

Working Paper No. 2021W01

Jan. 28th 2021**Jianwei Xu**

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Why Has China's Current Account Balance Converged after the Global Financial Crisis?*

Abstract

China's current account surplus declined significantly from its peak of nearly 10 percent in 2007 to less than 1 percent (of GDP) in 2018. The new pattern offered fresh evidence for our understanding of China's current account dynamics. In this paper, we used the flow of funds (FFA) data to gauge its underlying driving forces. Specifically, by employing index decomposition analysis (IDA), we decomposed the current account from the perspective of savings and investment into three sectors: the household, corporate, and government sectors. We found that the decline in China's current account ratio was first driven by cyclical factors, i.e. weak corporate saving growth induced by the economic slump of 2009 as well as the following massive corporate investment bolstered by the government stimulus plan. However, such cyclical factors quickly subsided, and the subsequent current account balance reduction

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was later supported by structural factors, i.e. household savings declined enduringly and Chinese government switched to more expansionary fiscal policy. There are three possible explanations for the structural movement: reduced precautionary saving due to higher social security coverage ratio, lower corporate profits as a result of economic slowdown, and a twin deficit due to the government's more relaxed fiscal stance. The new facts, however, seems failing to accommodate the other current account theories focusing on the long-term aspect of the saving-investment account puzzle, especially those about China's special demographic characteristics.

Key words: current account, flow of funds accounts, investment, saving

JEL codes: E21, E22, G21

I. Introduction

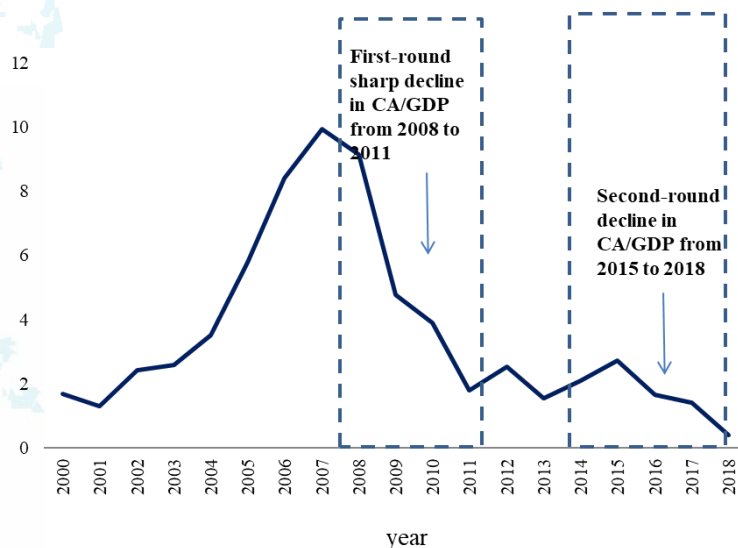
Debate over China's current account surplus has often featured in the global news. However, the once seemingly unstoppably growing current account surplus halted at the global financial crisis and then experienced a drastic reversal, with the current account surplus share of GDP shrinking significantly, from nearly 10 percent in 2007 to less than 1 percent in 2018. What's more, in the *IMF 2018 External Sector Report* (IMF, 2018), there could even be a possible current account deficit in the future. Thus, the question is why and how did China's current account balance embark on such a diminishing trajectory over the past 10 years?

The literature trying to explain China's current account balances can be traced back to the 2000s when it started to accrue, reaching a peak in 2007. Most of the studies focused on the particular pattern of China's high household saving rate, producing a number of novel theories highlighting special features such as the demographic transition, precautionary saving, and sex imbalance (Modigliani and Cao, 2004; Horioka and Wan, 2007; Du and Wei, 2010; Zhou, 2012). Several theories also emerged focusing on the particularly high corporate saving rate and linking it with China's special institutional characteristics, (Song

et al., 2011). All in all, these explanations associated China's increasing current account surplus with structural characteristics of its economy and fitted them with the intertemporal open macroeconomic framework (Obstfeld and Rogoff, 1995).

However, most of the evidence used to support the above theories was based on China's pre-2007 current account balance movement. There has been a sharp reversal of the situation ever since then. After the global financial crisis, China's current account ratio (as a proportion of GDP) slumped from about 9.1 percent in 2008 to less than 1.8 percent in 2011, and then remained at a low level and continued decreasing (Figure 1). This seemed to cast doubt on the validity of some of the previous theories focusing on long-term structural factors, such as demographic characteristics, which actually experienced very gradual change after the crisis. Extending the evidence to the post-2007 period thus offers novel opportunities to reassess the validity of the above theories.

Figure 1. China's current account balance (annual, % of GDP)



Source: International Monetary Fund (IMF) World Economic Outlook (WEO) data.

To account for the new pattern, a few studies examined the recent movement of the current account balance in China. For example, *The Economist* (2019a, b) highlighted that

the negative drift in the current account was due to the cyclical shift of the high prices of Chinese imports, such as oil and semiconductors, and the rising labor cost, which led to lower exporting capacity. Furthermore, the service trade sector deficit also offered an important channel that offset a large amount of the goods trade surplus, contributing to the worse current account deficit following the global financial crisis. That said, to the best of our knowledge, there seemed to be little evidence to revisit the theories proposed earlier.

In this paper, we offer an attempt to better understand China's current account imbalance in the aftermath of the global financial crisis. Following the method described by Xu et al. (2016), we decompose China's saving and investment behavior for three domestic sectors, namely household, non-financial enterprises, and the government sector; we analyze the dynamic current account adjustment from an internal perspective, and assess their relative importance using index decomposition analysis (IDA). Our paper suggests that there were two distinct phases of current account balance adjustment after the global financial crisis. The first phase was the initial 4 years following the global financial crisis, characterized by a sharp decline in the saving rate but also a large amount of investment against the backdrop of quantitative easing. In the second phase, the current account balance continued declining but with a clear structural pattern, featuring steady reductions in household and government saving rates.

