



**wocu**

Exchange is no longer foreign

Wocu : A more stable way to  
manage international project  
finance

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## 1 Introduction

Large infrastructure projects have a long life span and may include suppliers from different countries and receive funding from financial institutions based abroad. When a budget for the project is estimated one of the several items to consider is how exchange rates will change and how they might affect costs.

This case study compares a basic project budget in US Dollar with a budget where a currency basket - the Wocu™ - is used as the 'project currency'. Using this tool helps a company executive to:

- ⌚ create a more stable environment, allowing more reliable estimates of future cash flow,
- ⌚ remove a large part of the uncertainties associated with currency risk,
- ⌚ reduce the time, efforts and energies a company executive has to spend managing foreign exchange,

This tool is a unit of value for cross-border activities, based on several currencies instead of a single currency, in other words a currency basket. A currency basket provides a more stable environment<sup>1</sup>; the Wocu is a specific currency basket that makes life even easier than other similar alternatives currently available<sup>2</sup>. It is a market-led basket of the currencies that are legal tender in the countries with the 20 largest GDP in the world, according to a classification updated twice a year by the IMF<sup>3</sup>.

Using a currency basket creates a 'hub and spoke' model for cross border transactions that isolates changes in strength and weakness of one currency from the others. This has been dealt with in greater details in other white papers such as "[Wocu: The currency shock absorber](#)", a white paper that can be downloaded from the [www.wocu.com](http://www.wocu.com) website

Throughout this document we have used XCU as the three letter code for the Wocu (a formal application for the ISO 4217 code XCU for the Wocu has been submitted by WDX Organisation Ltd.

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<sup>1</sup> The currencies included in the basket may not necessarily be strong (or weak) at the same time; therefore the movements in different directions creates a more stable environment. For a more in depth analysis of the stabilising effect of the Wocu, please read "[Wocu: The currency shock absorber](#)", a white paper that can be downloaded from the [www.wocu.com](http://www.wocu.com) website.

<sup>2</sup> The Wocu is market driven without any political interference, the IMF SDR is an artificial currency basket driven by political consideration. For a more in depth analysis of the advantages of the Wocu over the SDR please refer to "[Retooling global development: A matter of TrUST](#)", a white paper that can be downloaded from the [www.wocu.com](http://www.wocu.com) website.

<sup>3</sup> For more information about the Wocu see section 4 About the Wocu, WDX the WDXI, on page 17 of this document. In 2009, the top 20 global economies (ranked by the IMF according to their GDP) contributed between 80% and 90% of the total world GDP.

## 2 Wocu and Project Finance

Let us consider the situation of an infrastructure project in Morocco that has been enabled through funding from a company based in Singapore, has to pay a monthly software licence to a US company, uses technology bought in the Eurozone and it is put together by a Brazilian company.

The infrastructure will start generating an income after a specific intermediate milestone has been reached and from that moment on, the income will increase as more milestones are met.

The life of the project spans four years, from January 1<sup>st</sup> 2007 to December 31<sup>st</sup> 2010. The budget is as follows:

a) Non-Wocu world

- i. Software licence USD 5,000 a month paid to an American company on the last Monday of the month from Jan 2007 onwards.
- ii. Technology purchases from a company in the Eurozone, USD 200,000 paid every other month for the first half of 2007 than monthly until May 2008.
- iii. Building/implementation, paid to a Brazilian company. USD 600,000 a month and at the end of each six months period USD 1,200,000 when project milestones are achieved.
- iv. Funding of USD 35,000,000 from an institution based in Singapore. An initial payment of USD 10,000,000 at the beginning of the project, plus two further payments of USD 10,000,000 on September 2007 and February 2008 and a final payment of USD 5,000,000 in July 2010. At the end of the project USD 1,699,195.81 are leftover (4.77% of the total funded). The SGD equivalent of the total paid to fund the project is SGD 51,740,500, against an estimate of SGD 53,711,000.
- v. Income from the infrastructure starts at the end of the month following the achievement of the first milestone (end of July 2007) and it is MAD 150,000 per month. Each milestone reached increases the income by MAD 150,000 a month up to MAD 1,050,000 by the time the project is completed (and might increase further post completion but it is outside the time frame included in this case study).

Every cost or revenue item is converted from USD into the relevant currency on the date the transaction occurs (except the income in MAD which is fixed and it is converted into USD according to the same logic). The total is then compared with the estimate cost or revenue assessed using the exchange rate of the first day of the project (01/01/2007)

b) Wocu world

All amounts in Wocu were assessed at the exchange rates USD/XCU at the beginning of the period. Funding has been rounded to achieve a manageable amount. Every cost and revenue item has been converted from XCU into the relevant currency at the exchange rate of 01/01/07 (estimate) and at the rate of the date the transaction occurs (actual). The revenue in MAD has been converted into XCU following a similar logic.

