

ECONOMIC SITUATION AND STRATEGY

Risk management: A model for determining systemic risks

Collapsing stock prices and rising inflation rates are the risks to assets that investors most often consider. As a rule, however, they only reduce wealth – in most cases temporarily – and thus constitute only a partial loss or devaluation. On the other hand, a collapse of the existing payments system can result in a total loss, since many asset classes, e.g., stocks and bonds, would be affected simultaneously and often to the full extent of their value. In the past years, confidence in the existing payments system has been tested several times. In the financial market crisis, first signs of a run on banks emerged following the bankruptcy of Lehman Brothers. In Great Britain, for example, it was necessary for a short time to bail out Northern Rock, a major bank, because of enormous capital withdrawals by customers. In the European debt crisis, only Mario Draghi's now famous words "whatever it takes" reestablished calm by signaling that the ECB would take all necessary steps to support the crisis-afflicted countries.

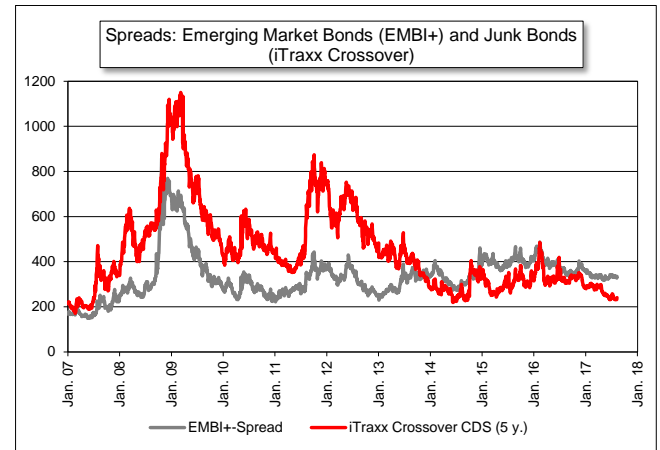
At present, confidence in the major countries and central banks still seems fully intact. But ultimately, our entire payments system is based on confidence, since the banknotes and account balances are not backed by assets of real value, but only by the promises of the government and central banks. To preserve large asset accumulations, it seems generally advisable to consider the risk of a systemic change despite the now calm situation.

Systemic risks have lately had increasing influence on the stock and bond markets. In many cases, market movements cannot be explained solely by economic data. On the other hand, price developments can be explained by systemic risks with growing frequency. Knowledge of existing systemic risks can therefore improve understanding of market movements and hence increase the quality of investment decisions. For this reason, in the midst of the European debt crisis in 2012, Björn Block and Dr. Jörg Rahn, then analysts at Marcard, Stein & Co., developed a systemic risk model, which Dr. Rahn has developed further at M.M.Warburg & CO. The result is a purely quantitative model consisting of 35 different time series. These fall into six categories of information gathered from the bond market, the credit default swap market, the stock market, the money market, the behavior of households and businesses, and central bank measures.

The **bond market information** concerns spread developments, including the spreads of corporate bonds of different rating classes and those of government bonds. Emerging markets are also taken into account because contagion effects can come from them, as in the Asia crisis of 1997/98. High and widening spreads may indicate a loss of confidence.

The costs of purchasing **credit default swaps** from banks and governments increased significantly both in the financial market crisis and in the euro debt crisis. Although this market, reserved for institutional investors, often exhibits

parallels to the bond market, it sometimes indicates trends earlier. Low liquidity in bonds is often a reason why professional investors switch to insuring their bonds instead of selling them by purchasing credit default swaps.

