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Senegal: Selected Issues

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SENEGAL

Selected Issues

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Approved by the African Department

May 30, 2008

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I. SENEGAL—ASSESSMENT OF THE REER AND EXTERNAL COMPETITIVENESS[1]

A. Introduction

1. **Senegal's export performance has been far from impressive in recent years.** The country has steadily lost its share in world export markets, and its net exports have contributed negatively to economic growth. Exports are not well diversified, mainly from the primary sector, and concentrated in products that have experienced below-average growth in volumes compared to world exports. These developments point toward a problem with external competitiveness and raise questions about the appropriateness of the real effective exchange rate (REER) and Senegal's business environment.

2. **This chapter analyzes Senegal's REER and external competitiveness.**[2] A REER significantly above its equilibrium, as determined by economic fundamentals, can impede a country's external competitiveness, calling for corrective macroeconomic measures. In the same vein, structural impediments in the economy, mainly with respect to the business environment, could hamper external competitiveness and depress export performance, which would require structural reforms to induce a diversification of exports into more promising areas.

3. **This chapter finds no conclusive evidence of a REER overvaluation, implying that structural reforms are key to improving Senegal's external competitiveness.** The recent REER appreciation may nevertheless reflect rising production costs, which can be addressed through business environment reforms. Structural performance indicators suggest that substantial barriers to private sector development hinder Senegal's external competitiveness. Reforms should focus on improving infrastructure, education, the provision of health services, the legal, regulatory, and administrative framework, labor markets, financial sector intermediation, and governance.

4. **The remainder of the chapter is structured as follows.** Senegal's export performance is described in Section B. Section C describes developments of the REER, followed by an empirical analysis of the equilibrium REER in Section D, which applies a variety of econometric techniques with the fundamental real exchange rate approach and the macroeconomic balance approach. Structural measures of competitiveness are illustrated in Section E, followed by a concluding Section F with policy recommendations.

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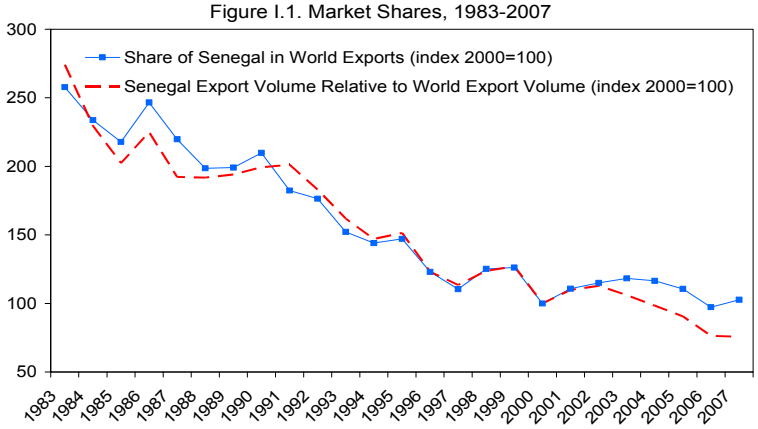
[1] Prepared by Pritha Mitra (PDR).

[2] A country's external competitiveness is not only reflected in its export performance but also the ability of domestically produced products to compete with imports. Due to insufficient data on the performance of Senegalese products in relation to imports, only export performance is discussed in this chapter.

B. Senegal's Export Performance

5. **Senegal's export sector performed poorly over the last two decades** (Figure I.1). Strikingly, its share in world exports has been steadily eroding in both value and volume, with the 1994 CFA franc devaluation halting this process only briefly. In volume terms, Senegal's share of world exports was almost 80 percentage points lower in 2007 than in 1995.

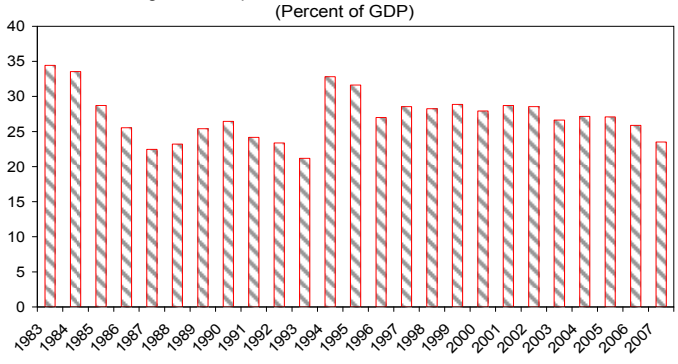
Figure I.1. Market Shares, 1983-2007



Sources: IMF staff estimates and UN Comtrade.

6. **The 1994 CFA franc devaluation did not have a lasting effect on raising export performance** (Figure I.2). This illustrates the limited scope of an exchange rate adjustment in boosting exports, if underlying structural obstacles continue to hamper business activity. At present, exports are only 5 percent of GDP higher than they were in 1993, prior to the devaluation. While the devaluation boosted exports by over 10 percent of GDP initially, about half of this increase dissipated over the following years.

Figure I.2. Export of Goods and Services, 1983-2007
(Percent of GDP)



Sources: IMF staff estimates.

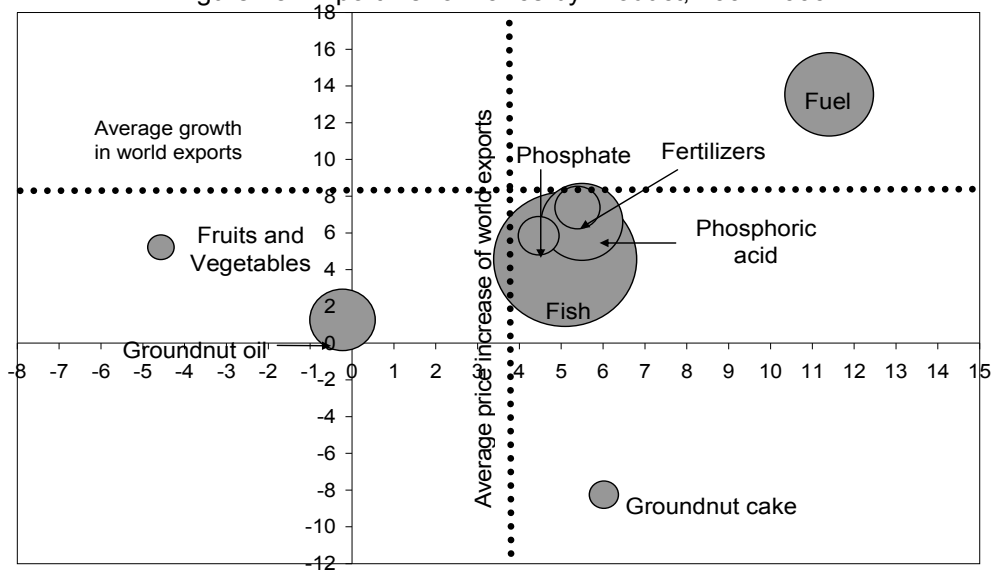
7. **Senegal's exports are concentrated in products with below-average volume increases relative to world exports.** Figure I.3 compares the volume and price growth of Senegal's exports with that of world exports. The conclusions are striking:

- None of Senegal's main exports appear in the upper right-hand quadrant which shows the most competitive exports—i.e., those that have high market and price growth relative to world exports. Only fuel products appear in that category, but they represent re-exports of refined petroleum to Mali—and faced some supply-side difficulties, as discussed below.

- Fish and phosphate exports benefited from price increases above world exports, but faced difficulties since their market growth is below that of average global exports. The situation for phosphoric acid appears to have improved since late 2007, with rising prices and demand.[3]

- In contrast, groundnut oil exports (6 percent of total exports—Figure I.4) are even worse off, with below average price and market growth relative to global exports. The groundnut sector employs about half of the population.

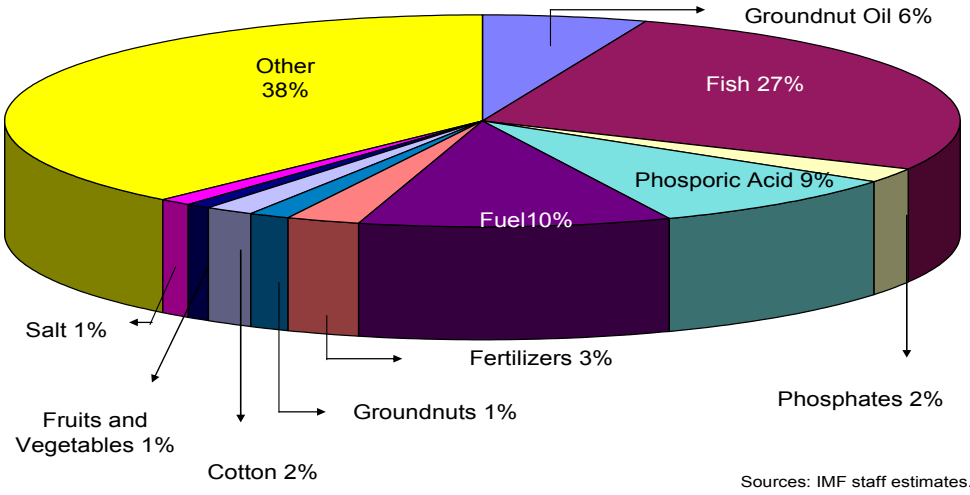
Figure I.3. Export Performance by Product, 1994-2006



Sources: IMF staff estimates and UN Comtrade.

[3] Senegalese phosphate products currently do not compete in world export markets. ICS, the main producer of phosphate products, is contracted to export close to its entire current production to India. With the expansion of ICS's operations in 2008, an increasingly large share of ICS's output may be sold in the world markets, allowing it to benefit from the current surge in world phosphate prices.

Figure I.4. Exports by Products, 1994-2007
(Percent of total exports of goods)



Sources: IMF staff estimates.

8. **Recent supply-side difficulties have hampered exports but are being overcome.**

- Production of refined fuel, one of Senegal's few exports in high-demand markets, practically came to a halt during 2006–07 due to the financial difficulties faced by SAR, the state-owned petroleum company. However, SAR's prospects are improving and production has resumed.
- Senegal's main producer of phosphate products, ICS, also faced serious financial difficulties during 2005–07 and is now in the process of recapitalization and restructuring. Production, which plummeted to one-third of capacity in 2006–07, is expected to pick up in the second half of 2008, reaching capacity by 2010.
- Given the change in ocean currents and over-fishing, the supply of fish in easily attainable waters is rapidly declining. In addition, improvements in boats and equipment are needed to maintain exports are their current level.

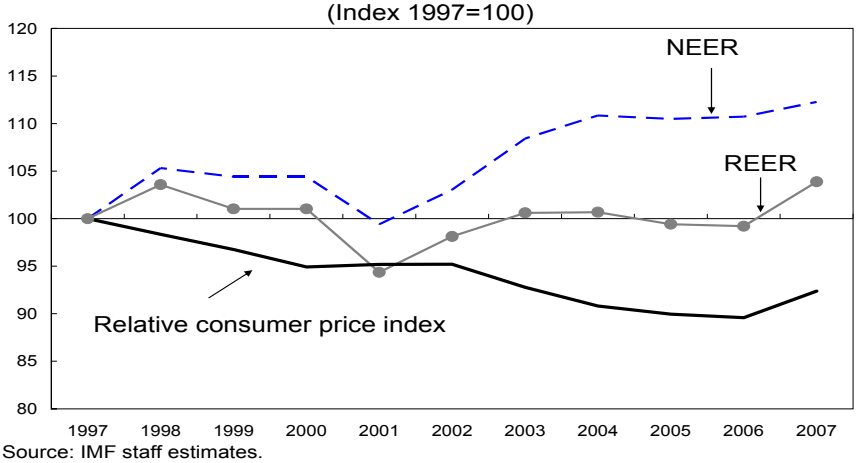
C. Developments of the REER

9. **Senegal's REER has been broadly stable since the 1994 devaluation but appreciated somewhat since 2001** (Figures I.5 and I.6). As a result, its exports have become relatively more expensive on world markets. This appreciation has been driven by the appreciation of the euro, to which the CFA franc is pegged. Rising prices and production costs in Senegal relative to its major trading partners have also contributed to the REER appreciation:

- The REER based on consumer price indices (CPI) has appreciated by over 10 percent since 2001. Half of that appreciation has been the consequence of recent surges in food and energy prices.

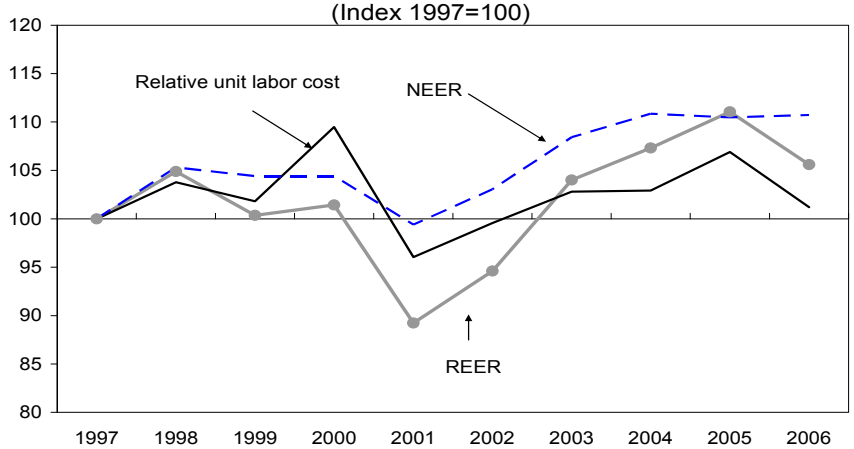
- The REER based on unit labor costs (ULC) shows an even greater appreciation of more than 20 percent since 2001, owing to rapidly rising Senegalese labor costs. In recent years, the shortage of high-skilled labor, especially expatriates, has resulted in large increases of private sector salaries.[4]
- The CPI-based REER is applied in the empirical analysis of this chapter, as it has a sufficiently long time series. The short time series of the ULC-based REER precludes its application in econometric analysis.

