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COLOMBIA

Selected Issues

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Approved by the Western Hemisphere Department

April 14, 2005

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I. Labor Markets in Colombia: Structural Issues, Reforms, and Prospects[1]

High structural unemployment and a large informal sector prompted Colombia to enact a major reform in 2002, aimed at increasing labor market flexibility while protecting vulnerable groups. Although it is difficult to separate the effects of the reform from the impact of strengthening GDP since reforms were implemented, they appear to have had some positive results. Nevertheless, there may be broad scope for further initiatives to improve the performance of Colombian labor markets.

A. Introduction

1. **Labor market conditions in Colombia present a challenge.** At end-2004, the unemployment rate amounted to 12 percent, and about one-third of the labor force was considered underemployed. The steady economic growth in 2003–04 helped lower the unemployment rate from 20 percent in 2000. However, while cyclical factors play an important role, it seems clear that structural rigidities also affect labor markets. Anecdotal evidence suggests that rigidities introduced by regulations may drive employment into the informal sector as employers seek to avoid these requirements. Jobs in the informal sector are often less secure, raising concerns about the stability of future incomes. In short, a lack of jobs in the formal sector is often considered to reflect structural problems, and could contribute to high poverty rates in Colombia.

2. **Concerns about structural rigidities prompted a major labor market reform in December 2002 aimed at increasing flexibility.** Unemployment and informality have declined since the reforms, with the economy generating hundreds of thousands of new jobs. At the same time, the economic recovery solidified and gained momentum, thus making it difficult to distinguish between the impact of the labor market reforms and the employment gains that typically accompany stronger economic growth.

3. **This paper will examine conditions in Colombian labor markets.** The following section reviews labor market developments leading up to as well as since the reforms. Subsequent sections examine structural issues in the labor markets, then review the labor market reforms, and analyze the impact of reforms versus stronger growth. The final section explores remaining challenges.

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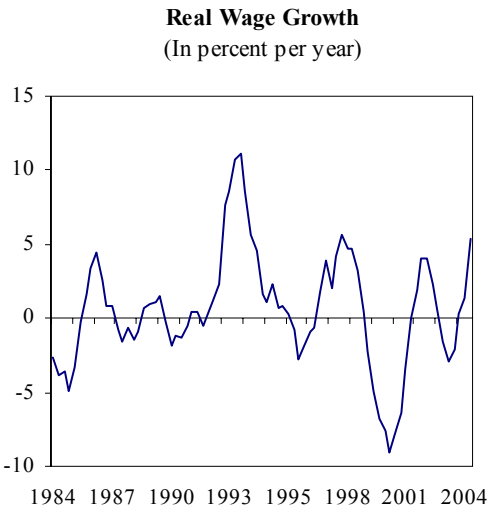
[1] Prepared by Calvin Schnure.

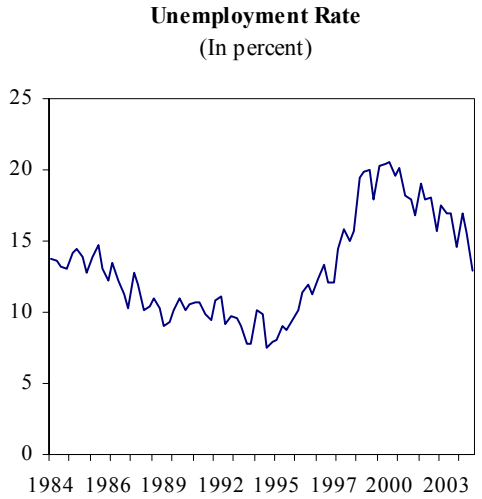
B. Recent Labor Market Developments

The economic crisis in 1999 interrupted a sustained improvement in labor markets

4. **Two decades of solid macroeconomic performance contributed to a firming of labor market conditions through the mid-1990s.** Strong economic growth and moderating inflation provided a sound framework for job growth, as real GDP growth was robust through 1998. Macroeconomic stability improved as well, with inflation decelerating from over 30 percent in the early 1990s to below 20 percent in 1997, with further declines to single digits since then. These economic conditions fostered a steady improvement in labor markets. Unemployment rates declined from 14 percent in the mid-1980s to below 8 percent in 1994. Strong demand for labor lifted wage growth contributing to a decline in poverty rates.



5. **Employment conditions worsened considerably, though, during the economic crisis of the late 1990s.** Real GDP stagnated in 1998 and contracted by more than 4 percent in 1999 as the regional crisis spilled over to Colombia. The unemployment rate rose from 7½ percent in 1994 to over 20 percent by the end of the decade. The poor job market cut across all major demographic groups, with significant increases in unemployment among both men and women, adult workers, youth, and older workers. Longer-term unemployment worsened, with those looking for work for more than 25 weeks rising from less than 40 percent of total unemployed prior to the crisis to 65 percent in 2000.



6. **These unemployment trends understate the deterioration in labor markets, as the quality of employment worsened as well.** A modest decline in overall employment masked a shift from those with jobs in the formal sector, to underemployment, informal and self-employment. Informal sector employment rose from an already-high 52 percent to 60 percent of total employment. Self employed workers, who often are unable to find higher-paying jobs in the formal sector, rose more than 11 percent from 1997 to 1999, from

1.65 million to 1.84 million. This shift toward lower-quality jobs hurt earnings, with real wages declining 20 percent from mid-1998 to 2000. At the same time, the share of workers earning the minimum wage nearly doubled, from 20 percent of all workers to 37 percent.

7. **Labor force participation rose to bolster family incomes.** Women and younger family members entered the labor force to supplement or replace income from the primary wage earner. The female participation rate rose from 47 percent to 57 percent between 1996 and 2000, while the participation rate among adult males, in contrast, was stable at 75 percent.

Labor market conditions have begun to improve again

8. **Labor markets improved only modestly as the economic recovery got underway.** The tentative nature of the early stages of recovery likely contributed to the slow growth in jobs, as real GDP growth remained low through 2002 and the level of GDP did not exceed the previous cyclical peak until mid-2002. More fundamentally, however, several sources of rigidity were believed to contribute to structural unemployment, including substantial nonwage labor costs, a high minimum wage, other labor market regulations, low worker skills, and security concerns related to the civil strife and drug-related violence.

9. **The improvement in the labor market accelerated in recent years.** The unemployment rate declined to 12 percent at end-2004, from over 20 percent in 2000. Long-term unemployment has fallen significantly, from 65 percent of total unemployed in 2000 to around 50 percent in 2004. Employment in the formal sector expanded rapidly while informal employment declined slightly between 2002 and 2004, leading to a 3 percentage point decline in the informal sector's share of total employment. The rate of underemployment declined as well, from 36 percent to below 32 percent, with most of the reported decline occurring among male workers. These improvements in the quality of jobs contributed to a marked rise in the growth of real wages in 2003 and 2004, as well as a 2½ percentage point increase in the share of workers covered by social security benefits. Finally, there has been a modest decline in participation rates, though improvements on this front appear more tentative.

C. Sources of Labor Market Rigidity

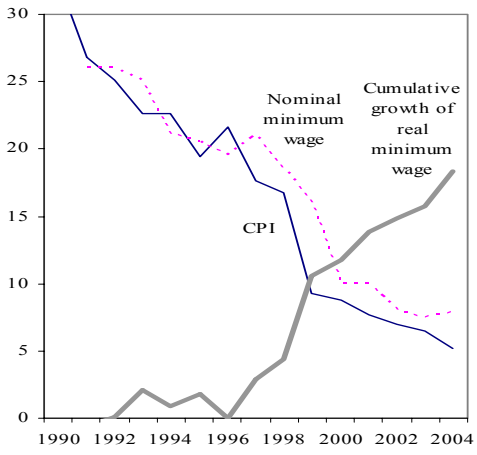
10. Despite these gains, unemployment rates remain elevated and the informal sector still accounts for an unusually large share of total employment. This section addresses several sources of structural rigidities in Colombian labor markets.

- *Nonwage labor costs.* Nonwage costs are high in Colombia and increased further as a result of labor market reforms in the early 1990s, to over 50 percent of total labor costs. Such costs provide disincentives to hiring and can reduce allocative efficiency in labor markets. Chief among these costs are severance payments, pension costs and other non-wage levies. Funding for special fiscal funds imposes a significant nonwage cost to employers through a 9 percent surcharge on wages, including 3 percent for the *Cajas de Compensacion*, which encompass a number of programs in the workplace. The absence of an unemployment insurance scheme has reinforced the reliance on severance payments as a source of financing for unemployment spells, as well as making the funding of employment-related programs highly procyclical.

  Nonwage labor costs undercut labor market performance in Colombia, according to several studies. Bernal and Cárdenas (2003) estimate a relatively high cost elasticity of labor demand, and suggest that nonwage costs were responsible for much of the rise in unemployment in the 1990s. Kugler (1999) finds that lower severance costs following the 1990 reforms improved labor market flexibility by increasing both separations and hiring, with a net positive impact on employment, including increased hiring from the informal sector into the formal sector. Greater employment flexibility likely improved allocative efficiency in the labor markets.

- *Minimum wage.* Colombia has a relatively high minimum wage that applied to over one-third of all workers in 2002 and appears to act as a binding constraint on hiring. Moreover, researchers have found the minimum to have broader effects in wage-setting in the formal sector not just at wages near the minimum but also at levels further up the pay scale, and in the informal sector as well (Maloney and Nuñez, 2000). This broader effect on wage setting behavior may exacerbate the severity of the impact of minimum wages on labor market flexibility. Moreover, minimum wages in Colombia appear to have worsened income

CPI Inflation and Change in Nominal Minimum Wage
(In percent per year)



Sources: Nominal minimum wage is from Banco de la Republica; and CPI is from DANE.

inequality by depressing employment of less-skilled workers, especially women and younger workers (Arango and Pachon (2004), Angel-Urdinola (2004)).

Economic distortions due to the minimum wage have likely intensified in recent years, as the real minimum wage rose significantly in the late 1990s due in part to the backward-looking process of adjusting nominal minimum wages for inflation. The nominal minimum wage is adjusted annually based roughly on the previous year's inflation rates. During a period of declining inflation rates, this process resulted in nominal increases faster than current inflation. As a result, the real minimum wage rose nearly 20 percent over the past decade, inhibiting the labor market adjustment to the economic crisis.

- *Other labor market regulations.* Colombia has historically had strict regulations regarding the workweek, overtime wages, severance payments and job security, and other aspects of the labor market. Such labor market regulations may have detrimental effects on employment. Botero et al. (2003) find labor market regulation across 85 industrialized and developing economies to be associated with a larger informal economy, lower labor force participation, and higher unemployment, especially among younger workers. According to an index of labor market regulation the authors construct, Colombia's labor markets were more heavily regulated than three-quarters of the 41 middle-income countries in their sample. Interestingly, they also find that richer countries regulate labor markets less than do poorer countries, but offer a more generous social safety net (Table).

- *Low worker skills.* Commentators have noted an apparent mismatch between skill levels in the supply and demand for labor, with the surplus of low-skilled workers accounting for a high share of unemployment and underemployment. Furthermore, the rapid pace of technological change may have worsened the skills gap in recent years. To address the level of workers' skills the Ministry of Social Protection has included education and training in its strategy to improve labor market performance.

- *Security.* A long guerrilla civil conflict and drug-related violence have disrupted economic activity, rendered certain areas of the country unsafe for commerce, investment, and mineral and oil exploration and development. Crime and drug activity may have also diverted labor and capital to protection and security as well as socially unproductive activities. Cárdenas (2002) compares the level of conflict in Colombia to a broad range of countries and argues that crime and security concerns were significant factors in the drop in productivity in recent years following several decades of robust gains.

Employment Laws Index for Selected Countries, by GNP Per Capita

Selected Countries	Subindicies: Alternative Employment Contracts[2]	Conditions of Employment[3]	Job Security[4]	Overall Index[1]
Bottom 25 percentile of GNP per capita (median)	**0.56**	**0.73**	**0.38**	**1.72**
Uganda	0.44	0.77	0.50	1.71
Zambia	0.56	0.59	0.00	1.15
Bolivia	0.39	0.87	0.57	1.82
Ukraine	0.72	0.84	0.68	2.24
Indonesia	0.83	0.50	0.43	1.75
Middle 50 percentile of GNP per capita (median)	**0.56**	**0.75**	**0.41**	**1.75**
Philippines	0.39	0.65	0.57	1.61
Ecuador	0.57	0.62	0.67	1.86
Dominican Republic	0.56	0.77	0.33	1.65
Jamaica	0.56	0.48	0.13	1.16
Peru	0.23	0.74	0.70	1.67
Colombia	**0.56**	**0.82**	**0.62**	**1.99**
Russian Federation	0.78	0.75	0.68	2.21
Panama	0.87	0.84	0.67	2.38
Turkey	0.72	0.81	0.20	1.74
Venezuela	0.85	0.84	0.64	2.32
Mexico	0.53	0.77	0.71	2.01
Brazil	0.85	0.86	0.69	2.40
Chile	0.70	0.55	0.31	1.56
Uruguay	0.72	0.52	0.03	1.27
Argentina	0.39	0.72	0.44	1.55
Top 25 percentile of GNP per capita (median)	**0.56**	**0.39**	**0.21**	**1.25**
Canada	0.56	0.49	0.17	1.22
United Kingdom	0.56	0.26	0.20	1.02
Hong Kong	0.56	0.19	0.01	0.76
Singapore	0.56	0.19	0.11	0.85
United States	0.56	0.29	0.08	0.92
Japan	0.59	0.64	0.19	1.42
Median, all countries	**0.56**	**0.65**	**0.34**	**1.66**

Source: Botero et al (2003)

[1]Measures restrictions against alternative labor contracts, such as part-time work.

[2]easures the flexibility of employment contracts with regard to working time requirements (working hours, mandated rest, overtime), mandatory payments for nonworking days (paid annual leave, holidays, maternity leave), and minimum wage legislation.

[3]easures legal protections against dismissal and costs to employers to terminate employment contracts.

[4]The overall index is aggregated from subcomponents that measure the degree of labor market protection or regulation regarding alternative employment contracts, conditions of employment, and job security. Higher values indicate greater labor market rigidities.

D. The Labor Law Reform of 2002

11. **The Labor Market Reform Law 789 of December 2002 aimed to increase the flexibility of the labor market while protecting vulnerable segments of the population**. The reform sought to stimulate demand for labor by increasing the flexibility of labor contracts, encouraging training through apprenticeships, and expanding protection for the unemployed through training programs and a temporary unemployment subsidy. Restrictions on the length of the workday and workweek were relaxed or eliminated, making it easier for employers to hire for peak periods and weekends, or to use multiple shifts in factory work. Mandatory overtime charges for nighttime, holidays, and Sunday work were also reduced. Severance payments for unilateral dismissal—which may make employers reluctant to hire new workers in the face of uncertainty about future business demand—were lowered. The contract for apprentice programs, meanwhile, was changed to stimulate demand for apprentices, reducing wages during a training stage to 50 percent of the minimum wage, and to 75 percent during an on-the-job employment phase of apprenticeship.

