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What do We Know About Namibia's
Competitiveness?

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African Department

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Abstract

This paper evaluates Namibia's competitiveness using several traditional indicators; it concludes that, while the real effective exchange rate (REER) is in equilibrium at present— suggesting no imminent need for concern—the country may wish to improve its competitiveness by increasing educational attainment, reducing the skills mismatch, and diversifying its exports. Moreover, although Namibia scores relatively well on survey-based major indicators of structural competitiveness, the business environment can be made more conducive to private sector activity.

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Keywords: Autoregressive distributed lag model, business environment, competitiveness, equilibrium real exchange rate, governance.

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Contents   Page

I. INTRODUCTION

Namibia's recent macroeconomic performance seems to imply a comfortable level of competitiveness. For 2000–06, its average output growth of about 4½ percent exceeded that of the other members of the Common Monetary Area (CMA)[2]—South Africa, Lesotho, and Swaziland—and of sub-Saharan African (SSA) as a whole. Inflation has been low, although it picked up in 2006 as the exchange rate depreciated. Fiscal policy has been generally prudent, and the budget is expected to be in balance in 2006/07. It is estimated that current account surpluses, which reached about 7 percent of GDP in 2005, more than doubled in 2006 and are likely to stay high for several years, aided by receipts from the Southern African Customs Union (SACU).[3]

However, there are issues that raise concerns about Namibia's competitiveness. Because the Namibia dollar is pegged to the South African rand, the Bank of Namibia has limited capacity to conduct independent monetary policy. This leaves fiscal policy as the main tool to cope with shocks—but fiscal policy can at best react with a lag. Moreover, Namibia's labor markets, another means of adjusting to shocks, are quite rigid, and unemployment is high. Growth of Namibia's exports trails growth of world exports, SACU receipts are expected to fall and it is difficult for Namibia to cut back on imports given its domestic development needs.

Moreover, survey-based major indicators of competitiveness, governance, and the business environment raise concerns about Namibia's structural competitiveness. While Namibia still scores relatively well on such indicators, mostly second only to South Africa within SSA, its global rankings have been steadily falling.

Drawing on the literature, this paper reviews several traditional indicators of competitiveness for Namibia. It assesses one of the most popular indicators of competitiveness, the real effective exchange rate (REER), by comparing to its equilibrium level. To evaluate competitiveness over the long term, the paper takes a close look at survey-based indicators of structural competitiveness to identify lessons for Namibia. It also briefly analyzes Namibia's labor markets and export performance. It finds that the current level of Namibia's REER does not suggest a competitiveness problem, but issues remain with respect to education attainment, export performance, and the business environment; by improving them Namibia can become more competitive generally.

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[2] The loti of Lesotho, the Namibia dollar of Namibia, and the lilangeni of Swaziland are pegged to the South African rand at par. The rand circulates freely in these countries. Foreign exchange regulations and monetary policy throughout the CMA reflect the influence of the South African Reserve Bank.

[3] The current account balance has been in surplus primarily thanks to revenues from the Southern African Customs Union (SACU). SACU consists of Botswana, Lesotho, Namibia, South Africa, and Swaziland. South Africa is the custodian of the pool of SACU revenues, which constitute a substantial share of the state revenue of all the other member countries.

The paper does not consider several other indicators of competitiveness. For instance, to maintain cost competitiveness, wage growth needs to stay below inflation unless there are productivity improvements—but wage levels are not analyzed here due to data limitations. Other issues, such as management of public finances or financial sector development, though relevant are beyond the scope of the paper.

Section II examines the literature to identify indicators of competitiveness. Section III reviews the history of the Namibia dollar, and section IV assesses Namibia's REER using both purchasing power parity (PPP) and the behavioral equilibrium exchange rate (BEER) approaches. Section V analyzes survey-based indicators of structural competitiveness. Finally, Section VI draws conclusions. Separate boxes consider unemployment and the outlook for exports.

II. COMPETITIVENESS: THE LITERATURE AND THE CASE OF NAMIBIA

The paper reviews four sets of indicators of competitiveness relevant to Namibia's case: a) the REER, b) structural competitiveness, c) labor markets, and d) export performance.[4]

A. Real Effective Exchange Rate

The paper first analyzes one of the most important indicators of competitiveness, the REER. Competitiveness can be associated with the simultaneous achievement of internal and external balance. Internal balance is usually defined as low unemployment consistent with an acceptable rate of inflation[5]; external balance is equated with a desirable current account balance. In this context, the desired degree of international competitiveness can be defined as the level of the REER that ensures internal and external balance; persistent current account disequilibrium would require a mix of price and nominal exchange rate adjustments—in other words, real exchange adjustments.

There is a voluminous literature estimating the equilibrium level of REER (EREER) to assess whether actual levels are appropriate. The literature ranges from a relatively simple approach based on the PPP[6] to empirical econometric approaches, the most popular being the fundamental equilibrium exchange rate (FEER) approach pioneered by Williamson (1994)[7]

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[4] Competitiveness is rather an ambiguous concept and has been defined in a variety of ways. The OECD (1992) definition is often referred to: "Competitiveness is the degree to which a nation can, under free trade and fair market conditions, produce goods and services that meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the long term."

[5] Because unemployment in Namibia is highly affected by education and skill levels, the paper considers labor market issues relevant to long-run competitiveness.

[6] The results of the PPP approach can only be suggestive. PPP is not considered an appropriate model for determining the equilibrium level because the REER mean reverts only slowly to a constant level, which is the long-run equilibrium implied by the PPP assumption.

[7] FEER is the exchange rate consistent with macroeconomic balance and depends on the terms of trade, the current account balance target, and the full employment target.

and the BEER approach initiated by Edwards (1989, 1994). Section IV will estimate Namibia's EREER using both the PPP and BEER approaches and apply the results in evaluating the actual REER.

The Purchasing Power Parity Approach (PPP)

The PPP approach uses the real exchange rate index calculated as the ratio of the domestic price level to the foreign price level adjusted by the nominal exchange rate. Economic theory predicts that a country's prices should become relatively higher as the country becomes relatively richer. This is usually attributed to the Balassa-Samuelson hypothesis (Balassa, 1964; Samuelson, 1964), which assumes that in rich countries the tradables sector is more productive than in poor countries but that nontradable sector productivity is equally low for both rich and poor countries. Production costs rise with productivity in the tradables sector of rich countries because resources are bid up in domestic markets. Assuming the price of tradable goods is more or less aligned across countries, in rich countries only the price of nontradable goods can increase. Thus, rich countries with more productive tradables sectors will tend to have higher nontradable prices, leading to real exchange rate appreciation.

The Behavioral Equilibrium Exchange Rate Approach (BEER)

Edwards uses two equilibrium conditions to identify a unique EREER that can be estimated empirically: internal equilibrium is defined as the clearing of all nontradable markets (static equilibrium), and external equilibrium is attained when the net present value of future current accounts is nonnegative, given the amount of exogenous long-run capital inflows (dynamic equilibrium). Unlike the FEER approach, the BEER approach does not claim to be structural; nor does it directly incorporate internal and external balances that are identified in the FEER approach as positions of sustainable macroeconomic equilibrium.

B. Structural Competitiveness

Because the REER is considered to converge to its equilibrium level in the long run, structural competitiveness becomes a more relevant concept that is often considered crucial to enhancing long-run real income growth. A considerable number of empirical studies document the importance of macroeconomic stability for economic growth, and Namibia's macroeconomic environment has indeed been stable. However, there is increasing recognition that macroeconomic stability alone is not sufficient to ensure that economic growth will be rapid. De Soto (2000) argues for the importance of property rights. Kaufmann (2005), among others, stresses the importance of openness and transparency in the management of public resources. Moreover, the ability of businesses to resolve legal disputes through a court system that operates transparently and with reasonable speed is necessary to enhance and safeguard productivity. Section V will analyze Namibia's structural competitiveness relying on survey-based major indicators of competitiveness.

C. Education

Beyond these institutional factors, education and training are considered drivers of competitiveness. Education has been particularly important for technological innovation. Unemployment in Namibia has been above 30 percent since the late 1990s, and low educational attainment and lack of skilled labor, among other factors, are related to such a high unemployment rate (Ramcharan, 2006). Recognizing this, the authorities have already begun to address weaknesses in education and training (see Box 1).

D. Export Performance[8]

Since independence Namibia's exports have lagged world exports, and analysis of the terms of trade reveals that the recent recovery in exports of diamonds is not likely to last long. Some progress has been made in addressing the narrowness of the export base (see Box 2).

III. THE HISTORY OF THE NAMIBIA DOLLAR

Before evaluating Namibia's REER, this section examines the evolution of the country's exchange rate indices—nominal exchange rate against the U.S. dollar (NER), nominal effective exchange rate (NEER), and REER—to bring certain issues into relief (Figure 1).

Because of the peg, Namibia's NEER and REER have been largely dictated by the South African rand. Since the South African Reserve Bank was established in 1921, South Africa's currency has been used as a currency in Namibia. The Namibia dollar was introduced after Namibia's independence in 1990 but it is still pegged to the rand.