Figure I.5. Consumer price index-based REER
(Index 1997=100)



Source: IMF staff estimates.

Figure I.6. Senegal: Unit labor cost-based REER
(Index 1997=100)



Sources: World Bank; IMF estimates.

10. **The actual extent of REER appreciation is likely to lie somewhere between the CPI-based REER and the ULC-based REER.** The CPI-based REER may understate the

[4] World Bank (2007b) provides more details. Recently, the demand for expatriate and other high-skilled workers has exceeded the supply. The subsequent growth in their wages (estimated at more than 25 percent per annum) exceeds the relative productivity gains, pushing up unit labor costs.

growing cost of Senegal's exports, since (i) consumer prices include the price of imported final goods which are unrelated to domestically produced goods; and (ii) controls on some utility and transport prices included in the CPI understate the cost of production in Senegal. On the other hand, the ULC-based REER may overstate the extent of REER appreciation, since labor costs are not the only costs of production.

D. Empirical Analysis of the Equilibrium REER

11. **Comparisons of the actual REER with its equilibrium level may help identify macroeconomic imbalances.** The equilibrium REER is one in which the economy is both in internal balance—low unemployment and low inflation—and external balance—defined as a sustainable long-term current account position.[5] If a country faces a persistently high unemployment rate, or a persistently high current account deficit, a REER adjustment—through nominal exchange rate depreciation or subdued wage growth—is needed to restore the equilibrium. The fundamental equilibrium exchange rate (FEER) approach and the macroeconomic balance approach are applied to assess whether Senegal's REER is overvalued relative to its equilibrium value.

FEER approach

12. **The FEER approach assumes the equilibrium REER is a function of its fundamental determinants: the terms of trade, productivity, and investment.** Openness and government consumption are also commonly applied fundamentals in the FEER analysis. For Senegal, these two variables turn out to be not quantitatively significant in estimating the equilibrium exchange rate and are excluded from the analysis. They may not be significant because of strong indirect effects on the REER. For example, openness may impact the REER through the terms of trade, and government consumption through productivity and government investment.

13. **The expected relationships between the variables is as follows:**

- The REER and terms of trade are expected to be positively correlated. An increase in the terms of trade corresponds to increased demand and increased relative prices for domestically produced goods, resulting in a higher REER.
- Productivity, a measure of technological progress proxied by real GDP per capita in Senegal relative to its trading partners, is also expected to be positively correlated with the REER. An increase in productivity raises relative wages, and thus relative prices, increasing the REER.

[5] This concept of equilibrium REER for developing countries is based on the fundamental equilibrium real exchange rate framework of Edwards (1989) and Williamson (1994) where internal equilibrium is defined as the present and future clearing of the nontradable market.

- Investment, defined as the sum of private and public investment as a share of GDP, is expected to be negatively correlated with the REER. Given that Senegal has a high import content in investment, higher investment will increase import consumption, decreasing the REER.

14. **The model is estimated by applying four econometric estimation techniques.** These are the Autoregressive Distributed Lag (ARDL), Johansen, fully-modified ordinary least squares (FMOLS), and pooled mean group (PMG) approaches.[6] Their specific features are as follows:

- The *ARDL* and *Johansen* approaches estimate the equilibrium exchange rate based on time series data for Senegal. While the Johansen method is the classic approach for determining long-run relationships, it requires that all variables are integrated of order one. The ARDL approach, however, is independent of individual variables' order of integration. Small-sample performance of the ARDL bounds testing approach has been shown to be superior to the conventional Johansen approach.
- The *FMOLS* and *PMG* approaches estimate the equilibrium exchange rate for Senegal using information from panel data for all WAEMU countries. This allows for greater estimation precision, but the estimation results may be misleading to the extent that Senegal is different from other WAEMU countries. The model was estimated on annual data for the natural logs of the REER and its fundamentals over the period 1970–2007.[7] The panel includes the corresponding data for all WAEMU countries.

15. **The estimation results confirm the expected relationship between Senegal's REER and its fundamentals** (Table I.1).[8] Improvements in productivity and the terms of trade appreciate the REER while increased investment depreciates it.

[6] See Pesaran, et al. (2001) for details on the ARDL, and Johansen (1988, 1991, 1995) on the Johansen approach. Pedroni (2000) describes the FMOLS approach. The PMG approach is explained in Pesaran, et al. (1999).

[7] All variables have a unit root applying the Augmented Dickey-Fuller unit root test at the 1 percent level. The bounds test for a level long run relationship in the ARDL model was significant at the 5 percent critical value band tabulated in Pesaren, et al. (2001). The Johansen cointegration method finds one cointegrating vector, implying the existence of one long-run relationship.

[8] The FEER estimation approach is based on applications of this approach to WAEMU countries in Roudet, et al. (2007). The results are broadly consistent with their analysis.

Table I.1: FEER Parameter Estimation Results

	ARDL		Johansen		FMOLS		PMG	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
Constant	0.99	…	-0.97	…	4.01	…	5.55	…
Terms of Trade	0.83	3.43	1.28	9.06	0.32	5.03	0.23	1.62
Productivity	1.05	5.77	0.92	9.31	0.44	9.19	0.76	4.11
Investment	-0.03	-0.23	-0.07	-1.25	-0.19	-5.67	-0.58	-4.79

Sources: IMF staff calculations.

16. **The FEER approach does not provide conclusive evidence of an overvaluation.** The equilibrium REER for each year in the sample is calculated by fitting long-run values of each of the fundamentals to the parameter estimates from each estimation method.[9] The resulting deviation bounds, showing the maximum percent deviation of the actual REER from the equilibrium REER under the different econometric techniques,[10] are relatively large, albeit smaller in the post-1994 devaluation period (Figures I.7 and I.8):[11, 12]

- *Prior to the 1994 devaluation*, Senegal's REER experienced a substantial overvaluation of between +15 percent and +75 percent.
- *Immediately after the devaluation*, the deviation is estimated at between -15 percent to -45 percent.
- *Over the last decade*, the deviation of the actual REER from its equilibrium has been relatively small. The deviation bounds do not provide conclusive evidence of an over- or undervaluation of the REER.[13]
- *During 2007*, this trend continued, since the estimated deviation of the REER from its equilibrium ranged between -10 percent and +15 percent.[14]

[9] Long-run fundamental values are approximated by taking a three-year moving average of each variable.

[10] The results from each estimation technique are generally equally relevant. However, the Johansen approach's inferior small-sample performance relative to the ARDL approach (see paragraph 14) may justify placing a smaller weight on its results. This would not change the deviation bounds.

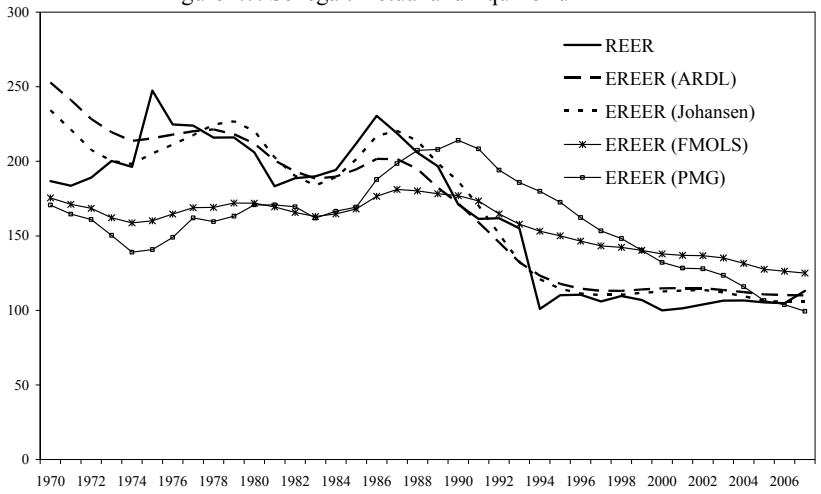
[11] The deviation bounds do not take into account the statistical uncertainty surrounding the point estimates underlying this maximum deviation.

[12] Given the small sample, data inconsistencies, and low frequency of the data, these econometric results must be used with caution. Alternative estimation techniques and models may yield different conclusions.

[13] Estimations which include a dummy for the 1994 devaluation yield similar results.

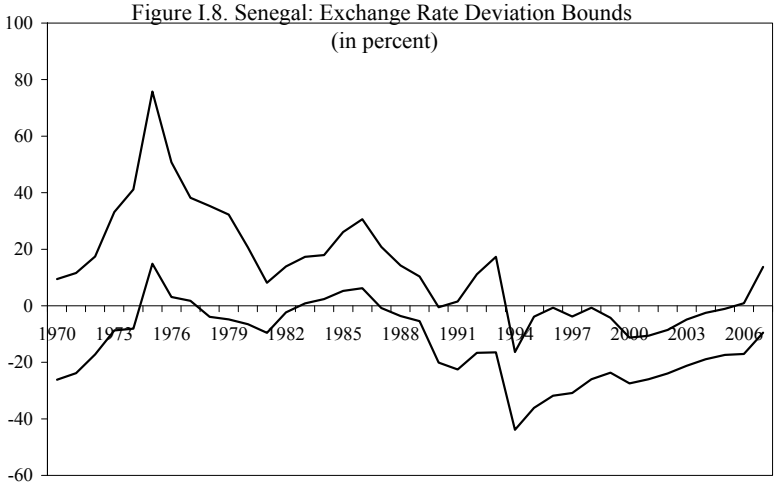
[14] The 95 percent confidence interval accompanying the deviation bounds for 2007 is –15 percent to +25 percent. Statistically, this implies that the estimated REER deviation is not significantly different from zero.

Figure I.7. Senegal: Actual and Equilibrium REER



Source: IMF staff calculations.

Figure I.8. Senegal: Exchange Rate Deviation Bounds
(in percent)



Source: IMF staff calculations.

Macroeconomic balance approach

17. **The macroeconomic balance approach estimates the REER adjustment needed to close the gap between the projected current account balance, as implied by macroeconomic fundamentals, and its long-run equilibrium value.** The current account (CA) balance implied by fundamentals is called the CA "norm." It is derived in two steps:

- an econometric estimation of the equilibrium relationship between the CA balance and its fundamentals for low-income countries; and
- the application of the parameter estimates to Senegal's medium-term fundamentals to obtain the CA norm for Senegal.

18. **The long-run equilibrium CA balance, also called the underlying CA balance, is the CA balance stripped of all temporary factors, including imports associated with FDI.** If the REER is perfectly aligned with its long-run value, then the CA norm will be the

same as the underlying CA balance. Otherwise, the REER adjustment needed to bring the CA norm to the level of the underlying CA balance represents the deviation of the REER from its equilibrium value.[15]

19. **The CA norm for Senegal is estimated to be 6 percent of GDP, and the underlying CA balance is 5 percent of GDP.**

- The *CA norm* was derived from the parameters estimated by regressing the CA on the following macroeconomic fundamentals for low-income countries (LICs): fiscal balance, net foreign assets relative to GDP, relative income, per-capita GDP growth, and population growth (Box I.1).

- The *underlying CA balance* is the balance consistent with (i) historical trends prior to the recent large influx of FDI; and (ii) the forecast CA balance once stable levels of FDI and related export production are achieved.

20. **The macroeconomic balance approach also does not provide conclusive evidence of an overvaluation.** The analysis finds that a depreciation of less than 8 percentage points would close the gap between the norm and underlying CA balance.[16] Qualitatively, this implies that the REER is above its equilibrium value. However, the small magnitude of REER deviation from its equilibrium and the statistical error associated with the estimation prevent a conclusive finding of an overvaluation.

[15] This is derived by using the elasticity of the current account balance to the REER. See IMF (2006) for more details on this methodology.

[16] The adjustment depends on the exchange rate elasticity of the CA, which is identified by applying trade elasticity estimates from single-equation models of export and import demand. The estimated export (import) elasticity is 0.37 (-1.16).

Box I.1. Macroeconomic Balance Approach for Low-Income Countries

A key challenge of applying the macroeconomic balance approach to LICs lies in estimating an appropriate CA norm. The Fund's Research Department has estimated the equilibrium relationship between the CA balance and its fundamentals for developed and emerging market economies. The application of these estimates to LICs would produce biased results due to sizeable differences in the economic dynamics between these countries and LICs.

For the purpose of deriving Senegal's CA norm, the relationship between the CA balance and its fundamentals was estimated specifically for LICs. The fundamentals used were the fiscal balance, net foreign assets relative to GDP, relative income, per-capita GDP growth, and population growth. The LIC equilibrium CA relationship was estimated using a panel of 35 LICs over 1980–2005.[1,2] The coefficient estimates (Table I.2) demonstrate the following:

- An improvement in the ratio of the overall fiscal balance to GDP corresponds to a more positive CA balance.
- An improvement in net foreign assets relative to GDP is also associated with a more positive CA balance.
- However, increased per-capita GDP growth deteriorates the CA balance. Relative income and population growth are less significant, and are, respectively, positively and negatively correlated with the CA balance.

Future estimations of the CA balance equilibrium relationship could be improved by:

- Filtering out high-frequency fluctuations, by taking four-year averages of the data to better reflect medium-term relationships across the variables.
- Applying deviations from the averages of trading partners for the following variables: fiscal balance and population growth. This would eliminate current estimation biases arising from: (i) overestimation of the impact of an improved budget balance in situations where there is a worldwide budget balance improvement with little effect on the CA balance of individual countries; and (ii) underestimation of the impact of a higher share of economically dependent young people which reduces national savings and consequently decreases the CA balance.

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[1] The analysis is restricted to the period 1980–2005 to obtain as large a country sample as possible, with the goal of improving the precision of the CA norm coefficient estimates due to the within- and between-country variation. Earlier data are less reliable. The reliability of the results may be further improved by adjusting for global current account imbalances.

