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Staff Country Reports

Cape Verde: Selected Issues

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INTERNATIONAL MONETARY FUND

CAPE VERDE

Selected Issues

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Approved by the African Department

June 9, 2008

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Abbreviations and Acronyms

FDI	Foreign direct investment
GDP	Gross domestic product
HTBEs	Highly-tourism-based economies
IMF	International Monetary Fund
INE	National Institute of Statistics of Cape Verde
ODA	Official development assistance
REER	Real effective exchange rate
WEO	IMF, World Economic Outlook

EXECUTIVE SUMMARY

The analytical work associated with the 2008 Article IV discussions continues the staff's work on defining the policy agenda to enable Cape Verde to reduce vulnerabilities and move to a sustained growth path. Two aspects of Cape Verde's recent economic development have brought tangible benefits and hold potential for the future, but also pose challenges for economic management: the recent tourism boom and its associated specialization, and the changing role of worker remittances as a hedge against macroeconomic shocks.

Chapter I. Cape Verde has been the fastest-growing tourism market among the highly-tourism-based economies (HTBEs). Its comparative advantages include a location conveniently near Europe, favorable social conditions, and economic and political stability. Using cross-country analysis of HTBE economies, the chapter shows that increasing specialization in tourism and external openness raises output volatility. As Cape Verde's growth cycle becomes synchronized with tourism originator countries, dependence on a single export means that demand shocks to it will propagate throughout the entire economy. This suggests that Cape Verde will need large buffers of foreign reserves and fiscal space because countercyclical policies are not an option: monetary policy is constrained by the peg, and the fiscal multipliers are small because the Cape Verde economy is highly open.

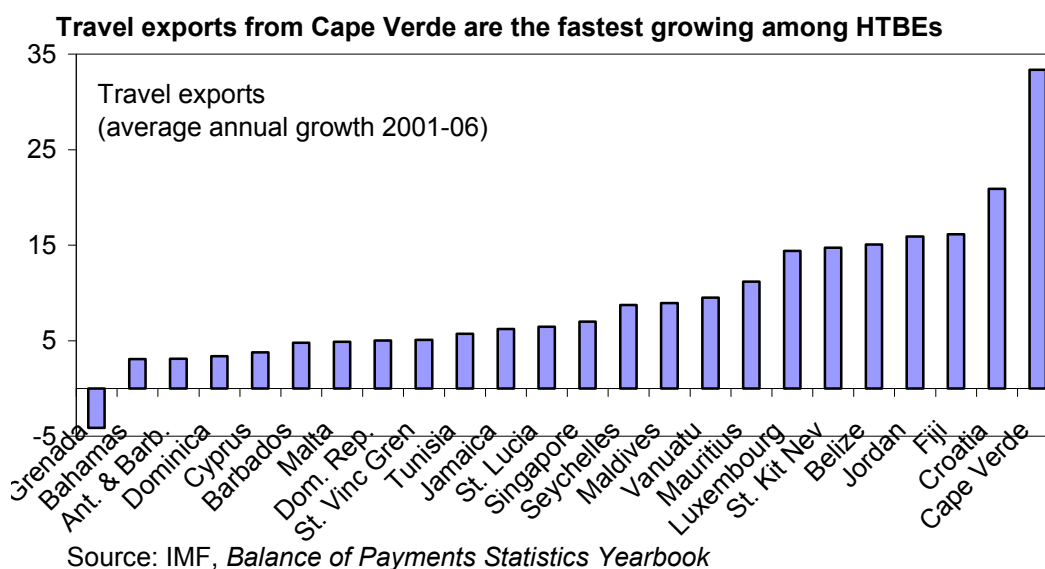
Chapter II. Historically remittances from Cape Verde's diaspora have constituted a large share of external financing and were thought of as a countercyclical tool to smooth consumption. Remittances continue to be a reliable source of balance of payments financing for Cape Verde, but they are declining in importance. Moreover, recent empirical evidence suggests that remittances are becoming increasingly procyclical and motivated by investment considerations rather than consumption smoothing, which reduces their value as a shock absorber. This also underscores the need to build large buffers for foreign reserves and fiscal space to enhance the economy's resilience against shocks.

I. SURFING THE TOURISM WAVE—MACROECONOMIC CHALLENGES FOR A HIGHLY-TOURISM-BASED ECONOMY¹

1. ***This cross-country analysis of highly -tourism based economies (HTBEs) suggests that the increasing specialization in tourism and the openness of Cape Verde’s economy will raise the output volatility and increase the amplitude and duration of growth cycles.*** This suggests that over time Cape Verde will need large buffers in the form of higher international reserves and fiscal space to buy policy insurance against shocks especially given the constraints of the exchange rate peg and the small fiscal multipliers reflecting the openness of the economy.

A. Tourism: Trends and Driving Factors

2. ***Cape Verde is the fastest-growing tourism market among the HTBEs.***² It was recently launched as a new frontier for European tourism (appendix I). Travel exports³ have grown on average by more than 30 percent annually for more than a decade, far outpacing other HTBEs.

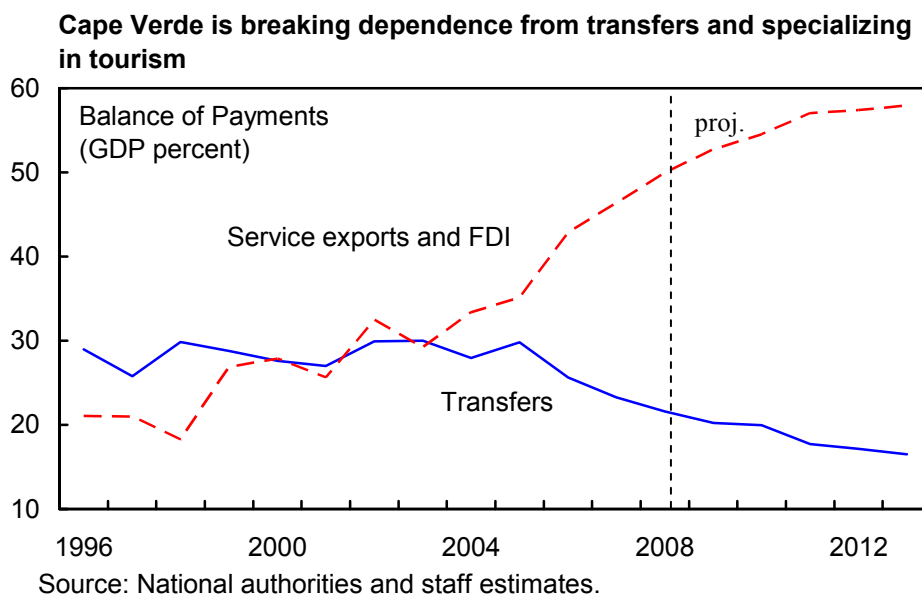


¹ Prepared by Eduardo Castro.

