1.56165]	[0.25877]	[0.84275]	[0.11739]	[-0.14048]	[-0.92544]	[0.61658]
Y6(-1)	0.017521	-0.002364	0.025855	0.004305	0.000211	1.096691	0.001825
	[1.49207]	[-0.14563]	[1.25453]	[0.53469]	[0.25062]	[8.13500]	[0.10005]
Y6(-2)	0.002107	-0.035752	0.112317	-0.019224	0.000388	-0.068745	-0.018363
	[0.12408]	[-1.52301]	[3.76798]	[-1.65059]	[0.31927]	[-0.35256]	[-0.69592]
Y6(-3)	0.007212	0.024403	-0.110654	0.034047	-0.002553	0.007669	-0.012071
	[0.37771]	[0.92463]	[-3.30185]	[2.60024]	[-1.86647]	[0.03498]	[-0.40689]
Y6(-4)	-0.016054	-0.011596	0.026550	-0.025302	0.000911	-0.133319	0.005003
	[-0.80422]	[-0.42028]	[0.75782]	[-1.84840]	[0.63719]	[-0.58174]	[0.16132]
Y6(-5)	0.022471	0.013752	-0.015177	0.012263	0.001766	0.441869	-0.038082
	[1.43230]	[0.63417]	[-0.55119]	[1.13982]	[1.57164]	[2.45321]	[-1.56241]
Y7(-1)	0.042046	0.318188	-0.018417	0.013529	-0.001838	0.418648	0.583840
	[0.51266]	[2.80694]	[-0.12795]	[0.24056]	[-0.31291]	[0.44463]	[4.58213]
Y7(-2)	-0.150536	-0.125626	0.162004	0.004351	0.002490	0.238256	0.070387
	[-1.53815]	[-0.92870]	[0.94317]	[0.06482]	[0.35513]	[0.21205]	[0.46293]
Y7(-3)	0.062631	-0.114897	-0.080124	0.065527	-0.000250	0.078933	0.160507
	[0.63153]	[-0.83821]	[-0.46033]	[0.96354]	[-0.03524]	[0.06933]	[1.04175]
Y7(-4)	-0.081128	-0.072570	-0.138380	-0.020650	0.000695	-1.501191	0.235499
	[-0.85647]	[-0.55429]	[-0.83238]	[-0.31792]	[0.10242]	[-1.38043]	[1.60028]
Y7(-5)	0.021427	0.045807	0.165074	-0.064569	0.003595	1.008168	-0.000557
	[0.27011]	[0.41778]	[1.18568]	[-1.18700]	[0.63267]	[1.10701]	[-0.00452]
C	8.197870	-10.09238	35.85153	3.535691	0.795565	236.2904	-28.90153
	[1.07695]	[-0.95924]	[2.68353]	[0.67735]	[1.45889]	[2.70381]	[-2.44387]
R^2	0.937075	0.931965	0.913806	0.955595	0.978069	0.962687	0.879984
Adj. R^2	0.902116	0.894168	0.865920	0.930925	0.965885	0.941958	0.813308

Akaike information criterion	26.80795
Schwarz criterion	33.41371

Notes: Included observations: 99 after adjustments
t-statistics in [ ]
Source: Extracted from Eviews 5 VAR output

The impulse response functions

Statistically, if we have sufficient observations in the periods before and after the financial tsunami, the two sets of VAR outputs would be beneficial to arrive at a robust conclusion regarding the evolution of the interrelated variables. Unfortunately, since the number of observations is less than the number of parameters to be estimated in the period after the 2008 financial tsunami[6], we cannot produce a VAR to be compared with the VAR for the period before the financial tsunami. In order to show the evolution of China's monetary policy transmission mechanism, we try to estimate another unrestricted VAR with 5 lags of each variables and a constant term over the period January 2001 to August 2008. If the results are significantly different from that calculated from the period January 2001 to August 2009, taking into account the overlapping years in these two observed period, we have the reason to conclude that the changes have been initiated by the financial tsunami.

For argument's sake, we assume the money supply is always equal to the money demand. That is, when Y_1 is on the left-hand side of the equation (the dependent variable), we view it as money demand; when Y_1 and is on the right-hand side (the independent variable), we view it as money supply. By using a significance level α=0.05 to remove those independent variables with a coefficient that is insignificantly different from zero[7] in each of the autoregression functions calculated from the

[6] We have only 12 monthly observations after the outbreak of the Financial Tsunami in September 2008.

period January 2001 to August 2009 and the period January 2001 to August 2008 VAR estimates, we then calculate a new set of regression equations for the remaining variables over the period January 2001 to August 2008 (period A) and the period January 2001 to august 2009 (period B) respectively. Since these regression equations trace out the response of a variable of interest to changes in the chosen independent variables, we call them impulse response functions (Elder, 2003). Table 5 tabulates the impulse response functions which are derived from the above VAR analysis.