[2] Pooled OLS, random effects, and fixed effects models were estimated. A Hausman test rejects systematic differences between the random effects and fixed effects coefficient estimates.

Table I.2: Estimation of CA on Fundamentals[1/]

	Pooled OLS	Fixed Effects
Overall Balance/GDP	0.35	0.56
	(0.07)	(8.06)
NFA/GDP	0.07	0.06
	(0.02)	(2.49)
Relative income	0.47	-0.67
	(0.11)	(3.21)
Per capita GDP growth	-0.17	-0.21
	(0.06)	(3.33)
Population growth	-0.43	-0.45
	(0.22)	(1.84)
1=Small island	-4.69	0.00
	(1.60)	…
1=Fuel exporting	6.66	0.00
	(1.25)	…
Constant	-4.70	-2.57
Observations	546	546
R-squared	0.30	0.24
No. of LICs	35	35
Time fixed effects?	Yes	Yes
Country fixed effects?	No	Yes

Source: IMF staff calculations.
1/ Standard errors in brackets.

Other considerations

21. **The empirical findings are complemented by developments that suggest limited concerns over the recent REER appreciation.** Senegal's sustainable debt position and a stable macroeconomic environment have succeeded in increasing investor confidence, reflected in the recent FDI surge. FDI has more than doubled in less than five years. However, the FDI stems from a small number of large multinationals in the areas of infrastructure, services, and natural resources. Structural improvements that ameliorate the business environment will be necessary to entice further and more diversified FDI.

E. Analysis of Structural Measures of Competitiveness

22. **Senegal is ranked as one of the least competitive countries in the world.** The *World Economic Forum's Global Competitiveness Index* ranks the country as 100 out of 131 countries in 2007 (Table I.3); Senegal was not ranked in 2006. Its stable macroeconomic and political environment, as well as technological readiness, rank relatively high, but the survey points toward a need to develop institutions, labor market efficiency, education, and infrastructure. In these areas, Senegal ranks well below other African countries, including Kenya and South Africa.

Table I.3. Global Competitiveness Index 2007-08
(Out of 131 countries, best=1, worst=133)

	Benin	Senegal	South Africa	Ghana	Kenya	Nigeria
Overall GCI Ranking	108	**100**	44	…	99	95
Basic requirements	106	103	61	…	117	108
Institutions	90	97	39	…	101	103
Infrastructure	112	98	43	…	93	119
Macroeconomic stability	80	**58**	50	…	122	28
Health and primary education	111	113	117	…	110	124
Efficiency enhancers	122	104	36	…	79	77
Higher education and training	114	105	56	…	88	109
Goods market efficiency	99	**78**	32	…	79	65
Labor market efficiency	110	119	78	…	60	75
Financial market sophistication	97	111	25	…	48	56
Technological readiness	112	**82**	46	…	92	97
Market size	121	100	21	…	78	52
Innovation and sophistication factors	92	80	33	…	56	69
Business sophistication	97	**82**	36	…	70	74
Innovation	86	**73**	32	…	46	66

Source: World Economic Forum.

23. **Firms face high costs of doing business.** According to the World Bank's *Doing Business Report*, in 2007–08 Senegal ranked 162 out of 178 countries in terms of the ease of doing business—below all WAEMU countries, except Guinea-Bissau and Niger (Figure I.9 and Table I.4). In comparison, Ghana and Kenya were ranked among the top ten global reformers. These countries excelled in reducing the financial cost and time spent to start a business, register property, pay taxes, and obtain credit. Senegal has begun improving its business environment, especially with respect to starting a business. The creation of a one-stop window in mid-2007 has shortened the duration to open a new business from 58 days to 48 hours, which should help improve Senegal's ranking in the 2008–09 Doing Business Report. Notwithstanding such progress, property registration and obtaining credit remain cumbersome, while investors are provided little protection. These institutional hurdles discourage new firms from entering the market and make Senegal less attractive for private investment.

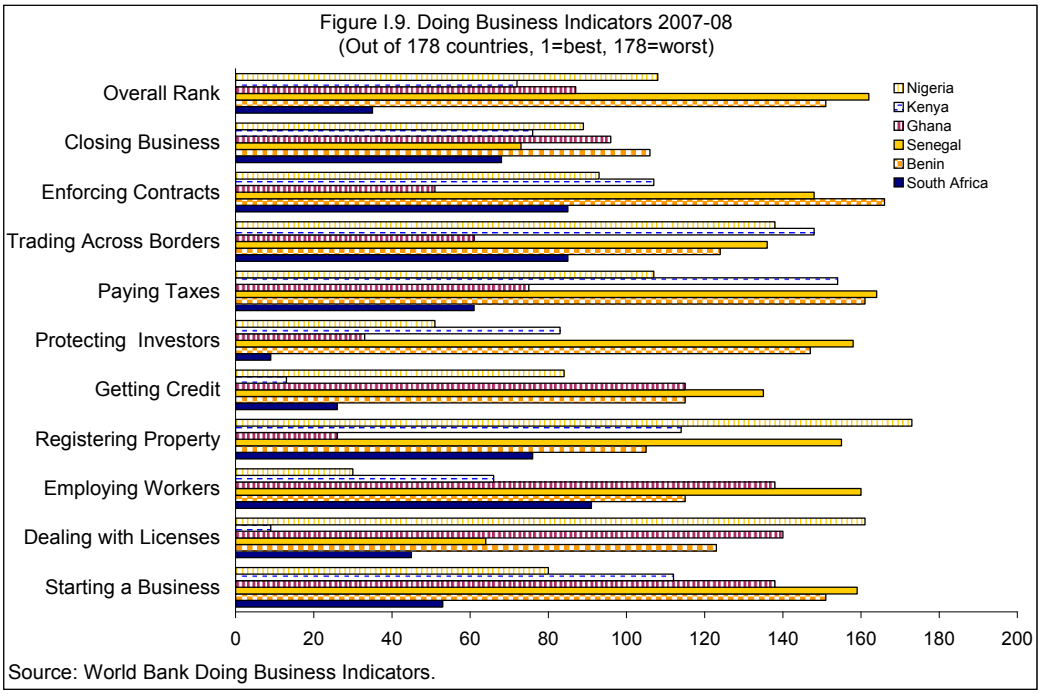


Table I.4. Doing Business Indicators: 2007-08 Relative to 2006-07

(- = improvement, + =deterioration)

	Benin	Senegal	South Africa	Ghana	Kenya	Nigeria
Overall Ranking	4.0	4.0	-2.0	-22.0	-10.0	0.0
Starting a Business	8.0	**6.0**	-5.0	-11.0	-3.0	3.0
Dealing with Licenses	3.0	2.0	-1.0	0.0	-6.0	-9.0
Employing Workers	-3.0	-3.0	-2.0	7.0	0.0	0.0
Registering Property	-9.0	3.0	7.0	-56.0	2.0	1.0
Getting Credit	4.0	3.0	-6.0	-17.0	-19.0	4.0
Protecting Investors	0.0	0.0	0.0	1.0	2.0	2.0
Paying Taxes	-2.0	0.0	2.0	-18.0	-2.0	2.0
Trading Across Borders	4.0	**9.0**	4.0	-13.0	1.0	3.0
Enforcing Contracts	0.0	1.0	0.0	-10.0	2.0	1.0
Closing Business	6.0	-2.0	2.0	2.0	2.0	3.0

Source: World Bank Doing Business Indicators.

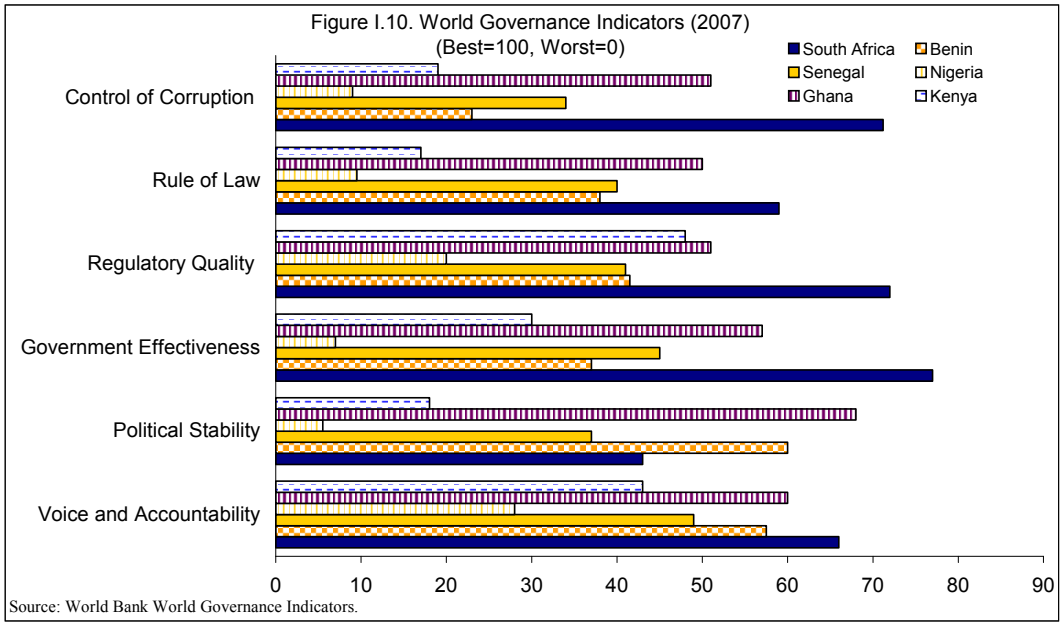
24. **Human capital needs to be further developed through education.** In 2007, Senegal ranked 156 out of 177 countries on the *United Nations Human Development Index (HDI)*, not improving much from its 2005 ranking of 157. Relative to other African countries, Senegal fares well in certain health-related social indicators, such as life expectancy and infant mortality. Lower adult literacy and enrollment ratios than the average for Sub-Saharan Africa, however, reveal poorer conditions for education (Table I.5).

Table I.5: Social Indicators, 2005

	Senegal	Benin	Cameroon	Mali	Guinea	Sub-Saharan Africa	LIC
Life expectancy at birth (years)	56	55	46	49	54	47	59
Fertility rate (births per woman)	5	6	5	7	6	5	4
Mortality rate (infant, per thousand live births)	61	89	87	120	97	96	75
Mortality rate (under 5, per thousand live births)	119	150	149	218	160	163	115
Measles immunization rate (percent, ages 12-23 months)	74	85	68	86	59	64	65
Adult literacy rate (percent)	39	35	68	24	30	59	53
Gross enrollment ratio (percent school age population)							
Primary	78	96	117	66	81	95	104
Secondary	21	33	44	24	30	32	46
Tertiary	5	…	6	3	3	5	9

Sources: World Bank, World Development Indicators (2007); and UNDP, Human Development Report (2007).

25. **Improved governance can also boost Senegal's competitiveness.** It has been shown that small improvements in governance can sharply improve a country's competitiveness. For example, Wei (2000) finds that reducing the level of corruption in Mexico to that of Singapore would have the same impact as reducing the corporate income tax by 30 percent. Although Senegal ranks high in voice and accountability—measuring civil liberties, citizens' participation in government selection, and government accountability towards citizens—in the World Bank's *World Governance Indicators*, corruption and inefficient administration hold the country back (Figure I.10 and Table I.6). Over the past decade, rather than improving administrative efficiency and reducing corruption, Senegal's position in these crucial areas has significantly deteriorated.



Source: World Bank World Governance Indicators.

Table I.6. Changes in 2007 World Governance Indicators Relative to 1997
(In percentage points)
(+ = improvement, - = deterioration)

	Benin	Senegal	South Africa	Ghana	Kenya	Nigeria
Voice and Accountability	-7.00	2.00	-4.50	20.0	25.5	18.0
Political stability	-14.50	9.00	27.15	30.0	-2.0	30.0
Government Effectiveness	-17.00	-13.00	2.90	18.0	-19.0	7.0
Regulatory Quality	9.45	5.50	19.90	-1.0	18.0	8.0
Rule of Law	-11.50	-5.00	-1.75	11.0	3.0	1.0
Control of Corruption	-5.20	-9.50	-5.20	15.0	9.0	3.0

Source: World Bank, World Governance Indicators.

F. Policy Implications and Conclusions

26. **Given the absence of conclusive evidence of a REER overvaluation, policies to improve Senegal's external competitiveness should concentrate on business environment reforms.** Nonetheless, the REER needs to be carefully monitored going forward, as the recent appreciation, if continued, would make Senegal's exports more expensive on world markets.

27. **Survey-based competitiveness indicators point to various areas for reform in the business environment.** Those reforms would set the stage for expanding and diversifying Senegal's export base, improving product quality, and lowering production costs. They should be embedded in prudent macroeconomic policies that create a stable operating environment for the private sector. Specific measures should aim to improve infrastructure, education, the provision of health services, the legal, regulatory, and administrative framework, labor markets, financial sector intermediation, and governance.

28. **The authorities have embarked on those reforms.** For example, they are undertaking significant investment to modernize infrastructure in various areas, such as roads, airports, ports, and energy. Public spending on health and education, which boosts human capital development and labor productivity, is rising. The authorities are also strengthening the judicial system and easing administrative procedures that proved costly to entrepreneurs in the past, such as through the new one-stop window to start a business.

29. **Overall, implementation of the reform agenda would lead to a more attractive business environment that fosters both domestic and international investment in both traditional and new exports.** In the end, Senegal's resilience to changing world prices and markets should be strengthened by these reform efforts.

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II. Policies to Protect the Poor from Rising Energy and Food Prices in Senegal[1]

A. Introduction

1. **In 2007, Senegal started implementing policy measures to protect the poor from the adverse effects of the recent surge in energy and food prices.** This chapter assesses the distributional impact of these policy measures, and proposes alternative policy options, based on a Poverty and Social Impact Analysis (PSIA) conducted in early 2008.