- i. Software is billed at XCU 3,041.33 a month (USD 5,000 on 01/01/07).
- ii. Technology purchases from a company in the Eurozone, XCU 121,653.33 (USD 200,000 on 01/01/2007) paid every other month for the first half of 2007 then monthly until May 2008.
- iii. Building/implementation, paid to a Brazilian company. XCU 364,959.98 (USD 600,000 on 01/01/07) a month and at the end of each six months period XCU 729,919.95 (USD 1,200,000 on 01/01/07) when project milestones are achieved.
- iv. Funding of USD 35,000,000 from an institution based in Singapore. An initial payment of USD 10,000,000 at the beginning of the project, plus two further payments of USD 10,000,000 on September 2007 and February 2008 and a final payment of USD 5,000,000 in July 2010. At the end of the project there are USD 1,699,195.81 leftover (4.77% of the total funded). The SGD equivalent of the total paid to fund the project is SGD 51,740,500, against an estimate of SGD 53,711,000.
- v. Income from the infrastructure starts at the end of the month following the achievement of the first milestone (end of July 2007) and it is MAD 150,000 per month. Each milestone reached increases the income by MAD 150,000 a month up to MAD 1,050,000 by the time the project is completed (and might increase further post completion but it is outside the time frame included in this case study).

## 2.1 Currency Volatility

We have already shown in other case studies how the exchange rate of the Wocu is less volatile. We have taken the exchange rate against the USD and the one against the Wocu on 01/01/07 as the baseline and we have mapped the variations from that exchange rate every day until 31/12/10. In this way we have similar units of measure for both USD and Wocu exchange rates. The results are shown in the four charts below