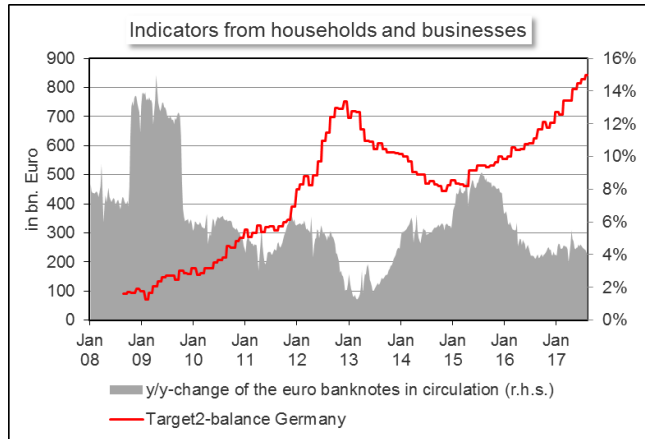


Nervousness on the **stock market** may be inferred from implicit volatility. It reflects more the expectations of future development than current jitters and is therefore a good indicator of whether market participants have worries about the future. Since banks are also affected in a systemic collapse, the performance of bank stocks relative to the overall market offers valid information about whether a loss of confidence in the banking system is already occurring on the stock market.

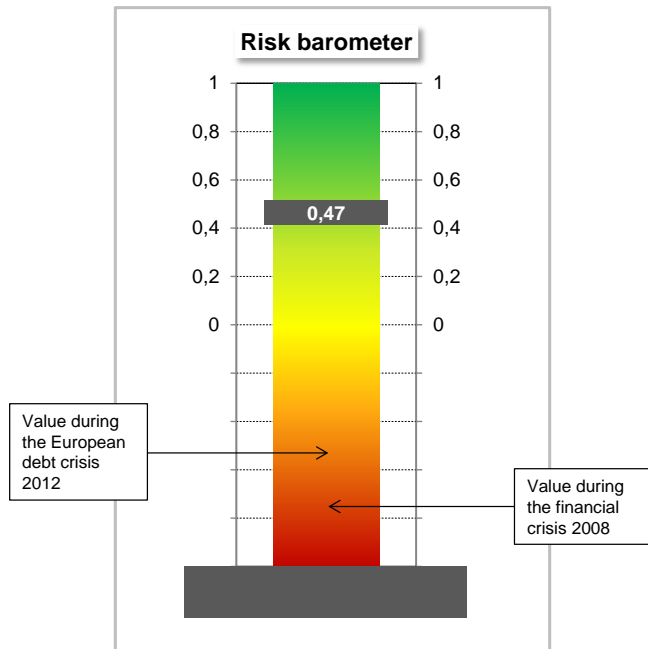
The **money market** has suffered stress in every crisis. It is a measure of the confidence that banks have in each other. That can be gathered very well from the spread between the Euro Interbank Offered Rate (Euribor) and the overnight indexed swap. The Euribor expresses the average interest rate at which euro zone banks offer to lend unsecured funds to other banks. The overnight indexed swap indicates how a swap between a fixed interest rate and a variable interest rate is priced, with the variable interest rate referring to the Euro Over Night Index Average (Eonia). Since the risk is low in the case of the swap because it is limited to just a small amount (payment obligation due to the swap's change in value). The spread may therefore provide a signal for the confidence of banks among themselves. Furthermore, use of the central bank marginal lending facility is an indicator of whether banks are dependent on the ECB as their source of capital because they can no longer obtain short-term credit from other lending institutions.

To take account of the **confidence of households and businesses**, the model considers banknote hoarding. The total amount of euro banknotes has been growing at above-average rates for some years, although an ever larger share of daily payments are being made digitally. These increased growth rates may be partly explained by the low level of interest rates, which makes it less "expensive" to hold no-interest cash. However, sudden increases, as in October 2008 at the worst point of the financial market crisis, primarily signal fear in the population of a banking system collapse. The ECB's Target2 balances are also suitable

measures of popular confidence. This complicated accounting unit may be regarded as an indicator of capital flight from the European crisis states to Germany. If Germany's Target2 surplus expands at the expense of Italy or Spain, that may be interpreted as a loss of confidence in the two southern European countries.



