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Abstract: This paper attempts to examine the effects of financialisation and leverage on China's economic growth and income inequality. The empirical results suggest that the effects of the financialisation indicators are ambiguous and weak; however the leverage indicators do have negative impacts. We find that the ratio of non-financial private debt to GDP has significantly negative impact on China's growth, whereas the effects of the ratio of public debt to GDP are insignificant. Moreover, at the disaggregated level of non-financial private debt, it is the higher non-financial corporate debt level rather than the household debt level that remarkably undermines China's economic growth. Finally, we find that the rise in the household debt level could significantly reduce the income inequality, and the ratio of M2 to GDP is positively related with the income inequality in China.

Keywords: Leverage, Financialisation, Economic Growth, Income Inequality, China's Economy

JEL Code: O53, H63, G10

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1. Introduction

The abrupt decline in the growth rate of China economy has attracted greater concerns since 2012. In this paper, we seek to uncover the connections of the recent slowdown with the evolutions of the financialisation and leverage indicators in China, and then identify the threshold levels for these indicators, inasmuch as they have important implications for the development strategy of China's economy and finance.

Financialisation is defined as the increasing significance of financial markets, financial institutions, and financial elites in the operation of the economy and the decisions of policies, both at macro and micro levels (Epstein 2001, p.1). Its consequences, according to Pally (2007), include: (1) the elevation in the importance of the financial sector relative to the real sector; (2) the shift of income from the real sector to the financial sector; (3) the increase in income inequality; and (4) putting the economy at risk of debt deflation and prolonged recession. The final one implies that financialisation generates the over indebtedness in economic sectors and thereby depressing the economic growth[2]. Studies show that financialisation is most developed in the advanced economies, particularly in the US economy. However, emerging markets may also be infected and gradually evolve into financialisation. Given its adverse effects, in this paper, we introduce five variables, including the contribution of financial production to GDP, the growth rate of financial production, the ratio of the growth rate of financial production to the growth rate of industrial production, the ratio of the average wage level in the financial sector to the aggregate average wage level, and the ratio of M2 to GDP as the measuring indicators to test if financilazation has emerged in China's financial system, and if so, what about its effects at macro level.

Higher leverage often accompanies the process of financialisation. In this paper, leverage is defined by the ratio of debt to GDP. Our study mainly focuses on the ratio

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[2] See, for example, Fisher (1932).

of public debt to GDP, and the ratio of non-financial private debt to GDP.   The latter is partitioned into the ratio of household debt to GDP and the ratio of non-financial corporate debt to GDP. The global financial crisis of 2008 has renewed the research interests in studying the association of leverage with economic growth and distribution, because the bail-out packages implemented for weathering the global financial crisis have significantly expanded the leverages both in the advanced economy and in the emerging markets. Against this backdrop, China's debt problem has also attracted considerable concern. Referring to the fresh literature on the leverage-growth nexus, this paper attempts to provide new evidence from China case.

Our study extends the findings about the effects of financialisation and leverage on the economic growth and the income inequality by focusing on China economy. Using an extended Solow growth model, we find that the effects of the financialisation indicators on China's p.c. GDP growth are ambiguous and insignificant, which reflects that financialisation in China is still under developed. Nevertheless, the stylized facts about the financialisation indicators, the preliminary evidence in this paper documenting the negative correlations between the financialisation indicators and the economic growth, especially, the higher ratio of broad money to GDP and its remarkably negative effects, all of these suggest that financialisation has been evolving and should be accorded more concerns in China. Most importantly, we find that the leverage indicators do negatively affect the p.c. real GDP growth in China. The ratio of non-financial private debt to GDP has significantly negative impact on China's real p.c. GDP growth, whereas the effects of the ratio of public debt to GDP on the economic growth are insignificant. Moreover, at the disaggregated level of non-financial private debt, it is the higher non-financial corporate debt level (percentage to GDP) rather than the household debt level that remarkably undermines the growth of China's economy. Finally, our empirical results suggest that the rise in the household debt level could significantly reduce the income inequality, and the ratio of M2 to GDP is positively related with the income inequality in China.

The remainder of this paper is organized as follows. Section 2 reviews the literature.

Section 3 presents the stylized facts about financialisation, the debt structure and the economic performance in China. Section 4 discusses the empirical methodology. Section 5 presents and analyses the results of the study. Section 6 makes the remarking conclusions.

2. Literature Review

There exists a vast of literature on the finance-growth nexus from the theoretical and the empirical aspects, where economists disagree about the impact of finance on growth. On one hand, a number of studies show that finance matters for economic growth; for example, World Bank (1989), and notable, King and Levine (1993), who conducted a cross country analysis using data on 80 countries over the 1960-1989 period. Their empirical evidence suggests that financial system can promote economic growth by stimulating the physical capital accumulation and improving the economic efficiency. The empirical evidence from Rajan and Zingales (1998) support the above conclusions, however Arestis and Demetriades (1997) argued that the results from cross-country regressions may not accurately reflect individual country circumstances such as the institutional structure of the financial system, the policy regime and the degree of effective governance. They found that the cross country results exhibit substantial variation across countries using time-series estimations on individual countries. Furthermore, Levine (2000) examined the impacts of financial structure, featured by bank-based versus market-based financial systems, on economic growth using panel data. His research did not support either the bank-based or the market-based view, although overall financial development has robust correlations with economic growth. Levine (2004), and Demirgüç-Kunt and Levine (2008) provided comprehensive surveys on the connections between the operation of the financial system and economic growth from the theoretical and empirical aspects. They show that a well-functioned financial system exerts first-order impact on long-run economic growth through five functions: 1) producing information and allocating capital and thereby reducing the costs of transactions; 2) monitoring firms and exerting corporate governance to improve the efficiency of firms; 3) risk

amelioration; 4) pooling of disparate savings for investment; 5) easing exchange of goods and services. Empirical evidence suggests that better developed financial systems may influence saving rates, investment decisions, technological innovation, and hence long-run economic growth. On the other hand, certain economists have stressed the endogenous instability of financial system and the damage effects of overdevelopment in the financial sector on the economic growth and distribution; for example, the well-known studies by Minsky (1992, 2008), Epstein (2001), Pally (2007), Hein and Treeck (2007, 2008). The global financial crisis of 2008 recalled the research interests in the associations of the overdevelopment in financial markets, namely financialisation, with the economic growth and financial cycles. Epstein (2001) provided a notable definition on financialisation and analysed the effects of financialisation by analysing the inflation targeting regime. Hein and Treeck (2007, 2008) introduced an alternative definition on financialisation, which focuses on the micro factors such as the increasing power of the firms' shareholders, the increasing debt-financed consumption of households and their effects on the growth and distribution. The shareholder-oriented firms will replace retain and invest strategy with down-size and distribute, which reduces the potential aggregate output on one hand, decreases the aggregate demand on the other hand. The increase in the debt-financed consumption will accumulate the debt burdens for households and thereby depresses the aggregate demand and economic growth. They examined the effects of financialisation on distribution and growth within Post-Keynesian models. Their theoretical analysis suggests that an expansive finance-led economy may build up major financial imbalances, i.e. increasing debt-capital or debt-income ratios, which make such economies prone to financial instability and undermine the economic growth and income distribution. Pally (2007) provided a survey about finncialization and analysed the channels through which financialisation affects the economic growth and distribution. He pointed out that financialisation impacts the economic system and depresses the long-run economic growth by three conduits, which include changing the structure and operation of financial markets, influencing the corporate behaviours, and reshaping economic policy framework. Moreover,

many economists attribute the Great Recession since 2008 to financialisation in the advanced economies, which is in line with the influential theory about the business cycle constructed by Minsky (1992).

