

Market Insights

2016

Foreword

Here at PMC we like to share market insights and news that you might find valuable.

We have teamed up with experts and industry commentators to bring you the latest industry news. Working in conjunction with Record – an established, independent currency manager – we're able to bring you a report on how to assess emerging market investments which we hope will help keep you ahead of the game.

We hope that you will find this information useful and would welcome any comments or suggestions which you may have.



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Summary

Long-term investments in emerging markets can be difficult to value, especially with regards to the future value of the currency. While the spot exchange rate fails to capture the fact that emerging market economies tend to have higher rates of inflation relative to developed economies (and will therefore depreciate over time), the forward rate tends to overcompensate and price in more depreciation than that which usually transpires. The goal of this paper therefore is to consider consistent and easily implementable methodologies to value emerging market currency investments that correct for both of these tendencies.

The following table is a summary of possible methodologies to estimate the future spot exchange rate per US Dollar for the South African Rand (USDZAR) and Mexican Peso (USDMXN) five years ahead, along with some notes on the particular methodology employed.

5 Year Forecasts for USDZAR and USDMXN Using Different Methodologies

No	Formula	USDZAR Value	USDMXN Value	Notes
1	Spot (assumed constant)	15.5	17.5	Fails to account for long term impact of inflation on currency valuations
2	Forward (5 Year)	22.5	20.5	Fails to account for the real interest rate differential embedded in the forward rate that is a harvestable risk premium; thus overcompensates for inflation adjustment
3	Spot + Cumulative 5 Year Inflation Differential	18.5	18.4	Reasonable as long as the two economies represented by the currency pair do not have widely different prospects for per capita economic growth. If they do, this fails to account for the Balassa Samuelson Effect
4	Spot + Inflation Differential – 0.5* Growth Differential (Forecasted over 5 years)	19	18.3	Most complete methodology but relies on assumptions and could be unnecessary in some cases

Source: Bloomberg, IMF World Economic Outlook October 2015. All calculations use 5 year cumulative forecasts for growth / inflation. Differentials measured on the basis of quoted currency – base currency.

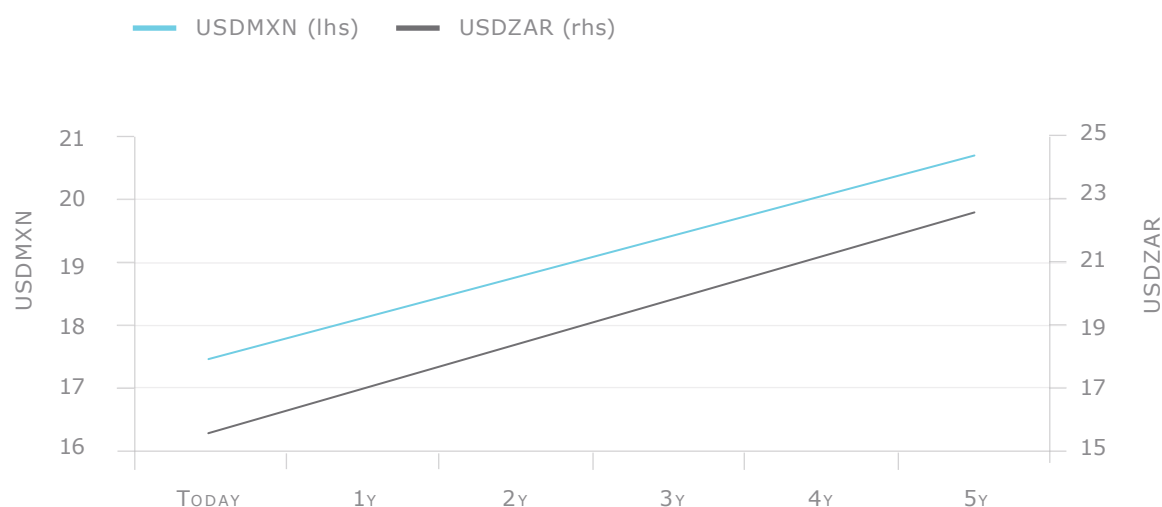
We would not recommend options 1 and 2 because of the fairly obvious shortcomings noted. Option 3 may be appropriate in cases where both legs of the currency pair have fairly similar growth outlooks. Option 4 includes a useful refinement for cases where the growth outlooks for the two legs vary significantly, although it does rely on the continuance of an assumed relationship between growth rates and exchange rates.

We note however that the above analysis is useful only in cases where the currencies in question are deliverable (ZAR, MXN etc.) or operate in non-deliverable forward (NDF) markets that are broadly representative of the onshore market (Brazilian Real, Korean Won etc.). In cases where there is a significant degree of detachment between the onshore and offshore markets (Argentine Peso, Vietnamese Dong etc.), the appropriate methodology would simply be to use the NDF market's forward rate. In such markets, covered interest parity¹ does not hold as there is a significant barrier to accessing the onshore market, and the forward rate is simply a "betting market" that reflects market participants' best guess of the future spot rate.

