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Assessing Competitiveness and Real Exchange Rate Misalignment in Low-Income Countries

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**Assessing Competitiveness and Real Exchange Rate Misalignment in
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Abstract

Assessing a country's competitiveness routinely starts with an analysis of the real exchange rate. However, in low-income countries, empirical analysis of the real exchange rate is often subject to important limitations that seriously weaken the results. This paper summarizes the methodologies used to assess real exchange rate misalignments and discusses the range of obstacles common to low-income countries. Recognizing the importance of using a wide range of indicators for assessing competitiveness in low-income countries, the paper discusses alternative competitive measures and then proposes a template of indicators to allow for a systematic assessment of competitiveness in low-income countries. The template is then used to rank countries according to their competitiveness performance in 2006.

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I. Introduction

Competitiveness assessments are a crucial component in evaluating a country's macroeconomic performance and the sustainability of its policies. Such assessments routinely start from an assessment of the real exchange rate level. However, empirical analysis of real exchange rates presents a range of conceptual and methodological obstacles. These obstacles— in particular, major data weaknesses and numerous structural breaks—are particularly profound in low-income countries (LICs,) and weaken considerably the usefulness of the results. This paper will aim to outline these obstacles, and provide suggestions for how the analysis of real exchange rates in LICs can be supplemented to provide broader, and potentially more useful, competitiveness assessments.

The paper first revisits concepts of competitiveness and their connection with real exchange rate misalignments. It will then summarize a range of methodologies available for assessing real exchange misalignments, outlining potential obstacles and providing some suggestions for how these can be overcome. The paper will then summarize other measures for assessing competitiveness, including more "traditional" approaches (e.g., export sector performance and input costs), and also newer measures generally associated with the quality of institutions. The paper will argue that in the light of obstacles present in LICs, as wide a range as possible of measures is needed to best capture the competitiveness situation in these countries. With this objective in mind, the paper will then present a template for assessing competitiveness in LICs in a systematic manner, drawing on a multiplicity of methodologies. This template is then applied to a broad set of LICs.[2]

II. Definitions

The Real Exchange Rate

Assessing the possible misalignment of the RER misalignments is generally a starting point for competitiveness assessments. Most modern theoretical work defines the RER as the domestic relative price of nontradable goods to tradable goods (i.e. an indicator of the incentives guiding consumption and the allocation of resources between the tradable and non-tradable sectors). The price for nontradable goods is also determined by domestic factors, while, especially in small countries, the prices of tradable goods are determined by international prices and the nominal exchange rate. Hence, an increase in the relative price of nontradable goods indicates an increase in domestic production costs, and *ceteris paribus*, a reduction in the profitability of tradable sectors. The estimation of the RER is not a straightforward task due to ambiguities surrounding the definition of the RER itself, the difficulty to finding proxies for the analytical constructs, and the choice of the price index—

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[2] The group of LICs used in this paper corresponds to those countries eligible for the IMF's Poverty Reduction and Growth Facility (PRGF), the IMF's concessional facility targeted to its low-income members.

see Edwards (1989). Under specific circumstances, alternative definitions may not provide consistent assessments of misalignments.[3]

RER Misalignments

The RER is "misaligned" when it is out of line with its economic fundamentals for a sustained period of time. The magnitude of the misalignment is the difference between the observed RER and a (non observed) "equilibrium" RER. An "overvalued" RER indicates that the value of the current RER is above its equilibrium value, with an "undervalued" RER indicating the opposite. Approaches for assessing RER misalignments are discussed below in Section III.

Caution should be exercised when using the RER *by itself* as a way to assess competitiveness (Arriazu, 1997). Indeed, an appreciation of the RER will not always result in a loss of competitiveness, and conversely, a RER depreciation will not always imply a better competitiveness picture. Some examples may be useful to illustrate this point: (i) an increasing RER might be a reflection of productivity gains in the tradable sector (*á la* Balassa-Samuelson); (ii) even in the case in which productivity increases occur predominantly in the non-tradable sector, a RER appreciation is possible if the country under analysis has a fixed exchange-rate system, non-tradable prices tend to be sticky (i.e. inflexible downwards), and the government does not apply an accommodative policy (thus leading to higher interest rates). Thus, competitiveness assessments that are based only on the observation of the RER evolution through time can result in misleading conclusions.

Competitiveness

The exact definition of competitiveness is often left vague in country studies. At times, competitiveness (or "competitive advantage") is used interchangeably with "comparative advantage", but often it is reduced to an assessment of the RER misalignment. This paper defines competitiveness as the ability of a given country to produce goods and services of international quality standards more cost effectively than other countries. This is hence a simple, broad-based definition of competitiveness that implicitly includes a number of macro, micro, and institutional of indicators. RER misalignments will constitute a crucial component of a country's overall competitiveness which should however be supplemented by a broader range of measures, including other relative price measures, external sector outcomes, production costs, and measures of institutional quality. This broad-based definition has a number of benefits, including the ability to be applied to any country in a standardized fashion, allowing comparability across countries and across time. From a policy perspective, it gives policy makers a more comprehensive view of the many dimensions of

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[3] See Edwards (1989).

competitiveness and thus, helps in establishing a policy agenda aimed at improving it. This can be of particular benefit for LICs.

III. ANALYSIS OF COMPETITIVENESS AND REAL EXCHANGE RATE MISALIGNMENTS IN LICs

A. Assessments of Real Exchange Rate Misalignments

RER assessments are usually the starting point for analyses of competitiveness in a given country, sometimes complemented by the use of other competitiveness indicators.[4] The broad approach taken to this work can generally be grouped into "informal' and "formal" assessments.

Informal Assessments

Informal assessments rely on a graphical examination of relative price measures, normally the CPI-based RER. Informal assessments implicitly draw on the PPP method discussed above for assessing RER misalignments, and thus compare the current value of the RER with its value in some base year, which carries the implicit assumption of unchanged fundamentals. The base year is either assumed to be a point in which the economy was in internal and external equilibrium, a moment in which authorities decided to significantly devalue the nominal exchange rate (or to float it), or just a common year used for a group of countries. The discussion of RER developments may be complemented by a discussion about terms of trade movements, structural changes, changes in financing flows, productivity, capital stock, and consumption patterns, all of which may have affected the equilibrium RER level. These assessments often include comparisons with similar or neighboring countries.

The most popular ways to measure the RER include:

- **The purchasing power parity (CPI)-based RER** is calculated as the ratio of the domestic Consumer Price Index (CPI), as a proxy for the price of nontradable goods, to the foreign CPI, as a proxy for the price of tradable goods, multiplied by the nominal exchange rate. The measure can be bilateral or multilateral—the Real Effective Exchange Rate

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[4] These assessments are usually based on "single-country" analyses of RER misalignments, though RER assessments can also be carried out from a multilateral perspective (e.g., the IMF's work in the context of the Consultative Group on Exchange Rate Issues (CGER) (IMF, 2006)). This work forms part of the "surveillance" function of the Fund, which broadly aims to (i) oversee the international monetary system to ensure its effective operation; and (ii) oversee members' compliance with the obligations specified under the IMF's Articles of Agreement (IMF, 2005).

(REER)—uses an average of foreign price indices, weighted by their relative importance in the external trade of the country under analysis.[5]

One of the main problems is finding a good proxy for the price of nontradable (domestic) goods. The CPI, Unit Labor Cost (ULC), and Producer Price Index or Wholesale Price Index (PPI/WPI), have been used; each has advantages and disadvantages, for theoretical reasons and in terms of data availability. A general problem for comparing across countries is that the weights in the price indices vary across different countries. Thus, for example, an increase in a given commodity price may point to an erroneous change in relative competitiveness.[6] Moreover, in the particular case of the CPI-based RER, consumption baskets do not necessarily reflect the cost-basket of firms. Although this problem may be partially solved by using the PPI-based RER, PPIs rarely include wages, taxes, and interest rates, which are important costs of firms.

- **The Internal Terms of Trade** (ITT), which follows closely the RER theoretical definition, is calculated as the ratio of the proxy for the price of nontradable to the proxy of the price for tradable goods (Appendix II). However, in empirical and policy work this definition takes different forms, mostly because of the lack of good proxies for the prices of tradable and nontradable goods.[7]

In principle, computing ITTs only requires domestic price data. Therefore parallel exchange rates, unrecorded trade and shifts in trade patterns should not lead to measurement problems (unless they lead to distortions in domestic price statistics). However, the difficulty in distinguishing tradable from nontradable goods presents several problems. In particular, there is some "endogeneity" in the composition of these two categories, as the degree of "tradability" depends on the level of the RER. Empirically, data is usually available only for exports or imports rather than for tradables or nontradables. In practice, this tends to

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[5] This is the approach followed by the IMF's Information Notice System CPI-based REER. This paper will use the REER and RER expressions interchangeably.

[6] An example (taken from Arriazu, 1997) may help clarify this point: assume that there are two countries (A and B), and two goods (beef and steel); "A" specializes in beef, and beef represents 50 percent of its consumption basket; "B" specializes in steel, and steel represents 98 percent of its consumption basket. If the international price of beef increases 100 percent, the CPI in "A" will increase 50 percent, while in "B" will increase only 2 percent. In this case, the RER will indicate a deterioration of "competitiveness" in "A" with respect to "B", just because of the different weights, and even when "A" is richer than before (what may warrant an equilibrium appreciation of the RER). The CGER exercise (IMF, 2006) takes into consideration this problem.

[7] "Tradable" is a broader category than "traded" goods, as the latter comprises exports and imports, while the former comprises exports and domestically-consumed "exportable" goods, as well as imports and import-substitutes. See Appendix II. See Hinkle and Nsengiyumva (1999) for details on the relation between ITT and PPP-based RER.

understate the size of the tradable sector. For this reason, the ITT is usually measured by identifying suitable proxies for its components.

Formal Assessments

Formal assessments of the RER compare the current RER with its equilibrium value, formally determined. These RER assessments generally rely on econometric techniques (often some form of cointegration analysis) to identify a long-term relationship between the RER and a set of macroeconomic variables—the RER fundamentals. Although the variables considered are usually justified by a formal economic model, pure econometric-based approaches are also followed. The fundamentals usually comprise the terms of trade, government spending, the economy's openness, factor productivity, capital flows, among others, with aid flows important for LICs. In particular, the broad approaches generally used to assess the RER equilibrium, as well as their main elements, are as follows:[8]

- **The Macroeconomic balance approach (MB)** is based on: (i) an econometric estimation of an equilibrium relationship between the current account (CA) balance and a set of fundamentals; (ii) the medium-term fundamentals for each country are projected and with them a "CA norm" is estimated; and (iii) the RER adjustment needed to close the gap between the current CA and its "norm" is calculated; this is derived by applying the elasticity of the current account balance to the RER. In theory, the more open the country is, the less the RER would have to change for the CA to adjust; it is usually assumed that only the trade balance (TB) is the source of adjustment.