Higher leverage may or may not be the consequence of financialisation, but the financial development over past decades did relax constraints on access to finance and increase the borrowings of households and non-financial corporates. Excess indebtedness often triggers a debt crisis, currency crisis and financial instability, thereby depresses long-run economic growth. The impacts of leverage on economy are complicated, which have been less understood by economics until now. Generally, low and moderate levels of debt help promote the welfare and economic growth, whereas high levels can be disaster[3]. This suggests a threshold effect of debt: when the regarding debt level exceeds the threshold value, dragging consequences on growth produce. Traditionally, the regarding studies particularly focus on the effects of public debt, especially when higher public debt-to-GDP is the consequence of expansion fiscal policy to stimulate aggregate demand, it could promote the output in the short run, but crowds out private capital spending and reduces output in the long run. Notably, Reinhart and Rogoff (2010) use panel analysis to investigate the debt-growth nexus for advanced economies. They find that when the public-debt-to-GDP ratio exceeds 90%, the build-up of debt is harmful to the economic growth. Cecchetti et al. (2011) examined the impacts of both public debt and non-financial private debt on the economic growth using a new database composing of 18 OECD countries for the 1980-2010 period. They reported the thresholds levels for the government debt, the non-financial corporate debt and the household debt to be 85%, 90%, and 85% of GDP, respectively. Against this backdrop, Chudik et al. (2015) tested for threshold effects in the context of dynamic heterogeneous panel data models with cross-sectional dependent errors and illustrate by means of Monte Carlo experiments. Using data on a sample of 40 countries (grouped into advanced and developing) over the 1965-2010 period, they didn't find the evidence for a universally applicable threshold effect in the relationship between

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[3] See, for example, detailed discussions in Cecchetti et al. (2011).

public debt and economic growth when they account for the impact of global factors and their spillover effects. Nevertheless, their results indicate that there are significant negative long-run effects of public debt build-up on output growth. Most research in this topic ignore China's case, our paper fills this gap and provides certain interesting implications.

Finance development and Leverage have important impacts on the income inequality although the theoretical mechanisms are not very clear until now. Demirgüç-Kunt and Levine (2009) summarized the effects of finance developments on inequality. Greenwood & Jovanovic (1990) pointed out that, on one hand, financial development might increase the availability and use of financial services by individuals who had not been employing those services because of price or other impediments, and thereby expand the economic opportunities of disadvantaged groups and reduce the intergenerational persistence of relative incomes; on the other hand, finance can enhance the financial services of those already accessing the financial system, which are frequently high-income individuals and well-established firms, and thereby widen inequality and perpetuating cross-dynasty differences in economic opportunity. Regarding the effects of financialisation, as we have discussed, within post-Keynesian models, Hein and Treeck (2007, 2008) find that financialisation undermines the equality in the distribution; similar conclusions are also provided by Pally (2007). On the correlations between the inequality and leverage, Rajan (2010) argued that the increase in the income inequality created political pressure, not to reverse that inequality, but instead to encourage borrowing to keep demand and job creation robust despite stagnating incomes, which raises the household leverage. When the leverages are unsustainable, defaults occurred following by financial instability. Using a DSGE model, Kumhof and Rancière (2013, 2015) reported an endogenous interacting relation between the leverage and the income inequality in the US economy. They presented a strong comovement between increases in income inequality and increases in household debt-to-GDP ratios in both the period prior to the Great Recession and the period prior to the Great Recession. Their model shows that an increase in debt among bottom earners, which empirically

has been the main driver of the leverage in overall households in the period prior to the Great Recession, leads to an increase in crisis risk. Our study tried to extend these finding under the context of the growing leverage and inequality in China's economy

3. Stylized Facts of Financialisation and Leverage in China

As abovementioned, we use the contribution of financial production (hereafter FP) to GDP, the growth rate of FP, the ratio of average wage level in financial sector to the aggregate average wage level, the ratio of the growth rate of FP to the growth rate of industrial production (hereafter IP), and the ratio of M2 (broad money in China) to GDP as the indicators of financialisation. The leverage indicators are composed of the ratio of public debt to GDP and the ratio of non-financial private debt to GDP. The later are furtherly partitioned into the ratios of household debt to GDP and of non-financial corporation debt to GDP, respectively. In this section, we describe the changes in these indicators for the period of 1992Q1-2015Q2 in China. The quarterly data are collected from China Economic Information Networks database (hereafter CEIN), Wind database (hereafter Wind), and the Bank for International Settlements database (hereafter BIS).

3.1 Changes in the Indicators of financialisation in China

Figure 1 depicts the growth rates of China GDP, industrial production and financial production. It shows that the growth rate of financial production rose from 1.7% in 1992q1 to its peak at 33.9% in 2007q3, and then fell to 7.7% in 2011q4, rebounded to the second peak at 17.4% in 2015q2, whereas the average growth rate of FP is less than 7% in the US for the same eriod. It has exceeded the growth rate of GDP since the fourth quarter in 2005, particularly for the period between Q3 2005 and Q2 2008, and the period between Q1 2012 and Q4 2014. Generally, the growth of GDP has the same trend as the growth of IP, but reversed trend as the growth of FP. The growth rate of GDP fell dramatically after 2012q2, whereas the growth rate of FP has distinguished risen since 2012q1.

