GnS economics

# Q-Review 4/2017

December 2017

## The approaching perfect storm

### Special report on the coming economic collapse

- Global economic growth has accelerated while the imbalances behind the façade of this economic expansion continue to grow.
- The detrimental development during the past 9 years is currently converging towards a "perfect storm" likely to engulf the global economy within two years.
- In this special report we provide a roadmap to the impending crisis.
- The crisis is likely to start with a 'financial shock' emanating from one of the over-bought markets.

Eerie complacency has taken over the markets. Even though the debt-stimulus of China (see Q-review 1/2017) and the pro-business policy of Donald Trump (see Q-review 4/2016) give a strong lift to the global economy, we are not moving to the right direction. Although the renewal of global growth is extremely welcome, the imbalance behind the façade is widening. In this sense, the above mentioned drivers are a kind of a Trojan horse. They have lured the markets to believe that the good times are here to last, but nothing could be farther away from the truth.

In this special report, we gather our analyses for the past six years and provide a roadmap for the next crisis. Because basically all the imbalances are converging to an increasing trend, the impending crisis will be the largest the world has seen since the 1930's. We call it a 'perfect storm'.

The 'perfect storm' is a combination of five factors:

1) The 'everything bubble'
2) The zombification of the global economy
3) The over-indebtedness of China
4) The teetering banking sector of Europe
5) The end of QE and the beginning Quantitative Tightening (QT)

We address each in turn.

**Bubbles, bubbles, bubbles**

The single most important economic innovation of the mankind has been the discovery of the market pricing mechanism, i.e. a system, where the seller (producer or owner) and the buyer come together to discover the price for a product or service. Both agents try to *optimize* the offered price based on their budget limits and preferences and on the features (age, risk, etc.) of the product or service in question. The main point in the pricing mechanism is that both the seller and the buyer win. If not, another round of the price negotiations would be conducted to find a more suitable price. This continuous loop of price negotiations creates the market mechanism, where the value of every service and product is discovered to optimize their allocation in the economy. Without the market price mechanism, the allocation of the resources calls for some centrally controlled mechanism, like socialism or other form of authoritanism. These mechanisms are known not to work very well.

In the current financial markets, there is one major entity which does not have a budget limit and the only aim of which is to tweek the market prices to

whatever direction it sees suitable. The central banks have, through their QE -programs, effectively destroyed, or at least seriously damaged, the market mechanism and thus disrupted the allocation of financial capital. The central banks have, in essence, created their own version of a centrally controlled economy. There has never been such a monetary policy experiment in modern history.

Moreover, after 2009, the central banks have always run to the rescue in heavy market turbulence, which notably happened in 2008/2009, 2011,[1] 2012,[2] 2013,[3] 2015,[4] and 2017.[5] This has created an extraordinarily dangerous market environment, where the market-wide losses and risks have been socialized by the central banks. The market participants have adjusted to this low risk, thus attracting them to buy riskier (and higher yielding) products and to leverage ever more (to gain sufficient profit from low yielding products). In the words of Hyman Minsky: "stability is destabilizing". However, it is obvious that this can not continue for ever as the central banks had to buy every larger correction in the asset prices, which would effectively transfer the private funds to the central banks and to kill the capital markets.

The perplexing amount of the central bank-induced market manipulation can be seen from their swollen balance sheets (see Figure 1). From the end of 2008 till October 2017, the balance sheets of the four largest central banks have grown by astonishing 15 trillion dollars. This has created some strange and extremely imbalances in the financial markets. Figure 2 presents the sovereign bond yields of the US and Italy and the average yield of junk (high-yield) bonds in Europe and in the US. Several notions are in order. First, and foremost, the figure directly implicates that the default probability of Italy and an average European junk-rated company is lower than that of the US government. This is, of course, just absurd. Secondly, the yields of the junk bonds have been in constant decline. The only jumps are the period between second and third QE of the Fed and late 2015 and early 2016 when China had its mini-recession (see Q-review 1/2017). Thirdly, after the China tremors, the European high-yield started its relentless downward trend pushed by the QE of the ECB.

What Figure 2 implies is that the market risks have been pushed into the far ends of the probability distribution, which has effectively made them invisible (see Q-review 1/2016). In addition, before all previous market peaks, some of the assets could be covered by holding the government bonds, whose value always rose when the stock markets fell and uncertainty increased. Now, the prices of all liquid financial asset-classes are extremely high indicating that there are no safe havens. Hence the "everything bubble". So, the risks, even if recognized, cannot be hedged in any simple way. This may have actually feed the frenzy in, e.g., the US stock markets.

We have warned about the risks of these unorthodox monetary policies several times (see Q-reviews: 2/2013, 2/2014, 1/2016 and 1/2017). In addition to distortions in the capital markets, the central banks have created a 'zombie economy' (see Q-reviews: 4/2013 and 3/2017). A zombie firm is

[1] ECB's provided low interest rate loans to European banks.

[2] The Outright Monetary Transactions by the ECB, where it essentially quaranteed the sovereign bonds of crisis countries.

[3] The Fed withdraw is decision to taper on QE3 due to the market turbulence.

[4] The ECB announced its 'expanded asset purchase program', which effectively removed any sovereign risk from bonds of the Eurozone governments.

