

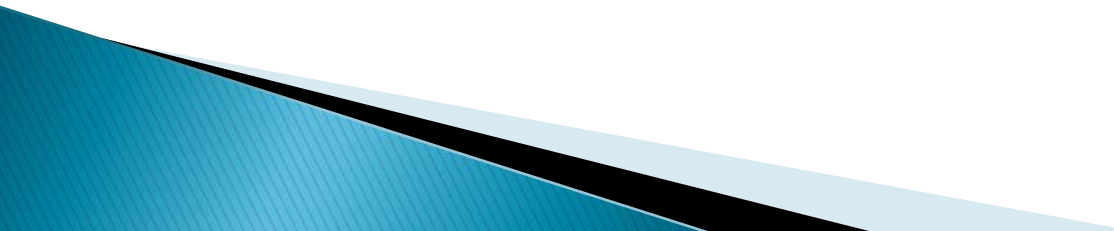


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The Impact of Exchange Rate Fluctuations on the Economy of Mozambique

Five Transmission Channels of Exchange Rate Impact

- Domestic Price Determination
 - Trade Flows
 - Firm Profits
 - Asset Valuations
 - Economic Growth
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Overview of Developments in the Metical Exchange Rate Since 1995

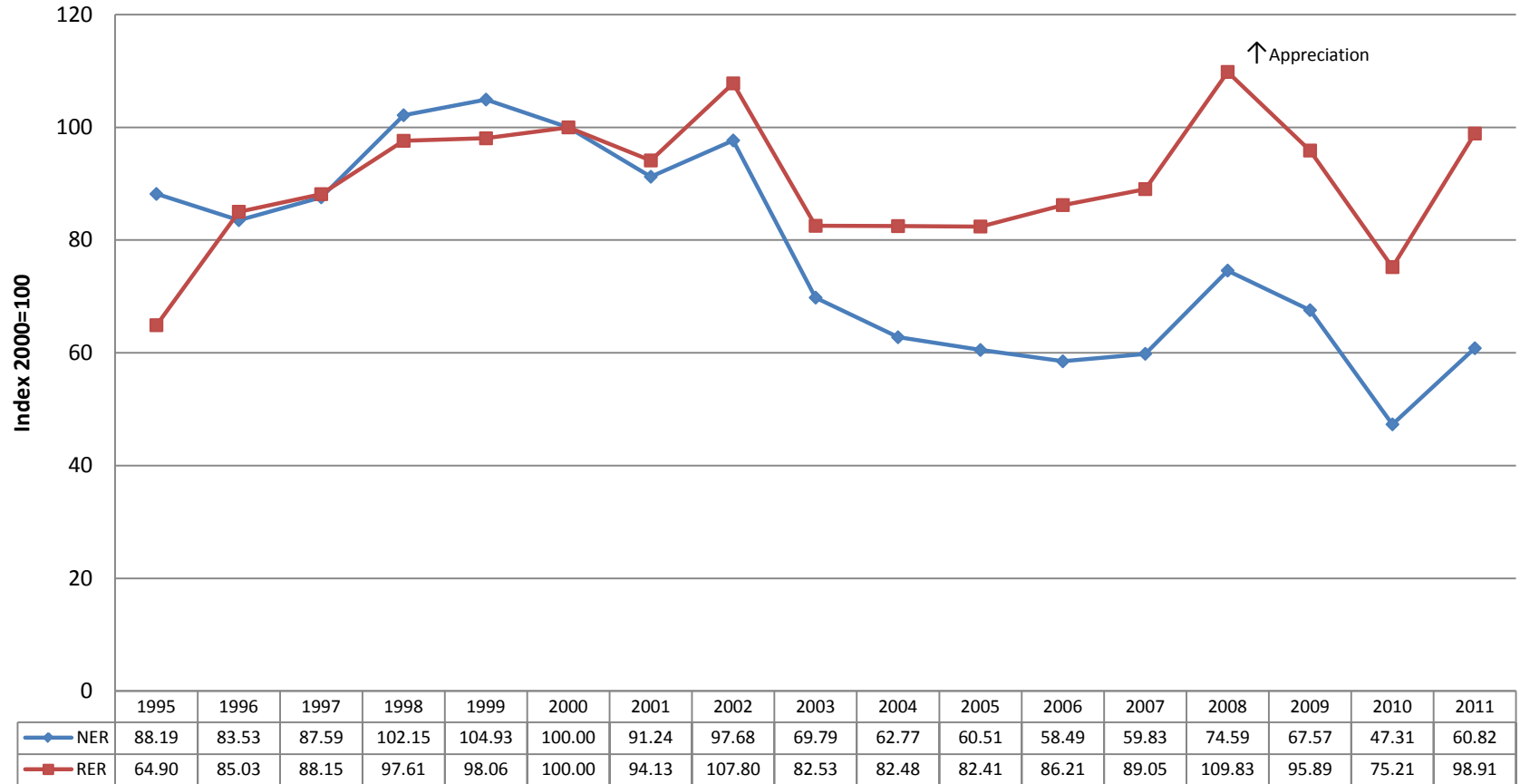
- ▶ Bilateral Rates
 - ▶ Effective Rates
- 

