

23 June 2004

Foreign Exchange Strategy

# Cause & FX

## *TRL – Who is Afraid of the Pass-Through?*

Global

### FX Strategy Team

**Yianos Kontopoulos**  
Chief Global FX Strategist  
(44) 20 7996-2402  
john\_kontopoulos@ml.com

**Alex Patelis**  
Head G10 FX Strategist  
(44) 20 7996-5897  
alex\_patelis@ml.com

**Vincent Low**  
Head Emerging Asia FX Strategist  
(65) 6330-7193  
vincent\_low@ml.com

**Mehmet Simsek**  
EMEA FX Strategist  
(44) 20 7996-2877  
mehmet\_simsek@ml.com

**Mario Robles**  
Latin America FX Strategist  
(1) 212 449-6080  
mario\_robles@ml.com

**Parag Ramaiya**  
FX Associate  
(1) 212 449-1608  
parag\_ramaiya@ml.com

**Tom Hobson**  
Chief Technical Strategist  
(44) 20 7995-3950  
tom\_hobson@ml.com

Trading ideas and investment strategies discussed herein may give rise to significant risk and are not suitable for all investors. Investors should have experience in FX markets and the financial resources to absorb any losses arising from applying these ideas or strategies.

- **Bottom Line:** TRL depreciation bouts and oil price spikes, such as those experienced in the past three months, are perceived to be detrimental to Turkish inflation and to local currency asset performance. We find that the exchange rate and oil price pass-through to inflation is high, but recently shrinking, and insignificant, respectively. Our findings indicate that the government's end-2004 inflation target of 12% is well within reach, making high-yield local currency paper attractive.
- **Strategy:** We are closing two of our year-ahead thematic trades at a loss.

### High Exchange Rate Pass-Through?

The recent (April-May) episode of exchange rate weakness and high international oil prices sparked inflation worries in Turkey. This is not surprising, as historically there has been a strong correlation between exchange rate movements and domestic prices. While benign CPI figures for April and May appear to have somewhat eased investor concerns regarding the risks of a return to high inflation, we think it is worth studying the impact of exchange rate and oil price movements on domestic prices.

In order to study inflation pass-through in Turkey, we used a vector autoregression model<sup>1</sup>. Using Turkish industrial production, CPI, WPI, the USD-TRL exchange rate, and oil prices for the 1995-2003 period we generated impulse response functions using a Cholesky decomposition. From these impulse response functions we were able to compute exchange rate and oil price pass-through coefficients. These coefficients indicate what percentage of an exchange rate shock is passed through to prices over time.

#### ■ Effects of Exchange Rate Movements on CPI and WPI

In Chart 1 (next page), we plot the pass-through coefficients for WPI and CPI inflation for the 12 months following an exchange rate shock. Our findings indicate that a large percentage of an exchange rate shock is passed through to prices. In the first month, approximately 10% of the exchange rate move is passed through to CPI, and 18% is passed through to WPI. This percentage gradually rises over time, peaking at about 12 months out, when about 60% of the exchange rate move is reflected in CPI, and 80% is reflected in WPI.

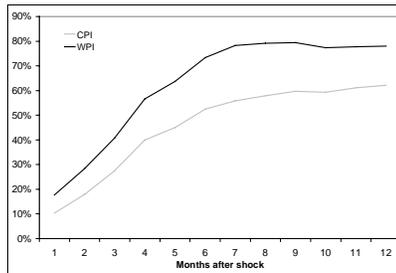
<sup>1</sup> We use the methodology of Leigh, D. and Rossi, M. (2002): "Exchange Rate Pass-Through in Turkey", IMF Working Paper No 02/204, and McCarthy, J. (1999): "Pass-Through of Exchange Rates and Import Prices to Domestic Inflation in Some Industrialised Economies", BIS Working Paper No. 79.

Merrill Lynch does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report.

Investors should consider this report as only a single factor in making their investment decision.

Refer to important disclosures on page 5.

**Chart 1: Exchange Rate Pass-Through to Inflation**



Source: Bloomberg, Merrill Lynch.

