Deutsche Bank

The impact of credit on demand

The credit impulse and the outlook for a recovery

Deutsche Bank

Michael Biggs, +44 20 7545 5506, michael.biggs@db.com, February 2010

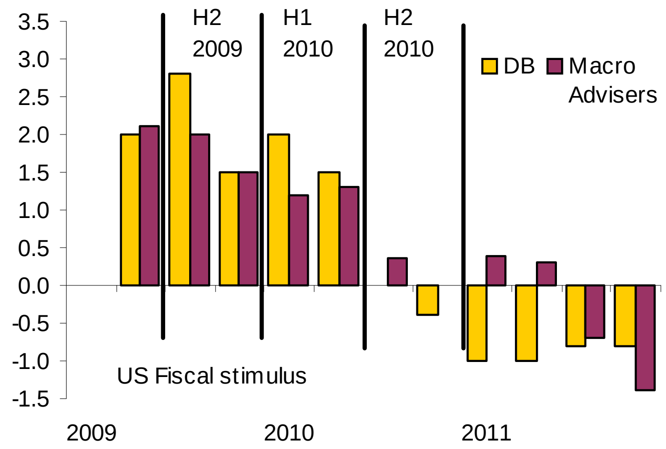
The macro outlook and the implications for risk assets

- **GDP growth rebounded strongly in H2 2009, driven in part by the inventory cycle and the fiscal stimulus**
  - Both drivers are likely to boost growth through H1 2010, but they are expected to fade in H2. A sustained recovery will require a rebound in private sector demand
  - The bearish camp argue that global debt levels are too high. Because both households and firms need to de-lever, domestic demand growth is likely to be subdued for some time.
- **We expect GDP growth to surprise to the upside due to the credit impulse**
  - We argue that what is required for a rebound in global growth is not a return to positive credit growth, but merely a slowdown in the pace of de-leveraging.
  - We expect the credit impulse to turn positive in 2010, and we expect global GDP growth to surprise to the upside.
- **Risks to growth stem from a tightening in Asia, sovereign risks in Europe, higher inflation and the impact of regulatory changes on bank lending**.
- **Given upside risks to growth, we would be long risky assets**

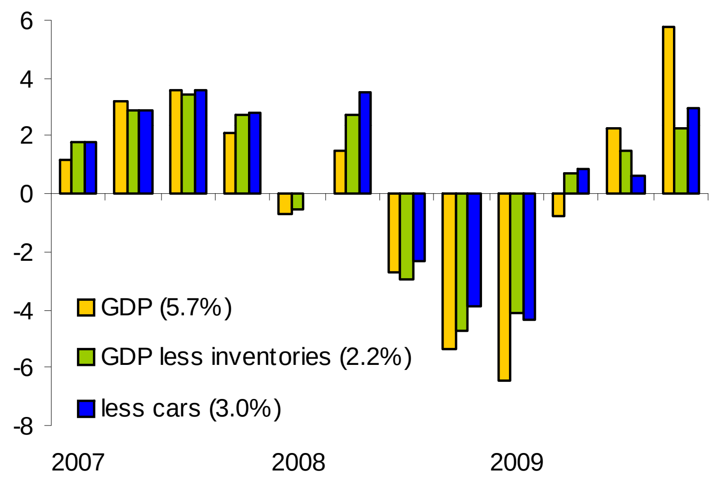
Fiscal stimulus in the US and elsewhere

Fiscal stimulus and private demand

- The enormous US fiscal stimulus through 2009 played a key role in stabilising the banking sector and boosting US demand growth.
- The strong stimulus in Germany should offset fiscal consolidation in Spain and others. We expect the stimulus profile to be not unlike the US
- The fiscal stimulus is likely to remain positive through H1 2010, but neutral in H2 and negative in 2011
- When Q3 US GDP growth was released, commentators remarked on the impact of cash for clunkers. In Q4 cash for clunkers lowered real demand growth by 0.8%, but nevertheless, GDP growth rebounded



Source: Deutsche Bank, Haver, Macro Advisers



Source: Deutsche Bank, Haver

Deutsche Bank

Stock cycle added 3.4% to US GDP growth in Q4 – more to come

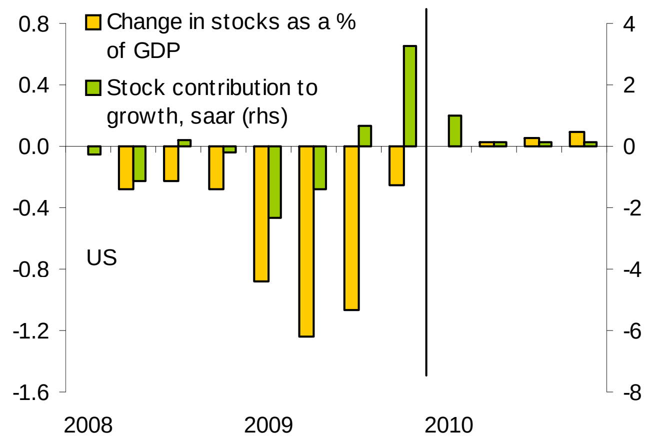
The stock cycle

- **A slowdown in the rate of de-stocking is all that is required to boost growth**
- **The boost from the stock cycle peaked in Q4, but will still be supportive in H1 2010**

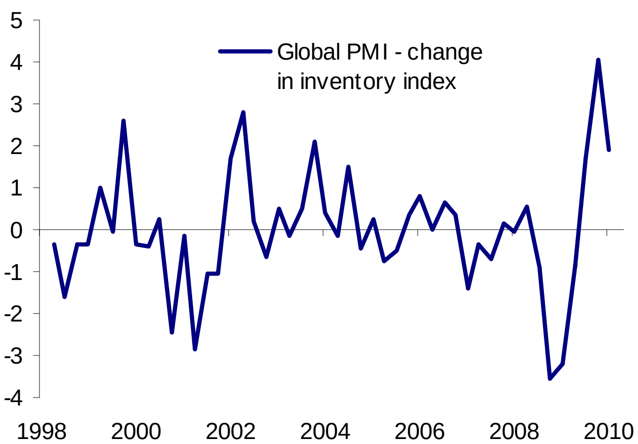
Figure 1: Stock cycle – an example

	Production	Demand	Closing stocks	Change	Growth
1	100	100	0	0	0
2	100	100	0	0	0
3	100	90	10	+10	0
4	90	70	30	+20	-10
5	50	70	10	-20	-40
6	60	70	0	-10	+10
7	70	70	0	0	+10
8	70	70	0	0	0

Source: Deutsche Bank



Source: Deutsche Bank, Haver, BEA

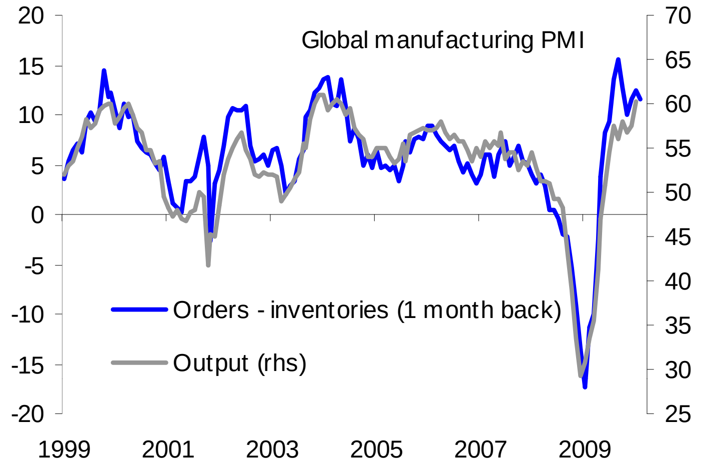


Source: Deutsche Bank, Haver, Markit

Deutsche Bank

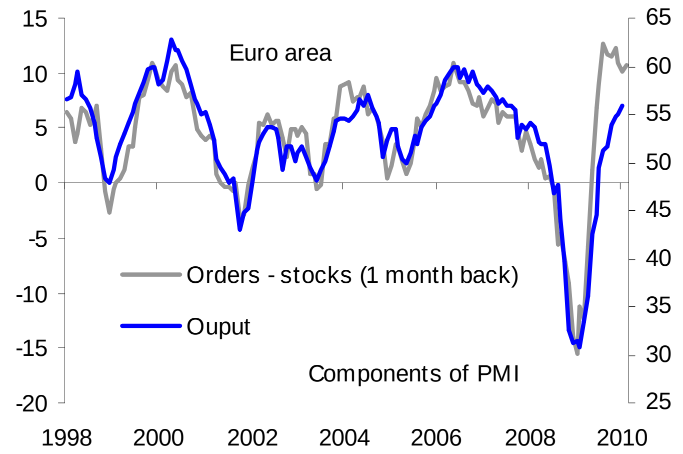
The stock cycle

Current orders are being met via production and de-stocking. As inventories fall, production has to increase

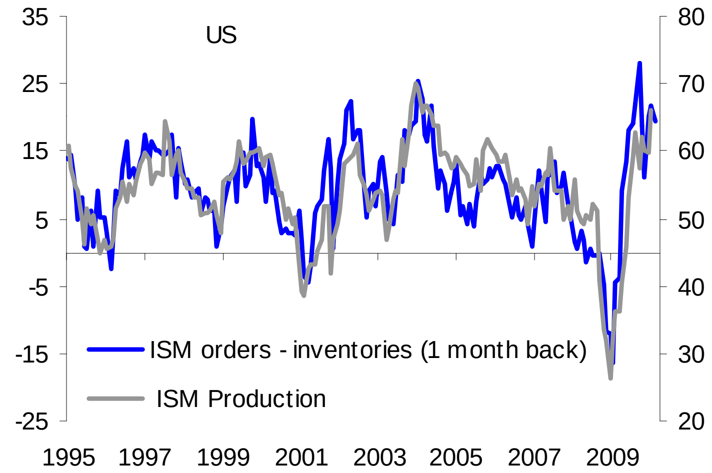


Source: Deutsche Bank, Haver, Markit

Pace of de-stocking means firms can de-stock and boost production for another quarter

