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# Currency Ranking Methodology

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## Summary

Understanding that the key long-term movers of foreign exchange markets are macroeconomics and public policy, we at Silva Capital have structured our investment process around thoroughgoing, fundamental evaluations of the countries whose currencies we trade. Through our investigations, we aim to select those variables which hold the greatest explanatory power of FX trends, to normalize these metrics for comparison, and to weight our findings in ways which reflect the market environment. At end, we utilize our findings to produce a ranked basket of investable currencies.

In this paper, we describe our 2012 ranking process, detailing the countries we have selected for investigation, the variables against which we assess them, and the weighting schema we now assign the market.

We believe that skilled, active analysis of the fundamentals captured by our method will generate risk-adjusted outperformance over time.

Further information concerning Silva Capital's offerings and investment history is available to accredited investors upon request.

# Selection of Markets

**The definition of 'Emerging Markets' encompasses more than 125 countries and more than 75% of the world's population. To ensure the inclusion of investable currencies in our evaluation, we identify three subsets of the emerging markets universe based on a combination of population and economic potential (GNI per capita in purchasing power parity terms).**

## Frontier EM Universe (Excluded)

Frontier EM countries do not operate open market currency policies and are typically neither liquid nor accessible. These markets exhibit markedly low standards of living, widespread public health challenges, and a lack of access to basic education. While we maintain a broad database of Frontier indicators, we exclude Frontier EM countries from our general rankings and have no current holdings in this region.

## Opportunity EM Universe (48)

Opportunity EM countries are nations with strong real GDP growth, incomes per capita between $2,000 and $11,456 in purchasing power parity (PPP) terms, and populations under 40 million.

- Opportunity Asia: Malaysia, Sri Lanka
- Opportunity LatAm: Argentina, Peru, Venezuela, Chile, Guatemala, Ecuador, Cuba, Dominican Republic, Bolivia, Honduras, El Salvador, Paraguay, Nicaragua, Costa Rica, Panama, Uruguay
- Opportunity EMEA: Poland, Uzbekistan, Romania, Kazakhstan, Belarus, Azerbaijan, Serbia and Montenegro, Bulgaria, Turkmenistan, Croatia, Georgia, Moldova, Bosnia & Herzegovina, Lithuania, Albania, Armenia, Algeria, Morocco, Iraq, Yemen, Syrian Arab Republic, Tunisia, Libya, Jordan, Lebanon, Occupied Palestinian Territories, Cameroon, Angola, Congo, Mauritania

## Core EM Universe (16)

Core EM countries are nations with strong real GDP growth, incomes per capita between $2,000 and $11,456, and populations over 40 million.

- Core Asia: China, Indonesia, Vietnam, Philippines, Thailand, India, Pakistan
- Core LatAm: Brazil, Mexico, Colombia
- Core EMEA: Russian Federation, Turkey, Ukraine, Egypt, Iran, South Africa

Countries within the Core and Opportunity EM subsets are eligible for our ranking system. Before inclusion, they are evaluated for data availability, the openness of their currency regimes, and the availability of liquid forward markets in their currencies.

## Data Availability

Our ranking methodology requires the availability of robust historical macroeconomic data. Countries are excluded where data is either unavailable or unsound.

## Exchange Rate Regime

Countries that are "dollarized" or maintain a currency peg are excluded (with the exception of China). This eliminates most Middle Eastern and North African countries in addition to Central American and South American nations that engage in de facto or conventional fixed peg arrangements.

## Existence of a Liquid Forward Market

Silva Capital's investment strategy requires liquid Spot, Forward, and/or Non Deliverable Forward markets, and we consider only currencies in which such markets can be found.

Together, these requirements limit our rankings to a group of 23 liquid, investable currencies. *(See Figure 1)*

***Figure 1***

| Select EM Universe (23) | | |
|---|---|---|
| **Asia** | **EMEA** | **Latin America** |
| China | Czech Republic | Argentina |
| India | Egypt | Brazil |
| Indonesia | Hungary | Chile |
| Korea | Israel | Colombia |
| Malaysia | Poland | Mexico |
| Philippines | Romania | Peru |
| Singapore | Russia | |
| Thailand | South Africa | |
| | Turkey | |

# Factors Used In Quantitative Ranking System

**Silva Capital's Quantitative Ranking System (QRS) considers six traditional measures of macroeconomic robustness and five additional components which we believe to possess meaningful explanatory and predictive power of FX performance.**

