

EM Portfolio Strategy

Argentina GDP warrant – more upside

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- ▶ **Based on our model's assumptions, we estimate a fair-value of 15.7, 15.8, and 9.2 points for USD, EUR, and ARS warrants, respectively**
- ▶ **The market is implicitly pricing the Argentina USD warrant using the yield of the Discount bond**
- ▶ **Priced at the Discount's yield, we find modified duration of approximately 7.7 for the warrant**

The GDP warrant – as a fixed-income instrument

In the past, we have treated the warrant as a hybrid instrument and considered the use of the weighted average cost of capital (WACC) to discount the cash flows (see *EM Portfolio Strategy: Argentina GDP-linked warrants update*, November 2005).

Despite its embedded technical aspects, the market tends to value the GDP warrant as a fixed-income instrument. In this respect, since there is no repayment of any principal at maturity, the warrant could effectively be considered as a stream of future cash flows that are variable in nature (as is the case with an FRN), though with no well-defined maturity. Indeed, the 2035 “maturity” is rather theoretical, as the likelihood that the total accumulated cash flows reach a defined ceiling is relatively high. Arguably, this last characteristic could assimilate the warrant as an instrument with an embedded call option that would be automatically exercised as soon as the option goes in-the-money. To the extent that FRNs and callable bonds are often valued with traditional fixed-income methods, we can therefore value the GDP warrant in much the same way.

In this document, we first determine the implied analytics derived from the current market valuations and discuss the underlying assumptions. In a second step, we determine the upper and lower bounds of reasonable fair value to gauge the potential upside of the warrant.

Warrant analytics

The payouts of the warrant are contingent on several conditions and among them the fact that Argentina's growth has to be greater than defined thresholds. More than any other level, 3% long-term growth is a particularly important threshold to consider, as it is one of the conditions to be met starting in 2015 for Argentina to continue to pay on the GDP warrants.

The value of the warrant is very sensitive to this threshold. Assuming long-term growth of just above or just below the 3% threshold has indeed a significant impact on the number of payments made by Argentina, and therefore on the valuation of the warrant.

With a warrant trading at 7.75 points, our calculations indicate the market is effectively assuming long-term GDP growth of 3% or lower for Argentina over the life of the warrant. To think otherwise would necessarily imply valuing the warrant's cash flows with a discount rate of at least 15.8% (ie, more or less the WACC discounting rate), which sounds quite unrealistic in regards to the Discount bond's yield-to-maturity (which recently averaged 8.25%).

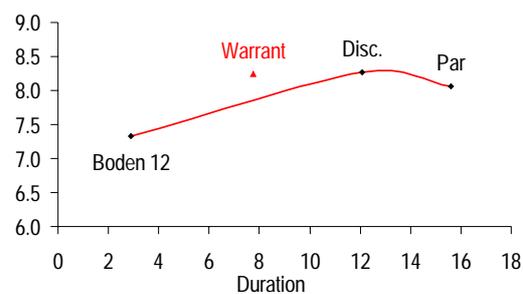
Consider the following:

- ▶ If we assume a long-term rate of just below 3% (in the present scenario, 2.99%), only five payments would then be made, as one of the conditions would not be met starting 2011 (the accumulated value of the coupons paid on the warrant would then exceed the total amount of restructured debt). Under this 2.99% growth assumption, a market value of 7.75% for the warrant implies using discounting rates that are effectively much closer to that of the Discount bond (around 8.25%), for a corresponding modified duration of 3 to 3.5 (depending on the

speed at which the Argentine economy is converging towards the 3% growth rate).

- ▶ In our view, the market is implicitly assuming long-term growth of just 3%, this level generating the closest theoretical value for the warrant vis-à-vis the market. To generate a value of 7.75 points, the market is implicitly assuming a quick convergence towards the 3% growth rate, the country practically reaching this level starting 2009. Under these assumptions, the duration of the warrant ranges between 7.6 and 7.9.
- ▶ When considering the Argentina global curve, durations of 7.6 to 7.9 correspond to a fair yield of around 8%, which can arguably be considered as relatively close to the assumed discounting rates used to value the warrant's cash flows (8.25%). If priced on the yield curve, the fair value for the warrant would be around 8 points.

USD-denominated GDP warrant versus USD yield curve (%)



Source: HSBC

- ▶ This year's payout is practically known, given the almost certain 9.1% real growth of the Argentine economy for 2005 (to be confirmed in March). Based on this, we calculate that the warrant should pay 59/100 per dollar on December 15, which makes 7.6% "carry" for a warrant trading at 7.75%. This carry is actually comparable with the Argentine local curve.

The duration and carry analysis both suggest that the warrant is trading cheap relative to the curve, the warrant offering a substantial pickup versus other dollar fixed-income assets.

Theoretical value

As seen before, the market is implicitly assuming a 3% long-term growth rate for the warrant. This appears to be quite conservative, given the historical average, which is closer to 3.5%.

As we use two methods of valuations, we find the following values for the warrants:

Theoretical values of the warrants

	Certainty Path	Monte Carlo Path	Average Value
USD warrant	15.2	16.3	15.7
EUR warrant	15.1	16.5	15.8
ARS warrant	7.9	10.5	9.2

Source: HSBC

Despite the volatility of the results, our calculations still suggest that, when analysed as a fixed-income instrument, the warrant is largely undervalued.

