



# Exchange Rate Observatory

February 11, 2009

## The Peso and the Mexican Economy, at the expense of an extraordinary global context

### Introduction

- In accordance with our theoretical valuation models, the peso should have an equilibrium exchange rate between 12.5 (13.0) and 13.5 pesos per dollar (ppd) at this time.
- High risk aversion and capital outflows have led the peso to depreciate to almost 14.70 ppd. This evolution is in line with estimates of previous episodes of cash outflows.
- If these pressures are reverted, the peso should appreciate gradually, but the risk is of a more depreciated peso in the coming months.

### The global context unleashed the depreciation of the peso ...

Until the announcement of the breakdown of Lehman Brothers—September 15, 2008—when there was an extreme increase in risk aversion, the emerging markets had remained relatively distant from the financial crisis underway since a year before. In fact, the peso had appreciated above its theoretical equilibrium level during several years, possibly as a result of the exponential growth of financial flows toward the emerging markets during the period of excess liquidity (see Graph). With the abrupt outflow of capital in autumn of 2008, a strong currency depreciation was generated in those markets.

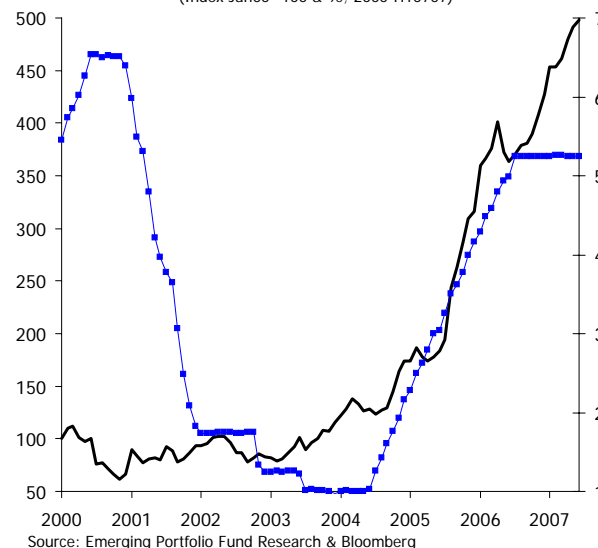
The abundance of liquidity, low perception of risk and the consequent search for greater earnings led to unprecedented capital flows to the emerging markets. After the recession in the United States in 2001, the Federal Reserve progressively reduced its reference rate until it reached 1.0%, and maintained it at that level during one year (from July 2003 to June 2004). The extremely low levels of aversion to risk and the search for higher earnings translated into a growing appetite for risk that generated an abrupt downward trend in the risk spreads and volatility levels (see Graph), which intensified cash inflows to the emerging markets, exposing them to changes in sentiment, such as those derived from the current financial crisis.

The total loss of confidence and the onset of fear that has taken place in the financial markets in recent months, have led to strong capital outflows in response to aggressive unleveraging and the *flight to quality*. This has adversely affected the financial variables, particularly the exchange rate. The stress levels of volatility and aversion to risk have completely eliminated

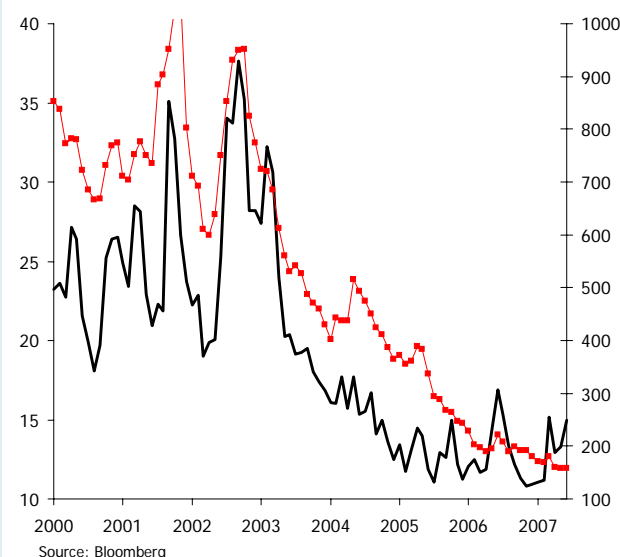
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Foreign Equity Holdings in Emerging Markets & Effective Federal Funds Rate  
(Index Jan00=100 & %; 2000-H107)



VIX & Emerging Markets EMBI+  
(Index & bp; 2000-H107)



carry-trade opportunities, feeding with it the net outflows of capital and consequently the depreciation of the peso (see Graphs).