However, changes in Namibia's NEER have been muted compared to changes in South Africa's due to differences in trade weights. South Africa represents the dominant share of Namibia's international trade; for instance, in 2005 Namibia's exports to South Africa represented 31 percent of total exports and imports from South Africa were 83 percent of the total. South Africa's own trade is much more diversified.

Namibia's REER has been relatively unchanged since independence; South Africa's has depreciated. Besides the difference in the NEER, the fact that average annual inflation in Namibia has been about 1 percent higher than in South Africa kept Namibia's REER stronger.[9] Nonetheless, it was strongly affected when the rand steeply depreciated early in 2002, rapidly rebounded in 2003 and 2004, and depreciated again in 2006.

With respect to Namibia's price competitiveness, then, is its REER fairly close to the equilibrium level? In particular, did the steep appreciation in the REER in 2003−04 lead to an

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[8] For examples of studies analyzing export performance to assess an economy's competitiveness, see Pavia (2001), Bakhache, Kalonji, Lewis, and Nachega (2006), and Gutierrez (2006).

[9] Namibia's inflation rates have recently converged to South Africa's.

overvaluation, and was it reversed by the recent depreciation? Section IV attempts to answer such questions.

Figure 1. Namibia and South Africa: Exchange Rates, 1980–2006

Sources: International Financial Statistics and Fund staff calculations.
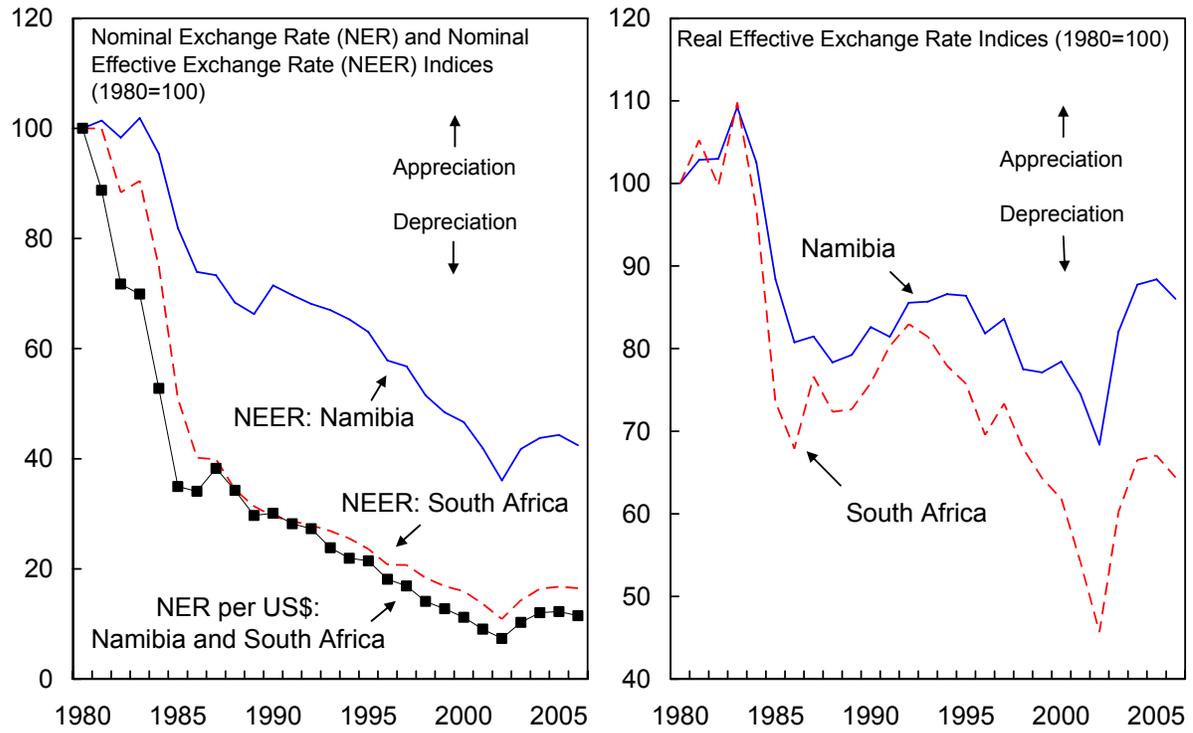
BOX 1. WHY IS THE UNEMPLOYMENT RATE HIGH?

The unemployment rate is high in Namibia. It has been above 30 percent since late 1990s and the latest figure is as high as 35 percent. This is the highest in the region—Swaziland's is next at 30 percent. Moreover, Namibia's unemployment rate seems to have worsened recently, while it has somewhat declined in the other SACU member countries.

According to the Afrobarometer Survey, unemployment is perceived to be by far the most important problem faced by Namibia, even compared with other major challenges—the rate of HIV/AIDS infection is among the highest in Africa, and poverty and destitution are widespread, affecting about 30 percent of the population.

Empirical studies reveal how low education attainment and lack of skilled labor are related to unemployment in Namibia. Based on the Afrobarometer Survey data, Ramcharan (2006) econometrically demonstrates a negative link between education attainment and the likelihood of being unemployed, and a positive link between education attainment and income. Moreover, Ramcharan (2004) stresses the possible complementarities between unskilled and skilled labor—unemployment among unskilled labor will fall as skilled labor increases, therefore restrictions on the immigration of skilled workers increase unemployment among unskilled workers.

Results of Afrobarometer Survey on the Most Important Problems Facing Namibia

Choices	Percent of Respondents
Unemployment	53.9
AIDS	7.6
Poverty/destitution	6.6
Other	31.9

Source: IMF Country Report 2006.

However, the education system is thought to be still too weak to effectively play the role expected of it by Vision 2030. Vision 2030, the government's new strategy for national development, identifies such impediments to growth as lack of appropriate knowledge and technology. It also identifies the education and training system as a key area for reform. In response, a 15-year education program, the Education and Training Sector Improvement Program (ETSIP), was devised in 2005 to overcome weaknesses in the education system—poor quality, low efficiency, inequality, low economic relevance, and low capacity for knowledge creation and innovation.

Besides low educational attainment and lack of skilled labor, there are other possible reasons for high unemployment. The dominance of unprocessed exports is thought to be one. While serving worthwhile objectives, the affirmative action rules may be cumbersome to the administrator, raising costs and implying a need for streamlining. The impact of full implementation of the new Labor Act is uncertain; arbitration was introduced to streamline the dismissal process, but termination of nonperforming staff may still be costly and time-consuming, and the effect of redefined leave days on labor cost is ambiguous.

Therefore, programs to address education and training issues need to be implemented adequately and promptly. Moreover, the authorities should ensure that regulations do not adversely affect functioning of the labor markets.
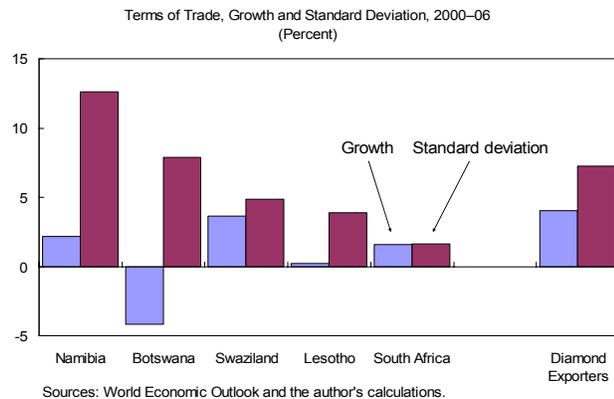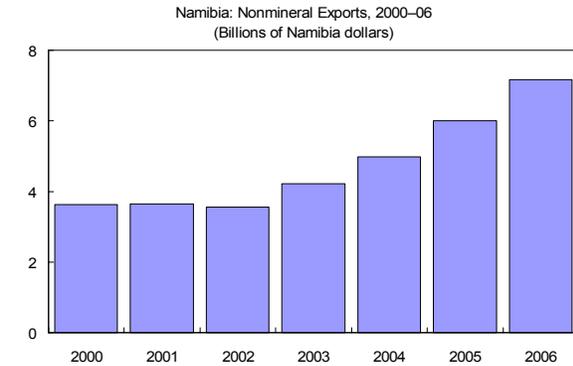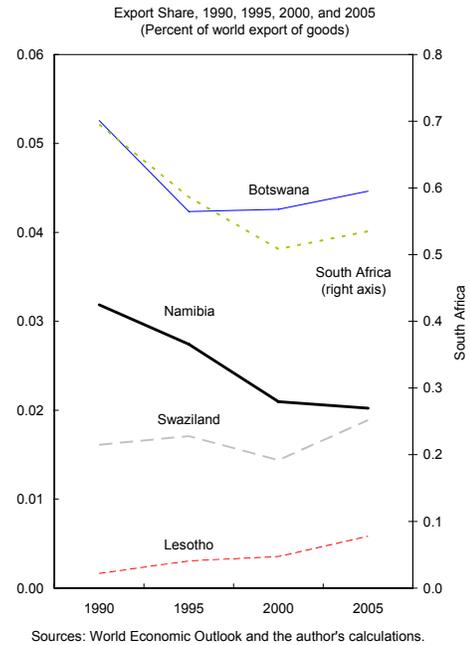
BOX 2. WHAT IS THE PERFORMANCE OF EXPORTS?

