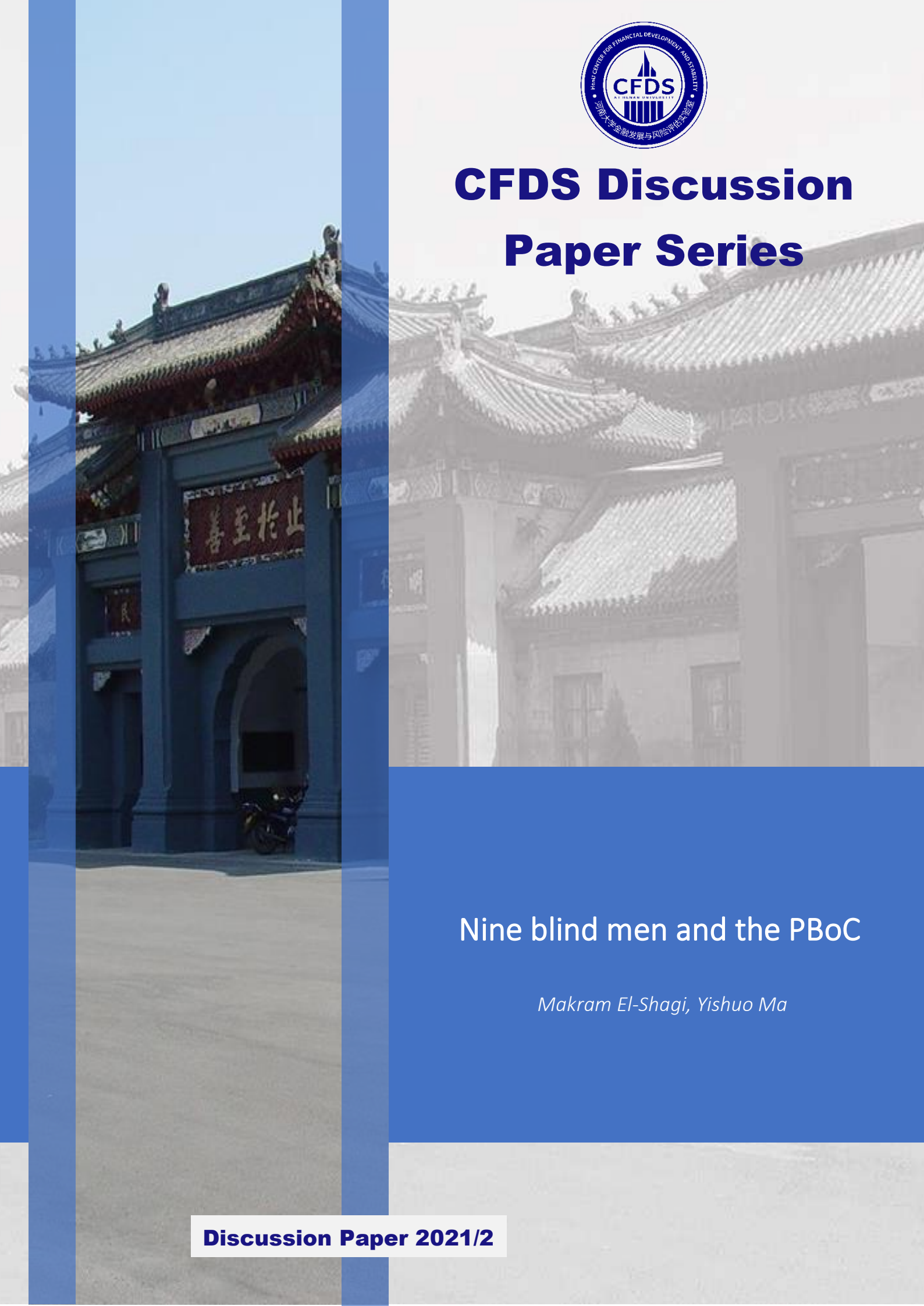

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Nine blind men and the PBoC

Makram El-Shagi, Yishuo Ma

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Nine blind men and the PBoC*

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Abstract

Over the past decade, several dozen papers have been written that identify the People's Bank of China's monetary policy shocks. Yet, what often seems like minor differences in measurements of monetary policy and identifying assumptions yield vastly different implied shocks. In this paper, we pitch 20 shock time series from the literature against each other in a horse race. We use a local projections framework to produce impulse responses based on all shocks for production, prices, money and interest rates and use them to assess the economic plausibility of the competing results. Our results confirm the frequently mentioned relevance of monetary aggregates for Chinese monetary policy but also point the importance of using forward looking policy reaction functions (or account for forward looking variables in a VAR framework) when identifying monetary policy shocks.