Bilateral Rates (\$/MT)



Bilateral Rates (Rand/MT)

Bilateral Nominal and Real Exchange Rates: Rand/Meticais



Bilateral Rates (€/MT)



Effective Rates: NER and REER

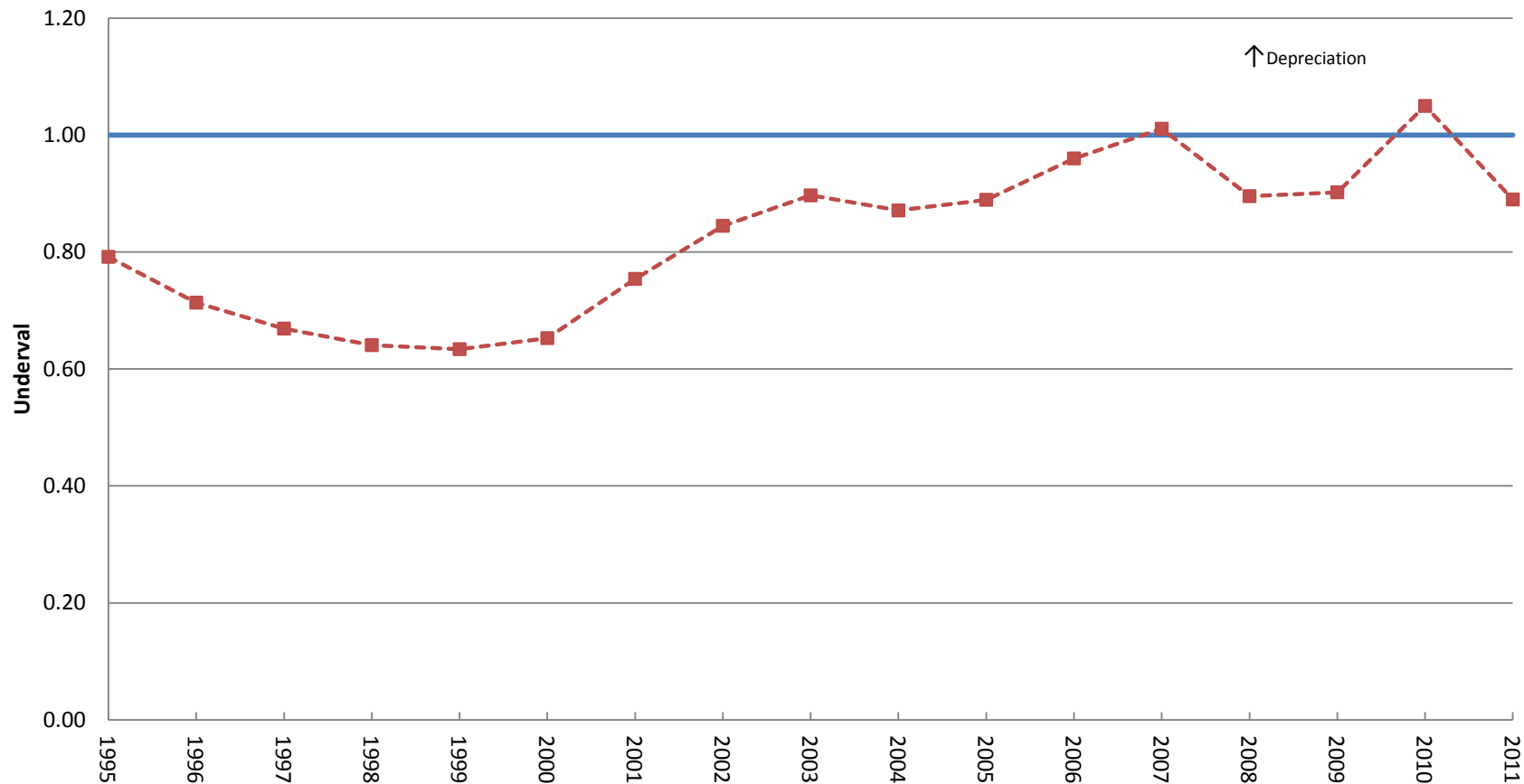


Exchange Rate Volatility

- Volatility of REER over the last decade high and persistent
- Measured by the standard deviation of the first difference of logarithms, average volatility for period 3.9
- Volatility has risen over the decade – increasing 40 percent, from average volatility of 2.6 in the first half of the decade to 3.7 in the second half
- Mozambique's average volatility is almost twice as high as in advanced countries
- Benchmarked against other developing countries, Mozambique appears normal for non-fuel, primary exporters who tend to have highest volatility in world

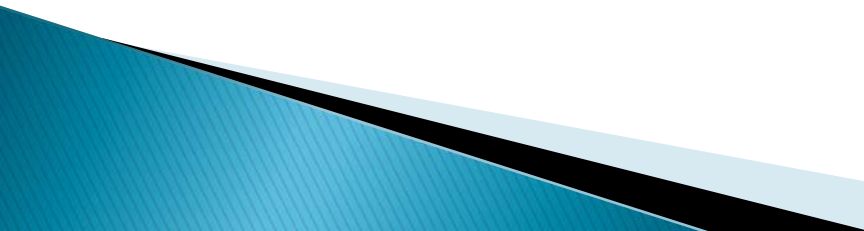
Assessment of Exchange Rate Misalignment

Equilibrium (PPP) Exchange Rate and Undervaluation

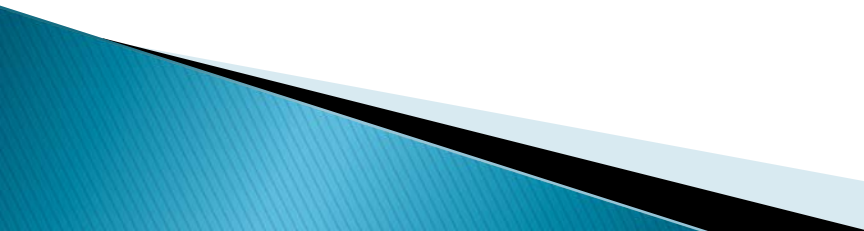


Index of Undervaluation 1995–2011

	Nominal Exchange Rate Average \$/MT	Real Exchange PPP Rate Average	Undervaluation Index (Equilibrium PPP=1)	Undervaluation (%)
1995-1997	10.62	98.22	0.72	-28%
1997-2000	13.29	94.43	0.64	-36%
2001-2003	22.72	128.08	0.83	-17%
2004-2006	23.68	122.16	0.91	-9%
2007-2009	26.84	122.11	0.94	-6%
2010- Aug.2011	31.25	132.14	0.97	-3%



Exchange Rate Fluctuations and Prices

- ▶ Principal direct effect through impact on import prices, which, via the pricing chain, triggers changes CPI and producer costs.