- **The External Sustainability Approach (ES)** involves three steps: (i) establish the size of the CA balance that would stabilize the NFA at a given "benchmark" position (to find the present value of future trade surpluses that would be sufficient to pay for the country's outstanding external liabilities: one way to satisfy this condition would be to make NFA stable in relation to the size of the economy); (ii) compare the TB or CA balances obtained with those expected to prevail in the medium term; and (iii) estimate the RER adjustment needed to close the gap between the medium TB and CA balances and the NFA-stabilizing TB and CA balances. Unlike the MB and ERER approaches, which rely on econometric estimation, the ES approach requires only a few assumptions about a number of macroeconomic variables including the economy's potential growth rate, the inflation rate and the rates of return of external assets and liabilities.

- **The Equilibrium RER Approach (ERER)** is by far the most common methodology applied to LICs. It generally involves three steps: (i) an econometric estimation of an equilibrium relationship between RER and a set of fundamentals; (ii) the calculation of the RER on the basis of the current value for the fundamentals, and an equilibrium RER on the

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[8] MacDonald (1997), (1998) and (2000) also discuss available methodologies.

base of the projection of the fundamentals in the medium term; and (iii) the calculation of the RER adjustment needed to restore equilibrium; this is estimated directly as the difference between the actual and equilibrium RERs.

These above–mentioned methodologies have their counterparts in the general literature about RER equilibrium determination and its misalignments such as:

- The **Behavioral Equilibrium Exchange Rate** (BEER): This approach is based in the empirical calculation of an "actual" RER misalignment, by means of estimating the statistical long-run relationship between the RER and its fundamentals (MacDonald, 1997, and Clark and MacDonald, 1998).
- The **Permanent Equilibrium Exchange Rate** (PEER) is closely related to the BEER approach. It underscores that the total RER misalignment at any given moment (the difference between the fitted and actual value of the RER) depends on transitory (short-term) factors and on the departure of fundamentals from the their long-term value; usually, the decomposition into permanent and transitory components is obtained by using the Gonzalo-Granger method (Gonzalo and Granger, 1995).
- The **Fundamental Equilibrium Real Exchange Rate** (FEER): The FEER is defined as the exchange rate consistent with internal and external balance. Internal balance is defined as a situation in which the country under consideration is operating at a level of output consistent with full employment and low inflation ("low" being a normative rather than a positive definition); in turn, external balance is defined as a situation characterized by a sustainable current account position (Williamson, 1994).
- The **Desired Equilibrium Real Exchange Rate** (DEER): This approach is very similar linked to the FEER approach described above; the only difference is that in the case of DEER, the situations at both internal and external fronts are defined in terms of desired policy objectives (Bayoumi et al., 1994). Thus, the DEER approach implies defining "desired" paths for policy variables instead of "sustainable" paths, as done in the FEER approach.
- The **Natural Real Exchange Rate** (NATREX): In this approach, (a different) ERER is defined both for the medium and long-terms; what is distinctive about the NATREX approach is that it also considers the stock of capital and of net foreign debt as part of the model and, and describes the path of the RER from the medium-term equilibrium (which is obtained based on the current values of the capital stock and foreign debt) to the long-term equilibrium (which is derived from the capital stock and foreign debt stabilized at their steady-state levels) (Stein, 1994, 1995 and 2002).

Both the BEER and the PEER approaches are the natural counterpart for the ERER approach. In turn, the FEER and DEER approaches have elements in common with the MB approach, though their estimation is different. Finally, the NATREX approach has similarities to the ES approach. The approaches most commonly used for LICs include those based on the ERER approach, especially the BEER and PEER methodologies, even if references are not always

explicit. In contrast, the other approaches have been applied mostly to advanced and emerging market economies.

B. Issues complicating RER assessments in LICs

Structural factors

A number of factors complicate the estimation of equilibrium RERs in LICs. Many of these factors take the form of structural breaks, or contribute significant volatility to the data. Ideally, these factors could be appropriately specified in real exchange rate models. However, in practice, this often proves difficult, given the frequency of breaks and scale of volatility, thus, introducing extra complexities in estimating the equilibrium RERs and establishing meaningful measures of RER misalignments. Notably:

- **Terms of trade shocks**: many LICs are primarily commodity exporters. As a result, they are vulnerable to sharp movements in the terms of trade, which is augmented by the fact that many countries have a non-diversified export base, often concentrated in a small number of commodities. Terms of trade shocks introduce volatility into the data, and may complicate assessing the equilibrium RER unless such shocks are measured properly and their impact on the ERER is controlled for, which may be difficult if data weaknesses are present.
- **Frequent political and institutional changes**: the political, institutional and economic environment in many LICs are very fluid, and subject to reform and frequent changes. Theses usually impact the functioning of domestic markets, introducing additional volatility/noise in macroeconomic variables, as well as further breaks in economic time series. Dummy variables may be used to model specific changes, although these are less useful if the changes are frequent or do not have discrete start or end dates.
- **Market imperfections**: Price controls are not uncommon; labor markets are segmented; and rural underemployment/unemployment is generally high. These features are generally ignored by the models that provide the theoretical basis for RER equilibrium determination. In addition, such features introduce frequent breaks in time series, in particular for transition economies, which have been continuously adapting to reforms to implement free markets and prices. These market imperfections imply cross-country heterogeneity, which would call for country-specific coefficients in panel estimates, or the use of country-specific methods.
- **Volatile financing flows**: Aid flows, in particular, are volatile, often reflecting rapidly changing political and economic conditions, but also exogenous conditions in donor countries or institutions. The volatility of these flows results in frequent changes in the fiscal stance and in unstable levels of public investment, complicating assessments of productivity growth and the equilibrium RER.
- **Multiple exchange rate practices and capital controls**: the presence of different forms of capital controls undermines the strength of RER data series (which are calculated using official exchange rates), as only a limited subset of external operations are liquidated in the official foreign exchange market.

Data issues

Data limitations also seriously hamper the assessment of RERs in LICs, rendering estimates less robust and meaningful. Macroeconomic data in LICs often have substantial weaknesses, both in length and scope. In particular:

- **Short time series**: the length of data series is often short, with many countries lacking reliable data before 1980. Data on macroeconomic aggregates are usually available at low frequency, often only on an annual basis, in particular for the national accounts and balance of payments. Consequently, econometric estimates of reduced-form equations for the RER often produce coefficients that have large standard deviations and/or an unexpected signs. This poses particular problems for the cointegration techniques which aim to uncover the long-run relationship between a variable and its fundamental determinants.

- **Poor data quality**: data systems in many LICs suffer from important collection and compilation problems that effect the underlying accuracy of the data. Many series from the national accounts and balance of payments may not be available and are only roughly proxied by alternative existing data. Investment, productivity, and even key components of the current account such as services and informal sector trade can only be inferred from other indicators, and there is often uncertainty even about trade volumes and unit values, which are important for assessing terms of trade changes; all of this introduces a great deal of imprecision in the data. The quality of price data is especially problematic. The CPI—the measure most often used to compute the RER—is rarely based on a nationally representative sample. Commodity prices, usually constituting the lion's share of many LICs exports, are marginally represented in the CPI, blurring the link between the evolution of the CPI-based RER and that of profits in the export sector. Wage data are scarce, and often times inexistent, with particular gaps on sectoral wages and wages in the rural and informal sectors. As a result, the CPI-based RER, which by construction ignores the existence of segmented labor markets and large informal sectors in LICs, may provide an imprecise picture of the actual price of nontradable relative to tradable goods.[9]

- **Methodological structural breaks**: data series recurrently contain breaks that are the result of methodological changes (in addition to the macroeconomic or political events mentioned above). This introduces greater margins of error into econometric estimates, and may trigger spurious conclusions, given that movements in specific macroeconomic aggregates due to statistical or definition changes may be incorrectly interpreted.[10]

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[9] Indeed, the CPI-based RER may show, for example, an appreciation—e.g. because the demand for services in the city in which the CPI is surveyed has increased—while real wages (for which there is no good information) in the rural and informal sectors may have remained constant. This is bound to happen if informal sector and rural unemployment are large.

[10] In empirical work, these methodological structural breaks would require the use of dummy variables at the very least; this same approach should be followed in the presence of breaks in data series that follow from a

• **Significant premia in parallel exchange rate markets:** There are also uncertainties related to the exchange rate data itself. Many LICs used to maintain a range of currency restrictions that resulted in multiple currency practices, and thus in sizable gaps between official and parallel rates. Although such restrictions are now less common, they are still present in the times series data.

The tables below demonstrates the greater limitations of econometric techniques in LICs. Examining results from a set of IMF country studies (details are provided in Appendix III), in LICs (the first table), only about a third of the estimated coefficients (without unambiguous signs) had both the correct sign—i.e. that expected by economic theory—and were statistically significant. This compares poorly with the results obtained by a sample of studies of RER misalignments in 12 emerging market economies (EMEs), in which about two thirds of the coefficients had both the correct sign and were statistically significant.

Single Country Long-term REER Estimation: Summary of Results for LICs

		Percentage
Number of estimated long-term coefficients	52	
of which , statistically significant	29	55.8
Number of estimated long term-coefficients with unambiguous signs	30	
of which, statistically significant	16	53.3
of which, both with correct sign and statistically significant	10	33.3

Source: Authors' compilation

Single Country Long-term REER Estimation: Summary of Results for EMEs

		Percentage
Number of estimated long-term coefficients	51	
of which , statistically significant	48	94.1
Number of estimated long term-coefficients with unambiguous signs	24	
of which, statistically significant	24	100.0
of which, both with correct sign and statistically significant	16	66.7

Source: Authors' compilation

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move from central planning to a market economy (or more generally the removal or imposition of price/quantity/capital controls), as described above.

C. Non-RER measures of Competitiveness

Because of the above-mentioned problems in assessing RER in LICs, competitiveness assessments for these countries need to rely on additional indicators, which can often be based on external sector outcomes, production costs, and the quality of the business environment.

External Sector Outcomes

The evolution of exports, market shares and current account developments, provide important indications about a country's competitiveness that convey information about the sustainability of current policies. These type of indicators are used for countries at all levels of income, but are particularly useful for LICs because data are readily available.[11]

- **Export growth and market share**: The performance of export volumes is used to assess the ability of the export sector to compete in international markets. Closely related to this indicator, the evolution of export market shares in specific partner countries is used to provide an indicator of the efficiency and underlying productivity of the export sector of a given country.[12]

- **The evolution of the current account balance** is another measure to assess competitiveness. This measure is global in nature, and it may indicate "structural" deficits that, through a steady rise in net indebtedness, can indicate the presence of unsustainable policies, and/or an overvalued RER. However, current account balances have a number of weaknesses as a competitiveness measure and thus can be an unreliable indicator. In particular, competitiveness problems may be masked if imports are compressed due to, for example, political or security disruptions, or an attempt to offset overvaluation pressures through very tight demand management. The current account balance may also reflect temporary shocks, or lags between changes in policies and outcomes. Finally, countries may run current account deficits financed through long-term aid inflows.