Keywords: China, monetary policy shocks, local projections, meta study
JEL: C83, E52

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1 Introduction

The People's Bank of China (PBoC) is now responsible for conducting monetary policy for one of the largest economies on the globe, it regulates one of the largest bond markets in the world and manages the largest reserves of any central bank. However, it seems the Chinese growth miracle that made the PBoC one of the most important actors on global financial markets took everybody by surprise. Because even now, it seems we know shockingly little about Chinese monetary policy. Many papers have been written about this topic, but only in recent years, the literature has fully recognized that both the PBoC's policy and the Chinese macro-economy differ vastly from its Western counterparts and deserve a treatment that goes beyond merely applying standard models to Chinese data.

Quite a few papers argue that Chinese monetary policy should be measured through a monetary aggregate since the PBoC started only a few years ago to emphasize interest rates more strongly in their policy and traditionally paid more attention to monetary aggregates. However, money being the intermediate target of monetary policy does not necessarily make it a good measure of the policy stance. Before the introduction of the Euro, the Bundesbank for example, one of the most prominent examples for a monetarist central bank, conducted its policy through interest rates while targeting money growth. Therefore, others have moved beyond models that merely replace interest rates with money growth, and stress the importance of explicitly acknowledging the broader toolbox of the PBoC. Sun (2013) and Sun (2015) propose narrative indicators based on the PBoC's monetary policy reports. He and Wang (2012), El-Shagi and Jiang (2017) and Fu and Wang (2020) all account for several instruments separately.

At first glance, these might seem like minor differences in the pursuit to identify shocks a little bit more efficiently. Money, its price (i.e. the interest rate), and what the PBoC announces to do to influence the money market are all perfectly legitimate and reasonable measures of monetary policy. Yet, it turns out the differences are quite substantial. Looking at a sample of 20 shock time series collected from the literature, there is not a single quarter that is covered by five or more shock time series where there shocks match direction, i.e. agree on the direction of the surprise component of monetary policy. This invokes associations with the famous East Asian parable (and the equally famous American poem) about six blind men inspecting an elephant, all returning with entirely different impressions. In this paper, we utilize the fact that we might not know how the elephant looks, but we have a fairly good idea how a location where elephants grazed looks like. Or, to abandon the metaphor, we have a fairly good idea how the response to a monetary policy shock looks like, even though we might have trouble identifying the PBoC's monetary policy shocks. Thus, in this paper, we take all the shocks out of their original modeling environment and estimate impulse responses for each shock using the same local projections framework. This allows us to see which shocks produce impulse responses that are consistent with economic theory when the impulse responses are not restricted (as they often are as part of the identification procedure).

With this horse race approach, we do not only provide an overview of the current situation of the literature on monetary policy in China, but also contribute to the economic issue at hand by identifying directions that have proven promising. At the same time, we add a new spin to meta-study literature – i.e., the literature on the statistical analysis of empirical results – by proposing a framework that fits cases where the main result cannot be summarized in one (or few) parameter estimates.

The remainder of the paper is structured as follows. In Section 2 we introduce our shock database and provide a detailed narrative and preliminary graphical analysis of the differences and similarities we find. In Section 3 this is followed by a brief description of our local projections framework. We present our results and their implications in Section 4 and Section 5 concludes.

2 Data

2.1 Monetary policy shocks

Measurement and Identification We identify more than 30 papers that estimate monetary policy shocks for China. We contacted all authors and received information for 11 papers covering 20 time series of shocks. While M_2 is the measure that is used most often, in total more papers use interest rates (8) than money (5). See Figure 1 for a complete overview.

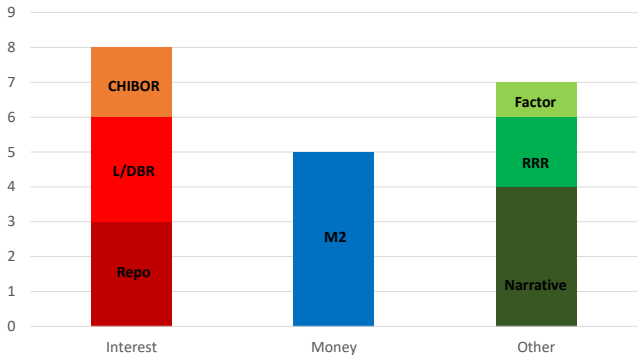


Figure 1: Distribution of measures of monetary policy in China

Note: L/DBR = loan/deposit benchmark rate; RRR = required reserve ratio

The earliest series we have starts in 1998Q2 and the latest ends in 2019Q2. Figure 2 shows the individual sample periods for all 8 papers. In each paper within our sample, all estimated shocks are estimated for the same period. With the exception of He et al. (2013) – who estimate monthly shocks – all papers are natively using quarterly data. For He et al. (2013) we cumulate monthly shocks to obtain quarterly shocks. All quarterly shocks are normalized to mean 0, a standard deviation of 1, and recalibrated so that an increase indicates

expansionary monetary policy (in line with M2, the most frequently used MP indicator).

