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CONSUMPTION IN DEVELOPED AND EMERGING ECONOMIES

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Abstract:
In what follows various econometric technique is applied to determine the source of consumption growth with historical retrospective to equity and real estate markets as well comparative analysis of US consumer and Chinese consumer is presented. Evidence supports the argument that consumption as economic growth engine has been possible only due to ability to withdraw and spend equity from appreciating assets in the USA. Financial underdevelopment of emerging economies makes replication of this process questionable.

Keywords: consumption, household wealth, consumer credit, credit

JEL Classification: E21

1. Introduction

Consumption is important driver of growth in terms of conventional GDP accounting, therefore determination of the source of consumption financing in developed countries might shed light on how likely is emerging market consumer to become the new engine of economic growth. First, source of increased US consumption during 1995-2005 is determined. Legislative amendments allow identifying possible benchmark years for structural change. Analogue of Chow test via dummies reconfirms structural changes in the economy in 1995 as well as 2000. Due to appreciating asset prices from deregulation of real estate and commercial banking industries, consumption no longer relies on disposable income but rather consumer wealth that translates into stationary between consumer credit and consumer wealth. Consequently, economic growth dependent on consumption is actually economic growth dependent on appreciating assets[54] rather than, say, technological progress. As a result, ability of emerging markets to become new engine of growth requires ability of households to benefit from appreciating equity markets as well as real estate markets. It is shown that these necessary conditions are not present in China as emerging market proxy. Therefore, argument in favor of the superiority of emerging markets in setting global economic growth is questionable.

2. Developed market perspective

Equity boom in the US that started in mid 1990s has been driving consumer wealth (CW[55]) and consumer credit (CC[56]) with it up to the early 2000 when deregulation in the financial sector coupled with development of sophisticated financial products allowed to securitize illiquid assets, increasing wealth of consumer via raise in the price of previously illiquid assets like real estate (Figure 1). Laibson, Mollerstrom (2010) have argued that asset price movements, including the equity markets and residential real estate markets are capable of explaining international financial flows (i.e. private debt build-up). During the period of inflated asset values, US consumers spent their new wealth, with marginal propensity to consume of about 4%. The asset bubble framework also quantitatively explains the large current account deficit of the US.

[54] This is interesting phenomenon when conventional CPI figures do not capture asset price inflation, i.e. CPI in the USA in 1990 – 2005 remained flat. Or rather, this might simply means that CPI is not useful tool in analysing economic situation.

[55] From the Federal Reserve's B.100 Flow of Funds release.

[56] The total outstanding consumer credit amount. This index is taken from the G.19 report disseminated by the Federal Reserve. Covers most short and intermediate term credit extended to individuals, excluding loans secured by real estate.

Figure 1. S&P Index (grey line), Household Wealth (net worth, red line) and House Prices (S&P/Case-Shiller Home Price Index, blue line). 1990-2010

Source: Federal Reserve's B.100 Flow of Funds release, Case-Shiller.

Figure 2 shows that consumer credit started to decouple from disposable income (DI) in mid 1990s when equity market rate of growth has increased.

