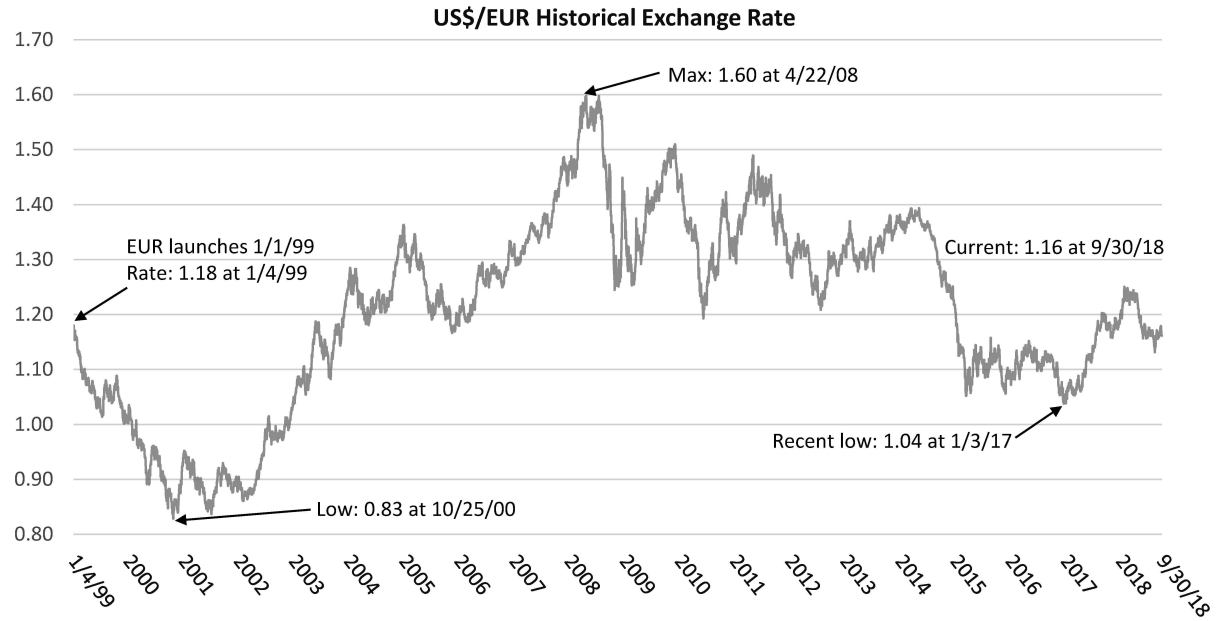
How Hedging Can Substantially Reduce Foreign Stock Currency Risk

Possible losses from changes in currency exchange rates are a risk of investing unhedged in foreign stocks. While a stock may perform well on the London Stock Exchange, if the British pound declines against the U.S. dollar, your gain can disappear or become a loss. In addition, currency fluctuations are generally more extreme than stock market fluctuations. During the more than fifty years that Tweedy, Browne has been investing, the Standard & Poor's 500 Stock Index has declined on an annual basis more than 20% only four times, in the back-to-back bear market of 1973 and 1974, in the technology and telecommunications crash of 2002 and in the financial collapse of 2008. By contrast, the U.S. dollar/pound, U.S. dollar/Swiss franc, U.S. dollar/euro, and U.S. dollar/yen relationships have moved more than 20% on numerous occasions. There was a four-to-five-year period from 1979-1984 when the U.S. dollar value of British, French, German and Dutch currency declined by 45% to 58%. More recently, during the years 2011 through 2016, the U.S. dollar value of Eurozone, Swiss, British and Japanese currency experienced peak to trough declines of between 29% and 40%. There have also been numerous steep declines in foreign currencies in the shorter term. In the 16-month period between November 8, 2007 and March 10, 2009, the U.S. dollar value of a British pound declined from $2.10 to $1.37, a 35% decline; in the seven-month period from April 22, 2008 to November 20, 2008, the U.S. dollar value of a euro declined from $1.59 to $1.24, a 22% decline. To recoup the 45% to 58% losses that a U.S. investor incurred by owning British, French, German and Dutch currency unhedged during the 1979-1984 period, returns ranging between 82% to 138% were required. Similarly, during the years 2011 through 2016, returns of 41% to 67% were required to recoup the 29% to 40% declines in the Euro, the Swiss franc, the British pound and the Japanese yen.

