

Currency risk hedging of portfolios

Examination of empirical theory about currency movements

and risk hedging of portfolios

By Christian Betz, Jyske Capital



By Christian Betz, Jyske Capital

The purpose of this article is to describe and compare scientific articles dealing with the impact of currency movements on portfolios of foreign assets and the effect of currency risk hedging on portfolio risk and return. Argumentation and conclusions are based on empirical theory.

Background

Currency risk is an inevitable part of investing in assets in a currency other than the investor's base currency, and there are diverging views of how to handle such risk. Currency risk can on the one hand be seen as uncompensated risk which investors may benefit from hedging away, for instance via a currency overlay programme. On the other hand, currency risk can be seen as risk which for certain assets, such as equities, is of less importance and which over time tends towards being offset.

The purpose of this article is to gather considerations and conclusions on this issue from various research papers. Including what seems to be consensus with respect to the handling of currency risk on bonds and equities as well as mixed portfolios. This should be seen in the light of the rising interest in currency overlay programmes and the derived considerations about the degree of hedging. A considerable part of the literature is based on the dollar as base currency whereas a few consider the risk from the point of view of a DKK investor. The article focuses exclusively on the issue taking its point of departure in academic empirical theory. In a subsequent article we will with our own calculations deal with the issue from a quantitative angle seen from a Danish investor's point of view.

Hedging vs no hedging

According to (Perold and Schulman, 1988) currency risk hedging of global portfolios (including equities and bonds) reduces the variance of the portfolio return of the base currency. Investment is made in Japan, the UK and Germany, and hedging is not made at the expense of the portfolio return in USD in the long term. Moreover, (Perold and Schulman, 1988) finds that the hedging costs are at a minimum compared with the risk reduction achieved. (Eun and Resnick, 1988) obtains similar results and finds that a hedged global equity portfolio outperforms a non-hedged portfolio of equity investment in Canada, France, Germany, Japan, Switzerland and the UK with base currency in USD. If the return is maintained and the risk is reduced, the decision about currency risk hedging is simple.

Yet, (De Roon et al., 2012) finds evidence that the average return on international equity and bond portfolios is reduced in connection with the hedging of currency exposure. In line with others, (De Roon et al., 2012) obtains a reduction of the variance of the return on the portfolio. It must be borne in mind that (Perold and Schulman, 1988) bases the empirical investigations on data from before 1988 whereas the data in (De Roon et al., 2012) are from 1975 to 2009. (De Roon et al., 2012) makes calculations based on USD and equity investment in Canada, Japan, Australia and Switzerland. The article's considerations about reduced portfolio return due to hedging can to a certain degree be explained on the basis of (Saravolos, 2007) who argues in favour of a division of the players in the currency market on the basis of a varying degree of motivation. (Saravolos, 2007) argues in favour of some players being in the currency market to hedge a risk, others wish to generate a return. The rationale is that investor focus is not always on small returns in the FX mar-

ket but on risk reduction in the portfolio. Therefore, this investor type is willing to "sacrifice" a potential return on currency to obtain a variance reduction given that the currency return is less important than the portfolio return and risk.

Hence, it is not necessarily inoptimal to accept a reduction of the average return on a global portfolio due to currency risk hedging. With data from 1975-2005 (Campbell, Serfaty-de Medeiros and Viceira, (2010)) finds evidence that the currency risk of a global portfolio consisting of equities should be hedged to reduce the return variance. Moreover, (Campbell et al. 2010) finds evidence that bonds should be fully hedged due to the existence of very low correlation between bonds and FX rates. The study was made with USD as the base currency.

The result from the point of view of a Danish investor may be different. Fully in line with (Campbell, Serfaty-de Medeiros and Viceira, 2010), (Rangvid, 2004) finds that also a Danish investor can benefit from hedging the currency risk. Rangvid concludes that US bonds should be fully hedged and that the hedging increases the Sharpe ratio of the investment very considerably through a better return and lower standard deviation. For a portfolio of US equities the corresponding increase in the Sharpe ratio is lower but still considerable. Similar results are found in (Glen and Jorion, 1993), where currency risk hedging improves the risk as well as the return on bond portfolios relative to non-hedged bonds.

In (Black, 1989), we see similar evidence that the currency risk of global equity portfolios should be hedged, yet not with a full degree of hedging as described in (Perold and Schulman, 1988). (Black, 1989) argues in favour of a universal hedging method which is independent of the currency in which the return is measured. This universal ratio is calculated on the basis of a mixed international

portfolio and the average variance of the currency of this portfolio. Yet, Black agrees with (Perold and Schulman, 1988) on the consideration that the average return will not be reduced as a result of a reduction of the variance.