Figure 1 Growth Rates of China GDP, IP and FP (Percentage)
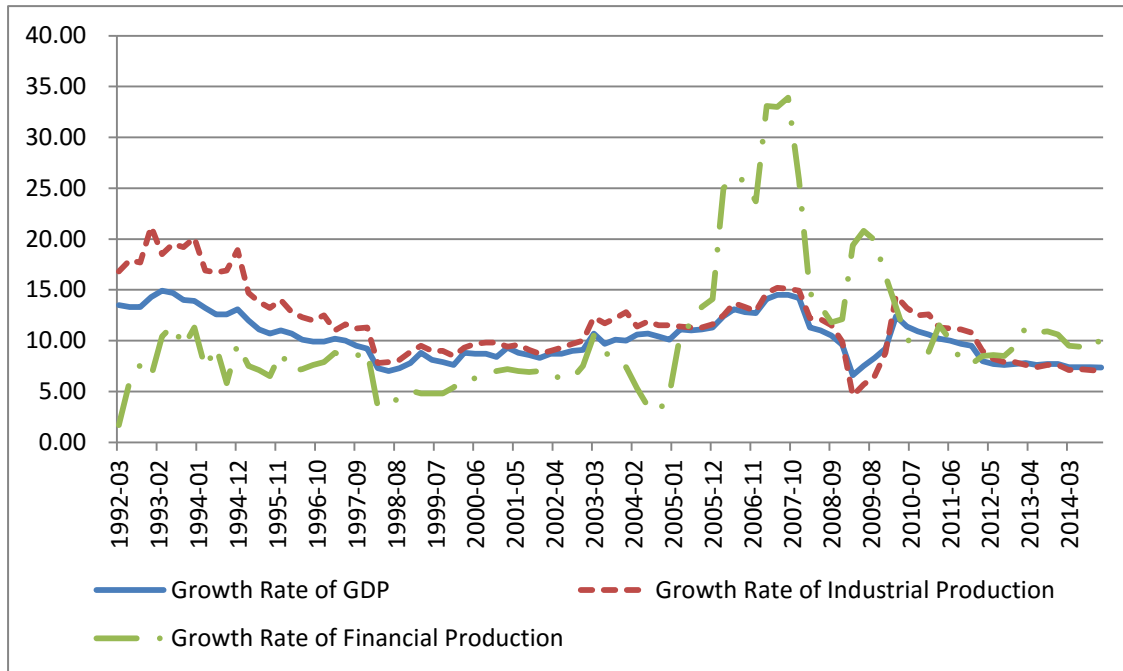
Source: CEIN, WIND

Figure 2, Growth Rate of GDP, Contribution of IP and FP to GDP (Percent)
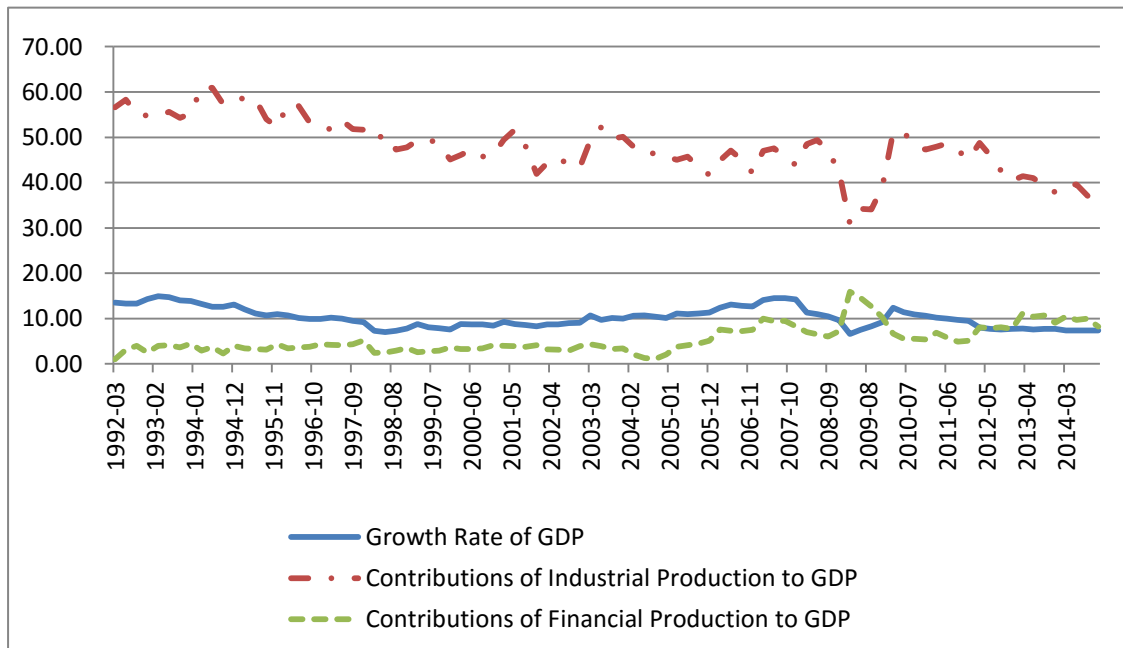
Source: CEIN, Wind

Figure 2 plots the contribution of financial production and industrial production to GDP, respectively. Prior to 2005, the contribution of financial production to GDP is lower and positively related with the growth rate of GDP. However, it demonstrates an increasing trend after the third quarter of 2005, and is reversely correlated with the

growth rate of GDP since the third quarter of 2008. The contribution of industrial production to GDP shows a positive relation with the growth rate of GDP over the sample period.

The share of the employment in the financial sector in total employments, and the ratio of average wage level in financial sector to overall average wage level (Seasonally adjusted) in China are presented in Figure 3. It indicates that the wage income in the financial sector has risen dramatically since 2005 given its nearly constant employment share. In addition, the ratio of wage level in the financial sector to average wage level keeps up rising and remains higher than 150% since 2005, has attained 200% for the period of 2012-2015, whereas it is only 80% prior to 2005.

Figure 3 Employment Share and Wage Ratio in the Financial Sector (Percent)
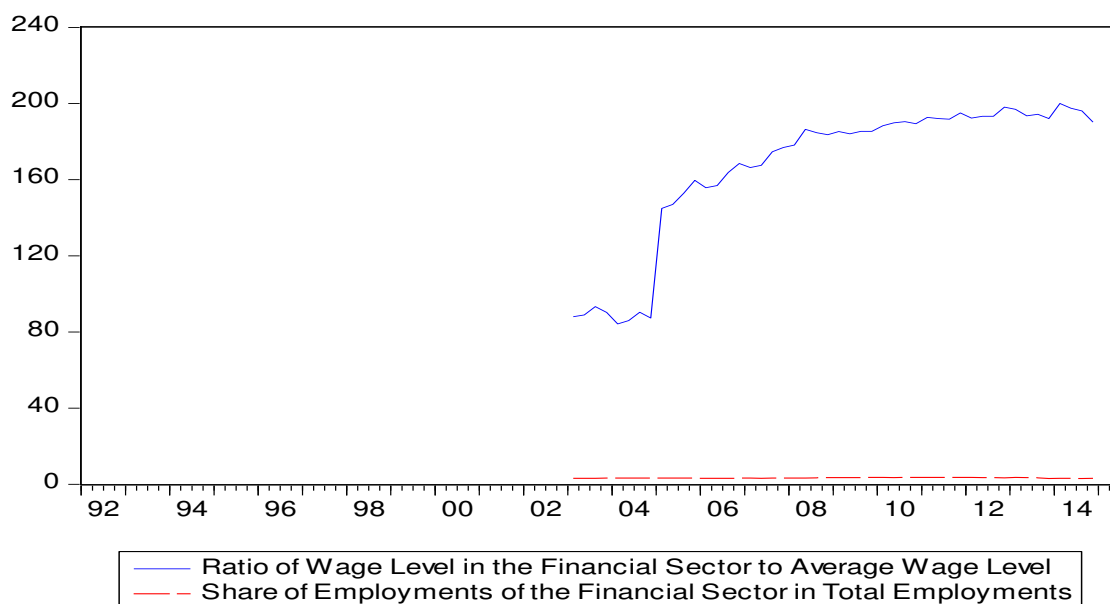
Source: Author's Calculation

