

Currency Effects

Often we model global sales simply as a rough figure, typically in USD. Maybe we say that a drug performs similar like one already on the market, assuming peak sales in the range of – let’s say – USD 1 bn to USD 1.5 bn. But we might just as well make a more thorough forecast using a (weighted) price, but applying it to the global pool of patients. Unless we really make a country-by-country analysis, we often use one currency. But how do we include different currencies in the valuation? How do we consider if two currencies drift apart? This is a generally neglected aspect of valuation.

Case Study “Swiss Franc”

Switzerland is an export economy and mainly exports to its neighbours that have the Euro. Since the Euro has become weaker and weaker – 1 EUR was initially more than CHF 1.60 – the Swiss National Bank (SNB) has artificially weakened the Swiss Franc to maintain an exchange rate of at least CH 1.20. On January 15, 2015 the SNB abandoned that exchange rate floor and the EUR/CHF exchange rate dropped to about parity, which was an instantaneous loss of about 17%.

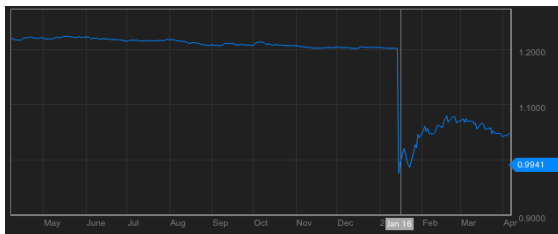


Figure 1: EUR/CHF (source: Bloomberg.com)

Clearly, with abandonment of the FX (foreign currency exchange rate)

floor not only the EUR/CHF rate has changed, but also the whole dynamic of the Swiss Franc with respect to any other currency. The Swiss Franc simply got stronger overall. Now the Swiss Franc can move freely, which wasn’t the case before due to the SNB’s interventions (as can be seen very clearly in figure 1).



Figure 2: USD/CHF (source: Bloomberg.com)

Comparing the share prices of some important Swiss-quoted pharma and biotech companies we observe that all companies lost in value.

Table 1: Share performance after the SNB abandoned the EUR/CHF floor – Pharma and Biotech.

Company	Loss after 1 day	Loss after 2 days
Novartis	(8.7%)	(13.7%)
Roche	(8.6%)	(13.0%)
Actelion	(13.7%)	(19.4%)
Cosmo	(6.4%)	(8.8%)
Basilea	(6.9%)	(11.2%)
Santhera	(4.5%)	(11.3%)
Newron	(6.1%)	(11.8%)
Molecular Partners	(4.9%)	(3.5%)
Adnex	(10.1%)	(17.7%)

All companies lost in value. But the value loss was quite different.

FX Leverage

The fact that the share values changed less than the actual currency is quite remarkable. It is fair to expect that Swiss companies have relatively more expenses in CHF than they have revenues in CHF. The revenues come from worldwide operations and Switzerland is with only 8 mn inhabitants a small market.

However, on the cost side the headquarters and some R&D facilities weigh more heavily. They have so to speak an FX leverage. If we assume a company with the revenue structure as in table 2 then the value difference after an event like January 15 for the Swiss Franc leads to an even stronger value loss than the FX change would suggest.

Table 2: Example Company Valuation.

Before Event	Revenues	Expenses
rNPV of CHF Cash Flows	CHF 1 bn	CHF 10 bn
rNPV of non CHF Cash Flows	CHF 99 bn	CHF 70 bn
TOTAL	CHF 100 bn	CHF 80 bn
After Event		
rNPV of CHF Cash Flows	CHF 1 bn	CHF 10 bn
rNPV of non CHF Cash Flows	CHF 82 bn	CHF 58 bn
TOTAL	CHF 83 bn	CHF 68 bn

In the example of table 2 the value drops by 25% even though non CHF currencies only fell by 17%. Clearly, this is not what we could observe in January 2015. Nevertheless it is fair to assume that the FX leverage is different for the companies.

Table 3: Share performance after the SNB abandoned the EUR/CHF floor – other industries.