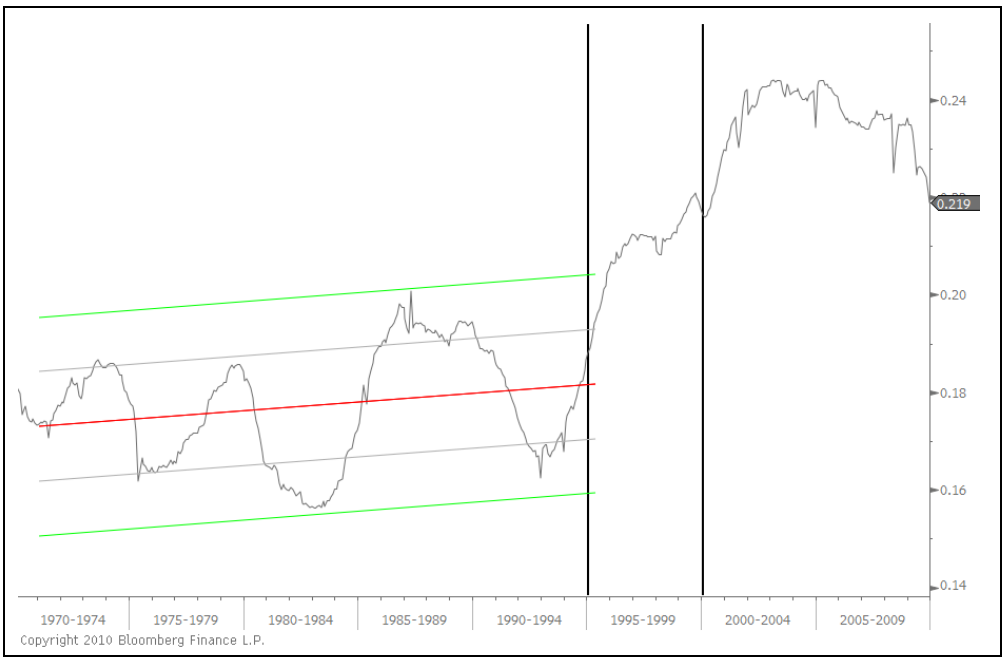

Figure 2. Consumer Debt/Disposable Income ratio, 1970-2009.

Notes: Red line - regression line with 2 STD (green line).
Source: Federal Reserve's G.19. Report, Bureau of economic Analysis.

To account for possible structural change in the rate of growth in equity markets, the analogue of the Chow test[57] via dummy variables is employed. Results in Table 1 confirm that there has been indeed a significant change in the pre and post 1995 equity price growth rates.

Table 1. Structural Break Test for S&P 500 Index

Regression results for $\ln S\&P_t=\alpha_1+ \alpha_2 D_t+\beta_1 t+ \beta_2(D_t*t_t)+\mu_t$		
Variable	**Coefficient**	
C	5.801*	(0.012)
TIME	0.006*	(0.0005)
DUM	-0.740*	(0.035)
DUM*TIME	0.011*	(0.0005)
Adjusted R-squared: 0.9887; F-statistic: 3501; Prob (F-statistic): 0.000; Data adjusted for autocorrelation via Newey-West HAC Standard Errors & Covariance (lag truncation=5). * - significant at the 0.01 level; ** - significant at 0.05 level. Standard errors in ( ).		

Notes: Regressand is the logarithm of S&P500 Index and the regressor is 'time,' which will take values of 1, 2, 3, etc. D=dummy variable. Dummy takes the value of 0 for older subperiod and 1 for latter subperiod. Subperiods 1990-1995 and 1995-2000.

Results show that both differential intercept and slope coefficients are statistically significant, strongly suggesting that the growth rate of S&P Index for two sample periods differ. Since equity income is part of consumer wealth (household worth, as in Federal Reserve form B.100 Flow of Funds release) it comes as no surprise that surge in wealth is caused by S&P index trend change. I test for the structural shift in consumer credit with benchmark year 1995[58]. Results presented in Table 2 in reconfirm the structural change in 1995.

Table 2. Structural Break Test for Consumer Credit

Regression results for $CC_t=\alpha_1+ \alpha_2 D_t+\beta_1 t+ \beta_2(D_t*t_t)+\mu_t$		
Variable	**Coefficient**	
C	88.50*	(12.53731)
TIME	3.159*	(0.078704)
DUM	-1663.7*	(36.39433)
DUM*TIME	6.595*	(0.122910)
Adjusted R-squared: 0.99736; F-statistic: 54018; Prob (F-statistic): 0.000; Data adjusted for autocorrelation via Newey-West HAC Standard Errors & Covariance (lag truncation=5). * - significant at the 0.01 level; ** - significant at 0.05 level. Standard errors in ( ).		

Notes: Regressand is the consumer credit and the regressor is 'time,' which will take values of 1, 2, 3, etc. D=dummy variable. Dummy takes the value of 0 for older subperiod and 1 for latter subperiod. Subperiods 1990-1995 and 1995-2000.

The second benchmark candidate for structural change is expected to be year 2000[59], when Glass–Steagall act has been repealed. Initial assumption has been related to consumption financed with debt or bank debt (which is the asset side of the banking sector). In order to account for possible policy shift after the Glass–

[57] Gregory C. Chow, 'Tests of Equality Between Sets of Coefficients in Two Linear Regressions,' *Econometrica,* vol. 28, no. 3, 1960, pp. 591–605.

[58] It is possible that change in legislation might have caused decoupling of credit aggregates. In particular, the 1995 New Community Reinvestment Act strengthened the role of Fannie Mae and Freddie Mac in mortgage markets and facilitated mortgage securitization. Therefore, 1995 is appropriate candidate for structural change benchmark.