## Model Metrics for Evaluation & Comparison

- Exchange Market Pressure (EMP): Exchange Market Pressure is the sum of percent changes in a currency's nominal exchange rate and its level of foreign reserves. EMP is a proxy for the market-orientation of policy regimes as well as a gauge of accrued but unrealized changes in a currency's valuation. High values indicate interventionist policies by central banks and managed exchange rate regimes.
- Real GDP Growth: Strong economic activity is considered supportive of a currency and tends to result in FX appreciation over time. Output growth attracts inflows of capital as investors seek to benefit from bull markets via equities and foreign direct investment (FDI). These inflows require the purchase of local currencies, thus boosting demand and the currency's relative value.
- Basic Balance: If current account deficits are not financed with capital inflows, they put a country at risk of a balance of payment (BOP) crisis. Capital inflows to a country can be deconstructed into (1) portfolio flows, which by nature are highly volatile, and (2) FDI which is typically more stable given its inherent link to long-term investments. The basic balance measures the extent to which these two inflows satisfy deficits in the current account. Positive values indicate that a currency is unlikely to experience a BOP crisis and are supportive of FX appreciation.
- Carry-to-Risk: Carry-to-Risk measures the yield gains of a local currency investment, adjusted by its market-implied risk. The measure is similar to a Sharpe ratio, and therefore suggests that higher values are supportive of currency strength.
- Policy Rate: A central bank's policy rate proxies interest payments on all other investments throughout a country. It particularly signals the attractiveness of investments in short-duration fixed income products and is a primary driver of flows into a currency. Higher policy rate levels are supportive of currency valuation.
- Inflation: Inflation erodes purchasing power and, all else being equal, the relative value of a currency.
- REER: The Real Effective Exchange Rate (REER) compares the relative impact of inflation on a nation's currency against a basket of its trading partners. We consider REER in terms of a deviation from its 5-year moving average, under the premise that in the longer term, currencies are likely to display mean-reversion tendencies. Higher values represent strength vis-à-vis the historical valuation of a currency's trading partners, and suggest future weakness. The opposite is true of lower values.
- External Debt-to-Reserves: External Debt-to-Reserves reflects a nation's total foreign currency denominated indebtedness as a share of the reserves available at its central bank to service that debt. Emerging market currencies have sometimes come under stress when investors have feared that their reserves cannot sufficiently cover debt service obligations. As such, high levels of external debt relative to reserves represent greater risk that a crisis could occur and that currency weakness could follow.
- Fear of Floating: Fear of Floating measure the extent to which governments manipulate the value of their currencies. We consider central bank actions that directly or indirectly impact the valuation of a currency on a fractional scale ranging from 1 to 3. A country that does not intervene in foreign exchange markets and allows the valuation of its currency to be fully determined by the market would be assigned a value of '1'. At the other end of the spectrum, a country which intervenes to fix the valuation of its currency would be given a value of '3'. Variations of policies aimed at impacting currency valuation are labeled with intermediate values to the extent which intervention is at risk of occurring.
- Political Risk: Elections create market uncertainty and have, in some instances, significantly impacted currency valuation. While elections vary greatly in their potential impact on economic stability, they are in general too important to disregard in emerging market currency analysis.
- Future Index Value: We feel it is critical to incorporate forward-looking measurements into our ranking framework. Thus, we include a normalized value of our future year rankings as an element of its current year valuation. This builds an aspect of expectation into our methodology and allows us to quantify anticipated changes in our other ranking metrics.

# QRS Statistical Approach

In order to reach a consistent comparison of our QRS factors, we statistically normalize the data. We produce z-scores for each annual metric by comparing against yearly averages for the emerging markets universe and dividing by their standard deviations. In order to obtain each final currency rank, directional weights are given to these z-scores which are then summed and standardized by a common factor. An example of the resulting z-scores and final currency rankings can be seen in the table below, which depicts QRS outputs for Egypt.