- **Export sector profitability**: profitability measures for the export sector are used to measure firm and sector-level competitiveness, and provide information about profit margins. In practice, data availability is a problem and these measures are usually proxied by ratios that include export unit prices in the numerator, and some measure of labor costs (or alternatively the WPI to track the development of key input prices) in the denominator.

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[11] It is worth pointing out that these indicators constitute ex-post measures of competitiveness.

[12] However an increase in the volume of exports of lower value-added goods at the expense of higher value-added goods could be a sign of an erosion of competitiveness.

Production Costs

Microeconomic data on key production or input costs provide useful means for complementing competitiveness assessments, in part because of weaknesses in the price measures discussed above (in particular related to the CPI):

- **Production costs:** Key production include such measures as the cost of capital, labor, infrastructure, transport and utilities, and can be particularly useful for cross-country comparisons.[13] Comparable data on labor costs is often an obstacle in LICs, particular for the private sector, but infrastructure data (road, air, postal service, electricity, and telecommunications) is often available, and provides useful information on business costs and uncertainty about merchandise delivery. The challenge is understanding which costs are important for a given country or sector.

- **Sectoral analysis:** Drawing on production cost information, a useful technique is to analyze the profitability of specific sectors, in particular the most important export sectors. This type of analysis can be powerful for countries with a concentrated production structure, including commodity-producing LICs.[14] The variables affecting these sectors' profitability are those present in any stylized income statement. A weaknesses of this approach is that the cost structure of the sector analyzed may not be representative generally.

Stand-alone Indicators of the Quality of the Business Environment

The business environment, including the availability of credit, the strength of the domestic banking sector, and the quality of institutions are useful complements to more traditional competitiveness indicators, particularly in LICs. A weak banking and financial sector and widespread governance weaknesses represent indirect or hidden production costs that negatively affect productivity and deter economic activity. However, there are limitations to the use of these non-traditional indicators; in particular, governance indicators are relatively recent, and in cases, they convey subjective rather than objective perceptions. The indicators most widely used include:

- **Financial sector:** The depth of the banking and financial sectors is a key component of a business friendly environment. In LICs, bank lending to the private sector is scarce and its cost high, hence increasing the cost of capital. In addition, banks often do not lend to small and medium-sized businesses.

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[13] In theory, the cost of factors is already reflected in the computation of the RER. However, in part because of weaknesses in the price measures discussed above (in particular related to the CPI), it is helpful to look directly at the key production costs to assess competitiveness.

[14] See Arriazu (1997) for an application of a form of this analysis to emerging market economies. Bakhache et al (2006) apply this approach to the cotton sector in the Central African Republic.

- **Foreign Direct Investment (FDI)**: Inward FDI flows reflect, ex-post, the attractiveness of a country's investment climate, although specific factors—such as the onset of capital-intensive mining activities—also play a role.

- **Governance**: Governance problems and corruption—or perceived corruption—are thought to negatively affect foreign investors' decisions. Survey-based measures of corruption are available for a very large number of countries, including LICs. The *Worldwide Governance Indicators* of the World Bank provides governance indicators for 213 economies covering 6 dimensions of governance. The indicators range from -2.5 to 2.5, with higher values corresponding to better governance outcomes. The *Corruption Perceptions Index* from Transparency International reflects the perception of corruption in the public sector. The indicator ranges from 0 (highly corrupt) to 10 (highly clean).[15]

Synthetic Indicators of the Business Climate

Synthetic survey-based indices of the quality of the business climate are now available for a large number of countries, and allow for easy multi-criteria competitiveness assessments. The three indices with the largest country coverage are the *Doing Business Survey* from the World Bank, the *Index of Economic Freedom* of the Heritage Foundation, and the *Global Competitiveness Index* of the World Economic Forum. These indices include an assessment of institutions, bureaucratic effectiveness, governance and security considerations and sometimes also an assessment of the macroeconomic environment. These indicators are particularly useful for policy makers as they point directly to the specific impediments to competitiveness.

- **Doing Business (World Bank):** The *Doing Business* indicator encompasses information on the number of days, procedures and costs required to complete various business transactions if all procedures mandated by law are followed and completed within the officially designated time for each step. The overall indicator of *Doing Business* is an average of 10 sub-components. The database has a very wide coverage: 175 countries for 2007, including almost all LICs. In general, PRGF-eligible countries rank low in the *Doing Business* ranking relative to other country groupings.

- **The Index of Economic Freedom (Heritage Foundation):** The *Index of Economic Freedom* ranks 161 countries according to 50 economic variables that fall into 10 broad categories which are equally weighted. Similar to *Doing Business*, the *Index of Economic Freedom* tries to measure bureaucratic and institutional hurdles. However, it also includes an assessment of corruption and of the macroeconomic environment by incorporating a judgment on monetary and fiscal policies as well as the free flow of capital.

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[15] See www.worldbank.org/wbi/governance and www.transparency.org. Regarding the latter, although Transparency International started publishing its index in 1995, the country coverage in the early years was limited.

• **Global Competitiveness Index (World Economic Forum):** The *Global Competitiveness Index* gives a higher weight to skills, innovation, and technology as determinants of competitiveness. The index is a weighted average of indices of 9 "pillars", grouped around three major themes: (i) Basic requirements (institutions; infrastructure; macroeconomy, and health and primary education); (ii) Efficiency enhancers (higher education and training; market efficiency, including labor market; technological readiness); and (iii) Innovation factors (business sophistication; innovation). Although the country coverage of the *Global Competitiveness Index* has increased since its creation in 1979, it is less extensive than that of the Doing Business or the *Index of Economic Freedom*, particularly for LICs—only 38 PRGF-eligible countries are covered.

IV. A SUGGESTED FRAMEWORK FOR ANALYZING COMPETITIVENESS IN LICs

A. A Possible Template

The methodologies outlined in this paper—ranging from the simple CPI-based RER to sophisticated models of the ERER to more judgmental measures of institutional quality—all have merits and drawbacks. The limitations of many of these approaches are particularly binding in LICs, where the structural characteristics of the economies and data weaknesses impair their effectiveness. As a result, this paper argues that competitiveness assessments should be based on a wide range of indicators, used systematically. To this end, this paper proposes a template of measures, as shown in the figure below.

The Competitiveness Template

Relative Prices	**ITT CHG**	Percentage change in ITT over the last 5 years.
	RER CHG	Percentage change in the CPI-REER over the last 5 years.
	EREER	Misalignement between the REER and the Equilibrium REER.
External Sector	**Xvol**	Percentage change in the non-oil export volume over the last 5 years.
	Xshare	Percentage change in the share of world's non-oil exports over the last 5 years.
Costs	**Diesel**	Price of a liter of diesel fuel in US$ (latest available year).
	Telecoms	Price of a 3 minute telephone conversation to the United States in US$ (latest available year).
Institutions	**DoingB**	Doing Business Ranking.
	TI	Corruption Perceptions Index from Transparency International.

The proposed template groups measures and methodologies by category. These include relative price measures (in particular the RER), external sector outcomes, production costs, and measures of institutional quality. Necessarily, data availability affected the indicators' selection as potentially useful indicators for which country coverage is low were excluded. Within each category, several measures are proposed. The aim of the template is to allow

comparisons across countries, and across time, while inevitably some measures will vary across countries due to data availability issues.

The template includes the following indicators in the four competitiveness categories:

- **Measures of RER misalignment**: These include ITT and CPI-based RER changes over the last 5 years, and a measure of the deviation of the equilibrium RER from the actual RER. Instead of single country long-term RER equations, which as noted above in Section III-B are often not robust, this papers uses the deviations from the ERER derived from the panel estimates of Chudik and Mongardini (2007). Even though the appropriateness of using such coefficients for all countries is not certain, it provides a standardized manner to evaluate RER misalignments in a simple fashion.[16]

- **External trade indicators**: These include changes in export volumes and in the export share of the country under analysis in world exports during the last 5 years.[17]

- **Production costs**: The template should include costs of inputs that enter the production of most exports in most countries. We therefore include a proxy for telecoms and energy prices (diesel)[18]. A broader measure of transport costs (e.g., cost per kilometer), or wage data would be desirable but could not be included because of data unavailability.

- **Institutional indicators**: For reasons of comprehensiveness, synthetic measures are used here, namely the World Bank's *Doing Business* synthetic indicator and the Transparency International's *Corruption Perception Index*. These institutional measures have the widest country coverage and in contrast to the *Index of Economic Freedom* or the *Global Competitiveness Index* do not duplicate the other indicators of the template, or include variables which we do not consider essential for competitiveness assessment in LICs.

The rationale for the inclusion of these specific indicators in the template is to have as broad a coverage of the range of institutional indicators as possible, while also choosing other more "traditional" indicators for which data are generally available in the case of LICs. In the analysis of individual cases, the indicators presented in the template can be complemented by other indicators, especially if important for the country under analysis, provided information

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[16] The equilibrium RER was calculated using the coefficients from Table 2 of Chudik and Mongardini (2007); in particular, the coefficients used come from a panel of non-oil exporting Sub-Saharan countries. These coefficients are useful for the purposes in this paper, but there is some uncertainly surrounding the estimates. Chudik and Mongardini (2007) also present results for a panel of oil producing countries, but these show limited robustness because of the small group size and the limited time dimension.

[17] Both export volume and export market shares refer to non-oil exports. Template results including oil are available upon request.

[18] Diesel is subsidized in some countries, limiting the usefulness of this measure in these countries. For diesel, the latest available data is for 2004. The same applies for telephone costs, though for some countries it belongs to earlier years. The template presents the latest available value.

is available (e.g., wage data and/or FDI data).[19] Likewise, alternative methods for assessing the RER misalignments could be used, in addition to the one used for this template.

A practical problem arises when deciding how to quantify the competitiveness indicators included in the template. Because the indicators are measured in different units of account, any comparison between two countries on two (or more) different indicators is difficult. To solve this problem, following Husain (2006), the template orders the countries in percentiles. Percentiles (deciles in the template) are straightforward to compute; the higher the order of the percentile that is used, the easier to differentiate the situation of any two countries for a given indicator, but at the same time, the larger (and thus less tractable) will be number of different percentile groupings. Although interpreting the results (presented in Section IV-B below) will be complex, if a country x ranks at least as high as another country y for every indicator, but strictly higher in at least one indicator, it could be deemed to be "more competitive".

The template—a common framework for analyzing competitiveness—has a number of benefits. Namely, it:

• Provides a simple manner to organize various competitiveness indicators, which is especially useful in the case of LICs, given the pitfalls of any particular technique.
• Allows competitiveness assessments across countries and across time;
• Underscores that competitiveness goes beyond RER measures;
• Provides guidance as to what are the obstacles for competitiveness improvements;
• Can be easily be extended to other country groupings, as competitiveness comparisons between LICs and an EMEs could be done in an analogous manner to the one presented here solely for LICs.