E. The Impact of the Labor Market Reforms

12. **It is difficult to separate the effects of labor market reforms in generating employment gains from the general effects of economic recovery**. Gaviria (2004) suggests that economic growth has been the main driver of labor market improvements, and that the overall effects of the reforms have been slight. Relying on indirect evidence from a survey of businesses, as well as an empirical examination of employment in the commercial, service, and manufacturing sectors, Gaviria finds no evidence that the reforms stimulated employment. He does find, however, that efforts to increase apprenticeship have been largely successful. Also, underemployment due to insufficient hours fell significantly, presumably as a result of the reform to increase the flexibility of the workday and workweek, suggesting some further beneficial impact of the reforms.

13. **These findings have been somewhat controversial.** One concern centers on the validity of the control group for the impact of the reforms. The study assumes that the reforms had little or no effect on the manufacturing sector, which can thus serve as a control group. Accordingly, the methodology compares employment trends in commercial and service sectors relative to manufacturing. Finding little difference in employment growth across sectors, these results are interpreted as indicating little impact of the reforms. This lack of divergence is also consistent, however, with the reforms having a positive effect, but one that is similar across all three sectors, including manufacturing. Furthermore, some analysts have observed that the sample of businesses in the paper's survey is not very representative.

14. **Other research, in contrast, provides more direct support for the effectiveness of the reforms.** One method of testing the impact of the reforms is to examine whether the relationship between real GDP growth and employment has changed since the reforms were enacted. López et. al. (2004) find that employment has, in fact, risen more rapidly for a given

increase in real GDP since the reform than in prior periods.[2] Specifically, according to these estimates, employment was 3.4 percent higher in 2004 than it would have been in the absence of reforms, representing a net increase of 260,000 jobs. Moreover, this partial-equilibrium analysis may understate the overall effect if the reforms, by stimulating labor demand or allocative efficiency of labor markets, lifted real GDP growth as well.

15. **The quality of jobs improved, with a marked shift from informal to formal employment.** The sectoral detail of employment suggests that gross flows may have been more important than net flows, with significant net hiring out of the informal sector into the formal. Formal employment rose 325,000 between mid-2002 and mid-2004, with most of the gains occurring at larger firms. Informal employment, in contrast, rose modestly in 2003 but declined in 2004, decreasing slightly in net terms (López et. al., p.28). While more rapid real GDP growth would be expected to boost labor demand in both the formal and informal sectors, the reform eased restraints on formal employment. Thus, the greater strength of employment in the formal sector is consistent with these reforms having had some of the desired effects. Other signs of improved job quality include a decrease in underemployment, as well as a decline in labor force participation rates by secondary household workers, presumably because the incomes of primary workers have stabilized.

16. **Spells of unemployment have shortened in duration as greater labor market flexibility encouraged flows from unemployment to employment**. Nuñez (2004) estimates the impact of the reforms by comparing movements between unemployment and employment in the formal sector, where the flexibility of labor contracts improved under the new legislation, with the flows in and out of the informal sector, where the labor laws do not formally apply. Increased flows out of unemployment in the formal sector reduced the duration of unemployment spells since the reforms were enacted. Furthermore, the improvements were greatest among younger and less-qualified workers, suggesting the reform has had positive consequences on the distribution of income as well.

17. **Workers receiving benefits under social security rose as well.** Two factors combined to increase the number of workers covered by government benefits. First, coverage ratios rose in both formal and informal sectors. Coverage within the formal sector increased 1¼ percentage point to nearly 90 percent. Coverage was up a similar amount in the informal sector (but from a much lower base), rising to 45 percent. Second, the employment shift from the informal to formal sectors helped boost overall coverage, which increased 2½ percentage points (López et. al., p. 29). While the timing of this shift toward the formal sector and increased coverage is suggestive of an impact of the reforms, though, one cannot rule out that

[2] López et. al. (2004) estimate the elasticity of quarterly employment growth with respect to GDP growth for 1986-2004, including dummy variable for the periods after the 1990 reforms and 2002 reforms. The estimated employment elasticity rose from 0.305 in 1994–2002 to 0.485 in 2003–04.

it is a result of stronger economic growth, as real GDP continued to grow in 2003 and into 2004.

18. **Greater flexibility of the workday appears to have bolstered employment generation since the reforms.** Gross employment data do not allow one to distinguish which aspects of the reform had the greatest impact. To overcome this, the Ministry of Social Protection conducted a survey of some 200 firms. Responses suggest that more flexible regulations of work schedules played a major role in more rapid employment generation. Over three-quarters of respondents indicated the changes to the workday and reduced overtime charges for holiday and Sunday work were the most aspect of the reforms. Reduced charges for dismissals were also considered important (López et. al. pp. 29-30).

19. **The reforms appear to have stimulated a sharp increase in apprenticeships.** The total number of apprentices rose 89 percent in the first year following the reforms (Gaviria, p. 20). Most of this increase has been in the on-the-job phase of apprenticeship, while the number in training has not risen substantially (López et. al., p. 33).

20. **Programs to support the unemployed, however, have fallen short of the reform's targets.** Administrative difficulties in these programs appear to have slowed their execution. As of mid-2004, for example, only 69 percent of the resources available for unemployment subsidies and been utilized, while spending on training programs only achieved 36 percent of the target (Gaviria p. 18).

21. **Results to date may be understated if the reforms have fuller effect only over a longer period.** The difficulties in evaluating the effectiveness of the reforms are compounded by the relatively short time period that has elapsed since their enactment. As hiring decisions and job search processes tend to take a considerable amount of time to complete, the full effect of the reforms to increase the flexibility of labor markets is unlikely to have been realized in just two years. Other aspects of the government's strategy to reduce structural unemployment, including apprenticeship and training programs, may take even longer to bear fruit.

F. Remaining Challenges

22. **Reforms to date are perhaps best characterized as an important first step whose ultimate results are not yet fully apparent, while not being a complete solution to structural labor market issues**. Colombian labor markets still have several sources of structural weakness. Some—like the high real minimum wage, and heavy nonwage labor costs—are specific to labor market regulations and could be addressed through policy changes. More general influences may stifle labor demand as well, including the skill mismatch in the workplace, the pace of overall real GDP growth, and the security situation.

23. **Real minimum wages remain high.** There is strong political opposition to reducing the minimum wage, and the Constitutional Court has ruled that the minimum wage must continue to be adjusted for past inflation. Thus, while a gradual reduction in the real minimum wage would likely have a favorable impact on employment generation, particularly in the formal sector (with the attendant increase in wages, benefits, and coverage under social security), as well as the distribution of income, progress over the near term appears unlikely.

24. **Nonwage labor costs—if not lowered—may continue to weigh on formal sector employment.** One hurdle in reducing the nonwage costs is the absence of an alternative revenue source for the public sector for employment-related programs and other social benefits. A key part of removing the disincentives to employment, therefore, will be to strengthen the overall revenue framework to reduce the reliance on nonwage levies.

25. **Further efforts to build human capital, through education, training, and apprenticeships, would likely bolster employment.** Several studies have suggested that a large supply of unskilled or low-skilled labor relative to labor demand contributes to higher unemployment, especially in the face of technological change in recent years (for example, see Arango, Posada, and Uribe). Education and training may facilitate the movement of these workers into higher skilled positions. Furthermore, as the minimum wage and high nonwage costs may have a greater effect on lower-skilled workers, such training efforts that successfully boost skill levels may diminish the negative effects of these other structural problems as well.

26. **More general macroeconomic and societal improvements will also ameliorate labor market issues.** Two factors in particular will be critical in reducing unemployment over the medium term. First, overall GDP growth will need to be sustained in line with potential growth rates in order to generate sufficient demand for labor. Second, further stabilization of the security situation would continue to reduce the disruptions that crime and violence have caused to economic activity and investment spending, and increased security costs. Improvements in the security situation may have some offset on unemployment rates, though, if a large number of former combatants need to be reabsorbed into the domestic labor force.

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II. THE INTERGOVERNMENTAL TRANSFER SYSTEM IN COLOMBIA[1]

A. Introduction

1. **Colombia has reached an advanced stage of decentralization with large-scale transfers from the center to the regions.** The 1991 constitution established a revenue sharing transfer system from the central administration to the subnational governments, earmarked by sectors, in order to finance service provision in the health and education sectors at the local level. A constitutional reform in 2001 led to slower growth of intergovernmental transfers during the period 2002–08. In 2004, transfers to the subnational level reached 5.1 percent of GDP, and 36 percent of expenditure was carried out at the decentralized level.

2. **While the automatic revenue-sharing system has contributed to fiscal problems at the subnational level through the 1990s, it is likely to create serious fiscal difficulties for the central administration going forward.** After fiscal legislation has managed to control subnational spending and borrowing, local governments have run surpluses in recent years, while the central administration continues to run a deficit. A reform in 2001 decoupled intergovernmental transfers from central administration revenue for a transition period, and has provided some temporary fiscal space for the central administration. However, the central administration deficit is forecast to widen in the near future, reflecting severe rigidities of the central expenditure system. In response, the authorities are embarking on a study that would assess the revenue sharing system, with a view to ensuring medium-term fiscal sustainability at all levels of government.

3. **The purpose of this paper is to analyze various aspects of Colombia's system of intergovernmental transfers.** Section B reviews the revenue-sharing system, including the 2001 reform and the transition rules, and the experience to date. It also simulates possible alternatives to the system for possible future reform. Section C highlights the characteristics of the distribution of transfers at the local level, including incentives, and the efficiency of subnational spending. Section D summarizes the experience of other countries, namely Spain, Brazil, and India, with intergovernmental transfers. The last section concludes.

B. The Level of Intergovernmental Transfers and their Fiscal Implications

4. **Colombia's decentralization process began in the early 1980s and was reinforced by the 1991 constitution.** Today, the country is a decentralized republic consisting of a central administration, 32 departments, 1,084 municipalities, 4 special districts and indigenous territories that are politically independent. Political and administrative institutions replicate the structure of the central administration, and governors, members of departmental parliaments, mayors, and members of municipal councils are elected directly.

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[1] Prepared by Isabell Adenauer.

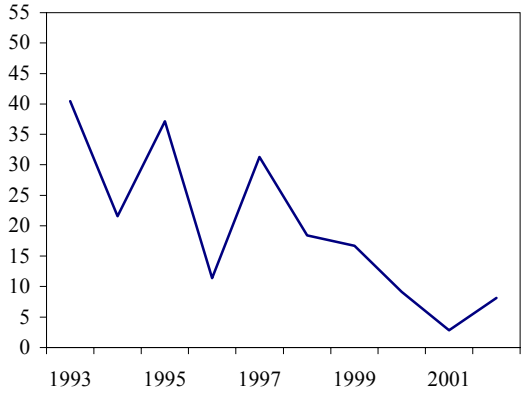
5. **The constitution stipulated large-scale revenue transfers from the center to the region, in order to finance subnational expenditure in the social sectors.** These provisions (Box 1) reflected the principle that local governments could carry out expenditure in the health and education sector more effectively. Transfers were to smooth out vertical differences and provide a stable income flow to subnational governments, as well as address horizontal differences at the subnational level.

6. **However, expenditure responsibilities were not specified clearly, and the revenue-sharing mechanism contributed to transfer dependence at the local level.** As will be discussed in this section, the system resulted in subnational fiscal indiscipline and aggravated fiscal problems at the central level, which are likely to increase going forward. Regions had no incentive to control their deficits, as transfers kept growing, creating the perception that costs for additional spending would be borne by the central administration.

The revenue-sharing system before 2001

7. **During the 1990s, automatically and sharply rising transfers, combined with a lack of clear rules and incentives to control deficits and debt levels at the subnational level, created an unsustainable subnational debt burden.** As required by the constitution (see Box 1), transfers from the central administration increased significantly during the period 1993–99 (Tables 1 and 2). At the same time, the stock of debt of subnational governments grew by 40 percent in 1993, and on average by 23 percent each year until end-1999 (Figure 1). Weak fiscal rules, nonbinding expenditure ceilings, and automatically rising revenue transfers to local governments had created a free rider problem at the subnational level.[2] In addition, bank lending to local governments through the early 1990s rose substantially, with banks using the transfers from the central administration as implicit collateral for their loans. Eventually, several departments collapsed financially, and the central administration bailed them out.

Figure 1. Subnational Public Debt
(Annual percentage changes)



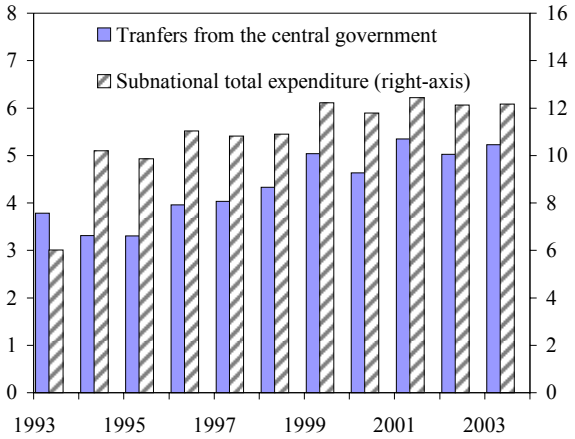
Sources: Ministry of Finance; and staff estimates.

8. **Moreover, large scale transfers to the subnational governments discouraged local tax collection, in particular at the departmental level (Figure 2).** One of the reasons for establishing high and automatic transfers from the center to the local governments was to

[2] The 1991 constitution specified some measures to control debt levels at the subnational level, introducing the rule that both internal and external debt of the central administration and the decentralized governments could not exceed their payment capacity. These regulations, however, proved insufficient to control local debt levels.

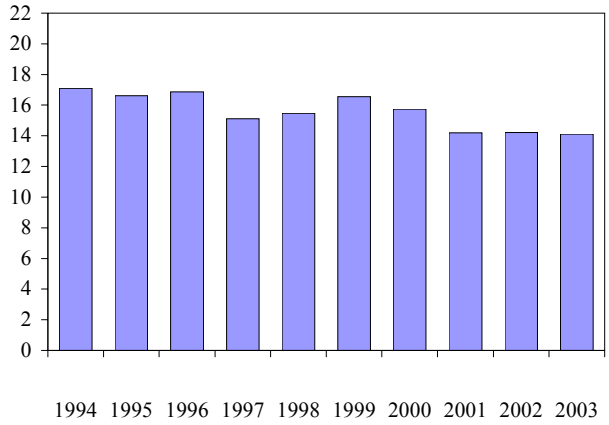
counteract limited tax collection capacity at the local level. Departments collect excise taxes, a motor vehicle tax, and a registration tax, while municipalities levy a real estate tax, an industry tax, and a gasoline tax. However, the increasing dependency on the transfer system was particularly pronounced at the departmental level, where the share of outlays financed by own tax collection fell from 57 percent in 1993 to 22 percent in 2001 (Table 3). At the municipal level, this share fell from 37 percent in 1993 to 27 percent in 2001 (Figure 3).