Based on the decomposition results, we re-examined the validity of the previous theories of current account imbalance in the Chinese context. Our analysis confirmed the following three explanations: First, there was reduced precautionary saving, as a result of the increase in social security coverage ratio; second, the slowdown in the Chinese economy, which reduced firms' profits, lowering the corporate saving rate; third, fiscal deficit expansion, in the midst of an accommodative financial liquidity environment, boosted private investment and thus reduced the current account balance. However, other theories associating China's current account imbalance with the institutional features

seemingly failed to explain the new pattern, especially the declining saving rate.

The paper is organized as follows. Section II is a review of the related literature. Section III is a brief introduction to the paper's key methodology. Section IV presents our key results and an analysis of the two distinct phases of current account transition. Section V is a further discussion of the validity of current account theories in the Chinese context after the global financial crisis. Section VI concludes the paper.

II. Literature review

The existing literature analyzed current account movements using two frameworks: internal and external. The former viewed the current account imbalance as a mismatch between domestic savings and investment due to internal economic factors such as preference and productivity. The latter interpreted imbalance by the balance of payments items, i.e. trade account, investment account, and financial account. However, such an external perspective does not specifically delve into the intrinsic dynamic feature of the current account, which is already an important issue in the modern open macroeconomics. In a seminal study, Obstfeld and Rogoff (1995) showed that intertemporal substitution is the key to explaining savings accumulation and, therefore, the current account imbalance. Thus, in this paper, we follow the mainstream literature by focusing on the internal framework.

Furthermore, there are three detailed angles through which the earlier studies discuss the current account imbalance under the internal framework through the analysis of the household, corporate, and government behavior. From the household perspective, previous studies focused on household savings behavior with the following explanations: (i) demographic change (Modigliani and Cao, 2004; Horioka and Wan, 2007); (ii) gender imbalance (Du and Wei, 2010; Wei and Zhang, 2011); (iii) the expectation of ageing (Liu et al., 2012); (iv) precautionary saving under an incomplete social security network (Blanchard and Giavazzi, 2006; He and Cao, 2007; Chamon and Prasad, 2010);

(v) habit formation (Zhou, 2012). From the corporate perspective, earlier studies focused on (i) financial constraint and its implications for the saving behaviors of heterogeneous enterprises (Song et al., 2011); (ii) the rise in corporate profitability (Kuijs, 2005; Yang et al., 2012); (iii) dividend payments. The governmental perspective is also important and is sometimes called “twin deficit,” a term used to describe the coexistence of the fiscal deficit and current account deficit (Sachs and Wyplosz, 1984; Kim and Roubini, 2008), but this angle was less often mentioned in the Chinese context before 2007.

Considering the cross-sectoral aspects of the macro economy, there are also papers providing comprehensive views of saving and / or investment behavior across sectors. For example, Yang et al. (2011) analyzed the economic, demographic, and policy reasons for the high and rising saving rates in the government, corporate, and household sectors during 2000–2008. They provided an overall view of the Chinese current account from a savings perspective and predicted a lower saving rate in the medium term. Xu et al. (2016) found that the steady increase in saving by the household and government sectors and the short-term downsizing of investment by the corporate and government sectors jointly led to the current account surplus before 2008.

The research interest in China’s current account imbalance seemed to have subdued after the slump of China’s current account surplus. From 2007 to 2019, China’s current account moved rapidly to being nearly balanced. Zhang and Tan (2015) argues that the twin surpluses in China's balance of payments will disappear in the future as a result of external and internal structural changes. Barry Eichengreen (2014) characterized the recent decreasing imbalance in a global environment as a requiem. Against this backdrop, it is necessary to re-examine theories in the context of the new current account balance.

III. Methodology

This paper uses the physical transaction part of the flow of funds account

(FFA) data to study the sectorial behavior of saving and investment in China. The FFA is a vital part of the System of National Accounts (SNA), which represents the source, use, and the inflow and outflow of funds among different sectors in the national economy. The earliest data from the physical transaction part of the FFA in China was published in 1992. Currently, the National Bureau of Statistics (NBS) of China publishes the physical transaction part of the FFA data with a 2-year lag policy. Beginning with value added and continuing with primary distribution, re-distribution of income, consumption, and investment, the FFA provides detailed data on how to accomplish the final savings and investment.

This paper focuses on the saving and investment behavior of the household, non-financial corporate, and government sectors. We have omitted the financial sector for the following reasons. First, the financial sector is important in the funds transaction but it is relatively small compared with other sectors. The average share of disposable income in the financial sector is only 3 percent after the global financial crisis. Second, the savings-investment gap in the financial sector has been relatively stable, with its annual change less than one percentage point, and it has little influence on the overall trend of the current account balance. Third, the transactions in the financial sector unavoidably interact with the non-financial sectors and its transactions are a partial reflection of non-financial sector transactions.

Table 1. Accounting method for savings and investment using flow of funds account data

Flow of funds account	
Traditional method	
Savings	Savings (source)
Investment	Gross capital formation (use)
Disposable income	Disposable income (source)
Adjusted method	
Savings	Savings (source) – acquisition less disposal of other non-financial assets (use) – capital transfer (use) + capital transfer (source)
Investment	Gross capital formation (use)
Disposable income	Disposable income (source) – acquisition less disposal of other non-financial assets (use) – capital transfer (use) + capital transfer (source)

Following Xu et al. (2016), we make a few adjustments for the savings and

investment measures in the Chinese context (Table 1). First, land-leasing income is an important source for China's government revenue, and has been consolidated in the government fiscal account since 2014 (by the New Budget Law). However, it is omitted from the government income in the FFA due to its association with natural resources, which, based on Organisation for Economic Co-operation and Development (OECD) standards, is recorded in Acquisition Less Disposal of Other Non-Financial Assets.[†] In this study, we readjust the item back to government income to fit the case of China in which land revenues are crucial for the local governments. Second, capital transfer was enormous in China. This component was originally attributed to enterprise investment in the FFA, but actually reflects government intention. To more accurately characterize the role of the government in the Chinese economy, we readjust capital transfer from the income of the government sector to the non-financial corporate sector. The above adjustments are reported in Table 1.