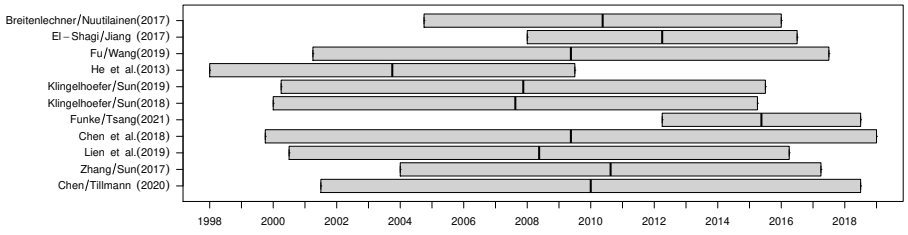


Figure 2: Periods covered by sample papers

The vast majority of shocks (15 out of 20) is identified using Structural VARs. Zhang and Sun (2017), Klingelhöfer and Sun (2019), and Chen and Tillmann (2021) use a standard (OLS estimated) VAR for the underlying reduced form; He et al. (2013) and Breitenlechner and Nuutilainen (2017) use factor augmented VARs (FAVAR); Lien et al. (2019) a regime switching smooth transition VAR, Fu and Wang (2020) a VAR with time varying parameters and stochastic volatility; and El-Shagi and Jiang (2017) use a LASSO-VAR to reduce the number of parameters due to their relatively short sample. With the exeption of El-Shagi and Jiang (2017) and Breitenlechner and Nuutilainen (2017) all VAR based approaches use a recursive identification scheme where monetary policy shocks are ordered last, i.e. are assumed to not affect the economy contemporaneously. El-Shagi and Jiang (2017) use a block recursive identification, where monetary policy is wedged between the real economy and the financial sector (which responds contemporaneously to monetary policy shocks). Breitenlechner and Nuutilainen (2017) combine a block recursive approach with sign restrictions to disentangle loan supply and loan demand based monetary policy shocks. Two papers (with three shocks in total) interpret the deviation of a policy indicator from a policy rule as shock, namely Klingelhöfer and Sun (2018) who estimate both a simple OLS based policy function and a regime switching policy function based on multiple regime threshold regression (MRTR), and the already seminal paper by Chen et al. (2018). The remaining two shocks – both proposed by Funke and Tsang (2021) – are a direct measure based on interest rate swaps and the shock series implied by a New Keynesian DSGE of the Chinese economy. For a summary of both the underlying measures of monetary policy and the used identification scheme, see Table 1.

Comparing shocks Except during the first and last few quarters of our combined sample, which are covered by less than 5 shock time series, there is major disagreement between the shocks, to the extent that they do not even agree on the direction of the shock, see Figure 3. El-Shagi and Jiang (2017), both models proposed by Breitenlechner and Nuutilainen (2017) and Fu and Wang (2020) identify two monetary policy shocks from a single model to account for

Table 1: Money measures and identification strategies

Paper	**Variable**	**Estimation**	**Identification**
Breitenlechner and Nuutilainen (2017)	RRR[1]	FAVAR	Block recursive + sign restrictions
	DBR[1]	FAVAR	Block recursive + sign restrictions
Chen et al. (2018)	M2	OLS	Deviation from policy rule
Chen and Tillmann (2021)	narrative	VAR	Recursive
El-Shagi and Jiang (2017)	Repo + LBR	LASSO-VAR	blockwise recursive
Fu and Wang (2020)	M2 + Repo	TVP-VAR-SV	Recursive
Funke and Tsang (2021)	Factor[2]	DSGE	
	Repo	Model free	Interest rate swaps
He et al. (2013)	M2	FAVAR	Recursive
Klingelhöfer and Sun (2018)	narrative	OLS	Deviation from policy rule
	narrative	MRTR	Deviation from policy rule
Klingelhöfer and Sun (2019)	narrative	VAR	Recursive
Lien et al. (2019)	CHIBOR	STVAR	Recursive
	M2	STVAR	Recursive
Zhang and Sun (2017)	M2	VAR	Recursive
	CHIBOR	VAR	Recursive

Note: [1] Both models identify two shocks each based on the same measure of money but distinguishing loan supply and loan demand driven shocks. [2] The factor includes Repo, RRR, open market operations, mid term lending facility and pledged supplemental lending withdrawal. TVP-VAR-SP: Time varying parameter VAR with stochastic volatility, STVAR: Smooth transition VAR.

the broad range of tools the PBoC uses. Since those shocks are orthogonal by construction, this might explain the disagreement to some degree. However, removing those papers from the sample only yields a single quarter where the remaining shock series agree on the direction of the monetary policy shock.

