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Is China's recent growth slowdown mainly due to demand or supply?

—— A simple model analysis and perspectives of new structural economics[1]

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Abstract

China has been experiencing persistent growth slowdown in the past decade. What is main cause for this slowdown and what policy recommendations should be provided? In this paper, a simple model is used to illustrate the key differences between Prof. Justin Lin and Prof. Guoqiang Tian in their arguments, and their logical predictions are examined and confronted with real-life data. Conclusion is reached that China's growth slowdown is mainly driven by negative and persistent external demand shocks. Further discussions from the perspective of New Structural Economics are provided to show how policy recommendations are different from the standard Keynesian argument and why structures are endogenous and relevant.

Key words: Chinese economy, growth, New Structural Economics.

JEL Classifications codes: H11, P26, O11, O40

[1] This article is based on the author's speech at the round-table discussion on the Causes and Policy Implications of China's Economic Growth Slowdown in the Past Decade, a special event during the Third Annual New Structural Economics Winter Camp held in Peking University in December 2017. Useful discussions and comments by the participants are gratefully acknowledged. Rundong Ji provides able research assistance. All remaining errors are mine.

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1. Background

As the chair of the organizing committee of the 3rd New Structural Economics Winter Camp, I would like to first express my gratitude to all experts and friends who participate the round-table discussion on the causes and policy implications of China's economic growth slowdown in the past decade. This important topic has been intensively discussed for a while. However, most discussions are not academic. The purpose of this round table is to bring together leading experts who have conducted serious academic research on China's growth and reforms to exchange views on this issue in an academic way.

The idea to organize such a round-table discussion originates from a debate between Prof. Guoqiang Tian and Prof. Justin Yifu Lin on this topic in a WeChat group I organize. Prof. Tian holds the view that the main driving force for China's recent economic slowdown is slagging domestic institutional reforms, so his policy recommendation is to expedite domestic market-oriented reforms, especially to improve the supply side by reducing resource misallocation and eliminating policy and institutional distortions (Tian, 2017). In contrast, Prof. Lin argues that the dominant reason for China's recent economic slowdown is external negative shocks instead of domestic constraints, so his policy suggestions are to adopt countercyclical macroeconomic policies to boost aggregate demand and also use this opportunity to facilitate domestic industrial upgrading (Lin, Wan and Morgan, 2016). After several rounds' debate in that Wechat group, Professor Gordon Liu proposed that Lin and Tian should hold an openly academic discussion. Both Prof. Lin and Prof. Tian agreed immediately. Several other scholars in the Wechat group also expressed their support to organize an open event. This is how we are able to have this round table with Prof. Gordon Liu kindly agreeing to serve as the host of the discussion.

There is no need to introduce more background information about this discussion and the topic, so I will directly jump into my analysis. The rest of the paper is organized as follows. Section 2 utilizes a simple textbook model to compare the logic and predictions of different views, and then confront the predictions of each view with the data. Section 3 makes further discussions by providing the perspectives of New Structural Economics. Section 4 concludes.

2. A Simple Model Analysis

In this section, the two contrasting views will be illustrated and examined in a simple textbook model, see Figure 1.