Figure 2. Transfers from the Central Government and Subnational Total Expenditure
(In percent of GDP)



Source: Ministry of Finance.

Figure 3. Subnational Tax Revenue
(In percent of combined public sector tax revenue)



Source: Ministry of Finance.

9. **The automatic tax-sharing system also weakened the link between revenue and expenditure at the subnational level, given that the sequencing between the assignment of expenditure responsibilities and revenue transfers was poor.** The 1991 constitution lacked clarity regarding the assignment of expenditure responsibilities across the different layers of government, which led to duplication of spending between the central and the decentralized governments, especially in the health and education sectors. While the automatic transfers enhanced the revenue side of the decentralization process, expenditure responsibilities and expenditure control lagged behind and were not properly developed across levels of government. In addition, the relative high level of transfers from the central administrations to the territorial governments, reaching 5.3 percent of GDP in 2001, would have been more typical for fully fledged federal systems, where expenditure responsibilities of the territorial governments are much more extensive.[3] This disparity between vague expenditure responsibilities, and automatic and high transfers from the central administration gave rise to a lack of subnational fiscal discipline.

10. **In addition, high and growing transfers from the central administration to the lower levels of government in Colombia did not smooth out vertical and horizontal differences.** At the department level, the vertical balance, measured as the ratio between the

[3] See Ter-Minassian (1997).

transfers received by the subnational government and its total expenditures, increased from 56 percent in 1994 to 65 percent in 2001. At the municipal level, the vertical balance stayed roughly constant, fluctuating around 33 percent for the period 1994–2001. Horizontal differences, understood as the ratio of own tax revenues to total revenues, also continued to exist (Figure 4). While in some departments receipts from the transfer system amount to almost 90 percent of total revenue, others are much less dependent on transfers from the center, drawing as little as 10–15 percent of their revenues from transfers. At the municipal level, the dependency of income on revenue transfers from the central administration showed an equally broad range—from below 20 percent to almost 100 percent. Neither departments nor municipalities converged in terms of fiscal performance; while some were running continued deficits, other achieved solid surpluses through 2001.

11. **The revenue sharing system also created serious difficulties for fiscal management at the central administration level.** Between 1996 and 2001, transfers to departments increased by 112 percent and to municipalities by 115 percent. These large-scale transfers had the following consequences:

- The rigid formula for automatic revenue transfers to local governments **diminished the incentive to collect more revenue** at the central administration level.

- Transfers to subnational government based on revenues were **pro-cyclical**, hampering the central administration's ability to conduct a counter-cyclical policy even if deemed appropriate. In addition, the rigid formula for increasing transfers limited the scope for expenditure discretion at the central level.

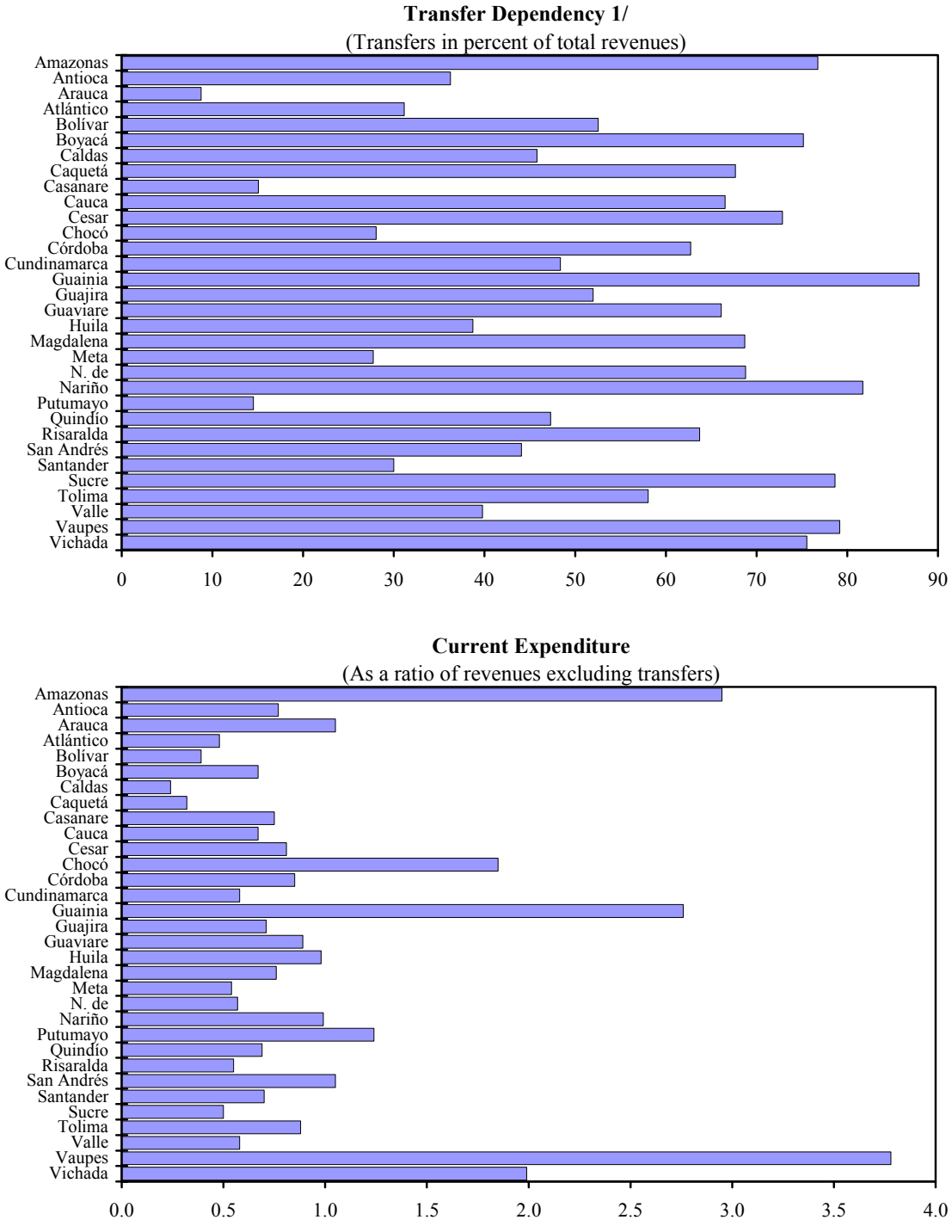
The effects of these consequences were compounded by the absence of a tight budget constraint, including at the subnational level, and the absence of expenditure coordination across levels of government in an automatic revenue sharing system increased the expenditures of the overall public sector.

The reform of the system in 2001

12. **Given the difficulties that the tax-revenue sharing system and lack of fiscal discipline had created, Colombia modified the arrangement in 2001.** The changes aimed to limit the automatic transfers to local governments and to improve macroeconomic and fiscal coordination across different levels of government by a series of laws (Box 2). In 2001, a constitutional reform was passed that changed the automatic tax-sharing system as follows:

- It consolidated several individual transfers, namely the *Situado Fiscal*, the *Participación Municipal*, the *Fondo Educativo de Compensación* and other transfers that were channeled into teacher wages in both departments and municipalities, into one single transfer called *Sistema General de Participaciónes (SGP).*

Figure 4. Colombia: Decentralization Indicators by Department, 2000



Source: Ministry of Finance.
1/ Exclude transfers from co-financing schemes and royalties.

- The SGP is based on an amount of Col$10.9 trillion for the year 2001. For a transition period (2002–08), this amount is to grow 2 percentage points in real terms for the period 2002–05, and 2.5 percentage points in real terms for the period 2006–08. From 2009 onwards, the rate of growth of the SGP will be the average percentage rate of growth of current government revenue of the preceding four years. At a minimum, however, the SGP must amount to at least the percentage of central administration current revenue that was transferred in 2001, which was around 42 percent of revenue, after the transition period ends.

- During the transition period, the following additional rule applies: whenever real GDP growth is higher than 4 percent, the growth of transfers would be raised by the excess of real GDP growth above 4 percent. This overall level of adjusted transfers, however, would be discounted by any extra costs that were caused by the transfer amounts in years in which real GDP growth was below 2 percent (during 2002–06), or 2.5 percent (2006–08).

- This new design of intergovernmental transfers led to SGP growth of 9.6 percent in 2002, 8.9 percent in 2003, and 8.3 percent in 2004.

Evaluation of the transition system and simulations of alternatives

13. **As a result of these efforts, fiscal discipline among subnational entities increased between 2000–04.** Spending grew less rapidly than during the period 1997–99, subnational deficits decreased, and the stock of territorial debt grew by only 5 percent on average throughout 2000–03. While local governments ran deficits through the 1990s, they began to achieve small surpluses in 2001, and reached a surplus of 1.3 percent of GDP in 2004.

14. **The 2001 reform of the transfer system was also instrumental in establishing fiscal discipline at the local government level.** Moving from an automatic revenue sharing system to a system in which transfers grow by a defined rate in addition to the inflation rate helped to address some of the incentive problems. Moreover, the system ensured a more stable and predictable flow of resources. Since transfers must be channeled through local budgets, the greater predictability has helped improve fiscal management. A relatively steady growth in the level of transfers has led to lower spending at the local level, as windfall gains are less likely.

15. **For the central administration, the reform of the transfer system managed to address some of the problems of the previous arrangement, but other expenditure rigidities led to continued deficits.** Expenditure of the central administration, however, is constrained by severe rigidities, of which transfers to local governments are only one element. Mandatory transfers to the public pension system, which depleted its reserves in 2004, have started to increase sharply. In addition, a relatively high public debt—53 percent of GDP at end-2004—has caused interest payments to rise. Multiannual expenditure for important investment projects, a special feature of the Colombian budgetary system, reduces the room for expenditure discretion further. As a consequence, the fiscal deficit at the central administration level has fluctuated around 5½ percent of GDP through recent years.

16. **Going forward, the central administration's outlays mandated by expenditure rigidities are projected to increase.** Even after the recent pension reforms, and net pension costs for the central administration are projected to rise significantly in relation to GDP between 2003 and 2010. The implementation of the revised budget code, which seeks to reduce revenue earmarking and scale back multiannual commitment, will take some time.

17. **A return to the revenue sharing system of intergovernmental transfers is likely to create substantial difficulties for fiscal management at the central administration level.** As pointed out above, current legislation foresees that, beginning in 2009, the transfers system will go back to a moving average share of central administration revenues. A simulation of a scenario in which transfers were linked to a moving average of central administration current revenue of the last four years,[4] starting in 2007 and other things being equal, reveals that the deficit would rise from 6.3 percent of GDP in 2006 to 8 percent in 2007. By 2010, the deficit would reach almost 9 percent of GDP, if no fiscal adjustment measures were taken (Table 4 and Annex I). The level of transfers would reach 7.1 percent of GDP in 2010, up from 5.2 percent of GDP in 2006.

18. **A better alternative might be to link growth of transfers to the rate of inflation, which would improve the fiscal outlook.** Under this scenario, transfers would decline from 5.2 percent of GDP in 2006 to 4.5 percent of GDP by 2010. The 2010 deficit would thus be lower by 2.6 percentage points of GDP than in the scenario with the return to the previous, revenue-sharing system (see Table 4). This would clearly imply that the subnational governments will need to raise their own revenues or trim spending, given the constraint on their ability to borrow.

Macroeconomic coordination

19. **Macroeconomic coordination and accountability across different layers are crucial for an effective decentralization process involving large-scale redistribution of resources.** The literature has underlined the importance of macroeconomic coordination across different levels of government, preferably under a tight budget constraint for the overall public sector, and the need for accountability in a context of large-scale transfers between central and subnational governments.[5]

20. **As in many other Latin American countries, the need to have fully consistent fiscal policy frameworks was not recognized in the early stages of decentralization in Colombia.** The institutional development lagged behind the relatively aggressive and large-

[4] In addition, the simulation exercise takes into account the 2001 reform stipulation that after the transition period of defined transfer growth ends and the system will be based on revenue-sharing again, transfers need to reach the minimum amount of the share of current revenue transferred in 2001, which is about 42 percent of current revenue (see Annex I for more details).

[5] See Rodden (2003), Wiesner (2002 and 2003), and Winkler (1994).

scale distribution of resources. Moreover, there was relatively little or no accountability of lower levels of government, and the information flow back to the center was erratic. While Colombia has made important progress to address these shortcomings, a certain fragmentation of different levels of governments continues.

21. **In particular, there is no designated institutional structure that coordinates and integrates the fiscal planning of different levels of government.** Overall fiscal coordination still needs to be strengthened across levels of government, including the coordination of budgets. No formal coordination of the different budgets—the one of the central administration and the ones of local governments—takes place to ensure consistency with spending targets for the overall public sector. In addition, a shortcoming of Law 819 is that it does not differentiate in terms of administrative capacity among subnational governments.

22. **Furthermore, the information system from, and accountability of subnational governments is still inadequate.** While subnational governments report some fiscal data to a number of institutions, there is no systematic monitoring and integration of complete fiscal data, including expenditure, for the subnational sector. The lack of monthly fiscal reporting requirement even for bigger municipalities and departments weakens the accountability of subnational entities. Sectoral expenditure data are also lacking, and the last census was conducted in 1993, even though the level of transfers to subnational entities for certain categories is determined by specific population indicators.

C. The Distribution of Intergovernmental Transfers

23. **The purpose of this section is to evaluate the distribution side of Colombia's intergovernmental transfer system.** Excessive earmarking for distributing resources to lower levels of government prevails (Box 3). In addition, the system could improve on promoting the right incentives across the different layers of government. Finally, this section examines how well Colombia fares regarding efficiency of spending, in particular in the social sectors.

The distribution system

24. **More room for expenditure discretion may need to be given to the local level.** Significant earmarking of the use of transfers has prevented local governments from taking on decentralized responsibilities in the form of prioritizing expenditure at the local level based on local needs, thereby hampering the decentralization process. While some earmarking might be retained to improve social indicators, more room should be given to general purpose transfers to increase ownership at the local level. In addition, the distribution system is very complex and uses a variety of indicators.

The role of incentives

25. **As discussed extensively in the literature, a crucial pillar of a successful decentralization framework is the provision of the "right" incentives across the different levels of government.**[6] In the context of large-scale transfers from the central administration to local governments, the importance of incentives to stimulate local tax collection has been stressed in order to avoid a free rider problem at the subnational level. Excessive earmarking of transfers, automatic formula transfers, a lack of independent evaluation of results, and weak institutional frameworks have been identified in the literature as the "wrong" incentives for a decentralization process.