² HTBEs are countries where travel exports exceeded 10 percent of GDP for at least one year in 1998–2007 (list in Table I.2).

³ Although this paper uses the terms “travel services” and “tourism” interchangeably, travel exports include tourism, travel for business and for other purposes and it does not include transportation services to and from Cape Verde.

3. ***Tourism is now changing the balance of payments picture in Cape Verde.*** The country is breaking its past dependence on aid and remittances and becoming a self-propelled economy specialized in export of services, especially tourism, and tourism-related foreign direct investment (FDI), which are now higher than aid and remittances. Though imports related to tourism and FDI are responsible for the widening current account deficit, they pose no threat to external stability because they are largely self-financing. The recent increase in FDI has been caused by expectations of high demand for tourism combined with an improvement in risk perception catalyzed by Cape Verde's strong economic performance.



4. ***Tourism growth in Cape Verde has unique features.*** Previous research suggests that economic growth in tourist originator countries is the single most important factor driving growth of arrivals. However, the Cape Verdean market share for European tourists is increasing: travel exports from Cape Verde are growing much faster than Europe's income and imports of travel services. Tourism receipts in Cape Verde grew even in 2001–02 during the fallout from the September 2001 attacks in the United States, a period when tourism departures from Portugal, Italy, and the United Kingdom did not grow.^{4 5}

B. Macroeconomic Implications of Tourism Specialization

5. ***Small open economies specialized in tourism typically have little room to smooth out the effects of external shocks on economic activity.*** Most of them adopt relatively rigid

⁴ These three countries are the most important markets for Cape Verde and account for half of travel services exports.

⁵ See Annex for a list of comparative advantages.

exchange rate regimes (pegs or currency baskets) to reduce volatility of the exchange rate. As a result, the nominal exchange rate cannot absorb permanent exogenous shocks and restore external balance. The typically high public debt in HTBEs also narrows the fiscal space available, and their high openness means that fiscal policy is much less able to function counter-cyclically to smooth the impact of exogenous shocks. It follows from the high import leakage in wide-open economies that fiscal expansion will ultimately drain foreign reserves without any substantial influence on sustaining economic activity. Nevertheless, fiscal space and foreign reserves can play an important role in smoothing out the consumption of vulnerable groups by means of direct transfers and other safety net arrangements.

Table I.1. HTBE: Exchange Rate Regime and Openness Indicators, 2006

	Total Trade ¹	De facto exchange rate arrangement
Antigua and Barbuda	126.6	Currency board with the US dollar
Bahamas, The	111.7	Conventional peg with the US dollar
St. Lucia	121.7	Currency board with the US dollar
Fiji	117.2	Conventional peg to a currency basket
Samoa	87.8	Conventional peg to a currency basket
Malta	177.7	Conventional peg to the Euro
Cape Verde	111.1	Conventional peg to the Euro

Source: IMF, *World Economic Outlook* and *2007 Annual Report on Exchange Arrangements and Exchange Restrictions*.

¹ Trade in goods and services in percent of GDP.

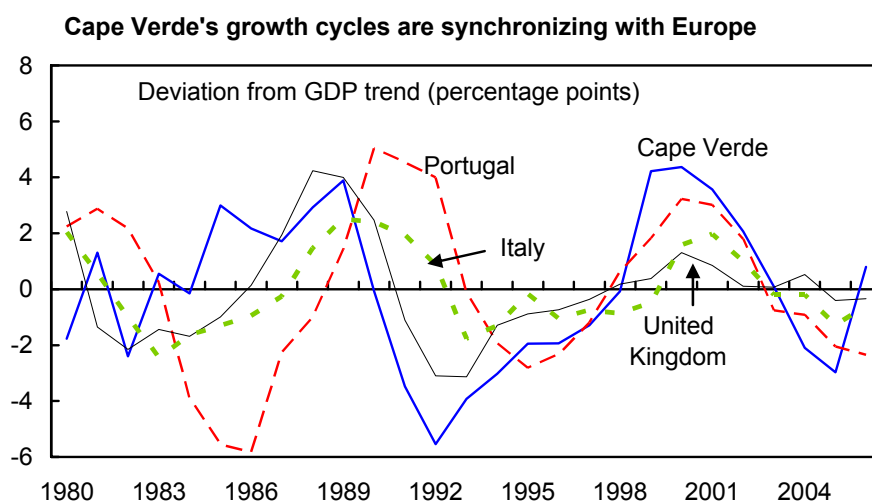
6. ***Specialization and greater openness pose the problem of higher output volatility***.⁶ Dependence on a single export means that shocks to demand for this product propagate through the entire economy. So far, because demand for tourism in Cape Verde has grown faster than supply, demand volatility has not been an issue. However, as tourism specialization progresses and the Cape Verdean economy becomes more exposed to international demand for tourism, output there will tend to become as volatile as in many other HTBEs—even though Cape Verde does not bear the risk of natural disasters that plague many HTBEs and add to their volatility.

7. ***Specialization in tourism coupled with the fact that the sector is not an enclave also raises challenges***. Specialization in tourism keeps the export base narrow and vulnerable to exogenous shocks. To the extent that the tourism sector maintains upstream linkages to the rest of the economy, a tourism shock propagates throughout the economy and affects all sectors. Such an economy can be understood as a single production chain funneled to produce tourism services. Because exogenous shocks in a single-chain economy are

⁶ Easterly and Kraay, 1999.

positively correlated for each link, the financial sector in an HBTE is generally more vulnerable than in a diversified economy. The positive correlation reduces the role of the financial sector in risk sharing and calls for strengthened prudential supervision. In contrast, if the upstream linkages of tourism are limited as an enclave sector, external vulnerability would be limited—but positive spillovers to the rest of the economy would also be limited. In the case of Cape Verde, the tourism sector does not seem to be developing as an enclave, as is evident from data showing that only 4 percent of tourist-days were spent in closed resorts and the rest were in hotels, inns, and tourist-owned residences.

8. ***The tourism sector in Cape Verde is becoming a channel for external shocks.*** The boom is contributing to the synchronization of growth cycles⁷ with those of tourism originator countries. Indeed, while until the 1990s Cape Verdean cycles used to lag behind European cycles, more recently the cycle is tightly tracking the growth cycles of major trading partners. Thus, as Cape Verde is more integrated into the world economy as a tourism service provider, it becomes more likely that economic circumstances outside Cape Verde will be passed through to the domestic economy.