Furthermore, we decomposed the saving and investment rate into sectoral saving and investment rate as specified by Equations (1) and (2). The sectoral saving / investment rate is decomposed into the sectoral propensity to save / invest and the income share of each sector:

$$\begin{aligned}
 \text{sectoral saving rate} &= \text{sectoral saving} / \text{gross national income} \\
 &= (\text{sectoral saving} / \text{sectoral income}) \times (\text{sectoral income} / \text{gross} \\
 &\quad \text{national income}) \\
 &= \text{sectoral propensity to save} \times \text{sectoral income share}
 \end{aligned}
 \tag{1}$$

$$\begin{aligned}
 \text{sectoral investment rate} &= \text{sectoral investment} / \text{gross national income} \\
 &= (\text{sectoral investment} / \text{sectoral income}) \times (\text{sectoral income} /
 \end{aligned}$$

[†]The land-leasing information is listed in the Acquisition Less Disposal of Other Non-financial Assets (ALDONA) account of the FFA. Based on SNA (2008), the ALDONA account is mainly used to record three types of non-financial assets: natural resources, contracts and leases, and licenses. This account is usually small in developed economies (e.g. 0.4 percent and 0.2 percent of total disposable income for the US and the EU). However, land leasing income makes this account significantly larger in China. Based on the 2009–2016 average data, ALDONA accounts for 25 percent of cooperate disposable income, 9 percent of government disposable income, and 4 percent of household disposable income.

$$\begin{aligned}
& \text{gross national income)} \\
& = \text{sectoral propensity to invest} \times \text{sectoral income share} \\
& \hspace{15em} (2)
\end{aligned}$$

The key reason for the decomposition is because the saving / investment rate is defined over national income, which by definition is useful for assessing the overall economy. However, for each sector, the propensity to save or invest does not rely on the size of the overall income. To unveil the incentive of each sector to allocate its resources, we calculate propensity to save and invest defined by sectoral income, directly reflecting the proportion of each sector's income being channeled to saving or investment.

To assess the relative importance of each decomposed factor, we further apply index decomposition analysis (IDA) using the Logarithmic Mean Divisia Index I (LMDI I) approach proposed by Ang (2004, 2005). This method has been widely used in the energy-related literature but also has several advantages to fit our study. First, it provides perfect decomposition without leaving a residual. Second, the results are multiplicative and are consistent in aggregation. Third, it handles negative value problems (Ang and Liu, 2007).

By definition, the current account balance can be decomposed as net savings of different sectors:

$$CA = S - I = \sum_{i=1}^6 V_i, \quad (3)$$

where V_i (for $i = 1, 2, 3$) is the saving rate of household ($i = 1$), corporate ($i = 2$), and government ($i = 3$) sector and V_i (for $i = 4, 5, 6$) is the negative value of the investment rate for the corresponding three sectors. The change of the current account balance ΔV from year 0 to year t can be decomposed into two categories of factors: propensity to save / invest P and income share Q for the three sectors:

$$\Delta V = V^t - V^0 = P + Q = \sum_{i=1}^6 (p_i^t q_i^t - p_i^0 q_i^0), \quad (4)$$

where p_i is the propensity to save (for $i = 1, 2, 3$) and the negative value of propensity to invest (for $i = 4, 5, 6$) and q_i is the income share.

According to the LMDI I method (Ang, 2005), the following formulas

hold:

$$P = \sum_{i=1}^6 P_i = \sum_{i=1}^6 L(V_i^t, V_i^0) \ln\left(\frac{p_i^t}{p_i^0}\right), \quad (5)$$

$$Q = \sum_{i=1}^6 Q_i = \sum_{i=1}^6 L(V_i^t, V_i^0) \ln\left(\frac{q_i^t}{q_i^0}\right), \quad (6)$$

and $L(a,b) = (a-b)/\ln(a/b)$. P_i (for $i = 1, 2, 3$), P_i (for $i = 4, 5, 6$), and Q_i are the propensity to save factor, the propensity to invest factor, and the income factor[‡] contributing to the change of the current account. The decomposition remains unchanged with p_i (for $i = 4, 5, 6$) where p_i are negative based on Ang (2007) who proved that if a factor changes from a negative value to another negative value, the original LMDI formulae can be applied to the negative values.

IV. The savings and investment pattern

1. An overview

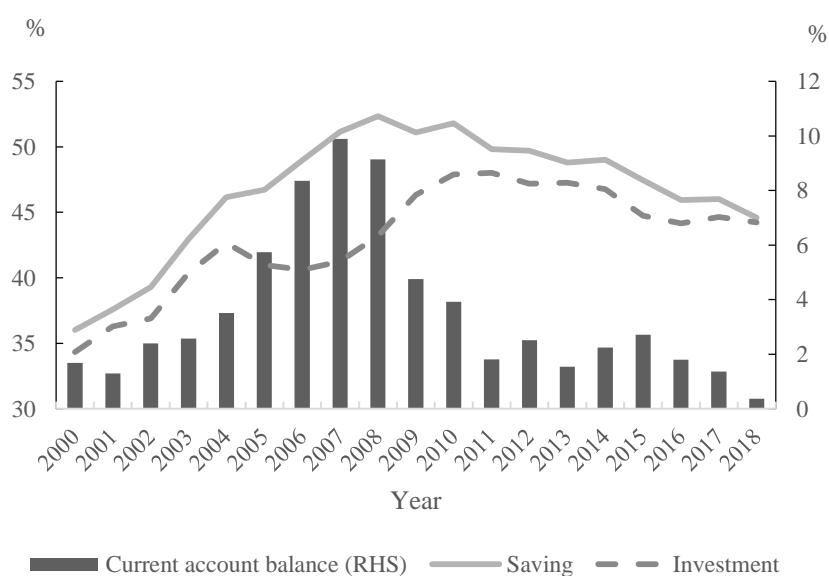
Before diving into saving and investment decomposition, we first review the basic pattern of China's current account. Figure 2 shows the evolution of China's current account balance from 2000 to 2018. China's current account balance had been on the rise from 2001 to 2007 but the post-2008 episode has clearly showed a different declining trajectory. After the global financial crisis, the current account balance as a percentage of GDP dropped massively from 9.9 percent (2007) to 1.8 percent (2011). Since then, the Chinese economy has been steadily slowing down. After a few years of stabilization, the current account balance further declined for the second round from 2015 to 2018, with its percentage of GDP moving down all the way to 0.4 percent.