The chart that follows illustrates the extraordinary interim exchange rate volatility faced by U.S. dollar-based investors in Euro-denominated securities since the currency's introduction in 1999.



Source: Bloomberg, as of 9/30/18. Past performance is no guarantee of future results.

How Hedging Can Substantially Reduce Foreign Stock Currency Risk

At Tweedy, Browne, we pick stocks; we do not pretend to understand currency valuations. We can read a company's balance sheet, but we cannot read a country's balance sheet. We count our wealth in U.S. dollars, and seek to avoid losses from non-U.S. currencies. As a result, in the Tweedy, Browne Global Value Fund and the Tweedy, Browne Value Fund, we have chosen to hedge the Funds' perceived foreign currency exposure back into the U.S. dollar. Some investors may view exposure to foreign currency as another form of diversification and/or may have a strong opinion that the U.S. dollar is likely to weaken (over the near or long term) against one or more currencies which the Funds own through their holdings of shares of foreign companies. For those investors, we offer two unhedged funds: the Tweedy, Browne Worldwide High Dividend Yield Value Fund and the Tweedy, Browne Global Value Fund II - Currency Unhedged. This is also consistent with the choices we offer to our separate account clients.

The Known Contractual Cost, or the Known Contractual Gain, from Hedging Non-U.S. Currencies Back into the U.S. Dollar

In our discussions with clients, we have often been asked, what is the cost of currency hedging? Clients almost always assume that there is a cost, and almost never realize that there can be *either* a locked-in contractual cost *or* a locked-in contractual gain from hedging non-U.S. currency back into the U.S. dollar: It depends on whether U.S. interest rates are lower or higher than interest rates in the particular foreign country whose currency is being hedged.

Leaving aside transaction costs to enter into currency hedging contracts, which tend to be minimal in the very liquid, global foreign exchange markets, the U.S. investor who enters into a hedging contract to sell forward the foreign currency of a country whose interest rates are lower than U.S. interest rates will receive a locked-in contractual gain – a known gain from having entered into the currency hedging contract. Conversely, the U.S. investor who enters into a hedging contract to sell forward the foreign currency of a country whose interest rates are higher than U.S. interest rates will have a locked-in contractual loss – a known cost from having entered into the currency hedging contract.

For example, if one-year interest rates are 1% in Japan and 5% in the U.S., the locked-in gain from entering into a one-year currency hedging contract would be the difference between the two interest rates, a gain of 4%. If one-year interest rates were 1% in the United States and 4% in Britain, the locked-in cost from entering into a one-year currency hedging contract would be the difference between the two interest rates, a cost of 3%.

In a typical transaction, when we buy a non-U.S. stock, for example, a stock in a British company, we first buy British pounds, and pay for the pounds with U.S. dollars. Then, we pay the seller of the British stock with British pounds. Then, to hedge the foreign currency risk, we enter into a currency hedging contract which sells the foreign currency that we own as a result of owning the non-U.S. stock. If the particular foreign currency increases in value, i.e. its U.S. dollar price goes up, we typically lose about the same amount on the currency hedging contract as we gained by owning that currency. If, on the other hand, the particular foreign currency decreases in value, i.e. its U.S. dollar price goes down, we typically make about the same amount on the currency hedging contract as we lost by owning that currency. That is how hedging works. (Please see the section entitled "How Currency Hedging Works" for a more in-depth discussion.)