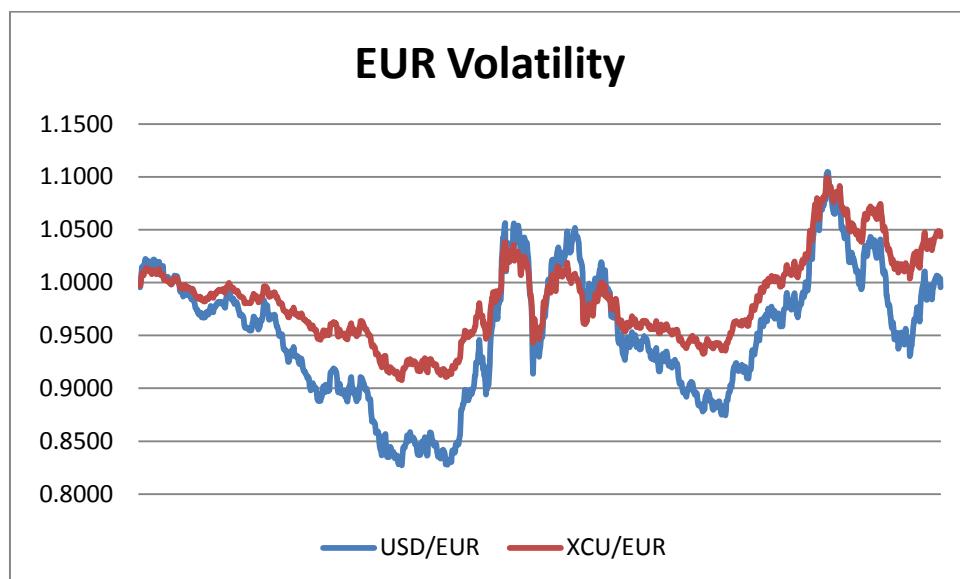


Figure 1 - EUR baseline against the USD and XCU

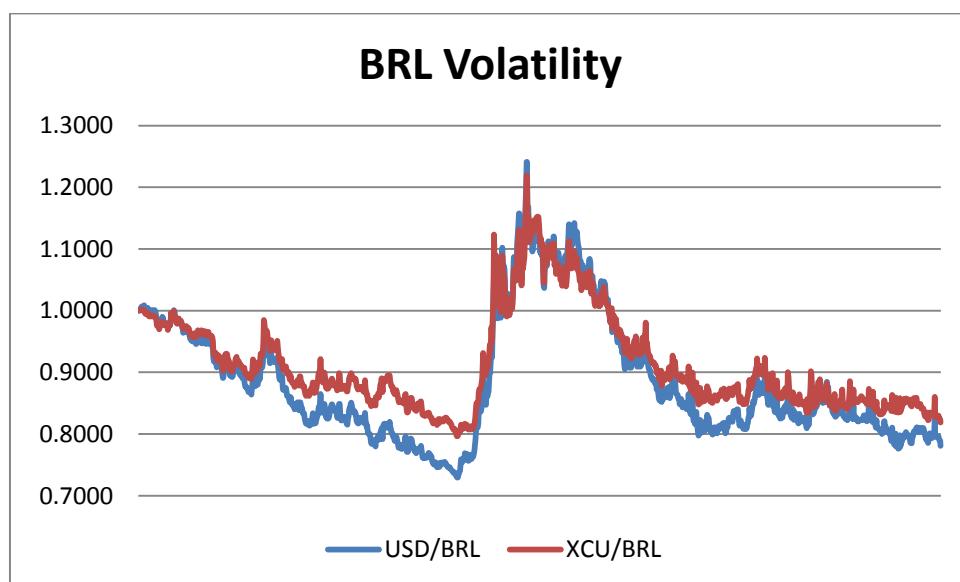


Figure 2 - BRL baseline against the USD and XCU

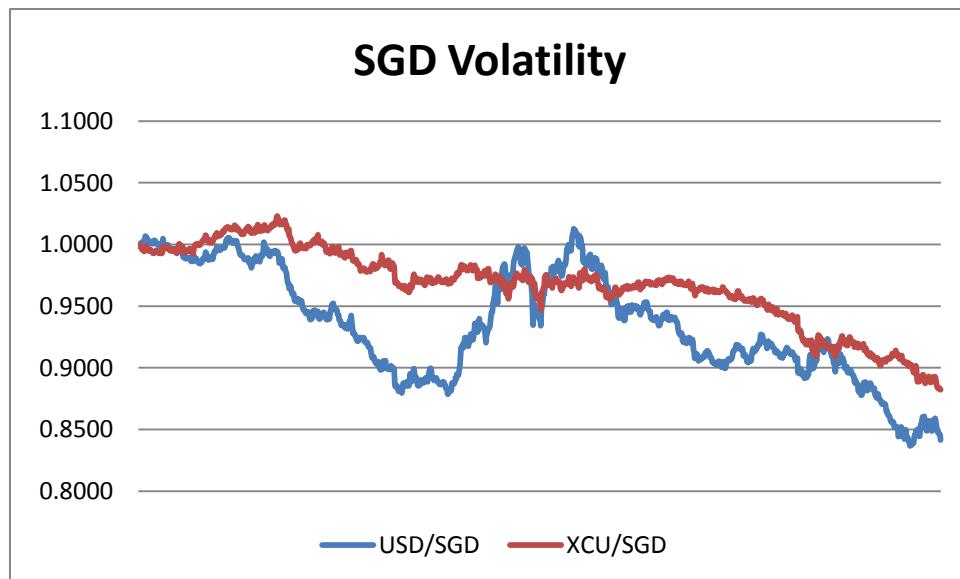


Figure 3 – SGD baseline against the USD and XCU

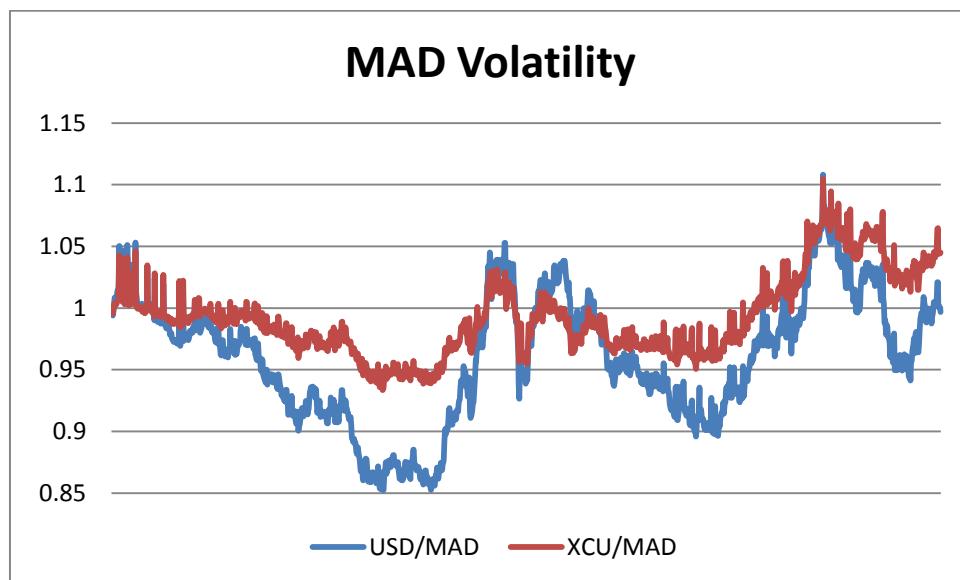


Figure 4 -MAD baseline against the USD and XCU

The Wocu is less volatile because it derives its value from a basket of currency and even when they all move in the same direction, they do not all move at the same speed. The different volatilities are summarised in the table below