To explore the driving forces behind the current account movement in the aftermath of the global financial crisis, we decompose the current account into the saving rate and investment rate, respectively. For the slump following the global financial crisis, the investment surge was clearly an important factor. From 2007 to 2009, China's investment rate increased from 41.2 percent to 46.3

[‡]The income factor will show up twice for each sector as income share exists in the decomposition of both savings and investment for each sector. For example, Q_1 and Q_4 represent, respectively, the income share factors in household savings and investment.

percent and remained at a relatively high level until 2011. Meanwhile, the saving rate was relatively stable, especially after 2010. During the second phase, the investment rate started to decline from the peak of 48.0 percent to 44.2 percent. Meanwhile, the saving rate entered into a more rapidly declining trajectory from 49.7 percent to 44.6 percent. All in all, investment and saving patterns both contributed to the decline in the current account balance, but their relative importance are different in the two distinct periods: 2007–2010 and 2011–2016 (Table 2).

Figure 2. China's saving rate, investment rate, and current account balance (%)



Source: IMF WEO Database (2019).

Table 2. Sectoral saving and investment rate (%)

Year	Household			Enterprise			Government		
	S	I	S-I	S	I	S-I	S	I	S-I
2007	24.5	8.6	15.9	17.5	28.6	-11.1	7.5	4.3	3.2
2008	24.9	8.7	16.2	18.8	30.3	-11.5	6.6	4.8	1.8
2009	26.7	10.1	16.7	15.8	32.8	-17.0	6.4	5.8	0.6
2010	28.2	10.2	18.0	13.6	32.6	-18.9	7.3	5.7	1.5
2011	27.9	12.1	15.8	12.7	31.3	-18.6	6.9	5.1	1.8
2012	28.0	12.1	15.9	12.0	31.5	-19.5	6.3	5.0	1.2
2013	27.5	12.5	15.0	12.7	29.6	-16.9	5.6	4.8	0.8
2014	25.7	11.9	13.9	15.0	29.8	-14.8	5.9	5.2	0.7

2015	25.1	10.8	14.4	14.1	29.3	-15.1	4.6	5.5	-0.9
2016	25.0	7.1	17.9	13.3	30.9	-17.6	3.7	6.4	-2.8

Source: CEIC, National Bureau of Statistics, authors' own calculation.

To better understand the economic factors behind the current account movement, we decompose the current account balance into sectoral propensity to save, propensity to invest, and income share (Table 3) based on Equations (1) and (2). In particular, we employ the IDA using the LMDI I to extract the major factors driving the current account imbalance movement during the two phases, in 2007–2010 and 2011–2016, respectively (Table 4).

In the first phase when China's current account surplus decreased by 7.39 percentage points as a proportion of GDP, the LMDI I decomposition results show that the corporate propensity to invest and the corporate income share were the dominating factors. Specifically, the corporate propensity to invest led to a decrease almost 1.5 times the total change, whereas the corporate income share[§] contributed half of the decrease. In the second phase when the current account decreased by 2.99 percent, and household propensity to save, government propensity to save, and government propensity to invest are three major factors. The household propensity to save reduced one-and-one-third of the total balance, whereas the government's saving and investment propensities together contributed a similar scale.

All in all, based on IDA, the corporate sector played a larger role in the first phase, and the household and government sectors were more important in the second phase. Our subsequent analysis will, thus, focus on the corporate sector in the first phase and household and government sector in the second phase.

[§]The corporate saving factors include both corporate propensity to save and corporate income share for savings, but as corporate propensity to save is always 100 percent, the shifting effect comes from the corporate income share for savings.

Table 3. Sectorial propensity to save, propensity to invest, and income proportion (%)

	Household			Corporate			Government		
	Propensity to save	Propensity to invest	Income share	Propensity to save	Propensity to invest	Income share	Propensity to save	Propensity to invest	Income share
2002	32.73	14.03	64.33	100.00	132.52	19.52	-9.75	23.33	14.53
2003	36.02	15.31	64.48	100.00	154.49	17.52	5.25	29.39	15.87
2004	35.77	17.89	61.25	100.00	148.68	18.63	21.36	26.14	18.19
2005	37.20	19.66	60.91	100.00	139.77	18.60	23.44	24.42	18.79
2006	39.08	15.86	60.58	100.00	162.83	17.73	28.67	24.18	19.70
2007	41.18	14.52	59.52	100.00	163.37	17.53	35.89	20.73	20.96
2008	41.73	14.57	59.66	100.00	161.25	18.79	34.14	24.73	19.30
2009	42.93	16.14	62.31	100.00	208.23	15.75	32.92	29.81	19.45
2010	45.03	16.29	62.54	100.00	239.14	13.62	35.41	27.98	20.53
2011	43.82	19.02	63.76	100.00	246.87	12.67	33.75	24.96	20.34
2012	43.32	18.73	64.54	100.00	263.18	11.95	30.95	24.82	20.26
2013	42.18	19.11	65.21	100.00	233.68	12.68	28.67	24.81	19.54
2014	40.63	18.75	63.34	100.00	198.44	14.99	30.70	27.13	19.19
2015	39.29	16.83	63.90	100.00	207.25	14.12	24.80	29.49	18.67
2016	38.69	11.00	64.68	100.00	232.69	13.26	20.30	35.57	18.05

Source: CEIC, National Bureau of Statistics, authors' own calculation.