***Figure 2***

| | Egypt | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | MQ | | | | | | | |
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| **Currency Analysis** | | | | | | | | |
| **Exchange Market Pressure (EMP)** | | 18.7 | 23.1 | 14.8 | (4.9) | 14.4 | (25.0) | 45.6 |
| **Real GDP growth** | 4.5 | 6.8 | 7.1 | 7.2 | 4.7 | 5.1 | 5.8 | 3.0 |
| **Basic Balance** | 7.6% | 7.3% | 9.8% | 8.0% | 1.3% | 1.1% | 0.2% | 0.4% |
| **Carry-to-Risk** | NA | NA | NA | NA | NA | NA | NA | NA |
| **Policy Rate** | 9.50 | 8.00 | 8.75 | 10.50 | 9.00 | 8.25 | 9.00 | 9.00 |
| **Inflation** | 4.7 | 7.3 | 8.6 | 20.2 | 9.9 | 10.1 | 11.2 | 10.7 |
| **REER** | 73.63 | 76.76 | 77.21 | 81.46 | 87.73 | 92.58 | 88.55 | 88.55 |
| % to 1y MA | 2.27% | 3.02% | 0.76% | -5.80% | 2.10% | -0.11% | -4.08% | -4.08% |
| % to 5y MA | -2.44% | 6.38% | 8.60% | 8.30% | 10.90% | 11.21% | 4.93% | 4.93% |
| % to 10y MA | -12.42% | -8.08% | -6.06% | 0.22% | 9.54% | 16.66% | 11.77% | 11.77% |
| **External Debt/Reserves** | 1.47 | 1.28 | 1.03 | 0.97 | 0.98 | 0.92 | 2.07 | 1.73 |
| **Fear of Floating** | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| *Current Description* | | | | | | | | |
| **Future Valuation** | 16.01 | 22.48 | 4.44 | 10.06 | 4.47 | (0.63) | 5.41 | 0.00 |
| **Years to Election** | 0 | 5 | 4 | 3 | 2 | 1 | 0 | 0 |
| **Discount for Anti-Market Policies/Politicians** | | | | | | | | |
| **Institutional Stability** | 67% | 67% | 67% | 67% | 67% | 67% | 68% | 68% |
| **Pure Political Risk** | (1.23) | 1.91 | 1.13 | 0.58 | 0.03 | (0.38) | (1.24) | (1.26) |
| Exchange Market Pressure (EMP) | | 0.07 | (0.18) | (0.29) | (0.69) | 0.28 | (0.99) | 3.35 |
| Real GDP Growth | (0.61) | 0.07 | 0.21 | 1.06 | 1.13 | (0.19) | 0.57 | (1.27) |
| Basic Balance | 0.41 | 0.26 | 0.70 | 0.69 | (0.40) | (0.25) | (0.36) | (0.29) |
| Carry-to-Risk | | | | | | | | |
| Policy Rate | 0.74 | 0.35 | 0.60 | 0.66 | 1.09 | 0.92 | 0.71 | 0.79 |
| Inflation | 0.19 | (0.49) | (0.26) | (1.42) | (0.79) | (0.53) | (0.64) | (0.61) |
| REER | 1.76 | 1.48 | 1.45 | 1.07 | 0.91 | 0.90 | 0.98 | 0.98 |
| External Debt/Reserves | 0.43 | 0.51 | 0.76 | 0.84 | 0.80 | 0.58 | (0.01) | 0.21 |
| Fear of Floating | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.11 |
| Political Risk | (0.40) | 0.00 | 0.00 | 0.00 | 0.00 | (0.12) | (0.39) | (0.40) |
| Future Valuation | 0.50 | 0.70 | 0.14 | 0.25 | 0.13 | 0.01 | 0.21 | |
| **Currency Ranking** | 24.5 | 16.0 | 22.5 | 4.4 | 10.1 | 4.5 | -0.6 | 5.4 |

# Weighting QRS Factors

**Because Silva Capital is active in foreign exchange markets on a daily basis, we hold a clear view of the forces that drive them.**

**In our experience, these drivers oscillate as economic cycles evolve, as valuations become stretched, and as sociopolitical events affect market perceptions. Because the market's focus is always changing, we believe it is critical for a ranking model to incorporate biases reflective of the fundamentals under its analytical microscope at any given time.**

**This insight is technically applied via the QRS weighting process. We overweight macro drivers that exercise a more pronounced influence on currency markets. Similarly, currency drivers that are out-of-favor are given less influence. We update these weightings regularly to reflect the current market environment.**

## Why Not Equal Weights?

Our QRS assumes a base case of equal 9.09% weightings. But the world in which markets operate does not so evenly distribute its attention. We believe it is important to change weights as markets change focus—but to do so within a consistent and systematic framework.

## Illustrative Importance of Weightings

Consider the differences between the weighting schemes for the bull market of 2006 and the financial crisis of 2008 depicted in Figure 3 below.

***Figure 3***

| Metric | 2006 Weight | 2008 Weight |
|---|---|---|
| Exchange Market Pressure | 0% | 0% |
| Real GDP Growth | 10% | 5% |
| Basic Balance | 5% | 15% |
| Carry-to-Risk | 20% | 5% |
| Policy Rate | 15% | 5% |
| Inflation | 15% | 5% |
| REER | 5% | 10% |
| External Debt/Reserves | 5% | 25% |
| Fear of Floating | 10% | 5% |
| Political Risk | 10% | 15% |
| Future Valuation | 5% | 10% |

Because markets are often moved by narratives, different factors weigh on asset valuations differently at different times. Whereas in the 2006 bull market, investors sought high carry and rapid growth at the expense of other concerns, the 2008 crisis evoked a move to risk aversion, and thus a shift in focus to debt/reserve metrics and the basic balance.