2. **The main findings of this chapter are:**

- **While mitigating the adverse impact of the recent energy and food price increase on the population, the current policy measures are overall not well targeted.** The measures roughly offset the increase in the cost of living resulting from the surge in prices through end-2007. However, almost 55 percent of the benefits accrue to households in the top 40 percent of the welfare distribution.
- **Alternative short-term measures would be more effective in protecting the poor.** These include restructuring subsidies, introducing lifeline tariffs for electricity, directly addressing rural poverty, and targeting poor groups directly.
- **The introduction of a well-targeted conditional cash grant would be the most effective option for promoting the poor's welfare and reducing poverty over time.** A heuristic targeting model was developed and could serve as the basis for such a transfer scheme, at limited cost. The targeted transfer program could be made conditional upon children's school enrollment and receipt of health care.

3. **This chapter is organized as follows.** Section B assesses the distributional impact of the recent policy measures taken to protect the population from food price inflation, while section C undertakes a similar analysis on the current subsidies for energy and petroleum products. Alternative short-term policy options are presented in Section D. A proposal for a conditional cash transfer system is discussed in Section E, while Section F concludes.

B. The Distributional Impact of Food Price Inflation and Policy Measures Taken

4. **During the first half of 2007, the prices for a number of basic food items increased significantly in Senegal, reflecting a decline in agricultural production and international price developments.** In particular, the price for rice, which is an important staple for the majority of the population, increased by 11 percent during the period. This mostly reflected the rise in the international price of rice, since an estimated 80 percent of rice is imported. Local prices for other food items, in particular cereals and milk products,

[1] Prepared by Isabell Adenauer (FAD).

also surged, partly reflecting a contraction of agricultural production as a result of low and uneven rainfall.

5. **To keep the prices of some core food products down, the government suspended VAT and customs duties on a number of important consumer products in July 2007.** The bulk of food spending was already exempt from the VAT based on the existing VAT framework for the West African Economic and Monetary Union (WAEMU).[2] The changes were as follows:

- **Rice.** As part of cereals, rice is exempt from VAT. Customs duties were suspended.
- **Wheat.** Wheat is also exempt from VAT, and customs duties were suspended.
- **Powdered milk.** Both VAT and customs duties were suspended.
- **Bread.** VAT was suspended at all levels of the production chain.

6. **The revenue loss caused by the tax and duty suspensions is estimated at CFAF 29 billion (0.5 percent of GDP) in 2007.** Lost revenue for customs was CFAF 12 billion for rice, powdered milk and wheat, while the VAT suspension on flour and powdered milk cost CFAF 5 billion and CFAF 12 billion, respectively. Since the suspension applied to only half the year, the full-year cost would roughly be 1 percent of GDP.

7. **The VAT and tariff suspensions did not reverse the upward trend in prices, partly reflecting the evolution of international prices.** Nonetheless, the price of rice dropped by 10 percent for about three months after the introduction of the measures, consistent with the tariff suspension of 10 percent. By end- 2007, however, it was higher than before the suspension. The price for powdered milk stayed roughly flat. The bread price is determined by a process called *homologation*, in which concerned groups suggest a price to the minister of trade who then sets the price.[3] This policy kept the bread price constant until October 2007 when bakers claimed that they were making losses and successfully negotiated a price increase with the government. As a result, the bread price rose by 16 percent between October and December 2007.

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[2] The WAEMU allows every member state to choose seven categories of products that are exempt from VAT, because they constitute basic food items that are consumed in big quantity by poorer segments of society. Senegal has chosen the following categories: (1) groundnuts; (2) cereals, manioc; (3) fresh vegetables; (4) fresh meat; (5) fresh and frozen fish; (6) eggs; and (7) potatoes and onions.

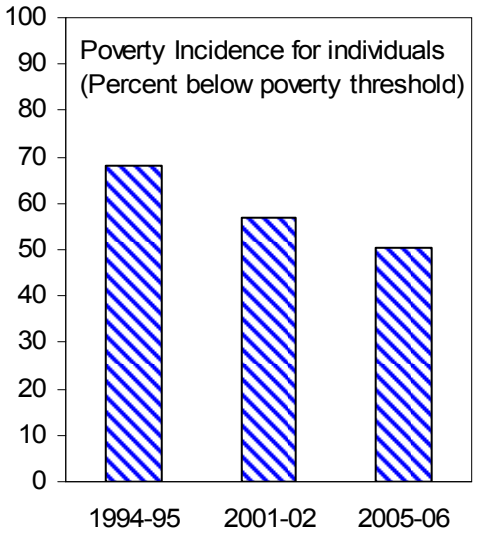
[3] This price-setting mechanism is to counteract monopolies or market concentration. The authorities have progressively reduced the number of prices set by homologation, and currently only the prices for bread and pharmaceutical products are subject to this mechanism.

Distributional impact

8. **The impact of the food price increases and policy measures to mitigate those increases on household welfare was estimated on the basis of household data, which can also be used to examine the distribution of poverty.** While poverty has declined over time, the data show that 43 percent of all households still live in poverty (Box II.1).

Box II.1. Poverty in Senegal[1]

Senegal remains a poor country, even though the situation has improved over time. In 2006, the GNI per capita was US$670,[2] and the incidence of individuals living below the poverty threshold remains at over half of the population. Still, over the last decade, the country has made significant progress in reducing poverty—the proportion of households living in poverty has fallen from 61 percent in 1994 to 57 percent in 2001, and dropped further to 43 percent in 2005.



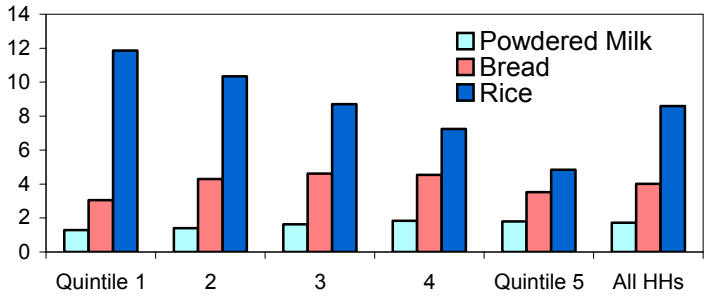
Poverty is spread unevenly across the country and concentrated in rural areas. It decreased faster in Dakar and other urban centers than in rural areas. As a result, the poverty rate remains at 56 percent in rural areas, as opposed to 28 percent in urban areas. The regions with the highest level of poverty are therefore those with the lowest access to water, sanitation and electricity.

The rural poor are vulnerable to external shocks, such as climatic conditions, which affect their income negatively. Agricultural production contracted in both 2006 and 2007, which adversely affected many rural poor and has compromised food security. This vulnerability has led to high emigration rates toward cities, in particular Dakar, contributing in turn to the deterioration of living conditions in urban areas, and the emergence of street children. These trends have raised concerns about food and water security among the poor, and sustainable economic growth in all regions.

[1] Source: World Bank (2007), Senegal Country Assistance Strategy for 2007–2010; and staff calculations.
[2] World Bank's Atlas methodology.

9. **Households were grouped into quintiles, based on their total consumption, from the least well-off to the most well-off, to identify food consumption patterns.** Rice and bread are important components of household food consumption, accounting for 8.7 percent and 4.3 percent of spending, respectively (Figure II.1). Rice is important for the bottom groups of the welfare distribution and the rural population, while bread is most important for the middle-income groups and the urban population. By contrast, powdered milk is mostly consumed by richer households.

Figure II.1. Average Budget Shares for Food Items
(In percent)



Source: Senegalese household survey; and staff calculations.

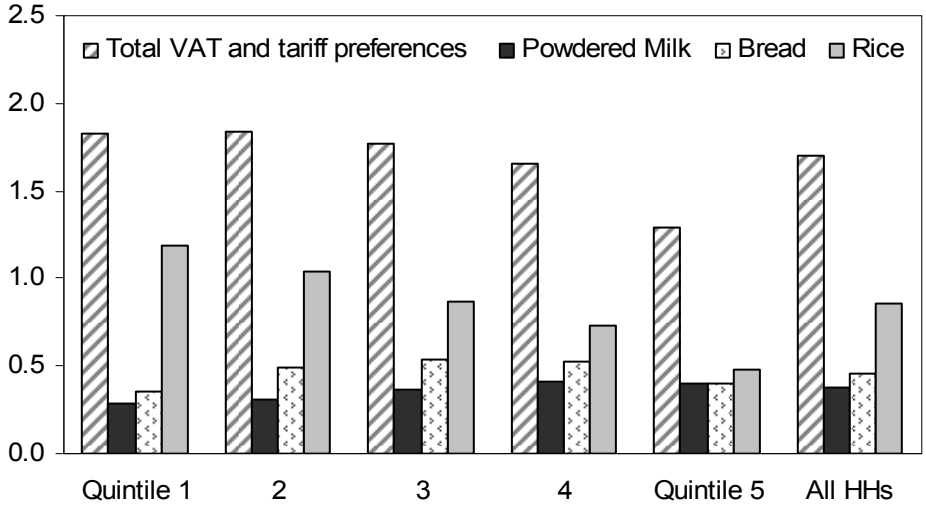
10. **To estimate the direct welfare gain from the recent policy measures, household spending was multiplied by the assumed price effects in the absence of mitigating measures.**[4] The analysis yields the following results (Figure II.2):

- **For rice, the tariff suspension has benefited the two poorest quintiles of the population.** Rice is an important component of household food consumption, especially for the bottom 40 percent of households and in rural areas. Therefore, the rural poor gained the most from the suspension.
- **For powdered milk and bread, the richer groups of the population gained most from the suspensions.**[5] Since the poorest 20 percent of the population consume relatively little powdered milk and bread, the richer segments gained relatively more from the measures. At the same time, the urban poor consume about twice as much bread as the rural poor, and thus benefited more.

[4] The effects of the tax and tariff suspensions are based on the actual price movements immediately after the suspensions or an estimate of the pass-through to the final consumer price: (i) for rice, an estimated 10 percent higher without the suspension; (ii) for powdered milk, an estimated 22 percent higher (18 percent for VAT and 4 percent for tariffs); and (iii) for bread, an estimated 12 percent higher (half of the VAT of 18 percent and 3 percent for tariffs).

[5] The impact of the VAT suspensions for bread is difficult to measure. The price of bread remained constant at CFAF 150 until the new round of homologation. Presumably, the homologation would have resulted in a much larger price increase in the absence of the flour and bread VAT suspensions. However, the ultimate impact on the price would depend on the amount of VAT that had been paid on other inputs in the production of bread.

Figure II.2. Welfare Gain from Policy Measures
(Percent of total expenditure)



Source: Senegalese household survey; and staff calculations.

Tax on vegetable oil

11. **In 2006, the authorities introduced a protective tax on vegetable oil.** A tariff of 25 percent is levied on imported refined vegetable oil. The measure was to protect the local refining activity of vegetable oil and to be phased out after 200 days. However, the authorities continue to apply the tax. The tax mainly benefits the local groundnut refining company, since it is also refining imported raw vegetable oil. This has kept the prices for this key staple high. Low-income households, who are the primary consumers of vegetable oil, therefore suffer welfare losses from the tax measure, as earlier PSIA analysis suggests. Rural households are particularly affected, as they devote a higher percentage of their budget to refined vegetable oil than urban households.

C. The Distributional Impact of High Energy Prices and Mitigating Policy Measures

12. **The prices of some core energy products have increased significantly in Senegal over the last two years, reflecting rising international prices (**Table II.1). The largest increases are for lamp oil (kerosene) and butane gas, which together account for more than 50 percent of energy consumption by the bottom two quintiles of the welfare distribution.

Table II.1. Price Increases of Selected Energy Products, January 2005–December 2007

Product	Percent increase
Lamp oil	70.9
Gasoline and diesel	42.7
Butane	66.8
Electricity	21.9

Source: Senegalese authorities; and staff calculations.

13. **The prices of all of these energy products are regulated and set directly by the authorities.** A committee meets every month to review and set prices, based on the import price. The government has traditionally allowed the bulk of the increase in world prices to pass through to consumers.

14. **More recently, the authorities have been taking measures to protect consumers from the price increases for selected products:**

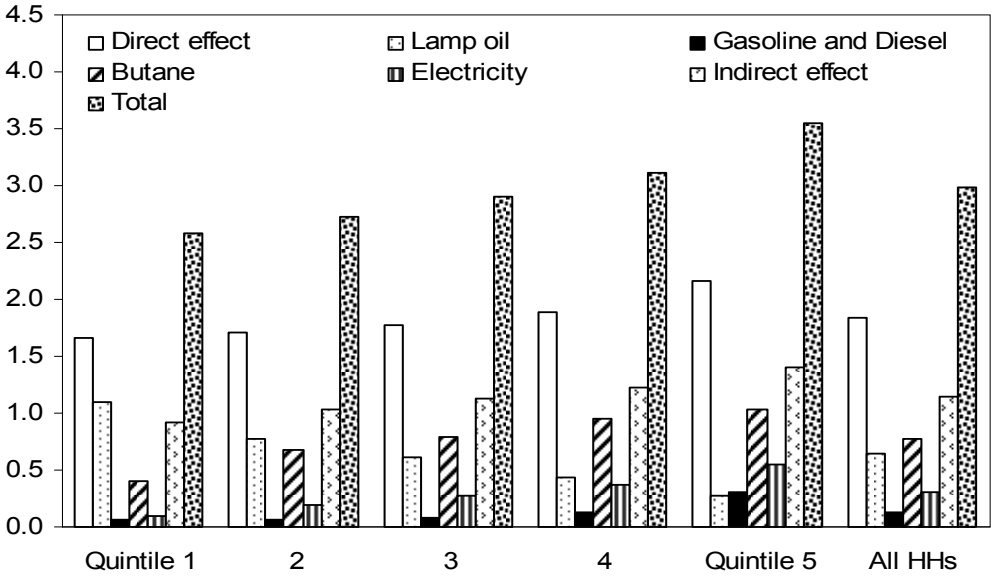
- **Butane gas.** The authorities have been directly subsidizing the consumption of small butane gas bottles (2.7 and 6 kg). They argue that these bottles are used by the poorest households, and that higher butane gas prices would lead the population to cut down trees and burn wood instead, causing deforestation and pollution. The subsidy is paid directly to the distributor. Its cost has followed a stop-and-go pattern, varying between 0.2 percent of GDP in 2005 and 1.4 percent of GDP in 2006. The authorities plan to gradually phase out this subsidy by July 2009, but have actually raised the level of the subsidy over the last few months.
- **Lamp oil (kerosene).** This product is important for the poor, in particular in rural areas, to light their houses. As a result, the authorities strive to keep the price of lamp oil affordable by granting an excise tax exemption on kerosene.
- **Electricity.** The government has not fully passed through the costs of production to consumers. Electricity price increases have been sporadic; the last such increase was in November 2007, at 6 percent. This has resulted in financial difficulties for the electricity company SENELEC, as the government insufficiently reimbursed the company for the foregone revenue. Nevertheless, electricity price subsidies ranged between 0.3 and 1.8 percent of GDP during the last three years. Going forward, under the planned energy sector reform, the authorities committed to having input costs automatically pass through to electricity tariffs by applying a market-based formula, with generally smaller increases for low-income households.