### ... and the global context will determine its evolution

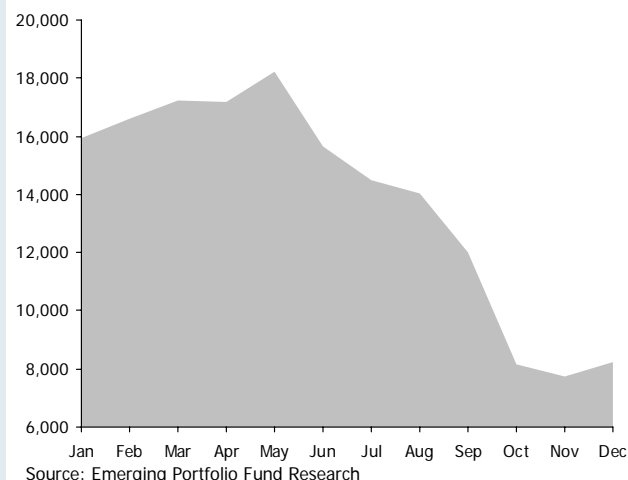
In line with theoretical valuation models, the peso should currently have an equilibrium exchange rate between 12.5 (13.0) and 13.5 ppd. Only the models that incorporate the behavior of financial flows and measures of risk aversion justify the current levels of the exchange rate, but do not capture the structural trend of the peso. What they do suggest is that a reaction beyond that determined by the fundamentals of the economy is being seen.

In a month in which the financial crisis acquired global dimensions (from September 15 to October 15), the peso depreciated 22.4%. Although there were domestic elements that coincidentally intensified the pressures on the pesos—mainly the sudden and abrupt increase in the demand for dollars from corporations in view of strong margin calls due to losses in their derivative positions<sup>1</sup>—, the speed with which the peso weakened was due mainly to the capital outflows from the emerging markets. This flight to quality has led to increasing sales of investments in the emerging markets in search of risk-free assets in the United States (i.e. Treasury Notes).

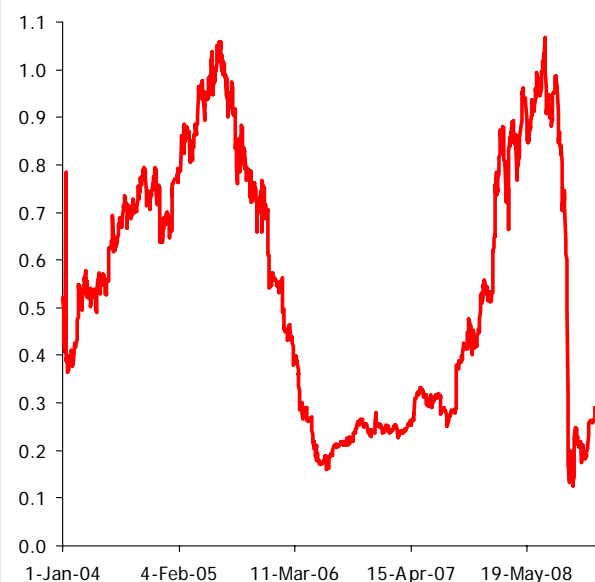
The effect of the global financial crisis is affecting the currencies of the emerging markets in similar magnitudes; the capital outflows being of comparable intensity. For example, according to data from EPFR Global, the generalized outflow of capital began in June 2008 and intensified as of September. Data through December of last year reflect that investment holdings in the capital markets have fallen 38% on average in the emerging markets, with regions such as Eastern Europe and Latin America somewhat more affected (-54 and -48%, respectively) than Asia (-36%). The capital outflows from Mexico (-41%) are in line with the average for the emerging markets. The level that these data reflect represent about 30% of foreign capital investments in Mexico (with data from the Mexican Stock Exchange, the *BMV*). From May to October of 2008, more than US\$34 billion had left Mexico. The bond market has not been the exception. From the record-high level of bond holdings by foreigners in Mexico at the beginning of August (more than US\$29 billion) after the bank funding rate was at 8.25%, increasing carry-trade opportunities in a world still with a high appetite for risk, these have fallen to slightly more than US\$11 billion. If we add the outflow of investments in the capital market and that of bond holdings, these are around US\$50 billion. These outflows are the main factor behind the depreciation of the peso during recent months, and the continuation of these explain the persistence of the peso's weakness, beyond that indicated by the macroeconomic outlook.