At the same time, the use of a template like the one proposed raises certain difficulties:

• The number of available indicators differs widely among LICs; even if the template is restricted to the competitiveness indicators discussed above with the largest country coverage, there are still gaps for some countries. This obscures the interpretation of the template, since, ideally, competitiveness comparisons should be attempted only among countries with a similar number of indicators.
• Time series for synthetic and institutional indicators are short and do not allow to assess gains in competitiveness from before 2004.
• The competitiveness assessments can be ambiguous; in other words, there is a problem associated with the "aggregation" of different indicators. This problem arises when

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[19] For example the cost data could be tailored to include the input costs that are most relevant given the export structure of the country.

a given country ranks better than another country in some of the indicators, but worse in others. In this case, the only possible way to rank both is to have some "weighting system" that allows to ascertain the importance of either one of the indicators for the overall competitiveness of the countries under analysis. This issue is discussed more fully below.[20]

B. The Template at work: General Results for 2005-06

As noted, to simplify comparisons across countries and across indicators, the information corresponding to each indicator is presented in the form of a decile ranking instead of the direct value of the indicator.[21] The first decile represents the most competitive countries, while countries in the 10th decile are the least competitive.

The paper presents the results of the template for LICs in two alternative ways. The first presentation shown in Table 1 below simply reports the score (decile) of each country for each indicator for 2006, allowing cross-country comparisons for each indicator separately.[22] Interestingly, no country scores systematically very high in all indicators and no country gets systematically low scores.

The presentation allows comparisons of countries according to each individual indicator and makes clear that the overall competitiveness assessment for a country requires some judgment as all indicators rarely point in an unambiguous direction. Moreover, indicators in each category are not necessarily correlated. For example, some countries such as Eritrea or Tanzania, score low in *Doing Business* but are ranked high by Transparency International.

Some countries show significant differences in relative price indicator rankings, but these are not necessarily paradoxical since the indicators capture slightly different dynamics. For example, for Nigeria, the CPI –based RER (RER CHG) has appreciated significantly over the last 5 years, and the country ranks in the 8th decile, but calibration estimates show that it is

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[20] To define the situation more precisely, suppose that there are nine attributes and in seven of those attributes country x has the same ranking as country y; however, in the remaining two attributes (called a_i and a_j), country x ranks far better than country y in a_i, and slightly worse than country y in a_j; the question that arises is how to compare such countries in that case, or in other words, how much extra of an attribute a country should have to compensate for less of another attribute to stay in the same level of competitiveness. Research conducted in the context of this paper (using simple regression analysis and panel data techniques) attempted to find an optimal weighting by relating several ex-post outcomes (e.g., foreign direct investment, measures of export performance, etc.), with several independent variables (institutional quality, input costs, RER misalignment). Initial results were not conclusive; as this constitutes work in progress, the results are not presented in this paper, but will be pursued in future work.

[21] In this respect, our methodology is similar to that of the World Bank's *Doing Business*.

[22] Results for 2005 are available from the authors upon request.

still well below its equilibrium value, justifying a ranking in the first decile. The reverse is true for Albania. Similarly, the RER has appreciated significantly in Chad over the last five years, but because the country started exporting oil (the prices of which simultaneously increased), the ITT mechanically decreased, thus explaining the large difference between the ITT and RER CHG measures.

Overall, it is safe to say that Ghana is more competitive than the Central African Republic, or that Bolivia is more competitive than Benin since Ghana and Bolivia score better on every indicator than the Central African Republic or Benin respectively. However, it is more difficult to form a judgment on the relative competitiveness of, for example, Pakistan and Sri Lanka since Pakistan outperforms Sri Lanka in only 6 indicators. The second presentation offers a simple means of dealing with the issue.

Table 1. LICs Competitiveness Rankings for 2006.

	Relative Price			External Sector		Costs-based		Institutions		# Ind. Available
	ITT CHG	RER CHG	EREER	Xvol	Xshare	Diesel	Tel	DoingB	TI	
Afghanistan						3		9		2
Albania	8	5	8	3	3	10	3	5	4	9
Angola	10	10	9	2	4	1	8	8	8	9
Armenia		9	1	2	2	5	6	1	2	8
Azerbaijan		5	1	1	1	1	9	4	6	8
Bangladesh	2	3	3	5	6	1	3	3	9	9
Benin	9	8	6	6	8	5	9	6	5	9
Bhutan				2	2			6	1	4
Bolivia	1	2	5	4	2	1		5	4	8
Burkina-Faso	9	8	4	2	2	10	2	9	1	9
Burundi	6	2	5	8	7	10	7	9	6	9
Cambodia	3	4	4	3	4	5		7	9	8
Cameroon		7	4	9	7	9		8	7	7
Cape Verde	10	5	2	3	3		10	5		7
CAR	9	9	9	8	9	10	5	10	6	9
Chad	2	10	3	2	4	10		10	9	8
Comoros	8	7	9	9	10			7		6
Congo	7	9	6	10	1	3	10	10	8	9
Congo (DCR)	7	4	1	4	3	8		10	9	8
Cote d'Ivoire	5	8	10	7	6	9	6	6	9	9
Djibouti	5	2	8	7	7	7	10	9		8
Dominica		3	7	9	10			2	1	6
Eritrea	6	10	8	10	10	5		10	2	8
Ethiopia	7	9	7	2	4	2		3	6	8
Gambia	6	1	1	10	8	8	4	5	5	9
Georgia		7		1	1	7		1	3	6
Ghana	9	6	4	6	5	6	1	3	1	9
Grenada		4		10	10	7		2	1	6
Guinea	1	1	2	8	8	5		8	10	8
Guinea Bissau	7	8	10	5	7		1	10		7
Guyana		4	8	10	9			6	5	6
Haiti		10	10	7	7			6	10	6
Honduras	7	5	7	7	8	4	7	5	5	9
India	3	6	6	3	3	4	3	6	1	9
Kenya	7	10	10	3	5	7	7	3	8	9
Kyrgyz Rep.		5	7	7	6	2		3	8	7
Laos	4	6	4	6	2	4	2	9	4	9
Lesotho	10	10	8	1	3	6	8	5	1	9
Liberia			10			6				2

	Relative Price			External Sector		Costs-based		Institutions		# Ind. Available
	ITT CHG	RER CHG	EREER	Xvol	Xshare	Diesel	Tel	DoingB	TI	
Madagascar	2	2	6	8	9	8	1	7	2	9
Malawi	3	1	2	9	9	10		5	4	8
Maldives	3	1	1	5	6		10	1		7
Mali	4	5	4	6	4	8		8	3	8
Mauritania	4	4	3	5	5	6		7	2	8
Moldova		4	6	3	5			4	1	6
Mongolia	9	6	5	4	2	6		1	3	8
Mozambique	3	3	2	8	1	9	3	6	3	9
Myanmar	10	10	10	8	7	4			10	7
Nepal		6	6	10	9	4	5	4	5	8
Nicaragua	4	3	7	4	5	2		2	4	8
Niger	4	7	7	8	6	9		9	7	8
Nigeria	1	8	2	1	1	3	4	4	8	9
Pakistan	6	6	6	4	6	3	2	2	8	9
Papua New Guinea	10	8	9	6	1			2	6	7
Rwanda	5	3	3	7	7	9	6	9	5	9
Saint Lucia		3	7	9	8			1		5
Samoa	8	9	8	9	10			1		6
Sao Tome	6	4	10	5	10		9	10		7
Senegal	5	6	3	9	9	9	1	7	1	9
Sierra Leone	2	1	2	1	1	7		10	8	8
Solomon Is.	4	2	9	1	3			2		6
Somalia						3				1
Sri Lanka	8	7	5	5	8	2	5	3	2	9
St Vincent		3	4	10	9			1		5
Sudan		10	5	3	5	1		8	9	7
Tadjikistan		2	1	2	10	4		6	8	7
Tanzania	1	1	2	1	4	7	8	7	2	9
Togo	5	7	9	7	6	8	8	8	6	9
Tonga		8			8			1		3
Uganda	1	2	3	6	5	8		4	4	8
Uzbekistan		1	1	6	4	2		7	9	7
Vanuatu		7		5	5			2		4
Viet-Nam	8	5	5	1	3	2	4	4	4	9
Yemen	2	9	9	4	2	1	6	3	4	9
Zambia	10	9	10	4	1	10		4	4	8
Zimbabwe	1	1	10	10	10			8	6	7

The second presentation, shown in Table 2, attempts to generate an overall, or "synthetic", competitiveness score for each country. To do so, a score is attributed to each of the four categories of the template. This is constructed as the average of the individual indicators (deciles) within the category. The simple average of the four categories averages are then computed to generate an overall score. In turn, these overall scores are ranked in deciles and reported in Table 2 below. In order to better assess the robustness of these scores, the table also include a measure of dispersion of the indicators. We thus compute the standard deviation of all the indicators relative to the mean score for each country, and rank these dispersion scores in deciles. As noted, while the synthetic indicator is informative, given the data weaknesses—and absent a more empirically determined weighting of the components—relative and absolute results presented here should be treated as indicative only.

This presentation allows comparisons of the values obtained for 2005 and 2006. However, only countries which have at least one indicator in each category could be ranked. Table 2 shows that the most competitive countries in 2006 were Armenia, Azerbaijan, Bolivia, Nicaragua, and Nigeria[23] while the least competitive were Cameroon, the Central African Republic, Djibouti, Myanmar, Niger, Sao Tome & Principe, and Togo. The competitiveness rankings are quite stable between 2005 and 2006 since more than half of the countries remained in the same decile. In addition, the changes in rankings are relatively small with most countries moving up or down by one or two deciles only. Cambodia and Rwanda registered the largest changes, moving down by three deciles. However one should bear in mind that the presentation reflects relative competitiveness. Hence a country's score depends on the performance of others as much as on its own policies. A higher ranking might not necessarily mean a loss of absolute competitiveness but rather that other LICs have become more competitive. Logically, dispersion measures are higher for countries which overall score is in the middle deciles (5, 6, 7,8), underlying that the extreme scores generated by the template are the most reliable.

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[23] Caution should be exercised when analyzing results for Nigeria as these can be distorted by the structure of an oil exporting economy: the non-oil export sector is extremely small, fuel prices are often subsidized and the ITT measure is sensitive to changes in international oil prices.

