

Roles and Uses of Risk-Free Assets

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Abstract: *Looking into the concept of a risk-free rate we distinguish the two different streams. One takes into account a store of value in a safe investment (e.g. for pension funds or minimum provisioning via accumulation of cheap zero-risk weight assets) and another makes use of such measure as a proxy for quantification of risk. We are addressing a discrepancy between the two concepts since it creates a gap that may triggers imbalances in financial markets.*

Key Words: *Risk-Free Assets; Concepts of Risk-Free Assets; Risk-Free Rate; German Bund; Overnight Indexed Swap; Quantification of Risk; Imbalances in Financial Markets.*

Introduction

Until the financial crisis, sovereign debt of advanced economies was generally deemed safe asset to invest in. Individual sovereigns were being traded at almost the same price, so that yields did not differ substantially and the sovereign spread to best ranked economies has been flat and close to zero. Advanced economies were enjoying high credit rating, based on which potential risks to debt sustainability from abrupt changes in market conditions have been to larger extent neglected. Low risk and low interest rate levels were driving growth and improving economic outlook and there seem to be no reason for any correction in risk assessment. These were the reasons why definition of risk-free asset did not play a central role. And if so, then kind of safe asset could have been found in almost any segment of the market.

This has however changed after 2007, when after tensions in the interbank market some financial prices became more volatile and elevated. With uncertainties building in and outlook becoming grim, ratings of both public and private entities were deteriorating. With these events taking place, notion of risk-free has been gradually redefined. As in theory, where risk-free asset is understood as such that pays one unit of account at a certain horizon in all states of the world, many of previously considered risk-free assets were losing grounds. One of the examples for

many have been U.S. Treasuries after recurring debt ceiling talks in Congress and their downgrade by main rating agencies.

In this study we discuss the instrument that may best serve to proxy for a risk-free rate. Notion of risk-free rate in connection to any real market instrument has to be perceived as proxy as any financial instrument may be exposed to some kind of risk either due to its construction or in some yet undefined consequences. However, for the sake of quantification of risk, definition of risk-free rate in financial markets is necessary. We therefore discuss different measures that are being used and rationalize their use in different circumstances.¹

German Bund vs. Overnight Indexed Swap as a risk-free rate

It is natural that in bond market, the first readily available risk-free security serving as a benchmark would be that of the best performing, best rated and considerably sized sovereign. The most common security that fulfils this role is German Bund on any maturity of its yield curve. It has always been rated as AAA and yielding the lowest or one of the lowest annual returns from among the euro area counties in the history of monetary union. Graph 1 and Graph 2 also show that this has been the case both in the times of heightened uncertainty and also in times when economically Germany did not perform at its best.

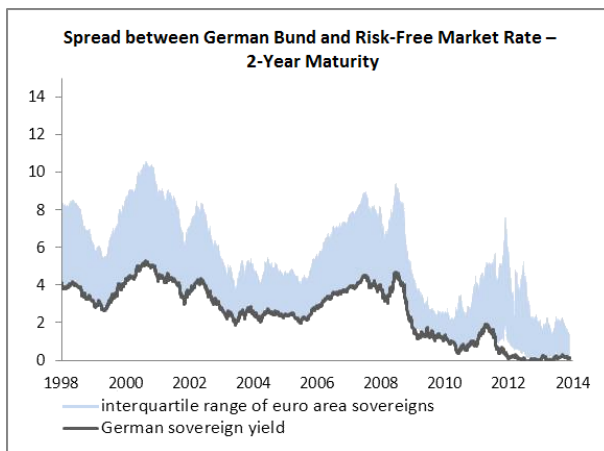
However, besides German Bund of respective maturity, financial sector is widely using also other instrument that is well striped of credit risk, liquidity risk and other risks that produce the vast portion of deviation from the concept of a risk-free asset. This instrument is so called Overnight Indexed Swap (OIS swap). Why one would however use another concept? Why would German Bund as risk-free asset be a concern?

The first in the list is related to a concern whether German Bund may be considered a risk-free asset. The same commodity of being risk-free has been for long attributed also to U.S. Treasuries. However this record has been scrapped in recent years, mainly following recurring debt ceiling discussions in U.S. Congress. In the same veins, it could be argued that internalized risk-sharing across the euro area, where Germany is being part of euro area wide guarantee schemes and newly built stabilizing

¹ See DAMODARAN, A. *What Is the Riskfree Rate? A Search for the Basic Building Block* [online]. 1st ed. New York: New York University, Stern School of Business, 2008. 33 p. [cit. 2013-11-30]. Available at: <http://people.stern.nyu.edu/adamodar/pdfiles/papers/riskfreerate.pdf>.