Distributional impact

15. **Both the direct and indirect impact of the recent energy price increases on consumers were estimated.** Consumers have faced price increases not only in energy products, but also in products for which energy is an important input. The *direct* effect can be estimated on the basis of household consumption of energy products.[6] To estimate the *indirect* effect that energy prices have had on the prices of other goods and services, an input-output matrix was used (Figure II.3).[7] Several conclusions can be drawn:

- **At the national level and for the urban population, energy price increases have had a "progressive" impact.** The percentage loss in welfare increases with the welfare level. The impact has been roughly proportional for rural households. As a result, the richest 40 percent of the population bear the bulk of the aggregate burden of the price increases.
- **For the poorest households, the direct effect of price increases for lamp oil predominates.** This is especially true for the rural poor, but the urban poor were also affected by the price increase for butane. For almost all households, the resulting increase in the price of food was the predominant indirect effect.

Figure II.3. Direct and Indirect Welfare Loss from Energy Price Inflation (Percent of total expenditure)



Source: Senegalese authorities; and staff calculations.

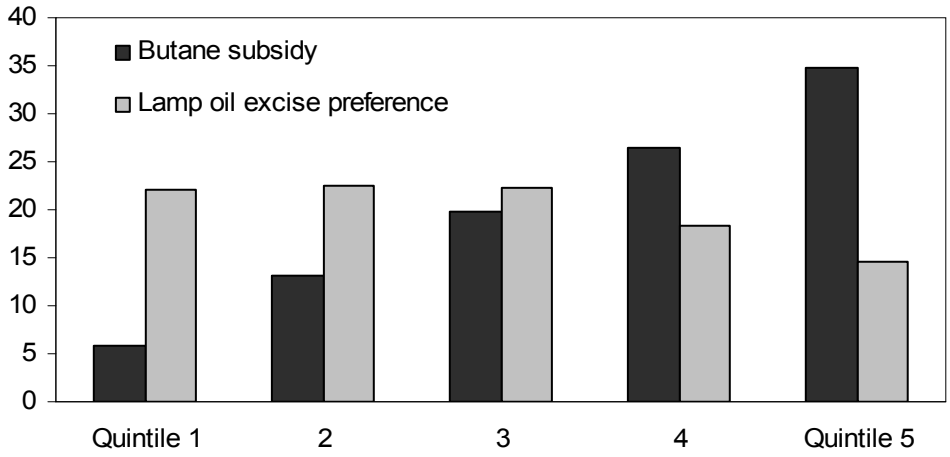
[6] The energy share in household consumption was multiplied by the actual price increase.

[7] Higher energy prices were fed into the matrix on the input side, and the output showed the effect on other consumer goods, which were then mapped back into the household survey.

16. **The analysis of the impact of current subsidies and other policy measures to offset energy price increases shows that they are not well targeted.** The numerical simulation of the welfare gain across households is as follows (Figure II.4): [8]

- **The subsidy on butane gas benefits the richer segments of the population, rather than the poor.** The 40 poorest percent of the population gain only 19 percent of the total improvement in welfare. By contrast, the richest 40 percent gain 61 percent.
- **Exempting lamp oil from excise taxation yields higher welfare gains for the poor.** The two bottom quintiles of the population benefit by 45 percent, while the top two quintiles only benefit by 33 percent.
- **The offsetting measures are less effective in urban areas** (Table II.2)**.** The recent price increases had a larger impact on urban households. Consequently, even though the offsetting measures have a larger impact on these households, they offset only part of the price increases.

Figure II.4. Share of the Benefit from Current Price Policies (Percent)



Source: Senegalese authorities; and staff calculations.

[8] The price of butane gas without the subsidy was derived, and it was assumed that the price for lamp oil would be 18 percent higher without the excise preference (this hypothetical excise tax is roughly midway between the current excise tax rates for gasoline and diesel).

Table II.2. Direct and Indirect Welfare Loss from Energy Price Inflation (Percent of total expenditure)

	Quintile 1	2	3	4	Quintile 5	All HHs
Urban						
Direct effect	2.1	2.2	2.3	2.3	2.4	2.3
Lamp oil	0.4	0.3	0.2	0.2	0.1	0.2
Gasoline and Diesel	0.1	0.0	0.1	0.1	0.3	0.2
Butane	1.2	1.4	1.4	1.3	1.2	1.3
Electricity	0.4	0.5	0.6	0.6	0.7	0.6
Indirect effect	1.2	1.3	1.4	1.4	1.5	1.4
Total	3.3	3.5	3.7	3.7	4.0	3.7
Rural						
Direct effect	1.5	1.4	1.3	1.4	1.5	1.4
Lamp oil	1.3	1.0	0.9	0.7	0.6	1.0
Gasoline and Diesel	0.1	0.1	0.1	0.1	0.2	0.1
Butane	0.2	0.3	0.3	0.4	0.6	0.3
Electricity	0.0	0.0	0.0	0.1	0.1	0.0
Indirect effect	0.8	0.9	0.9	1.0	1.1	0.9
Total	2.4	2.3	2.3	2.3	2.6	2.3

Source: Senegalese authorities; and staff calculations.

D. Short-Term Policy Options

17. **In the short term, poorer households could be protected against price increases at a lower budgetary cost and more effectively by redirecting resources to better-targeted measures.** Since the current measures were shown to be not well targeted overall, they should be reconsidered and replaced by alternative short-term policy options. These alternative measures are not necessarily optimal in the medium and long term. Some should be considered only as second-best solutions to the current food and energy price hike. Nonetheless, they could provide the intended relief more efficiently, but the authorities would need to guard against any distortionary effects.

Shift resources from butane subsidies to lamp oil subsidies

18. **The excise tax preference for lamp oil is better targeted than the explicit subsidy for butane.** Simply shifting some of the resources spent on the butane subsidy to a subsidy for lamp oil would greatly improve the targeting of the measures. Possible options include:

- Limit the subsidy for butane to an excise tax exemption and shift the resources saved to subsidizing lamp oil.
- Phase out the butane subsidy.

19. **Shifting resources from butane to lamp oil subsidies will encounter two problems, however.** First, one of the purposes of the butane gas subsidies is to shift

consumers from firewood and charcoal to butane. While it is difficult to assess the success of the subsidies in this regard, the household survey data suggest that such a substitution has taken place for urban households in the highest welfare quintiles. This may indicate that—even with the subsidies—butane is too expensive for households in other quintiles. Alternatively, it could mean that only relatively well-to-do households can afford the appliances that use butane. At any rate, to the extent that reductions in consumption of charcoal and firewood are needed for environmental protection, it is likely that more effective incentives will be needed to induce a switch away from charcoal and firewood. Second, a significant reduction in the relative price of lamp oil will provide an incentive to use it for other purposes. The administration of the subsidy will therefore be critical, and steps must be taken to ensure that lamp oil is not diverted from its current and intended use.

20. **Lamp oil subsidies are therefore not optimal in the long run.** They are preferable to the current butane subsidy, and would benefit the poor more, but not easy to target either. Therefore, the distributional aspect of lamp oil subsidies should be revisited in regular intervals to determine whether the subsidy continues to fulfill its goal.

Maintain some of the current tax suspensions while phasing out others

21. **Further distributional analysis reveals that maintaining the tax suspension for rice in the short term would benefit the poor.** Net rice sellers in Senegal represent only a very small group of the overall population, around 2 percent in rural areas and 0.2 percent in urban areas. Table II.3 presents the estimate of the average gain of a 10 percent drop in the price of rice for net buyers, the average expected loss for net sellers, and the average resulting aggregate effect as a percentage of welfare. The overall effect on households of a lower price for rice is positive—0.9 percent. This result is very close to the estimated direct effect presented earlier, as net sellers of rice are so few.

Table II.3. Direct Welfare Effect of a 10 Percent Decrease in the Price of Rice (Percent)

	Net Sellers	Net Buyers	Buyers and Sellers combined
Household quintiles			
Bottom quintile	-1.5	1.3	1.2
2nd quintile	-1.0	1.1	1.1
3rd quintile	-0.9	1.0	0.9
4th quintile	-0.9	0.8	0.7
Top quintile	-1.2	0.5	0.5
Total	-1.2	1.0	0.9

Source: Senegalese authorities and staff calculations.

22. **This measure would, however, have to be negotiated at the level of the WAEMU, as it breaches current trade regulations.** Also, it might have to be revisited after a while in the context of the efficiency of the overall tax system.

23. **The current VAT suspension for bread could also be maintained for an interim period.** As the distributional analysis showed, the urban poor do benefit from the suspension, and thus it could be maintained until more comprehensive measures to shield the poor from food price increases are taken. However, the measure is clearly not optimal, as even the suspension's effect on bread prices is not clear, given that they are regulated. Finally, the tax measures on powdered milk do not benefit the poor very much, and could be phased out.

24. **The protective tax on vegetable oil should be eliminated.** It does not benefit consumers, and affects poor households particularly adversely. Moreover, it inhibits the local production of vegetable oil, rather than support it.

Take measures related to the price of electricity

25. **For electricity services, a subsidized rate for small users should be developed.** Access to electricity is limited for poorer households and, especially, poorer rural households. However, to the extent that poorer households do have access, a carefully designed tariff structure can reduce the amount they pay. A new tariff structure is scheduled to be introduced by August 1, 2008 to make the current lifeline rate more effective while providing lower tariffs for low-income households.

Restructure existing agricultural subsidies

26. **The budget currently provides for a variety of subsidies for farmers, but these subsidies insufficiently support the authorities' objective to improve the supply of food products.** The government subsidizes rural credit, fertilizer, seeds, the groundnut producer price, and agricultural machinery, at a cost of 0.5 percent of GDP. Yet, the incidence of these subsidies is difficult to establish, since at least some of the benefit may accrue to consumers of agricultural products, rather than producers. Moreover, they are unlikely to bring about the development of the agricultural sector necessary to improve rural infrastructure, in particular to expand irrigation systems, which are seen as key prerequisites to expand domestic agricultural production, especially of high-yield crops such as rice. To promote these goals and address rural poverty, the current agricultural subsidies could be restructured as follows:

- **Increase farm productivity.** To raise productivity, greater emphasis could be given to helping farmers apply more advanced farming techniques, including better seed and irrigation techniques. Developing and financing an agricultural extension service to distribute needed assistance, including access to credit, and provide training in how best to use this assistance should be more effective in the long run. For instance, the agricultural extension service could develop demonstration farms to showcase how effective modern techniques can be.

- **Provide alternative job opportunities.** It is important that residents in rural farming areas be able to develop the skills necessary to allow them to either compete effectively in farming, against both domestic and international competition, or engage in alternative labor market activities, in either rural or urban areas. This could entail not only promoting education and health, but access to more specific training to broaden job opportunities over the medium term.[9]

Target relatively poor groups directly

27. **Some poor groups could be targeted directly, based on a set of indicators that signal their poverty.** Household data reveal that families with schoolchildren are disproportionally poor, and most poor lack access to health care (Table II.4). Thus, existing programs that provide school lunches, primary health care, and public works and mitigate poverty at the level of the most vulnerable households could possibly be expanded, such as by providing children in primary schools with a daily glass of milk and bowl of cereal. Existing women networks could be tapped into for the distribution of these items, in order to avoid leakage.

Table II.4. Possible Target Groups for Social Assistance
(Percent of total expenditure)

	Quintile 1	2	3	4	Quintile 5	All HHs
Rural population	29.0	23.8	20.1	16.5	10.7	100.0
Children at school age	27.2	23.5	20.6	17.2	11.5	100.0
Lack access to health care	30.1	23.4	20.1	16.4	10.1	100.0
Children in school	22.4	22.3	21.4	19.6	14.3	100.0
Elder family members	25.9	24.2	21.1	17.5	11.3	100.0

Source: Senegalese authorities; and staff calculations.

E. Longer-Term Policy Options: A Conditional Cash Transfer System

28. **A better long-term solution for an effective protection system to address both structural and cyclical poverty in Senegal would be to introduce a conditional cash transfer system (CCTS).** Such a program would be a more permanent way to protect the poor from welfare losses, including food and energy price increases. Its cost could be kept at 1 percent of GDP, which would be money well spent—the estimates below show that a CCTS would be much more cost-effective in reaching the poor than the current tax exemption on lamp oil and the butane subsidy.

[9] Providing vocational training is one of the crucial pillars of the World Bank's proposed labor market reforms. For more discussion, see World Bank, Senegal—Country Economic Memorandum (2007).