Table 2. Competitiveness Rankings: Overall Scores 2005-2006

	2005		2006		Change in score
	Score	Std. Dev	Score	Std. Dev	2005-06
Albania	6	6	6	5	↑
Angola	9	8	8	9	←
Armenia	1	3	1	6	↑
Azerbaijan	1	7	1	7	↑
Bangladesh	2	5	2	4	↑
Benin	8	3	8	1	↑
Bolivia	1	1	1	2	↑
Burkina Faso	5	9	5	10	↑
Burundi	9	5	9	4	↑
Cambodia	2	1	5	3	→
Cameroon	9	3	10	2	→
Cape Verde	6	7	7	9	→
Central African Rep.	10	1	10	2	↑
Chad	9	10	9	10	↑
Congo, Dem. Rep.	7	9	7	8	↑
Congo, Rep.	7	8	9	8	→
Côte d'Ivoire	10	4	9	2	←
Djibouti	10	3	10	5	↑
Eritrea	9	7	9	7	↑
Ethiopia	3	2	3	6	↑
Gambia	6	8	6	7	↑
Georgia	3	5	2	7	←
Ghana	4	9	3	5	←
Grenada	n.a.	10	6	10	
Guinea	6	7	7	10	→
Guinea-Bissau	8	9	8	7	↑
Guyana	8	4	n.a.	n.a.	
Haiti	10	2	n.a.	n.a.	
Honduras	7	1	7	1	↑
India	2	2	2	2	↑
Kenya	8	5	8	5	↑
Kyrgyz Republic	5	2	5	3	→
Lao	3	4	3	3	↑
Lesotho	5	10	6	9	→
Madagascar	5	7	5	8	↑
Malawi	7	4	8	9	→
Maldives	3	8	3	9	↑
Mali	8	5	6	2	←
Mauritania	6	2	4	1	←
Moldova	1	4	n.a.	n.a.	
Mongolia	4	6	3	5	←
Mozambique	1	3	3	6	→
Myanmar	9	10	10	4	→
Nepal	6	4	7	4	↑
Nicaragua	3	1	1	1	←
Niger	10	3	10	1	↑
Nigeria	2	9	1	6	←
Pakistan	2	2	4	3	→
Papua New Guinea	6	6	n.a.	n.a.	
Rwanda	5	6	8	4	→
São Tomé & Príncipe	10	10	10	6	↑
Senegal	6	6	6	8	↑
Sierra Leone	4	9	4	10	↑
Sri Lanka	4	5	4	4	↑
Sudan	8	7	6	8	↑
Tajikistan	4	8	4	9	←
Tanzania	2	8	2	6	↑
Togo	10	1	9	1	↑
Uganda	5	4	4	4	←
Uzbekistan	1	6	2	8	←
Vietnam	1	1	2	3	→
Yemen, Republic of	4	7	2	7	→
Zambia	8	10	8	10	←
Zimbabwe	8	10	n.a.	n.a.	↑

C. The Template at work: Some Specific Country Cases

In this section, we illustrate the application of the template by looking at 5 country cases: Angola (an oil producer), Honduras and Cambodia (two typical PRGF-eligible countries), Mali (a CFA zone country), and Uganda (a mature-stabilizer). Data availability prevented the consideration of a post-conflict country. For each country we present (see Appendix IV) the template rankings (deciles rankings) for 2005-2006 as well as the values of the indicators. In addition, we present three graphs that illustrate the evolution of some of these indicators for a more detailed evaluation: (i) REER CPI-based, the calibrated REER and ITT; (ii) export volume growth and market shares; and (iii) we go slightly beyond the template and also include a graph on FDI as a check to gauge the country's attractiveness to foreign investors. Finally we provide a short assessment of the competitiveness of each country outlining the relevance of some indicators for each case.

- **Angola**: According to the template rankings, in 2006 Angola was one of the least competitive LICs, with an overall score of 8, up from 9 in 2005. Angola ranks low on nearly all indicators except diesel, which is subsidized. The relatively good scores on external sector measures is misleading since non-oil exports are negligible in Angola. Relative price and institutional measures have been consistently ranked low and the RER was estimated to be overvalued by about 30 percent in 2006. The ITT measure shows a large loss of competitiveness, which can be attributed to the fact that during the hyperinflation of the early 2000s import prices (the proxy for prices of tradable goods) increased far less than domestic prices. Caution should be exercised when interpreting the evolution of FDI flows in Angola as these are closely linked with developments in the oil sector. Indeed, they are much higher than in the majority of LICs.

- **Cambodia**: According to the template rankings, Cambodia obtains an average score of 5 in 2006, down from 3 in 2005. The drop in relative competitiveness is due to a worsening of the external sector and institutional indicators. However, all indicators point to an unambiguous improvement in competitiveness since 2003. The RER show a mild improvement in competitiveness since 1995 while ITTs point at an important improvement since 2003. The calibration exercise also shows that the RER is broadly at its equilibrium level, being undervalued by about 7 percent. At the same time export volume and export market shares have increased continuously since 1995. FDI flows increased steadily between 2003 and 2006.

- **Honduras:** the rankings indicate an overall score of 7 for 2006 unchanged from 2005. While diesel became relatively cheaper in 2006, Honduras' export volume and institutional indicators worsened slightly in 2006. Competitiveness indicators had improved until 2005 but are more mixed for 2006. RER and ITT started to appreciate and according to calibration results, the RER is close to its equilibrium value, but overvalued by about 7 percent. FDI flows and market shares are also decreasing slightly but export volume continues to be on an upward trend.

- **Mali:** The movement in competitiveness indicators has been favorable for Mali. The country ranked in the 6th decile in 2006, up from 8th in 2005 with a higher in every indicator except EREER, export volume and the Corruption Perceptions Index from Transparency International. While the RER has stayed broadly constant since 2000, ITTs improved significantly after 2002. Calibration results also show that the RER is in line with its equilibrium value, being undervalued by about 6 percent. Export market shares have stayed relatively constant since 2000 but export volume has increased slightly. However, FDI has not responded to this improvement and has declined steadily since 2002.

- **Uganda:** Uganda was ranked in the 4th decile in 2006 up from 5th in 2005 as nearly all indicators, with the exception of export volume, improved. Indeed, all indicators show a strong improvement in competitiveness for Uganda since 2000. ITT and RER indicators have improved significantly since 2000 and according to calibration estimates, the RER appears to be undervalued by about 10 percent. This improvement in competitiveness is mirrored in FDI as a share of GDP which has stabilized as relatively high historical levels.

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APPENDIX I—EQUILIBRIUM EXCHANGE RATES AND PPP

The basic idea behind purchasing power parity (PPP) is that if the law of one price holds for a sufficiently large range of individual goods, then there should be a high correlation in aggregate price levels among countries. Absolute PPP argues that indeed the law of one price holds, while under relative PPP, the nominal effective exchange rate of a given country should compensate for the inflation differential between such a country and its trading partners (Rogoff, 1996).[1]

Even though the PPP theory is appealing for its simplicity, the empirical evidence shows that absolute PPP does not hold. Relative PPP does not hold in the short-run, but does hold in the long-run after a significant period of adjustment. A number of studies have shown that, in the short-run, relative nominal prices are less volatile than exchange rates, which translates in significant deviations from the LOP. When tested for longer time horizons (or larger cross-country data sets) the PPP theory appears to hold, although convergence occurs slowly (the identified "half-life" adjustment is equivalent to 3-5 years (Rogoff, 1996), (Cashin and McDermott, 2004).

The literature identifies a number of possible explanations as to why there could be long-run deviations between actual REER and its PPP equilibrium. One of the most popular is the "Balassa-Samuelson hypothesis", which explains such deviations on the basis of higher productivity growth in the tradable sector in rich countries compared to that in poor countries (other key assumptions of the hypothesis are perfect labor mobility across sectors within a country, imperfect capital mobility between rich and poor countries, and higher productivity growth in tradable sectors compared to that in non-tradable sectors). In such a world, increases in the productivity of tradables lead to an increase in the wages in the tradable sector, which in turn spreads to the non-tradable sector; such increases translate into an increase in the price of non-tradable goods, and thus, in an appreciation of the real exchange rate. Thus, rich countries that experience higher productivity growth in their tradable good sectors will have REERs that are more appreciated (in equilibrium) than those of poor countries.[2] Figure 1 shows that the gap between GDP measured at market exchange rates rather than PPP is particularly large for LICs.

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[1] The law of one price (LOP) is defined as $P = e \cdot P^*$, where P is the domestic price level, P^* is the foreign price level expressed in foreign currency, and e is the nominal exchange rate.

[2] Long-run deviations between actual REER and its PPP equilibrium are also explained by the cumulated current account deficits and their effect in long-run REER depreciations; and the effect of real government spending. Regarding the latter, Rogoff (1992) argues that with complete factor mobility across sectors and with open capital markets, the REER should be determined by supply-side factors only.

APPENDIX II—MEASURES OF THE INTERNAL TERMS OF TRADE

The paper draws on two methods for assessing the Internal Terms of Trade (ITT):

The **first method** follows Hernandez-Cata (1998), who takes the CPI as a weighted average of prices of tradable and non-tradable goods:

$CPI = (P_T)^{\theta}(P_{NT})^{1-\theta}$ where θ is the share of tradable goods in the CPI, P_T is the price of tradables and P_{NT} is the price of non-tradables.

Substituting in the definition of ITT,

$ITT = P_{NT} / P_T$

Gives

$ITT = (CPI / P_T)^{1/(1-\theta)}$

For estimation purposes, import prices are used for the price of tradable goods and the share of imported consumption goods in total private consumption as a proxy for θ.

The **second method** is based on the three-good model of Devarajan, Lewis and Robinson (1993). This is the method used for empirical estimates in this paper.

Aggregate income is defined as

$P_y Y = P_D D + P_X X$ where P_y is the GDP deflator, P_D the price of the domestically produced good and P_X the price of the export good. Y, D and X are total output, output of the domestically produced good and the output of the exported good. This can be rewritten as:

$P_D = (P_y - S_X P_X)/(1-S_X)$ where S_X is the share of exports in real GDP.

$$ITT = P_D / P_M \text{ where } P_M \text{ is the price of tradable goods (imports).}$$

APPENDIX III—REVIEW OF EMPIRICAL WORK

This appendix reviews how competitiveness assessments are performed in practice by the IMF in LICs. Because an important share of competitiveness assessments for LICs are performed by the IMF, the sample should be representative of the general empirical literature. This appendix looks at RER misalignments evaluations and other competitiveness indicators separately.

