

Research Assessment Exercise 2020
Impact Case Study

University: The Chinese University of Hong Kong

Unit of Assessment (UoA): 21 Economics and Finance

Title of Case Study: *Quantitative Analysis of China's Economic Growth*

(1) Summary of the impact

Zheng Michael SONG's research, which has a focus on China's economic growth, provided good intelligence to government organizations (Hong Kong Monetary Authority and a key department of China's central government) based on rich micro-level data and rigorous quantitative analysis. His work helped to track the well-being and performance of the Chinese economy and recommended policies to stimulate and sustain growth. Such intelligence is of vital importance to decision making in a political economy, particularly in China where economic data are often noisy. SONG's work has attracted attention from international media (including *The Economist*, *Financial Times* and *Wall Street Journal*). His work on China's productivity growth recently received endorsement from a ministerial level officer of a key department of China's central government, a major policy decision maker in the Chinese government.

(2) Underpinning research

SONG's research blended rich micro-level data and rigorous quantitative analysis to yield deep scientific insights in phenomena that are of critical importance to stimulate and sustain China's economic growth. This research is particularly challenging given the huge amount of noise in Chinese economic data. SONG's research discoveries had on many occasions debunked false beliefs about how the Chinese economy operated and motivated recalibrations of national policies, benefiting all Chinese citizens through more evidence-based economic policy making. This section reviews some research examples to illustrate how SONG's research has provided penetrating insights into the working of the Chinese economy and provided a more accurate picture of China's economic performance. This research underpins the impact presented in the next section.

Research Example 1: To understand the coexistence of China's big trade surplus and high capital returns, many resorted to currency manipulation. However, SONG's research, "Growing like China", [3.1] proposed a theory in which high capital returns and big trade surplus can coexist because of domestic frictions. The theory is consistent with a comprehensive set of macro facts. More importantly, although the paper was published in 2011, it also explains the recent decline of China's trade surplus [3.4]. This paper won the Sun Yefang Economic Science Award in 2013 and has become the mainstream scientific explanation for China's trade imbalances (more than 1,100 Google scholar citations).

Research Example 2: SONG investigated the transformation of China's state sector, another important yet controversial aspect of Chinese economy [3.3]. More than 80% of state-owned enterprises (SOEs) in 1998 were shut down or privatized by 2007. The remaining SOEs were restructured, and some new SOEs were established. SONG's work interpreted these facts from firm-level data using an equilibrium model of heterogeneous firms. The results showed that the restructuring of old SOEs and creation of new SOEs together accounted for around 21% of China's economic growth during 1998-2007. However, the exit and privatization of SOEs had a negligible effect. This study uncovered the resilience of China's state sector and questioned the importance of privatization in China.

Research Example 3: SONG's recent work [3.6] aimed to understand the institutional foundations of

China's growth – how the Chinese private sector can thrive under poor economic institutions. He and his co-authors argue that informal institutions, rather than formal institutions, played a key role. Chinese local governments wielded their enormous political power and administrative capacity to provide “special deals” for favored private firms. Local political leaders did so for personal political or monetary benefits. Nonetheless, competition between local governments limited the predatory effects of special deals.

Research Example 4: SONG also studied several main economic issues in China. For instance, he estimated the sustainability of China's pension system and demonstrated quantitatively the macroeconomic consequences of several policy experiments [3.2]. In another paper [3.4], he and his co-authors assessed the consequences of the 4-trillion-yuan fiscal stimulus program during 2009-2010. They found, after the program ended, local governments continued using their new access to financial resources to benefit favored businesses. Such practice worsened the overall efficiency of capital allocation and harmed long-run growth.

Research Example 5: SONG's most recent work [3.5] estimated the extent to which China's official provincial and national GDP data deviated from their true values, another long-standing issue. The work is built upon the research team's understanding of China's national account system, derived from detailed institutional knowledge and interactions with central and local statistical organizations. Two methods were used to adjust the official numbers: (a) using value-added tax revenue to correct GDP misreporting; and (b) estimating the true GDP using a set of economic indicators that were less likely to be manipulated. The annual nominal GDP growth was found to be over-reported by 1~2% during 2009-2015.