26. **While some progress has been made in Colombia, the current redistribution system needs to give stronger incentives to local governments to increase their fiscal sustainability.** The 2001 reform of the automatic revenue sharing transfer system has helped to curb the free rider problem at the local level, and has also introduced some elements to reward fiscal and administrative efficiency. However, these incentives are poorly designed and have too little weight. Rewarding tax revenue per capita through the last two preceding years is a questionable measurement of fiscal efficiency, as cyclical factors or new activities might bias tax revenues. Equally, defining fiscal efficiency as investment expenditure financed by own revenue might create the wrong incentives and lead to investment expenditure that would have not taken place otherwise. Finally, overall earmarking of revenues remains heavy.

27. **A better device to instill fiscal efficiency at the local level might be to reward local tax collection in relation to local tax capacity.** As has been argued above, the large scale transfers to local government tend to discourage local tax collection, in particular at the departmental level. A better device to raise local tax collection and strengthen fiscal sustainability than the current indicators of fiscal and administrative efficiency might be to measure the local tax effort in terms of fiscal capacity. This capacity can be estimated by using the average effective local tax rate as a proxy for a benchmark level of revenue and thus local revenue capacity. Fiscal capacity is estimated to vary a lot across local governments in Colombia, particularly among municipalities.

28. **The current transfers system could be reformed to smooth out the differences in local fiscal capacity.** Local entities with a tax base below the average would thus be compensated by higher transfers from the center, and tax collection in line with tax capacity would be rewarded. Local government that collect taxes below their capacity, however, would receive lower transfers. This approach would be more equipped to pursue both equity and efficiency goals among decentralized entities than the current distribution system, which does not differentiate between local revenue collection and local revenue capacity.

[6] See in particular Wiesner (2003, p. 45), and Rodden (2003, p. 14).

Efficiency of spending

29. **Despite a long period of high transfers to local governments to be spent in the social sectors, the quality of social services continues to lag behind.** One of the core objectives of the whole decentralization process and the design of the transfer system in Colombia was to address local needs, in particular in the social sectors. As indicated above, large-scale transfers to the local level were earmarked extensively for social expenditure. Yet, social indicators did not improve at the same pace as intergovernmental transfers, especially before the 2001 reform, which tried to align transfers better with actual local needs and costs by reforming the distribution side of transfers. A study by the Colombian National Planning Department (DNP) showed that while some progress had been achieved in the education sector in terms of school coverage through the 1990s, the quality of both education and health services was still relatively low, in particular at the municipal level.[7]

30. **While some progress has been achieved after 2001, studies point to continued inefficiency of local spending, especially in the social sectors.** Helped by the 2001 reform, health service and school coverage improved between 2002 and 2004, as did the supply of drinking water. However, additional studies by the DNP[8] point to remaining deficiencies in the quality of education and health sectors at the local level, as well as duplication of spending on the social sectors. Further clarification of expenditure responsibilities, continued fiscal adjustment through better coordination across levels of government, a better use of the fiscal capacity of local entities, measures to improve the efficiency of subnational spending, and better accountability and monitoring of local governments are thus crucial areas for future reform.

D. Cross-Country Comparison

31. The purpose of this section is to **compare Colombia's experience with intergovernmental transfers with the experience in Spain, Brazil, and India.** The latter countries were chosen because they share some common features with the system in Colombia:

- All countries are **highly decentralized,** with relatively large autonomy of subnational governments. In Spain, 45.3 percent of all expenditure was carried out at the subnational level, while in Brazil 35.8 percent was spent at the local level, and 56.7 percent in India (Table 5).

- In all three countries, decentralization involved **large intergovernmental transfers**, and all have some form of revenue-sharing arrangement in place. In turn, subnational governments in these countries were relatively dependent on large-scale transfers

[7] Porras (2002).

[8] Montenegro (2003).

from the center. The share of transfers in subnational revenue amounted to 42.4 percent in India, very close to Colombia's share of 42.2 percent.

- In all countries, the high degree of decentralization and significant intergovernmental transfers posed **challenges for the conduct of fiscal policy.** In particular, establishing fiscal discipline at the local level proved difficult, and all counties strove to set the right incentives among the different levels of government while controlling subnational borrowing.

32. **In Spain, transfers from the central governments to subnational governments are designed to cover the gap between mandatory expenditures and revenues accruing at the local level.** The formula for the amount of transfers is based on the costs of expenditure responsibilities minus revenues of local entities in a base year, growing by the rate of central government's tax revenue increase relative to the base year.[9] If the region's sources of financing were larger than its expenditure responsibilities, it will contribute to the central government's expenses. Since the formula is independent of the actual costs in the years after the base year, local governments have an incentive to trim their costs.

33. **Spain has been more successful than other countries—including Colombia—in clearly specifying expenditure responsibilities across levels of government.** It also has a relatively well functioning institutional framework in place, including a Fiscal and Financial Policy Council (FFPC) regulating the financial relations between national and subnational governments. While the FFPC has formally only consultative power, it coordinates fiscal policy in practice. In particular, in practice fiscal targets for the overall public sector are discussed within the FFPC, even though regions are *de jure* autonomous in their fiscal policy. As a result, regions were required to run a balanced budget in recent years. Weaknesses in the Spanish intergovernmental system include relatively weak enforcement mechanisms for adjustment at the local level, and the lack of timely subnational fiscal information.

34. **After three debt crises at the state level in the past decade, Brazil has made significant progress in improving fiscal performance at the subnational level.** As in Colombia and Spain, revenues of the central government are shared with local governments. However, only a certain number of federal government taxes are subject to revenue sharing, which has led to some distortion, with the federal government relying more on the taxes which are not shared with the regions. Also, some tax revenue is generated and redistributed at the local level itself. Despite these circumstances, the Brazilian states[10] raise a large share of their revenue through their own taxation, which includes a value-added tax, and the dependence on transfers varies a lot among subnational entities. The coefficients for the

[9] The transfer regulation also provides for transitory financing floors, and some compensation for demographic shocks in regions, and for solidarity financing to poorer regions. Moreover, for historical reasons, the Basque country and Navarre have separate financing systems.

[10] In addition, municipalities raise a sales tax on services.

horizontal distribution are to a large extent subject to political bargaining, so that there is little incentive for subnational governments to improve their performance. In addition, in some states, a moral hazard problem arose, as the central government did not credibly commit to a no-bail-out stance through the mid-1990s.

35. **In response, the debt rescheduling agreements signed in 1996 and the Fiscal Responsibility Law (FRL) of 2000 successfully re-established fiscal subnational discipline.** The FRL included a no-bail-out clause, and through recent years the center has taken strong stance against bail-outs. In 2004, subnational governments ran a primary surplus of about 1 percent of GDP. The law also established expenditure ceilings and set comprehensive reporting and transparence requirements for subnational governments, so that Brazil is now ahead of many other countries as regards access to subnational fiscal information and local accountability. However, there is a discussion in Brazil how sanctions would be applied in case of a subnational breach of the debt limits set by the FRL.

36. **In India, state governments account for close to 60 percent of public sector expenditure, but only for about 40 percent of revenue collection.** The vertical gap is closed by a complex combination of shared taxes, transfers, and borrowing. Several bodies are involved in determining the overall level of resources that are transferred to the local level, but there is no one institution setting a limit to the overall deficit, which creates problems similar to those arising from the Colombian set up. A constitutional body called the Finance Commission (FC) specifies the magnitude of shared taxes, several different bodies determine grant transfers, and the central government sets the market borrowing limit and provides direct loans to the subnational level. Control of state borrowing in the form of bank loans, however, is limited.

37. **In more detail, every five years, the FC determines** what share of central taxes are to be distributed to the states, and how these resources are to be allocated across states. In addition, the ministry of finance transfers resources in the framework of the annual budget to the local level to finance developmental needs. A body called the Planning Commission distributes these resources across states in the form of both loans and grants. Moreover, the central government also transfers specific tied grants to local government to finance particular projects.

38. **As in Colombia in the 1990s, this intergovernmental transfer system has discouraged local tax collection and efforts to control expenditure, and the absence of a ceiling on subnational domestic borrowing has undermined fiscal discipline.** In response, the FC has made attempts to take into account local tax capacity when distributing transfers among subnational governments, which however proved difficult to measure. Coordination among the different Commissions and institutions involved in India's transfer system also caused problems. To date, some regional governments are highly dependent on transfers from the center and have little incentive to control their deficits.[11] Their ensuing receiving

[11] Purfield (2004) shows empirically that Indian states with greater access to central administration transfers tend to have higher deficits.

loans from the center to cover their deficits creates a moral hazard problem. Thus, reform efforts should aim to pass appropriate fiscal legislation to establish local discipline and give some incentives to subnational governments to improve their performance.

E. Conclusions and Policy Options

39. **The intergovernmental transfer system in Colombia continues to pose challenges for the conduct of fiscal policy.** While a reform of the system and adequate legislation to promote fiscal responsibility have helped to establish fiscal discipline at the subnational level, further reform might be warranted to ensure fiscal sustainability of the overall public sector going forward.

40. **Remaining challenges in improving the system include in particular:**

- After 2009, **the transfer system should remain decoupled from the central administration's revenues.** A possible alternative might be to link the rate of transfer growth to the rate of inflation, which would curb pressures on the central administration deficit. In addition, this measure could help limit the combined public sector deficit, if subnational governments raised their own revenues or trimmed spending, in response to slower growth in transfers from the central administration.

- **Macroeconomic coordination mechanisms between different levels of government need to be strengthened,** including at the formal level. An institution similar to the Fiscal and Financial Policy Council (FFPC) regulating the financial relations between national and subnational governments in Spain might be warranted, so that budgets and fiscal targets can be coordinated more systematically.

- **Reporting and monitoring of subnational governments** should be improved. In order to promote transparency and accountability of local governments, a comprehensive set of fiscal data should be released at the local level regularly. Brazil can serve as a model in this respect.

- **The distribution side of intergovernmental transfers should be simplified,** with a view to reducing earmarking to provide more room for local expenditure discretion.

- **The incentive structure** of the system should strive to reward local tax collection, possibly by measuring subnational tax collection in relation to tax capacity.

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Box 1. The Intergovernmental Transfer System Before 2001

The 1991 constitution, in combination with Law 60 (1993), stipulated that transfers to territorial governments must increase to 46.5 percent of the central administrations' revenue in 2002. Out of the 46.5 percent, 24.5 percent would go to departments and 22 percent to municipalities. The constitution requires that revenue should only be devolved to lower levels of government after a specific expenditure responsibility has been assigned; however, this requirement has not been observed in practice. As established by the automatic tax-sharing system, departments received an increasing percentage of current revenue from the central administration, from 22 percent in 1993 to 26 percent in 2001. Transfers to municipalities increased from 15 percent of central administration revenues to 29 percent in 2001.

Law 60 of 1993 complemented the 1991 constitution in the area of transfers. It demands that the total amount of the transfers to departments be determined as a minimum share of the central administration's total current revenues, ranging from 23 percent in 1994 to 24.5 percent in 1996. Law 60 also stipulates that for the period 1994–98, every municipality would receive an annual basic transfer that is equal, in constant prices, to the transfer received in 1992.

Before the 2001 reform, the two main instruments for central administration revenue sharing were the *Situado Fiscal* and the *Participación Municipal*. The *Situado Fiscal* provided automatic transfers to departments, earmarked for current expenditure in health and education. The *Participación Municipal* was channeled into current and investment expenditure on basic services, including education, health, and water supply at the municipal level. Apart from these two mechanisms, resources were distributed to the subnational level through a system of cofinancing funds, as well as through the National Royalties Fund *(Fondo Nacional de Regalías)*. As the latter were not subject to automatic increase based on central administration current revenue and follow specific distribution rules, the discussion presented in this paper will relate mainly to the *Situado Fiscal* and *Participación Municipal*.

Box 2. Fiscal Rules for Subnational Governments

In 1997, Colombia started to enact a series of laws to ensure sound macroeconomic management at all levels of government, in particular to improve coordination between, as well as monitoring of, different layers of government. Law 358 (1997) was designed to curb excessive debt levels of subnational governments, by linking their ability to contract debt to liquidity and solvency indicators. A local entity that does not adhere to these indicators would have to establish a fiscal adjustment plan, to be monitored by the ministry of finance of the central administration. However, subnational debt still grew by 15 percent a year on average during the years 1998–2000, and the performance plans did not always bring about stronger fiscal discipline at the local level. These plans turned out to be a device to address short-term liquidity problems rather than solving the underlying fiscal imbalances, caused by high unconditional transfers and a lack of expenditure ceilings.

In 2000, Law 617 was passed in response to the latter developments, and established a set of fiscal rules for subnational governments. It classified department into five categories, and municipalities into six, based on several indicators related to population and fiscal performance. The law limits the operating expenses of subnational entities to a certain percentage of their freely disposable revenue, i.e., excluding earmarked transfers. Subnational governments that do not comply with these ceilings must establish a corrective adjustment program, to be monitored by the ministry of finance.

In 2003, another important law to improve fiscal coordination among different levels of government was passed. Law 819 requires both the central administration and local governments to present each year a consistent 10-year macroeconomic framework. While the liquidity and solvency indicators of Law 617 remain binding, the law established one additional rule, namely that the primary surplus has to be at least equal to debt service. It further stipulates that fiscal management at all levels of government, including expenditure authorizations and revenue collection, must be in adherence with the medium-term macroeconomic framework. Whenever a government plans to decrease its revenue collection or increase its sending beyond the explicit targets, it has to seek the analysis and approval of the ministry of finance. Both the central and decentralized budgets must also be in full compliance with the medium-term macroeconomic frameworks.

Box 3. Earmarking of Transfers to Subnational Governments

Transfers to subnational governments are characterized by extensive earmarking, based on Law 715 of 2001. Of the resources transferred to the subnational level, 4 percent is earmarked for specific purposes,[1] and 96 percent is distributed between education and health, and the category "general purpose." In education, expenditure must take place in the subcategories current expenditure, subsidies, and "quality." The funds for the health sector must be spent on demand subsidies, services to unaffiliated segments of the population, and health insurance.

The distribution to subnational governments within these categories is regulated by a complex system of various criteria. The guiding principle in the distribution of transfers in the education sector is the number of pupils enrolled. In addition, a residual sum may be distributed on the basis of poverty indicators. While the number of enrolled pupils determines the level of resources a subnational entity receives in the education subcategories current expenditure and subsidies, the amount in "quality" is derived by adjusting the number of students by an "Unsatisfied Basic Needs" Index (NBI). In the health sector, the amount distributed to individual subnational governments for demand subsidies is based on the subsidies in the preceding year. The amount to be distributed for poor people unaffiliated with any health plans is determined by an estimation of poor people in the respective territorial entity. The amount subnational governments receive for the health plan is based on their total population (40 percent), equity considerations in the form of the number of poor in a subnational entity (50 percent), as well as estimated health risks, and administrative efficiency (10 percent), measured by health indicators achieved.

