



Leibniz Institute for Financial Research SAFE  
Sustainable Architecture for Finance in Europe (<https://safe-frankfurt.de/>)

## SAFE Finance Blog

### How useful are financial derivatives in public debt management?

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Debates about public sector debt management are a recurring theme, particularly in times of rising public debt levels. Quickly there is talk of interest bets and gambling tax officials. Is the criticism appropriate?



"Hindsight is always 20/20" – this proverb also applies to the recurring controversies about the use of financial derivatives in public debt management. In 2018, the Hessian ministry of Finance felt these consequences. "Hessen verzockt mehr als drei Milliarden Euro" (Hesse gambles away more than three billion euros) was the headline in the newspaper WELT (<https://www.welt.de/wirtschaft/article182769514/Riskante-Geschaeft-Hessen-verzockt-mehr-als-drei-Milliarden-Euro.html>), for example.

What had happened? From 2011 onwards, the Hessian Ministry of Finance made extensive use of financial derivatives, especially of forward payer interest rate swaps. The aim was to extend the maturity structure of Hesse's public debt. In a payer swap, the state promises a swap partner a fixed interest rate over a certain

period of time and receives a short-term interest rate in return, usually the Euribor rate. The difference between a payer swap and a forward payer swap (FPS) is that the corresponding cashflows do not begin until a predetermined date in the future. In some cases, the FPS had a lead time of 10 years plus a swap duration of 40 years, so that interest rates could be fixed until 2060. Hesse also sold several receiver swap options from 2011 onwards. In doing so, the state receives a premium but gives the counterparty the option to enter into a 30-year receiver swap. If the option is exercised, the state has to pay a fixed interest rate for thirty years and receives the six-month Euribor rate in return. Such receiver swap options can also be seen as part of a hedge against rising interest rates. However, hedging with simple interest swaps appears much more direct and comprehensible. Moreover, for the government, the potential premiums of these options are received initially and are not automatically available when interest rates are high in the future.

This artificial maturity extension fixed the interest rate at – supposedly low – levels back then. However, interest rates continued to fall in the following years, as we know today. According to the criticism, the taxpayers must bear the costs. There was soon talk of speculation with tax money, interest bets, and gambling tax officials. Are these critics appropriate to the situation?

In a new study (<https://doi.org/10.1515/pwp-2019-0035>), we have investigated the problem of interest rate risks and the optimal debt maturity against the background of the extensive use of interest rate swaps in Hesse.

First, the choice of the debt maturity structure always represents an implicit "speculation" on the future development of interest costs: If debt managers choose a short-term debt structure and interest rates rise subsequently, they have backed the wrong horse. From a later point of view – i.e. ex-post – it would have been better if they had fixed the interest rate in the long-run. However, the opposite scenario is also possible: If debt managers chooses a long-term debt structure and interest rates fall in the sequel, they are also wrong ex-post. The problem is: debt managers have to make a decision, and they have to do so ex-ante – in other words, without knowing how future interest rates will develop. If debt managers do not use interest rate derivatives, the proportion of issued short- and long-term bonds – a strategic decision with the same implications – determines the public debt maturity. The term "speculation" is misleading for these reasons. Debt managers face following trade-off: long maturities imply greater planning certainty due to a lower interest rate risk. However, the interest paid on long-term government bonds is usually higher – a so-called maturity premium, which can be interpreted as an insurance premium.

### **The difference between the state and a private home-builder**

However, this simple trade-off ignores the fact that the public sector is not a "home-builder". First and foremost, the public sector does not do business for itself but should act as a custodian of the taxpayers. Taxpayers are also lenders: this means that the interest rate risk of the sovereign can be neutralized by the opposite risk of taxpayers. This is not precluded by the fact that taxpayers are only indirectly investors via their bank balances or through other channels, as long as these investments are exposed to the same interest rate risk. Therefore, the interest rate risk that the Finance Minister has in mind, thinking about public debt, does not, to the same extent, imply an interest rate risk of the taxpayer – an aspect often overlooked in the public debate.

Nevertheless, it can make sense for the state to fix the interest rate for a longer period of time. The reason is the excess burden of taxation resulting from behavioral reactions of taxpayers. If interest rates fluctuate strongly, the future tax burden or public spending also fluctuates stronger. As a consequence, the exponentially increasing excess burden of taxation becomes unnecessarily high. Alternatively, disadvantages also arise if the quality of public services fluctuate with the level of interest-related debt service. However, this is primarily an indirect effect. In principle, the finance minister could also smooth it through debt issuance that comoves with the interest rate.

### **Weighing up the costs and benefits**

The positive smoothing effect of long-term fixed interest rates is offset by the corresponding costs of extending the maturities. When using interest rate swaps, this premium is formed by the difference between

the swap rate and the short-term index rate. Historically, swaps have been a more expensive way to hedge against interest rate fluctuations than the issuance of long-term debt, because of positive swap spreads (i.e. the difference between the fixed interest rate of a swap and the interest rate of a government bond with a similar maturity). Due to negative swap spreads (more on this in the study (<https://doi.org/10.1515/pwp-2019-0035>)), this does not necessarily hold anymore for some Western countries, including Germany, after the recent financial crisis. However, a general assessment of whether financial derivatives should be used in public debt management remains very difficult. First and foremost, swap contracts are mostly over-the-counter (OTC) transactions, which means that the actual costs are not publicly available. Relevant additional costs for interest rate swaps, such as bank and administration fees, are therefore not always transparent.

For the specific case in Hesse, a final judgment is also complicated. On the one hand, fixing the Hessian interest rates for such a long period of time (up to 50 years) – desirable or not – would have been very difficult by issuing long-term bonds. On the other hand, the costs of the used financial instruments could be disproportionately high in this case as the duration of the instruments was exceptionally long.

In any case, the following question should be asked when reviewing government debt management: Do the used financial instruments really serve to shift government resources over time? If the government expects increasing interest rate costs in the future and use this argument to rationalize its debt management, then policymakers should also shift government resources into the future. In the case of the derivatives used in Hesse, the political charm for policymakers in 2011 was perhaps the reverse: In the early years, they were able to take advantage of the low short-term interest rates at the time. By contrast, the costs of interest rate hedging, which arise because the hedged interest rate level is higher than the prevailing interest rate level, only become apparent in the budget after a ten-year delay.

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Weichenrieder, A., Kasinger, J., & Nöh, L. (2020). Interest rate risks and long-term fixed interest rates against the background of interest rate swaps in Hesse. Perspectives of economic policy. (<https://doi.org/10.1515/pwp-2019-0035>) Online pre-publication.


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