Table 4. Results of current account decomposition, 2007–2016

Factor	P1	P2	P3	P4	P5	P6	Total change
	Household propensity to save	Corporate propensity to save	Government propensity to save	Household propensity to invest	Corporate propensity to invest	Government propensity to invest	
Phase 1 (value)	2.35%	0.00%	-0.10%	-1.08%	-11.65%	-1.50%	-7.39%
Phase 2 (value)	-4.03%	0.00%	-2.93%	3.36%	0.87%	-1.46%	-2.99%
Phase 1 (percentage)	-31.81	0.00	1.35	14.62	157.62	20.35	100.00
Phase 2 (percentage)	134.83	0.00	97.94	-112.42	-29.00	48.78	100.00
Factor	Q1	Q2	Q3	Q4	Q5	Q6	Total change
	Household income share for savings	Corporate income share for savings	Government income share for savings	Household income share for investments	Corporate income share for investments	Government income share for investments	
Phase 1 (value)	1.30%	-3.91%	-0.15%	-0.46%	7.71%	0.10%	-7.39%
Phase 2 (value)	0.89%	-0.36%	-0.68%	-0.29%	0.85%	0.78%	-2.99%
Phase 1 (percentage)	-17.61	52.92	2.07	6.29	-104.40	-1.41	100.00
Phase 2 (percentage)	-29.89	12.04	22.66	9.63	-28.41	-26.17	100.00

Source: Authors' own calculation.

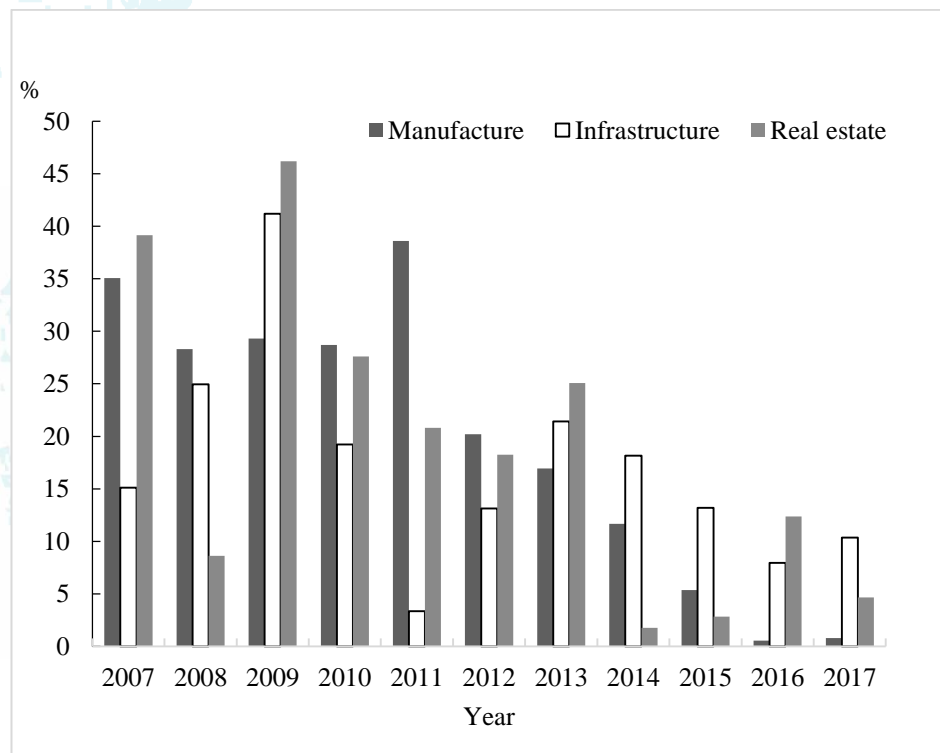
Note: In value terms, the lower the negative number, the higher the contribution of the factor. In percentage terms, the higher the positive number, the higher contribution of the factor.

2. Two phases of decline in the current account balance

(1) Phase I: Corporate investment upswing from 2007 to 2010

The first phase is characterized by a sharp decline in the net savings of the non-financial corporate sector from -9 percent to -15 percent, especially from 2008 to 2009. The result is intuitive because the financial crisis weighed on corporate profits, thereby reducing corporate saving. In fact, China's corporate saving rate declined from 18.8 percent in 2008 to 12.7 percent in 2011, and contributed 3.91 percentage points of the decline in the first phase. In addition to the savings adjustment, corporate investment also saw some increase, especially in the first 2 years, moving from 30.3 to 32.8 percent. The corporate propensity to invest factor contributed another 11.65 percentage points of decline in the first phase.

Figure 3. Investment growth by sector (%)



Source: Wind, National Bureau of Statistics.

Note: The calculation is based on the Urban Fix Asset Investment. For the infrastructure sector, it is an aggregate of the transportation, water conservancy, environment and public facilities management,

electricity, gas and water production, and the supply industry.

The fact of rising corporate investment together with declining corporate saving rate seemed to contradict the prediction of some of the neo-classical models in which negative productivity or demand shock lowers corporate profits and reduces investment, but can be better accommodated by China's government stimulus schemes during the period. In 2008, China engaged in significant quantitative easing (QE) known as the Four Trillion Stimulus Package. While most of the major developed economies, including the US and the EU, adopted QE following the crisis, the Chinese case was different in the implementation mechanism. In the US and the EU, central banks implemented their expansion by purchasing government bonds to support market liquidity and reduce interest rates, thereby easing the financial constraints for corporates. In the case of China, where the banking sector dominates, the central government eased the liquidity environment by injecting funds in the interbank market in the form of the medium-term lending facility (MLF), the standing lending facility (SLF), etc., and pushed commercial banks to support the corporates. The consequence of the stimulus was the rise in corporate investment notwithstanding the still low corporate profitability. As such, China's corporate propensity to invest, defined as the proportion of investment out of corporate' income, surged from 161.25 percent to 263.18 percent from 2008 to 2012. At the same time, the general situation for the corporate sector worsened over the four years; i.e. the share of corporate income over the total income of the country slipped from 18.79 percent to 11.95 percent (Table 3). A further breakdown of the fixed capital investment growth by sector shows that investment growth rates were particularly high in the manufacturing, infrastructure, and real estate sectors (Figure 3).