The distribution of the "general purpose" part of the transfers is based on a mix of equity and efficiency indicators. Out of the general purpose portion of the transfers, 40 percent are distributed on the grounds of relative poverty, as measured mainly by the NBI index. Another 40 percent relates to the proportion between urban and rural population. Fiscal efficiency, defined as the average growth of tax revenue per capita during the three preceding years, is the basis on which 10 percent is distributed. Another 10 percent is disbursed on the grounds of administrative efficiency to municipalities that manage to maintain or increase their investment spending per capita, financed by non-earmarked current revenue, for two years in a row.

Some earmarking is maintained for spending within the "general purpose" category. Smaller municipalities can spend up to 28 percent of the resources they receive for "general purposes" on investment, debt payments or other current administrative costs. The other 72 percent, and 100 percent for the bigger municipalities, must be spent in what is labeled "mandatory investment."

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[1] Out of these 4 percent, 0.5 percent are earmarked for the indigenous population, 0.08 percent for municipalities around the Rio Magdalena, 0.5 percent for school food programs, and 2.9 percent for the local pension fund (FONPET).

Table 1. Colombia: Trends of Local Government Fiscal Operations

(In percent of GDP)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total revenue	4.9	9.6	9.7	10.9	10.2	10.9	11.8	11.7	12.5	12.8	12.4
Property income	1.6	1.2	1.1	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.0
Tranfers from the central government	3.8	3.3	3.3	4.0	4.0	4.3	5.0	4.6	5.3	5.0	5.2
Tax revenue	2.1	2.6	2.7	2.8	2.7	2.7	2.8	2.7	2.7	2.7	2.7
Other income	1.2	1.9	2.2	2.4	2.5	2.8	3.0	3.3	3.4	3.8	3.5
Total expenditure	6.0	10.2	9.9	11.0	10.8	10.9	12.2	11.8	12.4	12.1	12.2
Overall balance	-1.1	-0.6	-0.1	-0.2	-0.6	0.0	-0.3	-0.1	0.1	0.6	0.2

Sources: Colombian authorities; and staff estimates.

Table 2. Colombia: Operations of the Central Administration

(In percent of GDP)

	1993	1994	1995	1996	1997	1998	1999	2000	200	2002	2003	2004	Proj. 2005	Proj. 2006
Total revenue	11.2	11.6	11.5	11.9	12.6	12.0	12.0	13.0	14.7	15.0	15.4	16.0	16.3	16.1
Current revenue	11.1	11.6	11.5	11.8	12.6	12.0	12.0	13.0	14.7	15.0	15.4	16.0	16.3	16.1
Tax revenue 1/	9.7	10.0	9.7	10.1	10.8	10.6	10.0	11.2	13.2	13.4	14.1	14.7	14.9	14.9
Nontax revenue	1.4	1.6	1.8	1.7	1.8	1.4	1.9	1.8	1.5	1.6	1.4	1.3	1.4	1.2
Total expenditure and net lending	12.8	13.3	15.0	17.1	16.2	17.4	19.4	18.8	20.4	21.4	20.9	21.6	22.3	22.4
Current expenditure	9.7	10.2	10.7	11.8	12.4	14.1	15.0	15.3	15.8	18.2	17.4	18.2	19.4	19.3
Wages and salaries	2.2	2.5	2.4	2.5	2.5	2.7	2.9	2.9	3.0	3.0	3.0	2.9	2.9	2.9
Goods and services	0.8	1.0	1.2	1.3	1.6	1.4	1.3	1.3	1.5	1.5	1.5	1.5	1.5	1.5
Interest	1.1	0.6	0.7	1.1	1.2	1.9	2.1	3.0	3.5	3.5	4.0	3.9	4.5	4.6
Other expenditure 2/	0.0	0.3	0.3	0.2	0.3	0.6	0.2	-0.1	-0.9	0.7	-0.1	0.5	-0.4	0.0
Current transfers	5.6	5.8	6.0	6.7	6.8	7.5	8.5	8.2	8.6	9.5	9.0	9.4	10.9	10.4
Of which: transfers to local governments	3.5	2.7	2.4	2.8	2.7	2.8	3.2	3.0	3.4	4.0	3.6	3.5	3.5	3.5
Capital expenditure	2.6	2.8	3.8	4.6	3.6	3.1	3.8	3.0	3.8	2.5	3.0	3.3	2.7	2.9
Fixed capital formation 2/	1.7	1.3	2.1	2.5	1.5	1.1	1.6	1.0	1.3	1.3	1.1	1.4	0.7	0.9
Capital transfers	0.8	1.5	1.6	2.1	2.2	2.0	2.3	2.1	2.5	1.2	2.0	1.9	2.1	2.1
Of which: transfers to local governments	0.3	0.6	0.9	1.2	1.3	1.5	1.8	1.7	1.9	1.0	1.6	1.5	1.5	1.6
Net lending	0.5	0.2	0.2	0.4	0.2	0.2	0.5	0.5	0.8	0.6	0.4	0.1	0.1	0.2
Overall balance	-1.6	-1.7	-3.5	-5.2	-3.6	-5.5	-7.4	-5.7	-5.7	-6.4	-5.4	-5.6	-6.1	-6.3
Overall transfers	3.8	3.3	3.3	4.0	4.0	4.3	5.0	4.6	5.3	5.0	5.2	5.1	5.0	5.0

Sources : Colombian authorities; and Fund staff estimates.

1/ Excludes proceeds of financial transaction tax in 1999 from revenue and expenditure.
2/ Includes change in the budget carryover. A negative number corrects for current cash payments of expenditures incurred in previous periods.

Table 3. Colombia: Subnational Spending in Relation to Combined Public Sector

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Subnational indicators											
	(Percent share of combined public sector, unless otherwise indicated)										
Total revenue	21.3	39.4	38.5	40.2	37.3	40.4	43.3	41.6	42.2	43.1	40.4
Tax revenue	14.1	17.1	16.6	16.9	15.1	15.5	16.5	15.7	14.2	14.0	14.0
Share of transfers in total revenue	76.8	34.4	34.0	36.5	39.4	39.9	42.6	39.8	42.8	39.4	42.2
Total expenditure	25.7	41.4	37.2	37.1	34.5	35.3	36.7	37.4	37.6	35.8	35.9
Expenditure financed by local tax collection	35.5	25.5	27.1	25.7	24.7	25.0	22.9	23.1	21.9	22.2	22.4
Transfers as a share of subnational revenue	76.8	34.4	34.0	36.5	39.4	39.9	42.6	39.8	42.8	39.4	42.2
Transfers as a share of subnational expenditure	62.8	32.5	33.5	35.9	37.3	39.8	41.2	39.3	43.0	41.4	42.9
Combined public sector											
	(In percent of GDP)										
Total revenue	23.1	24.4	25.3	27.0	27.4	26.9	27.4	28.0	29.6	29.6	30.7
Tax revenue	15.2	15.2	16.1	16.8	17.7	17.6	16.9	17.3	19.2	19.2	19.5
Total expenditure and statistical discrepancy	23.4	24.6	26.5	29.8	31.4	30.9	33.3	31.5	33.1	33.9	33.9
Overall balance	-0.3	-0.2	-1.2	-2.8	-3.9	-4.0	-5.9	-3.5	-3.5	-4.3	-3.2

Sources: Colombian authorities; and Fund staff estimates.

Table 4. Colombia: Estimates of Effect of Different Intergovernmental Transfer Scenarios on Central Administration Finances 1/

(In percent of GDP)

	2006	2007	2008	2009	2010
I. Baseline Scenario					
Revenue	16.1	16.1	16.1	16.1	16.1
Of which					
Current revenue	16.1	16.1	16.1	16.1	16.1
Expenditure	22.4	22.5	22.6	22.8	22.8
Of which					
Transfers	12.4	12.5	12.6	12.7	12.8
To lower levels of government (2.5 percent real growth) 2/	5.2	5.2	5.1	5.0	4.9
Deficit	-6.3	-6.4	-6.5	-6.7	-6.7
II. Scenario with Revenue-Sharing Formula					
Revenue	16.1	16.1	16.1	16.1	16.1
Of which					
Current revenue	16.1	16.1	16.1	16.1	16.1
Expenditure	22.4	24.1	24.5	24.8	25.0
Of which	12.4	14.1	14.5	14.8	14.9
Transfers					
To lower levels of government (growth with revenue) 3/	5.2	6.8	6.9	7.0	7.1
Deficit	-6.3	-8.0	-8.4	-8.7	-8.9
III. Scenario with Inflation-Linked Transfers					
Revenue	16.1	16.1	16.1	16.1	16.1
Of which	16.1	16.1	16.1	16.1	16.1
Current revenue					
Expenditure	22.4	22.4	22.4	22.4	22.4
Of which	12.4	12.4	12.4	12.4	12.3
Transfers	5.2	5.0	4.8	4.7	4.5
To lower levels of government (growth with inflation) 4/					
Deficit	-6.3	-6.3	-6.3	-6.3	-6.3
Difference in deficit (baseline versus revenue sharing)	0.0	1.6	1.9	2.0	2.1
Difference in deficit (baseline versus inflation)	0.0	-0.1	-0.2	-0.4	-0.5
Difference in deficit (revenue sharing versus inflation)	0.0	1.7	2.1	2.4	2.6

Sources: Colombian authorities; and staff calculations.

1/ Simulation starts in 2007.
2/ This scenario is based on the current system in which transfers grow by the rate of inflation plus 2.5 percent.
3/ Transfer growth is determined by the average growth of current revenue through the preceding four years. In addition, transfers have to reach at least 42 percent of current revenue.
4/ Transfers grow by the projected rate of inflation.

Table 5. Comparison of Decentralization in Selected Countries

Country	Share of subnational spending in overall public sector spending	Share of subnational revenue in overall public sector revenue	Share of transfers in subnational revenue
Colombia 1/	35.9	40.4	42.2
Brazil 2/	35.8	27.8	...
Spain 3/	45.3	20.3	...
India 4/	56.7	39.1	42.4

1/ 2003 data.
2/ 2003 data.
3/ 2003 data for share of subnational spending. Data for revenues exclude transfers from other levels of government but include revenues from tax-sharing arrangements. They refer to 2001.
4/ Data relate to average for 1990-1997. Data for subnational revenue exclude grants from the central government.

SIMULATION OF DIFFERENT SCENARIOS FOR THE LEVEL OF INTERGOVERNMENTAL TRANSFERS

This annex provides more details on the simulation of different arrangements for the determination of the level of transfers. **Three different scenarios** were considered:

i. A baseline scenario in which transfers grow according to the current system in place, i.e., 2.5 percent in real terms per year. In addition, pension outlays are projected to pick up substantially, based on estimates provided by the Colombian authorities. All other expenditure and revenue is projected to grow in line with GDP.

ii. A scenario as foreseen by law for the period after the current, transitional system described in (i) has ended: transfers grow in line with the **moving average of central administration current revenue** during the four preceding years of year t. In addition, transfers may not be lower than 42 percent of current government revenue, the amount transferred from the center to the regions in 2001.

iii. A scenario in which transfer growth is determined by the projected **average inflation** rate for year t.

In addition, the following **assumptions** were made for all scenarios:

- The different scenarios will start in **2007.**
- **Current revenue** will grow in line with nominal GDP.
- **No measures** to contain other expenditure, including rising pension costs, are assumed.
- The **nominal base** for transfer growth are transfers under the Sistema General de Participaciones, projected at Col$15,504,275 million in 2006.

Table 4 presents the results. By 2010, the **overall fiscal deficit** would be 2.6 percent of GDP higher in the scenario in which transfers are based on revenue sharing, compared with the scenario in which they grow in line with inflation. By contrast, the deficit would be half a percentage point lower in 2010, compared with the baseline scenario, if transfers would grow in line with inflation. Accordingly, the difference in the fiscal deficit between the revenue sharing system and the baseline scenario would amount to 2.1 percent of GDP in 2010.

III. Sectoral Balance Sheet Mismatches and Macroeconomic Vulnerabilities, 1996–2003[1]

The chapter employs the Allen et al (2002) Balance Sheet Approach to analyze macroeconomic vulnerabilities since the mid-1990s. Weaknesses existing prior to the 1999 recession— high levels of private sector debt, large net foreign currency liabilities of the corporate sector, and banks' exposure to stretched households and companies—have receded, owing in part to the floating exchange rate regime introduced in 1999. However, new vulnerabilities have emerged, in particular the high level of public debt, and the growing exposure of the financial sector to the sovereign.

A. Introduction

1. Several recent emerging market crises have originated in the build-up of currency and/or maturity mismatches in subsectors of the economy, such as the banking system, the corporate sector, or the government. Prior to the crisis, the size of these mismatches were often hard to assess for the outside observer—typical macroeconomic flow indicators, such as fiscal or current account deficits, provided only incomplete guidance. Once the imbalances unwound, other parts of the economy were affected by their exposure to the troubled sector. Examples include Mexico (1995), East Asia (1997/98), Russia (1998), Argentina (2001/02), and the Dominican Republic (2002/03).

2. **This crisis pattern has fostered an interest in the systematic anaysis of *sectoral balance sheets***, with a view to identify *balance sheet mismatches*—situations in which a sector's liabilties are not matched with assets of similar currency and/or maturity—and *balance sheet interlinkages*—vulnerabilities that arise from the exposure of sectors to one another. A general framework— the so-called Balance Sheet Approach (BSA)—has been proposed by Allen et al (2002) and applied to a number of country cases.[2]

3. **This chapter summarizes key results from Lima et al. (2005), an application of the Balance Sheet Approach to Colombia** carried out jointly by economists at Banco de la Republica—Colombia's Central Bank—and the IMF. While this study builds on an extensive literature on vulnerabilities of specific sectors,[3] it is the first to analyze all sectors simultaneously, including their exposure to one another. The project also advances the BSA methodology in various ways: the data cover a period of seven years, which allows to study the development of vulnerabilites over time; and the breakdown of the economy into eight sectors yields unusually detailed insights into the economy's financial structure (Box 1).

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[1] Prepared by Johannes Wiegand (PDR).

[2] A survey of recent applications is given in IMF (2005).

[3] Examples include Echeverry et. al. (2002) and Martinez Torres (2003) for the corporate sector; Uribe and Vargas (2002) and Villar et al (2005) for the financial sector; and Cepeda and Varela (2002) and Arbelaez et al (2004) for the public sector.

Box 1. Methodology and Data

The analysis is based on the aggregated balance sheets of eight sectors:

1) the nonfinancial public sector, comprising the central government, local and regional governments, and public enterprises;
2) the central bank;
3) private banks;
4) public banks;
5) private nonbank financial institutions, such as pension funds, trust funds, and insurance companies;
6) public nonbank financial institutions, including the bank restructuring agency Fogafin;
7) large- and medium-sized nonfinancial corporations, i.e., companies that report information to Colombia's superintendency for companies; and
8) households and small nonfinancial corporations.