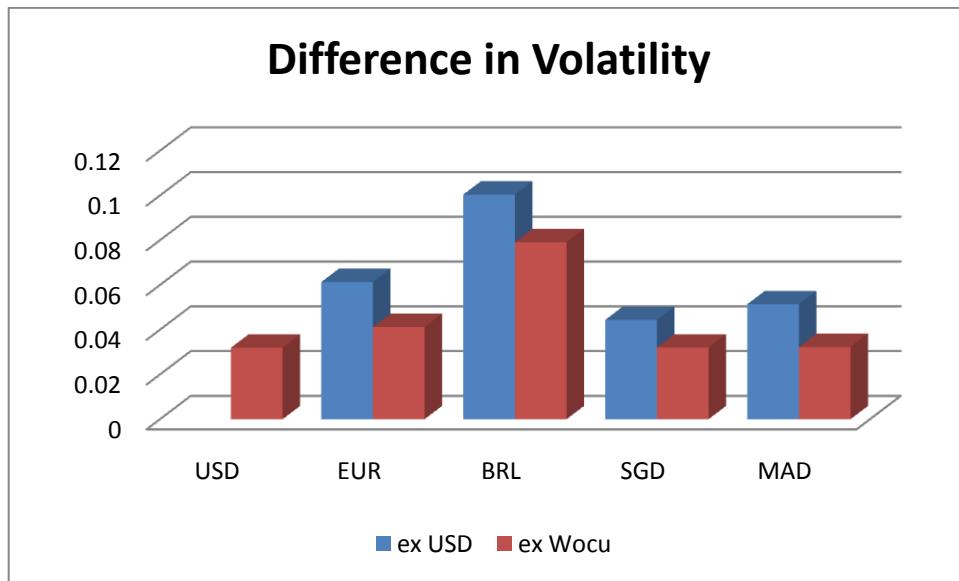


Figure 5 - Difference in volatility of the exchange rates

Obviously the USD payments acquire a volatility they did not have when the US Dollar was the reference currency for the project. However, as it is shown below, the increase in USD volatility is more than compensated by the drop in volatility of the other currencies.

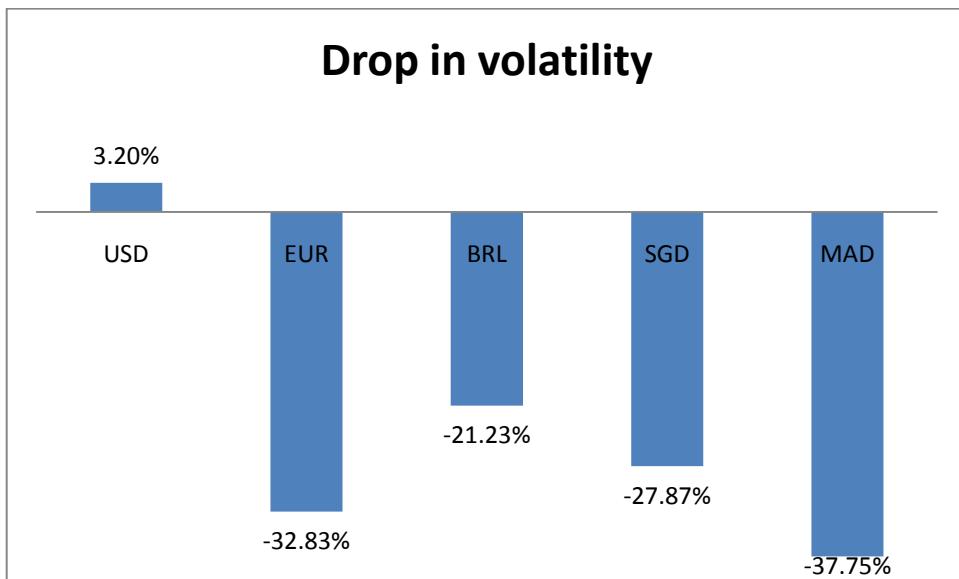
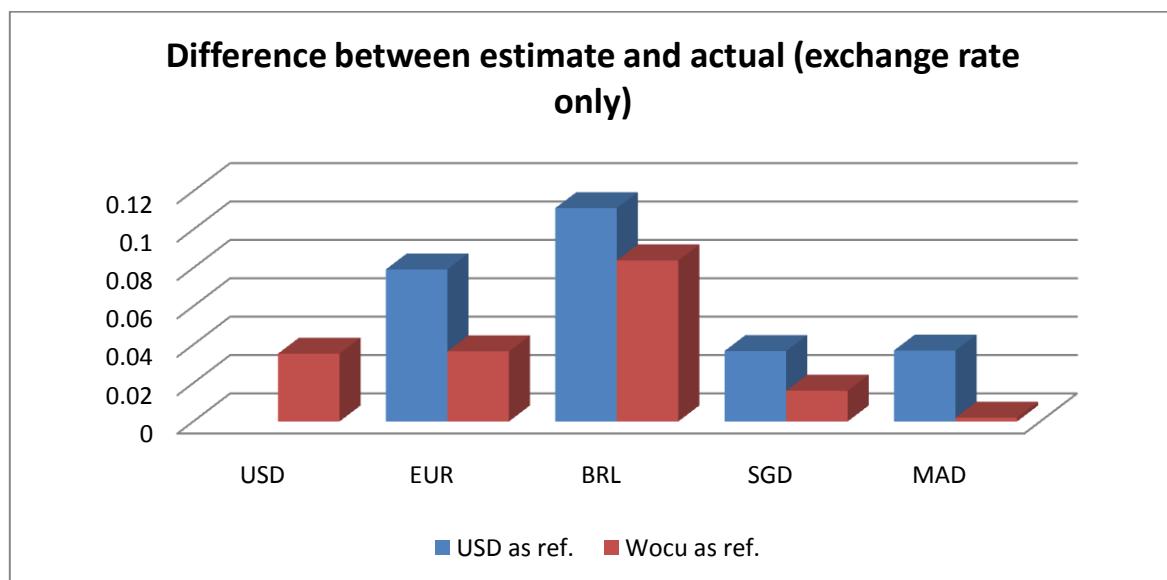