Besides fish and livestock, Namibia's exports rely heavily on mineral products. In 2006, diamonds were estimated to represent 40 percent and other minerals (copper, zinc, uranium, and gold) 18 percent of goods exports. Meat products including livestock were estimated to represent 11 percent and processed and unprocessed fish products 8 percent of goods exports.

Export performance improved recently aided by favorable developments in the terms of trade, but not enough to stem a decline as a share of world exports. Recent ups and downs in mineral exports track changes in the terms of trade. In the meantime, nonmineral exports have increased steadily since 2003, perhaps reflecting efforts to diversify the export base to nontraditional products. Despite all the favorable developments, however, Namibia's exports as a share of world exports continue to fall.

Export Share, 1990, 1995, 2000, and 2005
(Percent of world export of goods)

Sources: World Economic Outlook and the author's calculations.

Moreover, mineral exports are projected to fall in the near future given the history of the terms of trade. Looking at the average over 2000–06, volatility in Namibia's terms of trade was about 13 percent, about one and a half times as high as the second highest country in the region. Namibia's high volatility stands out even compared with the average for major diamond exporters. At the same time, its terms of trade have shown little trend, implying an inevitable fall if the past is any guide.

Namibia: Nonmineral Exports, 2000–06
(Billions of Namibia dollars)

Several initiatives have been undertaken to expand the export base. Production of grapes, one of the main nontraditional exports, more than tripled in the last decade. Namibian table grapes can reach the European market a month earlier than its competitors due to its climate. Namibia is also promoting tourism as part of its export diversification efforts. In beefing up such efforts, several challenges would have to be addressed. Lack of skilled labor limits diversifications to skill-intensive sectors, and lack of capacity in addressing standards, quality, accreditation, and methodology creates bottlenecks.

Terms of Trade, Growth and Standard Deviation, 2000–06
(Percent)

Sources: World Economic Outlook and the author's calculations.

IV. IS NAMIBIA'S REER MISALIGNED?

Estimation of the EREER is sensitive to data and methodology, especially for African countries where quantity and quality of data can be serious problems. In the case of Namibia, annual data are available only from 1980 on, and the quality of data for the years up to independence in 1990 is somewhat questionable. That is why this paper first uses the PPP approach to assess Namibia's REER; the approach relies only on data for recent years. Then, the paper econometrically estimates the EREER using the FEER approach. In an effort to account for the limited amount of data, the paper uses an econometric technique that is considered to have superior small-sample properties.

A. The Purchasing Power Parity Approach (PPP)

The real exchange rate, e, is

$$e = \frac{P}{EP^*},$$ (1)

where E is the nominal exchange rate defined as the number of units of the domestic currency per one unit of the foreign currency, P is the domestic price, and P^* is the foreign price. According to the Balassa-Samuelson hypothesis, e is assumed to be an increasing function of relative real GDP per capita

$$e = f(\frac{gdp}{gdp^*}).$$ (2)

where gdp and gdp^* are real GDP per capita of the domestic and foreign countries.

Figure 2 depicts estimated deviations of the Namibia dollar from its equilibrium level using the PPP approach. In all panels the y-axes represent Namibia's PPP exchange rate relative to the U.S. as a percentage of the market exchange rate, and the x-axes represent GDP per capita relative to the U.S., evaluated at the PPP exchange rate. According to equation (2), the trend line connecting the country samples—the equilibrium level—should slope upward. Positive deviations from the equilibrium level are considered to represent an overvaluation and negative deviations an undervaluation of the real exchange rate.

It appears from the PPP approach that the Namibia dollar was undervalued in 2005, but not as much as in 2002. The equilibrium level was derived in three different sets of countries: (i) all countries where data were available (178), (ii) 43 sub-Saharan African (SSA) countries, and (iii) 52 lower middle-income countries.[10] The trend lines representing the

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[10] This relies on the classification provided by the World Bank. Due to data constraints, the following countries are not included: Cuba, Iraq, Marshall Islands, Micronesia, Serbia and Montenegro, and West Bank and Gaza.

equilibrium level mostly slope upward, except for those in case (iii).[11] Namibia is below the equilibrium level, except in case (iii) for 2005, which implies that the Namibia dollar has been undervalued in recent years. Moreover, the fact that the distance from the equilibrium level narrowed in 2005 compared with 2002 indicates that the degree of undervaluation narrowed. This is consistent with the fact that the Namibia dollar plunged in 2002 in line with the South African rand and rebounded toward 2005.

B. The Fundamental Equilibrium Exchange Rate Approach (FEER)

Literature

The paper seeks to extend the few studies that consider Namibia's EREER. Eita and Sichei (2006) use the vector error correction model (VECM) for a single country to estimate Namibia's EREER for 1970–2004. They find that the REER (i) was not affected by the terms of trade but appreciated with greater openness and investment, and (ii) was overvalued throughout the sample period. Chudik and Mongardini (2007) apply the autoregressive distributed lag modeling (ARDL) approach to a panel of low-income SSA countries, including Namibia, to estimate the EREER. They first estimate single-country regressions but, concluding that such regressions are statistically less reliable, they proceed to panel estimations. Panel estimation techniques allow them to derive the EREER for countries with a short sample period. When they assume that the cointegration relationships between the EREER and fundamental determinants is identical for all SSA countries, the assumption is found to hold for non-oil exporters but less so for oil exporters, and it does not hold when all sample countries are included. As for econometric techniques, they use the ARDL approach, which has superior small-sample properties compared with the conventional Johansen cointegration test. Chudik and Mongardini, however, do not estimate single-country regressions for Namibia because the variables for the country do not exhibit significant level relationships. With these studies in mind, this paper chooses the ARDL approach as the main econometric tool and estimates Namibia's EREER in a single-country framework.[12]

Empirical Model

The REER is assumed to be a function of macroeconomic fundamentals, denoted by $FUND$:

$$e = f(FUND).\tag{3}$$

When specifying $FUND$, we focus on the macroeconomic variables summarized in box 3. Our specification and the expected signs are

$$e = f(\underset{+}{LNGCAP},\ \underset{+}{LNTOT},\ \underset{?}{OPEN},\ \underset{?}{BM},\ \underset{+}{INV},\ \underset{?}{FB},\ \underset{+}{PCONS},\ \underset{+}{PEXP}).\tag{4}$$

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[11] Because the countries included are at similar stages of growth, the Balassa-Samuelson effect is likely to be much less pronounced in case (iii) than in the other two cases.

[12] The paper uses the Johansen cointegration test and VECM as robustness checks.

Figure 2. The Purchasing Power Parity Approach, 2002 and 2005[1]
(Percent)

178 Countries, 2002

178 Countries, 2005

43 SSA Countries, 2002

43 SSA Countries, 2005

52 Lower Middle-Income Countries, 2002[2]

52 Lower Middle-Income Countries, 2005[2]
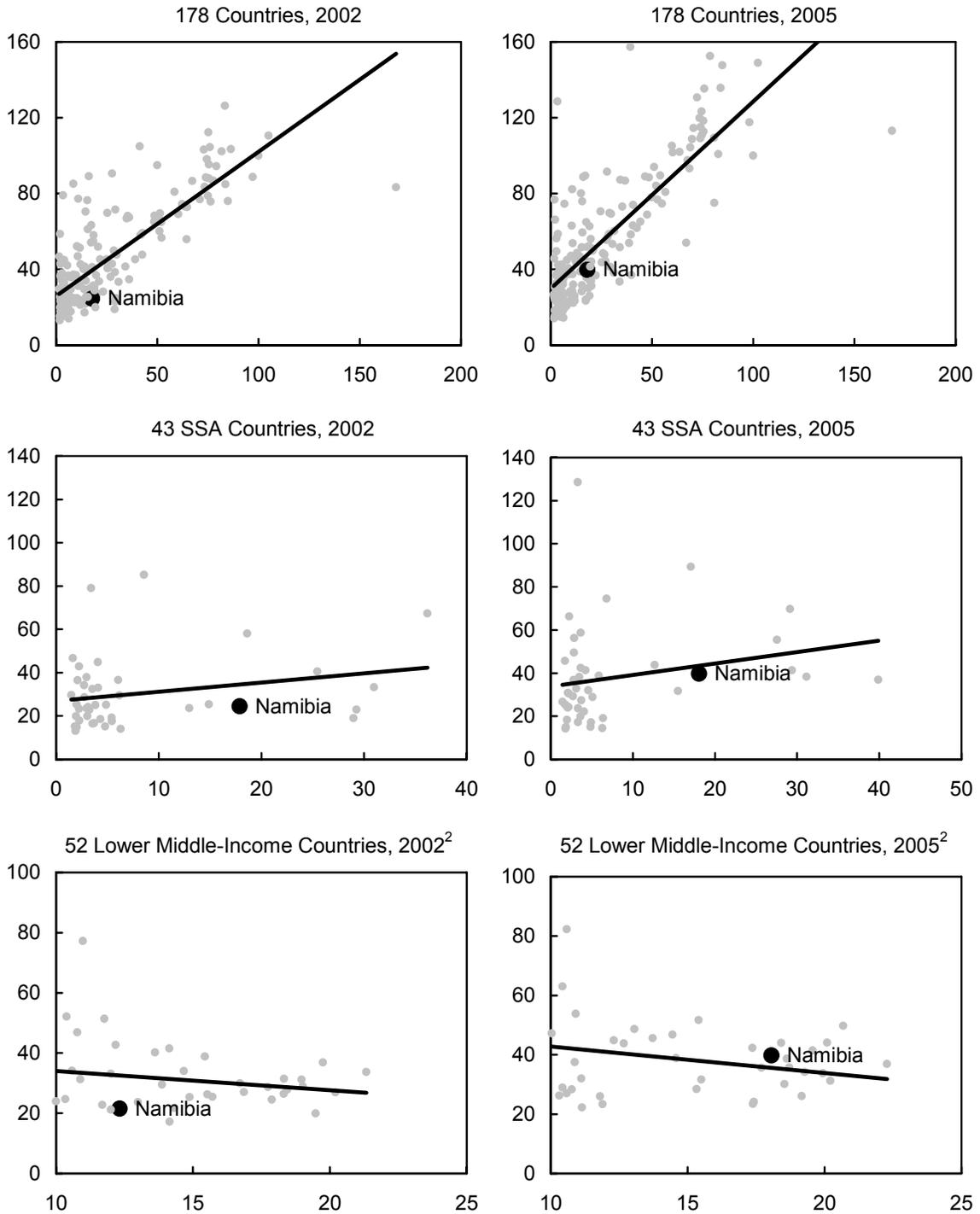
Sources: World Economic Outlook and the author's calculations.