Company	Loss after 1 day	Loss after 2 days
Nestle	(6.2%)	(12.6%)
Transocean	(8.3%)	(11.6%)
Straumann	(16.9%)	(27.7%)
Swiss Re	(5.6%)	(8.7%)
Credit Suisse	(11.0%)	(19.2%)
UBS	(11.7%)	(17.2%)

Other industries reacted differently. The banks seemed to suffer a lot, but we cannot draw any clear conclusions, the reactions were too different – unless that all companies lost value. Straumann, a medtech company, has a lot of manufacturing in Switzerland, so even more costs are in expensive CHF. Therefore the FX leverage is even stronger.

An R&D company is certainly more geared than a commercialising company. The R&D costs in CHF are earli-

er and more certain, accentuating the leverage. Unfortunately, this idea is not confirmed by the data. Molecular Partners, e.g., with an out-licensed project in phase 2 as the most advanced project at the time, is least affected even though it should be affected most according to the above reasoning. Depending on the currency of the license contracts at least revenues from milestones might not be subject to changes in currencies.

FX market vs. Equity market

So, does the equity market know better than the FX-market itself? Given that Swiss interest rates are lower than European interest rates, the Euro should get even weaker in the future. But there is a fundamental difference between FX markets and equity markets. FX markets are highly liquid and are the playground of arbitrageurs, using the slightest differences between interest rates, spot rates and forward rates to make some risk-free gains. The equity market relies much more on opinions and so-called under- or overvaluations might persist for a long time. It is not possible to simply hedge these valuation inconsistencies away as the fundamental value drivers – the future cash flows, are not traded assets. It seems that the equity market has also given its opinion on the future development of the Swiss Franc, to some extent. Since the share prices did not react as strongly as the theory suggests, the equity market expects the EUR/CHF rate to rebound. Interestingly, this is what happened to some degree. In August 2015 one Euro is worth CHF 1.08 again.

Liquidity

However, this still does not explain the very different reactions of the share prices in tables 1 and 3. Of course, some differences stem from other developments in the same period, just like any other day. But a final explanation might also be the limited liquidity in smaller biotech stocks. The two really liquid stocks of Roche and Novartis reacted in a very similar way. But smaller companies such as Newron, Molecular Partners, or Addex are not monitored and traded in the same way. Fewer investors look at these shares and as long as nobody buys or sells these shares the price does not move. Therefore the reaction is not as precise as for larger stocks.

FX in valuation

But how should we make use of currencies in our own valuations? Many analysts have been taken by surprise, as a changed FX rate was in some models not even an input factor. As we have seen, there is a considerable effect, and this effect depends on at least two important points:

1. FX leverage
2. Future development of FX rates

A complete valuation model should therefore include costs and expenses in their respective currency and for each currency an exchange rate development is required (i.e. for EURCHF we need an estimate for 2016, 2017, 2018, etc.). This is probably more than even the most sophisticated models use. Even in textbooks the FX issue is neglected (very much like taxes for R&D companies or success rates). Some say that FX is an additional risk that should be

taken care of in the discount rate. Typically, it is a diversifying market risk that would decrease the beta and therefore lead to a lower value. This is somewhat doubtful and would lead to the following situation: In a currency of a small country (like, e.g., Iceland, Denmark, Switzerland) the value of a company would be higher than elsewhere. On the other hand it would be the same company, no matter where it is located (disregarding tax aspects).

Another method would be to value all cash flows of the same currency and then translate that value with the current spot rate to the home currency. This method would require – most likely – different discount rates for different currencies. We have seen that this is not the method of choice.

The most reasonable method seems to assume a term structure for each FX (i.e. EURCHF, USDCHF, GBPCHF, etc) and to change every cash flow $CF(t)$ with $FX(t)$ to the home currency. For practitioners it is sufficient to assume a (constant) long-term exchange rate. This is what most analysts and investors have done, assuming that the Swiss Franc will weaken again somewhat.

Conclusion

Valuation of equity is less scientific than derivative instruments. But with a sudden change of FX rates we already touch the topic of term structures, which could also be applied to the discount rate (but nobody does so). We are quickly faced with the problem to which degree of detail we want to value a company or a project. Assuming fixed FX rates and fixed

discount rates is in most cases completely sufficient, but on January 15, 2015 it was not for Swiss companies.