Figure 4 plots the ratios of broad money (M2), total deposits, total loans and stock value to GDP. These ratios generally measure the financial markets development. It shows that except the ratio of stock value to GDP, other three ratios have exceeded 100% since 1998, and the ratios of M2 to GDP and total deposits to GDP have exceeded 150% since 2003. Moreover, the two latter ratios are nearly close to 200% after 2012.

Figure 4 Ratios of M2, Total Deposits, Total Loans and Stock Value to GDP
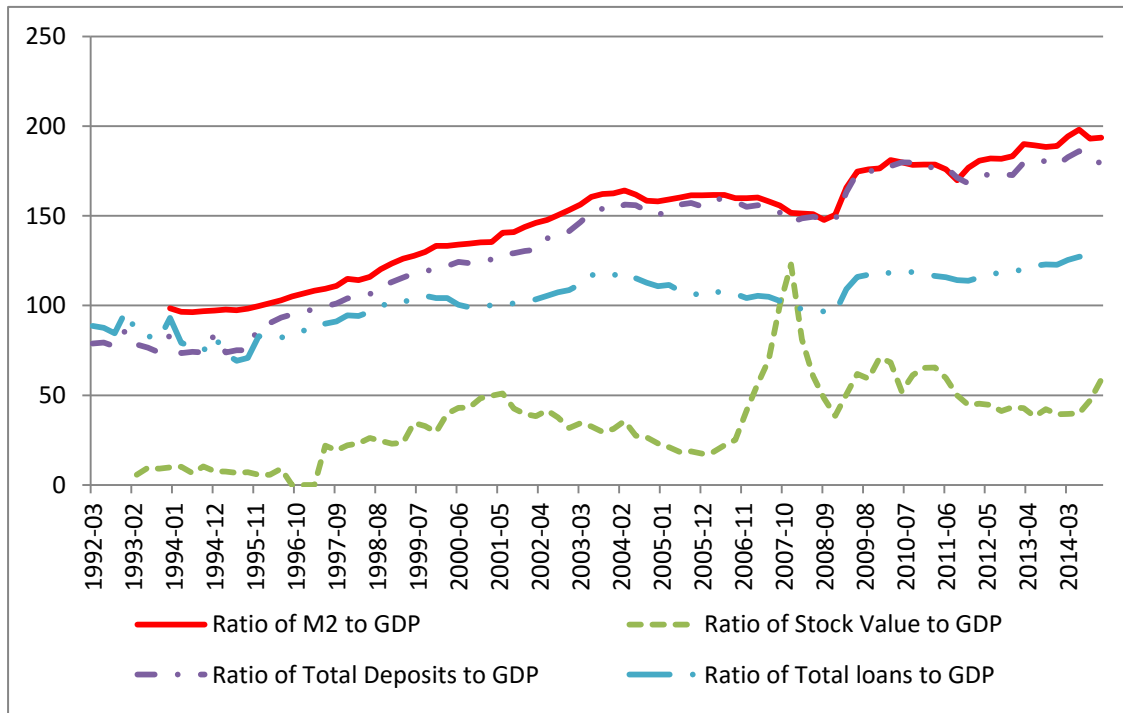
Source: Author's calculation

In particular, the contribution of FP to GDP and the growth rate of FP in China are remarkably higher than that in the US for the period of 2007q1-2009q4 and the period of 2012q1-2015q2. Moreover, the ratio of M2 to GDP in China rose from 93.6% (1.5 times the ratio in the US) in 1992q4 to 193.6% in 2014q4, which is three times the ratio in the US, where financialisation is most developed. These seem to indicate that somehow financialisation has emerged in China and should be accorded serious concern.

3.2 Changes in the Leverage Indicators in China

Figure 5 presents the shares of China's aggregate debt in 2013. It shows that China's total debt is dominated by the domestic debt, in which public debt and non-financial private debt represent more than 60%. Therefore, we focus on the evolutions in public debt level and non-financial private debt level (percent to GDP) to examine the effects of the leverages.