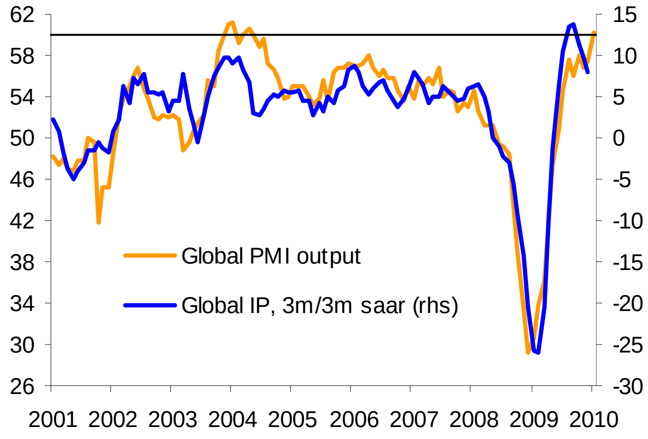


Source: Deutsche Bank, Haver, Markit

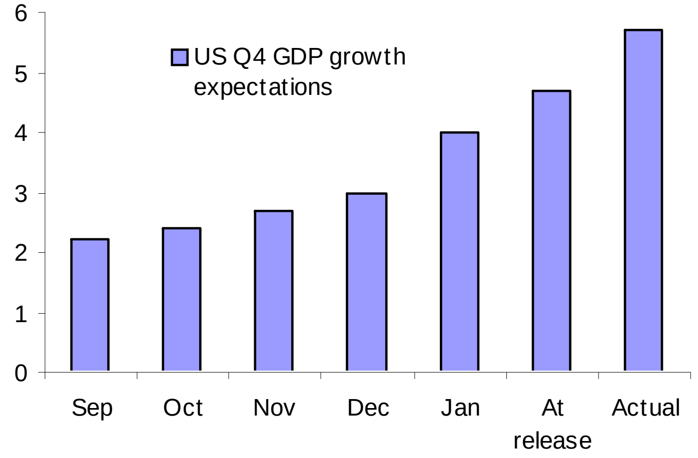


Source: Deutsche Bank, Haver, ISM

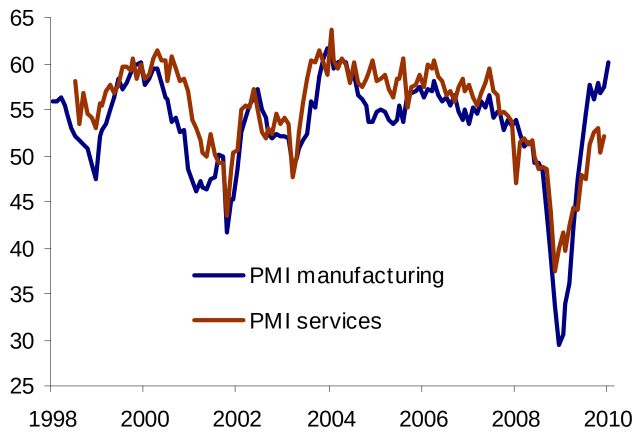
Global growth rebound – industrial country IP growth at highs



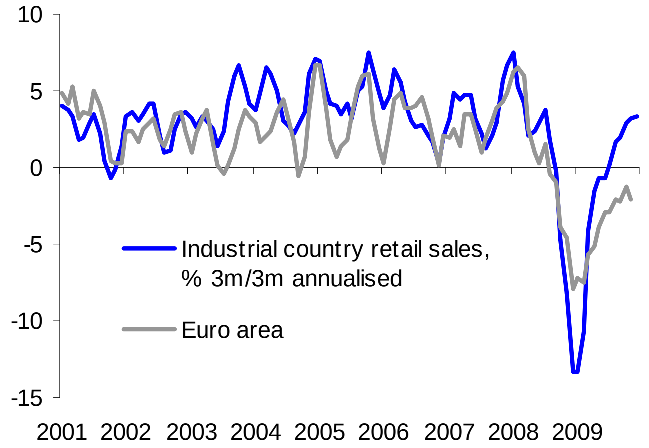
Source: Deutsche Bank, Haver



Source: Deutsche Bank, Haver



Source: Deutsche Bank, Haver



Source: Deutsche Bank, Haver

Deutsche Bank

The stock cycle argument broadly applied

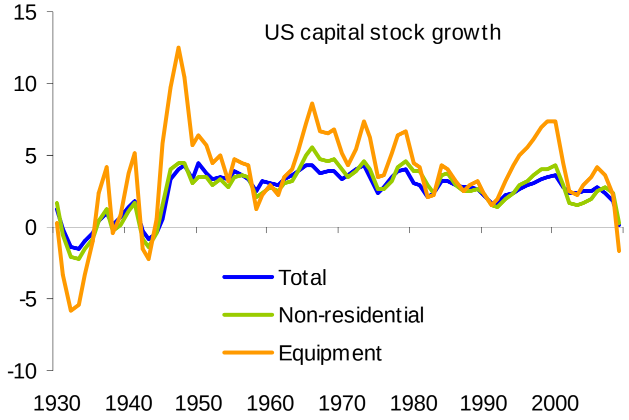
The stock cycle argument broadly applied

- **US car scrappage rate in 2008 = 14m. Purchases in 2009 = 10m, suggesting a 4m decline in cars. Slowing the pace of the fall in the stock of cars to 2m would require a 20% increase in car sales**

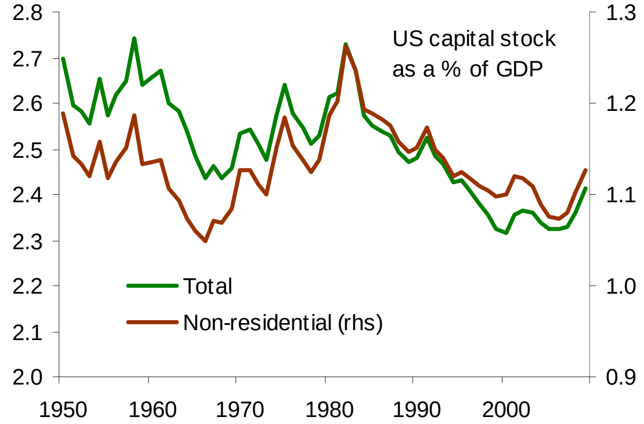
- **The stock of capital probably declined in 2009, and total private fixed investment stagnated. This happened last during WW2 and the Great Depression.**

- **Our US colleagues (Hooper, Slok, Dobridge) expect the cyclical components of GDP to contribute 2.0% to GDP growth from H2 2010 (Res. investment 0.5%, Equipment 1.0%, Cars 0.5%, Inventories and other durables 0.5%, Structures -0.5%)**

- **If the rest of the economy grows at 2.0%, then real GDP growth could average 3.5% (2.0% + 0.75*2.0%)**



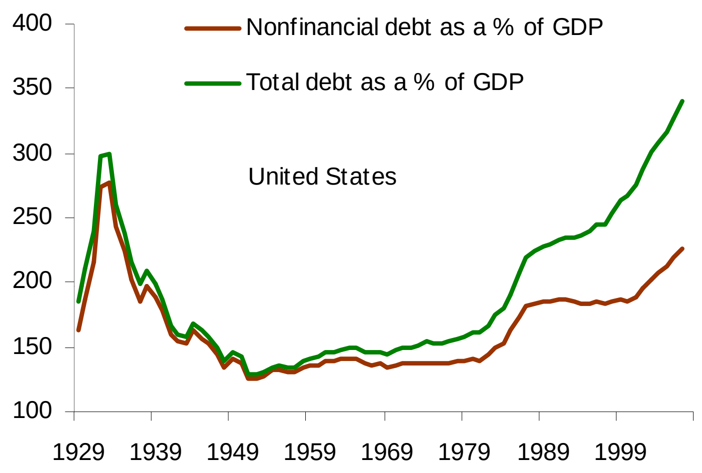
Source: Deutsche Bank, Haver, BEA



Source: Deutsche Bank, Haver, BEA

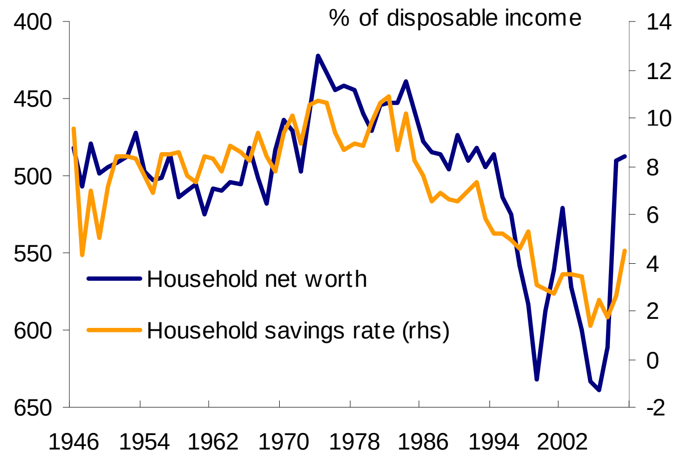
The black debt?

Debt levels have arguably risen to historic highs. Bear argument – debt levels have to come down, credit growth will have to be negative or at most very weak, and therefore demand growth will be weak



Source: Deutsche Bank, US Federal Reserve, Ben Wattenberg

Will US households be willing to borrow? Household net worth has collapsed, and further increases in the household savings rate could hurt spending



Source: Deutsche Bank, US Federal Reserve, BEA

The impact of credit on demand

GDP and consumption are flows rather than stocks. To understand the impact of credit on domestic demand, we have to look at the flow of credit rather than the stock.

Figure 1: Credit growth and the credit impulse

	Income	Borrowing	Spending	Debt	Spending growth	Credit growth	Credit impulse	Credit impulse
Year 0				200				
Year 1	100	0	100	200		0.0		
Year 2	100	10	110	210	10.0	5.0	10.0	10.0
Year 3	100	10	110	220	0.0	4.8	0.0	0.0
Year 4	100	5	105	225	-4.5	2.3	-5.0	-5.0
Year 5	100	-10	90	215	-14.3	-4.4	-15.0	-15.0
Year 6	100	-5	95	210	5.6	-2.3	5.0	5.0