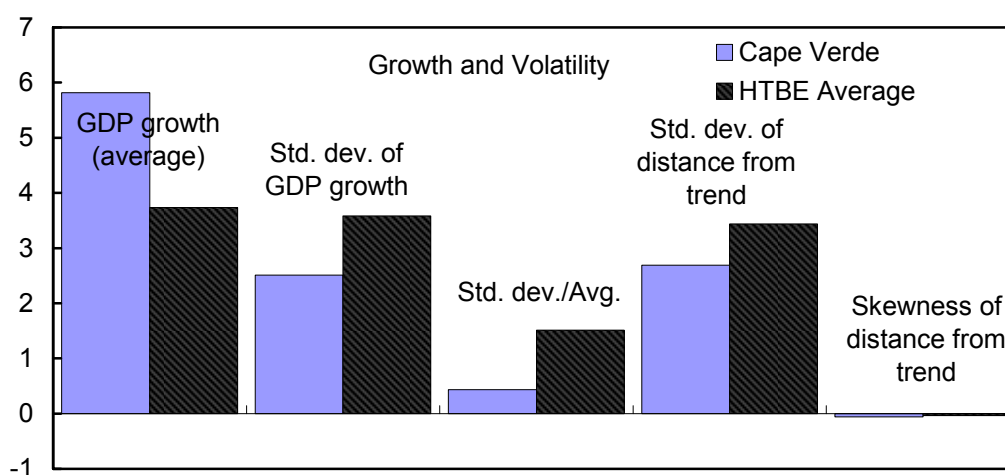
9. ***Because of the heightened exposure, output volatility is likely to grow in Cape Verde.*** Since the tourism sector does not seem to be becoming an enclave, as Cape Verde firmly joins the ranks of HTBEs, it will increasingly look more like one of them. Cross country evidence shows that HTBEs are more volatile than Cape Verde. GDP in Cape Verde has been growing relatively steadily for more than a decade, but GDP in HTBEs has historically been more volatile. Volatility in Cape Verde has been small even compared to the developed economies where tourists reside, suggesting that the lower volatility is not

⁷ Growth cycles are deviations of actual GDP from the long-run trend (see Cashin, 2004; and McDermott and Scott, 2000)

solely due to the fact that Cape Verde is not at risk of natural disaster. Its coefficient of variation, which indicates the proportion of the standard deviation to the average, is the smallest among both HTBEs and tourism originator countries.⁸

10. ***The institutional characteristics of Cape Verde compared to other HTBEs complicates its ability to absorb shocks even more and increases the potential for output volatility.*** Relative to other HTBEs, labor institutions and administered prices in Cape Verde, especially in the energy sector, are such that there is limited price and wage flexibility, which makes it difficult to adjust to exogenous shocks. Combined with the fact that the Cape Verde exchange rate regime is a peg, an exogenous shock is likely to wind up being absorbed by unemployment and real GDP. With limited room for both factor and goods markets to function as shock absorbers, real volatility will be inevitable.

Cape Verde's growth has been less volatile than HTBEs.



Source: IMF staff estimates.

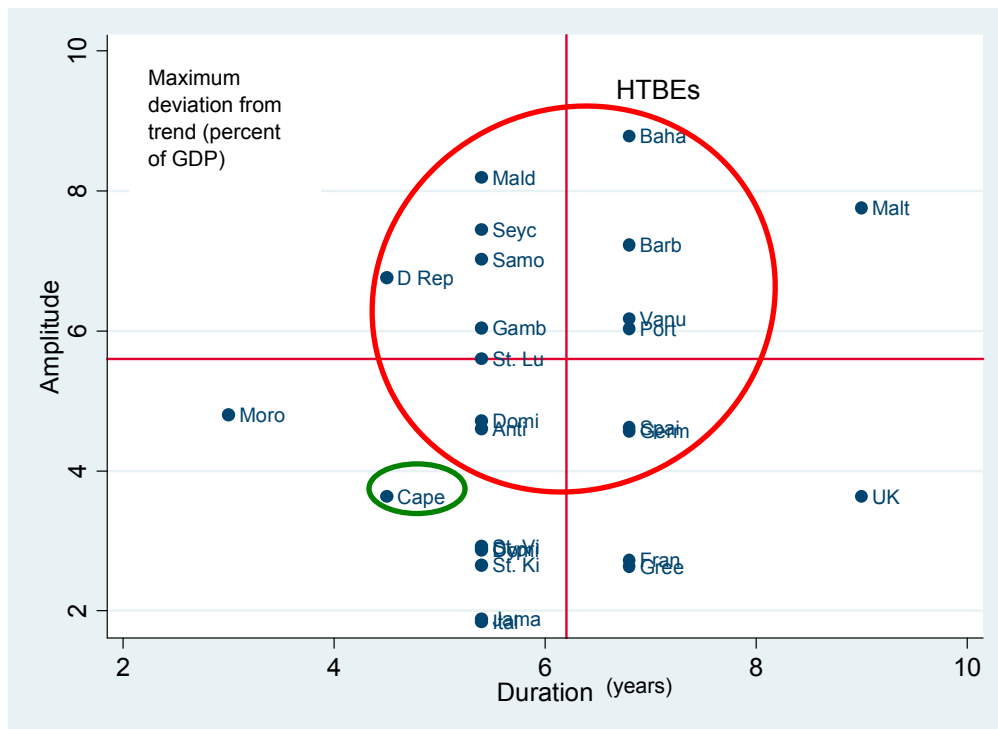
11. ***The increase in volatility and exposure to tourism will likely also imply an increase in the prominence of growth cycles in Cape Verde.*** Compared to other HTBEs, the country has historically had shallow and short growth cycles with quick reversion to trend,⁹ which suggests that previously the typical cycle in Cape Verde was relatively temporary and mild. However, this may change with the expansion of tourism because the amplitude of growth cycles in HTBEs is wider and the duration is longer. This suggests that, although tourism has generous and long-lasting benefits during the acceleration phase of the cycle, it may also bring difficult circumstances during the deceleration phase. The amplitude

⁸ Table I.2 provides country-specific indicators of volatility.