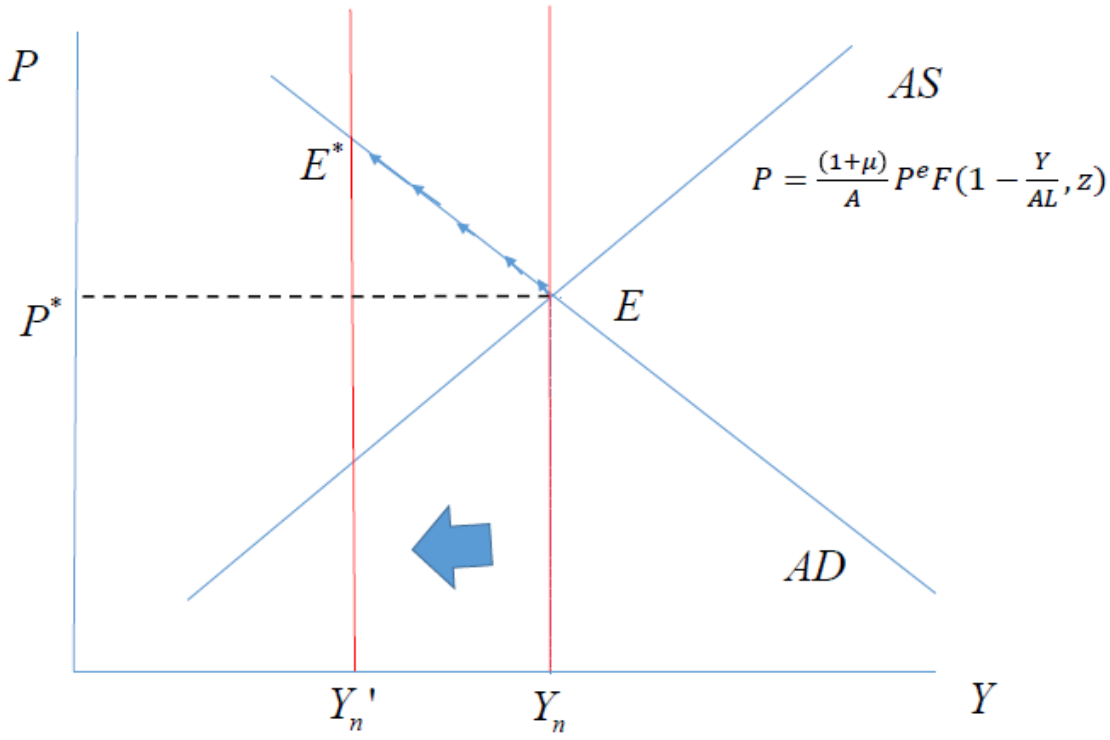

Figure 1: Decline in Aggregate Suppy

This figure shows up in almost all standard intermediate macroeconomics textbooks (for example, Blanchard 2007). Each curve in the figure has a mathematical equation behind it. The downward sloping aggregate demand curve AD is derived jointly from the IS equation and the LM equation, and the upward sloping aggregate supply curve AS has the following equation:

$$P = \frac{(1+\mu)}{A} P^e F(1 - \frac{Y}{AL}, z) \ , \qquad (1)$$

where P denotes the aggregate price level, μ denotes price mark-up, P^e denotes the expected price, the first argument u in function $F(u,z)$ is the unemployment rate, and the second argument z represents all other exogenous variables that help increase workers' bargaining power in wage negotiations, such as unemployment compensation. $F(u,z)$ decreases with u but increases with z. In equation (1), Y denotes the total output, or GDP, L denotes the aggregate working-age population and A denotes labor productivity. Imagine that the aggregate production function is $Y = A \cdot N$, where N is the employed population, so the

unemployment rate is $u = 1 - \frac{Y}{AL}$. Equation (1) actually incorporates the following wage determination equation in the bargaining process: $W = P^e F(1 - \frac{Y}{AL}, z)$. It shows that the equilibrium wage rate should be higher when expected price level P^e is higher, or when unemployment rate u is lower, or when the opportunity cost of working z is higher. The unit production cost is $\frac{W}{A}$, so the final price is given by equation (1).

Imagine that the economy is initially at the equilibrium point E in Figure 1, which corresponds to the natural output level, denoted by Y_n. Recall that Prof. Tian holds the view that the domestic institutional problems of China are the main reason for the slowdown. Mathematically, this view can be modelled as the supply side problem. More specifically, it can be modelled as an increase in markup μ (because of stronger market monopoly), or as an increase in z (that is, adopting policies that directly discourage people to work), or as a decrease in A, which will lead to a decline in the level of natural output, from the original Y_n to Y'_n.[3] We should also observe that the aggregate supply curve will move upward and the aggregate price level will rise, which is an inflation. Meanwhile, the output level will fall. This process continues until the economy reaches the new equilibrium E'. Based on this model, if the main reason of the economic slowdown is the suppressed supply as Professor Tian argues, then we should observe falling output accompanied by inflation, just like the stagflation in the United States during the 1970s and 1980s.