(2) Phase II: Household and government saving rate decline after 2010

The investment surge taking place in the first phase did not last long after the initial four-year binge. The downward pressure arose from the lowered

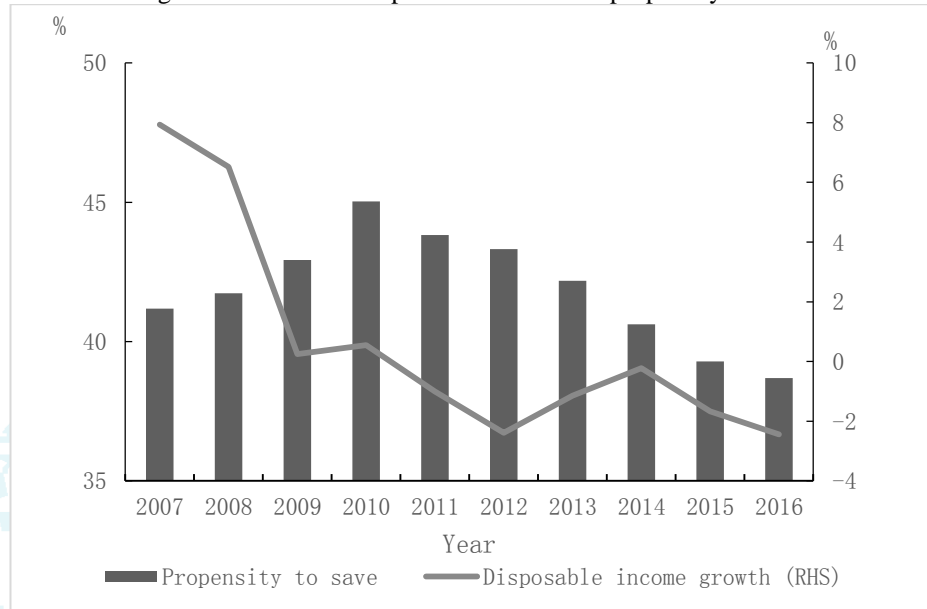
economic growth rate as well as the halt of the government stimulus plans. From 2010 to 2015, corporate propensity to invest steadily declined from 31.5 percent to 29.3 percent. However, the saving rate in the household and government sectors declined after 2010, leading to a steadier current account balance adjustment. In this subsection, we discuss in detail the shift of Chinese saving rate in the household and government sectors during the second phase.

Household sector

Household savings over GDP declined from its peak in 2010 (nearly 45 percent) to less than 39 percent in 2016. There has been a significant fluctuation in household investment, especially household property investment, but the steady decline in household savings still drove a downward movement of net savings in the household sector.

The key factor behind the slump in the household saving rate was the slower growth in disposable income. Following the global financial crisis, the growth rate of disposable income for household significantly decreased from 18.9 percent in 2008 to 11.7 percent in 2009. Although it quickly bounced back to 18.5 percent and 20.2 percent in 2010 and 2011 (Figure 4) because of the support from quantitative easing, the growth rate of household disposable income moved into a downward trajectory after 2012 when the stimulus effect faded off. The slowdown in household income led to a decline in the propensity to save of the household sector. Specially, the propensity was shown to peak at 45 percent in 2010 and then began to decline gradually all the way to 38.7 percent in 2016.

Figure 4. Household disposable income and propensity to save



Source: CEIC, authors' own calculation.

Government sector

Net saving in the government sector has decreased significantly during the second phase. It accounted for 1.2 percent of China's GDP in 2012, but deteriorated rapidly to only 0.7 percent in 2014, and then turned negative to -2.8 percent in 2016.

The structural decline in the government's net saving has largely followed the declining trend of the fiscal balance. To better understand the change, we follow Chinese official decomposition of the government budget – the summarization of the four government's accounts – to analyze the key driving forces. These accounts include the general public budget account, the government fund account, the state-owned capital operation fund account and the social insurance fund account. The detailed decomposition results are reported in Table 5. The change of state-owned capital operation fund balance was relatively small and the discussion will focus on the rest of three. Firstly, the general public budget is the largest component among the four accounts, constituting 66 percent of the total fiscal revenues. As shown in column 1, China's general public budget balance was positive in 2007, accounting for 0.6

percent of GDP, but it quickly deteriorated in 2008 and 2009 following the global financial crisis. After hovering around –2 percent to –1 percent for a few years, the budget deficit has widened significantly to more than –3 percent since 2015. Secondly, for the government fund balance, its share of GDP exceeded 0.5 percent for 2 years after the global financial crisis but then gradually narrowed and was even negative in 2016. Lastly, the decline in the social insurance fund balance accelerated in recent years, echoing with the expansion in social insurance coverage for more people and, at the same time, the continued population aging trend which is exerting increasing burden on the social insurance expenditure.

Table 5 Government deficit as a share of GDP (%)

Year	General public budget balance	Government fund balance	State-owned capital operation fund balance	Social insurance fund balance*
	(1)	(2)	(3)	(4)
2007	0.6	0.56		
2008	–0.4	0.21		0.3
2009	–2.3	0.65		0.1
2010	–1.7	0.71	0.00	–0.1
2011	–1.1	0.30	–0.01	0.2
2012	–1.7	0.23	0.01	0.1
2013	–1.9	0.30	0.01	–0.2
2014	–1.8	0.42	–0.04	–0.5
2015	–3.4	0.00	0.04	–0.8
2016	–3.8	–0.03	–0.01	–1.4
2017	–3.7	0.06	–0.01	–1.8

Source: National Bureau of Statistics.

Lastly, the decline in the social insurance fund balance accelerated in recent years, reflecting the expansion in social insurance coverage for more people and, at the same time, the continued population aging trend, which is exerting an increasing burden on social insurance expenditure.

V. How does the new pattern of China's current account fit the existing theory?

In this section, we fit the new pattern of China's current account after the global financial crisis with the existing theories in the literature. Because of the long-term structural feature of the existing theories, we will particular investigate the facts in the second phase of the adjustment.

In the household sector, the most significant feature of the Chinese economy following the global financial crisis is the structural deceleration of the growth rate associated with a decline in the household saving rate. As summarized in the literature review, the previous theories relied on China's structural features to explain the declining household saving rate. These included demographic change, the gender imbalance and the expectation of aging. To check the validity of these theories, we selected the key demographic indicators - youth dependency ratio, old dependency ratio, life expectancy, and gender ratio – and summarized their movements before and after the global financial crisis in Table 6. Unfortunately, based on most of the theories mentioned above, these demographic movements would have pointed to a rising household saving rate rather than a decreasing one. In other words, these earlier theories linking the current account with China's particular household features do not seem convincing in the aftermath of the global financial crisis.