⁹ The trend is assumed to be a Hodrik-Prescott filtered series of annual log-GDP with a smoothing parameter (λ) equal to 100.

of cycles in HTBEs typically reaches more than 6 percentage points whereas that of the Cape Verdean cycle is below 4 percent. In addition, the duration of cycles in Cape Verde is one to two years shorter than in HTBEs. The fact that the skewness of deviation from trend is zero on average in HTBEs implies that natural disasters are not the cause of their higher volatility. Zero skewness indicates that the acceleration phase is generally symmetric to the deceleration phase, whereas natural disasters would be consistent with sharp decelerations and slow accelerations.

As Cape Verde becomes a HTBE, the amplitude and duration of growth cycles will increase



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- Cashin, Paul, 2004, “Caribbean Business Cycles,” IMF Working Paper 04/136 (Washington: International Monetary Fund).
- Easterly, William, and Aart Kraay, 1999, “Small States, Small Problems? Income, Growth, and Volatility in Small States,” World Bank Policy Research Working Paper Series 2139 (Washington: World Bank).
- McDermott, C. John, and Alasdair Scott, 2000, “Concordance in Business Cycles,” IMF Working Paper 00/37 (Washington: International Monetary Fund).

Table I.2. GDP growth rates and business cycles, 1980-2006

	Descriptive statistics of GDP growth rates			Descriptive statistics of deviations from GDP trend	
	Average GDP growth	Std. Dev. of GDP growth	Std.Dev/Avg. ratio	Std. Dev.	Skewness
HTBE average	3.7	3.6	1.5	3.4	0.0
Antigua and Barbuda	4.6	3.3	0.7	3.3	-0.1
Bahamas, The	2.2	2.8	1.3	3.7	-0.5
Barbados	1.2	3.1	2.6	3.7	0.2
Belize	6.2	5.6	0.9	6.9	0.1
Cape Verde	5.8	2.5	0.4	2.7	-0.1
Croatia	0.5	6.0	11.0	7.4	-0.7
Cyprus	4.8	2.3	0.5	1.8	0.6
Dominica	2.8	3.3	1.2	2.6	-0.5
Dominican Republic	4.2	3.8	0.9	3.5	0.1
Fiji	2.7	4.6	1.7	3.2	-0.9
Grenada	3.7	4.0	1.1	3.6	0.0
Jamaica	1.7	2.5	1.4	1.9	-0.1
Luxembourg	4.6	2.7	0.6	3.2	0.1
Maldives	7.3	4.6	0.6	4.0	0.0
Malta	3.3	2.5	0.7	2.7	0.0
Mauritius	4.8	3.6	0.7	3.4	0.9
Samoa	2.3	3.9	1.7	3.5	0.5
São Tomé & Príncipe	1.4	4.7	3.3	2.9	-0.2
Seychelles	2.9	4.6	1.6	4.5	0.2
Singapore	6.6	3.7	0.6	3.6	-0.2
St. Kitts and Nevis	4.4	2.7	0.6	2.4	-0.2
St. Lucia	4.1	3.9	1.0	3.6	-0.2
St. Vincent & Grens.	4.3	2.9	0.7	2.3	0.5
Tunisia	4.2	2.3	0.5	1.6	0.0
Vanuatu	2.6	3.8	1.4	3.9	-0.6
Comparator country average	2.5	2.2	0.9	2.2	0.3
Greece	2.1	2.2	1.0	1.5	0.1
Morocco	3.6	4.8	1.3	3.0	-0.1
France	2.1	1.1	0.6	1.4	0.5
Germany	2.3	3.2	1.4	3.3	0.9
Portugal	2.8	2.3	0.8	2.9	-0.2
Spain	3.0	1.6	0.6	2.1	0.4
United Kingdom	2.5	1.5	0.6	1.8	0.6
Italy	1.7	1.2	0.7	1.4	0.4

Source: WEO; and staff calculations.

Annex: Cape Verde's Comparative Advantage and Competitiveness in Tourism

Several country-specific factors together explain Cape Verde's comparative advantage in tourism:

- ***Convenient location for Europeans.*** The country is closer to Europe than the Caribbean, Indian, and Pacific Islands. Located in the sun belt, outside hurricane paths, it has warm weather throughout the year and is within a 5-hour flight from Europe and in the same time zone. Several regular flights from European capitals have been launched, the airport infrastructure has been upgraded, and a new international airport was opened on Boa Vista island.
- ***Good position to absorb the overflow of tourists from the Mediterranean.*** Cape Verde as the next frontier beyond the Mediterranean for European tourism is benefiting from the maturation of tourism markets in the Mediterranean, which are growing in tandem with Europe's GDP growth. It is an attractive alternative destination for European tourists seeking novelty in a largely unexplored island.
- ***Small size relative to competitors.*** When tourism began to develop in the late 1990s, the pace of growth was attributed to the low starting point relative to potential. However, more recently, as the starting point becomes farther behind, the potential itself is expanding. Because Cape Verde is small relative to Mediterranean markets, a marginal diversion of tourists from the Mediterranean is sufficient to expand demand in Cape Verde considerably.¹⁰
- ***A favorable sociopolitical scene.*** Cape Verde is a stable democracy with adherence to the rule of law, relatively little corruption¹¹ and safe urban areas,¹² and no violent internal or external conflicts. The population is relatively well educated and skilled in foreign languages, which helps raise the quality of tourism services.
- ***An economic environment compatible with tourism activity.*** The peg to the euro reduces exchange rate uncertainty for European tourists. Economic stability reduces risks for investors, increases expected returns, and attracts new investments in hotel facilities. Foreign investors that are headquartered in Europe advertise and sell tourism packages in Cape Verde, thereby creating demand for their own supply of tourism services there.

¹⁰ Travel services exports of Cape Verde in 2006 corresponded to only 0.5 percent of the sum of exports of Greece, Malta, Turkey, Tunisia, Morocco and Cyprus.

¹¹ Cape Verde ranks 3rd in the Transparency International 2007 Corruption Index in Africa and 49th worldwide.

¹² The police force has been reinforced recently, including to cope with problems posed by the repatriation of emigrants.

- ***Competitiveness of Cape Verdean tourism is helped by current labor market conditions.*** Unemployment rate is high (about 20 percent) and there is no strong wage indexation in Cape Verde. As a result, upward pressure in wages in the nontradable sector coming from large tourism inflows (Balassa-Samuelson effects) is likely to be moot. While the actual REER will rise, given the tourism boom so will the equilibrium REER.