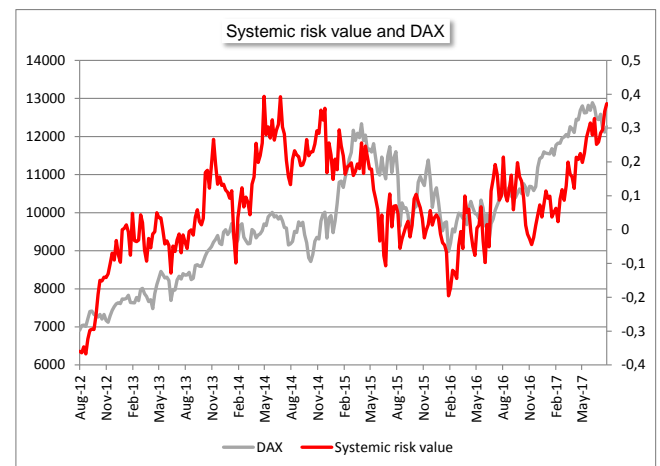
In a risk-free world, **central bank measures** are unnecessary and key interest rates are at a normal level appreciably above 0%. If unusually low interest rates or even additional bond purchases are necessary to stabilize the economy and calm the market, then that suggests the presence of subliminal systemic risks. The volume of weekly bond purchases, the amount of holdings on central bank balance sheets, and the interest rate level therefore enter into the determination of systemic risks.



Legend	
0,40 to 1,00	Systemic risk value is low
0,00 to 0,40	Slightly increased systemic risk value points to the existence of some uncertainties
-0,40 to 0,00	Increased systemic risk value points to noticeable uncertainties
-1,0 to -0,40	Systemic risk value is at a critical level

By calculating quantile ranks with which the current value of a time series can be set in relation to earlier values, we condense this information into a single number between -1 (system collapse) and +1 (no systemic risks). At present, systemic risk is comparatively low at +0.47. Calm is signaled particularly by the credit default swap market, the stock market, and the bond market. On the other hand, the negative value of central bank measures indicates that massive central bank intervention is the price of this relative calm. By comparison, values of -0.74 and -0.52 were reached in the financial market crisis and the euro debt crisis, respectively. The worry about assets felt at that time was thus not imagined, but rather demonstrable.

The systemic risk model is certainly not able to completely explain development on the stock markets. However, a connection between the DAX and the model can definitely be seen. In many cases, the model also has a small time lead on stock market movement.



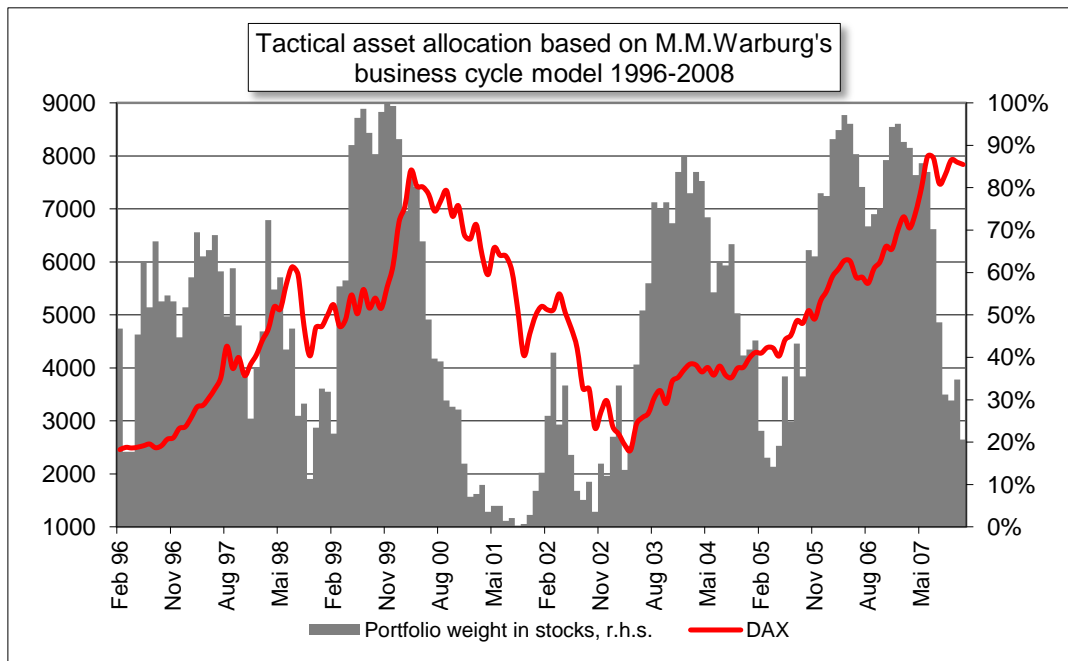
Nevertheless, the model remains only one instrument among many in determining tactical allocation. However, it is fundamentally important for managing the risks of the overall portfolio and individual securities. For, achieving high value stability in crises is an essential goal of asset management at M.M. Warburg & CO.