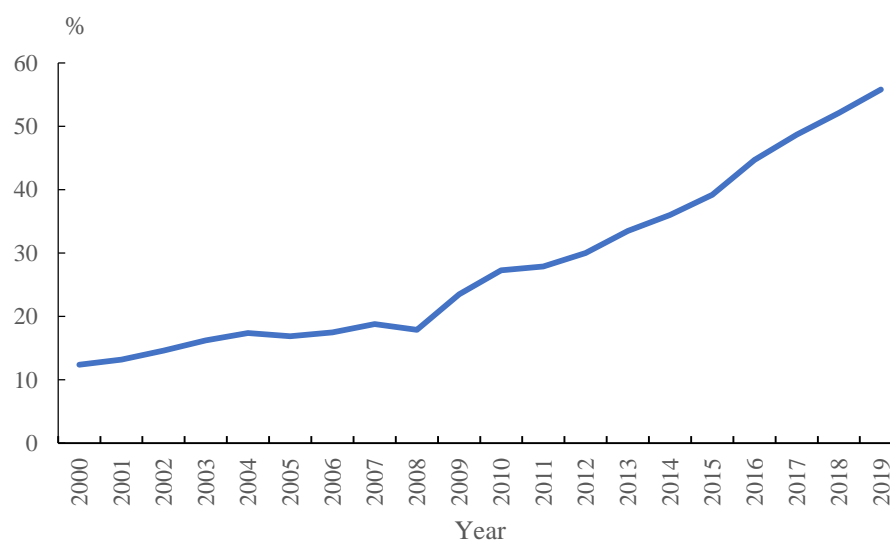
Table 6. Major demographic factors in China and their implications for household savings

Structural factor	Definition	2007	2017 or the latest	Trend	Effect on household saving
Youth dependency ratio	Population of 0–14/Population of 15–64	0.27	0.23	Downward	Increasing
Old dependency ratio	Population above 65/Population of 15–64	0.11	0.16 (2018)	Upward	Decreasing in general, but possibly increasing
Life expectancy	Average Life Expectancy	72.95 (2005)	76.34 (2015)	Upward	Increasing
Sex ratio	Male population between 20–39/Female population between 20–39	0.97	1.05	Upward	Increasing

Source: Wind, National Bureau of Statistics, authors' own calculation.

Household debt expansion was also an important channel to influence consumption, and thus saving rate. Dynan et al. (2012) showed evidence of lower consumption associated with higher debt. However, from 2007 to 2017, China witnessed a rapid surge in household debt from 18.8 percent to 48.7 percent of GDP (Figure 5), and this should have reduced consumption and increased the saving rate. However, the reality is the opposite.

Figure 5. Household debt to GDP ratio (% , 2000–2017)



Source: Wind, Chinese Academy of Social Sciences

Finally, the evolution of China's social security system seemed to offer a possible explanation for the change in the household saving. In 2007, China's social pension system was only accessible to 201 million people in urban area and there was no coverage in rural area. But the situation has largely improved, with the coverage in the urban region extending to 403 million and a new system serving 513 million rural residents from 2010. In addition, the participation in basic medical care insurance quadrupled from 223 million people in 2007 to 1,177 million people in 2017, with the corresponding coverage increasing from 16 percent to 84 percent. The higher coverage ratio of the social security system reduced future uncertainties and, thus, reduced the

incentive for the household to save (Table 7).

Table 7. Number of participants of social insurance at year-end (unit: million people)

	Basic pension insurance participants	Basic urban pension insurance participants	Basic rural pension insurance participants	Basic medical care insurance participants
2007	201	201	0	223
2008	219	219	0	318
2009	235	235	0	401
2010	360	257	103	433
2011	616	284	332	473
2012	788	304	484	536
2013	820	322	498	571
2014	842	341	501	597
2015	858	354	505	666
2016	888	379	508	744
2017	915	403	513	1177

Source: CEIC, Ministry of Human Resources and Social Security.

In the corporate sector, corporate saving is an important source of the increase in the current account before the global financial crisis. In particular, financial constraint was viewed as a reason to explain the peak in China's current account surplus before the global financial crisis, as it hampered the Chinese corporates' ability, especially those in the private sector, to use external finances, and pushed them to choose internal finance, namely corporate saving rate, to support their development. While financial constraints explanation may still hold for the post-crisis period as exemplified by the borrowing cost gap between the state-owned enterprises (SOEs) and the private-owned enterprises (POEs) shown in Table 8, it is less likely an important reason to outweigh the deterioration of Chinese corporates' profitability which dragged down the corporate saving rate following the financial crisis.

Table 8. Estimates of borrowing cost in SOEs and POEs (%)

Method 1	Method 2	Method 3
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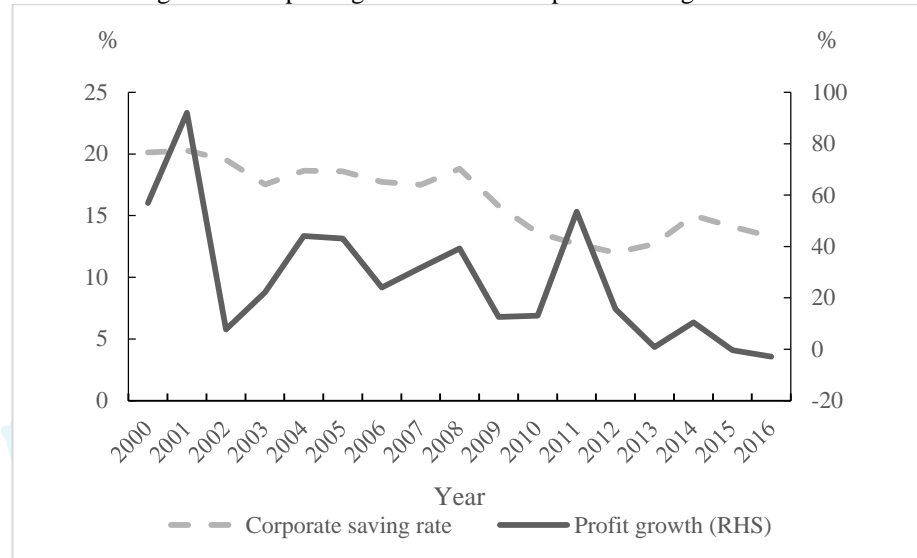
	SOEs	POEs	SOEs	POEs	SOEs	POEs
2003	1.75	2.08	4.50	16.82		
2006	1.72	2.17	4.60	18.69		
2007	1.86	2.40	5.05	20.60		
2008	2.15	2.61	5.58	20.13		
2009	1.87	2.33	4.59	15.59	4.36	5.95
2010	1.82	2.40	4.64	16.29	4.13	3.78
2011	2.31	2.91	6.32	18.86	5.68	6.24
2012	2.54	3.12	6.67	19.18	5.71	6.30
2013	2.05	2.93	5.09	17.62	5.55	6.17
2014	1.94	2.86	5.27	15.84	6.24	7.27
2015	1.60	2.56	4.26	13.17	5.03	5.92
2016	2.13	2.35	6.08	12.49	4.14	5.35
2017	1.28	2.17	3.98	12.21	5.50	6.26