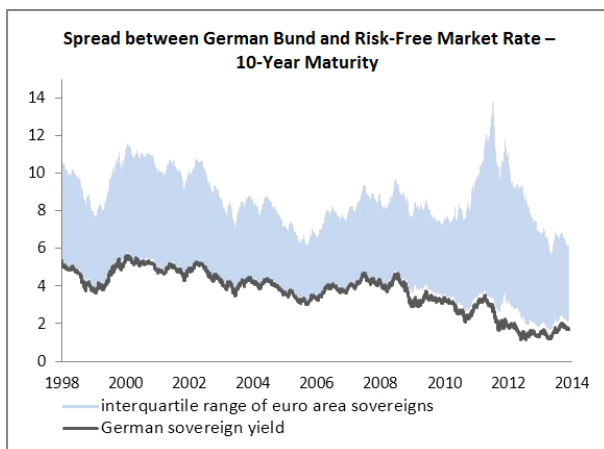
mechanisms put extra premium on Germany, which is featuring therein as one of the last standing safe anchors.

Graph 1 Spread between German Bund and Risk-Free Market Rate – 2-Year Maturity



Source: Datastream. In: *Thomson Reuters Datastream* [online]. 2013 [cit. 2013-11-30]. Available at: Subscription Service. Note: Shaded area refers to the interquartile range between yields of 10 original euro area members except Germany and Luxembourg. Black line represents German Bund yield.

Graph 2 Spread between German Bund and Risk-Free Market Rate – 10-Year Maturity



Source: Datastream. In: *Thomson Reuters Datastream* [online]. 2013 [cit. 2013-11-30]. Available at: Subscription Service. Note: Shaded area refers to the interquartile

range between yields of 10 original euro area members except Germany and Luxembourg. Black line represents German Bund yield.

On the other hand, due to its firm standing, remaining one of the very few AAA rated economies and very high uncertainty in the outer world; German bunds have served as a safe investment for vast majority of investors aiming to keep their investment ring-fenced from potential losses. This has been suppressing Bund yields down, even to negative nominal yields for up to 3-years of maturity. Risk-free rate being suppressed down, spreads could be considered higher than they should be in reality.

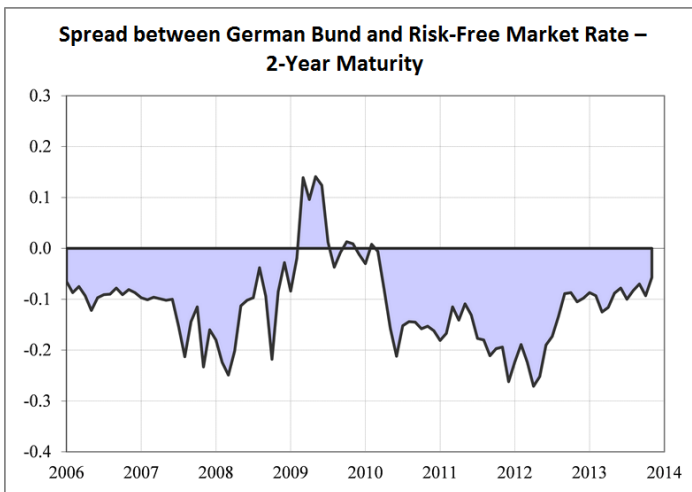
A possible alternate for the risk-free leg of risk pricing may be an Overnight Indexed Swap (OIS) rate, which is also being used as a benchmark of a risk-free asset. The most often use of OIS rate is in the measure of LIBOR to OIS spread, which is commonly used to measure uncertainty on the interbank market. OIS being the risk-free leg of this spread, it captures the rate of risk-free borrowing on the money market.²

Comparing the Bund yield and OIS rate of the same maturity we can see that a peak of a relative German government bond perceived safety occurred at the top of the business cycle in 2007 and also in the turbulent times at the market in late 2008. On the contrary, the moment governments started to be excessively involved in the crisis, the safest of the government bonds stopped to be perceived ideal risk-free measure at the market.