Figure 6 - Drop in exchange rate volatilities when the reference is moved from USD to XCU

## 2.2 Stability, Ease of Estimate

The person in charge of the budget has to monitor the changes in exchange rate. At the beginning there is an estimate based on an exchange rate agreed during the planning stage (we have taken the exchange rate on 01/01/2007 to calculate estimated value). Coping with currency volatility takes time and effort and it is not the only reason behind a change to budget.

Generically speaking, the lower volatility of the Wocu implies more stability and an ease in estimate. If we consider the differentials between the estimate and actual value between the two scenarios we notice that the actual and estimate values are closer when the Wocu is the reference currency of the project. The change is quite substantial as indicated in the chart below



**Figure 7 - Difference between estimates and actual amounts**

The chart in Figure 7 above shows the absolute values of these differences. The aim was to give an idea of the differences in value and how much 'closer' the two amounts were. Whether both the USD and the Wocu were above or below the zero or one was above and the other below is irrelevant. What the chart shows is simply that the estimate made on the basis of exchange rates on 01/01/2007 and the actual calculated on the exchange rates of the day of the transaction are closer when the Wocu is used as reference than when the US Dollar is.

The relevant data (with the correct sign) is shown in

	USD as ref.	Wocu as ref.		%
USD		-3.53%	0.04	-100.00%
EUR	-7.92%	-3.65%	-0.04	53.90%
BRL	11.11%	-8.39%	0.19	175.52%
SGD	2.05%	0.10%	0.02	95.12%
MAD	-3.70%	-3.77%	0.00	-2.09%

Table 1 below

	USD as ref.	Wocu as ref.		%
USD		-3.53%	0.04	-100.00%
EUR	-7.92%	-3.65%	-0.04	53.90%
BRL	11.11%	-8.39%	0.19	175.52%
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MAD	-3.70%	-3.77%	0.00	-2.09%

**Table 1 - changes in the difference between estimated and actual values**

The gap between estimated and actual is closer not just because of a lower volatility. The different patterns of volatility contribute to the narrower gap for the Wocu compared to the budget in US Dollar.