The lack of confidence and the absence of an appetite for risk continue to be present, and consequently, the outflow of investments from the emerging markets has not stopped. In the short term, we do not envision a change in this trend. Although the problems of liquidity seem to be resolved, the situation of the financial system at a global level is still questionable, and more so given the negative feedback of this variable with the recession toward which global growth seems to be heading. In addition, the growing public deficit in the United States will absorb a percentage of the investment flows, favoring a certain crowding out of the flows directed toward the emerging countries. In sum, it will be difficult to see a return of

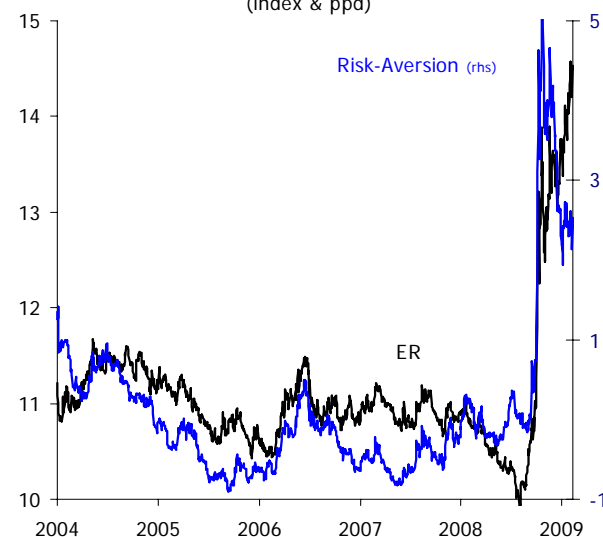
Foreign Equity Holdings in the Mexican Market (US\$ billion)



Carry-Trade Index, Mexico



Risk-Aversion\* & Exchange Rate  
(index & ppd)



\* Risk-Aversion Index— principal component analysis method, using the standardized changes of the following variables : [VIX index, exchange rate implicit volatility, IPC implicit volatility, yield-curve slope, MSCI index Mexico, 10-year swap spread, Embi+]

<sup>1</sup> See Box inset "Impact on Mexico of the Global Financial Crisis and Measures to Limit the Effects of Extreme aversión to Risk" in Situation Mexico, 4Q08.

the appetite for risk in 2009 and when it occurs, a return of the flows to greater risk assets (i.e., to the emerging markets) will be gradual and at a moderate pace.

We foresee that the current global context will continue in the first half of the year and the financial flows will not favor the emerging markets. In the second half of the year, if the current environment of volatility should diminish and the extreme levels of aversion to risk should lessen, we could expect the weakness of the peso to gradually diminish and the exchange rate to evolve toward our estimates. Because of this, we anticipate an average range for the exchange rate of between 13.8 and 14.5 ppd during the first half of 2009. In the base scenario, the exchange rate would average 13.4 ppd during the second half of 2009, with a range between 13.3 and 14.0 ppd.

In contrast, the risk scenario (in terms of flows and aversion)—less probable, but not to be ruled out—would assume a deepening of the negative feedback between the economic recession and the financial crisis and therefore, the negative effects on the financial variables would intensify, especially in the emerging markets. In such a scenario, the peso would not tend to strengthen and would even maintain its weakening trend: it would average 14.7ppd in 2H09, oscillating within a range between 14.4 and 15.0ppd, although the final magnitude would depend on risk aversion in the emerging markets.