[5] Both Swiss National Bank and BoJ have been active in buying equities (SNB) and ETF's (BoJ). AT least BoJ's actions seem to have targeted the stock market downdays (see, Q-view 2/2017). In total, central banks increased their balance sheets by a whopping $3.7trn during 2017. The Fed has also conducted liquidity operations, for example, during the "tax debacle" early November.

defined as an entity which continues to operate only because it is offered some easy-term refunding. This is what zero or negative interest policies and QE -programs effectively do. They lower the cost of capital to unnatural levels. In such an environment, unprofitable companies are able to borrow and to maintain their operations. The growing number of the zombie companies hinders productivity growth and thus diminishes the growth prospects of the economy (see Q-review 3/2017). Moreover, when the funding costs (interest rates) finally rise, the zombie firms will go belly up.

**The other building blocks of a 'perfect storm'**

The economy of China has been on our watchlist since the very beginning (see Q-review 1/2012, only in Finnish). In early 2014, it reached a point where a cautious warning was warranted (see Q-review 1/2014, only in Finnish). In Q-review 4/2014, we warned about the possibility of a regime altering economic crisis in China at some point in the future because of the massive scale of unprofitable investments. In March 2017 (see also Q-review 4/2016), we reported that China had been the sole source of growth of the global private debt. In September 2017, we noted that the share of the private debt is over 500 % of the annual GDP of China.

Because the extremely high debt levels combined with high quantities of unproductive investments surpress the effectiveness of any further debt stimulus, China faces a choice between two rather stark options (see Q-review 2/2017). The authorities need to choose whether to risk a serious slowdown now or to face a potential regime altering crisis later. We are keen to bet for the former. Moreover, president Xi Ping will probably like to have a booming economy by 2021, when China celebrates the 100th anniversary of the communist party. Keeping stimulus in place with these debt levels for another four years runs a risk of backfiring in a massive way. To stabilize a highly levered economy in four years, one needs to deleverage asap. This would remove a major support from the global economy (see Figure 3). We probably know whether this happens, once the appointments and policy changes are made in the 19th National Congress during Q1 next year.

The banking sector of Europe has never recovered from the crash of 2008. This is because, unlike in the USA and in Iceland, basically all banks were saved in Europe during the crisis. Their balance sheets are still burdened by an unknown amount of toxic assets and unprofitable loans (see Q-review 1/2015 and Q-review 1/2017).

During this year, we saw what can be described as a final push of the central banks to lift the global markets. They have unleached a massive money printing to elevate the prices of the bonds and equities as high as possible.[6] The only problem is that this road is ending. The central bankers seem to have become aware of the monster they have created. It looks like that the central bank of the US (Fed) actually started quantitative tightening (QT) in October, as the first central bank ever. The Fed tries to show that the unprecedented money printing stimulus, QE, can be unwound and to build some 'monetary policy muscles' before the next recession. In some sense, the Fed's balance sheet reduction is in an "auto-pilot" now meaning that reversing the QT requires a new policy decision and a media frenzy that would follow it. If the Fed needs to pull back from QT, it would give a very negative signal on the economy and directly implicate that QE may actually be "forever". We thus expect that QT revelsal will be a "cold day in hell" -event, meaning that it will be an absolute last resort to the Fed. Still, it should be noted that the Fed can temporarily stop the QT without any new decisions.

The BoJ and the Bank of England (BoE) have effectively tapered as well, meaning that their

[6] Total amount of global QE in 2017 is already $3.7 trillion.

purchases have stopped. The People's Bank of China (PBoC) still continues to increase its balance sheet although its pace has somewhat diminished. PBoC does also conduct some "market calming" operations, like the $45 billion liquidity injections during the first weeks of November. The only central bank still "carrying the QE-torch" is the ECB. However, it is closing on both the technical and political limits of its QE -program (see Q-review 1/2017 and Q-review 3/2017).

It is estimated that the global QE will turn into global QT during 2018. As QE:s have been "highly effective" in raising bond and equity values,[7] there is no doubt that QT will work the other way. Removing the excess liquidity is also likely to make the markets more reactive for geopolitical shocks.

**A roadmap to the 'perfect storm'**

The world economy thus faces a pressure from five fronts. The global QT threatens to bring down the 'everything bubble'. The zero interest rates have created a fragile, 'zombie-like' global business sector, especially in Europe. China is pondering whether to face a serious slowdown now or major crash later, and the European banking sector is still teetering on the edge of a failure.

Every financial crisis tends to starts with a crash or, more technically, with a "Minsky moment".[8] In 1929, the stock market crash led to a full-blown bank run in the US causing the Great Depression. In 2008, the "Minsky moment", the downturn in the US housing market was (eventually) followed by a run in the repo and commercial paper markets, which set the crisis ablaze.[9] In each of these cases, the crash triggered a run towards the assets of the financial sector, which led to the evaporation of credit and liquidity. Currently, there is no lack of possible triggers for similar runs. The US stock markets are showing rather visible signals of a bubble (see Figure 4) and the bond markets across the globe are seriously overvalued. Several countries, including Australia, China and Sweden, have real estate bubbles. In addition, the geopolitical risks are on the rise everywhere.

The most important notion is that the crash and/or the Minsky moment can appear without any triggers. One day, the majority of investors just lose their faith in the asset valuations and start to sell. It is our assessment that the crisis will start from a crash in one or several of three overvalued markets:

1) the US equities,
2) the China FX-market, and/or
3) the US/European high-yield bond markets.