Next we turn to the alternative view. Professor Justin Yifu Lin holds the view that the growth slowdown of China in the past few years is mainly due to the relative weak external demand rather than the depressed domestic supply. This view can be clearly seen in Figure 2.

[3] Note that we are considering dynamic changes, so this figure should be understood as a detrended relative change. Wang (2015) provides a dynamic model to explore the interaction between institutional reforms and growth in China.

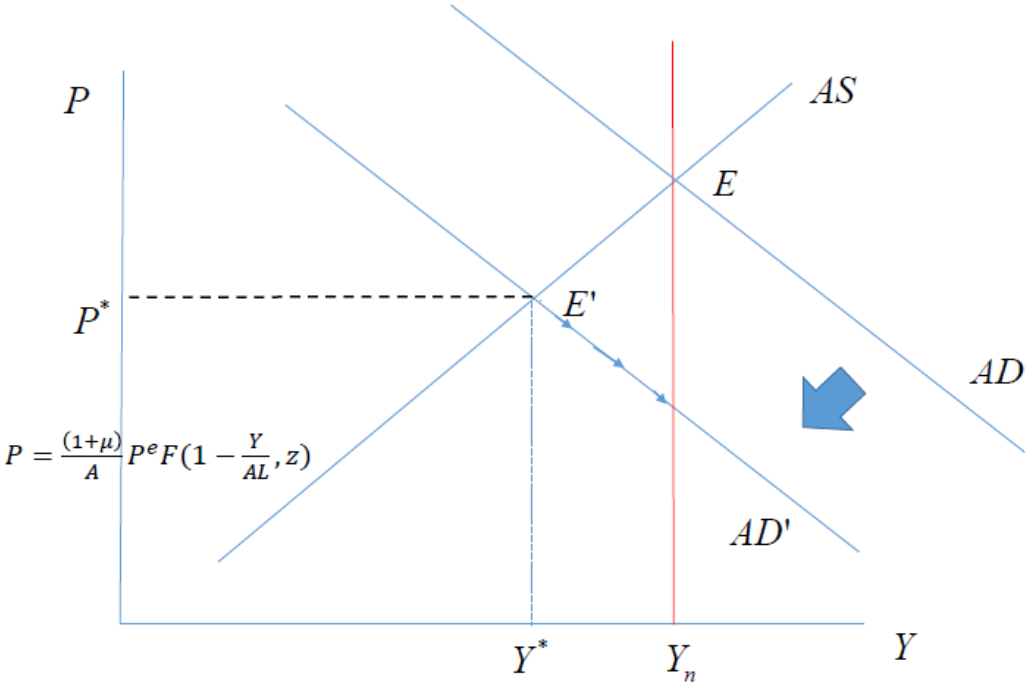

Figure 2: Decline in Aggregate Demand

Imagine that the initial state of the economy is at equilibrium E. Prof. Lin's point of view is that there is a huge negative demand shock in the 2008 Global Financial Crisis, so the demand curve AD moves leftward to AD', and the output declines in the short run, and the price level decreases until the economy reaches a new equilibrium. In other words, if the economic slowdown is mainly triggered by the weak external demand, we should observe a relative decline in output and deflation simultaneously[4].

It is clear by now that output and price should move in the opposite direction if it is a supply story, whereas they should move in the same direction if it is a demand story. As a result, we could judge which view makes more sense by looking at the real data.

[4] According to the theory, if there is an exogenous decline in total demand, output will rebound in the medium term, but price levels will continue to fall.