 - ▶ Other direct effect through impact on export prices, which leads to changes in exporter profit margins and trade volumes.
 - ▶ Magnitude of exchange rate effects on these prices is expressed in exchange rate pass-through (ERPT) to prices.
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ERPT in Mozambique: Imports

- ▶ ERPT generally not perfect
- ▶ Developed countries: ERPT to import prices 60% to 70%, farther down pricing chain ERPT to CPI 13% to 30%.
- ▶ Mozambique: ERPT to import prices $> 70\%$ and ERPT to CPI $> 75\%$, and transmission is symmetrical.
 - High import penetration; lack of local competition; few local product substitutes; few large local importers; inelastic consumer demand.

ERPT in Mozambique: Exports

- ▶ ERPT to export prices expected to be lower
- ▶ In EU countries, ERPT to Import prices 70% to export prices 43%.
- ▶ ERPT to export prices in Mozambique estimated to be 32%
 - Mega export prices not very sensitive to exchange rate changes;
 - primary exporters, with limited ability to hedge, and low market share, sometimes compelled to engage in pricing-to-market behavior

Exchange Rate Fluctuations and Trade Flows

- ▶ Second exchange rate transmission channel is via expenditure-switching effects on trade flows.
- ▶ Impact depends on magnitude of ERPT to import and export prices.
- ▶ In addition to price-related effects, other factors can have an impact on the supply response of trade flows:
 - Pricing-to-market behavior; Sunk trading costs; Import content of exports; Ability to hedge; Business environment and Financial constraints