While the US stock markets are in a bubble (see Figure 4) and the global government debt has ballooned since 2008, corporate debt has also (clearly) surpassed its previous peak (see Figure 5). More importantly, the yields of the junk bonds have dropped to the levels that do not reflect their real underlying risks (see above).

China implemented capital controls for two reasons: the capital flows where threatening the stability of Yuan (the foreign reserves were not sufficient to defend it) and a large depreciation of Yuan would have serious economic repercussions. Currently, the foreign exchange reserves in China cover only 10 % of money supply and 30 % of household savings. What this means is that if the consumers and corporations would shift just 10 % of their funds abroad, the FX -reserves would be wiped out. The situation has remained somewhat stable thanks to the rapid growth, but immediately after the Chinese economy starts to show the signals of strain, the capital outflow is likely to accelerate again. At some point, a large depreciation of Yuan is the only way to stem the outflow. However, this is likely to lead to a serious global financial shock,

[7] Fratzscher, Lo Duca and Straub (2017).

[8] Minsky moment is a situation, where asset valuations suddenly start to lose value in market-wide manner. Technically, it can be described as a sudden jump of the distribution of the asset yields into the negative.

[9] Repo = repurchase agreement.

to external defaults and to a collapse of economic growth. Still, it is the only way to fix the problem, in addition to total travel and cross-border-flow bans, of course.

First cracks have already appeared in the high-yield markets that experienced some heavy falls in early November. It is unclear why the rout ended almost as suddenly it began, but at last PBoC injected several tens of billions of dollars into its own markets. It is uncertain what other central banks did, but the recent history gives an indication that some 'market smoothing operations' were likely also on their part.

Like we warned in our latest report (see Q-review 3/2017), the large share of the algorithm trade and Exchange Traded Funds (ETFs) makes the markets fragile. Machines (algos) may have learned from the past few years that buying the dip is a profitable strategy. It is estimated that ETF's, the risk parity and the volatility target funds include some $8 trillion of the so called passive private assets. These have contributed to the steady upward trend in the equity markets but their behaviour during a large correction is untested. It can be assumed that, when a deep correction is reached, the large market share of the algos and passive funds will accelerate the fall. This is because, after some point of market fall, the algos will start to sell and short the market and the ETFs' will start to lose value *en masse*, which will turn their passive assets very active to the sell side. When this point is reached, the crash in the asset markets is likely to become unstoppable.

When the crash occurs, it will set in motion three collapse-enforcing trends: panic in basically all financial asset markets, a debt deleveraging and a deflation -cycle and fall in the consumer sentiment.

When the crash in the asset market commences, the market pricing of risk will return, and with a vengeance. This means the reversal of the push of liquidity to riskier asset enacted by the central banks, a sort of leverage (see Q-review 2/2014). In QE programs the central banks first bought the investment grade bonds, whose price fell. This meant that the investors needed to go to riskier products (from government to corporate bonds, for example) to obtain satisfactory yield. However, the central banks kept widening their purchases and the artifificial liquidity flowed to the corporate and other riskier bonds, which meant that the investors needed to go to even riskier financial products, like the junk bonds. This process has led to the above described absurdity, where for example the yield of the junk (non-investment grade) bonds has reached the yield of the sovereign debt of the US.

When the panic starts, the high-yield debt markets is likely to fall first, followed by the corporate bonds and the weakest sovereign bonds. This means that, suddenly, the interest rates of many financial products will skyrocket, leading to further panic in the asset markets, as banks, investors and institutional investors and funds try to cover their long (and short volatility) positions. This leads to a further asset selling and balance sheet deterioration as all asset classes start to lose their value. A vicious re-enforcing cycle of deleveraging and asset deflation will commence. The weaker banks, especially in Europe, will see their balance sheets deteriorating to insolvency. The interbank and bank lending rates will jump, and bank runs will ensue once the regular depositor understand the nature of the collapse. The corporate bonds markets and some weaker sovereign bond markets will freeze, leading to further raises in the interest rates. Corporate and household sentiment collapses. Investments will stop. Prices of the residential property and commodities are also likely to see large price decreases. The heavily indebted households and zombie companies will default and declare bankruptcies. The wealth funds, non-bank financial entities and pension and social security funds will see the value of their assets dwindling, and holes will start to appear in the financial fabric of modern societies.

When the panic ensues, the central banks and authorities are likely to first try to stem the panic

with more QE, equity purchases and debt stimulus. However, it is completely uncertain whether this is sufficient because the only thing that can keep the extremely fast algos at bay in a market crash are circuit breakers. In an extreme situation, the major stock markest will be closed. If this is not enough to stem the panic and the bank runs commence, some bank holidays, closures and mergers are likely to follow. If this is not enough, the banks will be closed and the depositor bailouts will be used meaning that the deposit of the households and firms will be used to recapitalize the banks (see Q-review 1/2017). In an asset market crash, the instruments the central banks have to respond are limited. The interest rates are low and the balance sheets are swelling with bonds. The history also shows that the central banks which operate with a large negative net equity, tend to lose the trust and thus the control of the financial markets.[10] Some analysts have floated the idea that the 'Special Drawing Rights' of the IMF could be used to recapitalize the central banks. We will return to this issue in Trends and Topics outlooks.