While it takes about 12 months for the full impact to be passed through to prices, it is important to note that it is during the first four months that the majority of the pass-through occurs. For CPI, about 58% of the total pass-through occurs in the first four months, and nearly 65% of the pass-through to WPI happens in the first four months.

These pass-through coefficients are relatively high. For example, exchange rate pass-through (one year's change in the consumer price index that can be explained by fluctuations in the exchange rate) is 27% in Mexico, 33% in Philippines, 39% in Brazil, 41% in Indonesia, and 48% in Hungary (Choudhri & Hakura, 2001)<sup>2</sup>. Needless to say, the pass-through from exchange rates to inflation is negligible in developed countries, around 2% in the UK and USA.

However, when considering Turkey's past exchange rate depreciation, these results make sense. From 1995 through 2001, the Turkish exchange rate consistently depreciated. As a result, there was a belief that any depreciation was not only permanent, but also likely to persist. It was therefore necessary for this to be passed on to prices. While these pass-through coefficients make intuitive sense, and are consistent with the literature on exchange rate pass-through in Turkey, it is important to note that there are large error bands attached to these estimates<sup>3</sup>.

### ■ Weakening Pass-Through?

In fact, the more recent experience suggests that the linkage between exchange rate movements and domestic prices may have weakened significantly. For example, in the past 18 months, Turkey has experienced large (over 10%) exchange rate depreciations on three occasions (March '03, October '03, and April '04). Based on historical experience, it appears that the exchange rate depreciations had much smaller effects on consumer prices than anticipated. This appears to be consistent with empirical evidence suggesting that a transition to a low-inflation environment results in a decline in the degree of pass-through of exchange rate movements to consumer prices. We were unable to empirically test this, however, as we do not yet have enough recent data.

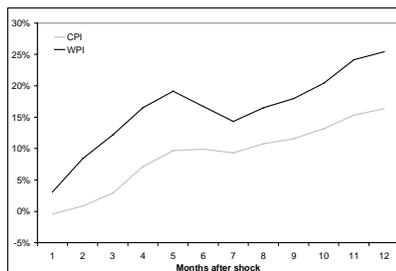
In addition, there have been significant institutional and policy changes. First, Turkey adopted a free floating exchange rate regime in February 2001, and it has been implicitly pursuing an inflation-targeting framework for monetary policy. Second, the Central Bank of Turkey has gained a considerable degree of independence since November 2001. It now has the freedom to gear the instruments of monetary policy toward price stability as well as completely shutting the public sector access to central bank lending. The bank has improved its anti-inflation credentials by undershooting its inflation target in both 2002 and 2003. At present, end-2004 consensus inflation estimates average about 11.5%, below its target of 12%. Hence, the current monetary policy regime is perceived as more credible than those carried out in the 1990s.

### No Significant Shock from Oil Price

Since it is commonly assumed that there is pass-through from oil prices to inflation in Turkey, we also performed the same exercise using oil prices. In doing so, we find that while there is some pass-through from oil prices to inflation, it is small and statistically insignificant

Chart 2 shows the pass-through coefficients for an oil price shock over 12 months. In contrast to the inflation pass-through from the exchange rate, only a small percentage of an oil price change is passed through to prices. In fact, over 12 months, only 17% and 25% of an oil price shock is passed through to CPI and

**Chart 2: Oil Price Pass-Through to Inflation**



Source: Bloomberg, Merrill Lynch.

<sup>2</sup> Choudhri, E U and D S Hakura (2001): "Exchange rate pass-through to domestic prices: does the inflationary environment matter?", IMF Working Paper No. 01/194

<sup>3</sup> Leigh, D. and Rossi, M. (2002): "Exchange rate pass-through in Turkey", IMF Working Paper No. 02/204

WPI, respectively. Another interesting contrast between exchange rate and oil price pass-through is the immediate impact that each has. While the exchange rate appears to immediately impact inflation, virtually none of the oil price effect is felt in the first month. Finally, as was the case with the exchange rate, an oil price shock has a larger impact on WPI than on CPI. Over 12 months, about 50% more of an oil price change is passed to WPI than to CPI, and over the first five months, the pass-through is more than twice as large in WPI as it is in CPI.