How Hedging Can Substantially Reduce Foreign Stock Currency Risk

When we enter into a currency hedging contract, we know for sure what our locked-in contractual cost or gain is over the contract period, which, as previously described, depends on interest rate differences between the U.S. and the particular country whose currency is being hedged. What no one knows for sure is how well, or how poorly, a U.S. investor who buys the same non-U.S. stock but does not hedge the currency back into the U.S. dollar will fare versus the U.S. investor who chooses to hedge. Historical data, and our own experience as global investors, has shown that over shorter periods no one knows who will win the hedged or unhedged race until the finish line is reached at the end of the particular period of comparison. All other things being equal (including investment performance), and leaving aside interest rate differences between countries, if the U.S. dollar weakens, a portfolio that hedges non-U.S. currencies back into the U.S. dollar will not have the gains from increases in the U.S. dollar prices of the hedged currencies that a currency-unhedged portfolio will have. Therefore, the currency-hedged portfolio will have worse investment results than the currency-unhedged portfolio in a period when the U.S. dollar has weakened. Conversely, all other things being equal and leaving aside interest rate differences between countries, if the U.S. dollar strengthened, the currency-hedged portfolio would not incur the losses from decreases in the U.S. dollar prices of the hedged currencies that a currency-unhedged portfolio would incur. Therefore, the currency-unhedged portfolio would have worse investment results than the currency-hedged portfolio in a period when the U.S. dollar has strengthened.

However, we believe that studies and our own experience have generally shown that over very long measurement periods, the returns of hedged portfolios have been similar to the returns of portfolios that have not been hedged.

A study by Lee Thomas, *The Performance of Currency-Hedged Foreign Equities*, examined the performance of equities in Germany, France, Canada, the United Kingdom, Japan and Switzerland from 1975 through 1988, comparing unhedged results to hedged results for a U.S. dollar investor. These six stock markets accounted for about 88% of the world market capitalization, excluding the United States. The study used FT-Actuaries Indices equity returns, included dividends, and assumed that at the beginning of each month the investor hedged by selling forward (for U.S. dollars) for one-month delivery the foreign currency value of his equity shares. Over the 1975 through June 1988 study period, the compounded annual returns on hedged and unhedged foreign equities were 16.4% and 16.5%, respectively.

Another study, *Asset Allocation with Hedged and Unhedged Foreign Stocks and Bonds* by Philippe Jorion, examined the hedged and unhedged results for an investment in the Morgan Stanley Capital International ("MSCI") EAFE (Europe, Australasia, Far East) Index from January 1978 through December 1988. This study, like the preceding study by Lee Thomas, assumed that at the beginning of each month, the foreign currency exposure was hedged through a one-month forward sale of the foreign currency value of the equity holdings. Over the January 1978 through December 1988 period, the average annual returns on hedged and unhedged foreign equities were 20.9% and 22.9%, respectively.

A more recent study, *Currency and Hedging: The Longer-Term Perspective*, November 2005, from The Brandes Institute, compared the results of hedging currency versus not hedging currency from the perspective of investors in each of the 23 developed market countries in the MSCI World Index over the 32-year period from the end of 1972 to December 31, 2004. The Brandes study developed a database of quarterly results for each of the 23 countries and then calculated simulated passive fully hedged and unhedged results from the standpoint of an investor whose home currency was the particular currency of each of the 23 countries. In other words, the study measured over the 32-year period whether a British

investor, who counts his or her wealth in British pounds, fared better with a hedged or unhedged portfolio; or whether a Japanese investor, who counts his or her wealth in yen, fared better with a hedged or unhedged portfolio. The study showed that in six of the eight largest countries (Australia, France, Germany, Japan, Switzerland and the United Kingdom), the hedged results exceeded the unhedged results by between .20% and .94% annualized over the 32-year period. In two of the eight largest countries (Canada and the United States), the hedged results were worse than the unhedged results by .65% and 2.23% annualized, respectively, over the 32-year period that ended December 31, 2004. For the other 15 countries in this 23-country study (Austria, Belgium, Denmark, Ireland, Italy, Netherlands, Norway, Spain, Sweden, Finland, Greece, Hong Kong, New Zealand, Portugal, and Singapore), the currency hedged results exceeded the unhedged results by between .21% and 2.34% annually for 12 of the countries, and the unhedged results exceeded the currency hedged results by between .52% and 2.19% annually for three of the countries.