[1] X-axes represent GDP per capita at the PPP exchange rate relative to the US and the y-axes represent PPP exchange rate relative to the US as a percent of the market exchange rate.

[2] Relies on the classification provided by the World Bank. Due to data constraints, the following countries are not included: Cuba, Iraq, Marshall Islands, Micronesia, Serbia and Montenegro, and the West Bank and Gaza.

Estimation Results

Autoregressive Distributed Lag Modeling Approach (ARDL)

Namibia's EREER is estimated using an approach that overcomes problems that typical econometric techniques suffer from. First, we identify a level relationship between the fundamentals and the REER using the bound-testing approach (Pesaran, Shin, and Smith, 2001).[13] This approach does not rely on the assessment of data generation processes, which could increase uncertainty in estimating a level relationship when the sample size is small. Second, we estimate long-run elasticity using the ARDL approach, which has superior small-sample properties (Pesaran and Shin, 1999).

In testing level relationships and estimating coefficients, we used 11 variables (*LNREER, LNGCAP, LNTOT, LNTOTNAM, OPEN, OPENNAM, INV, BM, FB, PCONS, PEXP*)[14] and set the maximum number of lags to two for all of them.[15] Using four regressors at a time, regressions were estimated for all possible combinations.[16]

Table 1. Namibia: Estimated Coefficients, ARDL Approach, Best Model

	Coefficient	Standard deviation	T-ratio
LNGCAP	0.781	0.083	9.372
OPEN	0.006	0.001	4.198
INV	0.028	0.004	7.226
BM	-0.004	0.001	-2.555
Error-correction coefficient	-0.658	0.136	4.853
Half life (months)	12.6	...	...
F-statistics [1]	9.776	...	...

Source: Author's estimations.

[1] With unrestricted intercepts. F-statistics is outside of critical bounds at the 1 percent level, which is (3.41, 4.68).

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[13] This approach tests for the existence of a level relationship using the F-test.

[14] *LNTOT* and *OPEN* are expressed relative to trading partners, while *LNTOTNAM* and *OPENNAM* represent only Namibia data.

[15] Results were essentially unchanged when the number of lags was increased to three. Setting them at two facilitates computation.

[16] This significantly increases the reliability of our choice of the best model. Regressions are estimated aided by an econometric template developed by Chudik and Mongardini (2007).

BOX 3. MAJOR DETERMINANTS OF THE REAL EFFECTIVE EXCHANGE RATE

Drawing on the literature, the following fundamental variables are used to identify Namibia's EREER:

Productivity (*LNGCAP*): Defined as Namibia's real GDP per capita relative to its main trading partners, expressed in natural log. Relatively higher productivity growth in a country, mostly stemming from the tradables sector, is expected to raise the domestic price due to the Balassa-Samuelson effect.

Terms of trade (*LNTOT*)[1]: Defined as the ratio of export deflator to import deflator expressed in natural log. Higher terms of trade are expected to have a positive effect on the trade balance, eventually leading to real exchange rate appreciation.

Openness (*OPEN*)[1]: Defined as the sum of exports and imports of goods and services as a share of GDP. More openness is typically associated with real exchange rate depreciation, because increased exposure to international markets is expected to lower domestic prices. However, if changes in openness are dictated by changes in exports, more openness may capture positive effects of the improved trade balance or increased domestic activity, which should lead to an appreciation of the REER.

Investment (*INV*): Defined as Namibia's gross capital formation as a share of GDP relative to its main trading partners. Higher investment is expected to capture technological progress, leading to higher domestic prices and real exchange rate appreciation.

Money supply (*BM*): Defined as a ratio of broad money to GDP relative to its main trading partners. Edwards suggests that monetary policy may have a short-run effect but its long-run effect is ambiguous. Monetary expansion in excess of economic growth could increase inflation; a more relevant aspect in the long run may be the degree of financial deepening that could lower inflation if it promotes smoother economic transactions.

Fiscal balance (*FB*): Defined as Namibia's fiscal balance as a share of GDP relative to its main trading partners. Higher fiscal deficits are considered to represent higher shares of expenditures directed to the nontradables sector, leading to higher domestic prices and real exchange rate appreciation. However, higher fiscal deficits may reduce confidence in the sustainability of fiscal, monetary, and exchange rate policies, provoking real exchange rate depreciation.

Public consumption expenditure (*PCONS*): Expressed as a share of GDP relative to Namibia's main trading partners. Higher shares of public consumption expenditure are considered to imply increased resources directed to the nontradables sector, leading to real exchange rate appreciation.

Public expenditure and net lending (*PEXP*): Expressed as a share of GDP relative to Namibia's main trading partners. Like *PCONS*, higher *PEXP* is expected to lead to real exchange appreciation.

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[1] Considering data both for Namibia alone, as is usually done in the literature, and relative to trading partners, which appears theoretically more appropriate.

The best model[17] consists of four fundamental variables—productivity (*LNGCAP*), openness (*OPEN*), broad money (*BM*), and investment (*INV*)—and the signs of estimated coefficients are consistent with our prior (Figure 3 and Table 1).[18] A 1 percent increase in *LNGCAP* and *OPEN* raises the REER by 0.8 percent and 0.6 percent, while a 1 percent increase in *BM* reduces the REER by 0.4 percent. The same 1 percent increase in *INV* has a larger impact, raising the REER by 2.8 percent.

$$LNREER = 0.781 * LNGCAP + 0.006 * OPEN + 0.028 * INV - 0.004 * BM \qquad (5)$$

Our results indicate that misalignments were relatively large before Namibia's independence in 1990, moderated in the 1990s, but picked up again in the 2000s. The large undervaluation in 2002 was caused by a steep depreciation in the South African rand. The ensuing rebound created a moderate overvaluation that was unwound as the Namibia dollar depreciated in 2006. Thus, measured misalignments suggest that the recent real overvaluation in the Namibia dollar was relatively small, and that it was reversed in 2006 by the latest depreciation (Figure 4).

Misalignments tend to dissipate over time. The error-correction coefficient indicates that, absent further shocks, about half of any given deviation would narrow on average in about one year. The literature suggests that large deviations, such as the one in 2002, could narrow more quickly.

Alternative Specification and Approaches

To check the robustness of our estimated results, first, we present the second-best model based on the same single-country ARDL modeling approach that was used to identify and estimate the best model. Then, as another robustness check, to both the best and second-best single-country models we apply the Johansen cointegration test and the VECM. Finally, we present panel estimates for non-oil-exporting SSA countries, including Namibia. Estimated misalignments from the alternative methods are consistent with those from the best model.

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[17] Using the SBC criterion, the best model is chosen from equations that have large enough F-statistics, which indicate the existence of significant level relationships, and coefficients with statistical significance and plausible signs (Appendix, Table 1).

[18] The terms of trade are usually found to be a main determinant of the REER and are positively correlated with the REER in the case of Namibia, the correlation coefficient being 0.4. However, our best models for Namibia according to our selection criteria do not include the terms of trade.