Spot and Forward

The South African Rand currently trades at a spot rate of 15.5 to the US Dollar with the 5 year forward trading at 22.5. This reflects an annualized interest rate differential of just under 6.5% p.a. between the two currencies over a 5 year period. Similarly, the Mexican Peso currently trades at a forward interest rate differential of 3.2% p.a. over a 5 year period. The theory of uncovered interest rate parity would suggest that the forward rate is an unbiased estimator of the spot rate and that our best guess of the spot rate in 5 years ought to be the current forward rate.

USDMXN & USDZAR Forward Curves



Source: Bloomberg (as of 29th March 2016)

However, empirical evidence has shown that uncovered interest rate parity doesn't tend to hold on average (higher interest rate currencies do not depreciate as much as expected) and this fact forms the basis of the forward rate bias (also known as the carry trade). This can be explained by the fact that economies offer different real interest rates that are representative of the risk of holding their particular currency². Our analysis should therefore adjust the nominal interest rate on offer by the real interest rate to arrive at a more accurate estimate of the future spot value.

¹ Covered interest parity suggests that the forward rate for a currency pair is simply the spot rate adjusted by the interest rate differential between the quoted and base currency. If covered interest parity holds, there is no arbitrage possible by borrowing in the low interest rate currency, depositing in the higher rate currency and locking in an offsetting forward (or vice versa).

This is:

$$= \text{Spot} * (1 + \text{NID}) / (1 + \text{RID})$$

$$= \text{Spot} * (1 + \text{NID}) * (1 + \text{ID}) / (1 + \text{NID})$$

$$= \text{Spot} * (1 + \text{ID})$$

Where NID = Nominal Interest Differential (in %);

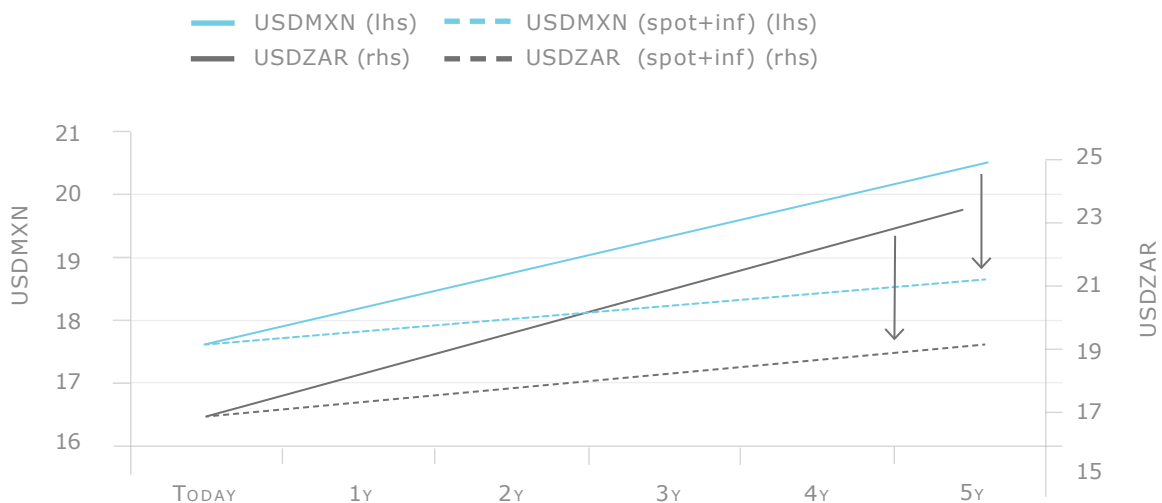
RID = Real Interest Differential (in %);

ID = Inflation Differential (in %); $(1 + \text{RID}) = (1 + \text{NID}) / (1 + \text{ID})$; Differentials calculated as quoted – base currency

Inflation Adjusted Spot / Balassa Samuelson Effect

In sum, an accurate estimate of the future spot value could simply be the spot adjusted for the long term inflation differential between the two economies. This is illustrated in the chart below which uses the 5 year forward and adjusts it for the projected real interest rate, where the inflation numbers are projections from the IMF³. As shown previously, this quite neatly collapses to the spot adjusted for inflation. The adjustment to the USDZAR spot is downwards to 18.5 while the adjustment to USDMXN is to 18.4.

USDMXN & USDZAR Forward & Inflation Adjusted Spot Curves



Source: Bloomberg IMF (as of 29th March 2016)

For most developed currency crosses, such an analysis would usually be adequate. However, in the case of emerging market currencies, this might not necessarily be the case as a result of the disparate economic growth rates of emerging and developed economies.