Our work clearly indicates that higher oil prices are unlikely to fuel inflation this year for several reasons. First, the oil price pass-through elasticity appears to be very low and statistically insignificant. Second, the country's strong fiscal performance should help mitigate the inflation pass-through from oil prices, as it has kept the need for hikes in gas pump prices at minimum. Gas pump prices have risen by 8.2% year-to-date compared to a 19.9% increase in international crude oil prices. Finally, the Merrill Lynch Oil team expects oil prices to average around \$30 per barrel in 2004, compared to the prevailing \$36 per barrel. The study also shows that CPI is a lot less sensitive to oil price spikes than wholesale prices. This is not surprising, as manufacturing industry products account for over two-thirds of the WPI basket.

Again, the error bands around these coefficients are quite large. This is especially important for the oil price coefficients, as they are close to zero for much of the time.

---

## **Conclusions & Strategy**

The past relationship between exchange rate movements and domestic prices in Turkey suggests that the country's disinflation efforts are vulnerable to bilateral exchange-rate movements. This does not seem surprising considering Turkey's long history of high inflation (averaging about 60% in the last three decades) and currency crises (1994 & 2001). However, inflation has now fallen to single digits, and there have been significant changes in the institutional and policy backdrop. Hence, the exchange rate pass-through may have diminished over the last two years. In contrast to common perception, the linkage between oil prices and domestic prices appears to be weak.

In our view, with the government's end-2004 inflation target of 12% well within reach, local currency T-bills yielding around 27-29% are attractive and we still recommend selling a high strike European digital USD call TRL puts for relatively short tenors.

*Mehmet Simsek, Daniel Waldman*

## Traders Corner

Our Top FX Themes for 2004 (*Global FX Strategist*, “Top Themes for 2004”, 26 November 2003) are morphing into the third quarter with the earlier than expected Fed tightening and fears of a global growth slowdown. We revisit two of the trades associated with these themes, in anticipation of variation in the original themes in the upcoming *Global FX Strategist*.

The long 1.31 EUR-USD, 92 USD-JPY joint one-touch position is closed at a value of 3% of payout versus the open of 12.5% of payout. The ATMS EUR & NOK call, USD & CHF put option basket position is closed at 0.92% for a loss of 0.98%.

Yesterday we inadvertently interchanged the strikes on the ZAR put spread trade that we opened. We state the corrected strikes in today’s table below.

DISCRETIONARY TRADES				
Trade	Open Date	Open Price	Target	Stop
Long 6.42 USD call ZAR put, short 6.80 USD call ZAR put, expiry Sep 21, 2004	Jun 21	1.9%	--	--
Short USD vs equally weighted long TWD, THB and 1-year RMB forwards (expiry Jun 2, 2005, spot 8.2767)	Jun 2	USD-TWD 33.45 USD-THB 40.56 1-yr RMB fwd 8.05	--	--
Short European digital 1,600 USD call, TRL put with expiry Nov 29, 2004 <sup>1</sup>	May 27	60.06% of payout	--	--
Short USD-BRL NDF, expiry Jul 26, 2004	May 24	3.2575	3.15	3.2575
Long USD-MXN fwd with expiry Dec 29, 2005 (12.4820) and long Dec 29, 2005 Bono (7.83% YTM)	May 4	0bp	40bp	-20bp
Long EUR-USD	Apr 30	1.1985	1.2680	1.1700
Short USD-KRW NDF, expiry Nov 15, 2004	Feb 11	1169.7	1052.8	1204.9
Long 1.31 EUR-USD, 92 USD-JPY joint one touch, expiry Nov 26, 2004 <sup>1</sup>	Nov 26	12.5% of payout	62.5%	0%
Long ATMS EUR & NOK call, USD & CHF put, expiry Nov 26, 2004	Nov 26	1.90%	9.5%	0%
Long 6.37% 1y10y AUD receiver swaption, expiry Nov 26, 2004	Nov 26	3.11%	--	--
Long 280 EUR call HUF put, accumulates on daily fix inside 245-265 1st year, expiry Nov 26, 2005	Nov 26	2.90%	--	--
ML FX AUTO PORTFOLIO OF TRADING RULES				
Trade	Open Date	Open Price	Target	Stop
Long NZD-USD (STAT)	Jun 18	0.6271	--	--
Short USD-TRL (STAT)	Jun 18	1484.5	--	--