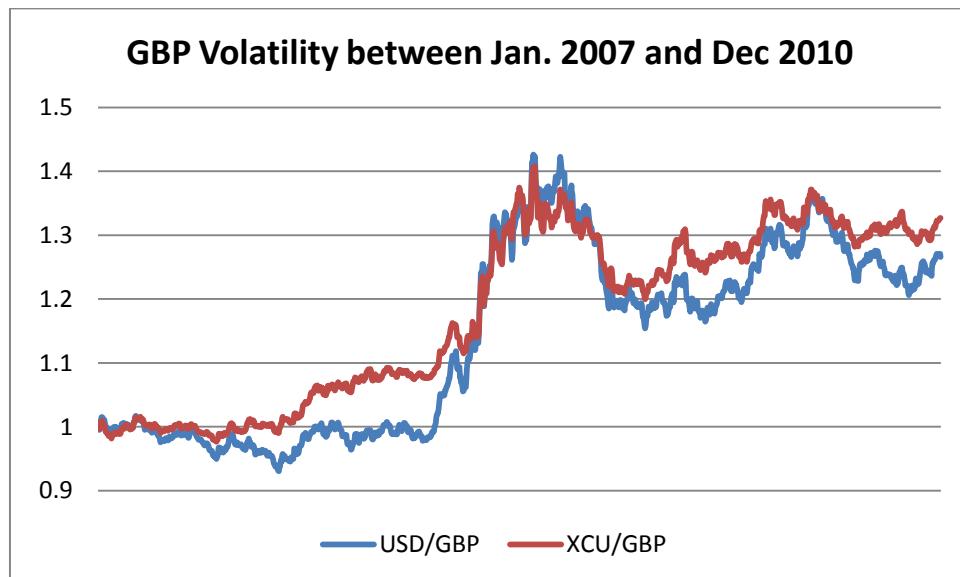
The Wocu is a currency basket, it is a weighed value of the legal tenders of the top 20 countries ranked by GDP according to the IMF.

We have considered the exchange rate at the beginning of the period (01./01/2007) as the baseline for all variations. A lower volatility indicates a lower range of fluctuations; however the variations against the Wocu may be on different side of the baseline compared to the changes against the USD. Looking at the charts of the currency volatility (Figure 1 to Figure 4 above) we can clearly see that the currencies where the difference between estimate and actual in Wocu is considerably lower than the same difference in US Dollar as described in

	USD as ref.	Wocu as ref.		%
USD		-3.53%	0.04	-100.00%
EUR	-7.92%	-3.65%	-0.04	53.90%
BRL	11.11%	-8.39%	0.19	175.52%
SGD	2.05%	0.10%	0.02	95.12%
MAD	-3.70%	-3.77%	0.00	-2.09%

Table 1 above are the currencies that have a range of volatility on both side of the baseline. Therefore, if you take a currency like the British Pounds or the South African Rand that showed weakness against all currencies in the basket (weakness shown by the trend being consistently above the baseline, indicating a constant strength of the Wocu against them) they will not show an

improvement in the gap between estimated and actual when the budget in US Dollars is compared with the budget in Wocu even though the volatility is lower<sup>4</sup>.

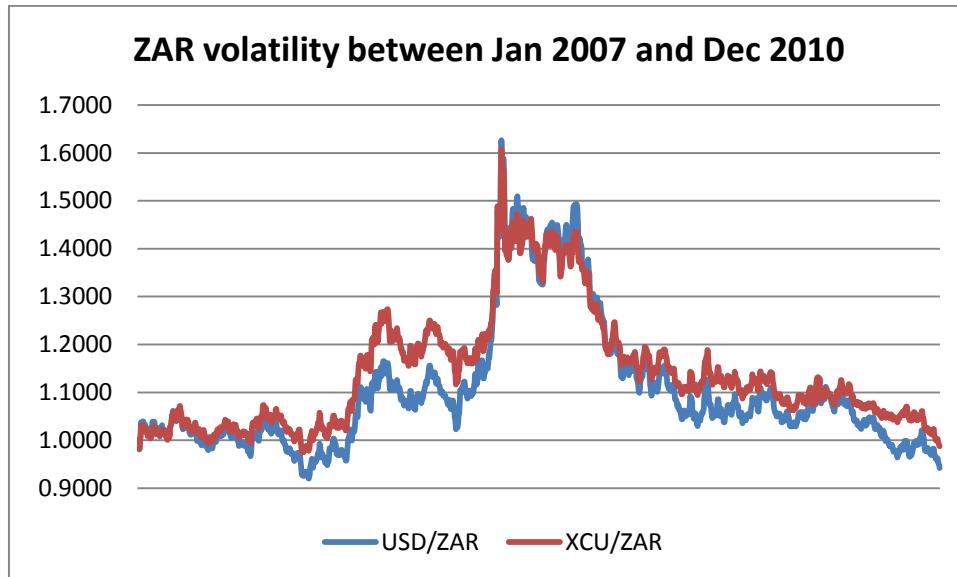


**Figure 8 - GBP baseline trend**

Figure 8 above and Figure 9 below clearly show a considerable peak of exchange rates against the Wocu and an overall trend that shows a consistent weakness against the Wocu and the US Dollar (the exchange rate being mostly higher than the exchange rate on 01/01/2007, whereas the other currencies show values on both sides of the baseline)

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<sup>4</sup> The volatility of the British Pound against the US Dollar in the four years considered is 14,35%, the one against the Wocu is 13.49%. The volatility of the rand against the USD is 13.49% the one against the Wocu is 12.21%