An important factor, when assessing the severity of the global economic crisis, is Eurozone. If it breaks, the economic collapse can take a radical deepening towards a social uprisings and even armed conflict. What makes this scenario somewhat likely is the lack of income transfers between the member states and the actions of the ECB. If gratuitious income transfers from the strong nations to the weak nations are not enacted when the crisis hits, some weak countries are likely to exit the currency area. This would become a problem for the ECB as it has recklessly taken a huge risk in the form of euro area sovereign and corporate bonds (see Q-review 1/2017). If the crisis leads to an exit of some large or few smaller heavily indebted countries from euro, they are likely to default on their sovereign bonds. This could lead to heavy losses to the ECB, forcing a bailout of the central bank (see Q-review 1/2017). If the corporations, the bonds of which the ECB holds, fail, the same result would follow. Technically, the central banks can always bail out themselves by printing large swathes of money and by covering their losses with increased *seigniorage*. In Eurozone, this can be considered to be a complete political no-no. While the ECB could use different accounting gimmicks to cover its smaller losses, a large negative net equity would become a big political issue. This is because the Articles of the TFEU (Treaty of the Functioning of the EU) categorically deny any central bank-financing of institutions or governments.[11] If the ECB would incur a negative net equity from its holding of government and/or corporate bonds in default, it could be considered as a central bank financing operation of a private and/or public institution. Political ramifications would be large and the outcome uncertain. So, the political will, or the lack of it, towards income transfers and to cover for the (likely) losses of the ECB during a crisis is likely to dictate whether euro will survive or not. If euro breaks down without controll, massive financial misallocations could lead to wide-spread social unrest around Europe.

The storm will eventually pass, when either bankruptcies, defaults and failures have cleared the market or when there is a fiscal stimulus large enough to counter the deflation in the private assets. The latter could include large scale central bank-financed government stimulus. In that case, the cure would be worse than the disease. The deficit financing of governments trough te central banks is usually denied in western countries, because it very easily leads to the destruction of the value of money. The best option will thus be to ride out the storm despite of the pain.

The positive side is that the crisis will create a buying opportunity of a life-time. Every single asset class is likely to go from the current state of serious over-valuation to a deep under-valuation, like in the US in the 1930's. Robotization and other

[10] See Dalton and Dzioberk (2005).

[11] See especially Article 123:

technological developments are likely to create a strong economic recovery after the crisis bottoms out.

**Forecasts**

Forecasting the crash and the onset of the crisis has been extremely difficult because of the centrally contolled nature of the current expansion. The central authorities of China have thus far run to the rescue each time some corner of its highly levered capital market that seemed to catch fire. How long they want and are able to continue doing this, remains unknown. As we have noted earlier (see Q-reviews 1/2017 and 2/2017), China may be closing in on the limits of its stimulus program. When the unproductive investments grow, the level of the credit creation needed to support economic growth becomes unbearable. We believe that China is very close to that level.

The central banks have done the same in a global scale. In addition, the central banks have also messed up the signals the financial markets usually send about the state of the economy. It is, for example, unclear whether the flattening of the US yield curve signals diminishing economic momentum or a carry-trade from other countries where central banks still have active QE -program. Therefore, the financial information, like the yield curves, should not be trusted to provide accurate information on the state of the economy. In that sense, we are "flying blind".

At this point, it looks if the major drivers, China and the global QE, would be ending roughly at the same time, more precisely, during H1 2018. This is a likely inflection point for the global economy. It also fits on the prediction about the timing of the market crash we made in September (see Q-review 3/2017). We speculated that, if the Fed starts its QT and China cuts back its debt stimulus, a major market correction appears between Q4 17 and Q2 18. Now, we renew that call with H1 18 as the likely inflection point, **if** China really starts to tighten during Q1 18.

The likelihood of a market crash during the next 12 months has risen to 85 %. We estimate that the likelihood of a global financial crisis to start within the next 12 months is 75 %. We estimate that the financial crisis will morph into a systemic crisis within the next 12 months with the likelihood of 30 %. The probabilities are thus getting rather high but the likelihood of a systemic event still appears relatively low, for now.

In Table 1 we present the *nowcasts* and the growth forecasts for the real GDP of Eurozone, Finland, and the United States under a consensus scenario.

Table 1. *Nowcasts* (nc) and forecasts for the growth rate of real GDP in the US, Eurozone and Finland under consensus scenario. Source: OECD, Bureau of Statistics and GnS Economics.

| Quarter | Finland | Eurozone | USA |
|---|---|---|---|
| 2017:1 | 1.21 | 0.62 | 0.31 |
| 2017:2 | 0.78 | 0.69 | 0.75 |
| 2017:3 | 0.38 | 0.61 | 0.81 |
| 2017:4 (nc) | 0.8 | 0.3 | 0.5 |
| 2017 | 3.2 | 2.7 | 2.8 |
| 2018 | 0.3 | 0.3 | 1.4 |
| 2019 | -0.1 | 0.4 | 1.4 |

The forecasts presented in Table 1 show a downturn approaching. Although this year will be characterized by fast growth, next year will see global slowdown, according to our forecasts. Under the crisis scenario, GDP in Finland, Eurozone and USA would fall even more than in the 2007-2008 financial crisis.