RER misalignments

With the objective of analyzing how RER assessments are performed in practice, this section summarizes the methodologies and findings of a number of studies performed for LICs at the IMF. The sample consists of 24 studies published between 2001-06, which include RER assessments for 17 LICs, split in 11 countries from Sub Saharan Africa, 4 transition economies, and 2 Asian countries (See Appendix III Table 1).[24] The main findings are as follow:

- **The RER measures used were similar for all the studies considered:** In all (but one) of the cases the Fund's INS CPI-based RER is presented, complemented in a number of cases by other measures of competitiveness including ULCs, the relative price between non-tradable and tradable goods (PNT/PT) , PPI-based RERs and CPI-based bilateral RERs.
- **Most RER were carried out in the context of broader competitiveness assessments:** For 14 countries, the analysis was performed to assess the countries' level of competitiveness; in the case of two countries the purpose was to estimate their equilibrium RER level; and in the remaining case, the objective was to analyze Balassa-Samuelson effects behind the observed RER dynamics. All but one studies attempted to reach some conclusion regarding possible RER misalignments. The remaining study (Albania) made explicit note of its inability to assess RER misalignments due to lack of appropriate data.
- **Econometric techniques were used in a number of cases in spite of data limitations:** the estimation of reduced-form, long-term, relationships between the RER and a number of macroeconomic determinants, by means of similar econometric techniques was attempted for nine countries; only one study explicitly recognized that the results were inconclusive, although in most studies results were poor both in terms of economic and statistical significance. Data samples are generally short, and at annual frequencies. Quarterly data is sometimes available but only for some variables, what implies that other variables,

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[24] The criterion applied to pick the studies in the sample was that such studies were available on the Fund's external web site. Recent studies on the West African Economic and Monetary Union and the Central African Economic and Monetary Community were very thorough, but have not been included here since they cover country groupings rather than individual countries.

only available at annual frequency, are smoothed out. The table below shows that only about a third of the estimated coefficients (without unambiguous signs) had both the correct sign (i.e. that expected by economic theory) and were statistically significant.[25] This compares badly with the results obtained by a sample of studies of RER misalignments in 12 emerging market economies (EME), in which about two thirds of the coefficients had both the correct sign and were statistically significant (see tables below).[26]

Single Country Long-term REER Estimation: Summary of Results for LICs

		Percentage
Number of estimated long-term coefficients	52	
of which , statistically significant	29	55.8
Number of estimated long term-coefficients with unambiguous signs	30	
of which, statistically significant	16	53.3
of which, both with correct sign and statistically significant	10	33.3

Source: Authors' compilation

Single Country Long-term REER Estimation: Summary of Results for EMEs

		Percentage
Number of estimated long-term coefficients	51	
of which , statistically significant	48	94.1
Number of estimated long term-coefficients with unambiguous signs	24	
of which, statistically significant	24	100.0
of which, both with correct sign and statistically significant	16	66.7

Source: Authors' compilation

- **The most common fundamentals considered were the terms of trade, government consumption and proxies for capital flows and productivity:** Capital flows are generally proxied by NFA changes, and productivity by per capita GDP and/or relative per capita GDP. Other variables considered include openness (generally proxied by the sum of exports and imports as percentage of GDP), government wages, investment, and taxes of

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[25] In the context of a cross country study of RER misalignment in Sub Saharan Africa, Chudik and Mongardini (2007) estimate a number of single-country long-term relationships arriving at the same conclusion, i.e., that the results of the econometric estimation of single-country RER models are generally poor.

[26] The 9 countries are Benin, Central African Republic, Ethiopia, Macedonia, Madagascar, Malawi, Mozambique, Tanzania and Zimbabwe; the study for Ethiopia reported inconclusive results. The studies analyzing RER misalignments in emerging market economies include assessments for Argentina, Brazil, Colombia, Chile, China, Czech Republic, Hungary, Mexico, Poland, South Africa, Turkey and Venezuela.

foreign trade. Interestingly, in only two instances did the reduced-form equations included aid flows as a determinant of the RER (Ethiopia, Zambia).[27]

- **Informal assessments were used when data limitations prevented the use of econometric techniques:** for 8 country studies, the assessments were just based on the comparison of the observed RER level with the level that existed in some reference year. In some cases the same reference year was picked for a number of countries and the RER behavior compared for such countries against the country under study.

The above studies looked at individual country cases. Studies using panel data for LICs are not common, notable exceptions being Chudik and Mongardini (2007) for Sub Saharan African countries and Dufrenot and Yehoue (2007), for a sample of developing countries, including a number of LICs.

Non-RER analysis of Competitiveness

This section summarizes the findings of a number of non-RER competitiveness assessments. As in the previous section, the sample comprises studies performed by the Fund, in the context of its surveillance role of its member countries. The documents surveyed include 80 "Article IV Consultation" documents performed for LICs between 2005 and April 2007 and 16 Selected Issues Papers (SIPs) (See Appendix III Tables 2 and 3).[28] The main findings are:

- **More than one half of the reports considered non-RER measures of competitiveness:** Non-RER measures of competitiveness are used/reported in the case of 45 reports. On average, these documents include between three to four such indicators.[29]
- **Non-RER measures of competitiveness are discussed both in the context of competitiveness assessments but also of growth promotion:** Article IV documents use non-RER measures of competitiveness also to justify growth performance, and not necessarily under the heading of competitiveness.
- **The World Bank's *Doing Business* is the indicator that is used most often:** This indicator was reported in nearly two-third of cases; infrastructure, utilities prices and wages were reported in a third of all cases. Corruption and trade measures such as export

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[27] Many of the studies reviewed lack an analysis of the economic and/or statistical significance of the fundamentals that they consider. This complicates analyzing whether some of the fundamentals seem to perform better than others in equilibrium RER assessments (See Appendix III).

[28] SIPs are background papers for Article IV consultations. The main reason to review only recent documents (i.e. since 2005) is that most synthetic indicators and other indicators of transparency/governance become available for LICs only in the last couple of years. The same rationale applies to the sample of SIPs surveyed. The documents reviewed include those for all PRGF-eligible countries with the exception of Tanzania.

[29] Out of the 81 documents, 10 documents referred to an SIP for a more in depth analysis of competitiveness.

performance, market shares and policy restrictions were also reported in about one fifth of the cases. Other measures were more seldom analyzed.

The findings from analyzing Article IV documents are confirmed by a survey of 16 SIPs that analyze competitiveness in LICs. These studies report on average 4 to 5 non-RER indicators, with the World Bank's *Doing Business* being the most widely cited indicator (in about half of the cases); otherwise, the most cited indicators are similar to those found in Article IV Staff Reports. The SIPs go beyond the analyses of competitiveness in Article IV documents, as they compute ITTs in about half of the cases, and, financial sector issues and the *Global Competitiveness Report* are cited in more than a quarter of the cases.

APPENDIX III Table 1 – Results of Estimated Long-Term ERER Estimation in LICs and EMEs

	Sample	# Obs.	Terms of Trade	Open	Fiscal Deficit	Gov. Cons.	Gov. Wages	Capital Flows	Tech. Prog.	Aid Inflows	Invest.	Taxes	Int. Rate Diff.	Const.	Dummy	Coint. Eq. Coeff.
			Ambiguous	Dep.	App.	App.	App.	App.	Ambiguous	App.	Ambiguous	App.	App.			
Benin																
REER	1977-2003	27 (?)	0.297 (*)		0.065 (*)	-0.016 (*)		0.184 (*)	-0.416 (*)					-3.762		X (?)
CAR																
REER	1980-2005	26 (?)	0.900 (*)	-0.100		0.600 (*)		0.010	-0.060 (*)							X (?)
Ethiopia																
REER	1982:Q2-2002:Q4	82 (?)		X (*)	X (*)				X (*)	X (*)						X (?)
Macedonia																
REER-CPI	1995:Q1-2003:Q4	36 (?)						0.180 (*)	1.350 (*)					5.940 (?)		-0.200 (?)
REER-PPI								0.130	1.160 (*)					X (?)		-0.120 (?)
Madagascar (1)																
REER (long run)	1980:Q1-2003:Q4	80	-0.693 (*)					0.007 (*)	0.370 (*)					6.484 (*)		
Madagascar (2)																
REER	1970-2000	31 (?)	0.047					0.005 (*)	0.441		-0.028 (*)	0.006		2.930 (*)	0.395 (*)	-0.467
Malawi																
REER	1980:Q1-2002:Q2	88 (?)	-0.175			-0.293 (*)	0.258	-0.042	-4.328 (*)		-0.218			17.004 (?)		-0.274 (*)
Mozambique																
REER 1/	12/93-4/00	77 (?)	-0.202 (?)					0.092 (?)								X (?)
Tanzania (1)																
REER	1970-2003	25	-0.118	-0.134		0.139			1.582 (*)	0.247				26.641 (*)		X (?)
Tanzania (2)																
REER-CPI	1970-2001	32 (?)	0.146	-1.652 (*)		0.572 (*)				-0.337 (*)				9.250(*)		X (?)
REER-PPI			0.046 (*)	-0.080 (*)		0.040 (*)				0.002				4.700 (*)		X (?)
Zimbabwe																
REER	12/94-12/99	60 (?)	X (?)		X (?)			X (?)	X (?)				X (?)	X (?)		X (?)

APPENDIX III Table 1 – Results of Estimated Long-Term ERER Estimation in LICs and EMEs

	Sample	# Obs.	Terms of Trade	Open	Fiscal Deficit	Gov. Cons.	Gov. Wages	Capital Flows	Tech. Prog.	Aid Inflows	Invest.	Taxes	Int. Rate Diff.	Const.	Dummy	Cap. Flows to LAC	Cap. Control	Exch. Control	Foreign Debt	ER Regime	Security	Trend	Lags	Coint. Eq. Coeff.
			Ambiguous	Dep.	App.	App.	App.	App.	Ambiguous	App.	Ambiguous	App.	App.											
Argentina (1)																								
REER	1976-1995	21 (?)	1.100	-0.800 (*)					2.700 (*)				-0.100 (*)		-39.000 (*)									-0.870 (*)
Argentina (2)																								
REER	1990:Q1-2002:Q4	48						5.190 (*)	0.720 (*)											0.440 (*)				
Chile (1)																								
REER	1990:Q2-2003:Q3		0.328 (*)			-1.477 (*)		-0.218 (*)	1.291 (*)			-4.730 (*)	-4.467 (*)	16.038 (*)		-0.001 (*)								
Chile (2)																								
REER	1990:Q1-2002:Q4	45	1.970 (*)						0.360 (*)															
Brazil																								
REER	1994:Q1-2002:Q4	34						8.980 (*)	0.740 (*)											0.210 (*)				
China																								
REER	1954-1997	44(?)	3.389 (*)	-0.878 (*)		0.323 (?)					-0.374 (*)			-2.668 (*)										-0.152 (*)
Colombia																								
REER	1962-2005	44(?)	-0.145 (*)					-0.068 (*)	-1.282 (?)					-1.112 (?)							0.006 (*)	0.017 (*)		-0.764 (*)
Czech Republic																								
REER	1995:Q1-2004:Q1	37	-1.528 (*)			-1.213 (*)			-2.877 (*)		-0.093 (*)			24.590 (*)					-0.090 (*)					
Hungary																								
REER	1995:Q1-2004:Q1	37		-0.457 (*)				0.092 (*)	-2.367 (*)		-0.010			14.075 (*)					0.069 (*)					
Mexico																								
REER	1990:Q1-2002:Q4	45	0.410 (*)			-0.040 (*)			0.740 (*)											0.160 (*)				
Poland																								
REER	1995:Q1-2004:Q1	37		0.461 (*)					-0.776 (*)				-0.021 (*)	8.640 (*)										
South Africa																								
REER	1970:Q1-2002:Q1	129 (?)	-0.460 (*)	0.010 (*)	0.020 (*)			-0.010 (*)	-0.140				-0.030 (*)	4.960 (*)										-0.080
Turkey																								
REER	1/87-6/96	114 (?)	0.226 (*)		0.013 (*)	0.375 (*)			4.877 (*)		-0.924 (*)			1.026 (*)			-0.002	-0.584						
Venezuela																								
REER	1950-2004	55 (?)	0.442 (*)						1.159 (*)				0.077 (*)	-2.059 (?)										0.243 (*)

Appendix III Table 2— Analysis of Competitiveness in Low-Income Countries in IMF Article IV Staff Reports, 2005-2007.