Degree of hedging

Full currency risk hedging of portfolios is not optimal according to (Black, 1989) that refers to Siegel's Paradox (Siegel, 1972) where part of the currency risk will create a better general return for international investments. Due to uncertainty about the optimal degree of hedging, (Gastineau, 1995) suggests a 50/50 hedging rule according to which half of the currency exposure is hedged. The strategy is an easily implementable compromise between full hedging and no hedging. Yet, the optimal degree of hedging seems to be determined by the data basis used in connection with the empirical investigation.

The importance of the data basis for the optimal degree of hedging is supported by (Xin, 2003). Xin describes how the correlation between the underlying asset and the currency varies strongly in time.

Calculating an optimal degree of hedging is to a high extent dependent on the time period investigated.

According to (Binny, 2001) the degree of hedging is influenced by factors which should be assessed as a whole for a portfolio of equities and bonds. The assessment of these factors differs among investors. The article argues that there are various priorities of currency hedging mandates. Therefore, a universal degree of hedging is difficult to determine. Yet, (Binny, 2001) finds that with a non-fully hedged portfolio an opportunity is created for a return based on currency positions in the currency risk hedging.

Cf. (Rangvid, 2004) there is evidence that full currency risk hedging is not the most optimal procedure. This view is supported by (Pojarliev, Levich and Kasarda, 2014) who argues that – apart from hedging – a global portfolio of equities and bonds should include currency alpha and beta. The investigation is based on USD as base currency.

Conclusion

The majority of the empirical theory concludes that currency risk hedging reduces the variance of the return on portfolios of international assets. Yet, it cannot unambiguously be concluded that this takes place without any reduction in the return. In relation to currency risk hedging for Danish investors we see a reduction of the variance and a better return and hence a significant increase of Sharpe ratio. This applies to equity as well as bond portfolios.

The evidence as to which degree of hedging is best depends on the correlation between the assets of the portfolio and the currency. Consensus from the literature under review is that especially the currency risk of bonds should be hedged. Choice of data - including time period and return currency – is widely dependent on the conclusions which can be made. Therefore, we point out that investors should be careful using empirical material reflecting the investor's own portfolio in the best possible way before making a decision on hedging of currency risk.

None of the information in this white paper should be regarded as investment advice. Investors are advised to contact a personal advisor with respect to investment, tax issues, etc. before buying and selling. Past performance is not a reliable indicator of future performance and price development. Performance and / or price development may be negative.

Published by:

Jyske Capital Management • Vestergade 8-16 • 8600 Silkeborg • Denmark
www.jyskecapital.com