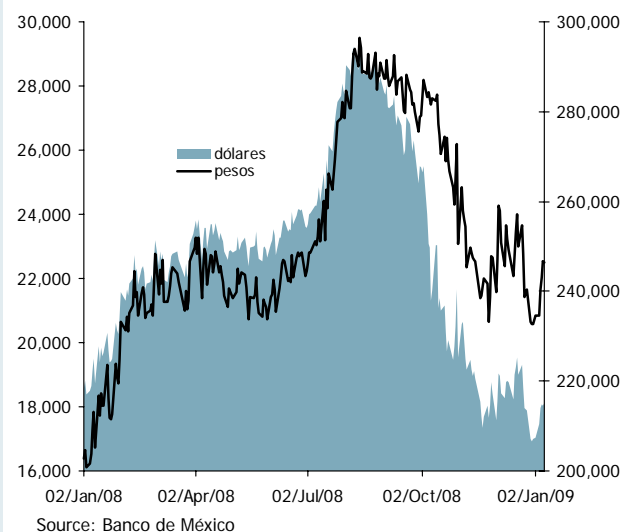
In 2010, with a lower risk aversion, there could be a return of capital flows to the emerging markets, although gradual and moderate. If this were to occur, the peso would tend to strengthen moderately. We anticipate that the exchange rate at the close of 2010 will be at a level of 12.4ppd in the central scenario and return to less stressed levels (13.6ppd) if the risk scenario were to take shape in 2H09. To sum up, we expect that in 2009 the abrupt adjustments of the last four months of 2008 will not be repeated, or the global context of high volatility and extreme aversion to risk, and thereby the weakness of the peso. Toward the end of the year, and especially during 2010, the exchange rate could show a correction.

### How can we value the impact of the financial outflows on the exchange rate and the curve slope?

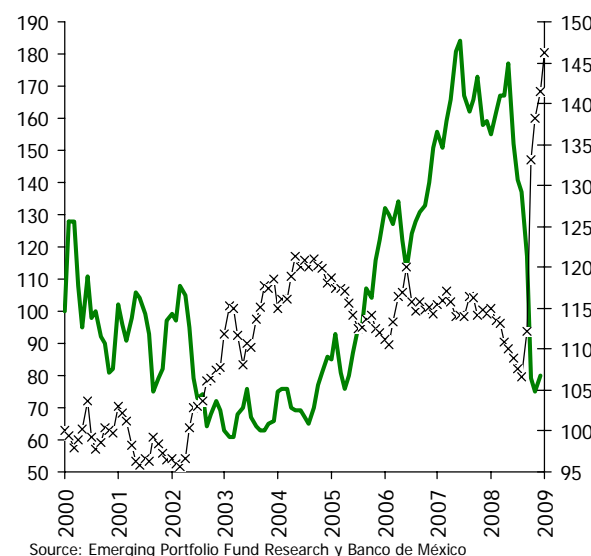
In conditions of “normality” or stability in the financial markets, the correlations between the financial variables, and even their impact on the macroeconomic components, are very different to those present in conditions of extreme risk aversion. For example, the transfer effect of the exchange rate to prices (pass-through) tends to be non-linear, which means that it is proportionately much lower when the volatility of the currency is low than when it rises. The same occurs with the reaction of long-term interest rates; their intensity and duration depend to a great extent on the economic context, whether it be global aversion to risk or another factor determined by domestic expectations.

Thus, with the objective of being able to value the current impact of the outflow of capitals and its impact on the peso/dollar exchange rate, and other variables, we estimated a model that considers an extraordinary context of investors' positions in the face of risk. That is, it considers that throughout the economic cycle we will not always find “normal” conditions, of low financial volatility and moderate capital inflows and outflows (see Box inset). We estimated the effects of capital flow movements and risk (measured by the Embi+) that exceed the two standard deviations during more than three months, and in which both move in the same direction. This restriction

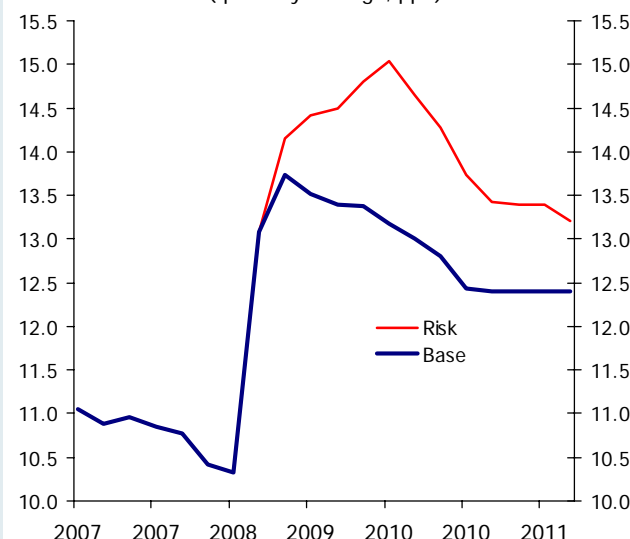
Foreign Holdings in the Mexican Bond Market (US\$ billion & million pesos)