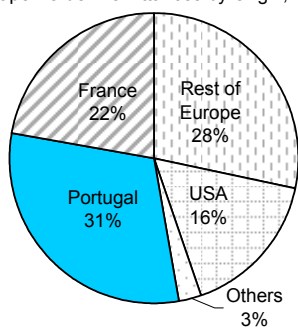
II. RIDING THE ECONOMIC CYCLE—ARE REMITTANCES A RELIABLE MACRO-SHOCK ABSORBER FOR CAPE VERDE? ¹

1. ***The changing structure of Cape Verde's balance of payments financing calls for a closer look at the volatility of remittances and their role as an absorber of economic shocks.*** Historically, remittances from the Cape Verdean diaspora have constituted a large share of external financing and have been comparatively less volatile than other foreign inflows, possibly due to preferential treatment of emigrant deposits. This chapter finds that compared to other external inflows, remittances continue to be a reliable source of foreign financing, but they are declining in importance. The chapter also shows that although in the past remittances may have played a role as a shock absorber, this influence seems to be gradually fading and remittances are becoming increasingly procyclical. This suggests that remittances may be progressively more motivated by portfolio investment considerations rather than altruistic motives related to smoothing the consumption of relatives, which would reduce their effectiveness as shock absorbers.² Like Chapter I, the results in this chapter underscore the need for Cape Verde to build large buffers for foreign reserves and fiscal space to enhance the economy's resilience against shocks.

A. Cape Verde: Stylized Facts about Remittances

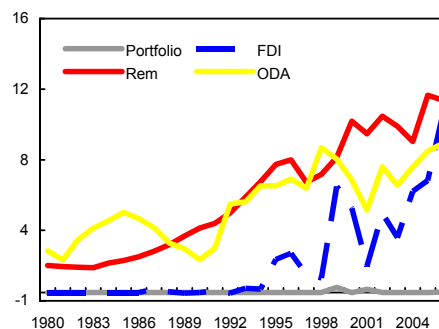
2. ***Over the years remittances have helped to finance the current account deficit .*** They have increased at an annual average of 10.3 percent for the last 20 years. In the mid-1990s, remittances were the largest source of foreign financing. A stable and credible exchange rate peg, the relaxation of exchange controls on the purchase and sale of foreign currencies, together with a strengthened financial system have all helped in encouraging remittances through formal channels.

Cape Verde: Remittances by Origin, 2007



Source: National authorities and IMF.

Cape Verde: Sources of Foreign Financing, 1980 - 2007
(billions of CV Escudos)

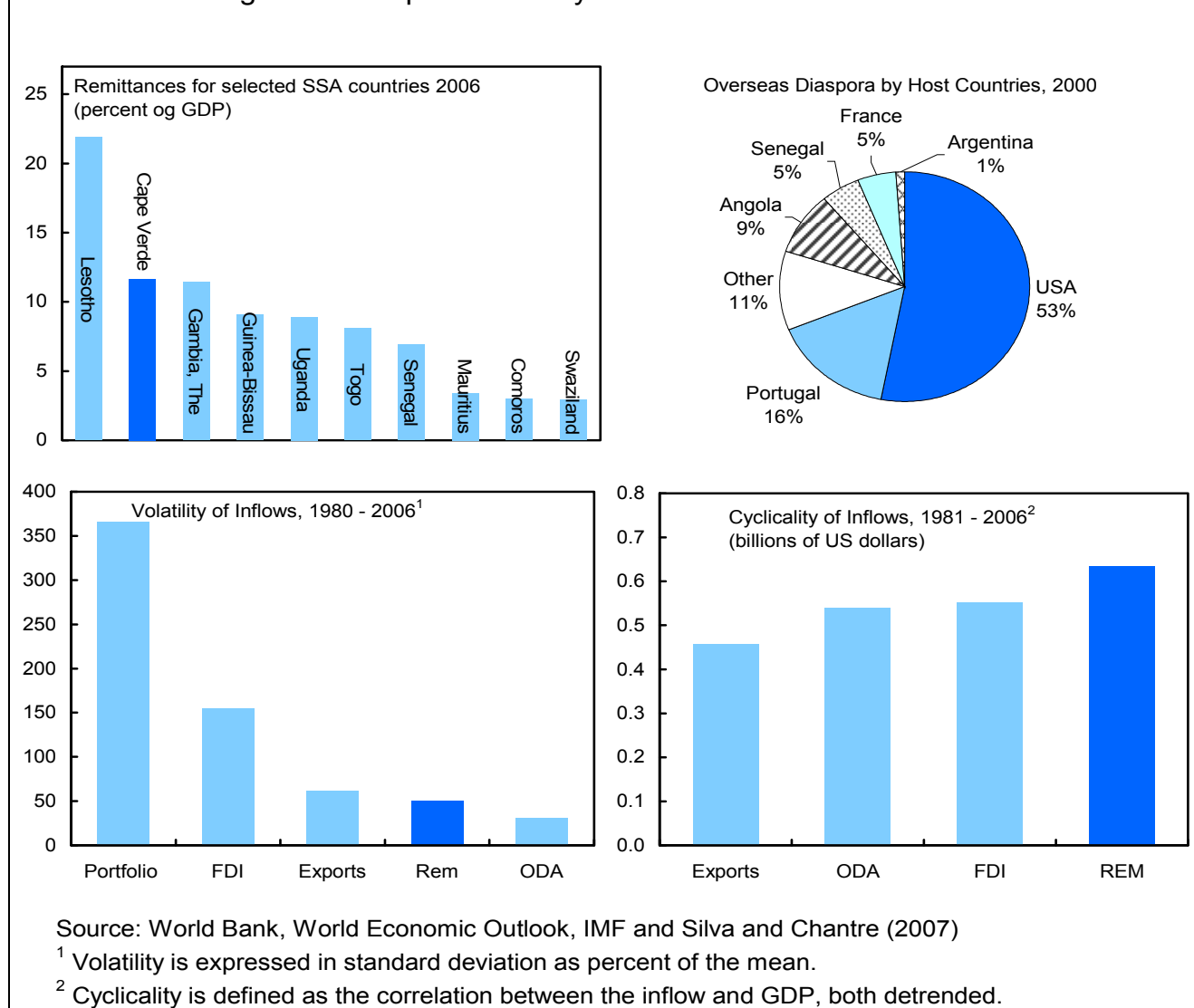


¹ Prepared by Amar Shanghavi, with assistance from team members.

² Remittances that are motivated by altruism should be negatively correlated to income and act as a shock absorber, smoothing out home country income. Remittances that are motivated by portfolio considerations are likely to be positively correlated with the home country business cycle and function less as a shock absorber.