Despite those differences, the correlation between different shock measures is typically still positive but low (see Figure 4a). Within groups of similar (or even identical) measures – especially within the groups using the narrative indicator proposed by Sun (2018) and M_2 respectively – the correlation is typically on the higher end (see Figure 4b). One of the highest pairwise correlations is between the loan supply based shocks from two models proposed by Breitenlechner and Nuutilainen (2017) using the required reserve ration (RRR) and the deposit benchmark rate (DBR), i.e. two shocks that use the same sign restrictions with regard to the impact of monetary policy but use different instruments. This highlights the importance of the identifying assumptions for the identification of shocks.

Monetary policy uncertainty and uncertainty in shock identification In recent years, several papers have discussed monetary policy uncertainty (MPU) in China (Li and Zhong; 2019; Lien et al.; 2019; Li et al.; 2020; Li and Zhong; 2019). While not the same, this is related to our finding regarding the disagreement about monetary policy shocks. This disagreement essentially reflects model uncertainty, and when the academic community is so uncertain about something, it seems plausible that market participants are too. We find indeed, that monetary policy uncertainty (more precisely the measure of MPU proposed by Li et al. (2020)) is positively related to the standard deviation of identified shocks over time. However, the relation is relatively small, and a visual inspection (see Figure 5) quickly reveals that it is mostly driven by the period around the financial crisis, when different models yield hugely different outcomes and market participants were uncertain on how the PBoC would respond.

2.2 Other macrodata

For our local projections model introduced in the next section, we also use the logarithms of real GDP, CPI and M_2, as well as the 1-day repo rate. All variables are seasonally adjusted using X11. Our macro time series ends in 2019Q4. That is, the last few quarters of shocks have to be dropped for longer horizon forecasts for Chen and Tillmann (2021) and Funke and Tsang (2021), that are available until 2019Q2, and Chen et al. (2018) where the authors kindly provided an updated shock series that ends in 2019Q4.

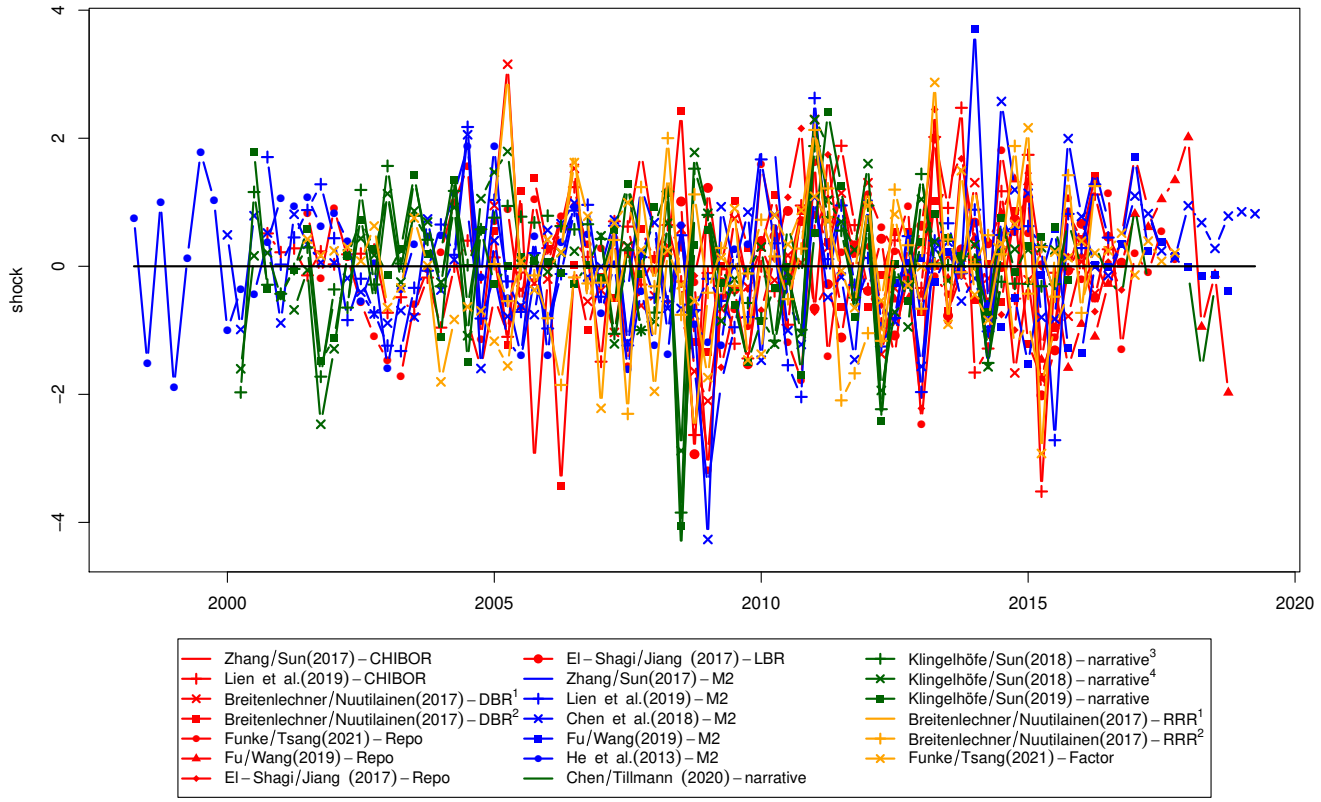
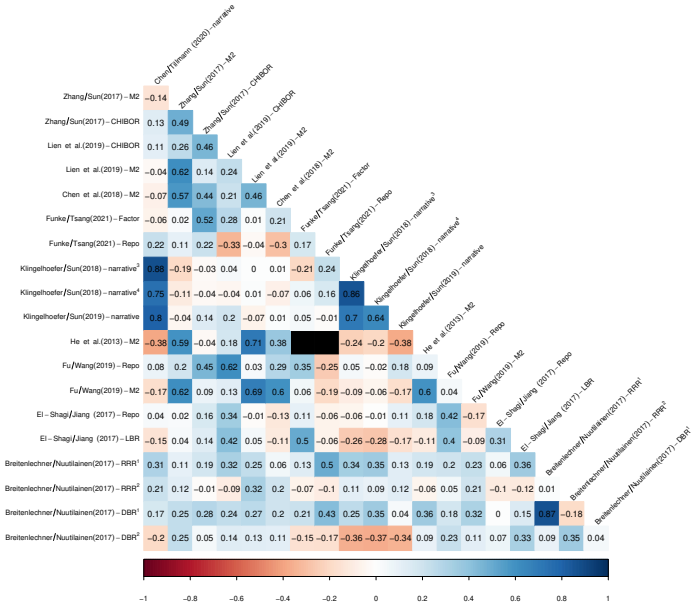
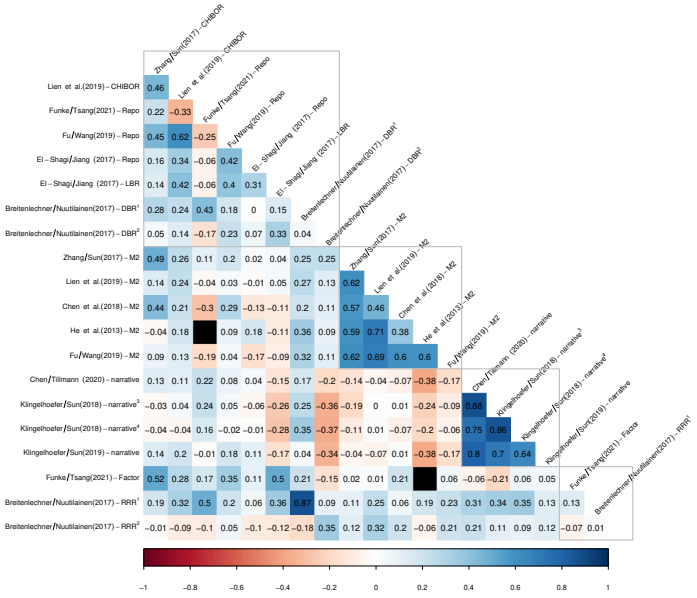