Country	Albania	Albania	Angola	Armenia	Azerbaijan	Bangladesh	Benin	Bhutan	Bolivia	Burkina Faso	Burundi	Cambodia	Cameroon	Cape Verde	Cape Verde	Central African Republic	Chad	Comoros	Congo	Congo (DRC)	Djibouti	Dominica
Year	2005	2006	2005	2006	2006	2005	2006	2005	2006	2005	2006	2006	2005	2005	2006	2005	2006	2005	2007	2005	2005	2005
Reference	EBS/05/ 21	EBS/06/ 91	SM/05/ 65	EBS/06/ 141	SM/06/ 108	EBS/05/ 85	EBS/06/ 146	SM/05/ 195	SM/06/ 217	EBS/05/ 130	EBS/06/ 84	SM/06/ 209	EBS/05/ 56	EBS/05/ 74	EBS/06/ 95	SM/05/ 368	SM/06/ 298	EBS/05/ 100	SM/07/ 123	EBS/05/ 123	EBS/05/ 135	EBS/05/ 139
ITT																						
Infrastructure and transport																		x		x	x	x
Price of Utilities								x					x			x					x	
Wages / Skilled Labor								x	x			x	x								x	
Banking and Financial Sector								x											x			
Trade policy restrictions/preferential access									x				x			x			x			
Export market shares		x		x																		
Export Volume		x																			x	
Exports Value		x									x											
Value added of exports		x		x																		
Profitability of exports																						
FDI		x																				
Tax Burden								x														
Access to land																						
Judiciary/Rule of law		x but																				
Corruption (TI)																	x					
Governance																			x			
Security & Politics		x					x	x														
Doing Business		x	x				x	x				x				x	x		x			
Heritage Foundation																						
Global Comp. Report (WEF)																						
Investment Climate (WB																						
Business Climate (UNCTAD)																						
Business Environment																						
EBRD Transition Indicators																						
Reference To SIP																SM/05/369			SM/07/124		SM/05/3	SM/04/1.

Relative Prices · External Sector · Business Climate

	Eritrea	Ethiopia	Gambia	Gambia	Georgia	Ghana	Grenada	Guinea	Guinea-Bissau	Guyana	Guyana	Haiti	Honduras	Honduras	India	Kenya	Kyrgyz Republic	Lao (PDR)	Lesotho	Lesotho	Liberia	Madagascar	Malawi
Year	2006	2005	2005	2006	2006	2005	2005	2005	2006	2005	2007	2005	2005	2007	2005	2007	2006	2006	2005	2006	2005	2005	2007
Reference	SM/06/ 85	SM/06/ 93	SM/05/ 254	EBS/06/ 128	EBS/06/ 40	EBS/05/ 79	SM/05/ 229	EBS/05/ 169	EBS/06/ 102	EBS/05/ 5	SM/07/ 92	SM/05/ 148	EBS/05/ 43	SM/07/ 53	SM/05/ 430	EBS/07/ 30	EBS/06/ 134	SM/06/ 76	SM/05/ 325	SM/06/ 314	SM/05/ 121	SM/05/ 176	EBS/07/ 11
ITT																							
Relative Prices																							
Infrastructure and transport		x											x		x							x	
Price of Utilities		x											x		x							x	
Wages / Skilled Labor		x			x		x				x		x		x		x					x	
Banking and Financial Sector																							x
Trade policy restrictions/preferential access													x			x						x	
External Sector																							
Export market shares		x			x										x	x	x						
Export Volume															x	x							
Exports Value											x			x									
Value added of exports																							
Profitability of exports																							
FDI											x			x									
Business Climate																							
Tax Burden													x										
Access to land																							
Judiciary/Rule of law																							
Corruption (TI)											x												
Governance		x									x												
Security & Politics											x		x										
Doing Business		x			x						x		x	x	x	x	x						x
Heritage Foundation											x				x								
Global Comp. Report (WEF)											x			x									
Investment Climate (WB											x												
Business Climate (UNCTAD)																							
Business Environment																							
EBRD Transition Indicators																							
Reference To SIP				SM/06/3 SM/				SM/06/25							SM/05/5							SM/05/32	

	Mali	Mauritania	Mauritania	Moldova	Mongolia	Mongolia	Mozam-bique	Nepal	Nicaragua	Niger	Nigeria	Pakistan	Papua New Guinea	Rwanda	Sao Tome & Principe	Senegal	Senegal	Sierra Leone	Solomon Islands	Sri Lanka	Sudan
Year	2005	2005	2006	2005	2005	2006	2005	2006	2005	2006	2005	2005	2007	2007	2006	2005	2007	2006	2005	2005	2005
Reference	EBS/05/ 172	SM/05/ 155	EBS/06/ 77	SM/05/ 17	SM/05/ 339	SM/06/ 403	EBS/05/ 86	SM/06/ 2	EBS/05/ 201	EBS/06/ 162	SM/05/ 227	SM/05/ 372	SM/07/ 77	EBS/07/ 4	EBS/06/ 23	EBS/05/ 28	SM/07/ 10	EBS/07/ 158	SM/05/ 349	SM/05/ 247	EBS/05/ 64
Relative Prices																					
ITT																					
Infrastructure and transport											x		x	x		x					
Price of Utilities											x		x	x		x					
Wages / Skilled Labor				x									x	x		x					
Banking and Financial Sector														x							
Trade policy restrictions/preferential access	x													x		x					
External Sector																					
Export market shares	x											x	x			x					
Export Volume													x			x					
Exports Value				x								x				x					
Value added of exports													x								
Profitability of exports																					
FDI																					
Business Climate																					
Tax Burden																					
Access to land																					
Judiciary/Rule of law																					
Corruption (TI)				x												x		x			
Governance															x	x					
Security & Politics													x								
Doing Business	x							x	x		x	x	x	x							
Heritage Foundation																					
Global Comp. Report (WEF)									x		x									x	
Investment Climate (WB	x			x					x									x			
Business Climate (UNCTAD)																					
Business Environment				x		x															
EBRD Transition Indicators																					
Reference To SIP				x																	

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Country	Tajikistan	Tajikistan	Timor Leste	Togo	Uganda	Uzbekistan	Uzbekistan	Vanuatu	Viet Nam	WAEMU	Yemen	Yemen	Zambia	Zimbabwe	Zimbabwe
Year	2005	2007	2005	2006	2005	2005	2007	2007	2005	2006	2005	2006	2006	2005	2007
Reference	EBS/05/38	SM/07/94	SM/05/192	SM/06/133	EBS/05/14	SM/05/146	SM/07/36	SM/07/64	SM/05/351	SM/06/73	SM/05/71	SM/06/159	EBS/05/199	SM/05/294	SM/07/58
ITT															
Relative Prices															
Infrastructure and transport								x		x					
Price of Utilities								x		x					
Wages / Skilled Labor										x					
Banking and Financial Sector															
Trade policy restrictions/preferential access								x		x					
External Sector															
Export market shares										x					
Export Volume										x					
Exports Value															
Value added of exports															
Profitability of exports															
FDI															
Business Climate															
Tax Burden															
Access to land															
Judiciary/Rule of law															
Corruption (TI)		x			x			x							
Governance	x				x										
Security & Politics								x							
Doing Business		x					x	x		x	x				
Heritage Foundation		x													
Global Comp. Report (WEF)															
Investment Climate (WB)					x						x				
Business Climate (UNCTAD)															
Business Environment															
EBRD Transition Indicators		x					x								
Reference To SIP															

Appendix III Table 3— Analysis of non-REER Competitiveness in Low-Income Countries in IMF Selected Issues Papers, 2004-2007.

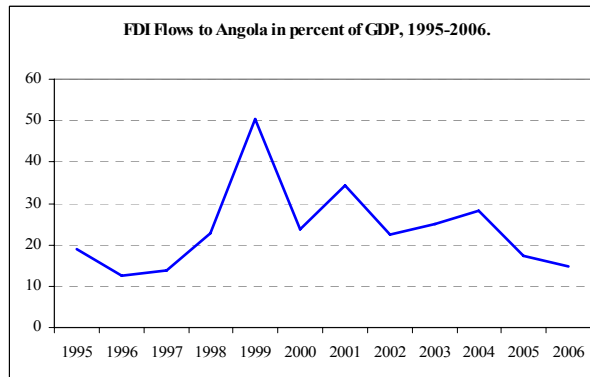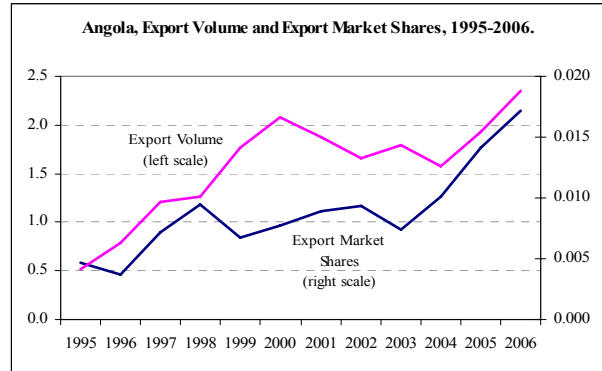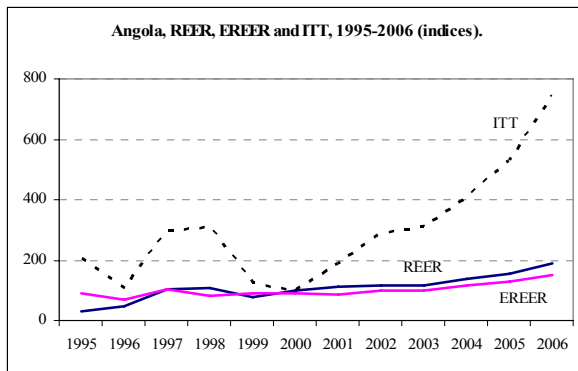|	Country	Afghanistan	Belize	Benin	Bolivia	Botswana	CEMAC	Chad	Djibouti	Georgia	Guinea	Lesotho	Madagascar	Rwanda	Tanzania	The Gambia	Zambia
	Year	2006	2006	2004	2006	2004	2005	2006	2005	2006	2005	2005	2005	2007	2004	2006	2005
	Reference	SM/06/ 68	SM/06/ 342	SM/04/ 315	SM/06/ 223	SM/04/ 80	SM/05/ 198	SM/06/ 387	SM/05/ 352	SM/06/ 113	SM/05/ 417	SM/05/ 337	SM/05/ 178	SM/07/ 15	SM/04/ 266	SM/06/ 348	SM/05/ 431
Relative Prices	ITT	x	x	x		x	x	x	x		x						
	Infrastructure and transport	x	x	x	x			x									x
	Price of Utilities	x		x			x	x	x			x			x		x
	Wages / Skilled Labor	x								x		x	x				
	Banking and Financial Sector	x					x								x		x
	Trade policy restrictions/preferential access	x															x
External Sector	Export market shares						x		x	x			x				
	Export volume																
	Export Value																
	Value added of exports						x										
	Profitability of exports						x										
	FDI						x										
Business Climate	Tax Burden	x															x
	Access to land	x										x					
	Corruption (TI)						x	x		x							x
	Governance						x				x	x					
	Security & Politics	x					x					x					
	Doing Business	x			x		x			x	x					x	x
	Heritage Foundation														x	x	
	Global Comp. Report (WEF)				x								x			x	
	Investment Climate (WB Survey)	x								x							
	Business Climate (UNCTAD)														x		
	Business Environment			x													
	EBRD Transition indicators																