3. *As a result, Cape Verde is one of the top recipients of remittances in sub-Saharan Africa.* In 2006, its remittances-to-GDP ratio was second only to Lesotho (22 percent of GDP) (Figure II.1). About 500,000 Cape Verdeans work abroad—more than the country's resident population of about 490,000.³ Those working in Portugal, France, and the USA accounted for about 70 percent of total remittances in 2007. Although the US share of the Cape Verdean diaspora is about 50 percent, its share of remittances is significantly smaller (16 percent) because those in the United States are often fourth and fifth-generation, with decreasing identification and social allegiance to Cape Verde.

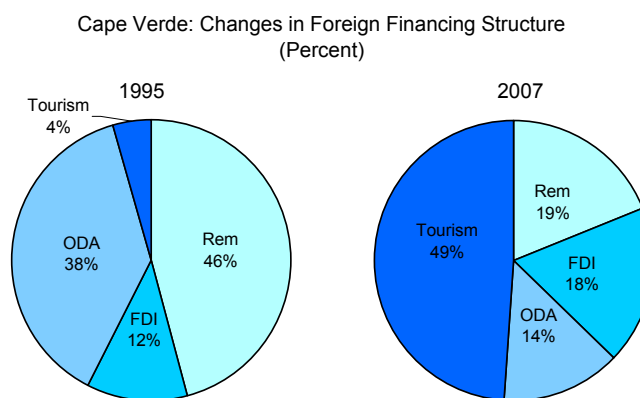
Figure II.1. Cape Verde: Stylized Facts About Remittances



³ Silva and Chantre (2007).

4. ***Compared to other inflows, remittances are a reliable source of foreign financing.*** They are less volatile than FDI and exports and only slightly more volatile than ODA (Fig. II.1)—unlike the patterns observed for global aggregates (IMF, 2005), where both FDI and ODA are reported to be generally more volatile.

5. ***However, remittances are gradually declining in importance.*** Remittances as a share of total foreign financing fell from 46 percent in 1995 to 19 percent in 2007. They are expected to decline further because the National Institute of Statistics (INE) projects that the emigrant population as a share of local population will fall by 45 percent, and remittances per emigrant are expected to decline. The increasing opportunities in Cape Verde are relieving pressures for emigration, and the continued growth in income is reducing the need for emigrants to supplement the earnings of their relatives in Cape Verde.



Source: World Economic Outlook and National authorities.

B. The Role of Remittances

6. ***Traditionally, remittances have been found to insure against external shocks and often help households smooth their consumption.*** According to Gupta (2005), remittances are used more to finance private consumption than investment, and do not respond to relative rates of return on investment in the home country. Additionally, remittances reduce the vulnerability of economies to shocks like natural disasters, and thus play a countercyclical role.

7. ***More recent studies provide mixed evidence on the cyclicity of remittances.*** The *World Economic Outlook* (IMF, 2005) concludes that de-trended remittances and de-trended global GDP are procyclical. Giuliano and Ruiz-Arranz (2005) show that, using a similar approach country by country, remittances in two-thirds of the countries studied are procyclical and one-third are countercyclical.

8. ***The impact of remittances on the home country's economy depends on two opposite forces: their positive effect on domestic demand and their negative effect on labor supply.*** Remittances may both help boost domestic demand by increasing family consumption or, if they are invested in productive assets, add to domestic growth. Using household-level evidence, Chamon (2005) finds that the main expenditures financed by remittances tend to be education, agricultural investments, self-employment activities, and real estate purchases, all of which boost the domestic economy. However, remittances could

undermine growth in the long run by reducing labor force participation owing to high reservation wages.⁴

9. ***Studies of the determinants of emigrant deposits and remittances in Cape Verde have also produced mixed results.*** The IMF (1996) report indicates that remittances smooth consumption, and also respond to exchange rate changes and preferential interest rate returns. Smoothing consumption of relatives is an altruistic motive, while responding to exchange and interest rates reflects an investment motive. Karpowicz (2006) concludes that, while emigrant flows from Europe are largely driven by altruistic motives, those from the United States are partly driven by returns on investment in Cape Verde.

10. ***The evidence that remittances undermine external competitiveness by inducing Dutch disease is weak.*** The majority of the studies find no evidence of a Dutch disease effect. In fact, the incipient Dutch disease effect of remittances may be self-correcting, because an overvalued currency deters it, so that Dutch disease effects are not sustained. Although there is some evidence that an appreciating real effective exchange rate in Cape Verde could be attributed to Dutch disease, the exchange rate has been generally in line with fundamentals. For Cape Verde, simultaneity bias may cause a spurious correlation between remittances and appreciation if remittances are indeed procyclical. Moreover, since the non-tradable sector is very shallow, it is unlikely to have an impact on tradable sector wages, which are highly concentrated in the services sector.

C. Empirical Analysis of Remittances to Cape Verde

11. ***The analysis below suggests overall that remittances to Cape Verde are becoming increasingly procyclical, thus reducing their role as shock absorber.*** Remittances and GDP, de-trended by the Hodrick-Prescott filter, shows a correlation of almost 70 percent for 1980–2006 (Figure II.2). In the early 1980s, remittances were largely motivated by altruistic reasons. Indeed, real interest rates were negative in the first half of the 1980s (inflation was higher than the nominal interest rate of 6.5 percent). However, the considerable increase in remittances a decade later may to a large extent have been motivated by investment purposes. After the mid-1990s, returns on deposits increased as special deposit accounts for emigrant remittances were created that earned 1 to 3 percentage points more than resident deposits. Moreover, the country's risk premium declined as policy credibility improved significantly under the exchange rate peg to the Euro and investor confidence was considerably enhanced.

12. ***Correlation analysis shows that remittances respond in several ways with macroeconomic variables in both home and emigrant host countries.*** There is a strong positive correlation between remittance receipts and the GDP of worker host countries

⁴ High reservation wages may be one of the causes of high structural unemployment in Cape Verde.

(Figure II.2). However, the relationship of remittances and the exchange rate is less clear. This may reflect two offsetting factors. Depreciation of the real exchange rate allows emigrants to provide for their relatives more easily, increasing incentives to do so. On the other hand, fewer remittances are needed to cover the consumption needs of relatives in Cape Verde once the escudo depreciates. The correlation between the interest rate differential and remittances is also less clear cut.