At this point, it is important to emphasize that we assume that Argentina growth rates for the next three years are effectively in line with our forecasts. In that respect, total accumulated payments for the period 2006-2008 account for 43% to 46% of the market value of the USD, ARS, and EUR warrants.

The quasi-certainty path

In the first approach, we leave aside both the cyclical and randomness components of our previous valuations and, instead, derive a quasi-certainty growth path to assess the value of the warrant.

We believe that this methodology, even when failing to account for important characteristics of Argentina's GDP (such as cyclical), is

especially useful to understand the potential payouts of the warrant.

The rationale for such a simplistic approach corresponds to successive upward revisions of our GDP growth forecasts and the increase in the probability that the Argentine economy may experience high growth rates for several years without falling into any abrupt recession over the medium term.

We draw a certain path of growth based on our forecasts for 2005 and the next two years (9.1%, 7.5%, and 5.7% for 2005, 2006, and 2007, respectively) and, starting from 2008, we assume a "soft landing" at around 3.1% real growth for the long term. Even without accounting for any random factor, we assume a mean-reverting speed of 95% so that the long-term value converges relatively smoothly.

We deliberately choose a long-term growth rate higher than 3.0% to stand above the threshold established by the government over the long run¹. The sensitivity of the value of the warrant in the 3.0% neighbourhood is noteworthy. However, considering that the historical mean growth rate is 3.5%, we believe 3.1% is a reasonable figure to assume.

We assume a 9% annual increase in the GDP deflator with a depreciation of the nominal exchange rate equal to 1/4 of the deflator's

¹ The government established a threshold converging to 3% in 2015 from a start point of 4.26% in 2005. This means that, for the warrant payment to occur, the annual real growth of the economy should exceed the established threshold for that year. This is one of the three conditions that must be jointly met to receive the annual payment.

increase. The result is a constant real exchange rate (RER) appreciation of 6.2% per year.

Under the aforementioned assumptions, we find a value of USD15.2 for the USD warrant, 7.9 for the ARS one, and 15.1 for the EUR one.

The Monte Carlo path

The second approach considers a random factor for the GDP growth path. As it was the case in the previous valuation, we start our assumption in 2008 leaving the first three years fixed with our GDP growth forecast.

Taking random draws from a normal distribution with mean 3.0 and a standard deviation of 5.6, and also maintaining the assumptions on the GDP deflator and nominal exchange rate, we now find a value of 16.3 for the USD warrant, 10.5 for the ARS one, and 16.5 for the EUR one.

As shown in the table below, however, the theoretical value is highly sensitive to initial assumptions (including discount rate, GDP deflator, and ARS/USD exchange rate):

Sensitivity of the value of the USD GDP warrant

Discount rate	Certain Growth Path (converging 3%)	Monte Carlo Path N(3%, 5.6%)
9%	15.2	16.3
12%	11.3	14.0
16%	8.0	10.7

Source: HSBC

Bottom line

From a market perspective, we believe the recent rally in the warrants is the result of three prevailing factors:

- ▶ There has been an upward revision of growth expectations for the short term and even the medium term for the Argentine economy.
- ▶ As EM bond yields have fallen, discounting rates to value the warrant's cash flows decreased, leading mechanically to higher valuations.

- ▶ The base of buyers of the GDP warrants (originally hedge funds for the most part), has been expanding exponentially over the last few months, providing an additional source of support.

As argued before, however, we believe that, beyond these technical aspects, a considerable source of upside can be found on the basis of the theoretical valuation itself. Although theoretical models tend to be very sensitive to initial assumptions, the value of the warrant, if assimilated as a fixed-income instrument, suggests substantially higher values than the market price of the warrant.

Appendix: The warrant payout

Below, we describe the mechanics and calculation of the warrant payout and provide an estimate of the expected December 2006 payment for USD-, EUR-, and ARS-denominated warrants.

For the warrant to effectuate the annual payment, three conditions must be simultaneously met each year:

- ▶ For the reference year, the actual real GDP must exceed the "base case GDP" (which is established by the Argentine government).
- ▶ For the reference year, the annual growth in actual real GDP must exceed the growth rate implied by the base-case GDP of the reference year with respect to the previous year.
- ▶ The total payments made on the GDP-linked security must not exceed 0.48 per unit of currency (otherwise, the total cash flows paid on the warrant would exceed the total amount of debt that was restructured).

Every year, the three conditions mentioned above must be fulfilled for the payment to take place. Coupons are paid annually on December 15, based on the previous year's growth numbers. For December 15, 2006, we estimate that Argentina

should pay nearly USD1.2bn of coupon on their warrants outstanding. We provide below the breakdown of the estimated payments:

Expected payments on the warrants on December 15, 2006
(in millions of original currency)

	Outstanding Amount	Expected Payment	Total Payments
USD warrant	17,401	59/100	393.6
EUR warrant	11,864	62/100	328.0
ARS warrant	88,005	57/100	1,183.8
Total (in millions of USD)*	60,074	-	1,170.4

* Excluding JPY warrants, which total outstanding amounts to JPY38.37bn (or USD330mn)
Source: HSBC

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