Type	Reference	Comments/Summary
Equities	Eun, C. and Resnick, B. (1988). Exchange rate uncertainty, forward contracts, and international portfolio selection. <i>The Journal of Finance</i> , 43(1), pp.197--215.	Hedged international equity portfolios outperform non-hedged portfolios. By hedging the currency risk it is possible to utilise the international diversification effect.
	Rangvid, J. (2003). The exchange rate and the return on international investments. <i>Finans / Invest</i> , (08/03).	28.8% of the variance of the return in DKK terms on US equities are due to exchange-rate fluctuations. The variance has been adjusted for the co-variance between the equities and the exchange-rate fluctuations.
	Campbell, J., Serfaty-de Medeiros, K. and Viceira, L. (2010). Global currency hedging. <i>The Journal of Finance</i> , 65(1), pp.87--121.	Equities should be partially hedged and partial hedging outperforms no hedging and full hedging. In addition the correlations between equities and currency make it possible to include currency in a global portfolio. This will create a more optimal portfolio.
	Rangvid, J. (2004). Hedging of currency risk in the portfolio. <i>Finans / Invest</i> , (1/04).	Sharpe ratio is increased by 63.75% for DKK investors with USD listed equities during the period 1986-2003.
	Black, F. (1989). Universal hedging: Optimizing currency risk and reward in international equity portfolios. <i>Financial Analysts Journal</i> , pp.16--22.	International equities should be hedged, and a universal degree of hedging can be found. Full hedging is, however, not optimal since a percentage of the currency risk contributes to generating a higher return in the portfolio.
Bonds	Campbell, J., Serfaty-de Medeiros, K. and Viceira, L. (2010). Global currency hedging. <i>The Journal of Finance</i> , 65(1), pp.87--121.	Bonds should be fully hedged. Bond investors should avoid holding currencies since there is close to no correlation between the relative return on bonds and the relative return on currency.
	Rangvid, J. (2003). The exchange rate and the return on international investments. <i>Finans / Invest</i> , (08/03).	98.80% of the variance of the return in DKK terms on US bonds are due to exchange-rate fluctuations. The variance has been adjusted for the co-variance between the bonds and the exchange-rate fluctuations.
	Rangvid, J. (2004). Hedging of currency risk in the portfolio. <i>Finans / Invest</i> , (1/04).	Sharpe ratio is increased by 193% for DKK investors with USD listed bonds during the period 1986-2003.
Equities and bonds	Perold, A. and Schulman, E. (1988). The free lunch in currency hedging: Implications for investment policy and performance standards. <i>Financial Analysts Journal</i> , pp.45--50.	Hedging of currency risk is beneficial for equities as well as bonds. This is found individually but also in a 65/35 portfolio. Hedging improves the variance and does not reduce the return.
	De Roon, F., Eiling, E., Gerard, B. and Hillion, P. (2012). Currency Risk Hedging: No Free Lunch Available at SSRN 1343644.	Hedging of currency risk in global portfolios with equities as well as bonds has a lower variance. It is found, however, that this is obtained at the expense of the return which is lower when currency hedging is utilised. Exposure against currency risk, on the other hand, improves the return of a portfolio.
	Glen, J. and Jorion, P. (1993). Currency hedging for international portfolios. <i>The Journal of Finance</i> , 48(5), pp.1865--1886.	Hedged global portfolios consisting of equities and bonds and in combination outperform non-hedged portfolios. Such outperformance especially applies to bond portfolios. The data basis is from 1974-1990.
	Pojarliev, M., Levich, R. and Kasarda, R. (2014). The Impact of Currency Exposure on Institutional Investment Performance: The Good, the Bad, and the Ugly. Available at SSRN 2378987.	The currency risk of a portfolio of equities and bonds should be hedged. In addition, the portfolio should also consist of currency alpha and beta strategies.
	Binny, J. (2001). The optimal benchmark for a currency overlay mandate. <i>Journal of Asset Management</i> , 2(1), pp.22--34.	The article is based on a portfolio consisting of domestic equities, bonds and foreign listed paper. There are various factors which determine the best degree of hedging which, moreover, differs among investors.

Bibliography

Binny, J. (2001). The optimal benchmark for a currency overlay mandate. *Journal of Asset Management*, 2(1), pp.22--34.

Black, F. (1989). Universal hedging: Optimizing currency risk and reward in international equity portfolios. *Financial Analysts Journal*, pp.16--22.

Campbell, J., Serfaty-de Medeiros, K. and Viceira, L. (2010). Global currency hedging. *The Journal of Finance*, 65(1), pp.87--121.

De Roon, F., Eiling, E., Gerard, B. and Hillion, P. (2012). *Currency Risk Hedging: No Free Lunch*. Available at SSRN 1343644.

Eun, C. and Resnick, B. (1988). Exchange rate uncertainty, forward contracts, and international portfolio selection. *The Journal of Finance*, 43(1), pp.197--215.

Gastineau, G. (1995). The currency hedging decision: A search for synthesis in asset allocation. *Financial Analysts Journal*, pp.8--17.

Glen, J. and Jorion, P. (1993). Currency hedging for international portfolios. *The Journal of Finance*, 48(5), pp.1865--1886.

Perold, A. and Schulman, E. (1988). The free lunch in currency hedging: Implications for investment policy and performance standards. *Financial Analysts Journal*, pp.45--50.

Pojarliev, M., Levich, R. and Kasarda, R. (2014). *The Impact of Currency Exposure on Institutional Investment Performance: The Good, the Bad, and the Ugly*. Available at SSRN 2378987.

Rangvid, J. (2003). Valutakursen og afkastet fra internationale investeringer. *Finans / Invest*, (08 / 03).

Rangvid, J. (2004). Afdækning af valutakursrisikoen i porteføljen. *Finans / Invest*, (1 / 04).

Saravelos, G. (2007). *Deutsche Bank Guide To Currency Indices*. (October 2007).

Siegel, J. (1972). Risk, interest rates and the forward exchange. *The Quarterly Journal of Economics*, pp.303--309.

Xin, H. (2003). *Currency overlay*. 1st ed. London: Risk books.