[59] There has been legislation change in 1999 – Gramm-Leach-Bliley Act, which removed the prohibition that prevented bank holding companies from owning other financial companies and 2000 Commodity Futures Modernization Act, which stipulated that financial derivatives such as CDOs would not be regulated as futures contracts, securities.

Steagall act has been repealed at the end of 1999[60] the dummy regression model is applied. Results are presented in Table 3.

Table 3. Stability Tests for GDP, Aggregate Bank Assets (BA)

Regression results for $BA_t=\alpha_1+\alpha_2D_t+\beta_1GDP+\beta_2(D_t*GDP_t)+\mu_t$		
Variable	**Coefficient**	
C	-70.171*	(19.858)
GDP	0.5728*	(0.0052)
GPD*D	0.4590*	(0.0233)
DUM	-4208.0*	(250.74)
Adjusted R-squared: 0.99857; F-statistic: 94214; Prob (F-statistic): 0.000; Data adjusted for autocorrelation via Newey-West HAC Standard Errors & Covariance (lag truncation=5). * - significant at the 0.01 level; ** - significant at 0.05 level. Standard errors in ( ).		

Notes: D=dummy variable. Dummy takes the value of 0 for older subperiod and 1 for latter subperiod. Subperiods 1973-2000 and 2000-2008.

As regression results show, both the differential intercept and slope coefficients are statistically significant, strongly suggesting that the *BANK ASSETS-GDP* regressions for the two time periods are different. The same applies to *BANK-ASSET-DISPOSABLE INCOME* or *BANK ASSETS-CONSUMER CREDIT* relationships (regression results not presented here). It is, therefore evident that banking sector has decoupled from the economy, whether measured relative to disposable income, GDP or consumption. This decoupling however did not bring any surge in disposable income as presented in Table 4.

Table 4. Disposable Income Analysis

Regression results for $\ln DI_t=\alpha_1+\alpha_2D_t+\beta_1t+\mu_t$		
Variable	**Coefficient**	
C	7.01*	(0.0731)
DUM	-0.21**	(0.0828)
TIME	0.07*	(0.0041)
Adjusted R-squared: 0.98701; F-statistic: 1254; Prob (F-statistic): 0.000; Data adjusted for autocorrelation via Newey-West HAC Standard Errors & Covariance (lag truncation=5). * - significant at the 0.01 level; ** - significant at 0.05 level. Standard errors in ( ).		

Notes: Regressand is the logarithm of disposable income and the regressor is 'time,' which will take values of 1, 2, 3, etc. Dummy takes the value of 0 for older subperiod and 1 for latter subperiod. Subperiods 1973-2000 and 2000-2008.

Disposable income has actually been growing more slowly in 2000-2008 period than in 1973-2000 period. Consequently, bank asset growth has not coincided with surge in disposable income but has coincided with surge in consumer credit. This has led to 2nd round of CC decoupling from DI (Figure 2). It seems that it is stock markets that have been driving consumer wealth in mid 1990s that have affected consumption pattern. After 2000 housing was increasing wealth and drove consumption higher. CC/CW is the only variable that remained stationary, i.e. mean reverting, for the period 1973-2008 as shown in Table 5.

[60] The repeal enabled commercial lenders such as Citigroup, which was in 1999 the largest U.S. bank by assets, to underwrite and trade instruments such as mortgage-backed securities and collateralized debt obligations and establish so-called structured investment vehicles, or SIVs, that bought those securities. It was originally introduced in order to separate bank types according to their business (commercial and investment banking) in 1933 to exclude the possibility of commercial banks being too exposed to risky assets.

Table 5. Consumer Credit/Consumer Wealth Stationarity

Null Hypothesis: CC/CW ratio has a unit root			
		t-Statistic	**Prob.***
Augmented Dickey-Fuller test statistic		-3.574630	**0.0067**
Test critical values:	1% level	-3.445701	
	5% level	-2.868202	
	10% level	-2.570384	
Lag Length: 9 (Automatic based on SIC, MAXLAG=17); *MacKinnon (1996) one-sided p-values. Augmented Dickey-Fuller Test Equation			