Figure 3: Different estimates of monetary policy shocks

Note: The color indicates the underlying measure of monetary policy. Money (M2) based shocks are blue, interest rate based shocks shades of red, and others shades of green. [1] - loan supply based policy, [2] - loan supply based policy



(a) Grouped by paper



(b) Grouped by MP measure

Figure 4: Pairwise shock correlations)

Note: [1] - loan supply based policy, [2] - loan demand based policy

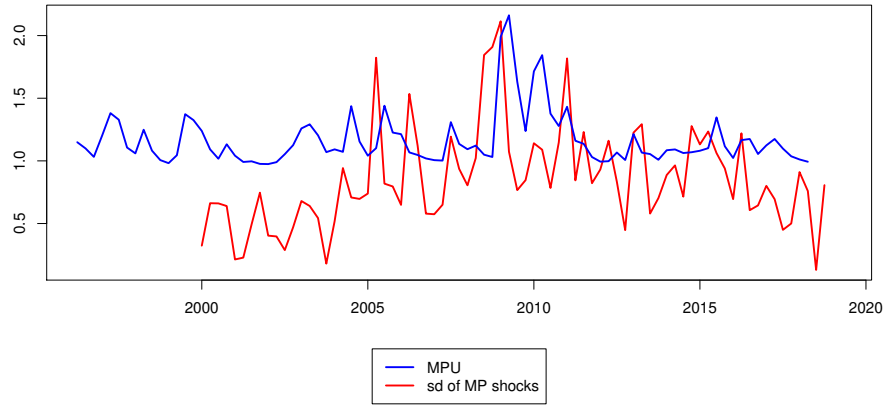


Figure 5: Monetary policy uncertainty and disagreement on shocks

3 Estimation

3.1 Local projections

We estimate impulse responses to all 20 shocks for the four variables that are typically included in the canonical small-scale monetary VAR, namely production, prices, money and the interest rate. The impulse response functions are estimated using local projections in the spirit of Jordà (2005). While recent years have seen a number of refinements (see e.g. Jordà (2009), El-Shagi (2019) and Barnichon and Brownlees (2019)). Most of those restrict the shape of estimated IRFs to get more smooth and economically plausible results. However, since our objective is assess the shocks we compare in a framework that is as open as possible, we refrain from any restriction and use the original Jordà (2005) approach.