## Silva Capital's Current Recommended Weighting

Given our present assessment of currency market drivers and extrinsic influences, our models reflect the following weightings:

***Figure 4***

| Metric | 2012 Weight |
|---|---|
| Exchange Market Pressure | 5% |
| Real GDP Growth | 20% |
| Basic Balance | 5% |
| Carry-to-Risk | 10% |
| Policy Rate | 15% |
| Inflation | 10% |
| REER | 0% |
| External Debt/Reserves | 10% |
| Fear of Floating | 5% |
| Political Risk | 15% |
| Future Valuation | 5% |

These weights reinforce the ever-present importance of adapting to evolving economic conditions.

- Exchange Market Pressure (5%): Exchange Market Pressure supplements and accentuates other metrics within our weighting scheme such as Fear of Floating, and is thus typically underweight.
- GDP Growth (20%): In the current, post-crisis economic moment, emphasis remains squarely on the relative speed of recovery and the resumption of economic growth. Countries with higher GDP growth rates are seen as more attractive for investment and are presently generating greater capital inflows and currency outperformance. We have reflected this premium in our weightings.
- Basic Balance (5%): In our assessment, as the market's concern is dominated by rates, growth, and politics, the Basic Balance and other Balance of Payment metrics are less important for currency performance than under a base case scenario. Though the financing of BOP shortfalls is always relevant and we have recently observed a number of countries changing from net borrowers to net creditors, the risk to the overall market from this figure does not currently warrant great concern.

- Carry-to-Risk (10%): Without doubt, in the current global low rate environment investors are seeking yield. Given such a premise, we would typically heavily overweight this variable. However, in past months, the dominant and most pertinent force driving investors' yield-seeking behavior has been growth. In the future, if normal times resume, capital controls in the emerging markets are lifted, unfettered access is given to EM currencies, this weighting is likely to double.

- Policy Rate (15%): In an extended period of historically low rates in the developed markets, the higher rates of the emerging markets are both signs of growth and producers of FX appreciation. As risk appetite returns, we expect investors to seek out higher rates, and as such we have overweighted the variable.

- Inflation (10%): After two rounds of quantitative easing in the United States and years of easy monetary policy throughout much of the rest of the world, one would expect inflationary fears to worry the market. In an environment without growth, however, this fear has remained muted. As such, we currently weight the variable near the base case and look to increase its standing when growth resumes in the developed world.

- REER (0%): In our assessment, REER moves markets only in normal economic times when investors weigh the full range of relative fundamentals. At the current moment, when investors' gaze is narrow, REER does not enter into their calculations and should therefore be eliminated from ours. It should be noted, however, that in aggregate, EM REERs are not meaningfully misaligned.

- External Debt-to-Reserves (10%): EM countries possess over $5.6 trillion of aggregate FX reserves in an environment where their external debt issuance is declining. In general, the balance sheets of these nations are strong, and investors are largely unconcerned with their ability to make good on their obligations. Still, with the European debt crisis very much on the market's mind, this variable cannot be underweighted. As such, we leave it near the base case.

- Fear of Floating (5%): Policymakers in both the emerging and developed worlds are taking quick, aggressive, and decisive policy action in the areas of exchange rate intervention, capital inflow restrictions, and/or taxation of short term foreign portfolio investment. In most environments we would view this as a reason to overweight the 'Fear of Floating' variable, but at the present, as intervention has become more or less an expected norm, countries with active regimes do not stand out as they once did, and are not as heavily penalized by investors. Thus, we view the weighting for this factor as of diminished important in the short run. We expect, however, to return it to at least the base case in coming cycles.

- Political Risk (15%): 2012 is the year of political risk. The persistent combination of income inequality and unemployment has increased the likelihood of civil unrest. Further, with key countries holding elections in the next twelve months, the risk exists that anti-market policy regimes may be enacted. As such, we have overweighted the political risk variable in the present year. We look to reevaluate this weighting in the aftermath of the U.S. elections in November.

- Future Index Value (5%): Though it is typical of markets in the midst of recovery to price assets with a look to the future, the enormous amount of headline risk emitting from the United States and Europe in the recent pasts has kept investors attention fixed on the short term. When the fiscal challenges of the developed world are resolved, we expect to return this metric to its standard weight.

## CONCLUSION

After weighting the metrics, the QRS generates a ranking for each of the 23 currencies considered in our original basket. To gain diversity among the best, we group the top ten currencies into an investable bundle and, after selecting an appropriate funding base, seek positions in this basket through forward, NDF, and spot markets. As the investment environment changes, we reweight our metrics and rebalance the basket, both to reflect alterations in currency drivers and to take profit and prevent loss as necessary.

We believe that this process is consistent with risk-adjusted outperformance over time.

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