Notes: The trades are marked at 15.00ET unless noted otherwise. The AUTO STAT trading rule is open for the week ending Friday. We mark the open price at spot, though the trade is executed at the appropriate bid or offer of the one-week forward. We present the spot price to be consistent with other trades and reference the forward in the weekly summary. The AUTO SPEC trading rule is open until the 40/45-day moving average crossover turns negative (positive) for a long (short) position. The AUTO CARRY trading rule is open for a month when the filter supports a trade.

We assume a capital base of \$100 in our discretionary trades. In the G10 currency regions, each spot and forward exchange rate trade is \$100 while the notional value of an option trade is \$300. Emerging market trades are one-half the size of the G10 currency regions. Trades that deviate from these benchmarks are specified accordingly. In our portfolio of trading rules, capital is allocated based on the expected frequency of the trades in the AUTO STAT, AUTO SPEC, and AUTO CARRY rules. The capital base for the portfolio of trading rules is \$100. We allocate \$100 per trade to the AUTO STAT, which trades most frequently, \$300 to AUTO SPEC trades, which trades least frequently, and \$200 to AUTO CARRY, which trades around 60% of the time. We compute the leverage ratios daily based on the total amount of capital allocated to trades divided by the capital base, which rises or falls with trading performance. The leverage ratio is the average of the daily observations. Performance is updated in our biweekly *Global FX Strategist*.

<sup>1</sup>For the 1.31 EUR-USD, 92 USD-JPY joint one touch we use a notional of 30, thus the initial outlay is 3.75 units of capital (30\*12.5%). For the European digital 1,600 USD call TRL put we use a notional of 4, thus the initial intake is 2.402 units of capital (4\*60.06%).

## Important Disclosures

Copyright 2004 Merrill Lynch, Pierce, Fenner & Smith Incorporated (MLPF&S). All rights reserved. Any unauthorized use or disclosure is prohibited. This report has been prepared and issued by MLPF&S and/or one of its affiliates and has been approved for publication in the United Kingdom by Merrill Lynch Pierce, Fenner & Smith Limited, which is regulated by the FSA; has been considered and distributed in Australia by Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), licensed under the Australian Corporations Act, AFSL No 235132; has been considered and distributed in Japan by Merrill Lynch Japan Securities Co, Ltd, a registered securities dealer under the Securities and Exchange Law in Japan; is distributed in Hong Kong by Merrill Lynch (Asia Pacific) Ltd, which is regulated by the Hong Kong SFC; and is distributed in Singapore by Merrill Lynch International Bank Ltd (Merchant Bank) and Merrill Lynch (Singapore) Pte Ltd, which are regulated by the Monetary Authority of Singapore. The information herein was obtained from various sources; we do not guarantee its accuracy or completeness.

Neither the information nor any opinion expressed constitutes an offer, or an invitation to make an offer, to buy or sell any securities or any options, futures or other derivatives related to such securities ("related investments"). Officers of MLPF&S or one of its affiliates may have a financial interest in securities of the issuer(s) or in related investments.

This research report is prepared for general circulation and is circulated for general information only. It does not have regard to the specific investment objectives, financial situation and the particular needs of any specific person who may receive this report. Investors should seek financial advice regarding the appropriateness of investing in any securities or investment strategies discussed or recommended in this report and should understand that statements regarding future prospects may not be realized. Investors should note that income from such securities, if any, may fluctuate and that each security's price or value may rise or fall. Accordingly, investors may receive back less than originally invested. Past performance is not necessarily a guide to future performance.

The bonds of the company are traded over-the-counter. Retail sales and/or distribution of this report may be made only in states where these securities are exempt from registration or have been qualified for sale. MLPF&S usually makes a market in the bonds of this company.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or related investment mentioned in this report. In addition, investors in securities such as ADRs, whose values are influenced by the currency of the underlying security, effectively assume currency risk.