Table 5 The impulse response functions

Period A: From January 2001 to august 2008 (87 to 91 observations depending on the number of lags)	Adj. R^2
1. $Y_1 = 5.489255 + 0.659234Y_{1(-5)}$	0.415459
2. $Y_2 = 0.82264 + 0.90095Y_{2(-1)} + 0.046859Y_{7(-1)}$	0.838760
3. $Y_3 = 65.46676 - 8.83964Y_{5(-4)} + 0.136047Y_{6(-2)} - 0.08033Y_{6(-3)}$	0.757003
4. $Y_4 = -1.93212 + 0.010239Y_{2(-1)} + 0.161122Y_{2(-2)} - 0.08328Y_{3(-2)} - 0.08421Y_{3(-3)} + 0.145453Y_{3(-4)} + 0.028119Y_{6(-3)}$	0.500366
5. $Y_5 = 6.008255 - 0.00497Y_{1(-2)} - 0.04346Y_{2(-5)} + 0.100285Y_{4(-2)} + 0.003125Y_{6(-1)}$	0.582952
6. $Y_6 = -9.08593 + 1.678564Y_{3(-2)} - 1.17883Y_{3(-3)} + 0.948042Y_{6(-1)}$	0.928417
7. $Y_7 = 0.310554 + 0.068537Y_{1(-1)} + 0.915057Y_{7(-1)}$	0.807235
Period B: From January 2001 to august 2009 (99 to 103 observations depending on the number of lags)	
1. $Y_1 = -4.18096 + 1.016397Y_{1(-3)} + 0.231009Y_{3(-3)} - 0.68319Y_{4(-1)}$	0.7173
2. $Y_2 = 0.269424 + 0.961234Y_{2(-1)} + 0.036531Y_{7(-1)}$	0.874914
3. $Y_3 = 70.01169 - 8.70394Y_{5(-1)} - 0.89754Y_{5(-2)} + 0.153787Y_{6(-2)} - 0.08689Y_{6(-3)}$	0.742293
4. $Y_4 = -2.42691 + 0.115389Y_{1(-1)} - 0.14644Y_{2(-1)} + 0.107516Y_{2(-2)} - 0.07832Y_{3(-1)} + 0.126582Y_{3(-2)} - 0.05821Y_{3(-3)} - 0.074491Y_{3(-4)} + 0.830951Y_{4(-1)} - 0.00078Y_{6(-3)}$	0.937786
5. $Y_5 = 0.107088 + 0.978985Y_{5(-1)}$	0.947074
6. $Y_6 = 0.780862 + 0.026286Y_{3(-3)} + 1.06995Y_{6(-1)} - 0.14244Y_{6(-5)}$	0.934535

[7] Their t-statistics in absolute value are less than 2.0076 for the January 2001-August 2008 data set (df=87-35+1=51), and less than 1.9983 for the January 2001-August 2009 data set (df=99-35+1=63).

7. $Y_7 = 0.425916 + 0.108429Y_{1(-1)} - 0.04734Y_{2(-3)} + 0.911115Y_{7(-1)}$	0.801389

The Monetary Transmission Channels

Although it is not easy to identify the explanatory power of and relationships among these seven variables in terms of their volatility, the interpretability of the resulting impulse response function will be useful to justify the connotation of the monetary transmission mechanisms before and after the financial tsunami. To illustrate this, we use a simple recursive method (Stokey and Lucas 1993, pp 3-7), starting from an autonomous change in money supply to produce a channel of monetary transmission and then continuously substituting the lagged independent variables for the dependent variables according to their relationship specified by the impulse response functions. The monetary transmission channels for the period from January 2001 to August 2008 (period A) and the period from January 2001 to August 2009 (period A) are depicted in the Figure 2.

Since the total Retail Sales of Consumer Goods (Y_7) is highly correlated with GDP, we use it as a proxy for income. In period A, the monetary transmission channels appear to be consistent with the notion that an autonomous change in Money Supply (Y_1) affects the Interest Rate ($Y_{5)}$ and Income (Y_7) directly, and indirectly influences Consumer Price Inflation (Y_4) and Stock Prices (Y_6) through its effects on Total Loans (Y_2) and Deposits (Y_3). However, the transmission channels in period A suggests that a money supply shock has little effect on Total Loans (Y_2), Deposits (Y_3), the Interest Rate (Y_5) and Stock Prices (Y_6). Therefore, we can conclude that the financial tsunami did create a significant impact on China's monetary transmission

mechanism. In addition to the fact that the financial tsunami weakened the effectiveness of monetary policy to regulate economic activities, it made the traditional Keynesian interest-rate monetary transmission mechanism an insignificant channel to transmit impulses from the monetary sector to the real sector in China today.