13. *The evidence from both our estimated time series error correction and panel data models generally suggests that remittances are becoming increasingly procyclical in Cape Verde (Table II.1 and II.2).*⁵ Specifically,

- At the aggregate level, remittances increase when Cape Verde's GDP increases. Based on both time series and pooled estimates, we find that a one percent increase in the growth of real GDP in Cape Verde will increase remittances between 2.5 and 9 percent. The panel data results also suggest that remittances are to some extent interest sensitive: remittances rise when the differential between domestic and foreign interest rates increases suggesting possibly portfolio investment motivation.⁶
- However, both the time series error correction and panel data regression analysis suggest that the procyclicality result for remittances varies across the main emigrant host countries. For the USA, remittances seem mainly motivated by investment reasons, and tend to increase when growth prospects and economic conditions in Cape Verde improve. The strength of procyclicality results for the USA could reflect the fact that emigrants to that country are typically fourth and fifth generations with less altruistic motive, which weakens consumption smoothing consideration. In contrast, the procyclicality results are not so strong for countries in Europe, where altruistic motives could still be playing some role.

⁵ See Annex on statistical analysis and data sources. One lag was used in order to preserve degrees of freedom.

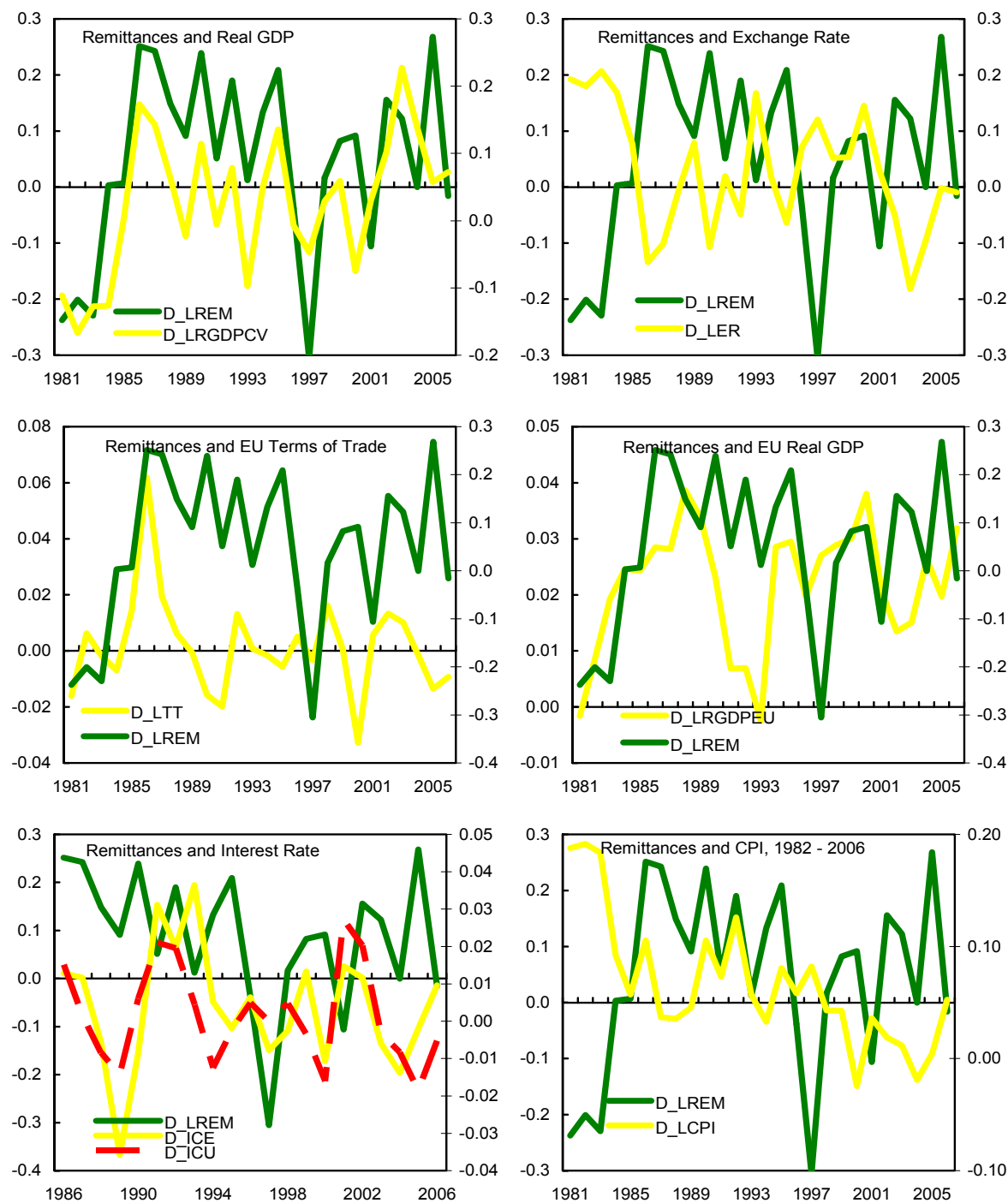
⁶ Procyclicality could also reflect the fact that growth cycles in Cape Verde are highly synchronized with cycles in the Euro area (see Chapter I).

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Annex: Statistical Analysis and Data Sources

Figure II.2. Cape Verde: Correlations of Remittances and Macroeconomic Variables, 1981-2006
(In log differences)



Source: World Economic Outlook and IMF.

To test the robustness of our correlation analysis, we estimated an error correction model for Cape Verde, because most variables are non-stationary and may be cointegrated to determine how remittances respond to shocks in macroeconomic variables (Table II.1). Several models were tested for quarterly data for 1999–2007.⁷ Remittances are measured in Cape Verdian Escudos and are in levels except for France, for which they are in year on year changes (*ln_remt*, *ln_remeu*, *ln_rempr*, *gremfr*, *ln_remus*). Potential shock variables included in the model are real GDP growth in the emigrant home country (*ggdpcv*), the real effective exchange rate in Cape Verde (*ln_reer*), and real GDP in the emigrant host country (*ln_gdpeu*, *ln_lgdpr*, *ln_gdpfr*, *ln_gdpus*). The second model looks at total remittances, macro fundamentals of the home country, and EU GDP (since more than 80 percent of Cape Verde's remittances come from the EU);⁸ the third, fourth, and fifth models try to disaggregate the behavior of remittances from the USA, France, and Portugal (the largest remitters). All variables are in logs except for growth rates.

Table II.1. Cape Verde: Error Correction Model of Remittances
1999Q1 - 2007Q4

	<i>ln_remt</i> (1)	<i>ln_remeu</i> (2)	<i>ln_rempr</i> (3)	<i>gremfr</i> (4)	<i>ln_remus</i> (5)
<i>ggdpcv</i>	3.79 ** (0.80)	2.49 ** (1.13)	1.61 (1.44)	2.10 ** (0.82)	12.62 ** (2.79)
<i>ln_reer</i>	1.66 (1.01)	1.40 (0.99)	1.85 (1.84)	-6.33 ** (1.01)	-19.29 ** (3.56)
<i>ln_gdpeu</i>		2.85 (2.02)			
Constant	0.01	1.23	-46.18	55.23	169.38
ECM	-0.966 ** (0.25)	-0.874 ** (0.25)	-0.688 ** (0.21)	-0.970 ** (0.41)	-0.080 (0.13)
R-square	0.43	0.42	0.45	0.67	0.20
Number Obs.	30	30	30	30	30

Rejection at *** 1 and ** 5 percent.