Exchange Rate Fluctuations and Trade Flows (cont'd)

- ▶ Estimates of elasticity of export flows: recent study 136 countries finds developed country (-.67) and developing countries is (-.13).
- ▶ Mozambique: Responsiveness of export volumes to changes in REER elasticity of (-.83)
- ▶ IMF's elasticity estimate for Mozambique is (-1.17) using different estimation method.
- ▶ Mozambique: Elasticity of response of cotton export volumes to changes in REER found to be -1.30.
- ▶ Exchange rate volatility: research shows influence on export composition, but not on total trade volumes.

Exchange Rates and Enterprise Profits

- ▶ Third transmission channel of exchange rate effects via profitability of firms. Exchange rates effect:
 - International price competitiveness; competition in domestic markets via changing import prices; shifts in the valuation of assets and liabilities on company's balance sheets
- ▶ Impact on profits depends on:
 - extent of involvement in trade (exports or imports)
 - competitive environment in which firm operates
 - extent of foreign exchange exposure of balance sheet
- ▶ Exchange rate volatility: causes difficulties in financial markets; limited ability to bear elevated risk. Result: underinvestment in activities of affected firms and resource shifts toward less volatile products.

Exchange Rates and Enterprise Profits (cont'd)

- ▶ Stock market data: firms in developed countries not affected much by exchange rate shocks
- ▶ No stock market data in Mozambique; so focus on effects on relative investor price incentives: Agriculture, Tourism
- ▶ **Agriculture** – Policy advice has been to remove overvaluation, “get prices right” for investors in tradables.
- ▶ But impact on relative price incentives depends on relative trade shares and relative elasticity of import demand and export supply.
- ▶ Mozambique: trade shares agriculture low, use of imported inputs low; so real appreciation would generally improve relative price incentives and real depreciation to worsen them.

Product	Trade Shares (%)		Imported Inputs (%) *	
	Exports (a)	Imports (b)	Family F	Commercial F
Cassava	<1	0	15	17
Maize	12	11.5	15	30
Rice	<1	60	10	20
Wheat	<1	99	(na)	(na)
Cotton	98	0	14	16
Soybeans	<1	0	11	12
Cashew	65	0	12	22
Tobacco	90	0	(na)	(na)
Horticulture	<15	(na)	(na)	(na)
Manufactures	>70	(na)	(na)	60

Source: Arlindo and Keyser (2007); Donovan and Tastao (2010); GTZ/Technoserve 2010.

(a) Exports as a percentage of production; (b) Imports a percentage of consumption;

*Imported input costs for all stages of production (farm production, processing, assembly and logistics) as a % of final shipment value.

Family F = family farm and Commercial F = commercial farm; (na) not available.

Exchange Rates and Enterprise Profits (cont'd)

- ▶ Aggregate impact on relative price incentives conceals differences: commodities differ significantly in trade shares and use of imported inputs.
- ▶ Example: Response elasticity of cotton exports to change in REER (10% appreciation REER leads to 13% decrease in cotton exports)
- ▶ Import–substitution investments in staple foods, with large import shares: appreciation reduces price incentives – competitive effects out–weight positive effects from lower costs of imported inputs.
- ▶ Import–substitution ventures in staple foods already in fragile position due to high–cost business environment. So exchange rates matter.

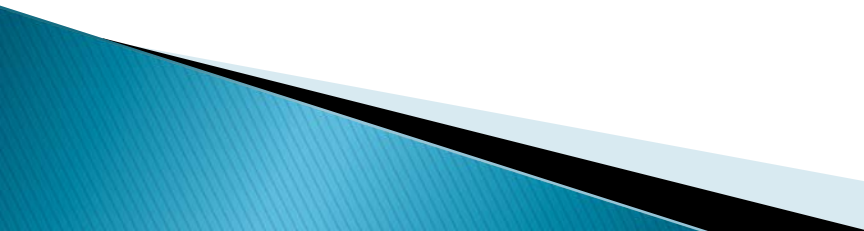
Exchange Rates and Changes in Valuations of Assets and Liabilities

- ▶ Exchange rates impact prices of assets and liabilities, causing changes in portfolios and wealth effects that influence consumer spending and firm investments.
- ▶ Accounting for these changes summed up in Mozambique's balance sheet of international assets and foreign liabilities called net international investment position (NIIP).
- ▶ Impact of exchange rates on NIIP depends on currency denomination of assets and liabilities.
- ▶ Analysis of NIIP since 2007 shows exchange rate revaluation effects have had a significant impact on external debt of country (2007-10 -3.3% of GDP or -\$265mn).