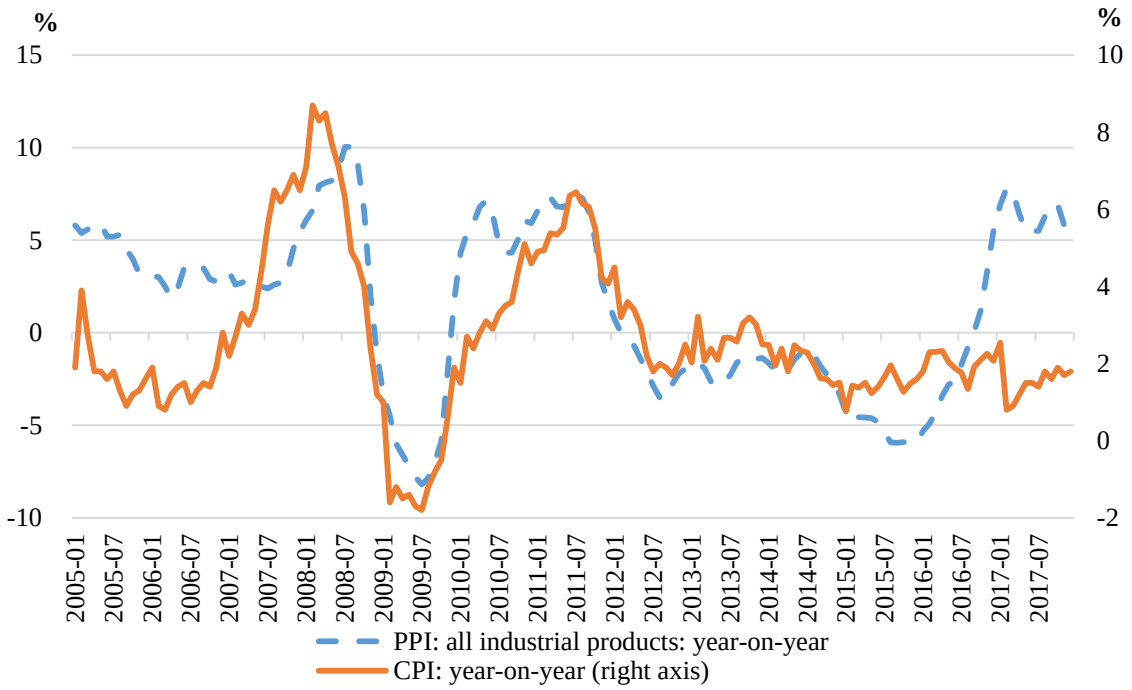

Figure 3: Changes in China's Price Index

Figure 3 plots the time series of two price indices. The (blue) dashed line is the PPI, which is the upstream industrial production price index. The (red) solid line is the CPI, which is the price index of downstream consumer goods. It is well known that the US Subprime Mortgage Crisis in 2007 gradually evolved into the Global Financial Crisis in 2008. Figure 3 shows that the price indices went down sharply into negative growth and the Chinese economy experiences persistent deflation for most time in this period. Whereas Prof. Tian's domestic supply argument would predict inflation, Prof. Lin's external demand argument would predict deflation, so the latter is more consist with the data.

Certainly, the observed time series of the price and output in the data also reflect the market responses to the government policies implemented in this period. In particular, China's government initiated a set of countercyclical or precautionary policies, including a four-trillion RMB stimulus package. Although the aggregate demand was boosted through expansionary fiscal and monetary policies, the two price indices are still falling most of the time. It means that the demand-enhancing policies still could not completely offset the negative demand shock from the rest of the world, so deflation still occurred. If Prof. Tian's view is correct, we would not only see inflation, but also see even more serious inflation because of the expansionary policies, which is counterfactual. Consequently, it can be

concluded that, even when policy interventions are taken into account, the actual data are still more supportive to the view of Prof. Lin.

3. Further Discussions: Perspectives from New Structural Economics

The analysis should not end here, because we must recognize that the textbook one-sector model shown above might be too simplistic, especially given that we also try to make policy recommendations for China. To deepen our analysis on this issue or many other important questions about China's macro development and institutional reform, we need to extend the model by introducing some key structural features of the Chinese economy.