This yields a set of forecasting equations of the form:

$$x_{t+h} = \beta_h + \phi_h s_t + \Gamma_h(L) Z_t + \varepsilon^h_{t+h}, \tag{1}$$

where x is one of our four variables of interest, y (log real GDP), p (log CPI), m (log M2) or r (the Repo rate), s is one of our 20 shocks, $Z = [y\, p\, m\, r]$, t is the time index and h the forecast horizon. The impulse response function is then given by the sequence $[\phi_0\, \phi_2 \ldots \phi_H]$ (where H is the maximum forecast horizon considered). In the appendix, we report IRFs for eight quarters. However, for our evaluation, we focus on the first few quarters after time impulse, where "normal" results – such as decreasing prices after monetary tightening– should prevail, whereas opposite effects are well within theoretical expectations at longer horizons due to the cyclical nature of the economy.

3.2 Evaluating IRFs

When evaluating the economic plausibility, we check whether the IRFs estimated through (unrestricted) local projections move in the expected direction. In spirit, this is not unlike the idea behind sign restrictions, where decompositions of the covariance matrix that yield shock estimates that do not meet economic expectations are discarded.

We use two approaches to assess whether theoretical expectations are met. For both, we assign a plausibility score to each set of IRFs. First we asses whether theoretical expectations are met period by period both on impact and for the first few periods following a shock, where we award 2 points for each period where the effect has the expected sign and is significant, deduct 2 points for significant results in the opposite directions, and award and deduct one point for the corresponding insignificant results (see 2). Following the logic from the seminal paper on sign restrictions by Uhlig (2005), we focus on the first two quarters (in his case 6 months) after the shock, as the theoretical expectations at longer horizons are quite controversial.

	negative / sign.	negative / insig.	positive/ insig.	positive / sign.
GDP	+2	+1	−1	−2
CPI	+2	+1	−1	−2
M2	+2	+1	−1	−2
Repo	−2	−1	+1	+2

Table 2: Scoring procedure

Note: Each shock is scored on impact and for the first two periods after the shock, yielding a total score between −24 for significantly defying every theoretical prediction and +24 for full and significant compliance.

In a second – far more subjective – approach, we grade the full 8 quarters ahead IRFs based on a visual inspection. This allows to properly appreciate the plausibility of IRFs, that imply longer lags of monetary policy but are generally showing expected results, IRFs that imply very short (but again plausible) effects, or IRFs that show counterintuitive results that are so small that they are economically irrelevant. In the interest of transparency, the full set of IRFs, including the scores we assign, are presented in the appendix.

4 Results

None of the shocks included in our survey produces the IRFs that we would theoretically expect, see Table 3 for a summary. Both shocks identified by Zhang and Sun (2017) come closest. Still, both of them produce a price puzzle, which becomes more pronounced when the CHIBOR is used to identify monetary policy, and the M_2 shock finds interest rate not only returning but dropping (insignificantly) below the equilibrium level very quickly. Generally, models using M_2 produce more economically plausible results with not a single monetary model producing an overall negative plausibility score. Interest rates

perform very mixed, with CHIBOR consistently producing the more plausible results compared to repo rates. Surprisingly, narrative indicators that look into policy making with great scrutiny produce negative scores without exception. However, this does not necessarily imply problems with the measure itself. By construction, the narrative measures are discrete (ordinal) indicators with few abrupt changes. The models that were used to demonstrate their usefulness typically treated them as continuous for simplicity. This might create undesired behavior in the identified shocks. Very much in line with this interpretation, we find similarly implausible results for shocks based on the RRR, which shares the discrete nature of the narrative measures.

Generally, the the results regarding money growth and interest rates come much closer to theoretical expectations, than the results regarding GDP and CPI. The prize puzzle, i.e. the negative reaction of CPI that most models find, might be explained by a neo-Fisherian effect. However, given that both CPI and GDP move in the wrong, i.e. theoretically unexpected, direction suggests another explanation, namely the fact that the vast majority of the models are not forward looking.[1] If the central bank is responding to negative future growth and/or inflation expectations, this might easily produce IRFs of the shape that we typically find. This is very much in line with the fact that the only paper that finds a positive response of GDP is the paper by Zhang and Sun (2017) who include indices of consumer and entrepreneur confidence, which are highly related to future growth expectations.