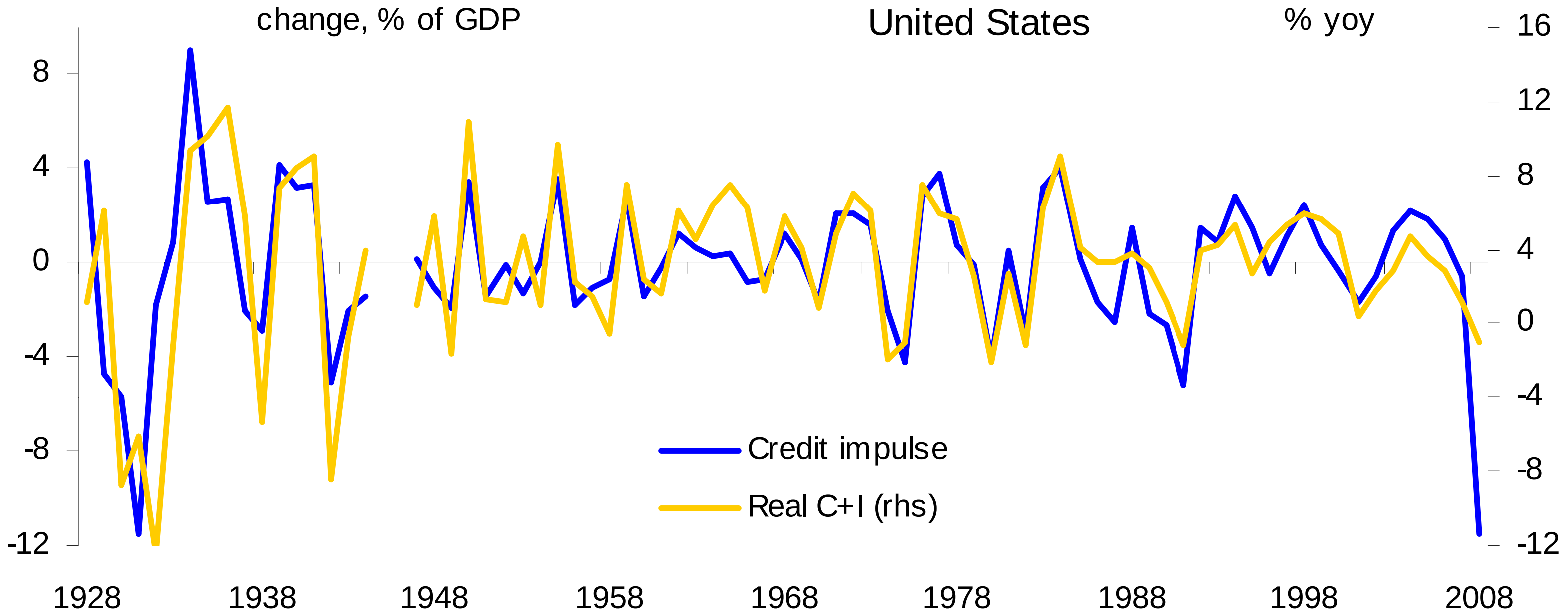
Source: Deutsche Bank

Credit impulse$_t$ = $(C_t - C_{t-1})/GDP_t - (C_{t-1} - C_{t-2})/GDP_{t-1}$

where C_t is the stock of credit at the end of year $_t$

80 years of the credit impulse in the US

We have argued that the important credit variable for GDP growth is change in the flow of credit, rather than growth in the stock of credit. This holds over 80 years.

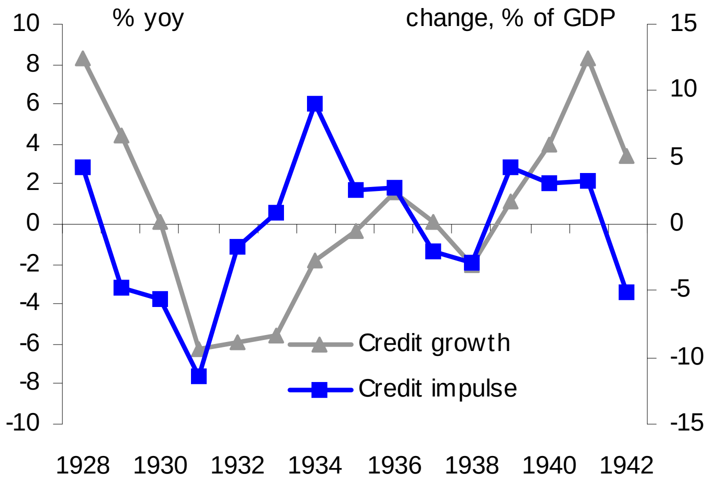


Source: Deutsche Bank, BEA, US Federal Reserve, US Bureau of the Census

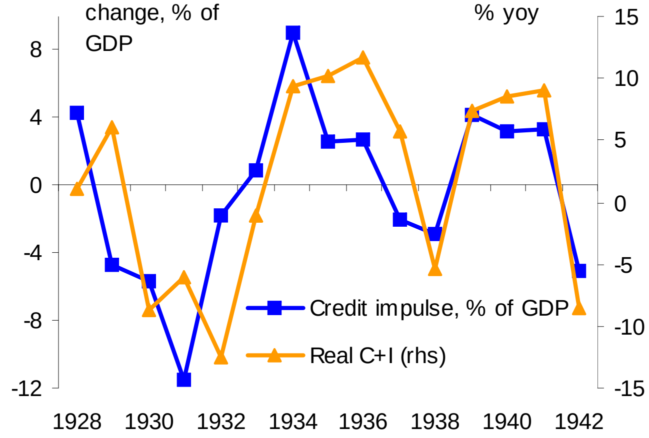
Deutsche Bank

What can we learn from the depression?

The credit impulse can turn positive even when credit growth is negative

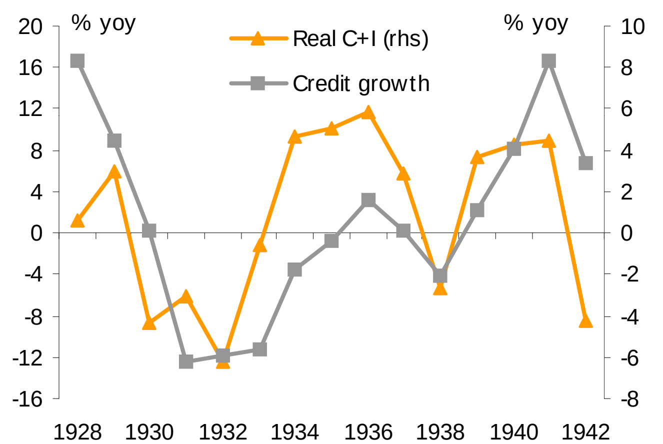


Source: Deutsche Bank, US Federal Reserve



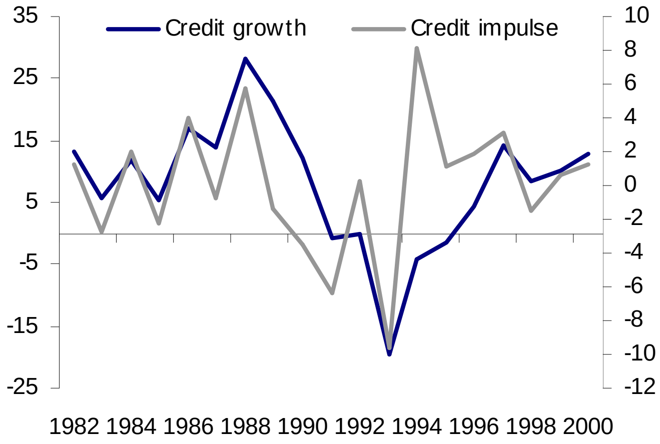
Source: Deutsche Bank, US Federal Reserve

Negative credit growth meant that debt levels were falling, even while demand was strong



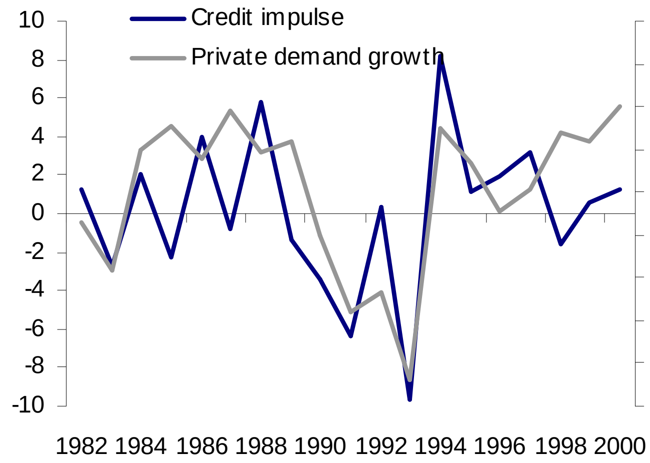
Source: Deutsche Bank, US Federal Reserve