Exchange Rates and Changes in Valuations of Assets and Liabilities (cont'd)

- ▶ Currency denomination of asset holdings also influences the impact of exchange rate changes on ERPT and domestic price determination.
- ▶ Mozambique significantly influenced by currency and asset substitution – “Dollarization”. Residents save and borrow in foreign currency and also make business and consumer payments.
- ▶ Measured by ratio of foreign–currency bank deposits to total deposits, Mozambique, at 40%, is at **high–end** of group of countries designated “moderately” dollarized.

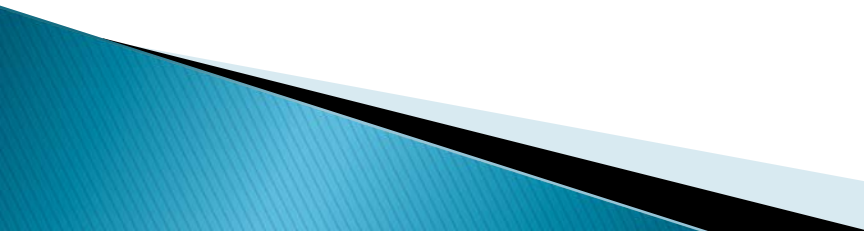
Exchange Rates and Changes in Valuations of Assets and Liabilities (cont'd)

- ▶ Research shows highly dollarized countries have larger ERPT's and higher exchange rate volatility.
 - ▶ Fact that Mozambique verges on high dollarization means ERPT will tend to be intensified.
 - ▶ Central reason dollarization increases ERPT is non-tradables priced in foreign currency (e.g., rents and real estate); so exchange rate shocks pass-through to broader set of goods than in non-dollarized economies.
 - ▶ High degree of dollarization and high ERPT to prices have important implications for monetary policy.
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Effect of the Exchange Rate on Growth

- ▶ Fifth transmission channel of exchange rate changes: Exchange rate-induced changes in incentives, lead to structural shifts in resource allocation, which drive changes economic growth. Key element is relative price of tradables to non-tradables (RER), which shapes incentives in the growth process.
- ▶ Research shows countries achieve higher growth when they increase incentives for investment in tradables by means of an undervaluation in RER.

Effect of the Exchange Rate on Growth (cont'd)

- ▶ Tradables are “special”: production has positive effects on rest of economy – learning-by-doing and technology transfer spillovers.
 - ▶ Incentives to increase share of tradables in economy via real exchange rate depreciation has positive growth-promoting implications.
 - ▶ Correlation coefficient undervaluation index and growth shows positive correlation, but coefficient not significant.
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Effect of the Exchange Rate on Growth (cont'd)

- ▶ No surprise to find REER–Growth link is not significant in Mozambique:
 - 1995–2010 short time for observable changes in structural transformation large enough to spur growth;
 - No undervaluation in REER during period;
 - REER only a facilitating condition: avoiding excessive overvaluation and excessive volatility enable country to exploit capacity for growth – i.e., to take advantage of a good infrastructure, well-trained labor force, good business environment.

Policy Implications

- ▶ Good job managing macroeconomic variables to bring overvaluation down in last decade – substantially improved incentives for investment in tradables.
- ▶ High degree of dollarization and high ERPT to prices have important implications for monetary policy:
 - Difficult time conducting independent monetary policy because real effects of nominal devaluations are limited.
 - Heightened “fear of floating”: so interventions in foreign exchange market more frequent and reserves maintained at higher levels, all at substantial cost.
 - Numerous disadvantages in achieving inflation goals (high ERPT; vulnerability to balance sheet effects (35% foreign–currency loans) – can make exchange rate flexibility required by inflation targeting disruptive and costly.

Policy Implications (cont'd)

- ▶ Where financial markets underdeveloped, exchange rate volatility negatively associated with growth, so need for the authorities to avoid excessive volatility (realizing that Mozambique's volatility will normally be higher).
- ▶ Authorities will have to pay close attention in future to policy trade-off between effects of overvaluation on cheaper imports and incentives for tradables, as keeping RER at competitive levels can be critical for growth prospects, particularly in low-income countries.
- ▶ But, policymakers should be mindful that exchange rate policy cannot substitute for the absence of other fundamental growth drivers – infrastructure, adequate labor force, good business environment.