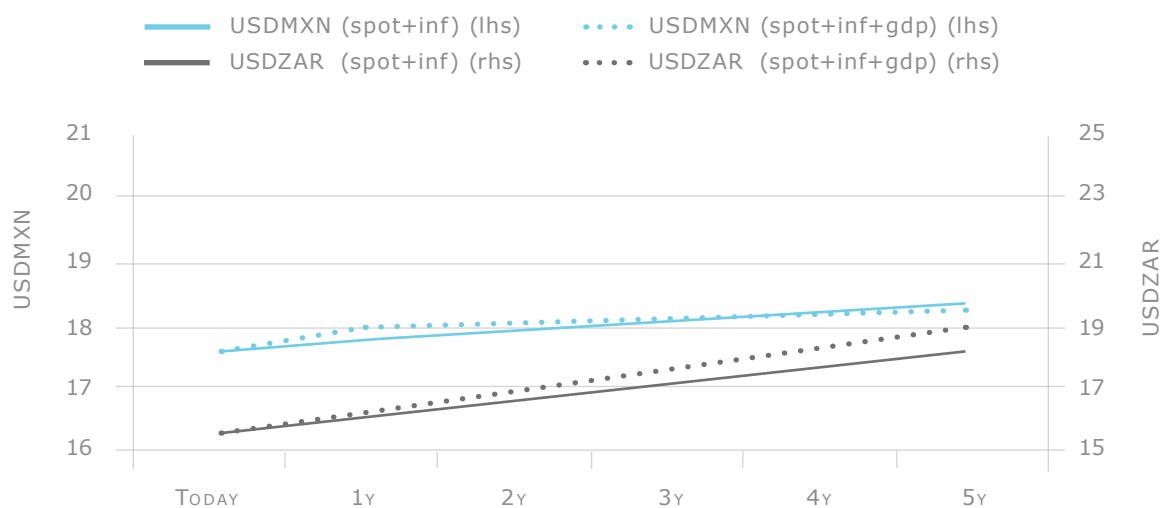
The Balassa-Samuelson effect postulates that productivity growth in economies should translate to an appreciation of the real exchange rate. The reason for this is that productivity growth ought to translate into higher wages in the tradable goods sector. However, since labour markets are (relatively) unified, wages must rise in the non-tradable sector as well. Since non-tradable goods (haircuts for example) cannot be arbitrated across economies, the domestic price level rises and the spot exchange rate doesn't depreciate to reflect this. There is therefore a real appreciation of the exchange rate. Our analysis, and a broad survey of the literature⁴, suggests that the impact of a 1% increase in relative productivity should translate to between 0.4% and 0.8% of real exchange rate appreciation.

²This is primarily because economies running current account deficits tend to offer higher real interest rates to investors to help finance those deficits. The additional premium paid is a reward that compensates investors for the risk of the economy being unable to finance that deficit. Carry trade returns as a result tends to have positive drift but negative skew.

³World Economic Outlook, October 2015

The chart below uses long term GDP per capita growth forecasts from the IMF and assumes that 1% of growth translates to 0.5% of real exchange rate appreciation (this is broadly in line with our estimates). The adjustment is made by shifting the dotted lines in the previous chart by half the relative per capita growth differential between the United States and South Africa / Mexico across the entire period. Since Mexico has higher projected growth versus the United States, the USDMXN curve is shifted downwards to 18.3. On the other hand, lower projected growth in South Africa versus the United States has the opposite effect with the spot being revised up to 19. It is worth keeping in mind that this exercise assumes that the real appreciation translates purely into spot appreciation as opposed to higher inflation in the faster growing economy. In both cases, returns for a foreign investor would accrue; either directly through spot appreciation, or indirectly through higher interest rates that the central bank would have to set in order to tackle the increased inflation.

USDMXN & USDZAR Forward & Inflation Adjusted Spot Curves



Source: Bloomberg, IMF (as of 29th March 2016)

Conclusion

In conclusion, **Spot + Forecasted Inflation Differential** would account for both nominal interest rate and inflation differences in the case of currency pairs where the projected growth rates are relatively similar and thus the Balassa Samuelson effect doesn't have a significant impact.

For currency pairs where the two economies have largely disparate growth outlooks, (Euro and Indian Rupee for example), further adjustment of the **Spot + Forecasted Inflation Differential estimate with half the relative per capita growth differential between the two economies** would capture the growth differential, albeit at the cost of a forward-looking assumption as to how the growth rate differential would translate into exchange rates over time.

It is worth recognizing some of the limitations of this analysis. Some emerging markets have closed capital markets that don't allow offshore delivery of the currency. In such instances, the market trades using non-deliverable forwards that settle on the local spot market. As mentioned in the summary, the analysis above is applicable only in cases where the spot market is deliverable or where the non-deliverable forward market is broadly representative of onshore rates. In cases where this is not the case, the best estimate of the future spot is simply the non-deliverable forward rate as this represents the market's best guess of the future spot price.

⁴Tica and Druzic (2006) "The Harrod-Balassa-Samuelson Effect: A Survey of Empirical Evidence"

⁵ World Economic Outlook, October 2015

To summarize:

Market	Condition	Approach
Deliverable / NDF market representative of onshore conditions	Small Growth Differential	Spot + Inflation Differential
	Large Growth Differential	Spot + Inflation Differential – 0.5*Growth Differential
NDF market disjointed from onshore	–	Non-Deliverable Forward

Finally, it is important to keep in mind that valuation exercises such as the one illustrated above attempt to describe a long term view that smooths out the cycles that are typical of risky assets. While they may not represent what *will* happen, they attempt to provide a long term unbiased estimate of what is likely to happen on *average*.

Risk warnings

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