More generally, from the perspective of New Structural Economics, I propose that we should bear in mind four important and simultaneous structural processes in China's post-reform era (Wang, 2017a). The first process is structural transformation, namely, production resources are gradually reallocated from agriculture to industry and then from industry to service as per capita income increases. It follows the pattern known as the Kuznets Facts. It is obvious that challenges and policy alternatives could be very different for different development stages because of the composition shift of these different sectors. The second process is economic transition, namely, China is gradually transiting from a planned economy to a market economy. There used to be only a single track (that is, the planned track), and then the market track also emerges and coexists with the planned track. This dual-track reform must continue and eventually converge to the single market track, which presumably would take a long time. The third process is opening up (or globalization). In 2001 China joined the World Trade Organization and it has now become the world's largest exporter. In addition, China is also gradually moving towards more financial globalization by liberalizing the capital accounts, promoting the free convertibility of the Renminbi, and so on. The fourth process is China's rise as a geopolitical power with global influences. More specifically, China used to be a nation with a weak political, diplomatic and military status and with only regional impact, but it has been rising as an increasingly important global power. It will challenge existing international political orders and rules, which were established at the end of the Second World War. Whereas this process is typically beyond the scope of standard economic analyses, a more complete analysis on economic policies and reforms must be put into this context. For example, China cannot purchase certain goods/technologies for reasons beyond economics, but rather for geopolitical concerns. None of these four structural processes by itself is unique to China. However, I would argue that China is by far the only country in

human history that has been experiencing these four structural processes simultaneously. Moreover, China is big. These make the Chinese economy special or even unique for certain aspects of the economic policies, institutions and economic performance.

In particular, discussions on the role of government and reforms have to be in the context of these four simultaneous structural processes. If we only focus on the second process, transition from a planned economy to a market economy, then deregulation is likely to be the main policy suggestion. However, all the other three structural processes would require the government to play an active role. For example, the process of structural transformation requires the government to solve the coordination failure in industrial upgrading and structural transformation, provide industry-specific infrastructure, and to optimize the education system to adapt to different stages of economic development, etc. The process of opening up requires the government to facilitate Chinese firms to do business worldwide and take into account the large country general equilibrium effect when making any macroeconomic policies, no matter whether they are trade policies, monetary policies or fiscal policies. Negotiations on trade and foreign investment policies and capital account liberalization are all non-trivial tasks for the state. The process of China's rise as a global power inevitably challenges certain aspects of the existing international order and rules, and government policies must respond to increasingly complicated geopolitical factors.

Let us come back to the issue of China growth slowdown in the past decade. There is no doubt that resource misallocation and distortions due to incomplete market-oriented reforms must play some role in the growth slowdown, and consequently, market-oriented reforms must speed up to improve the structure and the quality of the supply side. Whereas I fully support the market-oriented reforms (related to the second structural process), my own analysis shown in the previous section, plus plenty of additional supporting evidences provided by Prof. Lin and some other experts in the discussion, has convinced me that I am on the side of Prof. Lin when it comes to the diagnosis result for China's growth slowdown in the past decade. However, I want to clarify several points in terms of policy implications, which are closely related to the four structural processes mentioned above.

First, the policy recommendations to tackle the growth slowdown proposed by Prof. Lin are not conventional Keyensian countercyclical macro policies. The standard Keyensian expansionary fiscal policies can offset the economic recession only when the multiplier effect

is sufficiently large and the mechanism is to raise the public expenditure to boost aggregate demand when private demand is weak. The public expenditure itself does not have to be productive: hiring workers to dig a hole and refill the hole can also work. This is an argument without considering the above-mentioned first structural process: structural change and industrial upgrading. From new structural economics point of view, China is a developing country in which there are ample opportunities to upgrade industries and the infrastructure stock is still relatively low compared with developed countries, so increasing public infrastructure investment during the slowdown when the interest rate is low would be desirable because it can not only directly contribute to the aggregate demand in the standard Keynesian sense, but more importantly, it can facilitate firms to enter new industries and hence help industrial upgrading. In other words, the expansionary policy works on both the demand side and the supply side, so it is productivity-enhancing and can mitigate the overcapacity problem associated with the stagnated industry upgrading during economic recessions. The same reasoning also applies to the expansionary monetary policies for developing countries like China.