These results are consistent with Barrell and Davis (2007) who found that removal of liquidity constraints during liberalization may reduce the response of consumption to real personal income, and what is most important, may boost wealth effect correspondingly[61]. By employing various econometric techniques, they test the relationship between consumption, income and aggregate real net wealth in the long term that is augmented by a split between changes in tangible wealth and financial wealth in the short term. What they find is that when financial liberalization takes place, the coefficient on human wealth (i.e. income) may be reduced, as scope for borrowing means consumption is less closely tied to current income. Furthermore, the weights on financial and non-financial nonhuman wealth could change with liberalization. When households are constrained in their borrowing, direct liquidity of the components of wealth will be crucial for their effect on consumption. A lower weight would be anticipated for less liquid assets and especially for tangible wealth. When there are no credits constraints, as in a liberalized financial system, consumers can borrow to cover shortfalls in income and consume out of wealth, and in particular illiquid wealth. Higher wealth effects, especially in the short run dynamics of adjustment, are thus likely both for illiquid financial assets (equities, bonds, pension assets) and non-financial tangible wealth. Byrne and Davis (2003) showed in rolling regressions that there has been a rise in the long run impact of illiquid financial wealth on consumption in G7. Modelling the G-5, Barrell and Davis (2004) highlighted that absence of credit constraints also affects non-financial tangible wealth. The incidence of liquidity constraints was considered to be shown inter alia by the relative size of income and wealth terms in the consumption function, which was a crucial difference between their estimates over 1980-2001 for less liberalized countries such as Germany and Japan vis a vis France, the UK and US. Meanwhile, tangible wealth was generally significant in both the short and long run. Lee, Rabanal and Sandri (2010) found that wealth effect was a primary factor behind the rapid decline in the U.S. saving rate (raise in consumption rate) in the late 1990s. They found that high-wealth groups which benefited most from raising wealth decreased substantially their saving rate, while low-wealth groups changed little or even increased their saving rate.

3. Emerging markets perspective

The Chinese government has called for rebalancing the economy towards greater reliance on consumption as the driver of growth, away from investment and external trade as has been in recent years[62]. Underlying this, is the striking trend of continuing decline in the share of household consumption in GNP, which has fallen to below 40 percent in 2005, despite the remarkable pace of sustained high economic growth. In explaining this declining share of consumption, studies have largely focused on the household savings behavior, arguing that this trend reflects the high and rising savings by Chinese households (Blanchard and Giavazzi (2005), Kujis (2005), Modigliani and Cao (2004), Prasad and Rajan (2006)), due to a range of factors such as the rise in average household income, the increase in the proportion of working age population, and an increase in precautionary savings with the rise in the uncertainties during reforms (especially that of state-owned enterprises) and inadequate public provision of pensions, healthcare, and education. While there is little doubt that these factors could be important in explaining the rise in the household saving rate, it is less convincing that these are the main reasons for the decline in the consumption share. In fact, data suggests that the increase in saving alone explains only a small fraction of the decline in the consumption share. The rise in household saving rate of

[61] Similar studies have been performed by Davis and Palumbo's (2001) study of the US consumption function, which attempted to determine whether changes in wealth as well as income affect the growth rate of consumer spending. Ludvigson and Steindel (1999) also examined wealth effects in a quarterly loglinear long-run US consumption relationship and found a common trend and a statistically significant wealth and income effect (Barrell and Davis (2007))

[62] See for example, Zhou Xiaochuan's (Governor of the People's Bank of China) foreword in Jahangir Aziz et. al edited, 'China and India: Learning from Each Other,' IMF, 2006.

5 percentage points since the early 1990s can only explain 1 percentage of the 9 percentage points decline in the share of consumption that has occurred since then[63]. During the same time the share of household income in GNP declined by 8 percentage points. The decline in household income's share occurred across all major sub-categories, but particularly in wages, which, unsurprisingly, is the largest component of income. The shares of investment income and government transfers also fell. Given that the decline in wage income was the largest contributory factor, it may be tempting to seek an answer in China's labor market. With 100-150 million workers either unemployed or underemployed[64], it is perhaps easy to argue that this slack in the labor market has prevented wages from rising as fast as productivity, leading to the continued decline in the share of wage income. If one adds to that some degree of monopolistic power in the hands of the employers and ineffective worker protection, then it is even easier to see why workers have not benefited from the huge productivity gains the economy has enjoyed.