All the results reported in Table 3 use local projections with four lags of GDP, CPI, money and the interest rate, matching the order of magnitude that is typically found in quarterly VARs. In the appendix, we report the corresponding result using a more parsimonious specification with a single lag (see Table A2) and based on the visual inspection described in the previous chapter (see Table A1). While there are some change, the qualitative results that are interpreted in the previous paragraphs remain unchanged.

5 Conclusions

Our results highlight the necessity to improve our understanding of the PBoC. Although the macroeconomic literature on China has emancipated itself from the roots in the analysis of Western central banks and tries to account for Chinese characteristics, we are still far from a consensus regarding the appropriate way to identify monetary policy shocks. Our results can give pointers in this direction. First, we confirm the importance of monetary aggregates in identifying monetary policy shocks in China that has been claimed by many authors. Second, our results strongly point to the necessity to include forward looking behavior more explicitly in our macroeconomic models.

[1] The DSGE by Funke and Tsang (2021) does of course feature forward looking behavior, but no actually forward looking variables are included, i.e. future expectations are determined by the past development of the observable variables.

Table 3: Plausibility scores based local projections with 4 lags; $h = 0$ to $h = 2$

Paper	**Variable**	**n**	**GDP**			**M_2**			**CPI**			**Repo**			**Σ**
			$h = 0$	$h = 1$	$h = 2$	$h = 0$	$h = 1$	$h = 2$	$h = 0$	$h = 1$	$h = 2$	$h = 0$	$h = 1$	$h = 2$	
Zhang and Sun (2017)	M2	54	1	2	1	2	2	2	-1	1	1	1	-1	-1	10
Zhang and Sun (2017)	CHIBOR	54	1	1	1	2	2	2	-1	-1	-1	2	1	1	10
Breitenlechner and Nuutilainen (2017)[1]	DBR	46	1	1	-1	1	1	1	-1	1	1	1	1	1	8
Chen et al. (2018)	M2	78	-1	1	1	2	2	2	-1	-1	-1	2	1	-1	6
He et al. (2013)	M2	47	-1	-1	-1	2	1	1	1	-1	-1	2	1	1	4
Lien et al. (2019)	CHIBOR	64	-1	-1	-1	1	1	1	-1	-1	-1	2	2	2	3
Fu and Wang (2020)	M2	66	-1	-1	-1	2	2	1	1	1	2	1	-2	-2	3
Lien et al. (2019)	M2	64	-2	-1	-1	2	1	1	1	1	1	1	-1	-1	2
Funke and Tsang (2021)	Factor	26	-1	-1	-1	1	1	1	-1	1	-1	1	1	1	2
Fu and Wang (2020)	Repo	66	-1	-1	-1	1	1	1	-1	-1	-1	2	2	1	2
Breitenlechner and Nuutilainen (2017)[1]	RRR	46	1	1	-1	-1	1	1	-1	-1	-1	1	1	1	2
Klingelhöfer and Sun (2018)	narrative	62	1	-1	1	-1	-1	-1	1	1	1	1	-1	-1	0
El-Shagi and Jiang (2017)	LBR	35	-1	-1	-1	-1	1	2	-2	-1	-1	2	2	1	0
Klingelhöfer and Sun (2019)	narrative	62	-1	-1	1	-1	-1	1	-1	-2	-1	1	1	1	-3
Funke and Tsang (2021)	Repo	26	-1	-1	-1	-1	-1	1	-1	1	-1	-1	1	1	-4
Klingelhöfer and Sun (2018)	narrative	62	-1	-1	-1	-1	-1	-1	-1	-1	1	1	1	1	-4
El-Shagi and Jiang (2017)	Repo	35	-1	-1	-1	1	-1	-1	1	-1	-2	2	-1	1	-4
Breitenlechner and Nuutilainen (2017)	RRR[2]	46	-1	-1	-1	1	-1	-1	1	-1	-1	-1	1	1	-4
Chen and Tillmann (2021)	narrative	69	-1	-1	1	-1	-1	-1	-1	-2	-2	1	1	2	-5
Breitenlechner and Nuutilainen (2017)	DBR[2]	46	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	1	-1	-8
Mean			-0.55	-0.45	-0.4	0.5	0.4	0.6	-0.45	-0.4	-0.45	1.15	0.6	0.45	