From that point on however maturity starts to play a large role. Since short term outlook is usually more vulnerable to financial conditions, we may observe the role of safe heaven perceived by purchasing short-term German debt. Since the pressure has not been so great on the long end of the yield curve, here the differences between Bund return and OIS swap oscillates around zero. The pressure, similarly as it is seen on Graph 3 and Graph 4, remains until beginning of 2012, when 3-year LTROs reached market and bond prices of other euro area countries were on the rise (i.e. yields reaching lower levels) and therefore offered a good investment opportunity.

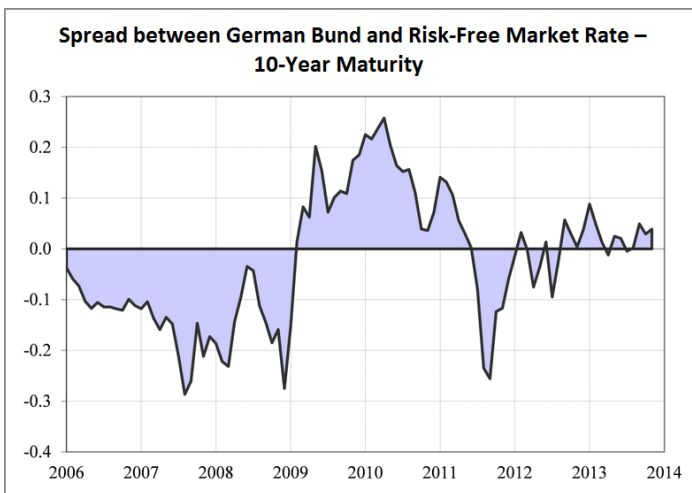
² 10-year OIS swap rate represents a contract between two parties swapping a fixed interest and overnight interest rate. Risk-free feature of this instrument is ensured by all the other risks being off-set apart from time-related expectations of overnight borrowing costs.

Graph 3 Spread between German Bund and Risk-Free Market Rate – 2-Year Maturity



Source: Bloomberg. In: *Bloomberg Professional* [online]. 2013 [cit. 2013-11-30]. Available at: Subscription Service. Note: Below the zero horizontal line "risk-free" government bond has lower yield than OIS, for the values above the line vice versa.

Graph 4 Spread between German Bund and Risk-Free Market Rate – 10-Year Maturity



Source: Bloomberg. In: *Bloomberg Professional* [online]. 2013 [cit. 2013-11-30]. Available at: Subscription Service. Note: Below the zero horizontal line "risk-free" government bond has lower yield than OIS, for the values above the line vice versa.

A split between the two risk-free measures is then driven by:

- a) perception of money market and budgetary risk in quiet and turbulent times;
- b) expectations subject to actual developments;
- c) heterogeneity of the market.

This however may be generalized to perception of the risk-free instrument to be a safe heaven, or in other words a parking place for investments in the times of heightened uncertainty.

To sum up, when we are computing spreads on a bond market, spread to German bund of corresponding maturity may be used, because perception of safe heaven is included in the quantification of a risk premium. However, if we compute spreads related to money markets, OIS would be the primary option, so that safe heaven features and/or economic outlook do not introduce noise into the quantification of spread. OIS therefore may be considered relevant for wider use than German Bund.

Another argument that supports this statement is that in addition, the OIS rate is the most relevant risk free rate since this is the risk free rate used not only by banks, but also by all other financial institutions for discounting future cash flows to price in financial instruments.

The two measures therefore may be considered as alternative risk-free measures, but they should be treated carefully and used sensitively with the context.

Safety vs. safety threshold

Until now we have been dealing with the concept of risk-free as a benchmark. This is a very narrow concept, since market of risk-free assets as discussed above is not large enough to satisfy the overall needs for risk-averse clients. Risk-free therefore may be understood in a different connotations. Notion of safety is therefore relative. Group of assets considered safe may also depend on the purpose these assets are used, or for example vis-à-vis regulation.

In a view of the former, long-term investment institutions, as pension funds, may be looking for a safest possible investment for their risk-averse clients saving for pension. In such case pension funds would gather long-term inflation linked liabilities that could well possess the properties of risk-free (or at least the most risk free that is available on the

current market). In a view of the latter, safe asset for the bank in terms of Basel regulation may be understood those assets that have zero-risk weight in their portfolios and therefore no provisions have to be made on their holding.³

This is much wider concept, but economically even more important as this one has its specific role in the system. This concept however is far from the definition used above, i.e. “paying one unit of account at a certain horizon in all states of the world”, since different underlying assets are possibly included in this concept, which over the crisis did not comply with the definition.