Source: Wind, National Bureau of Statistics, Dealogic database, authors' own calculations.

Note: Method 1: borrowing cost = interest expenditure * 100 / total liability; method 2: borrowing cost = interest expenditure * 100 / total mid- and long-term liability; methods 1 and 2 are based on the aggregated financial data for SOEs and POEs of industrial firms from Wind. The Dealogic database provided bond issuing rates for firms in China. Method 3 is the yearly average issuing rate (%) for SOEs and POEs in the domestic bond market.

Indeed, along with the economic slowdown, China's corporate profitability has been decelerating. The profit growth rate in industrial companies averaged 37 percent between 2005 and 2007 but shrank to 21.6 percent between 2009 and 2011 (Figure 6). The downward trend continued after 2013 with the average growth rate of the profit lowered to 4.8 percent. This seemed to have generated a direct impact on the corporate saving rate.

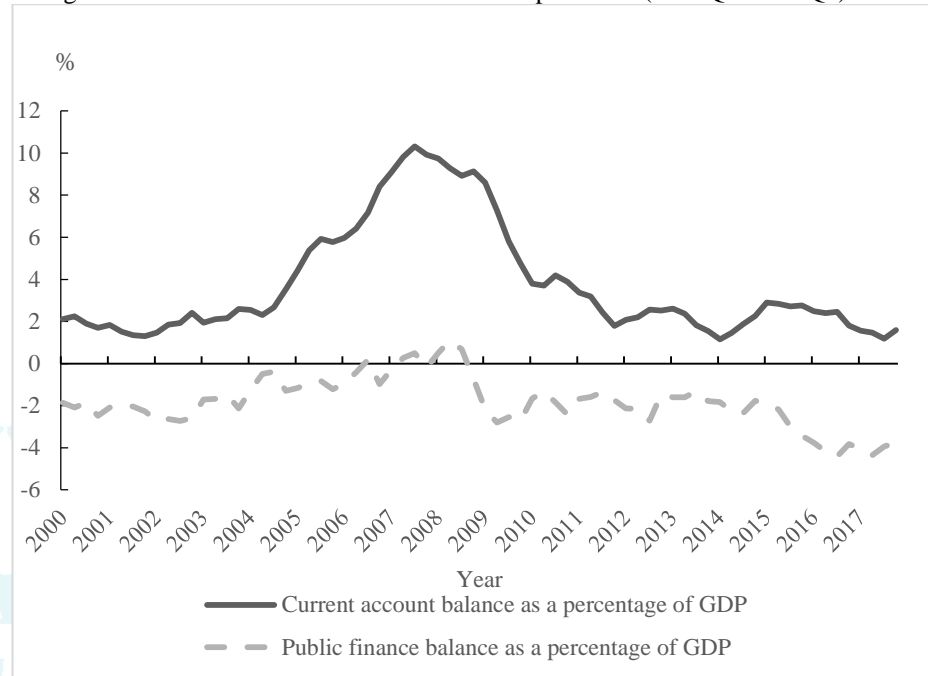
Figure 6. The profit growth and the corporate saving rate



Source: CEIC, authors' own calculations.

In the government sector, it is a well-established fact that the net saving rate of the government could be an important factor in explaining the current account imbalance introduced earlier with the so-called “twin deficit” theory. For example, Kim and Roubini (2008) has discussed the co-movement of the fiscal and current account for the US. Our investigation of the second post-crisis phase in China also fits the theory as both the government net saving and the current account edged lower simultaneously (Figure 7).

Figure 7. China's current account and fiscal expenditure (2000Q1–2017Q4)



Source: CEIC, authors' own calculation.

Note: The public finance balance is the general public fiscal balance. To focus on the intention of fiscal policy, we adopt the final accounting numbers, without considering the transfer of funds and the use of carry-over balances. Data are calculated in accordance with the four-quarter moving sum to eliminate seasonal effects.

VI. Conclusion

China's current account surplus has been approaching zero after the global financial crisis in 2008. This paper decomposed the current account balance to offer an explanation for the phenomenon. The initial 4 years following the global financial crisis were characterized by a sharp decline in the saving rate but also a large investment binge against the backdrop of QE. Since then, the current account balance continued to decline, showing more structural characteristics, including a steady reduction in the household and government saving rates.

Based on the decomposition results, we revisited the earlier theories for China's current account imbalance and found three possible explanations. First, lower precautionary saving, as a result of the increase in social security

coverage ratio, reduced the household saving rate. Second, China's economic slowdown reduced firms' profits, and thus lowered the corporate saving rate. Third, fiscal deficit expansion, in the midst of an accommodative financial liquidity environment, boosted private investment, and thus reduced the current account balance. This paper is a preliminary attempt to understand the transformation of China's current account balance after the global financial crisis. We investigated the post-crisis facts and checked how they fit the existing theories. However, we do not offer any model-based quantitative analysis and do not address the causality issue. We leave these to future studies.

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