The balance sheets were assembled by sector specialists at the Colombian Central Bank, who aggregated the information of several thousands of public and private entities, and checked it meticulously for accuracy and consistency. Sector balance sheets were computed for every other year since 1996, plus for 1999—the peak of the crisis—and 2003—the latest available information.

A sector balance sheet displays the sector's financial assets and liabilities with each other sector and the rest of the world. Intra-sector assets and liabilities are netted out (e.g., liabilities of companies with companies). Assets and liabilities are broken down by *currency*—domestic and foreign—and *maturity*—short term and long term. Short-term assets are debt instruments with original maturity of up to one year, including checking and savings deposits, certificates of deposits, fiduciary deposits, short-term securities, and trade credit. Long-term assets are equity and debt instruments with a maturity of more than one year. Equity is typically valued at market value, traded debt at face value, and all other assets/liabilities at historical costs.

Various indicators are used to gauge a sector's vulnerability, including:

- The **net financial position,** i.e., financial assets minus financial liabilites. A large negative net position can (but does not need to) point to solvency problems, especially if **leverage—** debt as a share of total liabilities (i.e., debt plus equity)—is high.
- The **net foreign currency position** (foreign currency assets minus foreign currency liabilities). A sector with a large negative (positive) is vulnerable to exchange rate depreciations (appreciations). Most foreign currency assets/liaibilities in Colombia are in U.S. dollars.
- The **net short-term position** (short-term assets minus short-term liabilities). A large negative short-term position indicates vulnerability to interest rate increases.

Importantly, the sector balance sheets include only *financial* assets; not real assets such as real estate. Also, off-balance sheet items—for example, a sector's net exposure in forward markets—are not recorded. As a consequence, the net financial position can not be interpreted as a sector's net worth or implied capital.

4. In the period covered by this chapter (1996 through 2003) **three sub-phases can be distinguished** (see the table below):

(i) *a pre-crisis period* (1996–98), coming at the end of a prolonged boom in the early 1990s that was driven by dometic absorption and financed by private capital inflows.

(ii) *a crisis period or recession* (1999 and 2000),[4] triggered by a sharp reversal in capital flows in the aftermath of the Russian and Asian crises. Among other things, this forced the Banco de la República to abandon the peso's long-standing peg with the U.S. dollar, and ultimately set off a banking crisis. During and after the crisis, public debt increased rapidly, owing to large fiscal deficits and the depreciation of the peso.

(iii) *a post-crisis or recovery period* (2001–03).

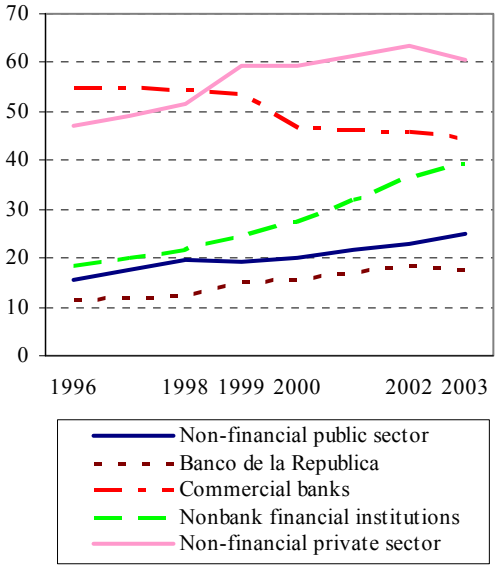
Selected Macroeconomic Indicators, 1993-2003
(Annual averages)

	Pre-Sample	Sample Period		
	Boom	Pre-Crisis	Crisis	Post-Crisis
	1993-95	1996-98	1999/2000	2001-03
Real GDP growth	5.4	2.0	-0.6	2.4
due to: consumption	5.1	2.8	-0.8	1.7
Investment	3.4	-1.5	-3.1	1.7
Net exports	-3.1	0.7	3.2	-0.9
Consumer price inflation (eop)	21.6	18.7	9.0	7.8
Real average lending rate	22.1	20.3	14.0	10.3
Real effective exchange rate (appr. +)	5.3	3.4	-6.0	-3.5
Exchange rate regime	Quasi-fixed 1/	Quasi fixed 1/	Reg. change 2/	Floating
		(in percent of GDP)		
Overall fiscal balance	-0.7	-3.6	-4.4	-3.2
Revenue	21.3	27.1	27.7	29.8
Public expenditure	22.1	30.7	32.1	33.0
Current expenditure incl. interest	13.7	21.8	23.8	24.9
Public investment	8.4	8.9	8.3	8.1
Public debt	23.0	30.3	44.5	56.0
Domestic debt	4.1	12.0	18.9	25.9
External debt	18.9	18.3	25.6	30.1
Private sector external debt	9.5	17.7	20.1	18.6
Current account balance	-4.3	-5.0	0.8	-1.5
Financial and capital account balance	4.3	5.5	-0.3	1.9
Public sector	0.1	0.9	0.8	0.9
Private sector	4.2	4.6	-1.1	1.0
Broad money	31.9	37.0	33.8	30.5

1/ Exchange rate band with the US dollar.
2/ The peso was floated in September 1999.

[4] The recession itself began in the second half of 1998 and ended in early 2000. As the following analysis will show, balance sheets adjusted throughout 2000, however.

Figure 1: Gross Financial Assets by Sector (in Percent of GDP)



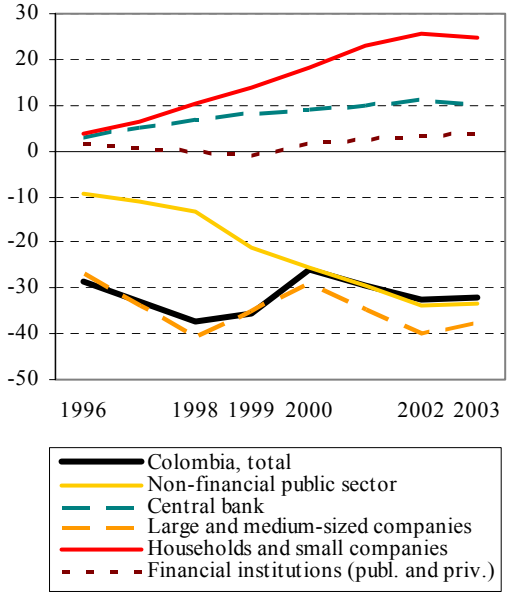
5. In these years, **the financial structure of Colombia's economy changed substantially.** A first impression is given by Figure 1, which displays gross financial assets by sector. Most sectors' assets grew faster than GDP, an indication of financial deepening. Especially impressive is the growth of nonbank financial institutions—pension funds, trust funds, and insurance companies—whose assets more than doubled. In contrast, the banking system shrank during the crisis, and has not regained its former importance.

6. **The remainder of the chapter is organized as follows.** Section B gives a brief overview of key trends. The sections following thereafter discuss some developments in more detail: consequences of the growth in public debt (Section C); corporate and household balance sheet adjustment during and after the 1999 crisis (Section D); and structural changes in financial intermediation (Section E). Section F concludes with a summary of macroeconomic vulnerabilities.

B. Overview: Key Trends

7. **Colombia's net financial position with the rest of the world followed a pronounced cyclical pattern:** it deteriorated prior to the 1999 crisis (hence, Colombia accumulated net liabilities), improved during the recession; and deteriorated again after 2000 (Figure 2). There were important sector-specific developments, however:

Figure 2: Net Financial Position (in Percent of GDP)

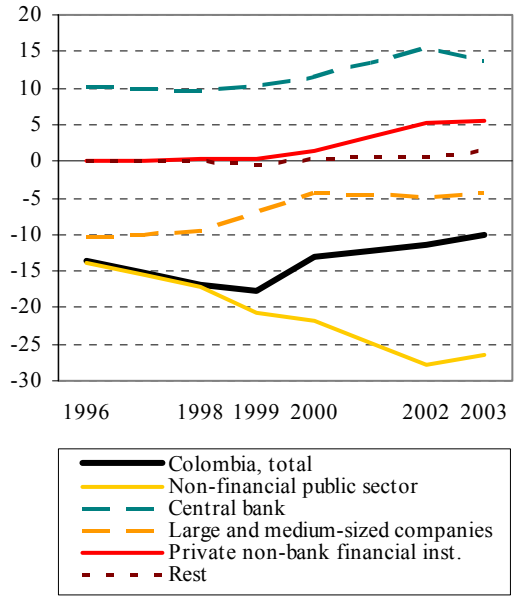


- The position of the *nonfinancial public sector* worsened significantly, owing to the accumulation of public debt—especially after 1998.
- Conversely, *households*' position improved. This development mirrors to a large part the deterioration in the government's position, as Colombia's financial system channeled an ever larger part of household savings into public debt.
- *Companies*' net position moved with the business cycle—worsening during expansions, and vice versa.
- The *central bank's* position strengthened, reflecting the accumulation of foreign currency reserves.
- Finally, the net position of *financial institutions*—both banks and nonbanks—is roughly balanced (as may be expected).

8. **Colombia's net foreign currency position improved after 1999, reducing the economy's exposure to currency fluctuations** (Figure 3).[5] Again, there are important differences between sectors.

- The foreign currency position of the *nonfinancial public sector* worsened, owing to the accumulation of foreign currency debt. The buildup of reserves by the *central bank* compensated only partly for this deterioration.
- In contrast, the private sector's position strengthened. *Companies* halved net foreign currency liabilities during the crisis years, and preserved these gains thereafter. The improvement coincides with Colombia's move to a flexible exchange rate system in 1999. *Private nonbank financial institutions*—especially pension and trust funds—built up a substantial long dollar position after 1999, which amounted to 5 percent of GDP at end-2003. As a consequence, nonbank financial institutions are vulnerable to an appreciation of the peso, while the public sector and companies are vulnerable to a depreciation.

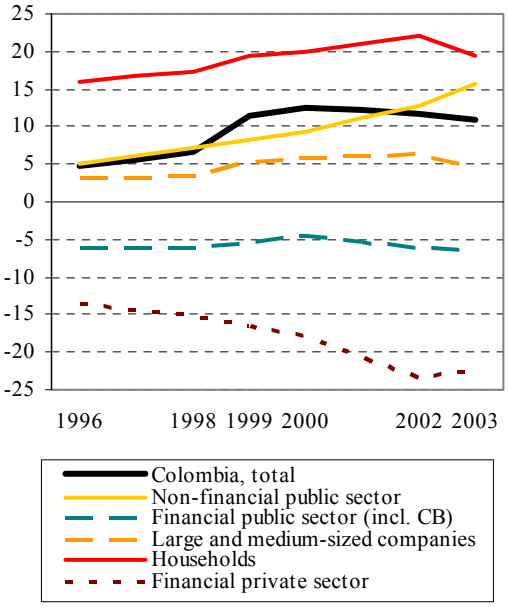
Figure 3: Net Foreign Currency Position (in Percent of GDP)



9. **The short-term position improved for the public sector and households, but worsened for the private financial sector** (Figure 4).

- The *nonfinancial public sector* successfully lengthened debt maturities, especially after 1998, thus reducing rollover risk. The improvement in *households*' short-term position reflects in part a reduction in (short term) consumer loans during and after the 1999 banking crisis.
- The counterpart of these developments is a deterioration in the private *financial system*'s (banks and nonbank financial institutions) short-term position, however. A large and increasing share of its assets is tied up in long-term government bonds. As a consequence, its vulnerability to interest rate shocks has increased.

Figure 4: Net Short-term Position (in Percent of GDP)



[5] The difference between Colombia' net financial and its net foreign currency position are investments of nonresidents in Colombian equity and in peso-denominated Colombian debt.

C. Consequences of the Growth in Government Debt

10. **Colombia's high level of public debt is widely considered its main macro-economic vulnerability**. Gross liabilities of the nonfinancial public sector more than doubled after 1996 (Figure 5), and reached almost 60 percent of GDP at end-2003.[6] This increase reflects *inter alia*

- large fiscal deficits in the late 1990s;
- the costs of recapitalizing the banking system after the 1999 banking crisis, which amounted to almost 5 percent of GDP; and
- several revaluations of external debt due to repeated currency depreciations after the abandonment of the crawling peg in 1999 (Figure 6).

Concerns over public debt sustainability triggered the loss of the government's investment grade rating in 1999, which has not been recovered since. In late 2002, the sovereign was temporarily excluded from domestic and international debt markets.

11. The increase in the debt level notwithstanding, **the structure of public debt has improved**. The share of debt denominated in foreign currency fell from more than 60 percent in 1996 to little more than 50 percent in 2003, thus containing the increase in exchange rate risk. Also, the average maturity of public debt increased from 3½ to 5½ years, reducing the government's rollover risk.

Figure 5: Liabilities of the Non-Financial Public Sector

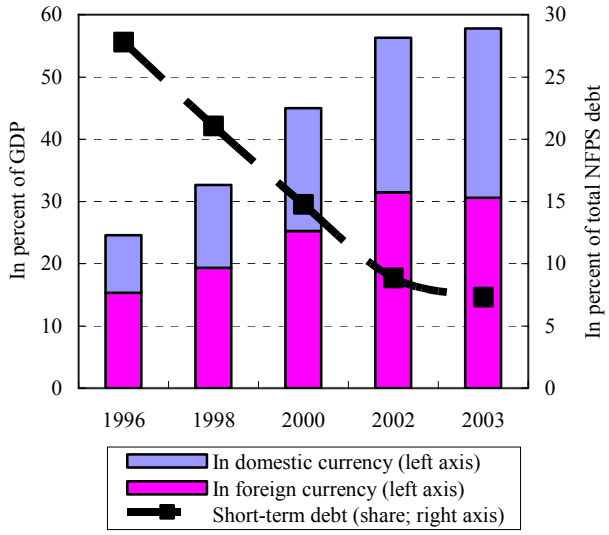
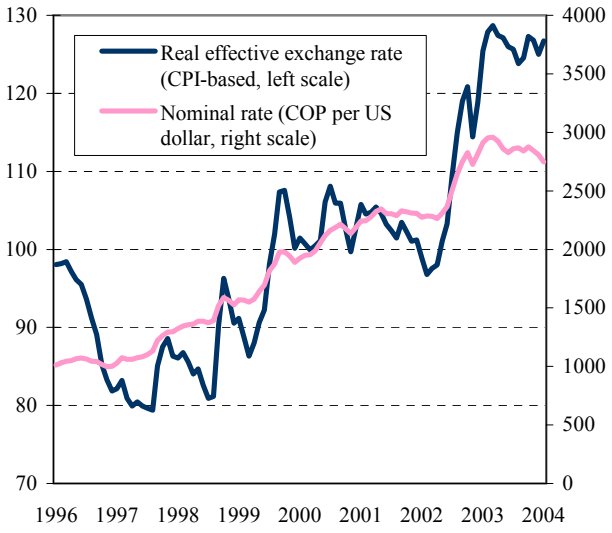


Figure 6: Exchange Rate Developments



[6] The concept of "total financial liabilities of the nonfinancial public sector" is somewhat wider than the concept of "debt of the nonfinancial public sector" used in the context of Colombia's IMF-supported program. For details, see Lima et al (2005).