Figure 5 Share of China's Total Debt at the End of 2013
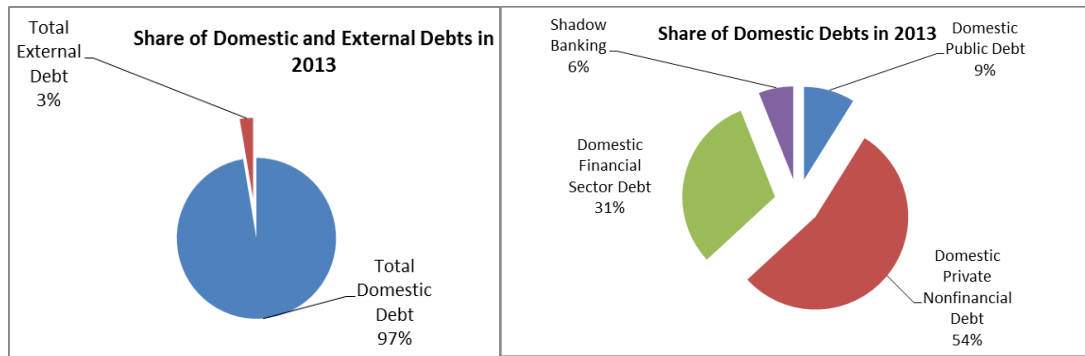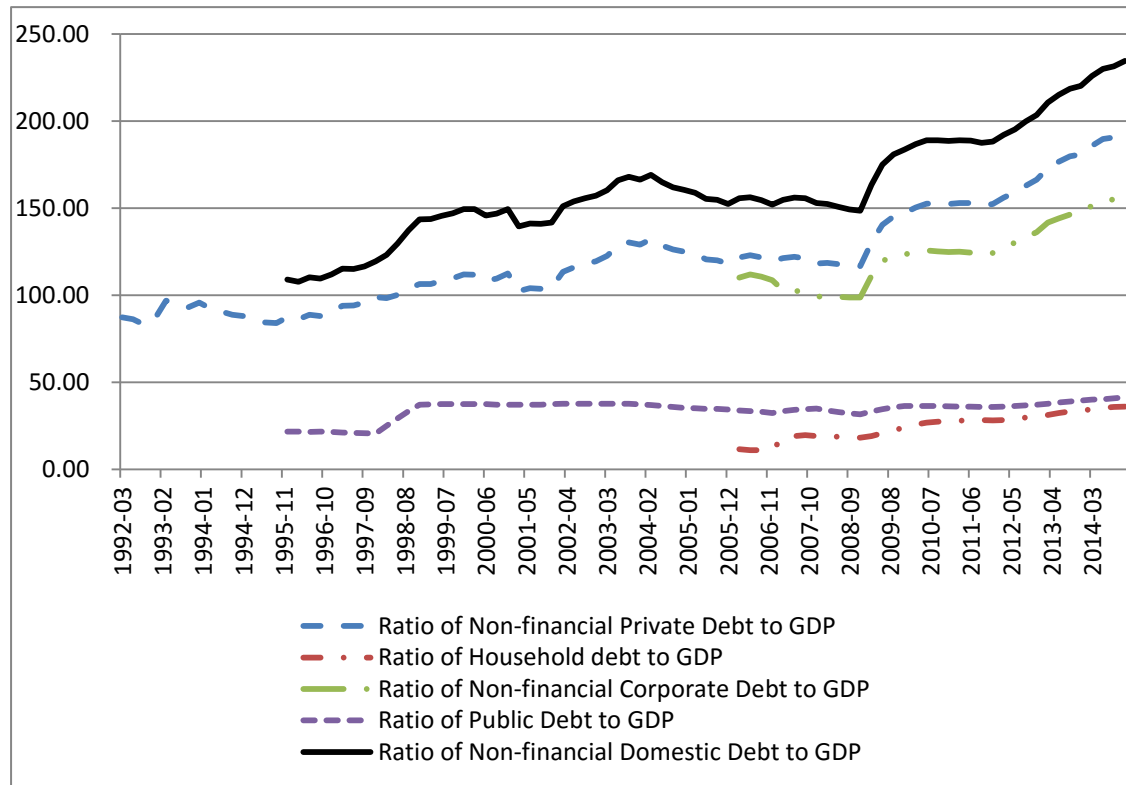

Source: Author's Calculation

China's public debt includes central government debt and local government debt. They are combined together as the general government debt according to the definition by IMF. In this paper, the public debt is defined at the general government level. China's public debt attained 26180.99 billion yuan (RMB) in the end of 2014, which is nearly 20 times the level in 1995. The private non-financial debt attained 122641.6 billion yuan in the end of 2014, which is 61.1 times the level in 1992. Household debt has increased approximately 111 times since 1992 and nearly quadrupled from 2007 to 2014, rising from 208.2 billion yuan in 1992 to 22921.5 billion yuan in 2014. Non-financial corporate debt has increased nearly 42 times since 1992 and nearly tripled from 2007 to 2014, rising from 2357.6 billion yuan in 1992 to 99720 billion yuan in 2014.

Both the ratios of the non-financial private sector and the public sector to GDP have risen since 1990s in China. The ratio of public debt to GDP is 41.3% in the end of 2014, which remains low by international standards[4]. The ratios of non-financial private debt to GDP had tripled by the end of 2014, attaining 193.3% of GDP. Driven by the increase in mortgage volumes, the ratio of household debt to GDP rose from 7.73% in 1992 to 36.01% in 2014. The leverage in the corporate sector has increased steadily since 1999, rising from 87.57% (to GDP) in 1992 to 156.68% in 2014, which is one of the highest levels of corporate debt in the world. Figure 6 summarizes the changes in the leverages by sector. Particular concerns should be given with the

[4] The average ratio of public debt in OECD countries is above 100% in the same year.
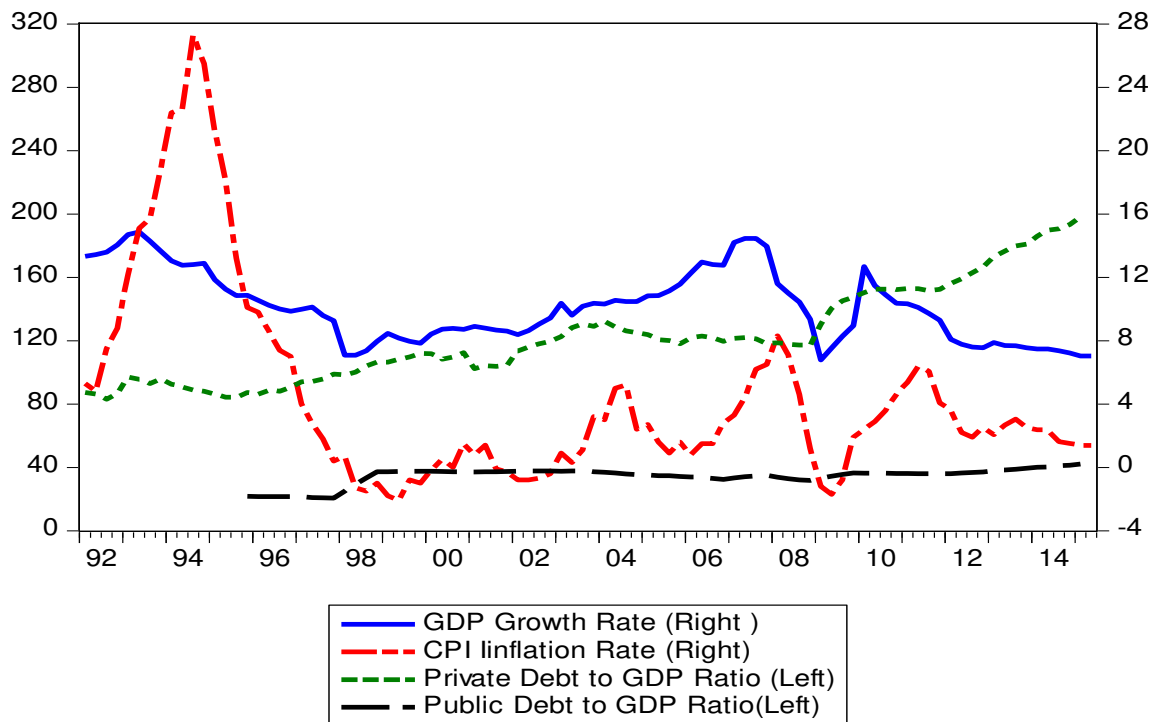
leverages in the private sector.

Figure 6 Evolutions of the Leverages by Sector

Source: BIS and Author's Calculation.