Any growth forecast includes an exceptional amount of uncertainty currently, as we have warned since March (see Q-review 1/2017). Growth could be faster next year than what is presented in Table 1. Growth outcomes are heavily dependent on central authorities unprecedented actions and their ability to keep the global asset bubble inflated. We will return to this issue in Trends and Topics outlooks.

**Conclusions**

The presidential stimulus in the US, the debt stimulus in China and the long-awaited economic recovery of Eurozone have all revitalized the global economy. In addition, the central banks and the central authorities of China nullified all possible setbacks in asset markets during the past quarters. Regardless of this, there should be no doubt that this is the last leg of this economic expansion, which may become to an abrupt end.

The remaining expansion should be used to prepare of what's to become, because beneath it, a major economic storm is brewing. Preferable means of this preparation include paying back as much debt as possible, accumulating sufficient cash reserves and, if practically possible, obtaining some physical gold.

The main risk is that we have not seen any kind of meaningful correction in the values of the financial assets for quite some time. What happens when the bear market finally arrives? It is likely to be a shock to many. The behavior of the massively grown robot trading and the enlarged role of the ETFs' and passive funds in capital markets are all but untested in a bear market environment. We fear that, when the over-bought financial markets finally turn the corner, the fall will be so massive that it will engulf the 'zombified' global economy. The fact that the global central banks have already exhausted their (standard) monetary policy means, add to this worry. Although such a detrimental development may seem far-fetched to at the time, the warning signals are popping in several corners of the world economy. Since the beginning of this year, we have been concentrating all our efforts on the mapping these signals.

The big question naturally is, when does the crisis arrive? In the best case, we may even have two years of expansion left, but some grave reservations are in order for this optimistic scenario. As mentioned above, both the global central banks and China are planning to diminish their support for the global economy and the markets around the same time (H1 2018). This would start what can only be a long and painful road towards returning to the *market economy*. If the central banks and China really go through with their plans, noting that China can also just run out of options, 2018 is likely to be the year, when the first signals of the crisis will appear. These include serious market turbulence, bank failures and possible panicky responses from the central authorities. In 2019, the crisis would get to the full swing when the last efforts of the central authorities to uphold the global asset bubble would become exhausted.

There is only one group of entities, where the blame should be placed, when the chickens of this speculative market frenzy finally come home to roost. China should receive a braise as it has supported the global economy by an unprecedented and risky credit stimulus. However, the central banks started an unprecedented and extremely risky financial experiment after the financial crisis. For reasons yet unknown, they decided that by destroying the pricing mechanism of the capital markets with artificial liquidity, the world economy would somehow heal itself. This logic completely escapes us. What the artificial liquidity did, was that it created artificial prices. There is no way of removing the artificial liquidity and prices without some major market disruptions and a global deflation. Thus, the central banks are the culprits in this unfolding story.

We recommend keeping a close eye on the central bank balance sheets, commodity prices (especially aluminium and nickel where the role of China is the largest), high-yield bond markets and all news from China. We will of course follow these developments closely in our quarterly reports and in our new Trends and Topics -service that will be launched early next year. It includes short outlooks on developments and trends in the global economy and it will be published twice in a month.

We also recommend to prepare for the unique buying opportunity the crisis will bring by holding

large enough reserves of liquid assets. Robotization and other technological developments are likely to lead to notable improvements in productivity and to a strong economic growth, once the crisis passes.