Credit impulse - the international experience

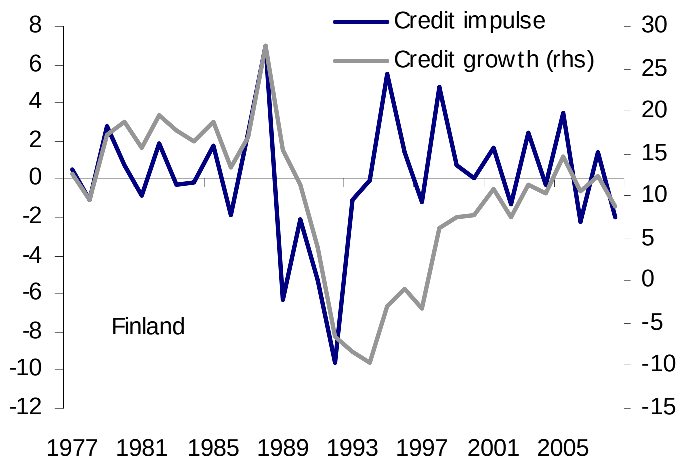


Source: Deutsche Bank, OECD, IMF

Sweden

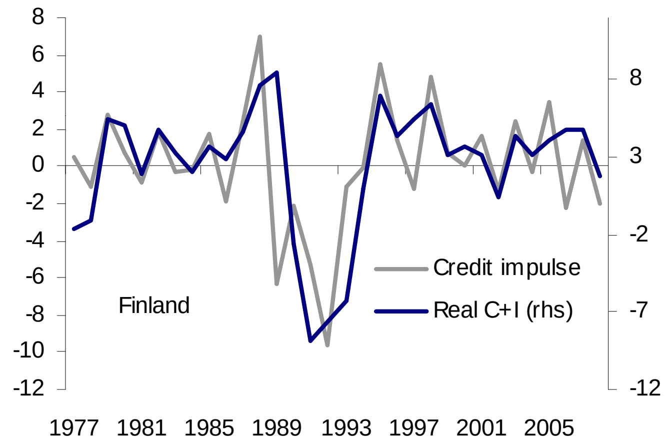


Source: Deutsche Bank, OECD, IMF



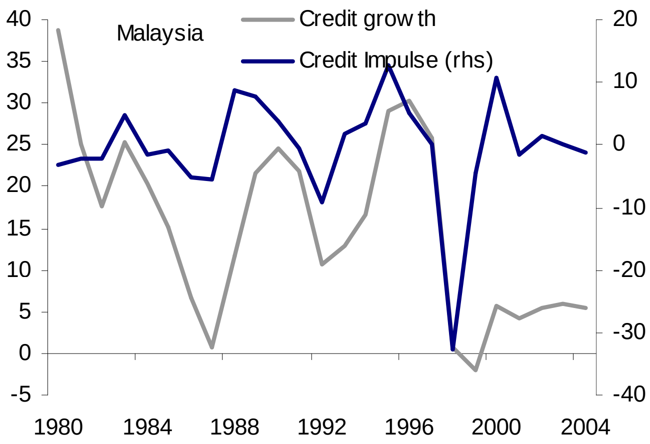
Source: Deutsche Bank, Haver

Finland

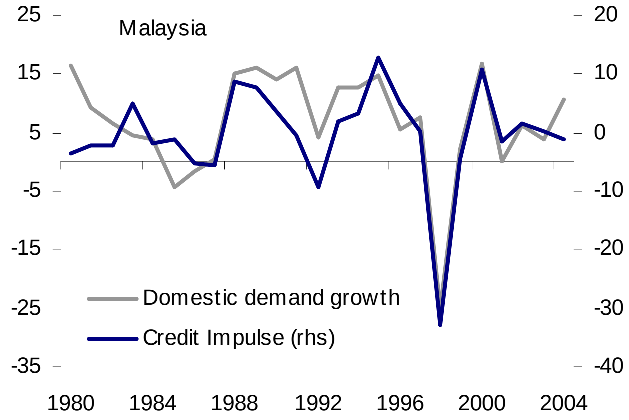


Source: Deutsche Bank, Haver

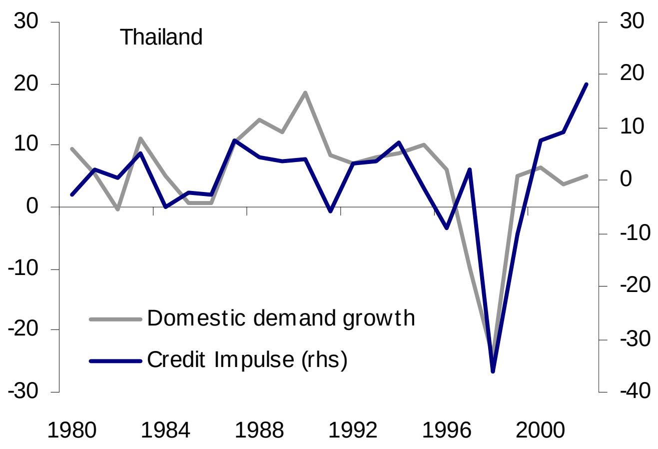
The international experience - Asia



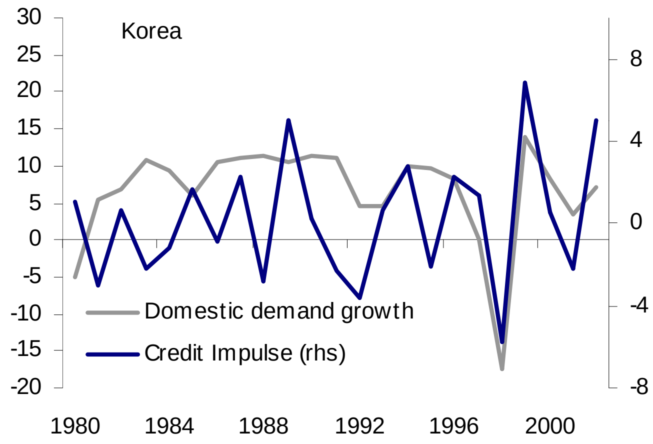
Source: Deutsche Bank, OECD, IMF



Source: Deutsche Bank, OECD, IMF



Source: Deutsche Bank, ONS



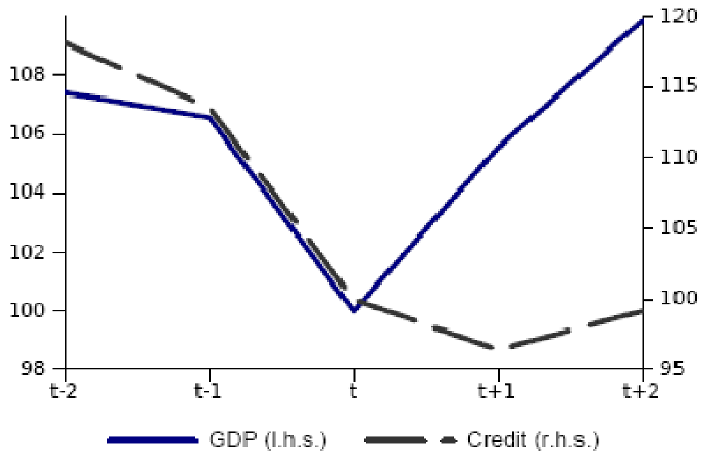
Source: Deutsche Bank, ONS

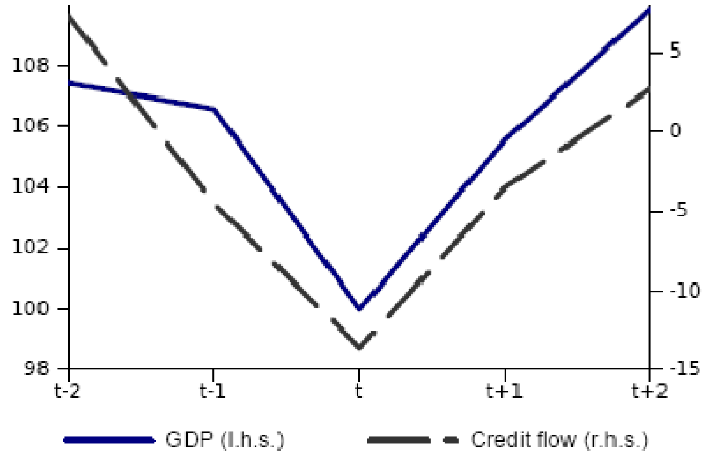
Deutsche Bank

The international experience - global

22 EM "sudden stop" experiences

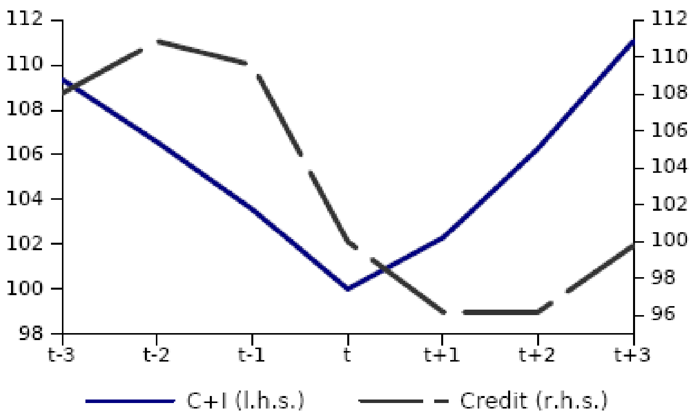
Source: Deutsche Bank, Calvo et al (2006)

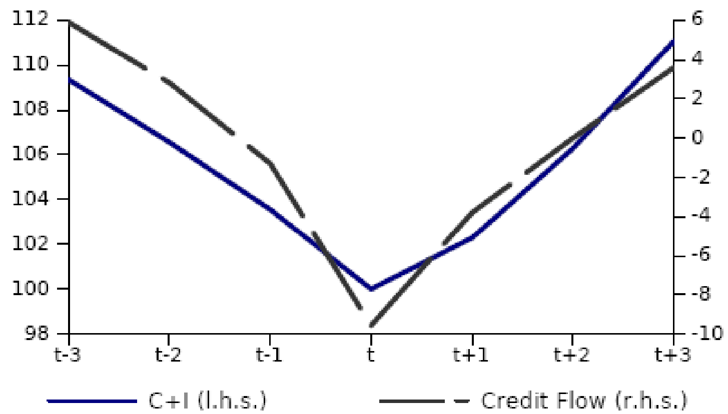




"Big 5" OECD banking crises

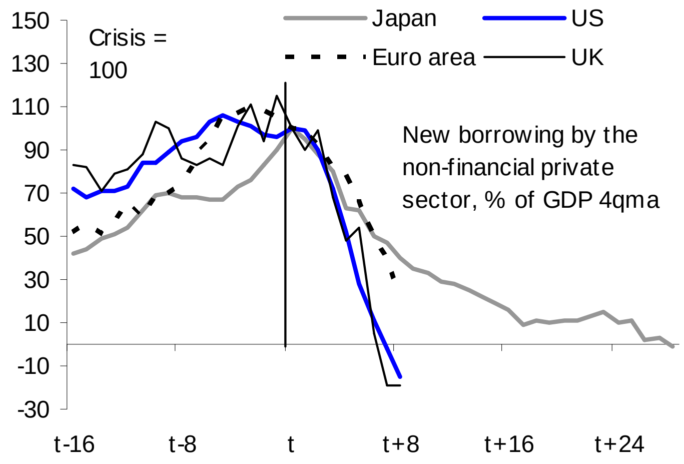
Source: Deutsche Bank, Rogoff and Reinhart (2008), IMF



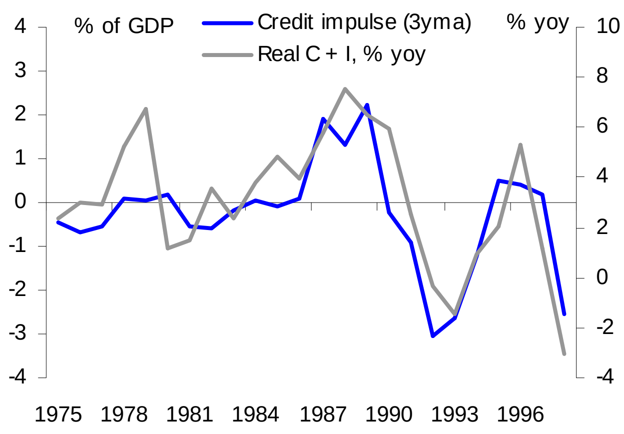


What about Japan's lost decade?