Figure 3. Namibia: Real Effective Exchange Rate and Its Determinants, 1980–2006
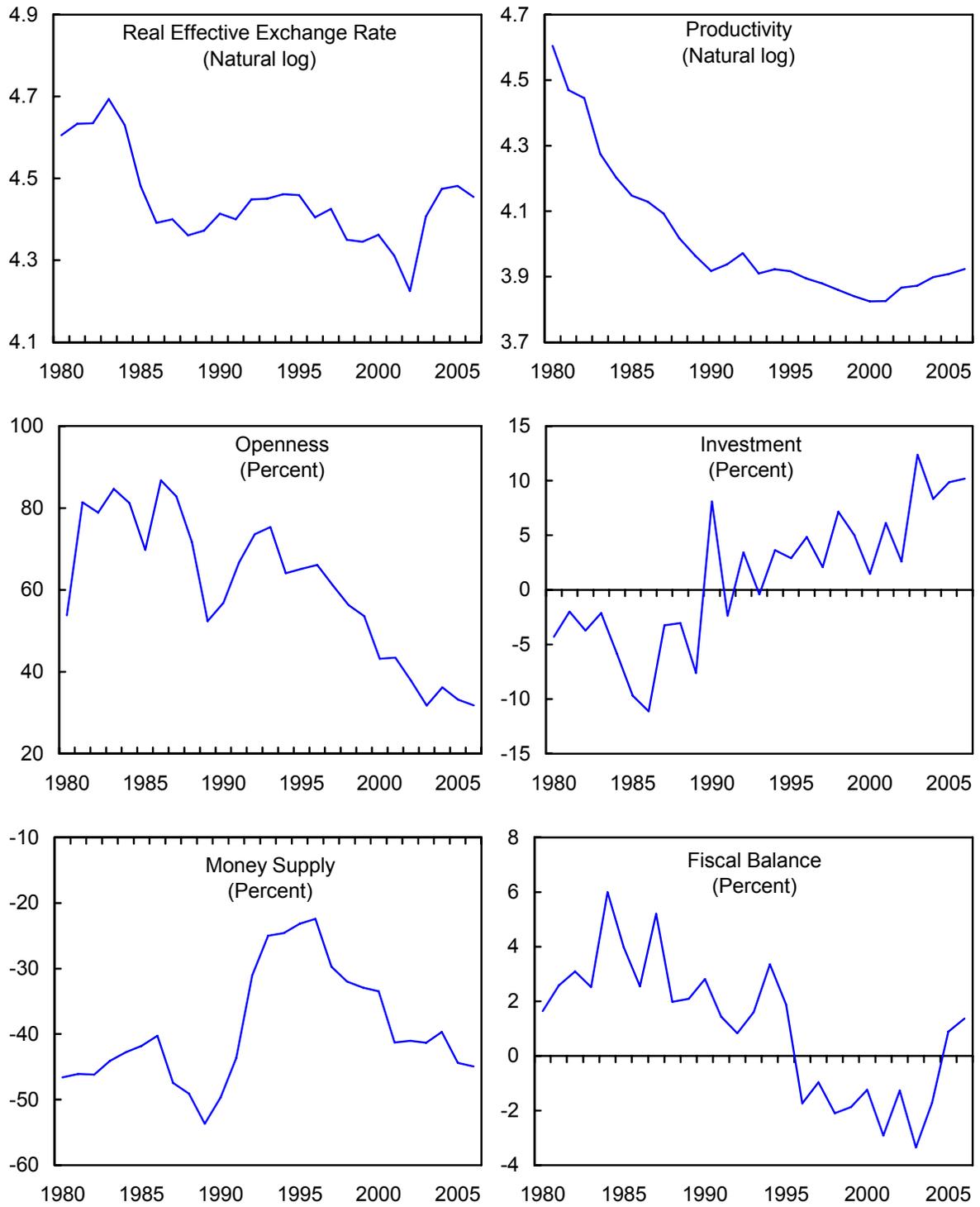
The Second-Best Model

The second-best model includes *LNGCAP*, *OPEN*, *INV*, and *FB*. Table 2 shows how estimated coefficients are generally consistent with those of the best model. The variables have significant level relationships and all coefficients are significant, with expected signs. The results show that the REER would appreciate by about 0.5 percent, 0.2 percent, and 2.0 percent in response to a 1 percent increase in *LNGCAP*, *OPEN*, and *INV*. The second-best model includes *FB* instead of *BM;* a 1 percent increase in *FB* would lead to a 1.6 percent real appreciation.

$$LNREER = 0.490 * LNGCAP + 0.002 * OPEN + 0.020 * INV + 0.016 * FB \qquad (6)$$

Further supporting the robustness of our results, estimated misalignments from the second-best model[19] are generally consistent with those from the best model (Figure 5, 1st panel).[20] The second-best model, however, suggests that Namibia's REER was never overvalued in recent years and that the undervaluation in 2006 was somewhat larger than the best model suggests.

The Vector Error Correction Model (VECM)

A vector error correction model (VECM) is a restricted vector auto regression (VAR) model designed for nonstationary series that are known to be cointegrated. The VECM has cointegration relations built into the specification so that it restricts the long-run behavior of the endogenous variables to converge to their cointegrating relationships but allows for short-run adjustment dynamics.

As we were not successful in estimating VECM, the paper could not use VECM results for robustness checks. Augmented Dickey-Fuller (ADF) test results suggest that the process of generating the included variables is I(1).[21] Note that it is uncertain how much unit root tests can be trusted where data may be too limited. The bound-testing approach, on the other hand, found a level relationship for the same variables without relying on such statistical inferences. When the best and second-best models were reestimated using the VECM, we found more than one cointegrating vector[22], which made it difficult to determine how variables are related.

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[19] Labeled "ARDL second-best" in the first panel of Figure 5.

[20] Labeled "ARDL best" in the first panel of Figure 5.

[21] See Appendix Table 2. For *BM*, we referred to the results without trend (intercept only) as it appears trendless. The other variables likely being trended, we referred to the results with intercept and trend.

[22] See AppendixTable 3. Trace test and maximum-eigenvalue tests indicate 4 and 3 cointegrating equations at the 5 percent level.

Figure 4. Namibia: Actual and Equilibrium Real Effective Exchange Rates and Misalignments, 1980–2006
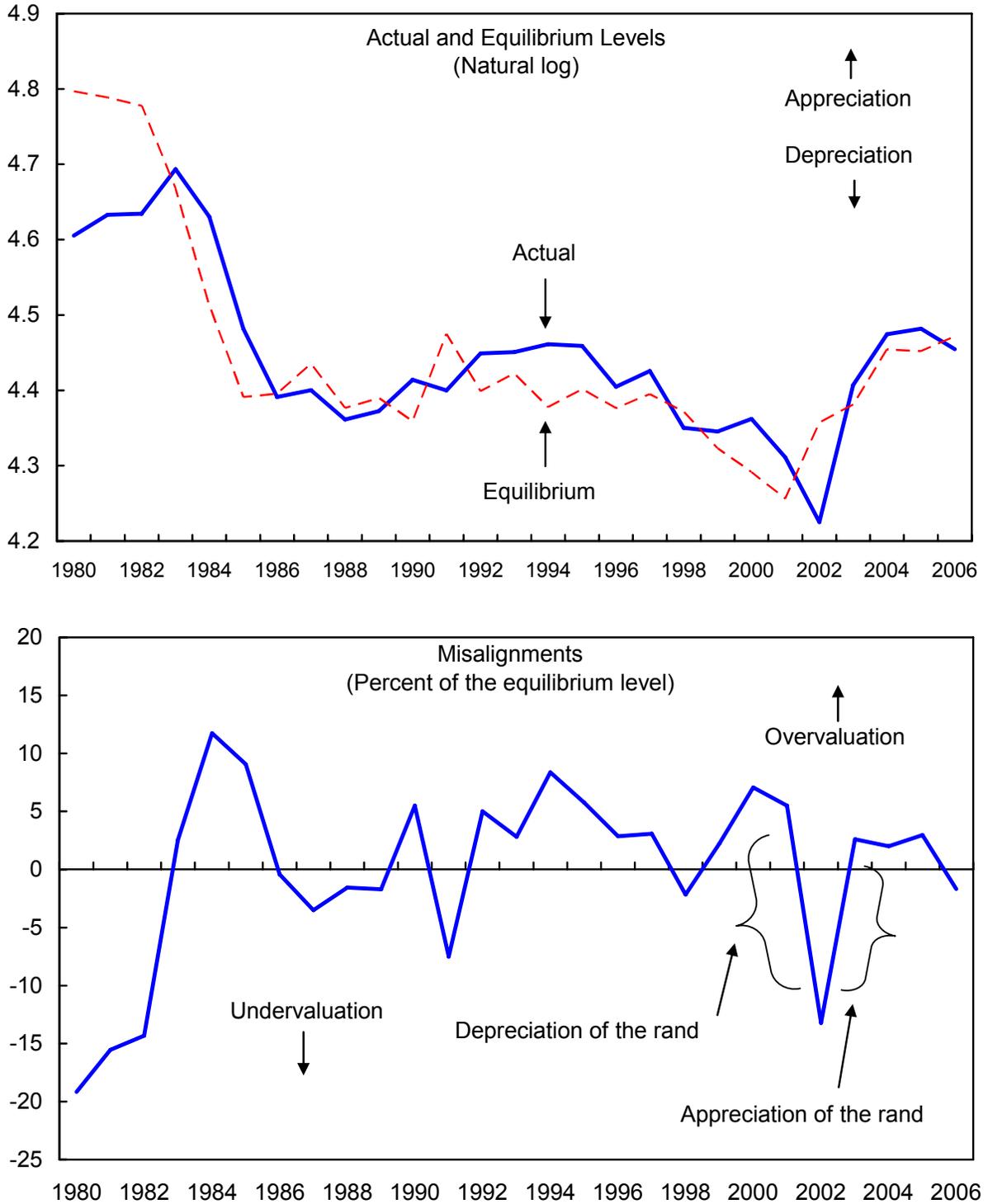
Sources: International Financial Statistics, World Economic Outlook, and the author's estimations.