Aziz and Cui (2007) have shown that China's underdeveloped financial sector and persistent and rising difficulty for average firms to obtain financing has played a major role in explaining the co-movements in employment, household income, and consumption over the last two decades. Specifically, Chinese firms rely on bank financing for working capital to pay wages and other current expenditure, where they are credit constrained. These borrowing constraints act like taxes on labor input that discourage the use of labor and create a wedge between the market wage rate and the marginal product of labor. Because of this wedge, the labor share in national income is less than its technologically determined share and the more difficult it is for firms to borrow, the larger is this wedge and lower is labor share. The paper showed that since the mid-1990s, pressures to reform forced Chinese banks to become more conservative in their lending operations to avoid creating new non-performing loans, which tightened borrowing constraints of firms, leading to a decline in the wage share. The declining share of wage income, however, would not necessarily have led to such a steep fall in household income share, if rising profits were distributed to households. This did not happen in China for several reasons. First, despite some listing in domestic stock markets, ownership of Chinese firms is not widely held, either directly or indirectly (through institutional investors and pension funds), by households. Second, even for firms that are listed, weak corporate governance and minority shareholding rights have allowed firms to accumulate profit instead of distributing dividends.

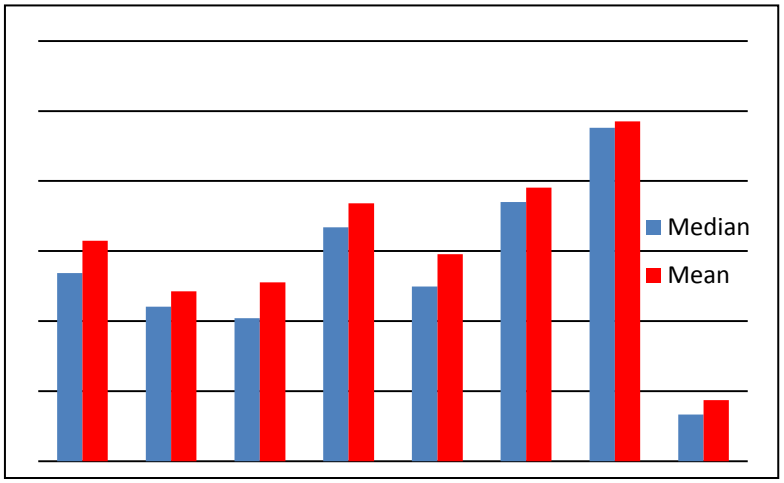

Figure 3. Dividend Yield

Notes: Dividend yield calculated by dividing 2009 dividend per share from the income statement by the period end price per share. Number of companies: USA (1731), Japan (2879), Korea (869), Malaysia (498), Philippines (76), Taiwan (420), Thailand (227), China (875). Companies selected according to country of domicile.

Source: Bloomberg

A string of scandals in the past few years associated with poor supervision of brokerage firms led to a protracted period of depressed equity prices and limited transactions such that households who owned shares did

[63] Aziz and Cui (2007)

[64] Merrill Lynch, February 2009, Asian Economics Snapshot.

not benefit from underlying capital gains. Third, the government still retains considerable ownership of the corporate sector. In most countries, this has been a conduit of indirectly transferring corporate profit to households. State-owned enterprises (SOEs) pay dividends to the government, which uses the funds to provide goods such as education and health that are essentially private goods, and welfare payments. In China, SOEs do not pay dividends to the government, such that this conduit of profit transfer has been closed. Lastly, bank deposits are the main vehicle of savings of Chinese households. However, the interest rate on household deposits has been capped by the government. Consequently, the share of interest earnings has declined over the years. China's banks have, of course, enjoyed higher interest rate margins. However, with much of the banking sector, burdened with high non-performing loans, under-capitalized, and under-provisioned until only last year, the higher interest margin has, for all practical purposes, ended up as being 'transfers' from households to corporations. For these reasons and unlike in many other countries, the rise in corporate profits did not translate into higher household income in China. The comparison with international experience is striking. During the past decade, less than 8 percent of households' disposable income came from investments (including profit, interest rate, etc). This is one of the lowest in the world as presented in Figure 4.