Most critics argue that Japan's fiscal and monetary policy response was too weak. In our view the main problem was that they did not address the problems within the banks. The necessary adjustment didn't take place

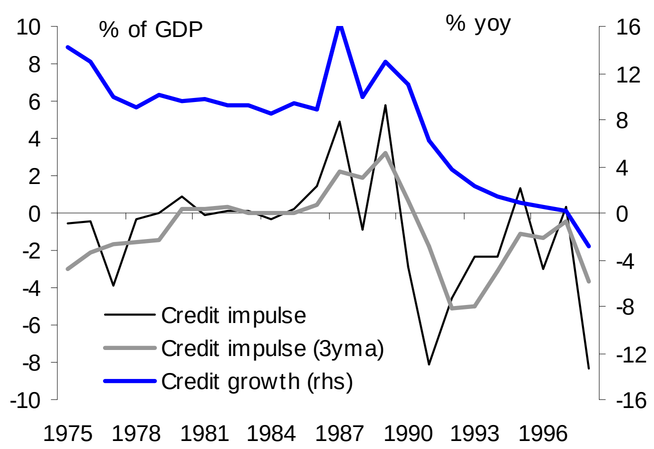


Source: Deutsche Bank, US Federal Reserve, OECD, IMF, ECB



Source: Deutsche Bank, IMF, BoJ

Japan

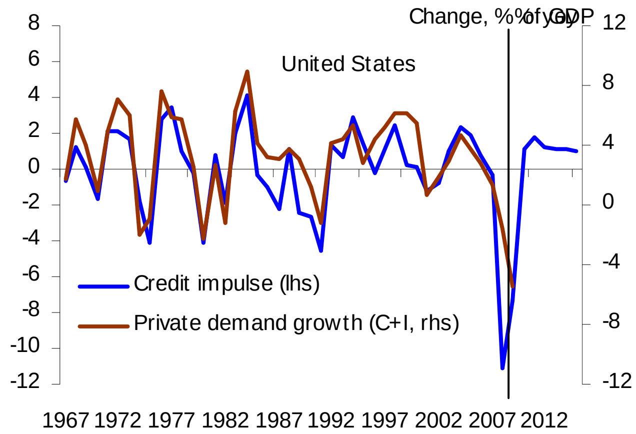


Source: Deutsche Bank, IMF, BoJ

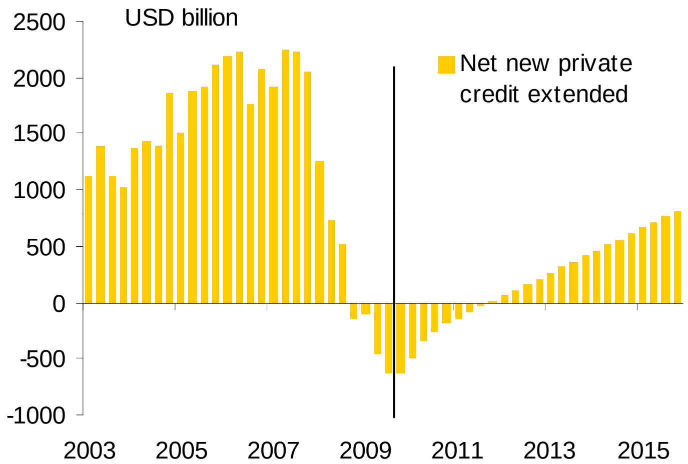
Deutsche Bank

Can this happen again now in the US?

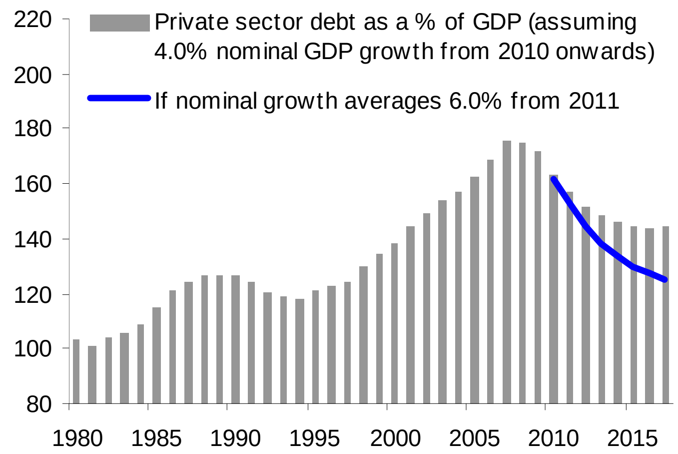
Absolutely! If the de-leveraging accelerates as we expect it to in Q3 and then stabilises, the US can combine decent growth and de-leveraging for five years



Source: Deutsche Bank, US Federal Reserve



Source: Deutsche Bank, US Federal Reserve

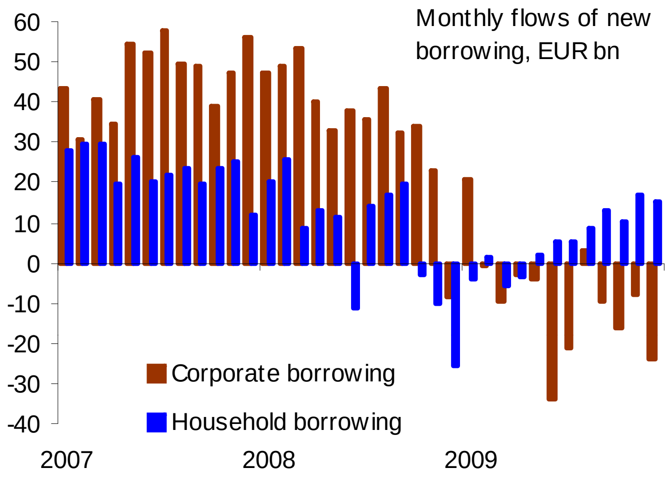


Source: Deutsche Bank, US Federal Reserve

Deutsche Bank

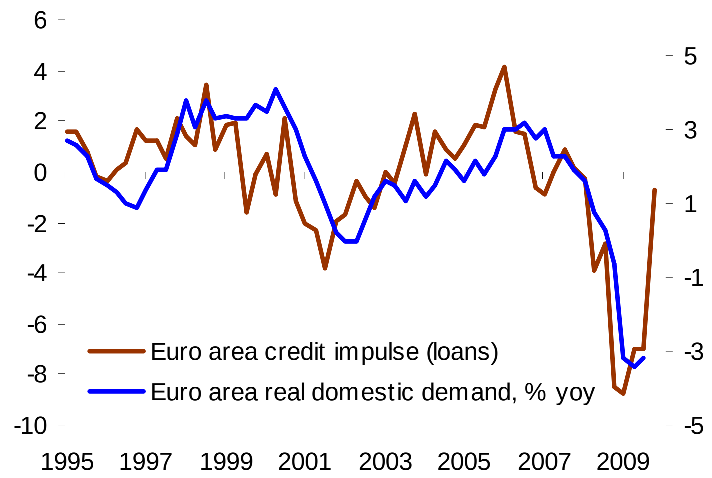
What about the euro area?

While consumer borrowing has stabilised and started to improve, corporate borrowing may only have bottomed in mid-2009



Source: Deutsche Bank, ECB, Eurostat

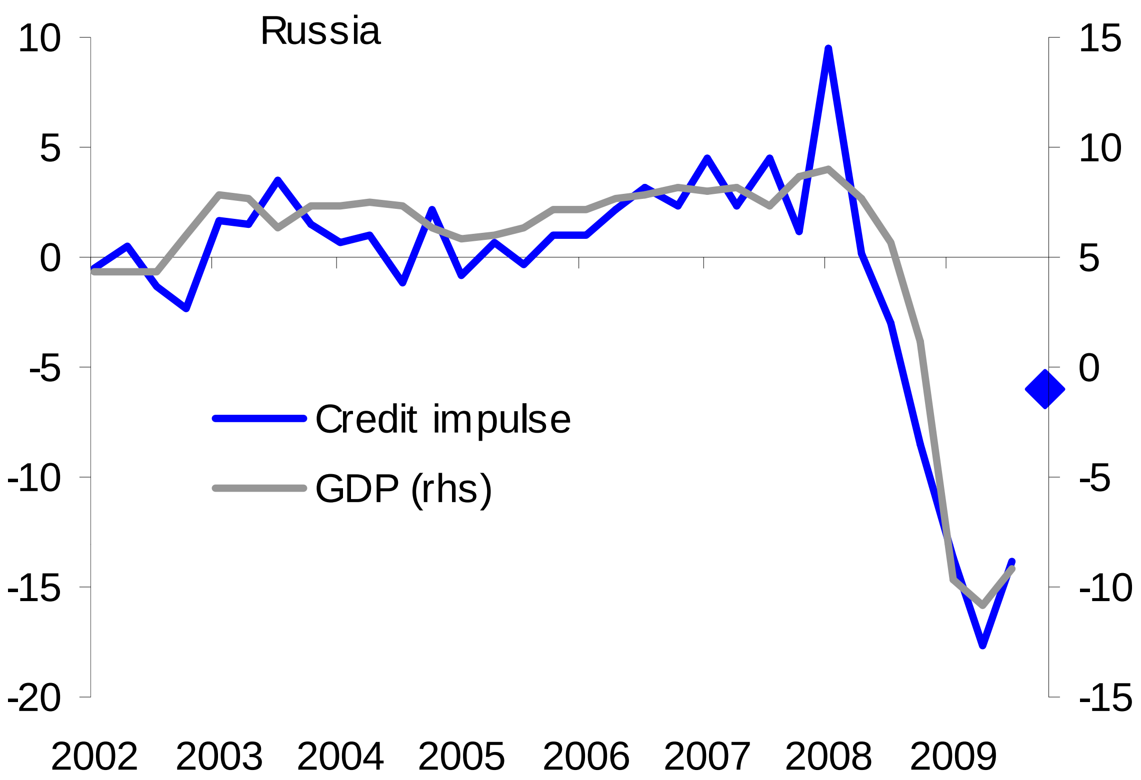
Even with this moderate borrowing performance, if the current pace of de-leveraging is maintained the credit impulse rebounds sharply



Source: Deutsche Bank, ECB, Eurostat

Deutsche Bank

What about Russia?



Source: Deutsche Bank, Haver

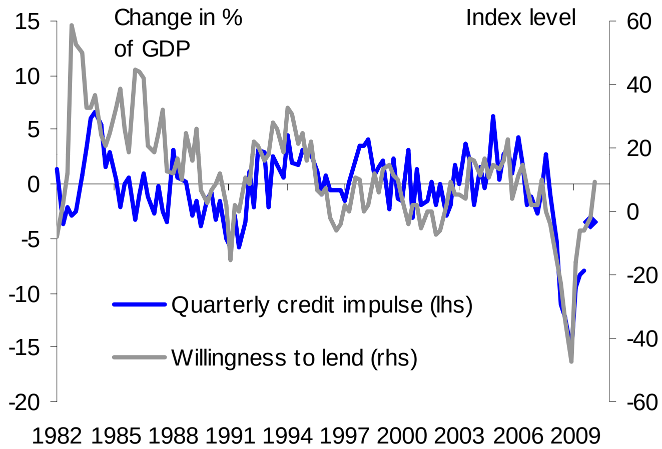
Deutsche Bank

Leading indicators

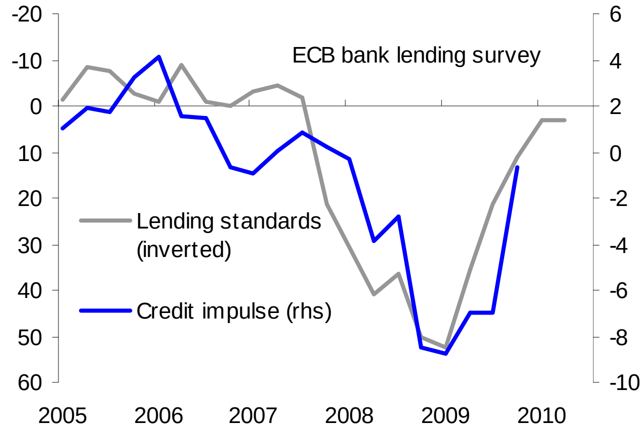
Bank lending surveys

- **The "willingness to lend" index improved from -47 in Q4 (after Lehman) to -16 in Q1 and +9.6 in Q4. This suggests that the economy is on a recovery path**