Over the approximately 25-year period we have been managing the Tweedy, Browne Global Value Fund, the MSCI EAFE Index (Hedged to U.S. dollars) and the MSCI EAFE Index (Unhedged) had annualized returns that were only 59 basis points apart, 6.06% for the hedged versus 5.47% for the unhedged index. For the roughly 23 year period from June 30, 1995 (when we began managing hedged global separate account portfolios) through March 30, 2018, the MSCI World Index Hedged to US dollars and the MSCI World Index Unhedged produced annualized returns that were only 2 basis points apart, 8.80% versus 8.78%. When considering the cost of hedging, it is important to remember that an investor whose net worth is counted in U.S. dollars really has only a few investment alternatives: to be unhedged, partially hedged, or fully hedged. The "cost" of being hedged should only be considered in comparison to the investment results, after the fact, of having been unhedged. For example, the only way that an unhedged U.S. investor in Eurozone stocks can earn the same percentage return as the Eurozone owner of the same stocks is if the U.S. dollar/Euro exchange rate remains unchanged, which seldom if ever happens. In summary, and keeping in mind that past performance does not guarantee future results, studies and our own experience as a global money manager have generally indicated that over very long measurement periods, the compounded annual returns on hedged foreign stock portfolios have been similar to the returns on unhedged foreign stock portfolios. In addition, over shorter periods of time, hedged equity portfolios have been significantly less volatile than unhedged equity portfolios, and have avoided heart-stopping, multi-year 45% - 58% currency losses.

Currency Hedging Costs from a Bargain Hunter's Perspective

Leaving aside comparisons of hedged investment returns versus unhedged investment returns, known hedging costs can be considered as part of the net investment to acquire a bargain stock. For example, if the known hedge cost is 3% per year, an investment at €60 per share in a French closed end mutual fund, whose cash and common stock holdings are estimated to have an intrinsic value of €100 per share, would cost 3% x €60 per share = €1.8 per year. Instead of paying €60 for €100 of estimated intrinsic value, the investment over a one-year period would work out to €61.8 for €100 of value In our view, on a net investment basis, a purchase of €100 of true value at €60, with an additional €1.8 cost gradually incurred over a twelve-month period, would still be an excellent bargain purchase. (Of course, a security may never reach its estimated intrinsic value and could decline in value from the original purchase price.)

How Hedging Can Substantially Reduce Foreign Stock Currency Risk

How Currency Hedging Works

Currency hedging is similar to selling short. For example, assume we transact to buy $1,000,000 worth of British Steel shares when the exchange rate is: £1 = $2. In order to pay the seller for the British Steel shares which we have agreed to acquire, we first use $1,000,000 to purchase £500,000 at $2.00 per pound, and then deliver the £500,000 to the seller in exchange for the British Steel shares which we have acquired. Now, we own a British stock which is denominated in pounds, not U.S. dollars. To hedge against the risk of the pound exchange rate declining below $2.00, we enter into a forward currency contract agreeing to sell £500,000 (which we do not own) one year later for $1.94 per pound, or $970,000. Assuming the price of British Steel's stock remained unchanged and the exchange rate of the pound declined to $1.50, the U.S. dollar value of our holdings would decline 25%, from $1,000,000 to $750,000, or a $250,000 loss of value. However, our contract to sell £500,000 (which we do not own) at a fixed price of $1.94 (or $970,000) for delivery twelve months later, produced a gain of $220,000 when we bought the £500,000 at $1.50 per pound (or $750,000 total), and delivered them to the buyer in exchange for the previously agreed upon $1.94 per pound (or $970,000 total). The $220,000 hedge profit largely offset the $250,000 currency loss on the British Steel holdings. In this example, if the pound had increased from $2.00 per pound to, say, $3.00 per pound in six months, the U.S. dollar value of the £500,000 invested in British steel stock would have increased from $1,000,000 to $1,500,000, a gain of $500,000. Offsetting this $500,000 currency gain would be a $530,000 hedge loss on the contract to sell £500,000 (which we do not own) at $1.94 per pound. (The £500,000 are purchased at the exchange rate at the end of six months, $3.00 per pound, or $1,500,000 total, and delivered to the buyer, who pays us the previously agreed upon price, $1.94 per pound, or $970,000 total, producing a $530,000 hedge loss.)