Figure 7: Non-Financial Public Sector - Financial Liabilities

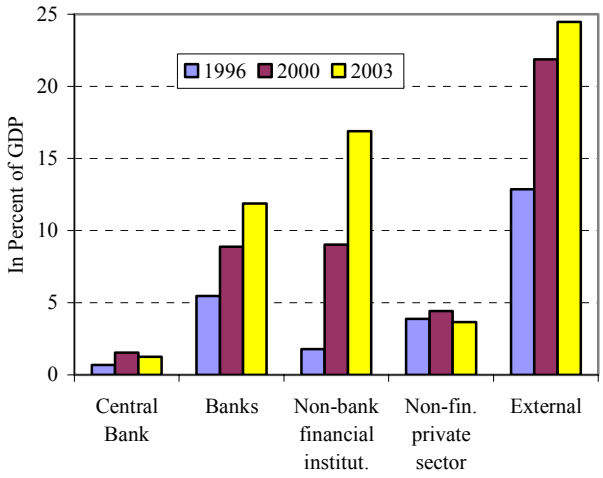
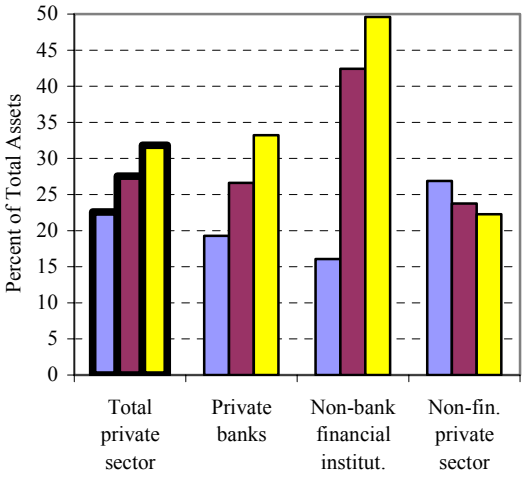


Figure 8: Exposure of the Private Sector to the Sovereign



12. **Two-thirds of the public debt issued after 1996 was purchased by banks and nonbank financial institutions** (Figure 7). As a consequence, the exposure of the financial system to the sovereign has greatly increased: at end-2003, private banks' had one-third—and nonbank financial institutions one-half—of their assets invested in government debt, compared to less than one-fifth in 1996 (Figure 8).

13. **With government debt largely long term, the short-term position of the financial system has deteriorated**. This is especially true for banks, whose liabilities (deposits) are mostly short term, while the maturity of their assets has lengthened (Figure 9). As a consequence, banks have grown more vulnerable to interest rate shocks. Importantly, interest rate volatility has fallen since 1999, however, as the move to a flexible exchange rate has permitted the Banco de la República to stabilize domestic financial conditions in the context of an inflation targeting framework (Figure 10). Thus, banks may have accepted the additional interest rate risk only because there is less of this risk to manage in the first place.

Figure 9: Private Banks - Term Structure of Assets

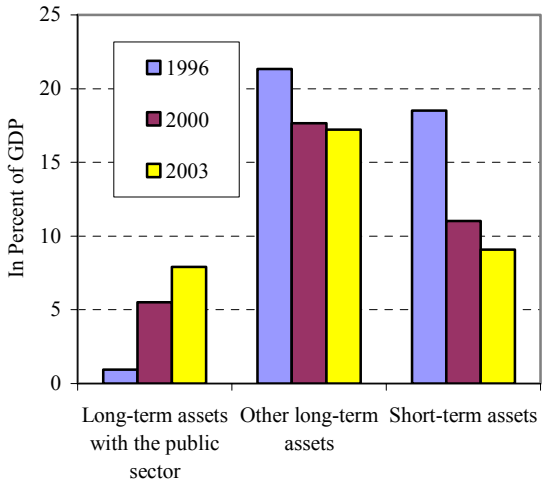
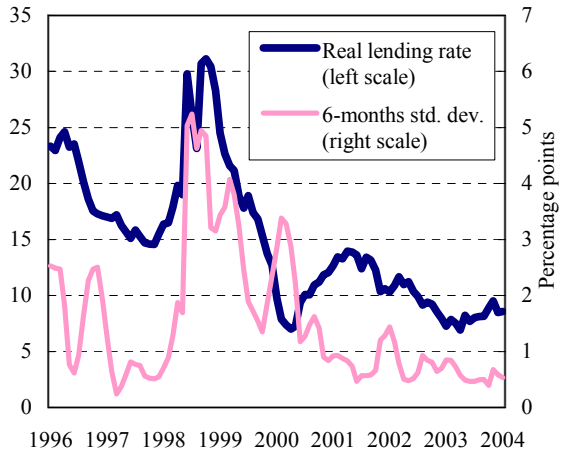


Figure 10: Interest Rate Developments



D. Corporate and Household Balance Sheet Adjustment During and After the Recession

14. As noted in the overview section, in 2002/03 net financial liabilities of the corporate sector had returned close to the levels before the 1999 recession (see Figure 2 above). **Corporate vulnerabilities have receded nevertheless, owing to improvements in the companies' financing structure**.

- First, **corporate leverage has fallen.** After 1998, companies sharply reduced debt levels, especially with the domestic banking system. The resulting loss in financial resources was compensated by higher equity financing from nonresidents (Figure 11). As a consequence, 49 percent of corporate liabilities consisted of equity at end-2003—compared to only 42 percent in 1998[7]—implying better risk sharing between Colombia's corporate sector and its financiers.
- Second, the **companies' foreign currency position has strengthened,** owing to the accumulation of external assets—notably, participations in foreign companies (Figure 12). On aggregate, however, the corporate sector is still short in dollars.[8]

Interestingly, both improvements also reflect greater integration of Colombia's corporate sector into the global economy.

Figure 11: Large and Medium-Sized Companies - Liabilities 1/

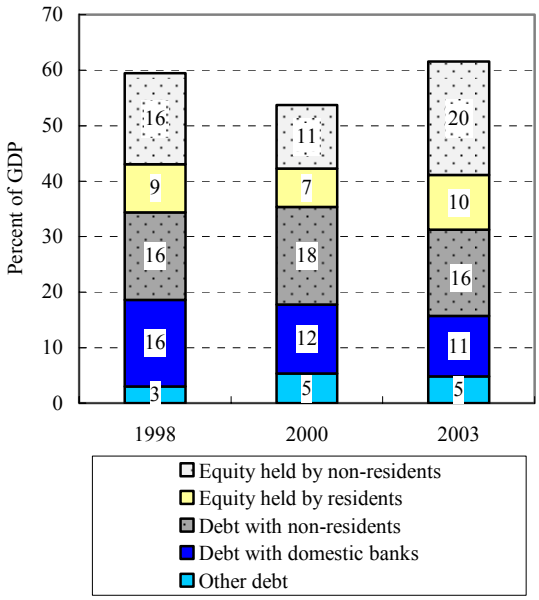
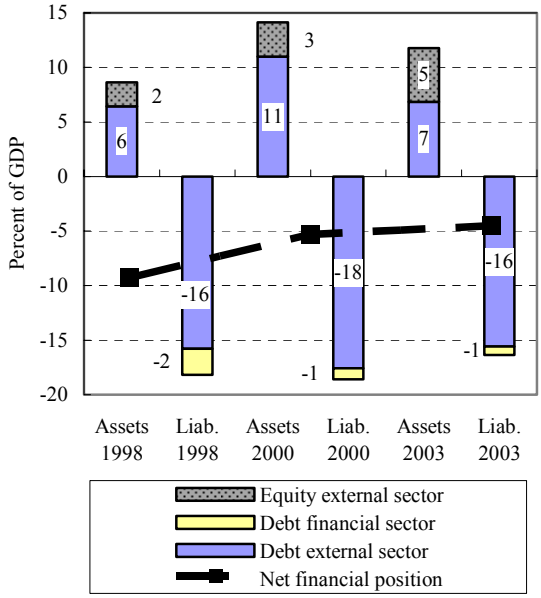


Figure 12: Large and Medium-Sized Companies - Foreign Currency Pos.



1/ In this and some of the following figures, the numbers inscribed in the columns denote percentage points of GDP

[7] The share of debt financing increased to 66 percent in 2000, reflecting the fall in equity valuations during the recession

[8] Echeverry et al (2003) report that dollar debt is held almost exclusively by exporting companies that earn foreign currency.

15. **Households have built up a substantial positive net financial position,** owing to two developments, one on each side of their aggregate balance sheet (Figure 13):

- **During the 1999 recession, household debt with the banking system fell sharply.** To a large extent, this reflects defaults on mortgage loans.[9] Default triggered the liquidation of the collateral, however, and hence the loss of *real* assets. Thus, even though the mortgage crisis improved households' net *financial* position, it is by no means certain that their *net worth* also strengthened.
- Since the introduction of private pension funds in 1993, **households have accumulated substantial assets with nonbank financial institutions,** most of them long term (Figure 14).

Figure 13: Households and Small Companies - Net Financial Position

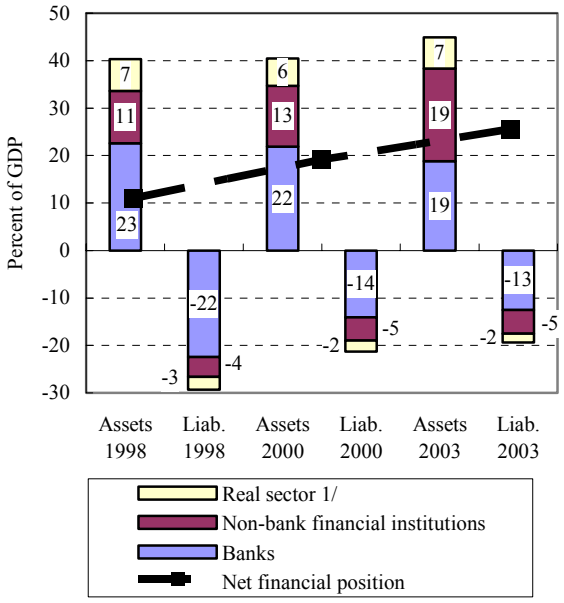
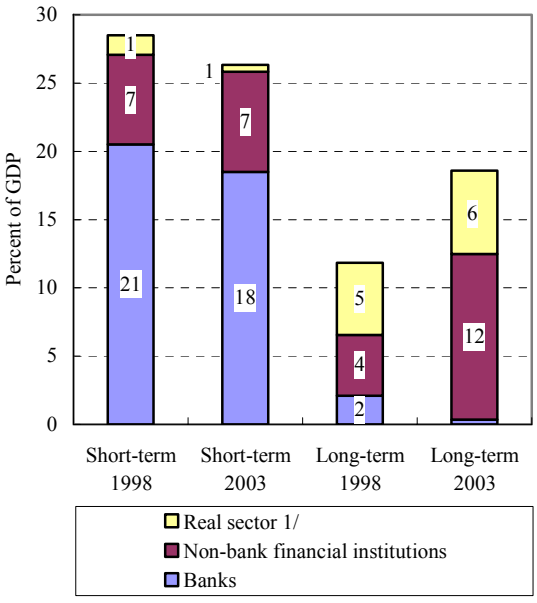


Figure 14: Households and Small Companies - Term Structure of Assets



1/ Large and medium-sized companies and the non-financial public sector

E. Structural Changes in Financial Intermediation

16. As mentioned in the introduction, **the banking system shrank during the 1999 recession, and has not recovered since** (Figure 15).[10] Moreover, banks retreated from lending to the private sector, especially to households, and accumulated assets with the government instead. While this development owed in part to the effects of the recession and the associated banking crisis, it was reinforced by regulations that tightened lending standards (see Villar et al, 2005).

[9] To a lesser extent cuts in consumer lending.

[10] Figures 15 and 16 depict private (as opposed to public) financial institutions only, which account for more than three-quarters of Colombia's financial system.

17. **In contrast to banks, private nonbank financial institutions have grown strongly** (Figure 16). By end-2003, their assets almost equaled those of private banks. Private nonbank financial institutions consist of pension and severance payment funds (assets of 14 percent of GDP at end-2003), trust funds (10 percent), insurance companies (4 percent), and other entities (3 percent). The growth of nonbank financial institutions since 1996 reflects in parts the rapid expansion of private pension funds since their emergence in 1993. It also owes to the outsourcing of the management of pension liabilities by several large public companies between 1999–2001 (e.g., the state oil company Ecopetrol).

Figure 15: Private Banks - Assets

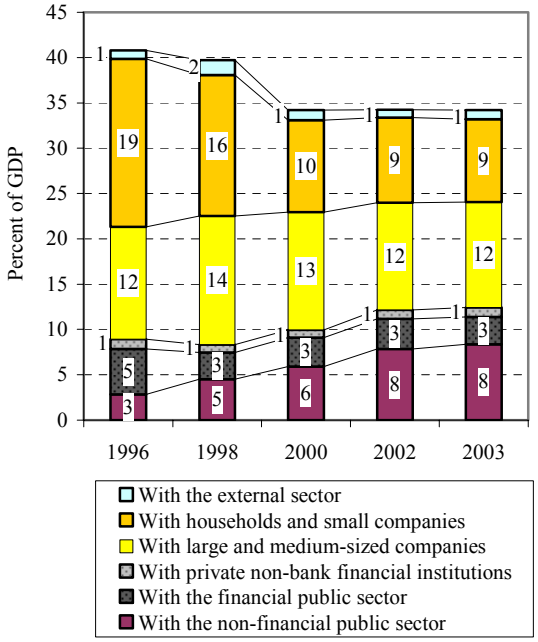
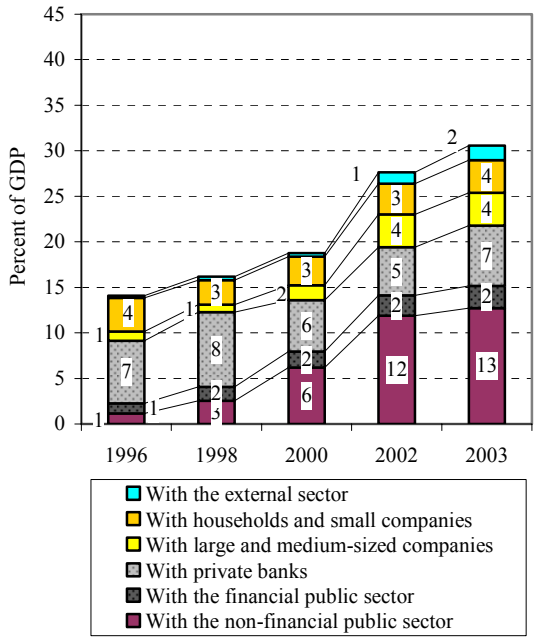


Figure 16: Private Non-Bank Financial Institutions -Assets



18. **Nonbank financial institutions invest a large and increasing part of their funds in government bonds** (Figures 16 and 17).[11] In contrast, investment in corporate assets—both corporate debt and equity—has remained sluggish. In 2002, the exposure of pension funds to the sovereign reached the regulatory limit of 50 percent of total assets, forcing the pension funds to look for other investment opportunities. However, most of the new contributions paid into pension funds in 2003 were placed in bank deposits, rather than invested with the corporate sector. This points to institutional obstacles to more investment in the nonfinancial private sector, notably an underdeveloped market for corporate securities.