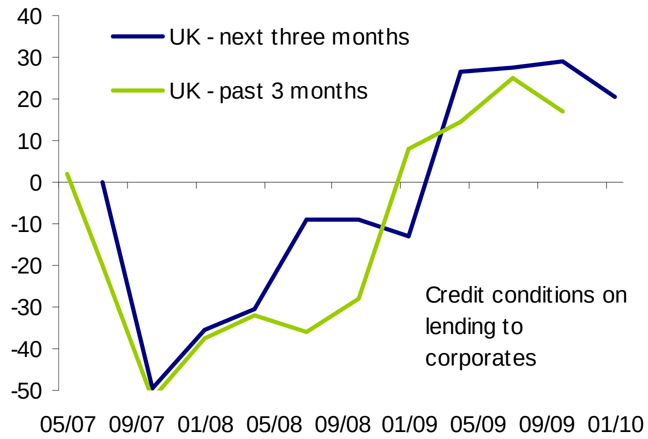
- **Risks from commercial real estate, regulatory uncertainty, larger bank capital requirements than we realise?**



Source: Deutsche Bank, US Federal Reserve

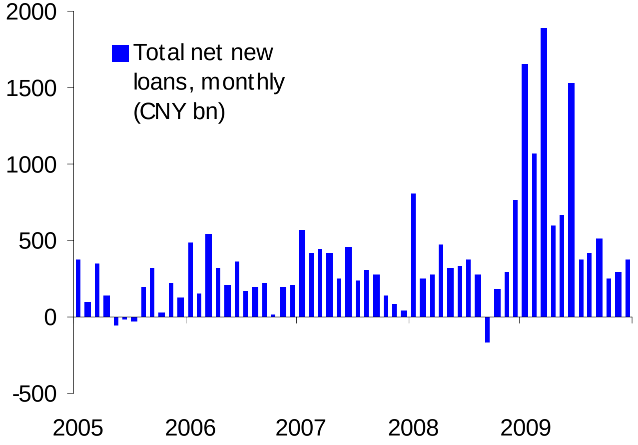


Source: Deutsche Bank, BEA, US Federal Reserve

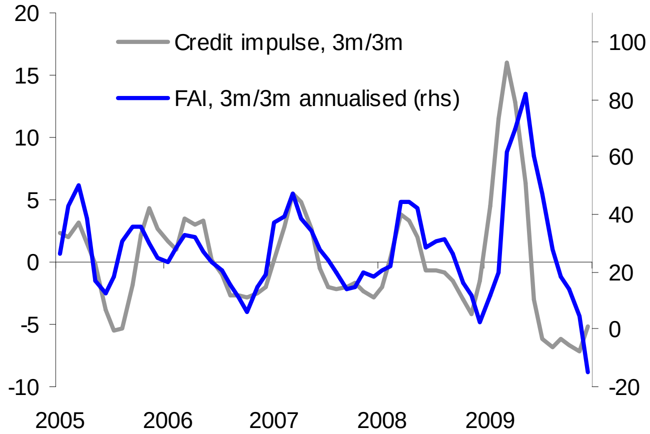


Source: Deutsche Bank, US Federal Reserve

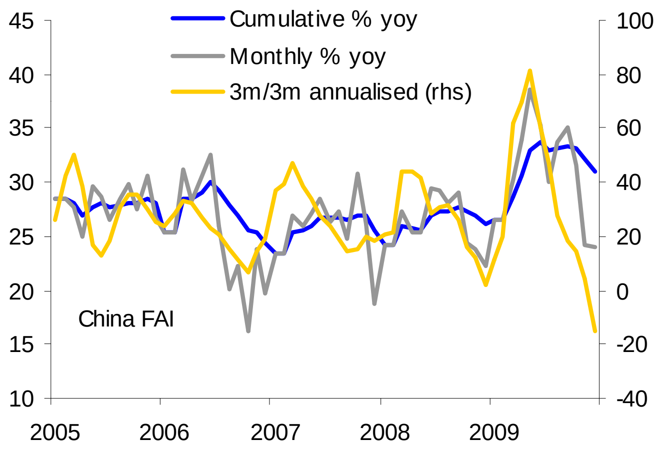
Risk 1. Cycles turning negative in Asia

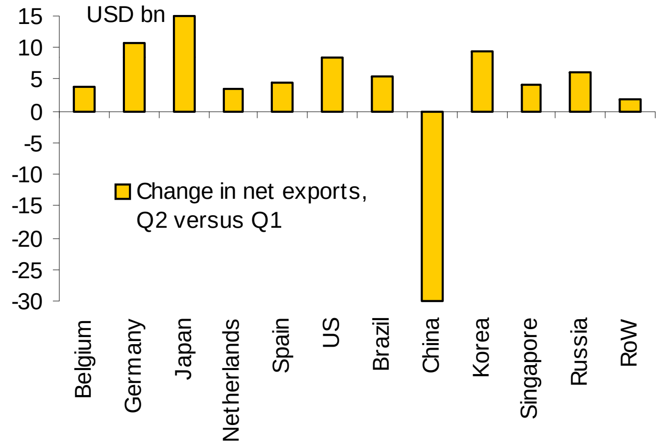


Source: Deutsche Bank, Haver



Source: Deutsche Bank, Haver

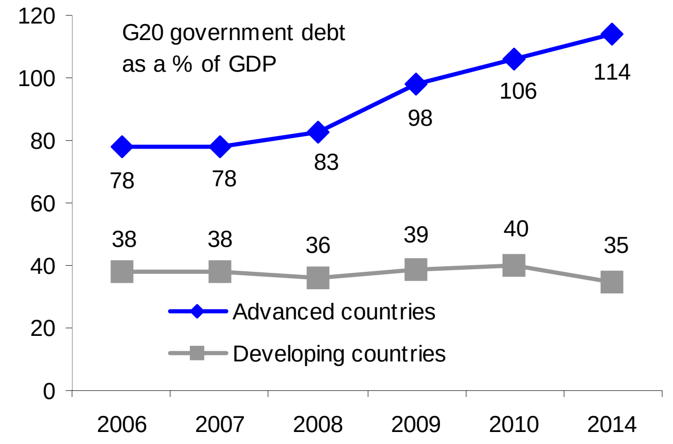


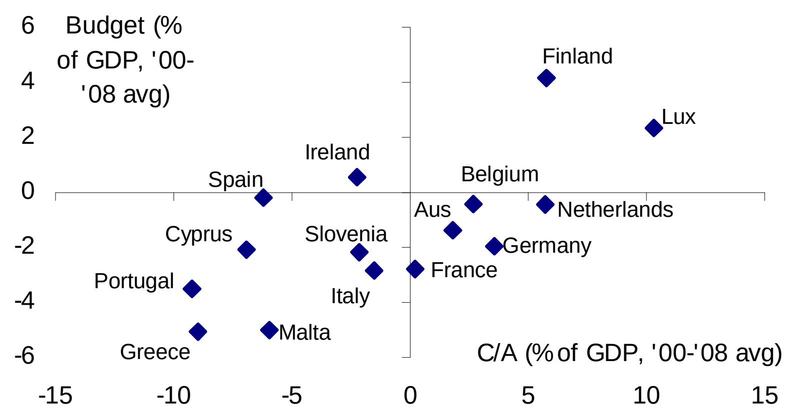


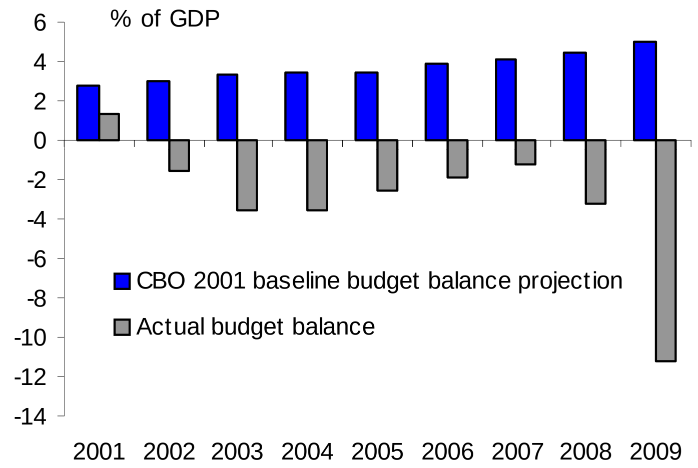
Source: Deutsche Bank, Haver

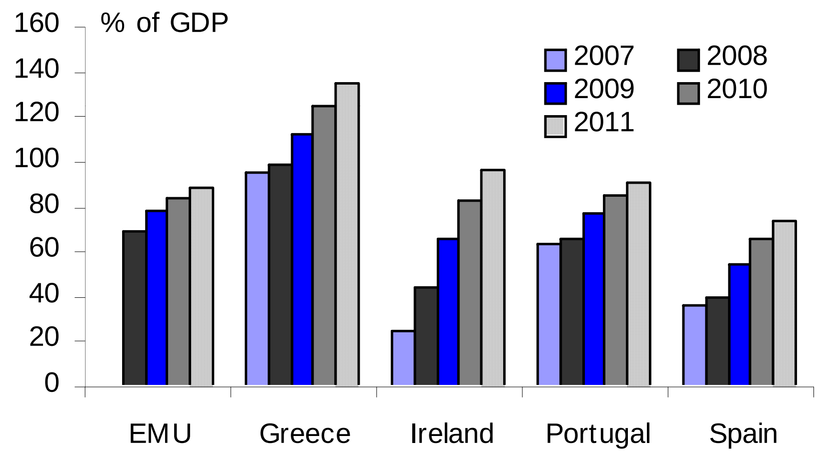
Deutsche Bank

Risk 2. Sovereign risks and fiscal consolidation







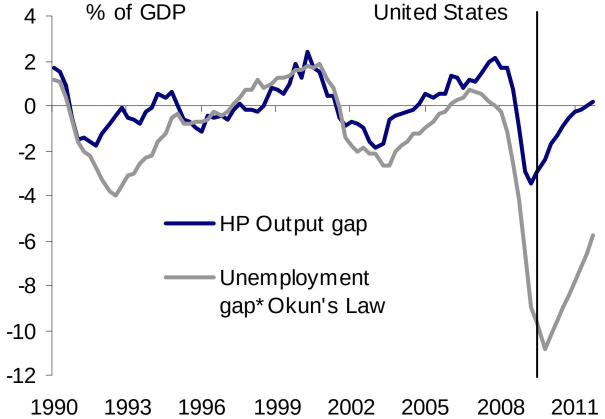


Source: Deutsche Bank, US Federal Reserve

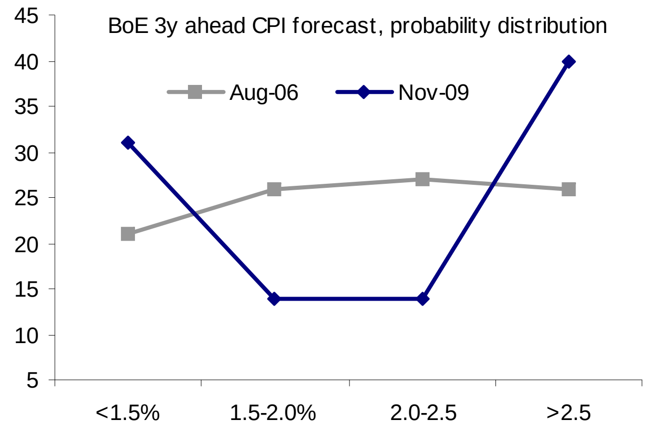
Source: Deutsche Bank, US Federal Reserve