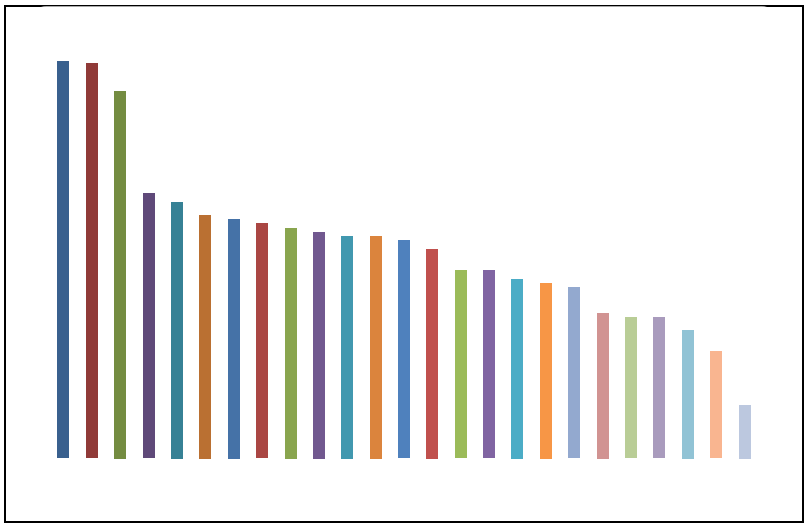

Figure 4. Investment Income (in percent of disposable income)

Source: Aziz and Cui (2007)

The nexus between financial sector development and growth is a long standing branch of economics literature. However, much of this literature, especially on the empirical front, has focused on the role played by financial intermediaries in mobilizing savings and some on their role in allocating savings. On the first role in China, earlier studies found that the banking sector did not contribute that much to growth through resource mobilization and allocation (see e.g., Aziz and Duenwald (2002)). Instead, bank financing was largely concentrated in the more sluggish state-owned enterprises, which could have aided growth indirectly by helping to maintain social stability in the economy. The low share of investment income in China brings into sharp focus the poor performance of the financial sector to distribute profit income from firms to households, both in the form of dividends and interest. China's stock market is relatively small despite the rise of private firms and the dilution of public ownership through listings in the stock market and through sales to foreign investors (Figure 5).

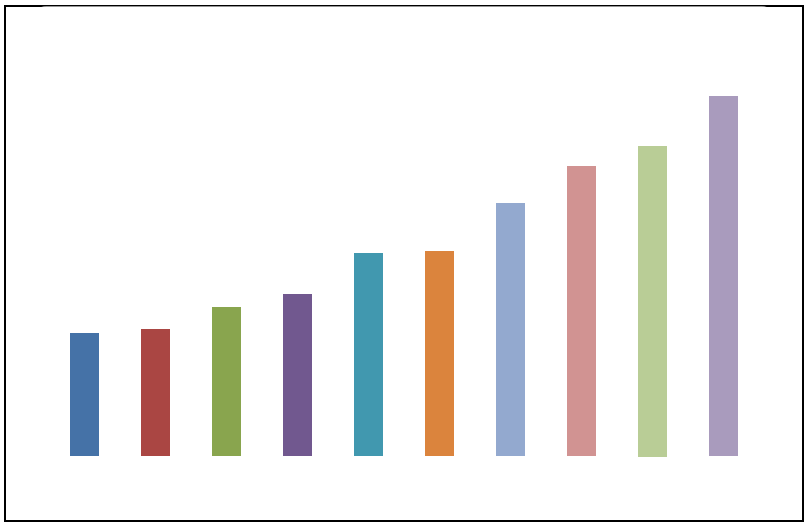

Figure 5. Market capitalization (percent of GDP, 2010)

Notes: Market capitalization includes total equity market capitalization as well as aggregate corporate and sovereign bond market capitalization, i.e. bonds and loans outstanding.
Source: IMF, Bloomberg.

Consequently, it is not surprising that distribution of household financial wealth is mostly concentrated in bank deposits (over 80%, Aziz and Cui (2007)) as compared to equity.

4. Housing wealth in China

During the late 1980s and 1990s, households in most Chinese cities were offered the chance to purchase the apartments that they rented from the state, thereby untying access to housing from working in the state sector and giving urban residents a chance to become private homeowners. Iyer, Meng and Qian (2009) find that the privatization reform caused private ownership of housing to increase from zero to approximately 50% of urban households. The untying of housing from state employment is probably the main driving force for this result, rather than the acquisition of private property rights. While it is not possible to test this directly, it is possible to individually test some of the implications of the different channels of private property rights like the importance of the credit channel for example. Though households in China at the time did not have access to credit from formal financial institutions for small businesses, private property can potentially be used as collateral for informal loans. Iyer, Meng and Qian (2009) present evidence that the housing privatization reform did not increase households' ability to obtain credit, in keeping with the institutional setting in China. Regression showed that households are not more likely to have either a housing loan or a non-housing loan following the enactment of housing privatization reforms. Iyer, Meng and Qian (2009) also find that the estimated coefficients for the effect of the reform on total household consumption and expenditure on housing improvements are small, negative and statistically insignificant. All of this suggests that the reform did not significantly increase household wealth.