APPENDIX IV—TEMPLATE RESULTS FOR ANGOLA, CAMBODIA, HONDURAS, MALI AND UGANDA
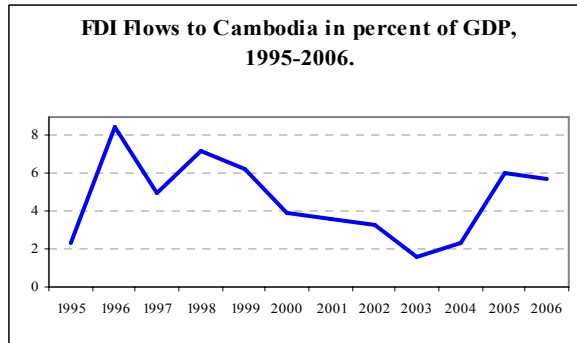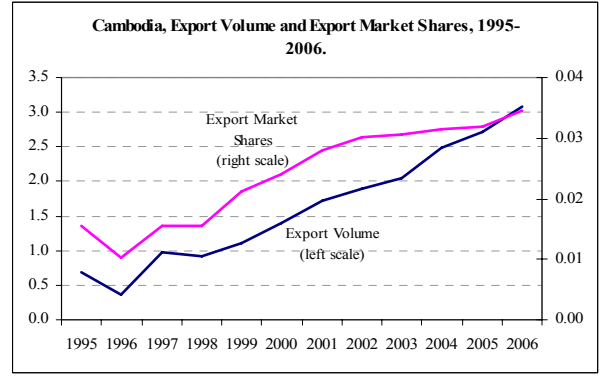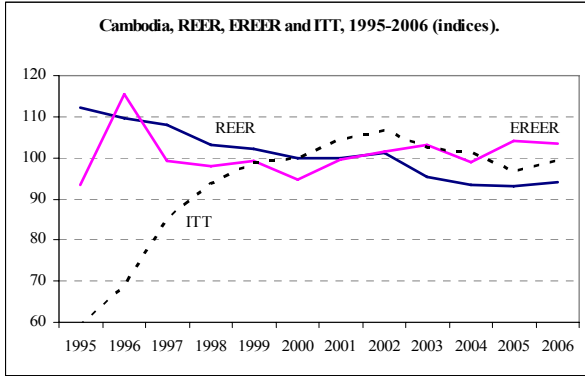
ANGOLA[30]

Competitiveness Scorecard Angola

		Relative Price			External Sector /1		Costs-based		Institutions		Overall
		ITT CHG	REER CHG	EREER	Xvol	Xshare	Diesel	Tel	DoingB	TI	
Values	2005	428.5	56.9	20.8	37.3	-7.4	0.29	3.23	155	1.9	
	2006	289.4	67.2	28.3	24.0	24.7	0.3	3.2	156	2.2	
Deciles	2005	10	10	9	3	7	1	8	8	9	9
	2006	10	10	9	2	4	1	8	8	8	8

Angola, REER, EREER and ITT, 1995-2006 (indices).

Angola, Export Volume and Export Market Shares, 1995-2006.

FDI Flows to Angola in percent of GDP, 1995-2006.

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[30] Because of the disturbances due to the civil war, pre-2002 data has been smoothed.

CAMBODIA

		Relative Price			External Sector /1		Costs-based		Institutions		Overall
		ITT CHG	REER CHG	EREER	Xvol	Xshare	Diesel	Tel	DoingB	TI	
Values	2005	-10.7	-6.8	-9.7	94.3	32.7	0.61	2.94	142	2.3	
	2006	-28.8	-5.8	-7.3	78.6	23.6	0.6	2.9	143	2.1	
Deciles	2005	5	4	3	2	3	5		6	6	2
	2006	3	4	4	3	4	5		7	9	5

Cambodia, REER, EREER and ITT, 1995-2006 (indices).

Cambodia, Export Volume and Export Market Shares, 1995-2006.

FDI Flows to Cambodia in percent of GDP, 1995-2006.

HONDURAS

		Relative Price			External Sector /1		Costs-based		Institutions		Overall
		ITT CHG	REER CHG	EREER	Xvol	Xshare	Diesel	Tel	DoingB	TI	
Values	2005	-3.5	-0.6	3.2	18.3	-21.1	0.66	2.52	107	2.6	
	2006	-4.9	-2.6	8.6	16.0	-25.7	0.7	2.5	111	2.5	
Deciles	2005	7	5	6	6	8	6	7	4	4	7
	2006	7	5	7	7	8	4	7	5	5	7

Honduras, REER, EREER and ITT, 1995-2006 (indices).

Honduras, Export Volume and Export Market Shares, 1995-2006.

FDI Flows to Honduras in percent of GDP, 1995-2006.
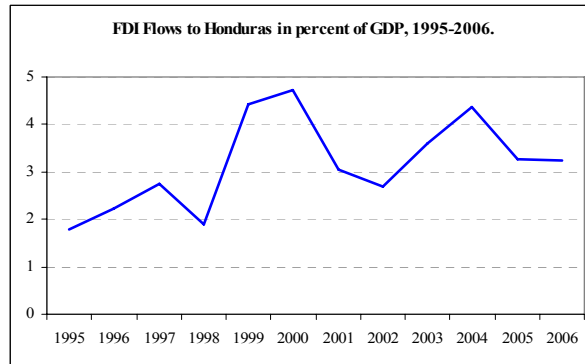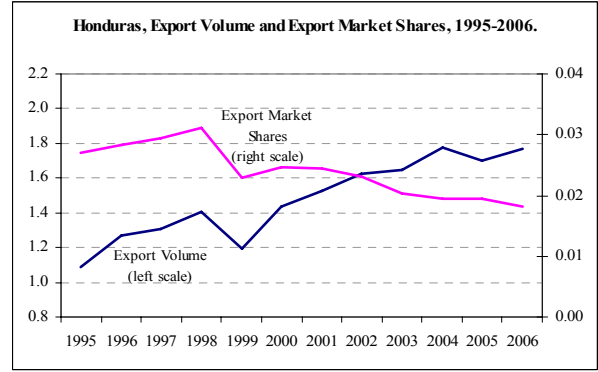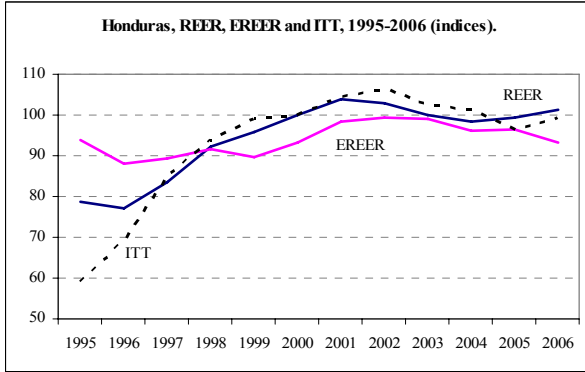
MALI

		Relative Price			External Sector /1		Costs-based		Institutions		Overall
		ITT CHG	REER CHG	EREER	Xvol	Xshare	Diesel	Tel	DoingB	TI	
Values	2005	-4.5	9.8	-8.7	48.8	26.2	0.90	n.a.	166	2.9	
	2006	-19.8	4.3	-6.3	19.5	8.8	0.9	n.a.	155	2.8	
Deciles	2005	7	7	3	4	4	9		9	2	8
	2006	4	5	4	6	4	8		8	3	6

Mali, REER, EREER and ITT, 1995-2006 (indices).

Mali, Export Volume and Export Market Shares, 1995-2006.

FDI Flows to Mali in percent of GDP, 1995-2006.
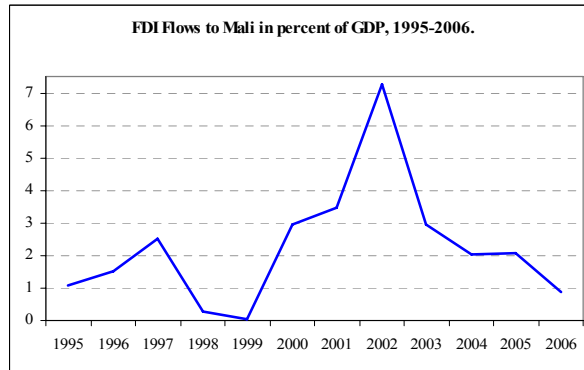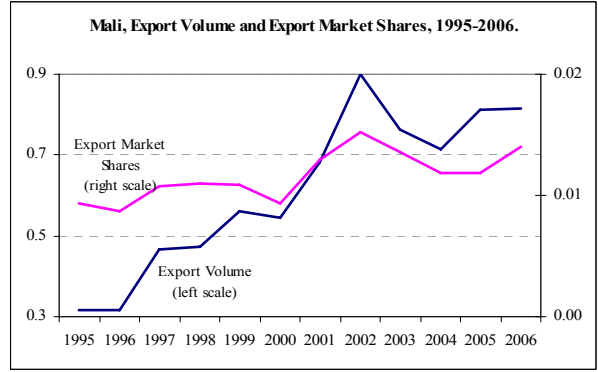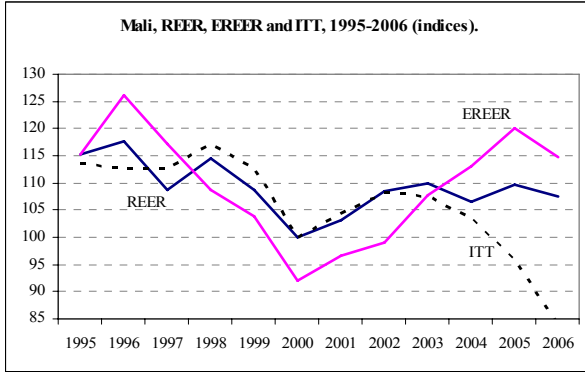
UGANDA

		Relative Price			External Sector /1		Costs-based		Institutions		Overall
		ITT CHG	REER CHG	EREER	Xvol	Xshare	Diesel	Tel	DoingB	TI	
Values	2005	-53.9	-11.2	-10.0	37.3	8.9	0.88	n.a.	103	2.5	
	2006	-42.6	-10.2	-9.5	24.0	1.9	0.9	n.a.	107	2.7	
Deciles	2005	1	3	3	5	5	9		4	5	5
	2006	1	2	3	6	5	8		4	4	4

Uganda, REER, EREER and ITT, 1995-2006 (indices).

Uganda, Export Volume and Export Market Shares, 1995-2006.

FDI Flows to Uganda in percent of GDP, 1995-2006.