Deutsche Bank

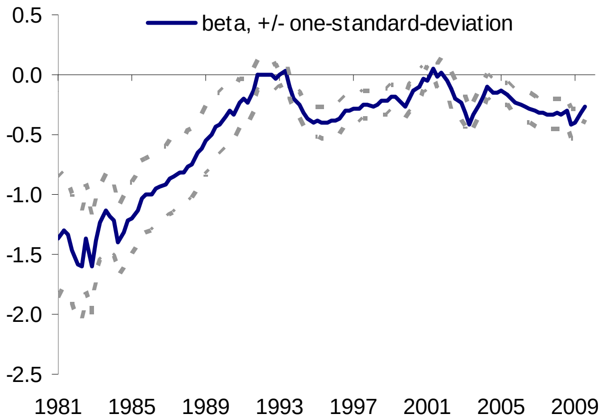
Risk 3. Inflation and the withdrawal of the monetary stimulus

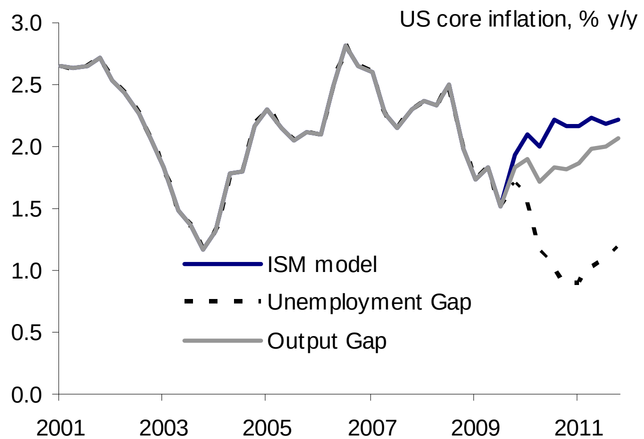


Source: Deutsche Bank, Haver



Source: Deutsche Bank, Haver



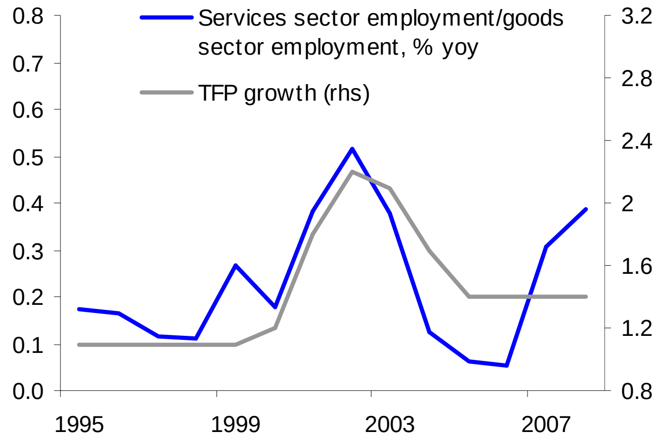


Source: Deutsche Bank, Haver

Long term reality – US potential growth = 1.6% - 2.2%

A rebound in lending

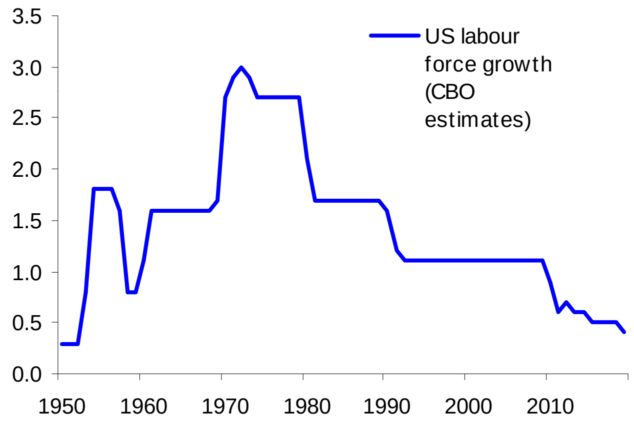
- **Potential GDP growth = 1/(1-a)*TFP growth + labour force growth (where a = capital share)**
- **Labour force growth in the US expected to fall to around 0.5% from 1.1% over the past decade**
- **CBO expects TFP growth = 1.4%. Stronger TFP growth arguably related to reallocation of labour from tradable sector to the non-tradable sector.**
- **If the process ends or is reversed, TFP growth could fall back. Average TFP growth from 1975-1995 was 0.8%.**



Source: Deutsche Bank, CBO

Potential growth estimates

	TFP growth			
Capital Share	**0.6**	**0.8**	**1.0**	**1.2**
0.3	1.4	1.6	1.9	2.2
0.4	1.5	1.8	2.2	2.5
0.5	1.7	2.1	2.5	2.9

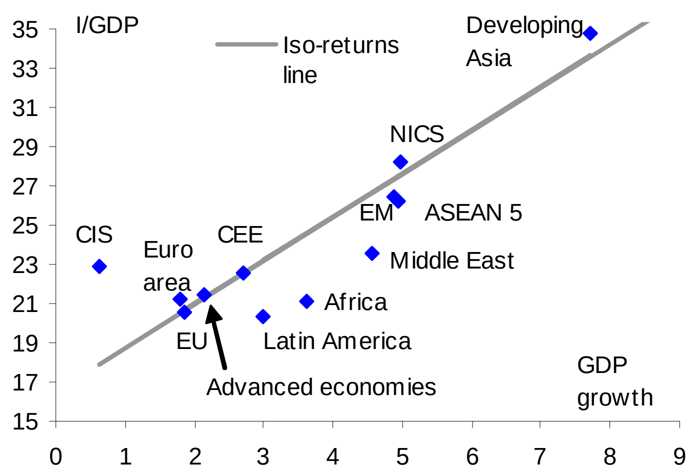


Source: Deutsche Bank, Haver

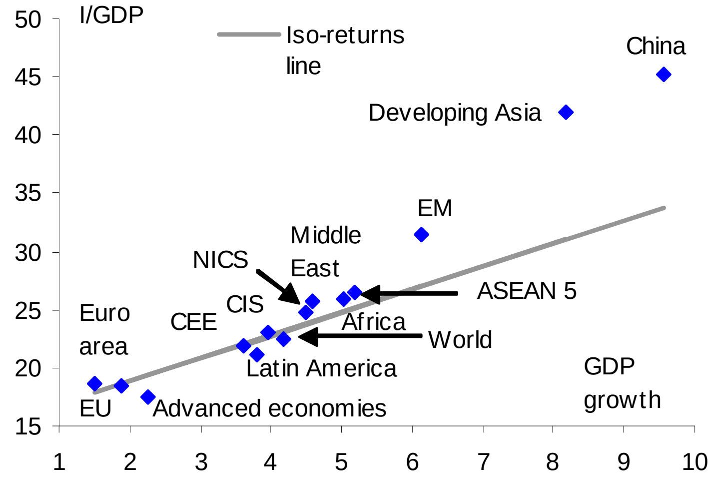
Deutsche Bank

Four charts on returns to capital

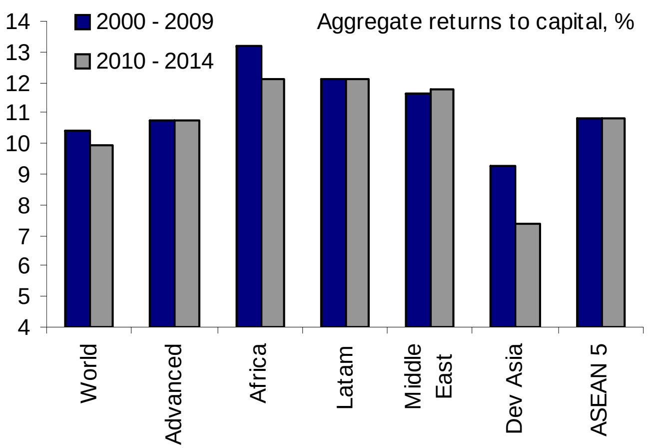
1990 - 2009

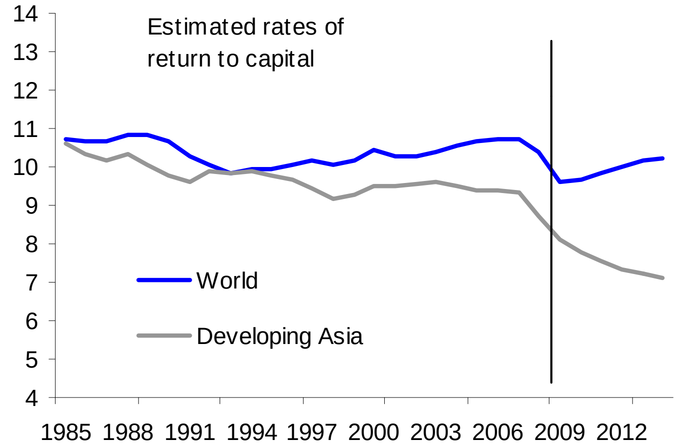


2010 - 2014



Source: Deutsche Bank, CBO





Source: Deutsche Bank, Haver, Bloomberg

Deutsche Bank

Conclusions

- **We expect GDP growth to surprise to the upside in 2010 due to the credit impulse**
  - The pace of de-leveraging has not slowed yet, but we believe that the hurdle to a rebound in private sector demand growth is much lower than the consensus realises
  - Asset markets are driven by growth surprises – if GDP growth is stronger than expected risky assets should do well
- **Inflation risks on the horizon, but perhaps not a 2010 problem**
  - We see upside risks to inflation in the medium term, but core inflation pressures could remain contained in 2010 due to high unemployment rates
- **Risks to our view stem from sovereign risks, regulatory changes, and policy tightening in Asia**
  - We would be long the US over developing markets