**Appendix: Figures**

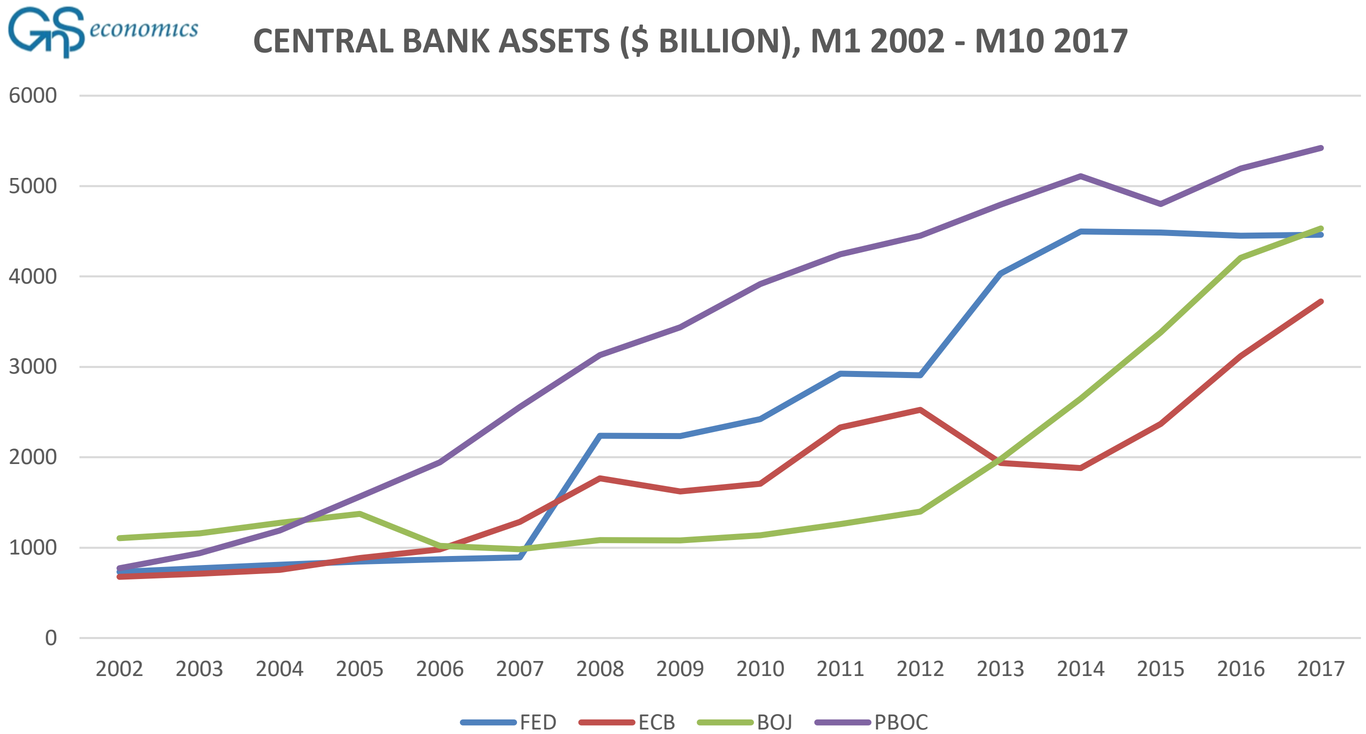


Figure 1. Cental bank assets in billions dollars. Conversion to dollar has been done using the exchange rates in 12/13/2017. Source: GnS Economics, BoJ, ECB, Fed, Trading Economics.

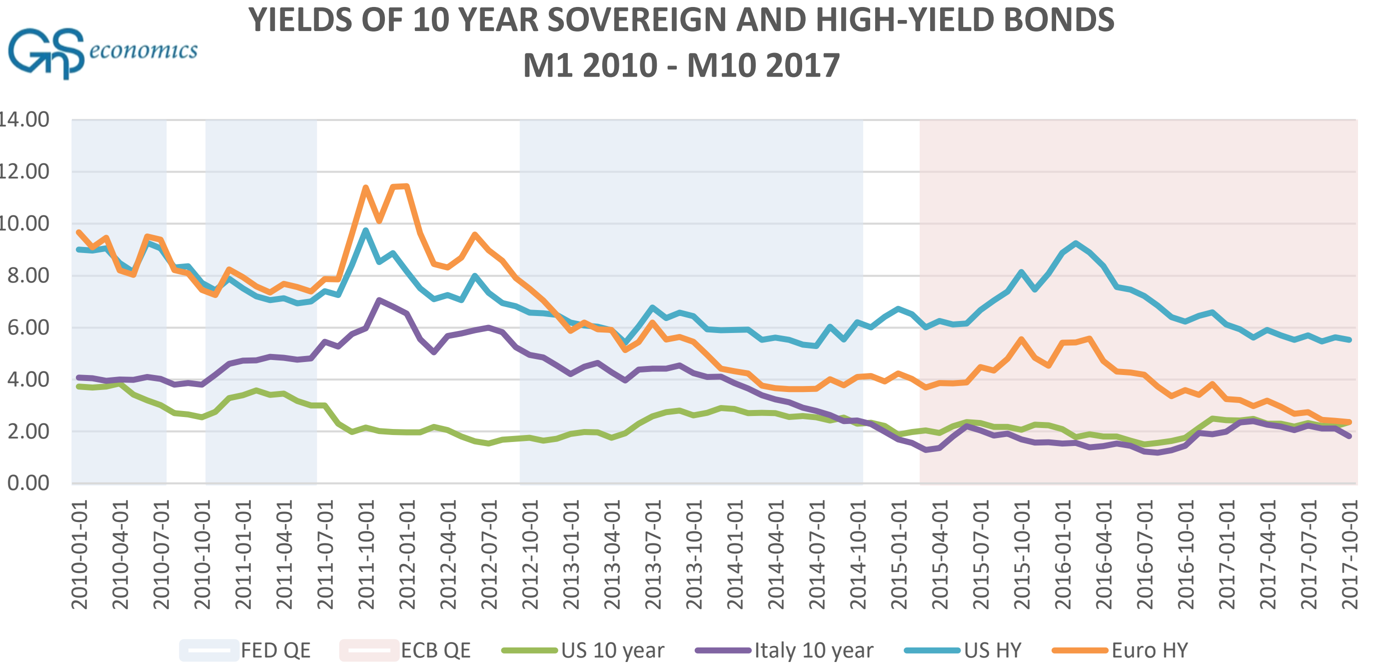


Figure 2. The yields of sovereign bonds in the US and Italy, the average yield of high-yield (junk) bonds in Europe and in the US and active months of the QE programs of the ECB and the Fed. Source: Fed St. Louis and GnS Economics