**Figure 9 ZAR baseline trend**

The greatest advantage of the Wocu is that it is possible to isolate a currency issue to that currency and not to others. It is not just a question of a lower volatility; unless there is a specific event<sup>5</sup> the ‘shock absorber’ effect makes for better and more reliable forecast of Wocu equivalent in that currency. A specific event may come as a surprise for a specific currency but it does not have any effect in the exchange rates of the other currencies against the Wocu.<sup>6</sup>

Whatever happens to the value of the currency in that period, reduced volatility reduces the currency risk. Figure 6 above shows the drop of volatility in the currencies used in our example. Even currencies that face an extended period of weakness against the Wocu shows a lower level of volatility

## 2.3 Difference in Funding

This section is very dependent on the specific currency used, however although the specifics may vary from one currency to another (due to the different trends in the exchange rates between that currency and the US Dollar and that currency and the Wocu), the concept has general validity.

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<sup>5</sup> the peak of Wocu strength against the British Pounds coincides with the credit crunch, the fall of Lehman brothers and the banking crisis. Events that considerably weakened the Pound

<sup>6</sup> The ‘hub and spoke’ model behind using the Wocu for cross border transaction will be further detailed in section 3 Conclusions, on page 21

Our example discusses the Singaporean Dollar, a currency that has a substantial drop in volatility between the exchange rate with the US Dollar and the exchange rate with the Wocu (see Figure 3 on page 7 above), so currencies with a lower drop in volatility will result in different figures.

Although the amounts in SGD in the two scenarios are very similar and the number of payment required to keep the project cash positive is the same, once again the Wocu shows a narrower difference between the estimated total amount required (using the exchange rate of 01/01/2007) and the actual disbursement of fund (value calculated at the rate of the exchange at the time the transactions were made), the Wocu budget has a smaller difference and therefore the estimate is more reliable. The actual difference in amounts depends on the specifics of the SGD and it may change using another currency but the principal is sufficiently general: Use the Wocu for a lower currency risk in your project. So whilst the end result is very similar, the ‘reliability’ of the estimate is higher in the ‘Wocu world’

The USD budget shows a leftover of 4.77% of the total, the XCU leftover is 4.46% of the total. Data summarised in table Table 2 below.

	Total	Leftover	Percentage
USD	35,000,000.00	1,669,195.81	4.77%
Wocu	21,289,331.89	948,921.05	4.46%

Table 2 - Summary of total funding

If we convert everything into Singaporean Dollars (please note the drop in volatility shown in Table 1, on page 10 above), we see that the total estimate for funding (at the exchange rate of 01/01/2007) are exactly identical and the actual total funding (based on the exchange rates at the time of the specific payments) are closer with the Wocu than with the USD. This matches what was mentioned in Section 2.2, on page 9, above. The variations in the gap between estimate and actual matches the variation in volatility between the two exchange rates (Data summarised in Table 3 below)

	Estimate	Actual	Diff.	%
USD base	53,711,000.00	51,740,500.00	1,970,500.00	3.67%
Wocu base	53,711,000.00	52,852,295.82	858,704.18	1.60%

Table 3 - Difference in funding (all the values in SGD)

What is specific to the SGD is the difference between estimate and actual in the two scenarios: it almost halves (See Table 3 above) whilst the actual amount of money required and the amount left over at the end of the project stays basically the same

	Actual funding	Leftover	
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USD Base	51,740,500.00	2,155,432.55	4.17%
Wocu Base	52,852,295.82	2,112,068.74	4.00%

**Table 4 - Difference in funding requirements**

Other currencies may have different final conclusions (depending on the trends of their exchange rates) but the principle of less volatility, leading to increased stability and more reliable estimates is common to all.

## 2.4 “Exchange is no longer foreign”

We can describe the current situation (a ‘non Wocu’ world) as a set of one to one relationships between currencies. A budget in US Dollar depends on relationship between each currency and the US Dollar, a currency that has its own volatility. In a Wocu world the relationship changes; currencies fluctuate against a more stable reference unit. Whereas the exchange rate between two currencies depend on the changes in strength and weakness of both currencies (usually reflecting changes in the economic and political situation in the two countries where the currencies are legal tender), when the Wocu is used as a benchmark there is only the change in value against the Wocu, therefore, the only relationship each party has to consider is the one between their currency and the Wocu. We move from a ‘network’ model to a ‘hub and spoke’ model; since the amount in Wocu does not change, the exchange rate between each currency and the Wocu depends on the strength/weakness of that currency against a basket of currencies and therefore it is entirely due to the financial and political conditions of the area where that currency is legal tender. The only ‘Wocu-led’ variations will happen when the basket is re-balanced and again the change in the weight of each currency depends on the GDP of the country where that currency is legal tender.