(3) References to the research

- [3.1] SONG, Zheng, Kjetil Storesletten, and Fabrizio Zilibotti. “Growing Like China.” *American Economic Review* 101.1 (2011): 196-233.
- [3.2] SONG, Zheng, Kjetil Storesletten, Yikai Wang, and Fabrizio Zilibotti. “Sharing High Growth Across Generations: Pensions and Demographic Transition in China.” *American Economic Journal: Macroeconomics* 7.2 (2015): 1-39.
- [3.3] Hsieh, Chang-Tai, and Zheng Michael SONG. “Grasp the Large, Let Go of the Small: The Transformation of the State Sector in China.” *Brookings Papers on Economic Activity* (2015): 295-366.
- [3.4] Bai, Chong-En, Chang-Tai Hsieh, and Zheng Michael SONG. “The Long Shadow of China's Fiscal Expansion.” *Brookings Papers on Economic Activity* (2016): 129-165.
- [3.5] Chen, Wei, Xilu Chen, Chang-Tai Hsieh, and Zheng Michael SONG. “A Forensic Examination of China's National Accounts.” *Brookings Papers on Economic Activity* (2019): 77-141.
- [3.6] Bai, Chong-En, Chang-Tai Hsieh, and Zheng SONG. “Special Deals with Chinese Characteristics.” *NBER Macroeconomics Annual* (2019).

(4) Details of the impact

For the past few years, SONG has worked on a series of first-order issues of China's economic growth. His work has generated impacts in the policy circle. The following examples illustrate the policy impact of SONG's research:

- a) His work on China's state sector has attracted attention from China's State-owned Assets Supervision and Administration Commission (SASAC) of the State Council, which is a ministry-level department that controls state-owned firms. They wrote a review article which was later published on *Qiu Shi* [5.2] a highly influential journal of China's Communist Party.
- b) The Hong Kong Monetary Authority had commissioned SONG to lead a theme-based study on China's productivity growth [5.5].
- c) SONG and his co-authors found that the actual size of Chinese local government debt is about 46 trillion Yuan, twice as much as reported by China's Ministry of Finance [3.4]. The International Monetary Fund (IMF) plans to use SONG's method and data as a reference to keep track of China's local government liability for surveillance purposes [5.6]. In an email to SONG, the economist from IMF wrote, "*your extrapolation method is very interesting and useful, and we will seek to replicate it*".
- d) SONG used value-added tax revenue as the main instrument to correct China's GDP growth [3.5]. His pioneer work on value-added tax revenue has prompted a key department of China's central government to invite him and Chong-En BAI at Tsinghua University to lead a project on the administrative data, which has never been used for policy or academic studies before [5.7]. The key department of China's central government commented that "*As a matter of fact, it is SONG's lecture on administrative data that inspired our research and ideas. To our knowledge, there are very few scholars who have the relevant experiences and can conduct this research.*"
- e) Finally, the collaboration between the submitting university and Tsinghua University had led to an important policy report: *China Productivity Report*, which was finished in August 2019. The policy report is based on SONG's previous studies on China's GDP data [3.5], productivity growth and efficiency estimation [3.1, 3.3 & 3.4]. The report has been warmly received by a key department of China's central government, a major policy decision maker in the Chinese government. A ministerial level officer endorsed the study by instructing the department to follow up on the Report's recommendations. The ministerial level officer also commented that "*this report has made unique contributions in its data work, methodology, views and arguments.*" [5.9]

SONG had successfully used broad media coverage of the major research findings as a pathway to create policy impact of his research. The widely publicized results attracted the attention of policy makers, who in turn enlisted SONG's help in policy research, allowing his subsequent research to directly inform policies. Indeed, SONG's work has also attracted lots of media attention. His research on China's external imbalances and domestic frictions [3.1] has been covered broadly and discussed intensively in many Chinese media. His research about the transformation of China's state sector [3.3] was reviewed by the *NBER Digest*, under the title of "China's State Sector: Transformed, but Not So Privatized". This research was also reported in many other newspapers in China and Hong Kong, including *South China Morning Post* and *Reference News (Can Kao Xiao Xi)* [5.1].