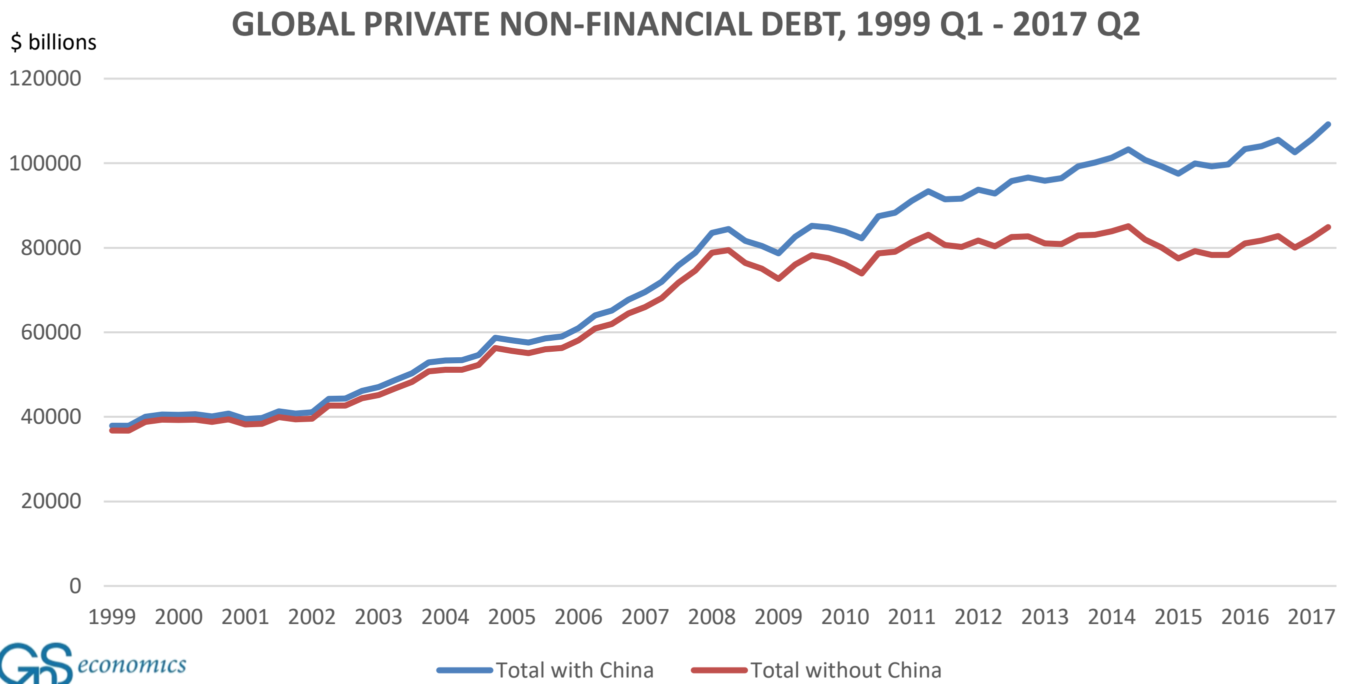


Figure 3. Non-financial debt of the private sector in 44 major countries. In billions US dollars. Sources: GnS Economics, BIS.

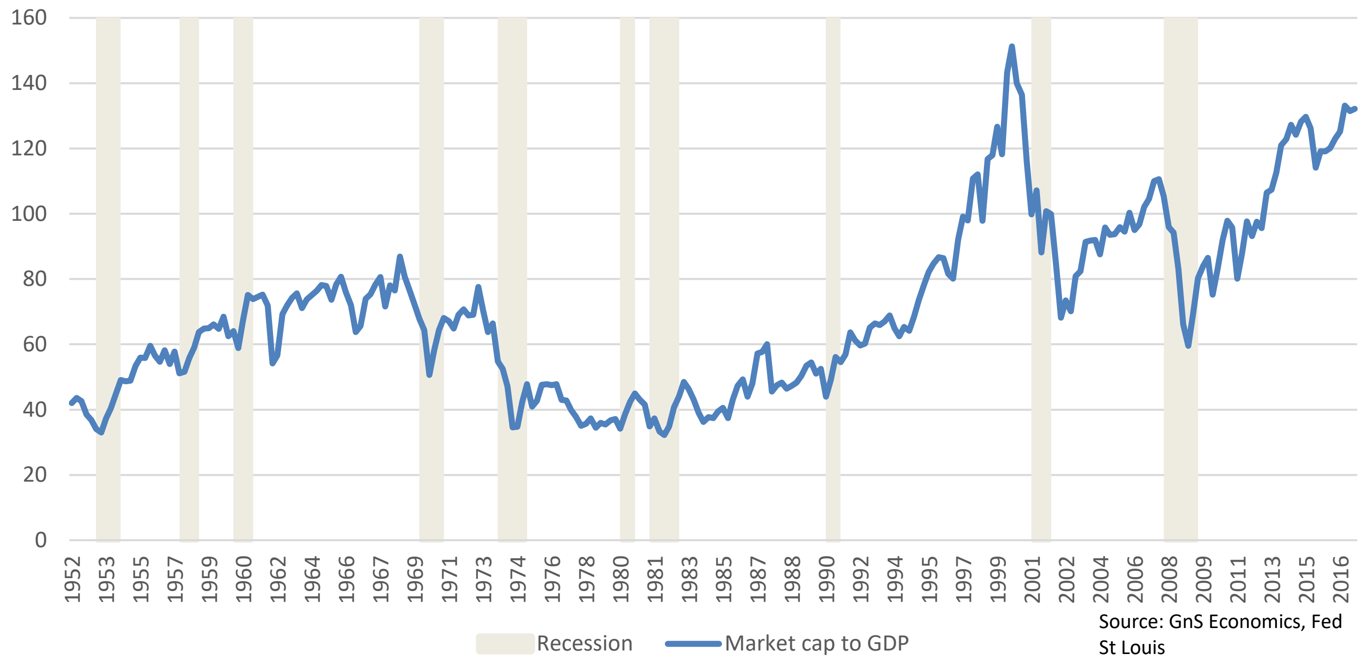


Figure 4. Share of market value of equities outstanding to GDP in the US. Source: Fed St. Louis and GnS Economics.