Weekly outlook for August 14-18, 2017

	Mar.	Apr.	May	June	July	Aug.	Release
DE: Producer prices, m/m	0.0%	0.4%	-0.2%	0,0%	0,2%		August 18
DE: Producer prices, y/y	3.1%	3.4%	2.8%	2,4%	2,3%		August 18
EUR19: Industrial production, m/m	0.4%	0.3%	1.3%	-0,8%			August 14
EUR19: Industrial production, y/y	2.3%	1.2%	3.9%	2,4%			August 14
EUR19: Consumer prices, y/y – final	1.5%	1.9%	1.4%	1,3%	1,3%		August 17
EUR19: Core inflation rate, y/y – final	0.8%	1.2%	1.0%	1,2%	1,3%		August 17
	Q4 16		Q1 17		Q2 17		
DE: GDP, q/q – s.a.	0.4%		0.6%		0.8%		August 15
DE: GDP, y/y – s.a.	1.8%		1.7%		2.0%		August 15
EUR19: GDP, q/q – s.a.	0.4%		0.6%		0.7%		August 16
EUR19: GDP, y/y – s.a.	1.8%		1.9%		2.2%		August 16

MMWB estimates in red

Chart of the Week: 10 years after the financial crisis outbreak



It has been almost exactly ten years since the US mortgage crisis began to widen and would eventually drive the financial markets and entire world economy to the brink of collapse. In August 2007, a German lending institution, IKB, was in the thick of it. In the preceding years, it had invested through its special-purpose vehicle Rhineland Funding in securities backed by US subprime mortgage loans. These securities lost more and more of their value as the US housing market crisis intensified during 2007. Ultimately, the bank got into deep financial trouble. Under the auspices of the German finance ministry, financial supervisory authority (BaFin), and central bank (Bundesbank), a rescue package was devised that had to be borne by a pool of banks including the Reconstruction Loan Institute (KfW) and public and private banks. The president of the Bundesbank at that time, Axel Weber, felt the need to issue a press statement¹ attesting to the soundness of the

world economy and ruling out the danger of a possible banking crisis. Injections of liquidity by global central banks helped stem the crisis initially. Stock prices reached their lows in mid-August 2007 and then recovered until the beginning of 2008. As we know now, the crisis only then really got going and stock markets like the DAX, the S&P 500, and the Euro Stoxx 50 lost almost 60% of their value by spring 2009. The Warburg Business Cycle Model, already in use at that time, started signaling imminent danger in summer 2007. The stock ratio recommended by the model decreased continuously from about 70% in July 2007 to only 20% in December 2007. In contrast to those days, current economic data are much better, so the model recommends a stock ratio of just over 80%. A new financial or even systemic crisis is not in sight.