Global Economic Outlook

	Real GDP % growth[b]			Consumer Prices % growth[c]			Current Account % of GDP[d]			Fiscal Balance % of GDP		
	2009F	2010F	2011F	2009F	2010F	2011F	2009F	2010F	2011F	2009F	2010F	2011F
US	**-2.4**	**3.8**	3.3	**-0.3**	**2.0**	1.7	-3.0	**-2.8**	**-2.9**	-10.2	-8.6	-6.3
Japan	-5.2	1.7	0.5	-1.3	-1.1	-0.6	2.9	4.6	5.3	-7.1	-8.5	-8.0
Euroland	-3.9	1.5	1.2	0.3	1.2	1.3	-1.2	-0.8	-0.6	-6.4	-6.9	-5.9
Germany	-4.9	2.1	1.4	0.3	0.8	1.0	3.4	5.3	4.0	-3.2	-6.3	-5.2
France	-2.3	1.5	1.1	0.1	1.3	1.1	-2.0	-1.9	-2.1	-8.0	-7.5	-6.3
Italy	-4.8	1.1	1.1	0.8	1.4	1.6	-3.1	-2.8	-3.2	-5.5	-5.4	-5.0
Spain	-3.6	-0.1	0.6	-0.3	1.1	1.4	-5.3	-3.9	-4.0	-11.0	-10.2	-8.8
UK	**-4.9**	1.5	2.5	2.2	3.1	0.9	-2.5	-2.3	-1.5	-12.5	-11.5	-9.0
Sweden	-4.7	1.5	2.1	-0.4	0.9	1.5	7.0	7.2	7.5	-3.5	-5.0	-5.0
Denmark	-5.1	1.0	2.0	1.4	1.7	1.6	2.0	2.0	1.8	-3.0	-5.0	-5.0
Norway	-1.1	1.8	2.5	2.2	1.7	1.7	14.9	15.0	16.0	10.0	7.0	7.0
Poland	1.9	2.4	2.6	3.4	2.5	2.5	-0.7	-3.3	-4.1	-6.5	-6.5	-5.7
Hungary	-6.4	2.2	2.5	4.3	3.7	2.8	0.2	-1.2	-2.5	-4.0	-5.0	-3.6
Czech Republic	-4.0	2.0	3.6	1.0	1.9	1.5	-1.1	-2.1	-2.9	-6.5	-4.0	-3.5
Australia	0.9	2.6	3.7	1.7	2.2	2.8	-4.2	-5.7	-4.9	-1.9	-2.9	-0.2
Canada	-2.5	3.0	3.5	0.3	1.7	2.5	-2.9	-2.9	-2.6	-3.7	-2.8	-1.8
Asia (ex Japan)	5.3	7.7	7.5	0.5	4.2	3.8	6.1	4.5	3.7	-4.2	-3.7	-3.0
India	6.0	7.5	7.7	2.0	7.3	6.5	-1.5	-1.0	-1.2	-10.7	-9.9	-8.1
China	8.4	9.0	9.0	-0.8	3.4	2.5	7.0	5.3	4.4	-2.9	-2.8	-2.0
Latin America	-2.8	3.9	3.5	6.3	7.5	7.3	-0.6	-1.0	-1.8	-2.9	-2.5	-2.7
Brazil	-0.3	5.8	4.5	4.3	4.5	4.7	-1.4	-2.6	-3.8	-3.7	-2.0	-2.7
EMEA	-5.5	3.7	4.4	8.0	7.9	7.8	0.9	-1.6	-1.7	-6.4	-4.5	-2.6
Russia	-7.4	3.8	4.5	8.8	8.5	9.5	4.8	0.2	0.7	-6.1	-3.5	-0.5
G7	**-3.4**	**2.8**	2.3	-0.1	**1.4**	1.2						
World	-1.1	4.1	3.9	1.2	**3.1**	2.9						

(a) Euroland forecasts as at the last forecast round on 03/12/2009. Bold figures signal upward revisions, bold, underlined figures signal downward revisions.
(b) GDP figures refer to working day adjusted data. (c) HICP figures for euro-zone countries and the UK (d) Current account figures for Euro area countries include intra regional transactions

European Macroeconomic Forecasts

Euroland, % qoq	09-Q1	09-Q2	09-Q3	09-Q4F	10-Q1F	10-Q2F	10-Q3F	10-Q4F	2009F	2010F	2011F
GDP	-2.5	-0.2	0.4	0.5	0.5	0.4	0.2	0.2	*-3.9*	*1.5*	*1.2*
Private Consumption	-0.5	0.1	-0.2	0.1	0.2	0.1	0.0	0.1	*-1.0*	*0.3*	*0.7*
Gov. Consumption	0.6	0.7	0.5	0.5	0.5	0.5	0.4	0.4	*2.4*	*2.0*	*1.9*
Investment	-5.4	-1.5	-0.4	-0.7	0.0	0.3	0.5	0.7	*-10.1*	*-0.5*	*2.9*
Stocks (contribution)	-0.6	-0.6	0.3	0.6	0.2	0.0	0.0	0.0	*-0.6*	*0.6*	*0.0*
Exports	-9.2	-1.5	2.9	1.7	1.2	1.0	0.8	0.6	*-13.6*	*5.0*	*2.9*
Imports	-7.9	-2.9	2.6	2.2	1.0	0.5	0.7	0.8	*-11.3*	*4.2*	*3.5*
Net Trade (contrib.)	-0.6	0.6	0.2	-0.2	0.1	0.2	0.0	-0.1	*-1.2*	*0.4*	*-0.2*
HICP inflation, % yoy	1.0	0.2	-0.4	0.4	1.1	1.2	1.3	1.3	*0.3*	*1.2*	*1.3*
Core inflation, % yoy	1.6	1.6	1.3	1.1	1.0	0.8	0.8	0.7	*1.4*	*0.8*	*0.9*
EMU4 GDP, % qoq											
Germany	-3.5	0.3	0.7	0.3	0.7	0.5	0.4	0.3	*-4.9*	*2.1*	*1.4*
France	-1.3	0.3	0.3	0.5	0.5	0.4	0.4	0.3	*-2.3*	*1.5*	*1.1*
Italy	-2.7	-0.5	0.6	0.5	0.4	0.4	0.2	0.1	*-4.8*	*1.1*	*1.1*
Spain	-1.6	-1.1	-0.3	0.1	0.2	0.5	-0.5	-0.2	*-3.6*	*-0.1*	*0.6*
Central Bank Rates (eop)											
ECB refi rate	1.50	1.00	1.00	1.00	1.00	1.00	1.25	1.50			
US fed funds target rate	0.00-0.25	0.00-0.25	0.00-0.25	0.00-0.25	0.00-0.25	0.00-0.25	0.75	1.25			
BoE bank rate	0.50	0.50	0.50	0.50	0.50	0.50	1.00	1.50			
BoJ O/N call rate	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10			

Source: National statistics, national central banks, Deutsche Bank forecasts. (1) Forecasts in lower table as of 03/12/2009

Source: DB Global Markets Research

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst(s). In addition, the undersigned lead analyst(s) has not and will not receive any compensation for providing a specific recommendation or view in this report. Michael Biggs

Deutsche Bank Debt Rating Key

redituy (“-”): \

reditold (“-”): \

reditell (“-”): \

redit o\ec (“- \”): e have not assigned a recommendation to this issuer. ny references to valuation are based on an issuer’s

\eference redit nstrument (“\”): \

\

\

\

\

Deutsche Bank

Regulatory Disclosures

SOLAR Disclosure

For select companies, Deutsche Bank equity research analysts may identify shorter-term trade opportunities that are consistent or inconsistent with Deutsche Bank's existing longer-term ratings. This information is made available only to Deutsche Bank clients, who may access it through the SOLAR stock list, which can be found at http://gm.db.com.

Disclosures required by United States laws and regulations

See company-specific disclosures above for any of the following disclosures required for covered companies referred to in this report: acting as a financial advisor, manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/comanaged public offerings in prior periods; directorships; market making and/or specialist role.

The following are additional required disclosures:

Ownership and Material Conflicts of Interest: DBSI prohibits its analysts, persons reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage.

Analyst compensation: Analysts are paid in part based on the profitability of DBSI, which includes investment banking revenues.

Analyst as Officer or Director: DBSI policy prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director, advisory board member or employee of any company in the analyst's area of coverage.

Distribution of ratings: See the distribution of ratings disclosure above.

Price Chart: See the price chart, with changes of ratings and price targets in prior periods, above, or, if electronic format or if with respect to multiple companies which are the subject of this report, on the DBSI website at http://gm.db.com.

Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, in addition to those already made pursuant to United States laws and regulations.

Analyst compensation: Analysts are paid in part based on the profitability of Deutsche Bank AG and its affiliates, which includes investment banking revenues

Australia: This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act.
EU: A general description of how Deutsche Bank AG identifies and manages conflicts of interest in Europe is contained in our public facing policy for managing conflicts of interest in connection with investment research.
Germany: See company-specific disclosures above for (i) any net short position, (ii) any trading positions (iii) holdings of five percent or more of the share capital. In order to prevent or deal with conflicts of interests Deutsche Bank AG has implemented the necessary organisational procedures to comply with legal requirements and regulatory decrees. Adherence to these procedures is monitored by the Compliance-Department.
Hong Kong: See http://gm.db.com for company-specific disclosures required under Hong Kong regulations in connection with this research report. Disclosure #5 includes an associate of the research analyst. Disclosure #6, satisfies the disclosure of financial interests for the purposes of paragraph 16.5(a) of the SFC's Code of Conduct (the "Code"). The 1% or more interests is calculated as of the previous month end. Disclosures #7 and #8 combined satisfy the SFC requirement under paragraph 16.5(d) of the Code to disclose an investment banking relationship.
Japan: See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.
Russia: The information, interpretation and opinions submitted herein are not in the context of, and do not constitute, any appraisal or evaluation activity requiring a licence in the Russian Federation.
South Africa: Publisher: Deutsche Securities (Pty) Ltd, 3 Exchange Square, 87 Maude Street, Sandton, 2196, South Africa. Author: As referred to on the front cover. When quoting, please cite Deutsche Securities Research as the source.
Turkey: The information, interpretation and advice submitted herein are not in the context of an investment consultancy service. Investment consultancy services are provided by brokerage firms, portfolio management companies and banks that are not authorized to accept deposits through an investment consultancy agreement to be entered into such corporations and their clients. The interpretation and advices herein are submitted on the basis of personal opinion of the relevant interpreters and consultants. Such opinion may not fit your financial situation and your profit/risk preferences. Accordingly, investment decisions solely based on the information herein may not result in expected outcomes.
United Kingdom: Persons who would be categorized as private customers in the United Kingdom, as such term is defined in the rules of the Financial Services Authority, should read this research in conjunction with prior Deutsche Bank AG research on the companies which are the subject of this research.