In addition, we estimated a pooled data model using annual data for the period 1990–2007 (Table II.2). The sample includes eight largest remitters to Cape Verde⁹ which make up more than 85 percent of the total share of remittances. Remittances are measured in natural logs of millions of escudos (*ln_rem*). While the main explanatory variables are real GDP growth in home (*rgdph*) and foreign country (*rgdpf*), the relative real effective exchange rates (*reer*),

⁷ Annual data was interpolated using E-Views.

⁸ Model 1 includes only the fundamentals of Cape Verde as explanatory variables to test for robustness against multicollinearity between home and foreign GDP. The coefficient on Cape Verde GDP remains relatively stable.

⁹ Switzerland, France, Germany, Italy, Netherlands, Portugal, UK and the USA.

and the differential between domestic and foreign interest rates differential (*int_d*), all in percent. To account for endogeneity in the model between remittances and home country GDP, two stage least square is carried out, with GDP growth in home country as the instrumental variable.

Table II.2 Cape Verde: Pooled Estimates of Remittances
1990 - 2007

	FE	FE 2SLS
	(1)	(2)
rgdph	5.44 ***	9.06 ***
rgdpf	0.03	0.44
reer	-0.01	0.00
int_d	4.47 ***	3.55 ***
constant	5.85 ***	5.60 ***
sigma_u	1.03	1.04
sigma_e	0.38	0.38
rho	0.88	0.88
R2 (fixed)	0.35	0.26
Number Obs.	141	134

Rejection at *** 1, ** 5, and * 10 percent.

Table II.3. Cape Verde: Augmented Dickey Fuller Test for Nonstationarity

	Level			First Difference		
	t-ADF	Lags ¹	Model ²	t-ADF	Lags ¹	Model ²
ln_remt	-4.03 **	5	1	-4.62 ***	6	2
ln_remus	-3.89 **	0	1	-6.48 ***	1	2
ln_rempr	-4.30 ***	5	1			
ln_remeu	-2.75	5	1	-2.66 *	6	2
gremfr	-3.43 **	7	1	-7.11 ***	1	2
ggdpcv	-1.92	5	2	-3.10 ***	3	3
ln_gdpeu	-3.78 **	5	1	-3.24 **	0	2
ln_gdppr	-3.07	0	1	-5.85 ***	0	2
ln_gdpus	-1.93	0	1	-5.42 ***	0	2
ln_gdpfr	-3.07	0	1	-5.85 ***	0	2
ln_reer	-2.15	0	2	-5.85 ***	0	3

Rejection at *** 1, ** 5 percent, and * 10 percent.

¹ Akaike criterion was used to select the lag length.

² Model 1 includes trend and intercept; Model 2 includes intercept and no trend; Model 3 includes no trend and no intercept.

Table II.4. Cape Verde: Cointegration Test

Hypothesized Number of Cointegration Vector(s)	Trace Statistic	Maximum Eigenvalue Statistic	Hypothesized Number of Cointegration Vector(s)	Trace Statistic	Maximum Eigenvalue Statistic
Model 1			Model 2		
None	41.0 ***	24.3 ***	None	71.6 ***	29.0
At most 1	16.6 ***	12.3	At most 1	42.6	22.3
At most 2	4.3 ***	4.3	At most 2	20.4	13.6
			At most 3	6.7	6.7
Model 3			Model 4		
None	49.6 **	21.6	None	48.0 **	26.3
At most 1	28.1	16.2	At most 1	21.6	14.5
At most 2	11.8	11.6	At most 2	7.1	5.4
At most 3	0.3	0.3	At most 3	1.7	1.7
Model 5					
None	54.8 ***	26.0			
At most 1	28.8	17.3			
At most 2	11.5	9.8			
At most 3	1.6	1.6			

Rejection at *** 1 and ** 5 percent.

Table II. 5. Data sources for the error correction estimates

Variables	Units/Scale/Frequency	Source
Log of total remittances (<i>ln_remt</i>)	CVEsc millions, Q	National authorities
Log of Portuguese remittances (<i>ln_rempr</i>)	CVEsc millions, Q	National authorities
Log of US remittances (<i>ln_remus</i>)	CVEsc millions, Q	National authorities
Growth of France remittances (<i>gremfr</i>)	CVEsc millions, Q	National authorities
Growth of real GDP in Cape Verde (<i>ggdpcv</i>)	CVEsc millions, A	National authorities
Log of real GDP in the EU (<i>ln_gdpeu</i>)	€ billions, Q	IMF, World Economic Outlook
Log of real GDP in the US (<i>ln_gdpus</i>)	US\$ billions, Q	IMF, World Economic Outlook
Log of real GDP in France (<i>ln_gdpfr</i>)	€ billions, Q	IMF, World Economic Outlook
Log of real GDP in Portugal (<i>ln_gdppr</i>)	€ billions, Q	IMF, World Economic Outlook
Log of the real effective exchange rate (<i>ln_reer</i>)	Index, Q	IMF, International Financial Statistics

Table II.6. Data source for pooled estimates

Variables	Units/Scale/Frequency	Source
Log of remittances (<i>ln_rem</i>)	CVEsc millions, A	National authorities
GDP growth in home country (<i>rgdph</i>)	percent, none, A	WEO
GDP growth in foreign country (<i>rgdpf</i>)	percent, none, A	WEO
Ratio of foreign and domestic growth rates of the REER (<i>reer</i>)	percent, none, A	Information Notice System, IMF
Interest rate differential (<i>int_d</i>)	percent, none, A	See sources below ¹

¹ Cape Verde's national authorities, 3 month T-bill rate (1999-07) and deposit rate (1990-1998). Germany, Italy, Netherlands, United Kingdom, and France – DataStream, interbank 3 month rate. Series codes FIBOR3M, ITIBK3M, AIBOR3M, LDNIB3M, PIBOR3M respectively. Portugal – IMF, government bond yield. USA – DataStream, 3 month T-bill rate. Series code USTBL3M. Switzerland – DataStream, 3 month LIBOR. Series code SWSNBLB.