Second, we should be well prepared to formulate and implement policies to respond to external factors. This is obviously related to the third structural process. As the world's largest emerging market and largest exporter, China has an enormous impact on, and is also tremendously influenced by, the rest of the world. So the policy recommendations for China have to go beyond rationales based on autarky models, which are perhaps more appropriate for China twenty years ago. Motivated by the observations on China and other emerging markets, Prof. Shang-Jin Wei and I are developing a model to show how a middle-income country can be sandwiched by innovating North (with higher human capital) countries and imitating South countries (with cheaper labor) through international trade and how this sandwiching forces affect the convergence of middle-income countries to developed ones. This model highlights that growth performance and optimal policies should take into account the chasing effect from South trade partners and the pressing effect from North trade partners. Our model is different from existing literature, which basically argues that growth underperformance of a country must be the country's own fault and the proposed policies are independent of the behaviors and policies of external economies (Wang and Wei, 2017). When discussing the growth performance of China as a middle-income country, shouldn't we consider its interaction with innovating countries such as US and with imitating countries that are chasing after us like Vietnam?

Moreover, the trade war between the US and the China in March 2018 clearly indicates that geopolitical factors are increasingly important as China rises, and state plays an irreplaceable role in such episodes. This is why the fourth structural processes have to be considered.

Third, we should have a better benchmark model to help us think about how to eliminate existing distortions for China and other developing countries. The past decade has seen the growing literature on resource misallocation (Restuccia and Rogerson 2008, Hsieh and Klenow 2009), which provides the useful quantitative framework to evaluate the impact of distortions on growth performance. From a static perspective, when the marginal productivity of some production factors (such as capital) between different micro-level production units is not equal, we can interpret it as inefficient resource misallocation. However, from a dynamic point of view, it could be efficient to purposefully allow some inefficient enterprises to temporarily exist and be protected in reforms, because it can prevent the large-scale unemployment and social turbulence. This temporary protection of low-efficiency firms creates distortions in the static sense, but it can earn dynamic gains that dominate the static loss. In fact, there is a huge literature that shows how the dual-track gradualist reform is better than the shock therapy (Lin, 2002). In addition, most existing literature on resource misallocation treats distortions as exogenously given, but New Structural Economics proposes that we should first better understand the roots that generate these distortions and try to eliminate the roots instead of only trying to dismantle distortions per se overnight, otherwise, it may lead to even more serious resource misallocation and more severe efficiency loss.

Fourth, endogenous structural differences between China and developed countries have to be better understood when policy recommendations are formulated. An important limitation of the simple model in Section 2 is that it is a one-sector model that cannot explicitly show structural differences between China and the US. Prof. Lin and I are working on a research project titled “industrial upgrading, structural change and middle income trap”, which explores the industrial upgrading within the manufacturing sector and structural transformation from manufacturing to service in middle-income countries (Wang and Lin, 2017). We divide service into three categories. One is the upstream production service, the second one is the downstream consumption service, and the third one is social service. Upstream production service includes telecommunications, transportation and finance, which

are dominated by state-owned enterprises in China (Wang, 2017b). Consumption service such as hotels, restaurants, and entertainment are largely liberalized and dominated by private firms in China. Social service is largely composed of sectors that produce and maintaining human capital such as medical care and education, which are still government-led in China. We also divide manufacturing into basic manufacturing and high-quality ones. Manufacturing are tradable where service is assumed non-tradable. We find that, in Laissez affair market equilibrium there may exist premature structural transformation (that is, production resources leaving the manufacturing sector too early or delayed structural transformation (that is, service sector is too much underdeveloped), because of coordination failures in the upstream sectors in the presence of pecuniary externality through the input-output linkages. Hence, government could enhance social welfare by helping provide better coordination for upstream firms in the production service. Moreover, social service must be improved to enhance life quality as well as provide better human capital for industrial upgrading and structural transformation. I believe this model could be more helpful when thinking about China's structural reforms when facing external demand shocks.

4. Conclusions

China has been experiencing quite persistent growth slowdown in the past decade. What is main cause for this slowdown and what policy recommendations can be provided? In this paper, a simple model is used to illustrate the key differences between Prof. Justin Lin and Prof. Guoqiang Tian, and their logic predictions are tested with real-life data. Based on these analysis, I conclude that China's growth slowdown is mainly driven by negative and persistent external demand shocks. Careful clarifications are provided to show the right policy recommendations are different from the standard Keynesian argument and New Structural Economics can provide useful new perspectives on this important development issue (Wang 2017a, Wang and Hua, 2017).

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