Currencies are hedged primarily through forward and futures contracts. The cost to a U.S. investor of hedging foreign currencies through forward and futures contracts is approximately equal to the difference between interest rates in the United States and the particular foreign country over the contract period. For example, if interest rates in the United Kingdom are 6% for a one-year certificate of deposit versus 3% for a one-year certificate of deposit in the United States, the cost of selling $1,000,000 worth of pounds forward for delivery in one year will be close to the difference between the one year interest rate in Britain, 6%, and the one-year rate in the U.S., 3%, or a 3% cost, which would be $30,000 on the hedging of $1,000,000 worth of pounds.

The reason why the percentage cost of hedging through forward and futures contracts is approximately the difference between interest rates in Britain and the U.S. over the contract period is that the other party to the forward contract, typically a bank, must be reimbursed by the forward contract for the costs which the bank incurs. Those costs are determined primarily by the two countries' interest rates. Here is how it works: Going back to the British Steel example, assume that interest rates in Britain and the U.S. are 6% and 3%, respectively. The exchange rate of the pound on January 1 is $2.00 and we agree to sell $1,000,000 worth of pounds (or £500,000) forward for delivery in one year at $1.94 per pound (or $970,000). The other party to this forward sale transaction, typically a bank, agrees to buy £500,000 from us in one year at a price of $1.94 per pound, or $970,000. The bank entering into this transaction would not want to be obligated to buy £500,000 at $1.94 in one year without protecting itself against currency risk. You can see that if the bank did not protect itself on this obligation, and the pound declined to $1.00 in a year, it would suffer a $470,000 loss. To cover its obligation to buy £500,000 at $1.94 in one year, the bank borrows £500,000 on January 1 at an interest expense of 6% per year (or £30,000, which is $60,000

at the January 1 exchange rate of $2.00 per pound) and uses the £500,000 to buy $1,000,000 U.S. dollars at the January 1 exchange rate, $2.00 per pound. Then, the bank invests the $1,000,000 for one year at the U.S. interest rate, 3%, and earns $30,000 in interest. Twelve months pass, and by December 31 the bank has paid $60,000 in interest on the £500,000, which it has now borrowed for one year, and earned $30,000 in interest on the $1,000,000, which was invested for one year. The net cost to the bank is $60,000 interest expense less $30,000 interest income, or a net cost of $30,000. On December 31, our forward contract to sell £500,000 to the bank at $1.94 per pound, or $970,000 total, comes due. We deliver £500,000 to the bank, which the bank uses to repay the £500,000 which it has borrowed. The bank pays us the agreed amount, $970,000, for the £500,000, which we delivered. The $970,000 paid to us by the bank is the $1,000,000 which the bank had invested for one year, plus $30,000 interest earned for one year, less $60,000 interest cost on the £500,000 which the bank borrowed at 6%. The bank is "whole" by acting as the counterparty to our forward sale of 500,000 pounds.

In actual practice, the difference between the forward currency price and the current currency price would usually be a somewhat greater percentage than the bank's net cost, and the bank would earn a profit. In the above example, if the forward price for the pound had been $1.938 (instead of $1.94), the bank would have been obligated to pay £500,000 x $1.938, or $969,000 on December 31. A $1.938 forward rate would have generated a $1,000 profit for the bank which is broken down as follows: $1,000,000 which the bank had invested for one year, plus $30,000 interest earned for one year, minus $60,000 interest cost on £500,000 which the bank had borrowed at 6% interest, minus $969,000 which must be paid to us on December 31, which equals a $1,000 profit.

If the pound had declined from $2.00 to $1.00, the bank would not have suffered any loss, even though it was obligated to buy £500,000 at $1.94, because on January 1 it set aside the dollars to pay this amount. If the pound had increased from $2.00 on January 1 to $3.00 on December 31, the bank would not benefit because the £500,000, which it purchased at $1.94 per pound, were owed to someone else. The bank was obligated to repay its loan of £500,000 through actual delivery of the £500,000 or the equivalent amount of market value, $1,500,000.

Arbitrageurs make sure that the difference between the current price of a currency (referred to as the "spot rate") and the price of the currency for future delivery (referred to as the "forward rate") is not less than the interest rate differential. If the difference between the spot rate and forward rate results in hedging costs which are less than the interest rate differential, arbitrageurs will, for example, borrow money in the U.S. for one year at a 3% interest rate, buy pounds with that money, invest the pounds in risk free certificates of deposit to earn 6%, and protect against currency losses by selling the same amount of pounds forward one year.