Figure 7 Leverages, GDP Growth Rate and CPI Inflation
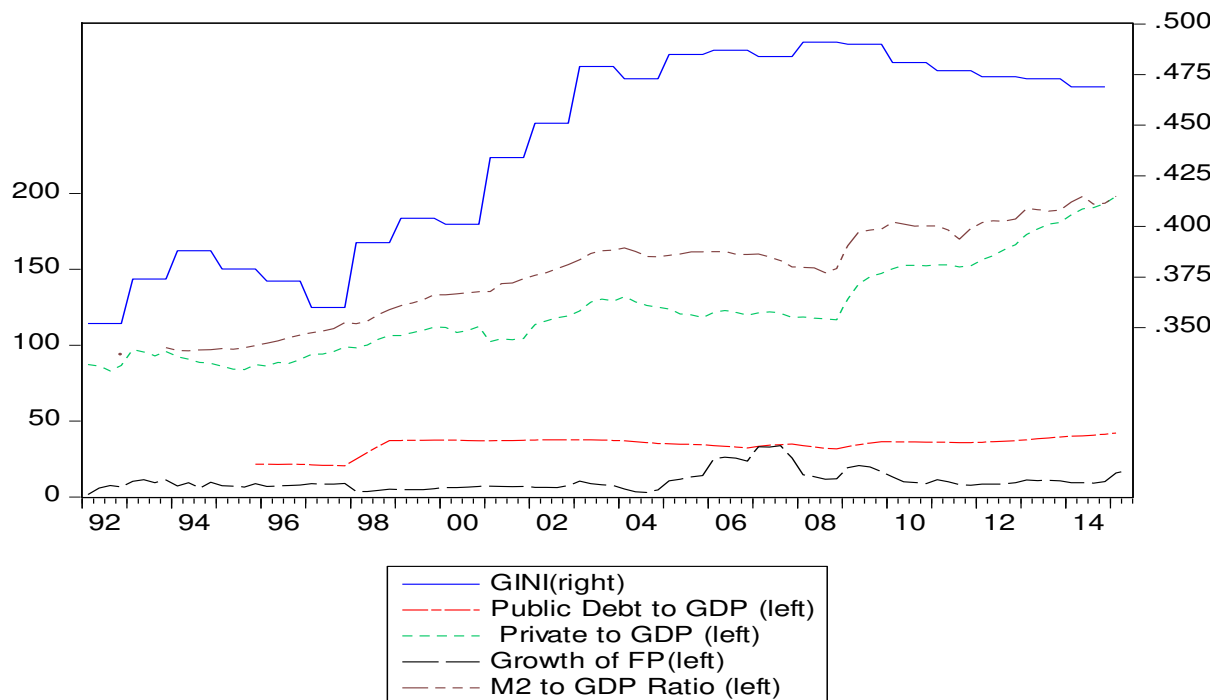

Source: WIND and Author's calculation

Figure 7 shows the growth rate of GDP, CPI inflation, and certain leverage ratios. It shows that the increase in the leverage of the private sector is contrast with the decrease in the growth rate of GDP for the periods of 1992-1998 and 2009-2014, respectively. In addition, a rough reverse correlation appears between the private debt level and the rate of inflation, particularly for the period after the global financial crisis of 2008.

3.3 The Income Inequality in China

One of the important effects of financialisation and higher leverage is the increase in the income inequality. Figure 8 shows the change in the GINI coefficients and the indicators of financialisation and leverage from 1992 to 2014 in China. The GINI coefficient has remained above 0.40 since 2000, which demonstrates that the inequality of income distribution has being risen since the turn of 21st century in China, and is the highest around the advanced economies and the emerging markets. Importantly, there appear remarkable positive relations between the ratio of private debt to GDP, the ratio of M2 to GDP and the Gini coefficient in Figure 8.

Figure 8 Financialisation, Leverage and Inequality

Source: Wind and Author's Calculation

3.4 Preliminary Evidence

To explore the effects of financialisation and leverage, first, we test the correlations between the indicators of financialisation and leverage and the growth rate of GDP. The results as rough and preliminary evidence are reported in Table 1.

In Table 1, four important indicators of financialisation, the contribution of financial production to GDP: the ratio of average wage level in the financial sector to aggregate average wage, the ratio of M2 to GDP, and the ratio of the growth in financial production to the growth in industrial production, are negatively correlated with the growth rate of GDP. Moreover, two leverage indicators, non-financial private debt and public debt (percentage to GDP) are also negatively related with the economic growth (both by GDP and p.c. GDP) in China. Interestingly, the correlations between the financializaiton indicators and the p.c. GDP growth are diverse and ambiguous.

Table 1 Correlation between GDP Growth and Financialisation, Leverage

	Growth Rate of FP	Contribution of FP to GDP	Ratio of Growth in FP to Growth In IP	Ratio of wage level in FS* to Average Wage	Ratio of M2 to GDP	Ratio of Non-Financial Private Debt to GDP	Ratio of Public Debt to GDP
Growth Rate of Real GDP p.c.	0.588	0.169716	0.3675	-0.09796	0.1403	-0.09173	-0.10644
Growth Rate of GDP	0.36395	-0.29137	-0.17487	-0.27262	-0.31152	-0.47265	-0.23577
CPI Inflation	-0.06309	-0.2294	-0.30377	0.0943	-0.51453	-0.39236	-0.4229

*FS: Financial Sector.

Furthermore, we investigate the correlations of the indicators of finacializtion and leverage with the inequality indicator (GINI coefficient). The results are shown in Table 2.

Table 2 indicates that both the financialisation indicators and the leverage indicators are positively correlated with the GINI coefficient, implying that both financialisation and the overindebtedness enhance the income inequality in China.

Table 2 Correlations between Financialisation, Leverage and Income Inequality

	Growth Rate of Financial Production	Contribution of Financial Production to GDP	Ratio of Growth in FP to Growth In IP	Ratio of wage level in FS to Average Wage	Ratio of M2 to GDP	Ratio of Non-Private Debt to GDP	Ratio of Public Debt to GDP
GINI Coefficient	0.488	0.5765	0.5784	0.06914	0.8864	0.7737	0.6199

Source: Author's Estimation

Referring to these preliminary evidence and the stylized facts, in the following, we seek to uncover the financialiation-leverage-growth nexus and financialisation-leverage-inequality connection in China by employing an extended Solow growth model, and identify the threshold levels for the leverage and financialisation indicators in accordance with Hansen (2000).

4. Empirical Methodology

Following the regarding literature (Mankiew et al., 1992, 1995; Ding et al., 2009; Cecchetti et al., 2011), we employ an extended Solow growth model to examine the effects of financialisation and leverage on China's economic growth:

$$\bar{y}_{t+1,\ t+k} = \alpha + \beta' x_t + \gamma' z_t + \varepsilon_t \tag{1}$$

where $\bar{y}_{t+1,t+k} = \frac{1}{k}\sum_{i=1}^{k} y_{t+i}$ denotes the average value of the forward economic growth rates for k periods. x_t is a vector of control variables; z_t is a vector of indicators for financialisation and leverage; β, γ are coefficients vectors, respectively.