The Chinese version of the paper on the sustainability of China's current pension system [3.2] was published by *Bi Jiao* [5.3], a highly influential journal for policy makers in China. SONG's assessment of the consequences of China's 4-trillion-yuan fiscal stimulus program [3.4] was reported in the *Financial Times* and the *Wall Street Journal* [5.4]. His recent work on the reliability of China's official GDP growth rate [3.5] were reported in great details in *The Economist*, *Financial Times*, *South China Morning Post* and *Lian He Zao Bao* [5.8]. This work was also reviewed in *NBER Digest* [5.8].

(5) Sources to corroborate the impact

- [5.1] Research about the transformation of China's state sector [3.3] was reviewed by NBER Digest (June 2015 Issue, <https://www.nber.org/digest/jun15/w21006.html>) and reported by South China Morning Post (July 2015, <https://www.scmp.com/comment/insight-opinion/article/1835682/why-aggressive-privatisation-reform-state-owned-enterprises>) and *Can Kao Xiao Xi* (July 2015, <http://www.cankaoxiaoxi.com/finance/20150713/848601.shtml>). [Also Appended]
- [5.2] Researches about China's trade imbalance [3.1] and the transformation of China's sector [3.3] were reviewed by *Qiu Shi's* article (September 2015, http://www.qstheory.cn/wp/2015-09/06/c_1116476508.htm). [Also Appended]
- [5.3] The Chinese version of evaluation of China's current pension system paper [3.2] was published by *Bi Jiao* (October 2015, <http://bijiao.caixin.com/2015-12-28/100893380.html>). [Also Appended]
- [5.4] Research about the consequences of China's 4-trillion-yuan fiscal stimulus program [3.4] was reported by the Financial Times (September 2016) (<https://www.ft.com/content/b303f280-7f14-11e6-8e50-8ec15fb462f4>) and the Wall Street Journal (September 2016) (<https://blogs.wsj.com/economics/2016/09/15/how-chinas-past-stimulus-is-dogging-its-growth-prospects/>) [Also Appended]
- [5.5] Zheng SONG was appointed as a Fellow of the Thematic Study Research Programme of Hong Kong Institute for Monetary Research, a research arm of the Hong Kong Monetary Authority, from June to November 2018. [Appended]
- [5.6] Email exchange with IMF's economist Philippe Wingender about the actual size of Chinese local government debt. [Appended]
- [5.7] Official document from a key department of China's central government, inviting Zheng SONG to lead, together with Chong-En BAI at Tsinghua University, a project using administrative data to conduct input-output table analysis. [Appended]
- [5.8] Zheng SONG's work on adjusting China's official GDP growth rate [3.5] was reported by the *Economist* (March 2019, <https://www.economist.com/finance-and-economics/2019/03/07/chinas-economy-might-be-nearly-a-seventh-smaller-than-reported>), South China Morning Post (March 2019, <https://www.scmp.com/economy/china-economy/article/2189052/china-exaggerated-gdp-data-2-percentage-points-least-nine>), and *Lian He Zao Bao* (March 2019, <https://www.zaobao.com/finance/china/story20190317-940667>). It was also reviewed by NBER Digest (August 2019 Issue, <https://www.nber.org/digest/aug19/w25754.shtml>). [Also Appended]
- [5.9] The policy report – China Productivity Report – which was based on SONG's previous studies, was endorsed by a ministerial level officer of a key department of the central government. [Appended]