Note: [1] - loan supply based policy, [2] - loan supply based policy

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Appendix

Table A1: Plausibility scores based on visual inspection

Paper	**Variable**	**GDP**	**M2**	**CPI**	**Repo**	**Σ**
Breitenlechner and Nuutilainen (2017)[1]	DBR	1	1.5	1	1	4.5
Chen et al. (2018)	M2	2	2	0	0	4
Breitenlechner and Nuutilainen (2017)	CHIBOR	1.5	2	-1	1	3.5
Breitenlechner and Nuutilainen (2017)	M2	2	2	0	-1	3
Klingelhöfer and Sun (2019)	narrative	1.5	1.5	-1.5	1	2.5
He et al. (2013)	M2	0	1.5	-1.5	2	2
Fu and Wang (2020)	Repo	-0.5	2	-2	2	1.5
Lien et al. (2019)	CHIBOR	-1	2	-1.5	2	1.5
Breitenlechner and Nuutilainen (2017)[1]	RRR	-1	1.5	-1.5	1.5	0.5
Chen and Tillmann (2021)	narrative	1.5	-1	-1.5	1	0
El-Shagi and Jiang (2017)	LBR	-1	1	-2	2	0
Fu and Wang (2020)	M2	-2	2	2	-2	0
Lien et al. (2019)	M2	-2	2	1.5	-1.5	0
Funke and Tsang (2021)	Factor	-2	2	-1.5	1	-0.5
Funke and Tsang (2021)	Repo	0	-1	-1	1.5	-0.5
Breitenlechner and Nuutilainen (2017)	RRR[2]	0	0.5	-1.5	0	-1
Breitenlechner and Nuutilainen (2017)	DBR[2]	-1	-1	-1.5	2	-1.5
Klingelhöfer and Sun (2018)	narrative	-1.5	-1	-0.5	1	-2
El-Shagi and Jiang (2017)	Repo	-1	-1	-1.5	1	-2.5
Klingelhöfer and Sun (2018)	narrative	-1	-2	1.5	-1.5	-3
Mean		-0.225	0.825	-0.7	0.7	

Note: [1] - loan supply based policy, [2] - loan supply based policy

Table A2: Plausibility scores based on local projections with one lag

Paper	**Variable**	**n**	**GDP**			**M_2**			**CPI**			**Repo**			**Σ**
			$h=0$	$h=1$	$h=2$	$h=0$	$h=1$	$h=2$	$h=0$	$h=1$	$h=2$	$h=0$	$h=1$	$h=2$	
Breitenlechner and Nuutilainen (2017)[1]	DBR	46	2	2	2	1	2	2	-2	-2	-1	2	2	2	12
Zhang and Sun (2017)	M2	54	2	2	2	2	2	2	-2	-2	-1	2	1	1	11
Zhang and Sun (2017)	CHIBOR	54	1	2	2	2	2	2	-2	-2	-2	2	2	2	11
Chen et al. (2018)	M2	78	-1	1	1	2	2	2	-1	-1	-1	2	1	1	8
Breitenlechner and Nuutilainen (2017)[1]	RRR	46	1	1	1	1	2	2	-2	-2	-2	2	2	2	8
Funke and Tsang (2021)	Factor	26	-1	-1	-1	1	2	1	-1	2	-1	2	1	1	5
Lien et al. (2019)	CHIBOR	64	-1	-1	-1	2	2	2	-2	-2	-2	2	2	2	3
He et al. (2013)	M2	47	-1	-1	-1	2	2	2	-1	-1	-1	2	1	-1	2
Fu and Wang (2020)	Repo	66	-1	-1	-1	1	1	1	-1	-1	-2	2	2	2	2
El-Shagi and Jiang (2017)	LBR	35	-1	-1	1	-1	1	1	-1	-1	-1	2	2	1	2
Breitenlechner and Nuutilainen (2017)[2]	RRR	46	-1	-1	1	1	1	1	1	-1	-1	-1	1	1	2
Breitenlechner and Nuutilainen (2017)[2]	DBR	46	-1	1	1	1	1	1	-2	-2	-2	2	1	1	2
Fu and Wang (2020)	M2	66	-1	-1	-1	2	2	2	-1	-1	1	1	-1	-1	1
El-Shagi and Jiang (2017)	Repo	35	1	-1	1	1	1	-1	-1	-1	-1	2	-1	1	1
Klingelhöfer and Sun (2018)	narrative	62	-1	-1	-1	-1	-1	-1	1	1	1	1	1	1	0
Klingelhöfer and Sun (2019)	narrative	62	-1	-1	1	-1	1	1	-1	-2	-2	1	1	2	-1
Lien et al. (2019)	M2	64	-1	-1	-1	2	2	1	-1	-1	-1	1	-1	-1	-2
Funke and Tsang (2021)	Repo	26	1	-1	-1	-1	-1	1	-1	1	-1	-1	1	1	-2
Chen and Tillmann (2021)	narrative	69	-1	-1	1	-1	-1	1	-1	-2	-2	1	1	2	-3
Klingelhöfer and Sun (2018)	narrative	62	-1	-1	-1	-1	-1	-1	1	1	1	-1	-1	-1	-6
	Mean		-0.3	-0.25	0.25	0.75	1.1	1.1	-1	-0.95	-1.05	1.3	0.9	0.95	

Note: [1] - loan supply based policy, [2] - loan supply based policy