In accordance with the literature of extended Solow growth models, to avoid the endogenous problem, we use the forward average growth rate of real GDP per capita for five periods as the dependent variable. Also to avoid the multicollinearity problems, we employ the stepwise regression approach. Our regressions satisfy the VIF tests and heterogeneity tests.

The control variables in equation (1) include:

A. Real GPD per capita at t_0, to capture the initial conditions of economic structure.

B. Saving rate, share of national saving (public and private) in GDP.

C. Population growth rate.

D. Human capital, proxied by the education expenditure per capita.

E. Openness, measured by the ratio of total foreign trade (exports plus imports) to GDP.

F. Rate of Inflation, calculated by CPI index.

G. Financial markets development index, measured by the ratio of total loans and total deposits to GDP.

Data sources are described in Section 2. The sample period is from the first quarter of 1992 to the fourth quarter of 2014.

On the threshold effects, we use the following regression:

$$\bar{y}_{t+1,\ t+k} = \alpha + \beta x_t + \gamma_1 J[z_t \le \tau] + \gamma_2 J[z_t > \tau] \cdot \qquad (2)$$

where $J[A]$ is an indicator variable that takes the value of unity if event A occurs and zero otherwise. τ denotes the threshold level for the concerning financialisation and leverage indicator z_t. To search for the threshold levels for the indicators of financialisation and leverage, we use a Monte Carlo Simulations with bootstrap algorithm in accordance with Hansen (2000).

When testing the effects of financialisation and leverage on China's income inequality (proxied by the GINI coefficient), we replace the dependent variable in regression equations (1) and (2) with the GINI coefficient.

5. Empirical Results

5.1 Effects on Economic Growth

Using equation (1), the basic growth regression and the extended growth regressions are conducted. Tables 3 and 4 summarise the regression results.

Table 3 Effects of Financialisation on Economic Growth

(Dependent Variable: Future Average Growth Rate of Real GDP per capita)

	(1)	(2)	(3)	(4)	(5)	(6)
Log real p.c. GDP	0.0215 (0.3129)	0.022 (0.314)	0.054 (0.31)	0.018 (0.315)	-2.23** (0.99)	0.21 (0.44)
National saving rate	0.255*** (0.039)	0.272*** (0.045)	0.225*** (0.043)	0.262*** (0.046)	0.377*** (0.108)	0.231*** (0.048)
Population growth	-21.28*** (4.60)	-21.94*** (4.69)	-20.33*** (4.58)	-21.61*** (4.77)	-14.91*** (28.39)	-23.32*** (5.82)
Human capital	-0.02*** (0.002)	-0.02*** (0.002)	-0.02*** (0.002)	-0.02*** (0.002)	-0.023*** (0.004)	-0.020*** (0.002)
Trade Openness	0.096*** (0.016)	0.093*** (0.016)	0.089*** (0.016)	0.095*** (0.016)	0.114*** (0.021)	0.1*** (0.016)
CPI inflation	0.046* (0.025)	0.041 (0.026)	0.058** (0.026)	0.044* (0.027)	0.187*** (0.056)	0.049* (0.029)
Financial index	0.003 (0.007)	0.002 (0.007)	0.006 (0.007)	0.003 (0.003)	0.048*** (0.009)	0.005 (0.015)
Contribution of FP to GDP		-0.036 (0.047)				
Growth of FP			0.029* (0.017)			
FP growth/ IP growth				-0.049 (0.17)		
FP wage/ overall wage					0.015* (0.009)	
M2/GDP						-0.007 (0.031)
R square	0.89	0.89	0.89	0.89	0.94	0.89
Adjusted R square	0.88	0.88	0.88	0.88	0.93	0.88

***, **, and * represent the significance at 1%, 5%, and 10%, respectively.

Standard deviations are reported in the paragraphs.

First column in Table 3 provides the results for basic growth regression. Nearly all the variables are statistically significant excluding the log of per capita real GDP and the financial development index. The increase in national saving as the share of GDP promotes China's future real per capita GDP growth. Trade openness and CPI inflation rate are also positively related with the per capita GDP forward growth rate. Interestingly, human capital plays a negative role in the growth of China's future p.c. real GDP, which may reflect the fact that China's economic growth was driven by the labour-intense forces, rather than the technological progress over the past decades. Population growth is negatively correlated with p.c. GDP growth. Our empirical results from the basic growth regression are similar as those from the advanced and other emerging economies excluding the effects of the human capital and the CPI inflation.

Columns from 2 to 6 in Table 3 are the results of growth regression with the financialisation indicators. We find that three indicators including the ratio of M2 to GDP, the contribution of FP to GDP, and the ratio of FP growth to IP growth have negative impacts on China's future p.c. GDP growth, but the effects are insignificant with the p values higher than 10%. Other three indicators, IP growth, the ratio of average wage in the financial sector to the overall average wage have positive effects, in which two effects are significance at 10% level. These results imply that the effects of financialisation on p.c. GDP growth are diverse and ambiguous in China.

Columns from 1 to 4 in Table 4 show the effects of the leverage indicators on China's p.c. GDP growth with the same extended growth model. The ratio of non-financial private debt to GDP has significantly negative effects on economic growth, whereas the effects of public debt level are insignificant. Moreover, it is the ratio of non-financial corporation debt to GDP rather than the ratio of household debt to GDP has the remarkably negative impact on the p.c. GDP growth.

Inequality Effect: Furthermore, we add the GINI coefficient to the basic regression model to test the effect of the income inequality on China's economic growth. Column 5 in Table 4 suggests that the income inequality significantly harms the economic growth.

Table 4 Effects of Leverage and the GINI Coefficient on Economic Growth

(Dependent Variable: Future Average Growth of Real GDP per capita)

	(1)	(2)	(3)	(4)	(5)
Log real p.c. GDP	-0.021 (0.297)	-2.79 (1.80)	-0.99 (1.26)	0.58 (0.53)	0.917* (0.492)
National saving rate	0.212*** (0.04)	0.37*** (0.145)	-0.15 (0.14)	0.18*** (0.16)	0.273*** (0.039)
Population growth	-14.01*** (4.94)	35.64 (75.76)	111.58** (491)	-30.3*** (6.50)	-31.32*** (6.22)
Human capital	-0.013*** (0.003)	-0.02*** (0.005)	-0.019** (0.003)	-0.02*** (0.002)	-0.025*** (0.003)
Trade Openness	0.081*** (0.016)	0.046 (0.038)	-0.003 (0.028)	0.07*** (0.016)	0.102*** (0.016)
CPI inflation	0.092*** (0.028)	0.372*** (0.087)	0.36*** (0.053)	0.19*** (0.04)	0.081*** (0.029)
Financial index	0.038*** (0.013)	0.071*** (0.014)	0.148*** (0.017)	0.013 (0.008)	0.01 (0.007)
Private debt/GDP	-0.066*** (0.021)				
Household debt/GDP		-0.09 (0.07)			
Nonfinancial corporate debt/GDP			-0.19*** (0.03)		
Public debt/GDP				-0.043 (0.043)	
Gini Coefficient					-19.29** (8.32)
R square	0.90	0.96	0.98	0.92	0.90
Adj. R square	0.89	0.95	0.97	0.91	0.89

***, **, and * represent the significance at 1%, 5%, and 10%, respectively.

Standard deviations are reported in the paragraphs.