Table 2. Namibia: Estimated Coefficients [1]

	ARDL	
	Best Model	Second-Best Model
LNGCAP	0.781	0.490
T-ratio	9.372 **	6.147
OPEN	0.006	0.002
T-ratio	4.198 **	2.312 *
INV	0.028	0.020
T-ratio	7.226 **	7.140 **
BM	-0.004	...
T-ratio	2.555 **	...
FB	...	0.016
T-ratio	...	3.246 **
Error-correction coefficient	-0.658	-0.749
T-ratio	4.853 **	4.071 **
Half life (months)	12.6	11.1
F-statistics	9.776	5.876

Source: Author's estimations.

[1] ** significant at the 1% level; * significant at the 5% level.

Panel Regression

Estimated misalignments from the panel of developing African countries by Chudik and Mongardini (2007) are used to further check the robustness of our results. Because any asymptotic statistical inference suffers from the short-sample problem, single-country estimations of Namibia's EREER may not be considered robust given limited data.

Our results from single-country regressions are similar to those from panel regressions estimated for a large number of African countries (Figure 5, 2nd panel). Chudik and Mongardini (2007) present estimated misalignments for a panel of non-oil-exporting SSA countries using several methods: pooled mean group estimator with and without incidental trends developed by Pesaran and Shin (1999), the fully modified OLS estimator of Pedroni (2000), and the panel dynamic OLS estimator of Mark and Sul (2002) with and without

Figure 5. Namibia: Estimated REER Misalignments, 1980–2006 [1]
(Percent of the equilibrium level)
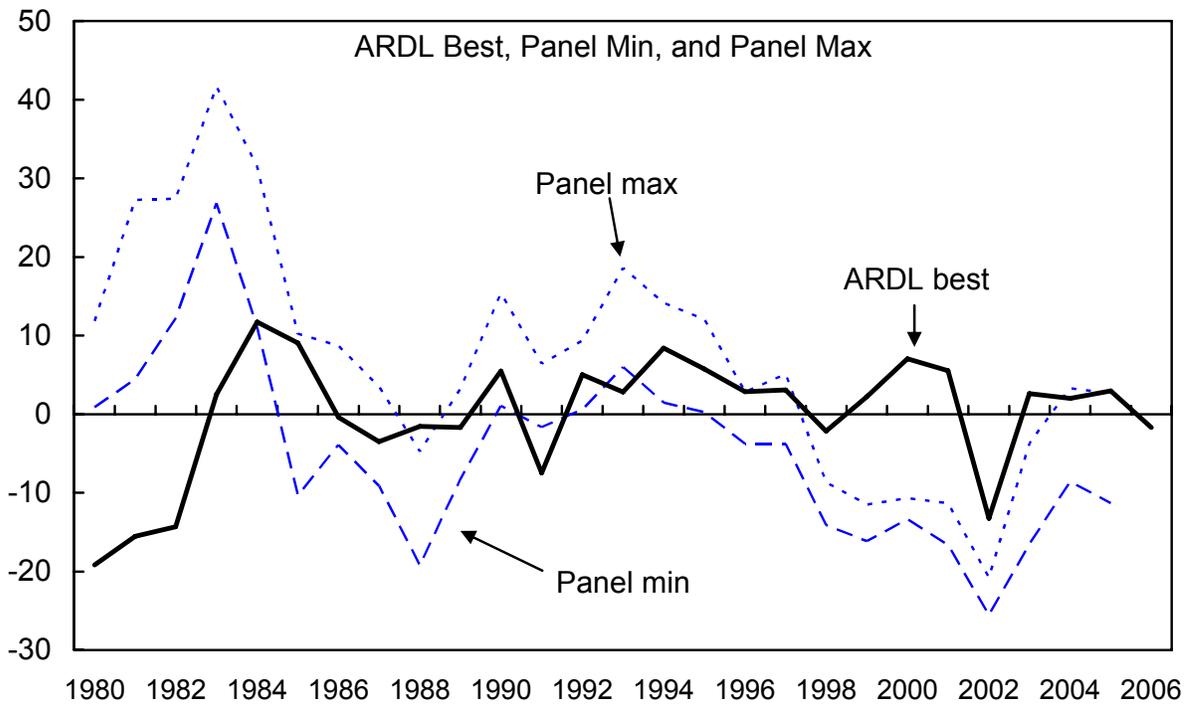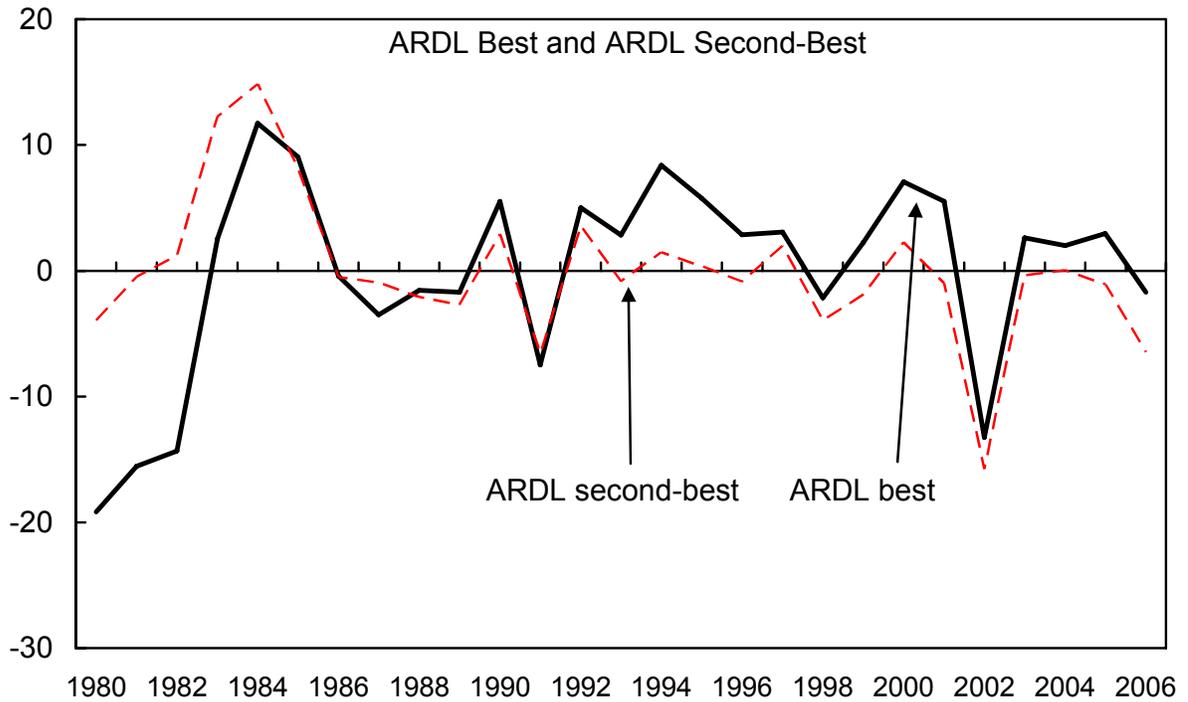
Source: Chudik and Mongardini (2007) and the author's estimations.
[1] **ARDL best**: the best model using the ARDL approach; **ARDL second-best**: replacing *BM* with *FB* in the best model; and **Panel min and Panel max**: minimum and maximum bounds for Namibia in Chudik and Mongardini (2007).

incidental trends. All of them are estimated with both four and five fundamentals.[23] Chudik and Mongardini report the minimum and maximum estimates of misalignments for Namibia across all specifications they employ.[24] Their estimated misalignments tend to indicate more undervaluation than this paper's best model does. For recent years their maximum estimates indicate misalignments similar to what this paper's best model suggests, but their minimum estimates suggest a larger undervaluation, by 10 to 20 percent.

V.   WHY HAVE NAMIBIA'S RANKINGS BEEN FALLING IN STRUCTURAL COMPETITIVENESS?

For a comprehensive picture of a country's competitiveness, it is important to consider its long-term aspect, structural competitiveness. To complement the analysis of the REER, therefore, we analyze three sets of survey-based indicators of structural competitiveness: the Global Competitiveness Index (GCI), the World Governance Indicators (WGIs), and the Doing Business Indicators (DBIs)[25], with particular attention to why Namibia's rankings have been falling (Figure 6).

The outcomes should be interpreted with caution. For instance, governance is inherently complex to measure. Ratings are hard to make based only on empirical evidence; there is often a large judgmental factor. Moreover, the criteria for and process of establishing ratings may vary from year to year.