Foreign Equity Holdings in the Mexican Market & Exchange Rate, ppd (Index Jan00=100)



Exchange Rate Forecasts (quarterly average, ppd)



attempts to simulate a condition of sudden movements related with changes in the perception of financial risk (the estimate does not include the data available of the last three months of 2008 to avoid a biased view of the results and to validate the results of the model beyond the sample).

In this manner, a scenario of abrupt capital outflows that imply a decrease in the balance of foreign investment in the stock market and debt of more than 10% (for at least three months), and increases the sovereign risk in Mexico (Embi+) by more than 25%, would lead, on average, to a depreciation of the peso of 16%. *We must highlight that the capital outflows from September 2008 to date have been double that simulated by us, which suggests that our estimates are in line with the effects that have been observed regarding the exchange rate, as the depreciation of the peso has been 35% since the financial crisis acquired a global dimension on September 15, 2008.*

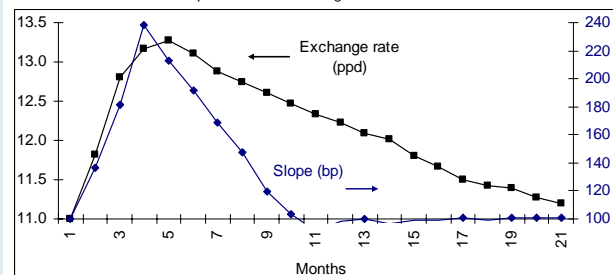
Furthermore, this greater aversion—associated with greater volatility that generates a significant depreciation—pressures the slope of the yield curve upward by 90bp (on average), but tends to have an effect of lesser duration than that observed in the exchange rate. That is, it would appear that, in the medium term, the expectations of monetary policy dominate more. The above is also consistent with what was observed in Mexico: initially an abrupt rise in the slope of the yield curve, explained mainly by greater risk and following a strong downward trend in earnings throughout the length of the curve (but especially in those of medium- and long-term) associated with the expectations of the easing of monetary policy. The results of the effects on the macroeconomic variables will be analyzed in another publication.

## In conclusion

The value of the Mexican peso responds significantly to the impact of external factors summed up in the aversion to or global preference for risk, which has caused the exchange rate to react strongly to the equilibrium estimate of the exchange rate. This dependence is relatively much more accountable in historically exceptional periods in terms of global aversion to risk, such as the current ones. Given that the strong outflow of financial resources explains to a great extent the peso's depreciation, only a context of gradual moderation of aversion to risk will support the convergence of the exchange rate. For now, the pressures will continue in the following months, but these should be diluted as the markets assimilate the new global economic context.

**\* Technical Note:** We estimated the effects of atypical movements of financial flows. For this, we used a methodology of restriction of signs, making use of *priors* to identify the system; this methodology is used by the BBVA department of Economic Studies (area of modelization) to estimate credit-crunch effects in Europe and the United States. A VAR is estimated with the variables of economic activity (IGAE), annual inflation, Embi+ Mexico, flows to the market of debt and stock market, exchange rate and yield curve slope (for the 2001-2008 period). We restricted the signs of the model in order to simulate a scenario of extreme aversion or optimism. That is, once the VAR is estimated, an abrupt movement of capital flows and Embi+ is simulated; for this, the model is restricted in order to capture and simulate those episodes estimated in the VAR in which a movement greater than 2 standard deviations of these two variables coincide during more than three months, and in addition, the movement in both variables is in the same direction. Once this restriction is simulated, we obtain the average exchange rate, curve slope, inflation and activity under these conditions.

Exchange rate and curve slope response function with restricted VAR to capital outflows and higher risk aversion\*



\*Assuming an steady state exchange rate of 11ppd and slope of 100bp  
la curva 100pb