5. Conclusion

Consumer credit has decoupled from disposable income in mid 1990s when equity market growth rate has changed. This coincides with 1995's New Community Reinvestment Act, which strengthened the role of Fannie Mae and Freddie Mac in mortgage markets and facilitated mortgage securitization. Consumer credit has also decoupled from disposable income in 2000s when Glass–Steagall act has been repealed, which allowed banks to be involved in investment activity in sophisticated financial instruments which in turn made previously illiquid assets (real estate) liquid, therefore raising demand on such instruments and therefore their price. Increasing consumption in developed markets caused by reliance of consumers on equity markets as well as ability to withdraw equity from appreciating real estate has been at the core of consumer spending expansion. Consumer credit has been increasing with consumer wealth, leaving CC/CW ration stationary. Chinese have neither developed stock market to benefit from raising corporate profits via dividends nor bond market – they are limited to deposits which rates are depressed. Neither there is an ability to withdraw equity from housing as well as privatization did not result in increased wealth by households. Disposable income by itself is not sufficient to fund

increased consumption – neither there are any conditions for increased disposable income in China. In summary, consumer as the engine of economic growth is simply non-existent in China to the degree that it exists in US and this phenomenon has to do with economic structure (financial architecture) of the economy. Credit tightening is closely associated with both rising uncertainty and declining wealth. And a large uncertainty appreciably reduces consumption not only via a lower wealth and tighter credit, but also indirectly via precautionary savings and postponed consumption. Deleveraging cycle in the banking sector has just begun as evident from Figure 6.

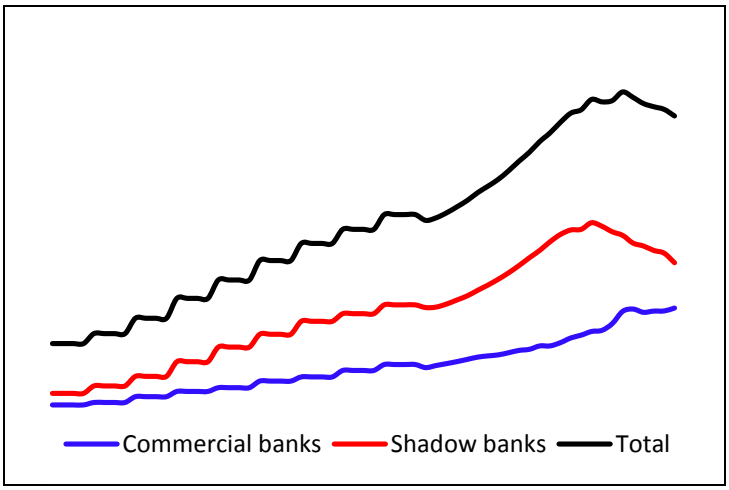

Figure 6. US Bank Liabilities, Trill. USD.

Notes: Traditional bank liabilities refer to total liabilities of the commercial banking sector (line 19 of Table L 109 in Flow of Funds Accounts). Shadow bank liabilities (netted from overlaps with Table L 109) refer to the sum of total outstanding open market paper (line 1 of Table L 208), total repo liabilities (line 1 of Table L 207), net securities loaned (line 20 of Table L 130), total GSE liabilities and pool securities (lines 21 and 6 of Tables L 124 and L 125, respectively), total liabilities of ABS issuers (line 11 of Table L 126), and total shares outstanding of money market mutual funds (line 13 of Table L 121).

Source: US Flow of Funds Accounts, Federal Reserve.

It is unclear to what degree will this have an effect on consumer spending or on the wealth of consumer balance sheet. However it seems that claim of change in paradigm and superiority of emerging market consumer is simply not supported by any plausible argument, empirical research or statistical analysis. Exposure to relative disadvantage of EM (China) consumer can be structured via shorting The Global X China Consumer ETF and taking long positions in Consumer Discretionary SPDR ETF as well as Consumer Staples SPDR ETF (Figure 7).

Figure 7.US Consumer ETF/China Consumer ETF Ratio.

Source: Bloomberg

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