As long as the hedge cost is less than the 3% difference between U.S. and British one-year interest rates, arbitrageurs will continue to engage in such transactions. Their significant sales of the pound in the one-year forward market will have the effect of driving down the forward currency price until the difference between the spot price and the one-year forward price is no longer less than 3%.

How Hedging Can Substantially Reduce Foreign Stock Currency Risk

Summary

Investing outside of one's base currency presents the investor with an additional risk, that of currency exposure. Foreign stocks are quoted and trade in foreign currencies. While a foreign stock may rise in its quoted or local currency, if that currency declines in value in relation to one's base currency, the investor could lose part or all the benefit of a rising stock price. This begs the very serious question of whether "to hedge or not to hedge" currency risk.

A number of empirical studies and our own observance of the performance of hedged versus unhedged indices (since the inception of our flagship fund) suggest that over long measurement periods there may indeed be a "free lunch" in currency hedging, i.e. a reduction of currency risk (including reductions in interim volatility and tracking error) at what would appear to be very little to no cost in terms of foregone return. Of course, in the short run, there can be significant unpredictable fluctuations in foreign currencies, which can cause hedged and unhedged returns to vary markedly.

While many investors seek to capture the local return in foreign securities through currency hedging, other investors may choose for one reason or another to remain fully exposed to currency when investing outside of their base currency. This, of course, is the investor's choice, and may in part depend on the investor's time horizon and tolerance for return dispersion. What we would caution against, however, are attempts to time the currency markets. Our advice to investors is to simply take a hedged or unhedged posture and stick with it over the long term. Either path is likely to lead to a similar destination. However, there are no guarantees regarding future returns, as the rear view mirror is always clearer than the windshield.

How Hedging Can Substantially Reduce Foreign Stock Currency Risk

Please note that the hypothetical illustrations provided herein do not take into account the effect currency fluctuations may have on the price of a particular security due to the global nature of an issuer's business and/or the indirect effect exchange rate changes may have on an issuer's business. These factors are considered on a case-by-case basis when a decision is made on currency hedging for particular securities. However, due to practical considerations, and the effect of currency and market value fluctuations, each particular security will not necessarily result in the security being fully hedged verses the US Dollar at all times.

Although hedging against currency exchange rate fluctuations reduces the risk of loss from exchange rate movements, it also reduces the ability to gain from favorable exchange rate movements when the U.S. dollar declines against the currencies in which the portfolios' investments are denominated and in some interest rate environments may impose out-of-pocket costs.

Portfolio characteristics are subject to change without notice. Past performance is not indicative of future results, which may vary. The preceding material is designed to be illustrative of the general investment philosophy and broad investment style overview of Tweedy, Browne Company LLC.

The MSCI EAFE Index is an unmanaged capitalization-weighted index of companies representing the stock markets of Europe, Australasia and the Far East. The MSCI EAFE Index (US$) reflects the return of the index for a U.S. dollar investor. The MSCI EAFE Index (Hedged to US$) consists of the results of the MSCI EAFE Index 100% hedged back into U.S. dollars and accounts for interest differentials in forward currency exchange rates. Index results are inclusive of dividends and net of foreign withholding taxes.

The MSCI World Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets. The MSCI World Index (US$) reflects the return of this index for a U.S. dollar investor. The MSCI World Index (Hedged to US$) consists of the results of the MSCI World Index 100% hedged back into U.S. dollars and accounts for interest differentials in forward currency exchange rates. Index results are inclusive of dividends and net of foreign withholding taxes.

The S&P 500 Index is an unmanaged capitalization-weighted index composed of 500 widely held common stocks that assumes the reinvestment of dividends. The index is generally considered representative of U.S. large capitalization stocks.

Indexes are unmanaged, and the figures for the indexes shown include reinvestment of dividends and capital gains distributions and do not reflect any fees or expenses. Investors cannot invest directly in an index. We strongly recommend that these factors be considered before an investment decision is made.

intentionally blank

intentionally blank

intentionally blank