A.   Global Competitiveness Index (GCI)

Namibia's ranking has been falling since it was first included in the GCI in 2002; the average slippage since has been 5¼ points a year. While South Africa's ranking also fell, it did so more slowly, at an average annual rate of 3¼ points. Namibia's decline in 2004/05 was particularly pronounced; its ranking fell by 11 points, primarily because of a significant deterioration in the subindices for public institutions and technology.

Though Namibia is considered to be in transition to a higher stage of growth, it has yet to score well in factors for sustainable growth at the higher stage. The GCI classifies countries in three different stages of development according to GDP per capita in U.S. dollars.[26] Lesotho, for instance, is in stage 1 and South Africa in stage 2; Namibia is considered to be in transition from stage 1 to stage 2. For Namibia to achieve sustainable growth at stage 2, the country would have to improve its scores in "efficiency enhancers," which include

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[23] The four fundamentals are government consumption, openness, productivity, and the terms of the trade; the fifth is debt service as a share of exports.

[24] These are labeled "Panel min" and "Panel max" in the second panel of Figure 5

[25] See box 4 for background information.

[26] Economies with GDP per capita below U$2,000 are classified as in stage 1; those above U$3,000 in stage 2. Namibia's GDP per capita is estimated to have reached U$3,157 in 2006, up from U$2,984 in 2005.

BOX 4. MAJOR SURVEY-BASED INDICATORS OF STRUCTURAL COMPETITIVENESS

A. The Global Competitiveness Index (GCI)

The GCI is published by *World Economic Forum*. Since 2001, the Growth Competitiveness Index (Growth CI) developed by Sachs and McArthur has been used to assess the competitiveness of nations. The Growth CI has three subcategories: macroeconomic environment (including macroeconomic stability, government waste, and country credit rating); public institutions (including contracts and law and corruption); and technology (including innovation, ICT, and technology transfer). To incorporate extra factors like infrastructure quality into a broader measure of competitiveness, Sala-i-Martin has developed a new comprehensive model, which was officially launched in September 2006. The GCI extends and deepens the concepts and ideas underpinning the earlier Growth CI. The GCI also has three subcategories: basic requirements (including institution, infrastructure, macroeconomy, and health and primary education); efficiency enhancers (including higher education and training, market efficiency, and technological readiness); and innovation factors (including business sophistication and innovation). The latest 2006 GCI includes 125 countries, based on data availability; indices for Namibia were first reported for 2002.

B. World Governance Indicators (WGIs)

WGIs are prepared by *the World Bank*. The WGIs reflect the statistical aggregation of responses on the quality of governance given by a large number of enterprise, citizen, and expert survey respondents in industrial and developing countries. The WGIs use six subindices to evaluate countries' governance levels: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption. Country coverage varies depending on subindex—the latest 2006 WGIs have the largest coverage (213 countries and territories) for political stability, while the smallest (203) for regulatory quality. The WGIs were calculated for 1996, 1998, 2000, and 2002–05.

C. Doing Business Indicators (DBIs)

DBIs are compiled by *the World Bank*. The DBIs provide objective measures of business regulations and their enforcement to indicate the regulatory costs of business. They can be used to analyze specific regulations that enhance or constrain investment, productivity, and growth. The DBIs have 10 subcategories to derive an overall evaluation of ease of doing business, among them: starting a business, getting credit, and enforcing contracts—all relevant to facilitate firms' productive operations in a given country. The DBIs for 2006 cover 175 countries, including all economies with a population over 1.5 million. The following countries are excluded: countries that are not World Bank Group members that are or recently have been in a military conflict, or where data are not available.

(i) higher education and training, (ii) market efficiency, and (iii) technological readiness. Namibia's scores significantly lag South Africa's in these factors, particularly the first.

B. Worldwide Governance Indicators (WGIs)

From 1996 through 2005, Namibia's scores in WGIs fell, particularly with respect to rule of law and control of corruption—areas where several SSA countries have made progress. During the same period Madagascar and Mali significantly improved their rankings in rule of law, and Botswana and Senegal improved in control of corruption.

C. Doing Business Indicators (DBIs)

In SSA Namibia's 2006 DBI ranking of 42 was surpassed only by South Africa's 29. Namibia's scores are even higher than South Africa's in several categories, such as licensing (19) and paying tax (28). However, its 2006 ranking was 3 points lower than in 2005, primarily because Namibia scored poorly with respect to registering property (127) and costs for cross-border trade (144).

According to the 2006 DBIs, many countries, some of them African, improved the business environment, and 213 reforms (in 112 economies) made doing business easier.[27] Moreover, two-thirds of African countries made at least one reform. Ghana and Tanzania were among the top 10 reformers. Some of their reforms were in registering property and lowering costs for cross-border trade, the two areas where Namibia lags behind (see Box 5). The DBIs report no reform that was implemented by Namibia.

BOX 5. WHAT DID GHANA AND TANZANIA DO TO IMPROVE THEIR BUSINESS CLIMATE?

Ghana and Tanzania, among the top 10 reformers in 2005/06, significantly improved their rankings in the reformed areas. What did these countries do to improve their scores so much?

Ghana:

- To reduce the costs of cross-border trade, Ghana introduced a single-window clearance process at customs where traders can fill in all paper work. Clearance time for imports dropped from 7 days to 3 days and for exports from 4 days to 2 days.

- To improve property registration, the stamp duty on property transfers was cut from 2 percent to 0.5 percent (of property value).

Tanzania:

- Custom clearance time dropped from 51 days to 39 days for imports and from 30 days to 24 days for exports.

Tanzania cut fees associated with transferring property by 3 percent, and revised the company law to better protect small investors.

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[27] 25 reforms are reported to have made business more difficult.

Figure 6. Indicators of Structural Competitiveness,
GCI, WGIs, and DBIs

GCI: Cumulative Changes in the Overall Ranking, 2002–06

GCI: Efficiency Enhancers, 2006 Scores (Best=1, worst=125)

WGIs: Rule of Law Changes from 1996 to 2005

WGIs: Control of Corruption Changes from 1996 to 2005

DBIs: 2006 Scores for Registering Property (Best=1, worst=175)

DBIs: 2006 Scores for Trading Across Borders (Best=1, worst=175)
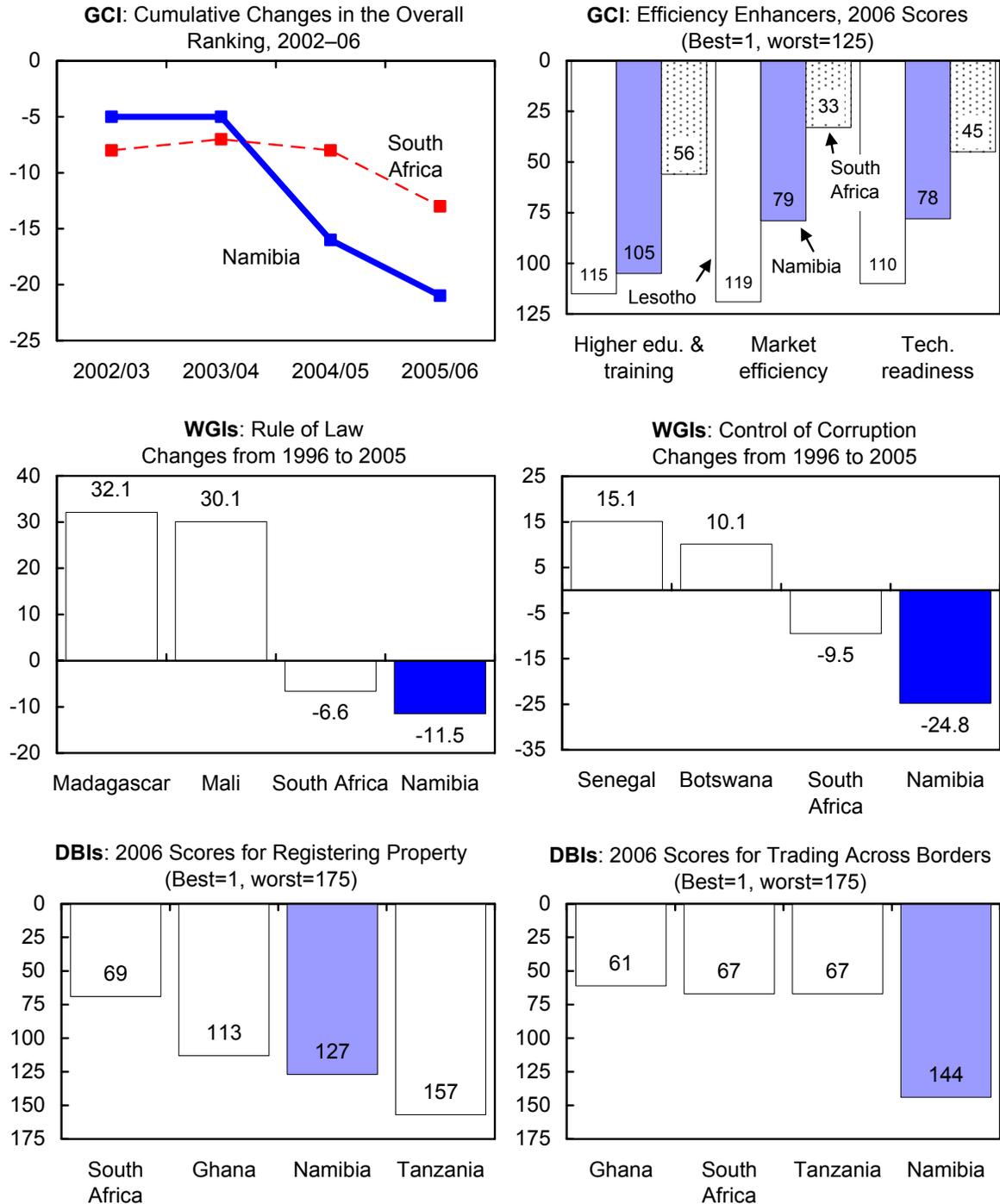
Source: World Economic Forum, World Bank, and the author's calculations.