5.2 Effects on the Income Inequality

In this subsection, we test the effects of financialisation and leverage on the income inequality. Following the above procedure in subsection 5.1, we replace the dependent variable, the p.c. real GDP growth, with the GINI coefficient. The regression results are summarized in Tables 6 and 7.

Table 6 Effects of Financialisation on the Income Inequality

(Dependent Variable: the GINI Coefficient)

	(1)	(2)	(3)	(4)	(5)	(6)
Log real p.c. GDP	0.044*** (0.004)	0.044*** (0.004)	0.044*** (0.004)	0.044*** (0.004)	0.043*** (0.006)	0.037*** (0.005)
National saving rate	0.0012** (0.0005)	0.0009 (0.0005)	0.001** (0.0006)	0.0008 (0.0005)	0.0009 (0.0007)	0.0015*** (0.0006)
Population growth	-0.465*** (0.0550	-0.453*** (0.057)	-0.469*** (0.056)	-0.445*** (0.058)	0.358* (0.18)	-0.408*** (0.067)
Human capital	-0.0003*** (0.00005)	-0.0003** (0.00005)	-0.0003** (0.00003)	-0.0002** (0.00003)	-0.0002*** (0.00002)	-0.0003** (0.00003)
Trade Openness	0.0004* (0.0002)	0.00046** (0.002)	0.0004* (0.0002)	0.0005** (0.0002)	0.00007 (0.0001)	0.0004* (0.0002)
CPI inflation	0.0016*** (0.0003)	0.0016*** (0.0003)	0.0015*** (0.0003)	0.0016*** (0.0003)	-0.0008** (0.00004)	0.0013** (0.0003)
Financial index	0.00034*** (0.0001)	0.00036** (0.0001)	0.0003*** (0.0001)	0.0004*** (0.0001)	-0.00002 (0.00006)	-0.0003 (0.0002)
Contribution of FP to GDP		0.00054 (0.0006)				
Growth of FP			-0.00007 (0.0002)			
FP growth/ IP growth				0.0024 (0.002)		
FP wage/ overall wage					0.00007 (0.00005)	
M2/GDP						0.0001*** (0.0003)
R square	0.96	0.96	0.96	0.96	0.71	0.97
Adj. R square	0.96	0.96	0.96	0.96	0.65	0.97

***, **, and * represent the significance at 1%, 5%, and 10%, respectively.

Standard deviations are reported in the paragraphs.

The first column in Table 6 shows that all the explanatory variables are significant in explaining the income inequality at least at 5% significance. The real p.c. GDP, national saving rate, trade openness, CPI inflation and the financial development have positive impacts on the income inequality in China since 1992, suggesting that China's economy is still on the left slope of the Kuznits curve. Most importantly, the increases in the population growth and the human capital can reduce the income inequality!

Table 7 Effects of Leverage on the Income Inequality

(Dependent Variable: the GINI Coefficient)

	(1)	(2)	(3)	(4)
Log real p.c. GDP	0.044***	0.02**	0.015	0.049***
	(0.004)	(0.008)	(0.009)	(0.007)
National saving rate	0.001**	0.003***	0.004***	0.0006
	(0.0006)	(0.0006)	(0.001)	(0.0007)
Population growth	-0.48***	0.86**	1.19***	-0.54***
	(0.063)	(0.33)	(0.37)	(0.088)
Human capital	-0.0003***	-0.00005**	-0.00008***	-0.0003***
	(0.00004)	(0.00002)	(0.00002)	(0.00003)
Trade Openness	0.0005**	-0.00004	0.00003	0.0006**
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
CPI inflation	0.0014***	-.0001	-0.0007*	0.0006
	(0.0004)	(0.0003)	(0.0002)	(0.0005)
Financial index	0.0003	0.0001**	0.0001	0.0002**
	(0.0002)	(0.00006)	(0.0001)	(0.0001)
Private debt/GDP	0.0002			
	(0.0002)			
Household debt/GDP		-0.0009***		
		(0.0003)		
Nonfinancial corporate debt/GDP			0.00006	
			(0.0002)	
Public debt/GDP				0.00009
				(0.0006)
R square	0.96	0.90	0.86	0.96
Adjusted R square	0.96	0.87	0.82	0.96

***, **, and * represent the significance at 1%, 5%, and 10%, respectively.

Standard deviations are reported in the paragraphs.

Columns from 2 to 6 in Table 6 present the effects of the financialisation indicators on the income inequality. Only the ratio of M2 to GDP has significantly positive impact on the income inequality. This implies that an active monetary policy could increase the income inequality. The effects of other indicators on the income inequality are insignificant.

Columns from 1 to 4 in Table 7 report the effects of the leverage indicators. It is worth noting that the household debt level has significantly negative effect on the

income inequality, suggesting that the rise in household debt level (percent to GDP) helps reduce the income inequality in China. Other leverage indicators have less (insignificant) impact on the income inequality in our empirical study.

6. Conclusions

Our study suggests that China's financial system has not yet evolved into financialisation as that in certain advanced economies. Nevertheless, certain indicators of financialisation, such as the ratio of M2 to GDP and the growth rate of financial production, has remarkably exceeded their threshold levels since 2005, which are unsustainable and should be accorded more concerns by the policymakers. We find that the leverage indicators do have negative impacts on China's economic growth. The ratio of non-financial private debt to GDP has significantly negative impact on China's real p.c. GDP growth, whereas the effects of the ratio of public debt to GDP on economic growth are insignificant. Moreover, it is higher non-financial corporate debt level (percentage to GDP) rather than the household debt level that remarkably undermines the growth of China's economy. The highest non-financial corporate debt level around the world has produced dragging effects on China's economic growth, and a long process for deleveraging in the non-financial corporate sector is waiting for China before it restores to the normal growth equilibrium.

In addition, we find that the rise in the household debt level could significantly help reduce the income inequality, which coincides with the theory that financial development increases the access of low and middle income households to financial services (borrowing), and thereby expand the economic opportunities of disadvantaged groups and reduce persistence of relative incomes. That the ratio of M2 to GDP is positively related with the income inequality in China implies the adverse distribution effects of an active monetary policy.

Further researches are needed to explore the channels through which the indicators of financialisation and leverage affect China's economy.

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