General principles

29. **CCTS have proven an effective and innovative tool to deliver social protection to the poor in Latin America.** Typically, these programs provide money to poor families conditional upon investment in human capital, such as sending children to school or attending health centers. Women are often the primary recipient of cash transfers, as they tend to make household spending decisions that are more beneficial for the family's welfare, in particular for children. Prominent examples are Brazil's *Bolsa Familia*, Mexico's *Oportunidades*, and Colombia's *Familias en Acción* programs. A review of CCTS finds that the majority was very effective in reaching the poorest segments of the populations.[10]

30. **Key elements of successful CCTS are proper targeting and conditioning.** Effective targeting ensures that transfers reach those most in need. A wide range of targeting methods have proven successful, which are often combined to get the most cost-effective results (Box II.2). Moreover, for extremely poor households, transfers that finance food consumption can be sufficient to promote welfare through improved health and higher labor productivity. However, for moderately poor households, transfers alone are unlikely to induce second-round productivity gains, and might create a dependency culture. Transfers should thus be conditioned on behavior that promotes graduating from the program over the medium or long term, for example regular school attendance of the household's children.

[10] Coady, Grosh, and Hoddinott (2004).

Box II.2. The Targeting of CCTS: Overview of Most Common Methods

Proper targeting of conditional cash transfer programs is a crucial element of their success. Typically, the poorest segments of the population are targeted. The most cost-effective targeting can be achieved through combining a range of targeting methods:

• **Geographic targeting.** Household and national census data can be used to allocate the overall transfer budget across regions throughout the country. Typically, this is achieved by using data from the national census, often combined with data from national sample surveys to construct a social-economic index for districts.

• **Self-selection targeting.** This approach allows lower-income households to select themselves into the program, and higher-income households to self-select themselves out of the program. This way, the cost of processing claims by ineligible households and leakage of benefits to higher-income groups can be reduced. Self-selection can be facilitated by providing low-level transfers relative to median incomes, or requiring households to apply at regular intervals to program offices, with a clear understanding that only those in need are eligible for transfers.

• **Categorical targeting.** Where there is a strong correlation between individual or household socioeconomic characteristics, the latter can be used to include or exclude applicants from a program. The correlation needs to be backed up by convincing empirical evidence, that is, by information drawn from a recent household survey.

• **Community targeting.** Information available at the community level can often be used to identify households in need, especially where current economic status is not easily captured by a more statistical approach to targeting. This information could come from program officers living in the community who have local knowledge not available in any survey. Other local persons such as teachers, doctors, or religious leaders could also be a good source of such knowledge.

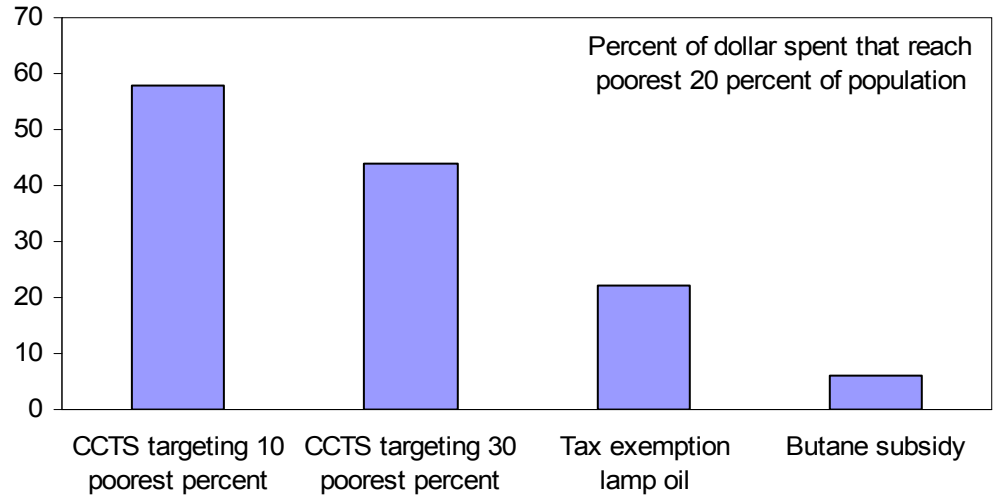
• **Means/Proxy-Means targeting.** Most sizeable transfer programs have some element of means testing. Simple means testing links eligibility and transfer size to some estimate of individual or household income. It is less attractive in countries where informal activity is prominent and verifying income difficult. For this reason, a growing number of countries use a statistical proxy-means approach that scores each individual or household regarding its means on the basis of key socioeconomic characteristics strongly correlated with economic status. The characteristics used should be easily observable and thus verifiable by program officers, and not easily subject to manipulation by applicants.

A CCTS for Senegal

31. **A CCTS for Senegal could be much more cost-effective than the current subsidies and other policy measures to protect the poor.** Under a CCTS scenario derived by staff, the beneficiary shares (Figure II.5) show that for every dollar spent, 44 cents reach the poorest 20 percent of the population, when the bottom 30 percent of the population is targeted. A CCTS targeting the poorest 10 percent of the population is even more cost effective, with 58 cents reaching people in the poorest quintile of the population. By contrast, for every dollar spent on the excise tax exemption for lamp oil, only 22 cents reach the poorest 20 percent of the population, and for the butane subsidy, only 6 cents reach that group.

32. **As a basis for a CCTS, a targeting mechanism that can help identify and select the poorest households in Senegal was constructed.** The specific method applied is the proxy-means approach, which links eligibility and transfer size to some element of individual household income (see Box II.2). The underlying analysis could also serve as input for other forms of targeting, such as geographical or categorical targeting.

Figure II.5. Cost Effectiveness of CCPT and Other Measures



Source: Senegalese authorities; and staff calculations.

33. **Poor households were identified on the basis of a household score.** Using household survey data, each household's per capita consumption was regressed on a set of household characteristics. These 30 characteristics fall into the categories of location of the household, housing features, family descriptors, and ownership of assets. The coefficients of the regression are presented in Table II.5.[11] Using the regression, the staff calculated a household "score"—that is, the household's predicted consumption per capita by adding up the coefficients of its characteristics. This score was then used to rank the households from richest to poorest, and select the poorest ones.

[11] Two alternatives that are easier to administer but almost equally effective were also examined (Table II.5).The two simpler specifications are based on a number of core characteristics that are most likely to be an indicator of household consumption per capita. Household scores could then more easily be derived by using only 16 of the geographic and housing characteristics, or 20 of the geographic, housing, and family descriptors.

Table II.5. Proxy Means Household Indicators

(Dependent variable = Log per capita consumption per adult equivalent)

	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
	Spec I		Spec II		Spec III	
Location						
Region Diourbel	0.00	-0.18	0.05	3.00	0.04	2.64
Region Fatick	0.09	4.58	0.11	5.90	0.09	5.23
Region Kaolack	0.19	10.09	0.21	11.78	0.17	9.69
Region Kolda	0.27	13.56	0.29	15.40	0.21	12.00
Region Louga	-0.09	-4.41	-0.06	-3.42	-0.07	-4.05
Region Matam	0.35	17.94	0.36	20.00	0.35	19.92
Region Saint-lou	0.35	18.56	0.37	20.65	0.37	21.99
Region Tamba	0.19	9.66	0.19	10.19	0.14	8.14
Region Thies	0.18	9.26	0.21	11.67	0.19	11.32
Location: Urban	0.01	1.22	-0.07	-5.66	-0.07	-6.25
Housing						
House roof of concrete, tiles, or cement	0.12	9.74	0.14	11.67	0.07	6.46
House walls of cement or brick	0.08	5.04	0.11	7.26	0.10	7.32
Piped water	0.10	7.51	0.12	10.01	0.08	6.54
Toilet sewer or septic	0.14	11.11	0.15	12.58	0.10	8.76
Cooking with gas	0.23	17.21	0.14	11.49	0.08	6.84
Electricity	0.22	16.58	0.29	22.57	0.13	10.04
Household and household head						
Number of people in household			-0.04	-31.36	-0.05	-39.60
Age of household head			0.00	-9.18	0.00	-9.12
Number of children			0.02	5.31	0.03	8.63
Household head works in agriculture			-0.07	-5.65	-0.07	-5.52
Ownership						
Ownership of house					-0.07	-5.67
Ownership of land					0.00	5.32
Ownership of a car					0.28	13.18
Ownership of a radio					0.15	13.64
Ownership of a mattress					0.16	9.39
Ownership of a refrigerator					0.18	14.51
Ownership of a motorcycle					0.15	8.78
Ownership of a television					0.14	11.21
Ownership of a telephone					0.14	9.73
Ownership of a computer					0.15	6.00
Constant	5.47	313.77	5.92	249.94	5.79	206.05
Adj. R-squared	0.26		0.36		0.44	
No. Observations	13,567		13,567		13,566	

Source: Senegalese authorities and staff calculations.

34. **The results show that a CCTS could be very well targeted.** Two options were examined:

- Scenario 1, targeting the poorest 30 percent of households. 66 percent of the bottom income quintile, and 43 percent of the next quintile would be eligible (Table II.6). The participation rates fall for the higher income groups, especially for the top 40 percent of households, which indicates that the approach is quite effective at limiting the coverage of higher income groups.
- Scenario 2, targeting the poorest 10 percent of households (but presumably with a higher benefit). This scenario would cover 29 percent of the bottom quintile, and 12 percent of the second-lowest income group. The participation would fall even more in the higher-income households.

Table II.6. Performance of Proxy-Means Targeting

	Participation Rates (In percent)					
Consumption Quintiles	Target: bottom 30%			Target: bottom 10%		
	I	II	III	I	II	III
Bottom quintile	56.3	63.2	65.6	20.0	25.7	29.0
2nd quintile	39.1	42.4	42.5	12.8	12.5	12.0
3rd quintile	28.3	25.3	25.4	8.0	7.3	6.4
4th quintile	18.9	14.8	13.1	6.9	3.6	2.2
Top quintile	7.3	4.3	3.2	2.3	0.7	0.4

Source: Senegalese authorities; and staff calculations.

35. **The cash grant in Senegal could be made conditional upon children's school enrollment and receipt of primary health care.** The majority of the rural population is in the bottom two quintiles of the welfare distribution, and only 27 percent are in the top two quintiles (see Table II.4 above). Similarly, households with children of school age or that lack access to health care are also disproportionately poor. The proposed cash grant should therefore be made conditional upon school enrollment of children and receipt of primary health care.

Implementation of CCTS

36. **The introduction of a CCTS should be gradual, and accompanied by the streamlining of existing programs.** Currently, Senegal has a broad range of social assistance programs, which focus on a variety of social objectives. The incidence of these programs is not clear, as there is no impact analysis available, and some might not be well targeted. To free up resources for the cash transfer program, the resources for some or all of these programs could be redirected toward the CCTS. In addition, a gradual rollout of the CCTS is crucial, in order to monitor and control the fiscal cost and the effectiveness of targeting.

1. **The development of a CCTS distribution system will also require a gradual implementation of the program.** Since beneficiaries might live in remote areas and are unlikely to be very mobile, they should not have to travel long distances to reach a payout point. Therefore, exiting structures such as old age homes, hospitals, and schools could be used to give out transfers. Payments could be made by check to such structures, electronically through banks or post offices to beneficiaries that can be reached this way, or in cash using contracted private companies.[1] Donors could also be approached for support of a CCTS.

A. Conclusion

2. **Most of the current policies to offset the recent food and energy price surge in Senegal are not well targeted, so that alternative policy options appear more desirable.** As a first step, the butane subsidy could be reduced or eliminated, and some of the resources redirected towards reducing the price of lamp oil. The protective tax on vegetable oil should be phased out. In addition, better-targeted lifeline tariffs for small quantities of electricity could help protect some of the urban poor. The existing subsidies for farmers could be restructured to promote modern farming techniques and support the authorities' plans to expand domestic agricultural production of high-yield crops. Some vulnerable groups should be targeted directly, such as primary school children.

The authorities could explore the introduction of a conditional cash transfer system to address both cyclical and structural threats to the well-being of poor households. Such a scheme would be more cost-effective than the current subsidies. The successful experience in Latin America, where cash grants conditional on children's school attendance and other parameters have been distributed to female members of households, could be used as an example. Senegal could start with a proxy-means-based targeting approach, which identifies poor households on the basis of a household score. Within this framework, several options with different degrees of complexity could be examined. The cash grant could be made conditional upon children's school enrollment and receipt of primary health care. Finally, the new program should be rolled out gradually, to test and fine-tune the benefits, and develop capacity gradually.

[1] Namibia can serve as a successful example in this regard (see IMF Country Report No. 06/153).

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III. Fiscal Implications of an Economic Partnership Agreement[1]

A. Introduction

1. **The European Union (EU) and African, Caribbean, and Pacific (ACP) countries have been negotiating new WTO-compliant trade agreements—so called Economic Partnership Agreements (EPAs)** (Box III.1). Opposition to the intended EU-ECOWAS EPA has been outspoken in Senegal, based on fears of revenue losses and negative effects on the domestic industrial base.

2. **This chapter concludes that potential revenue losses are manageable if trade liberalization is implemented gradually over a period of 15–20 years.** Senegal's low reliance on custom duties and the strong foundations of its tax administration system are crucial assets to approach the EPA negotiations with confidence. A gradual approach, which would also take full advantage of the option offered by the EU to liberalize only 80 percent of all imports from the EU, would have several advantages:

- **Revenue losses would no longer be a major concern.** They would average 0.2–0.3 percent of GDP annually in the first 5 years. A gradual approach could be compatible with WTO rules, which do not determine with precision the pace of trade liberalization.
- **Any negative impact on domestic industries would be reduced.** Domestic producers faced with greater international competition would have more time to adapt to the changing environment. Clear signals about the gradual phasing out of tariff protection would provide the incentives for local economic actors to seek efficiency gains in advance of the increased competition. The agricultural sector could be a prime candidate to benefit from the permissible protection.
- **With the EU committed to providing compensation for revenue losses, under a gradual approach such compensation may be easier to achieve and therefore also more credible**.
- **Regional integration would be facilitated.** A frontloaded EPA could face strong resistance because it would outpace regional integration.