VI. CONCLUDING REMARKS

Both the PPP and FEER approaches revealed that the current level of Namibia's REER does not suggest a competitiveness problem, but there is room for Namibia to take further measures to bolster its competitiveness generally.

Namibia's REER misalignments were relatively large before independence in 1990, moderated in the 1990s, but picked up again in the 2000s. The large undervaluation in 2002 was caused by a steep depreciation in the South African rand. The ensuing rebound created a moderate overvaluation that was unwound as the Namibia dollar depreciated in 2006. The estimated error-correction coefficient indicated that, absent further shocks, about half of any given deviation would narrow on average in about one year. While Namibia's REER is in equilibrium at present, future risks warrant monitoring; a prudent fiscal stance is the foundation for macroeconomic stability, as is moderation in wage developments.

Namibia's rankings in major indicators of structural competitiveness have fallen. An environment conducive to private sector activity would raise Namibia's growth potential and safeguard its long-term competitiveness—and thus improve Namibia's scores. In particular:

- There is room to address higher education and training first. Where programs to address education and training have begun, the next step is to implement them adequately. The Namibian authorities are collaborating with the World Bank, which is in the process of extending a loan to improve the Namibian education system.

- The Anti-Corruption Commission (ACC) was inaugurated only in early 2006 but as it becomes increasingly active, it will help Namibia control corruption. This will in turn raise the country's competitiveness rankings.

- The accountability and performance of parastatals could be improved. Governance is high on the authorities' agenda. As the State-Owned Enterprises Governance Act, approved in 2006, gradually goes into effect, it too will help enhance Namibia's structural competitiveness.

- To make the business climate more attractive, the authorities are reviewing the Namibia Investors Roadmap, a USAID-funded study that identifies administrative, regulatory, and procedural barriers to investment. Here, experience of reformers in the region will provide useful guidance.

Table 1. Namibia: Long-Run Estimates from Alternative Specifications of Lags[1]

	Selection Criteria			ARDL Specification	Long-Run Coefficients[2]								Error-Correction Coeff.	
	AIC	SBC	Rbar2		LNGCAP	t-ratio	OPEN	t-ratio	INV	t-ratio	BM	t-ratio	Coeff.	t-ratio
Best model according AIC														
1 (best)	-3.91	-3.33	91.7%	(1,0,2,2,2)	0.801	8.09	0.006	3.62	0.029	6.24	-0.004	-2.36	-0.647	-5.08
2	-3.90	-3.37	91.6%	(0,0,2,2,2)	0.781	9.37	0.006	4.20	0.028	7.23	-0.004	-2.56	-0.658	-4.85
3	-3.87	-3.23	91.3%	(2,0,2,2,2)	0.779	7.75	0.005	3.35	0.027	4.74	-0.004	-1.95	-0.673	-4.88
4	-3.85	-3.22	91.2%	(1,1,2,2,2)	0.785	7.29	0.005	2.29	0.027	4.79	-0.004	-1.81	-0.850	-9.08
Best model according SBC														
1 (best)	-3.90	-3.37	91.6%	(0,0,2,2,2)	0.781	9.37	0.006	4.20	0.028	7.23	-0.004	-2.56	-0.658	-4.85
2	-3.91	-3.33	91.7%	(1,0,2,2,2)	0.801	8.09	0.006	3.62	0.029	6.24	-0.004	-2.36	-0.647	-5.08
3	-3.84	-3.25	91.0%	(0,1,2,2,2)	0.770	8.43	0.005	2.79	0.027	5.48	-0.003	-1.98	-0.894	-8.92
4	-3.87	-3.23	91.3%	(2,0,2,2,2)	0.779	7.75	0.005	3.35	0.027	4.74	-0.004	-1.95	-0.673	-4.88
Best model according Rbar2														
1 (best)	-3.91	-3.33	91.7%	(1,0,2,2,2)	0.801	8.09	0.006	3.62	0.029	6.24	-0.004	-2.36	-0.647	-5.08
2	-3.90	-3.37	91.6%	(0,0,2,2,2)	0.781	9.37	0.006	4.20	0.028	7.23	-0.004	-2.56	-0.658	-4.85
3	-3.87	-3.23	91.3%	(2,0,2,2,2)	0.779	7.75	0.005	3.35	0.027	4.74	-0.004	-1.95	-0.673	-4.88
4	-3.85	-3.22	91.2%	(1,1,2,2,2)	0.785	7.29	0.005	2.29	0.027	4.79	-0.004	-1.81	-0.850	-9.08

Source: Author's estimations.

[1] Highlighting the best model. All selection criteria chose the same model as the best one.

[2] LNGCAP is productivity, OPEN is openness, INV is investment, and BM is broad money.

Table 2. Namibia: Unit Root Test Results [1]

a: Deterministic—Intercept and Trend

Series:[2]	LNREER	LNGCAP	OPEN	INV	BM
Number of obs:	27	27	27	27	27
ADF					
level	-1.614	-0.872	-0.176	-2.767	-0.670
p-value	75.9%	94.1%	98.8%	22.1%	96.2%
1st difference	-4.303	-5.995	-5.928	-10.431	-3.245
p-value	1.2%	0.0%	0.0%	0.0%	9.9%
2nd difference	-2.266	-9.832	-7.483	-13.467	-6.694
p-value	43.0%	0.0%	0.0%	0.0%	0.0%
KPSS					
level	0.117	0.197	0.146	0.070	0.124
1st difference	0.054	0.094	0.095	0.053	0.077
2nd difference	0.388	0.500	0.295	0.059	0.050
ERS					
level	15.851	576.357	660.976	9.594	13.340
1st difference	7.415	8.981	14.159	12.216	7.759
2nd difference	100.125	15.666	12.762	19.051	8.338

b: Deterministic—Intercept only

Series:[2]	LNREER	LNGCAP	OPEN	INV	BM
Number of obs:	27	27	27	27	27
ADF					
level	-1.875	-4.162	-0.096	-0.391	-1.314
p-value	33.8%	0.4%	93.9%	89.6%	60.8%
1st difference	-4.183	-1.838	-6.150	-10.541	-3.202
p-value	0.3%	35.3%	0.0%	0.0%	3.2%
2nd difference	-6.638	-10.107	-7.690	-13.787	-6.849
p-value	0.0%	0.0%	0.0%	0.0%	0.0%
KPSS					
level	0.405	0.628	0.633	0.678	0.229
1st difference	0.130	0.637	0.238	0.066	0.150
2nd difference	0.387	0.387	0.360	0.060	0.050
ERS					
level	10.074	386.206	31.856	22.895	9.602
1st difference	2.067	104.440	10.475	3.300	2.138
2nd difference	2.195	7.557	7.243	5.301	2.362

Source: Author's estimations.

[1] **ADF**: Augmented Dickey-Fuller; **KPSS**: Kwiatkowski, Phillips, Schmidt, and Shin; and **ERS**: Elliot, Rothenberg, and Stock. Highlighting when test statistics suggest stationarity.

[2] LNREER is the real effective exchange rate, LNGCAP is productivity, OPEN is openness, INV is investment, and BM is broad money.

Table 3: Namibia: Johansen Cointegration Test [1]

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s) [2]	Eigenvalue	Trace Statistic	0.05 Critical Value	Probability [3]
None *	0.911	136.051	69.819	0.000
At most 1 *	0.754	75.656	47.856	0.000
At most 2 *	0.588	40.570	29.797	0.002
At most 3 *	0.394	18.424	15.495	0.018
At most 4 *	0.210	5.896	3.841	0.015

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s) [2]	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Probability [3]
None *	0.911	60.395	33.877	0.000
At most 1 *	0.754	35.085	27.584	0.005
At most 2 *	0.588	22.146	21.132	0.036
At most 3	0.394	12.528	14.265	0.092
At most 4 *	0.210	5.896	3.841	0.015

Source: Author's estimations.

[1] Trace test and max-eigenvalue test indicate 4 and 3 cointegrating equation at the 5 percent level.
There are at most k-1 cointegrating equations with k variables.

[2] * denotes rejection of the hypothesis at the 5 percent level.

[3] Using MacKinnon-Haug-Michelis (1999) p-values.

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