‘Repatriating’ currency risk means spending less time and energies trying to manage that risk or trying to cope with the consequences of not managing it. When we add to that the increased stability of prices we have a much simpler environment that requires less time and energy.

### 3 Conclusions

The Wocu makes life easier for a company. What we have discussed in this document clearly shows that:

- ⌚ Stability does not reduce costs in itself, but ultimately saves on efforts and energies by making it easier to manage foreign exchange risks and ultimately cut the costs of currency hedging and the consequences of getting it wrong.
- ⌚ Using a currency basket in budgeting for a long and complex cross border project makes it easier to complete it within the initial forecast and makes creeping changes in cash flow less likely to happen. On the other hand it is possible to isolate the effect of variations in costs from variations in exchange rate<sup>7</sup>
- ⌚ Moving from a ‘point to point’ model for foreign exchange transactions to a ‘hub and spoke’ model simplify life and takes a lot of the ‘foreign’ away from ‘foreign exchange’.

How can this simplified environment be achieved? There is no need to create a new infrastructure, the Wocu operates like a currency, following this case study the non-Wocu world implies a SGD to USD transaction and a USD MAD, in a Wocu world that transaction would go through the Wocu. This can be achieved because there is a financial institution managing these two ‘one legged’ transactions<sup>8</sup> or because the two parties have entered a contractual obligation to transact in Wocu and they both subscribe to the exchange rate feed<sup>9</sup>.

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<sup>7</sup> A more detailed example on how it is possible to isolate the impact of changes in costs from changes in the exchange rate can be found in the case study “[Airlines – Jet fuel](#)” which is available to download from [www.wocu.com](http://www.wocu.com)

<sup>8</sup> Financial institutions managing transactions in Wocu might lead to future contracts in Wocu, similar to current future contracts for currencies. In this way the reduced currency risk introduced by the Wocu could itself be managed.

<sup>9</sup> For information on how to subscribe to the Wocu exchange rate feed, please contact WDX Ltd ([www.wocu.com](http://www.wocu.com))

## 4 About the Wocu, WDX the WDXI

The Wocu™ (**W**orld **C**urrency **U**nit) is a standardised, apolitical basket currency derivative quotation based on the real time exchange rates of the currency pairs of the world's top 20 nations, as determined by IMF measures of GDP. The Wocu naturally takes into account changing economic power and commercial perception of currency values as an elegant, market driven solution to the need for a global reference currency.

Wocu quotations are delivered across financial networks and the Internet in real time from the unique Wocu algorithm, which inputs trading prices of currency pairs from a broad spread of global sources to output the Wocu. The Wocu, its constituent currency pairs weighted in line with GDPs, is a generally less volatile currency unit than traditional currency pairs.

The Wocu balances and stabilizes currency risk, offering commercial advantage compared to the traditional use of the US Dollar to denominate international trade, acting as a natural currency shock absorber. It is applicable to most cross-currency transactions and particularly international commodity trading. US Dollar agnostic (the US Dollar simply forms a weighted component of the Wocu) the Wocu offers sovereign nations an alternative to the US Dollar to price commodity exports and a standardised reference for holding currency reserves.

The Wocu's integrity, non-manipulation and standardisation is ensured by the WDX Institute, a wholly independent not-for-profit research body established by WDX. The WDXI independently monitors the Wocu and its constituent revisions, as determined by IMF GDP figures, every six months. The WDXI is also mandated to further research into the application of the Wocu and World currency baskets in general.

The Wocu is developed, owned and distributed by the WDX Organisation Ltd, a private company formed in 2009 and based in the heart of the City of London financial district, England. The Wocu was made available for commercial use on January 1, 2010. WDX wholly owns the Wocu algorithm including a pending U.S. patent application for the calculation method and technology behind the Wocu.

Wocu currency pair prices, information about WDX, the WDXI and other data can be found at [www.wocu.com](http://www.wocu.com) or [www.wdxinstitute.org](http://www.wdxinstitute.org)

## 5 About the Author

After a long career as Change Director and Strategist for major financial institutions Silvano Stagni decided it was time to achieve a better work/life balance and switched to writing. His experience in 'bridging communication gaps' between stakeholders is the basis of his style of writing and the choice of subjects he writes on. He has written extensively on disruptive concepts with an emphasis on practical examples and pragmatic implementation scenarios (in other words, what does it mean? and how does it work?). He has also written extensively on the impact of new banking regulations, cross-border banking, banking in the developing world and risk strategies. He contributed white papers for regulatory and monetary issues behind electronic currency and other non-monetary type of payments to regulators in Asia and Europe. He has published several articles (both online and printed magazines) and contributed to many white papers and books.

Further information can be found on [www.stagni.net](http://www.stagni.net)

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