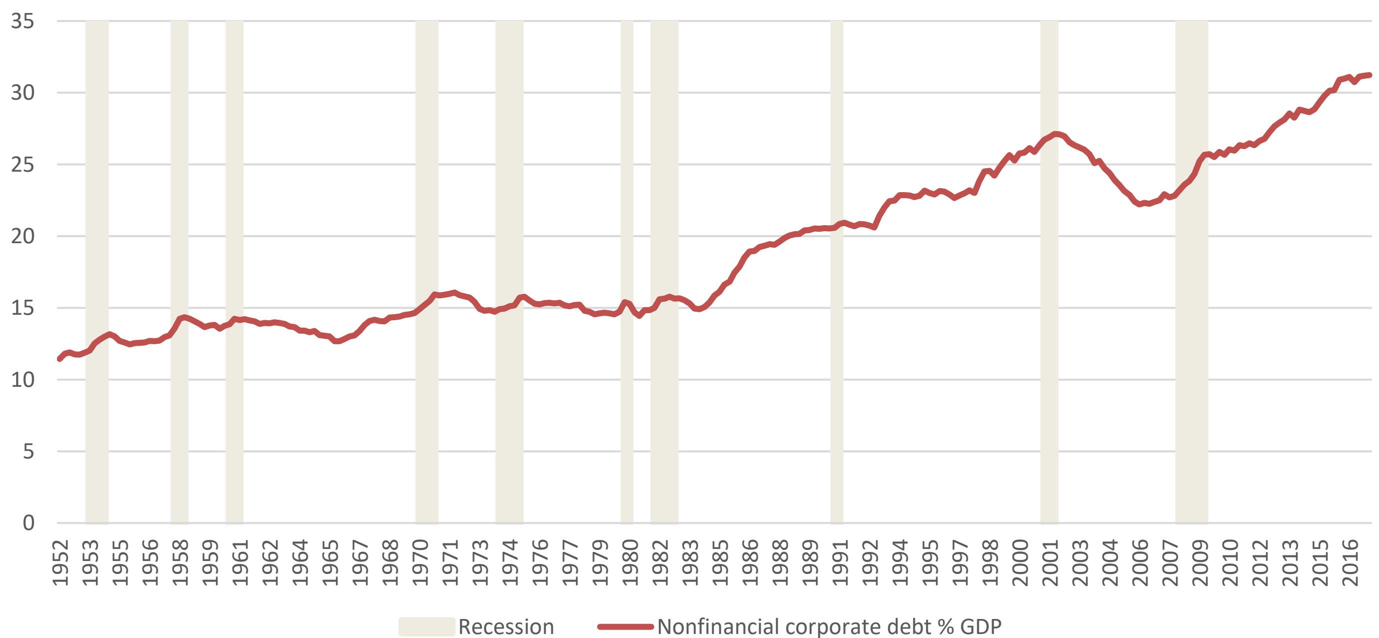


Figure 5. Oustanding debt liabilities of nonfinancial corporate businesses as a share (%) of GDP. Source: GnS Economics, St. Louis Fed.

REFERENCES:

Dalton, J. and C. Dzioberk (2005). Central bank losses and experiences in selected countries. IMF working paper no. 05/72.

Fratzscher, M., M. Lo Duca and R. Straub (2017). On the international spillovers of US quantitative easing. *The Economic Journal* (forthcoming). Earlier version available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2164261.

**Process descriptions**

The forecasts reported in this Q-review are based on the statistical modeling methods from the most recent academic research on predicting business cycle fluctuations. Nowcasts refer to the forecasts of the growth rates of the real Gross Domestic Product (GDP) for the current quarter. Nowcasts are needed because the standard measures for the GDP are published after a considerable lag and are typically subject to subsequent revisions, indicating that the coincident state of the economy is always uncertain. Our nowcasts for the current quarter are based on statistical models where all relevant information available at the time of nowcasting is utilized.

The GDP forecasts for longer horizons (over the current quarter) are based on the dynamic forecasting models where forecasts are constructed iteratively. This means, for example, that the three-quarter forecast is essentially based on the two-quarter forecasts and so on. Forecasts are constructed for all three economic areas (the Eurozone, Finland and the US) indicating that they depend on each other. Finally, note that the forecast scenarios considered in this Q-review are based on the expert view of GnS Economics.

-----------------------

The next Q-review will be published in March 2018.

-----------------------

# Contact information:

Tuomas Malinen, PhD
CEO

tel: +358 40 196 3909
email: tuomas.malinen@gnseconomics.com
www.gnseconomics.com

This GnS Economic report does not constitute a solicitation for the purpose of sale of any commodities, securities or investments. The information presented here is considered reliable, but its accuracy is not guaranteed. Persons using this report do so solely at their own risk and GnS Economics shall be under no liability whatsoever in respect thereof. The views expressed are those of GnS Economics, which do not necessarily reflect the views of the individual members of the company or the views of their background organizations.