The purpose related risk-free assets used to include collateralized assets, usually very well rated financial instruments that were often purchased to be part of the less risky parts of portfolios. The regulation related risk-free assets also used to include assets that one cannot currently view as safe. The most pronounced example is sovereign debt regardless of its rating. This is also the case in present with the exception that zero-weight may be attributed only to that sovereign debt that is domestically issued.⁴

As it is clear from the above, risk-free assets of this wider concept have declined in volume a lot in the past five years. Considering its purpose as a store of value, collateral, or fulfilment of prudential requirements, they are becoming short, while demand for them is increasing. This increased demand has been an issue especially during the heightened uncertainty in recent years. Excessive demand may trigger new financial innovations aiming to increase the volume of risk-free assets by making riskier assets less risky. This could in turn again threaten stability of the financial system.⁵

This is however not the issue for the benchmark function of risk-free rate dealt with in the previous section. The reason is simply in non-existence of imbalances between demand and supply at the real market. The necessary condition is only existence of sufficiently liquid market of

³ See SIEGEL, J. J. and J. B. WARNER. Indexation, the Risk-Free Asset, and Capital Market Equilibrium. *The Journal of Finance*. 1977, vol. 32, no. 4, pp. 1101-1107. ISSN 0022-1082.

⁴ See GOURINCHAS, P.-O. and O. JEANNE. *Global Safe Assets*. 1st ed. Basel: Bank for International Settlements, 2012. 59 p. BIS Working Papers, no. 399. ISSN 1020-0959.

⁵ See IMF. *Safe Assets: Financial System Cornerstone?*. In: IMF. *Global Financial Stability Report: The Quest for Lasting Stability* [online]. 1st ed. Washington, D.C.: International Monetary Fund, 2012, pp. 81-122 [cit. 2013-11-30]. ISBN 978-1-61635-247-9. Available at: <http://www.imf.org/External/Pubs/FT/GFSR/2012/01/pdf/text.pdf>.

these assets as their role is purely analytical, i.e. a benchmark functions in pricing other assets, in communication or serving as a benchmark for inflation or interest rate expectations.

Conclusion

Risk-free assets are important commodity. Concept of risk-free asset shall be differentiated between its purpose in financial market and its analytical purposes.

The wider concept of risk-free assets used in financial markets is related to twofold. First purpose are an investments with aim to hold usually long-term assets with risk-free properties, e.g. in case of pension funds. Second purpose is regulation, which is attributing zero-risk weight to sovereign bonds, based on which banks do not have to provision for losses on these underlying assets; making them more cost-efficient. This wider concept is in general lined to store of value or collateral purposes so its demand is vast, currently exceeding the shrinking supply, which may trigger instability in future.

However, only benchmarking function of risk-free asset aligns with its definition of paying one unit of account at a certain horizon in all states of the world. This is because this narrow concept is not attached to actual demand as it only looks to the best available threshold of risk-free asset. For these purposes German Bunds or Overnight Indexed Swaps are used, each in its specific areas as some of their properties are not complementary.

References

- Bloomberg. In: *Bloomberg Professional* [online]. 2013 [cit. 2013-11-30]. Available at: Subscription Service.
- DAMODARAN, A. *What Is the Riskfree Rate? A Search for the Basic Building Block* [online]. 1st ed. New York: New York University, Stern School of Business, 2008. 33 p. [cit. 2013-11-30]. Available at: <http://people.stern.nyu.edu/adamodar/pdfiles/papers/riskfreerate.pdf>.
- Datastream. In: *Thomson Reuters Datastream* [online]. 2013 [cit. 2013-11-30]. Available at: Subscription Service.
- GOURINCHAS, P.-O. and O. JEANNE. *Global Safe Assets*. 1st ed. Basel: Bank for International Settlements, 2012. 59 p. BIS Working Papers, no. 399. ISSN 1020-0959.

- IMF. Safe Assets: Financial System Cornerstone?. In: IMF. *Global Financial Stability Report: The Quest for Lasting Stability* [online]. 1st ed. Washington, D.C.: International Monetary Fund, 2012, pp. 81-122 [cit. 2013-11-30]. ISBN 978-1-61635-247-9. Available at: <http://www.imf.org/External/Pubs/FT/GFSR/2012/01/pdf/text.pdf>.
- SIEGEL, J. J. and J. B. WARNER. Indexation, the Risk-Free Asset, and Capital Market Equilibrium. *The Journal of Finance*. 1977, vol. 32, no. 4, pp. 1101-1107. ISSN 0022-1082.

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