¹ http://www.bundesbank.de/Redaktion/EN/Downloads/Press/Pressenotizen/2007/2007_08_02_statement.pdf?_blob=publicationFile



Stock markets	As of	Change versus			
	11.08.2017 11:01	04.08.2017 -1 week	10.07.2017 -1 month	10.05.2017 -3 months	30.12.2016 YTD
Dow Jones	21844	-1,1%	2,0%	4,3%	10,5%
S&P 500	2438	-1,6%	0,4%	1,6%	8,9%
Nasdaq	6217	-2,1%	0,7%	1,4%	15,5%
DAX	11947	-2,9%	-4,0%	-6,4%	4,1%
MDAX	24337	-3,1%	-1,7%	-3,2%	9,7%
TecDAX	2199	-3,7%	-1,7%	2,0%	21,4%
EuroStoxx 50	3400	-3,1%	-2,2%	-6,7%	3,3%
Stoxx 50	3034	-2,8%	-3,0%	-7,1%	0,8%
SMI (Swiss Market Index)	8871	-3,3%	-0,8%	-2,4%	7,9%
Nikkei 225	19730	-1,1%	-1,7%	-0,9%	3,2%
Brasilien BOVESPA	66992	0,1%	6,3%	-0,5%	11,2%
Russland RTS	1013	-1,3%	0,7%	-8,9%	-12,1%
Indien BSE 30	31173	-3,6%	-1,7%	3,1%	17,1%
China Shanghai Composite	3210	-1,6%	-0,1%	5,1%	3,4%
MSCI Welt (in €)	1940	-0,5%	-2,0%	-5,3%	-0,7%
MSCI Emerging Markets (in €)	1056	-0,1%	1,4%	-1,7%	9,8%
Bond markets					
Bund-Future	164,56	143	362	396	41
Bobl-Future	132,81	45	123	143	-82
Schatz-Future	112,17	7	26	7	-13
3 Monats Euribor	-0,33	0	0	0	-1
3M Euribor Future, Dec 2017	-0,32	-1	-2	-4	0
3 Monats \$ Libor	1,31	0	1	13	31
Fed Funds Future, Dec 2017	1,22	0	-3	-6	0
10 year US Treasuries	2,19	-7	-18	-22	-25
10 year Bunds	0,38	-4	-16	-4	27
10 year JGB	0,06	-1	-4	2	1
10 year Swiss Government	-0,18	-12	-17	-14	3
US Treas 10Y Performance	586,31	0,5%	1,8%	2,5%	3,0%
Bund 10Y Performance	610,26	0,7%	1,9%	0,8%	-0,4%
REX Performance Index	482,45	0,1%	0,7%	0,2%	-0,6%
US mortgage rate	0,00	0	0	0	0
IBOXX AA, €	0,71	-4	-20	-4	3
IBOXX BBB, €	1,26	-1	-21	-12	-24
ML US High Yield	6,15	17	-3	7	-30
JPM EMBI+, Index	825	-0,4%	1,2%	1,1%	6,8%
Convertible Bonds, Exane 25	7155	0,0%	-0,2%	-1,2%	3,5%
Commodities					
CRB Spot Index	441,34	0,0%	-1,2%	4,5%	4,3%
MG Base Metal Index	324,51	2,9%	8,6%	12,9%	16,0%
Crude oil Brent	51,51	-1,8%	8,9%	2,9%	-9,2%
Gold	1288,01	2,4%	6,2%	5,5%	11,3%
Silver	17,08	4,9%	9,8%	5,3%	6,4%
Aluminium	2032,00	7,6%	7,9%	9,3%	19,2%
Copper	6393,75	0,7%	10,3%	16,8%	15,8%
Iron ore	71,94	-2,1%	14,0%	14,9%	-9,8%
Freight rates Baltic Dry Index	1092	5,8%	33,2%	8,7%	13,6%
Currencies					
EUR/ USD	1,1756	-0,9%	3,2%	8,0%	11,5%
EUR/ GBP	0,9062	0,5%	2,4%	8,0%	6,2%
EUR/ JPY	128,09	-2,0%	-1,5%	3,4%	3,8%
EUR/ CHF	1,1282	-1,8%	2,5%	3,0%	5,1%
USD/ CNY	6,6655	-1,0%	-2,1%	-3,5%	-4,1%
USD/ JPY	109,22	-1,3%	-4,2%	-4,4%	-6,6%
USD/ GBP	0,77	0,5%	-0,8%	-0,2%	-4,7%

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