3. **This chapter is organized as follows.** Section B describes the current weight of customs revenues and assesses the fiscal impact under various liberalization scenarios. Section C analyses the case for protection of industries in Senegal, while Section D concludes.

[1]Prepared by Alex Segura-Ubiergo.

Box III.1. Economic Partnership Agreements—Background

EPAs are intended to replace the Cotonou Agreement between the EU and ACP countries. The Cotonou Agreement, which became effective in 2002, was nonreciprocal: whereas the EU would fully liberalize trade (with transition periods for some products), ACP countries were not required to dismantle or reduce their tariffs for European imports. The World Trade Organization (WTO) waived the EU's unilateral trade preferences until end-2007 but, even though negotiations had started in September 2002, fewer than half of the 77 ACP countries had initialed full or interim WTO-compliant EPAs by end-2007. ECOWAS has requested an additional negotiation period of 18 months.

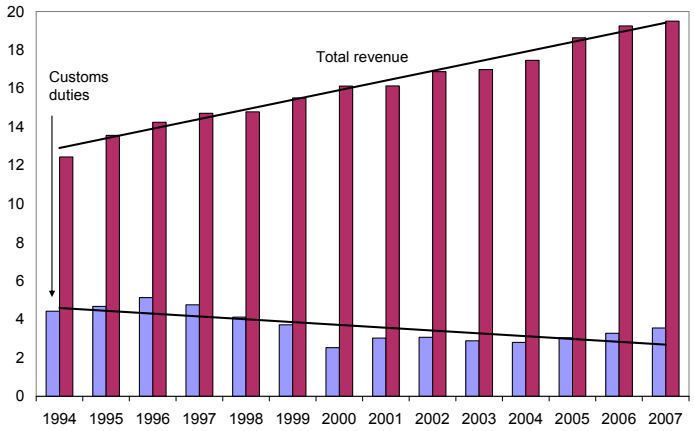
The core principle of an EPA is the establishment of a free trade area with "substantially all" trade liberalized. The EU has proposed asymmetrical implementation while preserving the notion of reciprocity: the EU would dismantle all tariffs and quantitative restrictions on imports from ACP countries, while most ACP countries (including Senegal) would liberalize just 80 percent of tariffs on EU imports, over a period of perhaps 15–20 years.

While countries such as Nigeria and South Africa have also not yet signed an EPA, Senegal has become one of the strongest voices in Sub-Saharan African (SSA) against EPAs. President Wade expressed strong opposition to EPAs during the EU-Africa summit in Lisbon in December 2007, and a protest march in Dakar attracted wide participation. An anti-EPA coalition has been established, and a delegation headed by the first vice-president of the Senegalese National Assembly organized a protest march in Brussels.

B. Fiscal Aspects of an EPA: an Assessment of Potential Revenue Losses

4. **Senegal has a tradition of strong tax administration and compares favorably in this respect to most SSA countries**. Many of Senegal's tax reforms can be considered best practice and have contributed to continuous growth in tax collection capacity.[2] The tax-to-GDP ratio has increased from 12 percent of GDP in 1994 to 20 percent of GDP by 2007 even though some key taxes, like the corporate income tax rate, were reduced, and others (e.g., the *taxe d'égalisation*) eliminated (Figure III.1).

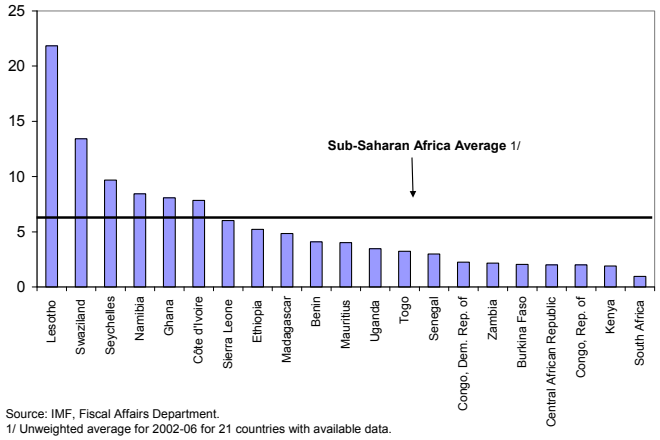
Figure III. 1.Senegal: Customs Duties and Total Revenue, 1994-2007
(Percent of GDP)



[2] These reforms include the introduction of the common external tariff, the unification of the VAT rates into one single rate, the establishment of a large tax payer unit, the simplification of certain taxes, the introduction of single tax-payer identification numbers, the focus on the fight against corruption and tax evasion, and the computerization of the Customs Administration and the Revenue Authority.

5. **Customs duties are sizeable but have been in long-term decline relative to GDP and total revenue.**[3] They currently represent about 3.5 percent of GDP and 15–17 percent of total revenues, below the Sub-Saharan African average (Figure III.2). The lower reliance on customs duties results from a lower average effective tariff rate and the strong performance of domestic taxes. This suggests that Senegal is better positioned than other developing countries to absorb the fiscal consequences of further trade liberalization efforts—with an EPA but also other instances of bilateral, regional and multilateral trade liberalization, such as those that could occur in the context of ECOWAS, the African Union or the Doha Round.

Figure III.2. Customs Duties in Selected SSA Countries
(Percent of GDP)



Source: IMF, Fiscal Affairs Department.
1/ Unweighted average for 2002-06 for 21 countries with available data.

6. **As to the order of magnitude of potential revenue losses from trade liberalization with the EU, it is useful to note that imports from the EU generated customs duties of 1.2 percent of GDP in 2007**. Imports from the EU (and associated customs duties) are heavily concentrated in five categories of products from the standardized classification system (Table III.1).[4] Specifically, mineral and petroleum products, machinery and mechanical appliances, prepared foodstuffs, vehicles, and vegetable products account for over 70 percent of all custom duties. Imports from the EU reached 17½ percent of GDP in 2007.

7. **Existing studies provide widely different revenue loss estimates of an EPA for Senegal** (Table III.2). Some estimate revenue losses of 0.3–1.1 percent of GDP per year, depending on the period considered and the list of protected products; those studies are broadly in line with the staff's results.[5] Others overestimate revenue losses because they use older data (in the early 2000s the share of EU imports in total imports exceeded 50 percent, whereas it is now about 43 percent)[6] and assume full and immediate trade liberalization—

[3] In recent years customs duties have grown about in line with the rising share of imports in GDP. Customs duties comprise all taxes and fees on foreign trade, except VAT.

[4] The focus of the Chapter is on trade in goods as only this generates customs revenue.

[5] See Fontagne et al. (2008), MEF (2008), UNECA (2004), and Cerdi (2004).

[6] EU imports account for just 36 percent of customs revenue because a number of EU products are exempt from duties.

Table III.1. Customs Duties from EU Imports (in CFAF billion)

TDC Section	Labels	Customs value	Customs duties	Percentage of imports	Effective tariff rate
V	Mineral and petroleum products	239.64	16.43	25.32	6.9
XVI	Machinery, mechanical appliances	190.87	12.28	18.92	6.4
IV	Prepared foodstuffs and beverages	72.60	6.84	10.54	9.4
XVII	Vehicles, aircraft, and vessels	56.91	5.29	8.16	9.3
II	Vegetable products	77.87	4.84	7.46	6.2
XV	Base metals and related articles	39.84	3.69	5.69	9.3
VI	Chemical products	97.01	3.56	5.49	3.7
VII	Plastics	30.35	3.00	4.62	9.9
XI	Textiles and textile articles	31.22	2.61	3.31	11.6
I	Live animals; animal products	34.98	2.21	3.41	6.3
XX	Miscellaneous manufactured articles	8.98	1.33	2.04	14.8
III	Animal or vegetable fats and oils	8.96	1.31	2.01	14.6
XIII	Stone, plaster, cement and asbestos	8.54	1.26	1.94	14.8
XII	Footwear, headgear and umbrellas	5.52	0.93	1.44	16.9
XVIII	Photo ,optical and medical Instruments	13.58	0.34	0.52	2.5
XIV	Pearls and precious stones	3.63	0.32	0.49	8.9
VIII	Raw hides, skins and leather products	3.53	0.29	0.44	8.2
X	Pulp of wood and paper	3.84	0.27	0.41	7.0
XIX	Arms and ammunition	3.43	0.04	0.07	1.3
IX	Wood, charcoal and cork	0.35	0.02	0.03	5.8
XXI	Works of art and antiques	0.04	0.01	0.01	3.4
	TOTAL	931.70	66.87	100.00	7.2

Source: Senegalese Customs Department (2007).

Table III.2. Estimates of the Fiscal Consequences of an EPA for Senegal

Study	Revenue Loss (% of GDP)	Revenue Loss (% of Total Revenue)	Protection Scenarios/ Pace of Trade Liberalization	VAT implications	Trade Diversion
MEF (2008)	0.8	4.5	Yes/Frontloaded	No	1 percent
Zouhon-Bi and Nielsen (2007)	2.0	10	No	No	6.8 percent
Fontagne *et al* (2008)	0.3 1/	1.5	Yes/Gradual	No	7.8 percent
UNECA (2005)	1.1	6	No/Frontloaded	No	9 percent
Busse *et al* (2004)	1.9	10.7	No	No	7 percent
Calipel et al (2004)	0.6	3.5	No/Frontloaded 2/	Yes	7 percent
IMF (2008) 3/	0.3 1/	1.5	Yes/Gradual	Yes	10 percent

1/ Under gradual trade liberalization. A frontloaded scenario would be associated with revenue losses of about 0.6-0.8 percent of GDP.
2/ Also calls for the need to proceed cautiously and use a gradual approach.
3/ Refers to this chapter.

ignoring that the EU has proposed that only 80 percent of imports from the EU need to be liberalized and that liberalization can be implemented gradually (Box III.1).[7]

[7] See Zhouhon-Bi and Nielsen (2007) and Busse et al. (2004).

8. **Three main liberalization scenarios seem possible.** The following assesses the fiscal impact under (i) a full and immediate trade liberalization (Option 1); (ii) substantial and immediate liberalization (Option 2); and (iii) substantial but gradual liberalization (Option 3). Full liberalization assume that 100 percent of all imports from the EU would be liberalized—which would be the most extreme scenario and unrealistic, given the EU's willingness to settle for a substantial liberalization, at 80 percent of all imports from the EU. With respect to the substantial but gradual liberalization scenarios, three different paces of liberalization are assumed: frontloaded, progressive, and backloaded (Options 3.1–3.3).

Option 1: Fiscal impact under full and immediate trade liberalization

9. **An immediate elimination of all tariffs on European imports would lead to revenue losses of about 1.5 percent of GDP per year.** They are composed as follows:

- **A loss of customs duties of 1.2 percent of GDP** (CFAF 67 billion) as explained in ¶5.
- **The reduction in customs duties would result in a VAT revenue decline of about 0.15 percent of GDP** (CFAF 8 billion). Any reduction in customs duties has an automatic negative effect on VAT revenue because custom duties are part of the VAT tax base (other studies have ignored this). A reduction in the VAT tax base equal to the decline in customs duties, multiplied by the effective VAT rate (on imports) of about 12 percent, yields an effect of 0.15 percent of GDP.[8]
- **Trade diversion may account for a further modest revenue loss of 0.15 percent of GDP** (CFAF 7 billion). Eliminating tariffs on imports from the EU might increase these imports vis-à-vis imports from other areas, which could lead to additional customs revenue losses. A relatively large trade diversion effect of 10 percent was assumed in the staff's simulations, even though trade diversion in the case of Senegal is likely to be smaller since: (i) the share of EU imports in total imports is already high, making it difficult to increase it further; and (ii) and the elasticity of substitution of most other imports is low (e.g., rice from Thailand, electronics from China, and WAEMU imports with their zero tariff rate). However, the import share of other countries (e.g., the US and Canada) could decline in favor of the EU.[9]
- **The impact of more complex second-order effects is unlikely to be large.** For example, if the EPA led to efficiency gains and higher competitiveness, GDP growth and corporate income taxes could rise. By contrast, if duty-free European imports led

[8] The statutory VAT rate is 18 percent but some products (especially agricultural ones) are exempt.

[9] UNECA (2004) assumes trade diversion of 9 percent and Fontagne et al. (2008) assumes 7.9 percent. It is not worth modeling with any precision what the trade diversion effect will be. Even if the trade diversion effect was very large (say 20 percent), the revenue impact (0.3 percent of GDP) would only be about one-fifth of the direct combined effect on customs duties and the VAT on imports.

to an erosion of competitiveness of domestic industries, tax collections could drop. However, this risk is largely limited by the continuation of tariffs on 20 percent of imports from the EU—which are to be selected as part of the trade negotiations.[10]

10. **A full and immediate trade liberalization under an EPA would constitute a relatively large fiscal shock for Senegal**. A fiscal revenue reduction by 1.5 percent of GDP would pose a serious risk for the desired fiscal stance and macroeconomic stability, given the uncertainties about the level of compensatory grants the EU (or other development partners) might provide. New fiscal revenue of 1.5 percent of GDP, on top of the significant revenue increases achieved in recent years, could not be generated in a nondistortionary manner, despite Senegal's strong tax system, and the country's development needs would make offsetting spending cuts difficult.

Options 2: Fiscal impact under substantial and immediate trade liberalization

11. **If trade liberalization is capped at 80 percent of imports from the EU, revenue losses may be around 1.2 percent of GDP**. The EU Commission has agreed to asymmetrical liberalization (100 percent liberalization on the European side, and 80 percent on the ECOWAS side), in line with other EPAs.[11] Given that effective tariff rates are similar across import categories (see Table III.1), four of the five scenarios presented here for selecting the 20 percent of imports to be protected yield similar revenue losses of about 1.2 percent of GDP, while the fifth is unrealistic (Box III.2 and Table III.3).