Figure 2 The monetary transmission channels

Period A: From January 2001 to August 2008
$Y_1 \rightarrow \begin{cases} Y_5 \rightarrow Y_3 \rightarrow \begin{cases} Y_4 \rightarrow Y_5 \text{ (repeat the } Y_3 \text{ channel)} \\ Y_6 \rightarrow Y_5 \text{ (repeat the } Y_3 \text{ channel)} \end{cases} \\ Y_7 \rightarrow Y_2 \rightarrow \begin{cases} Y_4 \rightarrow Y_5 \text{ (repeat the } Y_3 \text{ channel)} \\ Y_5 \text{ (repeat the } Y_3 \text{ channel)} \end{cases} \end{cases}$
Period B: From January 2001 to August 2009
$Y_1 \rightarrow \begin{cases} Y_4 \rightarrow Y_1 \\ Y_7 \rightarrow Y_2 \rightarrow \begin{cases} Y_7 \text{ (repeat the } Y_7 \text{ channel)} \\ Y_4 \text{ (repeat the } Y_7 \text{ channel)} \end{cases} \end{cases}$
Where: Y_1 is the money supply growth, Y_2 is the total loans growth, Y_3 is the total deposits growth, Y_4 is the inflation rate growth, Y_5 is the interest rate, Y_6 is the stock price index growth, and Y_7 is the total retail sales of consumer goods growth.

Furthermore, Snyder (2004) advocated in his empirical study on the consumption response to shocks in the stock market and monetary policy that if stock market wealth effects are growing, it potentially alters the transmission mechanisms of

money. Interestingly, when we take a look at the explanatory power of the stock price index (Y_6) in the impulse response functions listed in Table 5, we discover that it did make obvious impacts on economic activity through its effects on total deposits (Y_3) and consumer price inflation (Y_4). Since the movements in the stock price index may resemble the movements in other major asset prices including housing prices, we can simply use the movement in stock price index to represent asset prices movement. With this in view, we can conclude that the effect of changes in asset prices or the stock market financial wealth has performing a more and more important role in the monetary transmission mechanism as well as the overall economic setting, especially, after the financial tsunami.

Concluding Remarks

We used the estimates calculated from a seven-variable unrestricted VAR of monthly data with 5 lags of each variable and a constant term over the period January 2001 to August 2008 and the period January 2001 to August 2009 respectively to identify whether the impacts of the 2008/09 global financial tsunami have significant impacts on the evolution of monetary transmission mechanisms in China. The empirical results suggest that the financial tsunami weakened the effectiveness of monetary policy to regulate economic activities. Moreover, our research findings provide empirical evidence that the asset prices channel have replaced the traditional Keynesian interest-rate monetary transmission mechanism as a major channel to transmit impulse from monetary sector to real sector in China today.

China's monetary policy operation framework is still in an early stage of its

transition. The effectiveness of monetary policy has been greatly dammed by the weaknesses of the major monetary tools including high interest cost for the central bank bonds issued, and its undesirable impact on market interest rates; the interest rates paid on required and excess reserves, and the little effect of the change in required reserve ratio on the overall level of reserves; the slow pace of interest rate liberalization, and the imperfection of financial market. As a natural consequence, although the PBC wanted to switch the tight monetary policy to a loose monetary policy in times of financial crises, it is hardly possible that the targeted growth rate of M1 could have been achieved. In order to strengthening the effectiveness of conducting the monetary policy, we suggest the PBC to abolish the interest rates paid on the excess reserves and the required reserves gradually. We also suggest the PBC to move towards a more market-based interest rate regime, to further develop the consumer credit market to facilitate the financial intermediation function of financial institutions, and to improve the auction system of the open market operations in the hope of lowering the cost central bank bonds issued. Besides, because the deposits component of M2 is covering deposits with a vast variety of financial institutions, to reduce the ambiguity, we suggest the PBC to change the use of M1 instead of M2 as the intermediate monetary target. Last but not least, since the opening to international trade in 1979 and due mainly to the consequence of comparative advantages as well as absolute advantages, China has been carrying a huge surplus in both current account and capital account of the balance-of-payments, which in turn added to foreign exchange reserves accumulation. Under the existing system of foreign exchange administration, the rapidly accumulated foreign exchange reserves have enforced the PBC to release an enormous amount of monetary base in the purchases

of foreign exchange. As a result, the excessively rapid growth of money supply imposes a potential inflation pressure on the national economy. Faced with problem of a trade-off between the internal and external balance, it makes the PBC very difficult to conduct a monetary policy to achieve internal balance by dampening swing of economic cycles while sacrificing the benefits of exchange rate stability. And thus the effectiveness of China's monetary policy to regulate economic activities could be greatly dammed by the consideration of maintaining an acceptable position of external balance at the same time.

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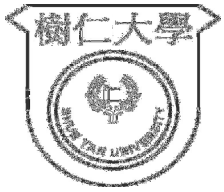
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