Option 3: Fiscal impact under substantial but gradual trade liberalization

12. **The EU is not requesting that trade liberalization be implemented at once**. Transitions of 15–20 years are envisaged, even if the precise path of trade liberalization for ECOWAS is not yet clear. Interim agreements signed with other ACP countries suggest three possibilities: *frontloaded liberalization* (Botswana, Lesotho, Namibia, Swaziland, Mozambique and the East African Community countries); *progressive liberalization* (Mauritius, Zimbabwe, and Caribbean countries); and *backloaded liberalization* (Côte d'Ivoire and Ghana).

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[10] Gauging the size of indirect effects requires the use of a general equilibrium model, which is beyond the scope of this chapter. Such models are difficult to calibrate in low income developing countries with large informal sectors and subject to frequent domestic and external shocks. However, Cerdi (2004), using a general equilibrium model, reaches overall conclusions with respect to revenue losses from an EPA similar to those presented in this chapter because the direct effects dominate.

[11] Among the countries that have signed interim EPA agreements, the overwhelming majority will eliminate tariffs for 80 percent of imports over a period of about 15 years. East African Countries will have liberalized 80 percent of imports by 2023, and so will Ghana and Côte d'Ivoire (the only two countries in West Africa to have signed interim agreements).

Box III.2. Five Protection Scenarios

Scenario 1: Protect agricultural products (Standardized Trade System (STS) sections I–IV), given that Europe' agricultural sector benefits from EU producer subsidies and is competitive, the livelihood of over 50 percent of the population depends on agriculture and poverty remains high in rural areas, and agriculture is important for all ECOWAS countries.

Scenario 2: Protect industrial inputs such as chemicals, plastic, and cement as well as transport vehicles (STS sections VI, VII, XIV, and XVII), given that chemicals and cement are important industrial sectors with large firms (ICS, Ciments du Sahel, and Soccocim), and the vehicles sector may be up and coming (e.g., bus assembly).

Scenario 3: Protect machinery and other related devices (STS section XVI) to guard primarily against revenue losses (given that there is no significant industrial activity in this area).

Scenario 4: Protect petroleum and mineral products (STS section V), to provide continued protection for the oil refinery (SAR), which currently imports crude oil free of customs duties (whereas the duty on refined oil is 10 percent), and protection for aluminum and iron ore exploitation.

Scenario 5: Minimize revenue losses by protecting individual products with the highest effective tariff rates (such as onions, margarine, potatoes, sugar, milk, syrup, some electronic devices, and personal vehicles). This would contain revenue losses at around 0.7 percent of GDP. However, in practice, the ECOWAS-EPA will have to be based on a common list of products—i.e., not differentiated by country—and require liberalization of 80 percent of tariff lines as well as 80 percent of trade in volume.

Table III.3. Revenue Losses under Alternative Protection Scenarios

Protection scenarios	Liberalized Trade	Customs Duties	Trade Diversion	VAT	Total	
	Percent		CFAF billion			% GDP
1. Agricultural Products	79.13	-49.7	-5.0	-5.4	-60.0	1.13
2. Industrial Inputs	81.14	-55.3	-5.5	-6.0	-66.9	1.26
3. Machines and Devices	79.51	-54.6	-5.5	-5.9	-65.9	1.24
4. Minerals and Petroleum	74.28	-50.5	-5.0	-5.4	-60.9	1.14
5. Minimize revenue losses	80.00	-32.8	-3.3	-3.7	-39.8	0.75

Source: IMF staff calculations.

13. **Three possibilities are presented in the following that differ in the pace of trade liberalization** (Table III.4 and Figure III.3).[12] They build on protection scenarios 1–4 above, which lead to ultimate revenue losses of about 1.2 percent of GDP. Within each scenario, liberalization is assumed to be spread out evenly (instead of implemented at the last possible moment) to avoid abrupt revenue losses.

Table III.4. Average Annual Revenue Loss by Liberalization Scenario, 2010–25
(Percent of GDP)

	2010-2014	2015-2019	2020-2024	2025 onwards	2010-2024
Frontloaded liberalization	0.6	0.8	1.0	1.2	0.8
Progressive liberalization	0.3	0.6	0.9	1.2	0.6
Backloaded liberalization	0.2	0.4	0.6	1.2	0.4

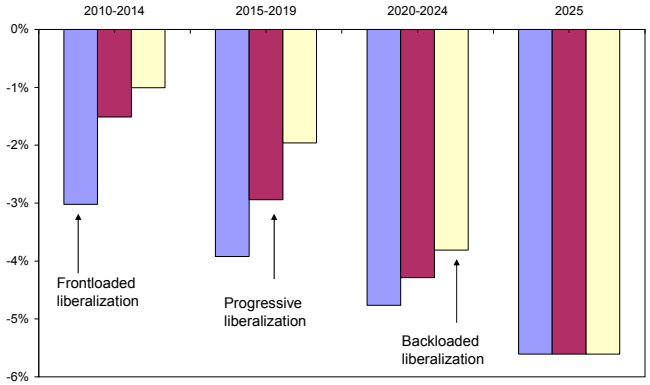
Sources: Senegalese authorities; and IMF staff calculations.

Note: All scenarios assume that 20 percent of trade is never liberalized and maximum revenue loss by end of the trade liberalization period is 1.2 percent of GDP. Frontloaded/progressive/backloaded liberalization assumes 50/25/20 percent trade liberalization during 2010-2014, 66/50/40 percent during 2015-19, 83/75/60 percent during 2020-24, and 100 percent thereafter.

- ***Option 3.1:*** *Frontloaded trade liberalization* produces the largest immediate revenue losses, which would start at 0.6 percent of GDP (3 percent of total revenues) annually from 2010.[13] This would still be a significant shock, even for a country with a strong fiscal system such as Senegal, which should be avoided.[14]

- ***Option 3.2:*** *Progressive liberalization* would lead to an immediate revenue loss of 0.3 percent of GDP (1.5 percent of total revenues). Recent experience suggests that Senegal is capable of absorbing a revenue loss of this magnitude. This option would also provide a substantial window to

Figure III. 3. Senegal: Average Annual Revenue Loss by Liberalization Scenario, 2010-25
(Percent of Total Revenue)



Sources: Senegalese authorities; and IMF staff calculations.

[12] The scenarios are stylized representations of possible agreements. In any case, it is not possible to exactly replicate in the scenarios the already signed interim agreements. For example, in the case of Côte d'Ivoire and Ghana, trade liberalization of about two-thirds of imports should be achieved by 2018 and 80 percent by 2023, but the pace of liberalization prior to 2018 is not specified.

[13] The start of the simulation is 2010 given the fact that the negotiations are likely to be pursued in 2008-09.

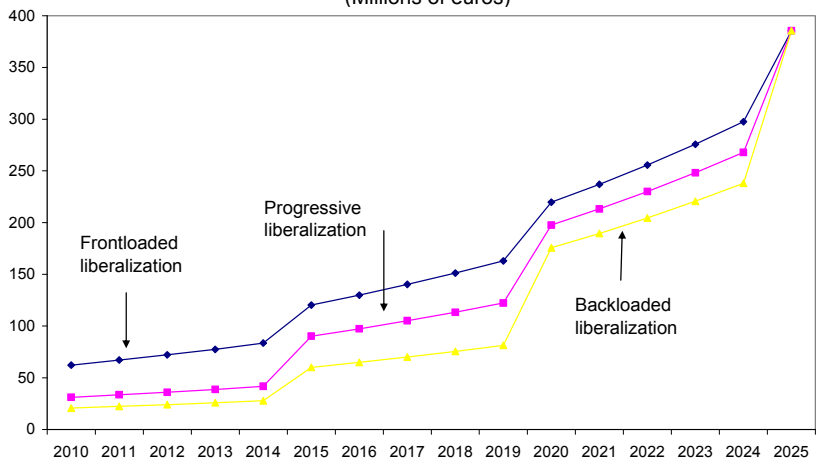
[14] A revenue loss of 0.6 percent of GDP is twice the size of the short-term revenue loss provoked by the reduction in the corporate income tax rate from 33 to 25 percent in 2005.

continue modernizing tax administration and expanding the revenue base so that additional revenue losses can be comfortably absorbed by the time the next phase of trade liberalization begins.

- ***Option 3.3:*** *Backloaded liberalization* would also provide a modest revenue loss in the first 10 years of trade liberalization. However, in the later years revenue losses rise more sharply under backloading than in the other two options.

14. **While the EU is committed to providing additional development assistance to offset EPA-related revenue losses, the required additional aid varies widely by scenario** (Figure III.4). If revenue losses were to be fully offset, during 2010–14 the required additional aid would be around €25–35 million per year under the assumed progressive or backloaded liberalization and €72.5 million per year under the assumed frontloading, representing aid increases of 60–125 percent.[15]

Figure III.4. Senegal: Required Additional EU Aid to Offset Loss of Customs Duties by Liberalization Scenario, 2010-25
(Millions of euros)



Source: IMF staff calculations.

15. **Reforms could reduce net revenue losses and the need for EU compensation.** Revenues could be bolstered by tax administration reforms (see MEFP ¶23). Reducing customs duty exemptions could also have a significant positive impact on revenue collection—the foregone customs duties on the quarter of imports that are currently exempt amount to 0.7 percent of GDP, over half of it related to the protection of SAR, the oil refinery.

C. The Infant-Industry Argument and Other Aspects of an EPA

16. **Critics of EPAs have made the (infant-industry) argument that (nascent) industries in Senegal need protection to compete internationally.** However, several factors suggest that this is not a strong argument. First, the average effective tariff rate on EU imports is already rather low (7 percent), implying that this is unlikely to be a decisive factor. Second, except for agricultural products, most imports from Europe are capital-intensive goods (transport vehicles, machinery, electronic devices) and petroleum products, in which Senegal clearly has no comparative advantage. For most nonagricultural imports from the

[15] For example, under frontloading the required additional aid would be €362 million over the 5-year period, compared to envisaged aid of €288 million in 2008–13 (according to the 10th FED recently signed in Lisbon).

EU, tariffs can only be justified because they produce revenue, not because of their "protective potential." Third, the limited dynamism of the Senegalese industrial sector to date has more to do with constraints that will not be overcome with tariff protection (e.g., access to finance, lack of labor market flexibility, weak judicial system, and poor infrastructure).

17. **International experience suggests that some protection can be useful when a particular sector has substantial potential to become competitive over time or when the immediate removal of protection would create a serious social dislocation**. But two conditions need to be met. The first one is that the level of protection needs to be limited in scope and be phased out over time. Unlimited protection distorts incentives, limits competition, generates inefficient and rent-seeking behavior, and reduces overall welfare. The key is to provide limited protection (so that the distortion of incentives is minimized) and clear signals that it will decline over time and ultimately be eliminated. This forces companies to follow a strategy of permanent adaptation and search for efficiency—companies know that they have to innovate and adapt or face decline and ultimate demise.

18. **Substantial but gradual liberalization under Options 3.2 and 3.3 could offer a degree of protection that is sufficient for domestic industries to prepare for greater international competition and for moderating the economic and social costs of adjustment.**[16] Protection of 20 percent of EU imports and the gradual phasing out of tariffs on EU imports over a period of 15 years will limit revenue losses to a manageable level and offer some level of protection to domestic industries. The level of protection is not too high because the average tariff rates are already relatively low, while the gradual phasing out over time would create the necessary incentive for adaptation and change.

19. **However, the EPA needs to be cast in terms of an overall industrial policy and development strategy, and could in particular support agriculture**. Agro-industries have been identified in the government's Accelerated Growth Strategy (AGS) as a sector with substantial potential, and agriculture could therefore be the focus of protection under an EPA. This approach would have the advantage of limiting revenue losses in a simple way (scenario I described above), could obtain broad regional support (given the importance of agriculture in African countries), would support a sector where the EU may have a particularly strong competitive edge, and would help shield a sector that is vulnerable due to a number of factors (irregular rain, land erosion, locust invasions, etc.) and has a direct impact on poverty.

20. **As tariffs are gradually reduced, additional aid from the EU to compensate for the revenue loss could be used to increase investments in the most dynamic sectors of the economy, as well as facilitating the adjustment from less efficient to more efficient**

[16] Fast trade liberalization, while having medium-term growth-enhancing effects, can create important short-term economic and social dislocations (Segura-Ubiergo (2007)).

industries. This strategy would have several advantages. First, it could provide a boost to the AGS: the sectors with the greatest potential could be made the key beneficiaries of additional aid from the EU. Second, the tariff reduction could result in lower domestic prices of imported products. And finally, for agricultural products, to the extent that they do not continue to be protected and tariffs on them are gradually reduced, production subsidies could be provided (which cause fewer distortions than tariffs and allow consumer prices to be at international levels instead of above them).

D. Conclusion

21. **Potential revenue losses associated with an EPA are likely to be manageable.** This is because Senegal depends relatively little on customs duties and has a strong tax administration and solid recent revenue performance. However, an EPA faces other important challenges that remain to be resolved, such as the pace of trade liberalization, the identification of the sectors to be protected, the precise mechanism to provide compensation for revenue losses, and coordination among ECOWAS countries.

22. **A substantial but gradual approach to trade liberalization would have several advantages.** Within this option, a progressive or backloaded approach could contain revenue losses, facilitate the establishment of a credible compensation mechanism, assuage concerns about the negative impact of the EPA on domestic industries, and facilitate current regional integration efforts. However, gradualism may face other difficulties, including the need to make the commitment for reform credible. By contrast, frontloading trade liberalization would be a significant fiscal shock for Senegal, with an initial revenue loss of about 0.6 percent of GDP, while the EU would have to more than double development assistance to Senegal to offset the loss. Frontloading could also raise significant concerns about the effect on industrialization and social dislocation.

23. **Given the option to maintain protection for 20 percent of imports, the agricultural sector may be the most appropriate one to protect**. The sector is important for a majority of the population (including the most vulnerable groups) and the EU is particularly competitive in it. Protecting this sector could also facilitate reaching a consensus with other ECOWAS countries.

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