19. **Since 2000, nonbank financial institutions—and especially pension funds—have accumulated substantial U.S. dollar assets,** accounting for 18 percent of their total assets

[11] Regarding the funding based of nonbank financial institutions, at end-2003 two-thirds of their liabilities were with households, a quarter with the public sector, 5 percent with companies, 4 percent with private banks, and 3 percent with nonresidents.

by end-2003 (Figure 18). Most foreign currency assets are U.S. dollar-denominated bonds of the Colombian government. As practically all payment obligations of nonbank financial institutions are in pesos, the open dollar position appears speculative and reflects depreciation expectations of the peso. However, the peso started appreciating at end-2003, leading to capital losses of nonbank financial institutions.[12]

Figure 17: Private Non-Bank Financ. Institutions - Net Financial Position

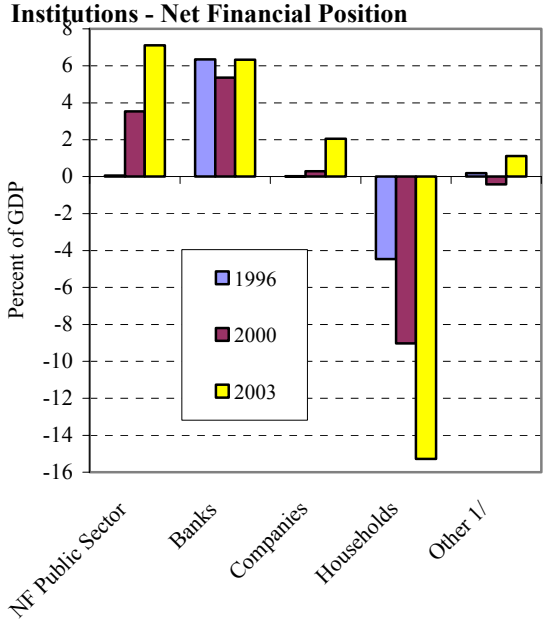
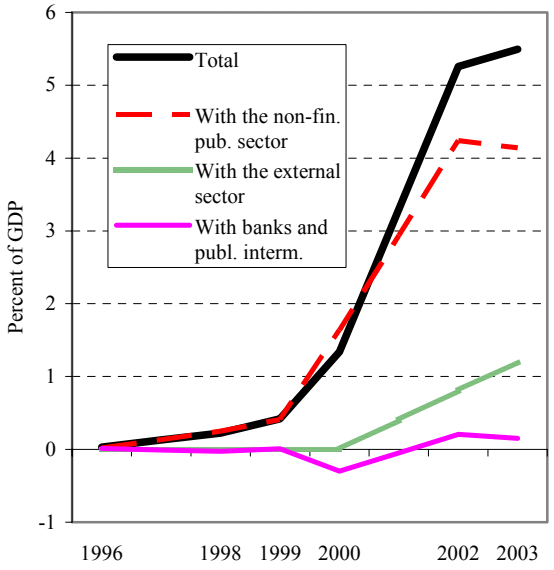


Figure 18: Private Non-Bank Financial Instit. - Net Foreign Currency Position



1/ Public non-bank intermediaries and external sector.

F. Key Lessons

20. The balance sheet of the nonfinancial public sector has deteriorated significantly.[13] Net liabilities grew by more than 25 percentage points of GDP between 1996 and 2003, substantially increasing default risk—as reflected in the loss of the sovereign's investment grade rating in 1999. The public sector's net foreign currency position has also deteriorated, *in spite of* improvements in the currency composition of public debt. This renders the public sector vulnerable to a peso depreciation. In contrast, its liquidity position has improved, but only at the expense of domestic banks and pension funds. Experiences in other emerging markets suggest that financial sector stress can spill over quickly into the sovereign's balance sheet.

[12] Otherwise, dollarization in Colombia is low, owing to legal restrictions on holding bank deposits in currencies other than the peso. At end-2003, only half a percent of bank deposits owned by domestic residents were denominated in foreign currency.

[13] Public debt started to fall at end-2003, however, and has decreased further in 2004.

21. **Corporate sector vulnerabilities have receded.** Relative to 1998—the year before the crisis—the companies' foreign currency position has improved—possibly in reaction to the move to a flexible exchange rate system in 1999, which may have induced companies to manage foreign exchange risk more prudently. Also, companies are more equity- and less debt-financed than in the past, implying less leverage and more risk sharing with their financiers.

22. **The results for households, banks, and nonbank financial institutions are mixed**.

- **Banks**' main vulnerability prior to the 1999 crisis was their exposure to the stretched balance sheets of the corporate sector and of households. This risk has diminished, as banks have reduced credit to the private sector, and corporate balance sheets have improved. However, banks' exposure to the sovereign has sharply increased, and with it liquidity and interest rate risk. While managing liquidity risk is a core banking activity, today, Colombia's banks would be less able to handle a sharp increase in interest rates than they were in the late 1990s. A foretaste of such difficulties was experienced in late 2002, when domestic debt markets closed for several months, following a hike in interest rates due to contagion from neighboring Brazil.
- The most important fact about **nonbank financial institutions** is their impressive growth in recent years. Similar to banks, they are heavily exposed to the sovereign; a stronger diversification of exposure to other sectors appears desirable. Also, between 2000 and 2003, nonbank financial institutions built up a substantial, speculative long foreign currency position, which rendered them vulnerable to the peso appreciation that set in late 2003.
- **Households'** net position has improved, due to the accumulation of assets with pension funds and other nonbank financial institutions. However, as nonbank financial institutions pass most household savings on to cover the government's financing needs, households are indirectly exposed to the sovereign.

23. The absence of mark-to-market data for some assets as well as of information on how much balance sheet exposure is hedged (although indications are that it is little) prevent an exact simulation of how macroeconomic shocks would feed through the Colombian economy. A rough, qualitative assessment is possible, however, and suggests the following.

- **A peso depreciation would hurt the public sector,** as well as private nonfinancial corporations—even though corporations' vulnerability to a depreciation is smaller than in the late 1990s. Nonbank financial institutions would benefit. Obviously, the opposite is true for an appreciation.
- **An interest rate hike would hurt the financial system.** In particular banks' liquidity position appears stretched. This suggests the need to avoid policies that may increase interest volatility, such as excessively stabilizing the exchange rate. The other sectors, including corporations, appear better equipped than in 1998 to deal with the immediate impact of higher interest rates.
- **An "autonomous" banking crisis** (i.e., not caused by balance sheet contagion from other sectors) would be less harmful than it was in the late 1990s, as both households and corporations have sharply reduced assets with the banking system. Nonetheless,

the share of households' financial assets placed with banks is still more than 40 percent. A similar amount is invested with non-bank financial institutions, rendering the latter's solvency critical.

- An **"autonomous" corporate crisis** would, obviously, affect aggregate demand and therefore impact on other sectors, notably households. *Direct* balance sheet contagion would be limited, however, as two-thirds of corporate equity and one-half of corporate debt is held by nonresidents.
- Finally, a **sovereign crisis** would critically affect banks, nonbank financial institutions, and households. Exposure of all these sectors to the sovereign has—directly or indirectly—increased in recent years.

24. **The analysis suggests the following policies to reduce macroeconomic vulnerabilities.**

- **Reduce the level of public debt,** both to decrease the public sector's own vulnerability to a debt crisis and to limit exposure of the financial system to the sovereign. Increasing the length of debt maturities is a double-edged sword, at least to the extent that it is not accompanied by a reduction in debt levels: while it reduces rollover risk for the government, it increases interest rate risk for the financial sector.
- **Maintain the exchange rate float.** The move from a quasi-peg with the U.S. dollar to a flexible exchange rate in 1999 has not only induced corporations to increase assets in foreign currency and therefore improve risk management, it has also reduced interest rate volatility.
- **Promote the development of domestic securities markets** to permit households and financial institutions to diversify assets away from the sovereign and to invest more into the private sector.
- **Promote market-based hedging mechanisms** that would allow sectors to close inverse open balance sheet positions. An example is foreign currency risk, where the public sector on the one hand and nonbank financial institutions on the other appear to be natural hedging partners.

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IV. The Development of Hedging Instruments in Colombia[1]

A. Introduction

1. **In Colombia, derivatives markets remain rather small and—notably in the fixed income segment—relatively illiquid.** In contrast, derivatives markets in several other Latin American countries have grown considerably, in both trading volumes and the types of instruments available. Brazil and Mexico are, by far, the fastest growing and largest derivatives markets in the region—in relative terms to the sizes of their underlying cash markets. Generally, derivatives markets in Latin America are dominated by interest rate and foreign exchange products, albeit often with features unique to a particular country, reflecting the products traded in the underlying cash markets. These markets are used extensively by local private sector entities to hedge risks associated with raising funds, domestically and in international capital markets.[2]

2. **More extensive use of hedging instruments in Colombia would provide several benefits.** It would enhance the liquidity and depth of Colombia's local capital market. Colombia experienced episodes of high illiquidity in the market for government securities (TES) in late 2002 and again in mid-2004, and hedging of interest rate risk would give financial institutions additional tools to manage their volatility. This would also help the government increase its reliance on domestic currency financing and minimize its risk to currency fluctuations. More active use of hedging exchange rate risk, especially at longer maturities, would help ease pressures for foreign exchange intervention by the central bank during periods of significant exchange rate volatility.

3. **This chapter provides an overview of hedging in Colombia's financial markets and offers suggestions to encourage greater use of hedging instruments.** The main recommendations include (i) establishing a credible reference interest rate to enable reliable pricing of risk, in both the fixed income and foreign exchange markets; (ii) easing the restriction on banks' cash position in foreign currency; and (iii) further development of the securities market to facilitate the process of financial intermediation. We also discuss how Brazil, Chile, and Mexico have developed their derivatives markets.[3]

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[1] Prepared by Roberto Garcia-Saltos (WHD) and Li Lian Ong (ICM).

[2] As an example, virtually all of the 40–50 Brazilian firms that have access to international financial markets raise U.S. dollar-denominated funds in these markets. They then turn to the local derivatives market to swap the external financing obligations into Brazilian reals with an interest rate indexed to the Interbank Certificate of Deposit (CDI) rate. This illustrates the importance of local derivatives markets for local entities which need to manage the currency and interest rate exposures that come with raising funds in international markets.

[3] For further details on these markets, see Mathieson, Roldos, Ramaswamy and Ilyina (2004).

B. Hedging Instruments

The foreign exchange market

4. **Onshore foreign exchange derivatives activity consists mainly of USD/COP forward operations.** In 2003, these transactions accounted for about 70 percent of the total volume of derivatives. There is a reasonably liquid over-the counter (OTC) market for currency-based forward contracts, with turnover growing from a monthly average of US$418 million in 1997 to US$5.6 billion in January 2005 (Table). Around 70 percent of the turnover corresponds to transactions carried out by the financial sector (banks and pension funds) and the remainder is attributable to the real sector. Evidence suggests that large nonfinancial corporations have used this instrument to limit their exposure to exchange rate risk (Annex I).

Activity in Forward Foreign Exchange Rate Market by Sector, January 2005

	Buy		Sell	
	Amount US$ million	Participation Percent	Amount US$ million	Participation Percent
Banks	3,213.70	57.7	3,371.10	60.5
Financial corporations	577.8	10.4	497.2	8.9
Commercian finance and leasing companies	18.0	0.3	6.7	0.1
Total interbank	**3,809.50**	**68.3**	**3,875.00**	**69.5**
Foreign banks and headquarters	306.3	5.5	272.5	4.9
Pension and retirement funds	511.9	9.2	683.6	12.3
Rest of the real sector	946.9	17	743.3	13.3
Total real sector	**1,765.00**	**31.7**	**1,699.40**	**30.5**
Total	**5,574.50**	**100**	**5,574.40**	**100**

Source: Banco de la República.

5. **Liquidity in the forward market is largely concentrated in the one-month contract, which represents about 80 percent of outstanding contracts.** There is reasonable liquidity up to 3 months, while the one-year contract is the longest tenor quoted (Figure 1). Transactions in non-deliverable forwards (NDFs) amount to almost 6 times those of the outright forwards (US$2.4 billion compared to US$0.4 billion in August 2004) in the onshore market. In the real sector, hedging of foreign exchange exposure using forwards has grown to about 60 percent of all international trade transactions, measured as the ratio of forward purchases/imports and forward sales/exports (Figure 2). Derivative instruments, known as *Operaciones a Plazo de Cumplimiento Financiero* (OPCFs) are also traded on the Colombian stock exchange (BVC) (Figure 3).

Figure 1. Composition of Forward Markets

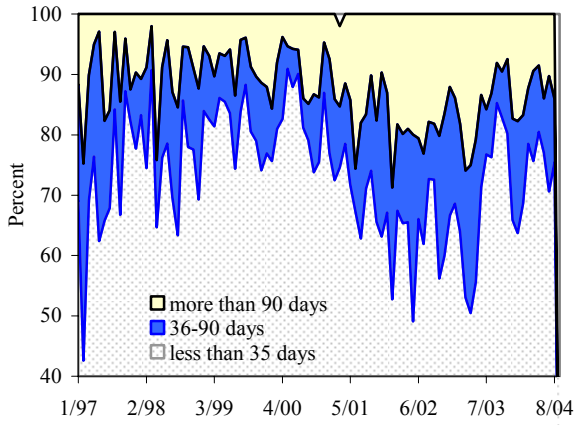
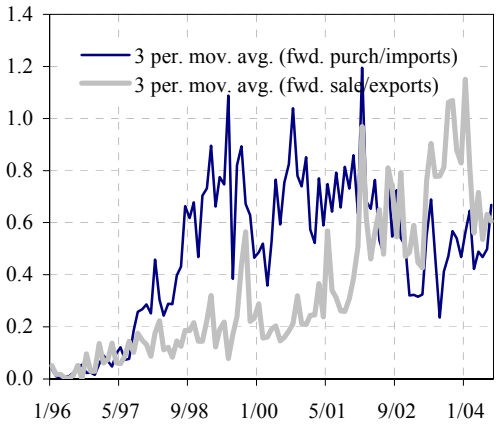
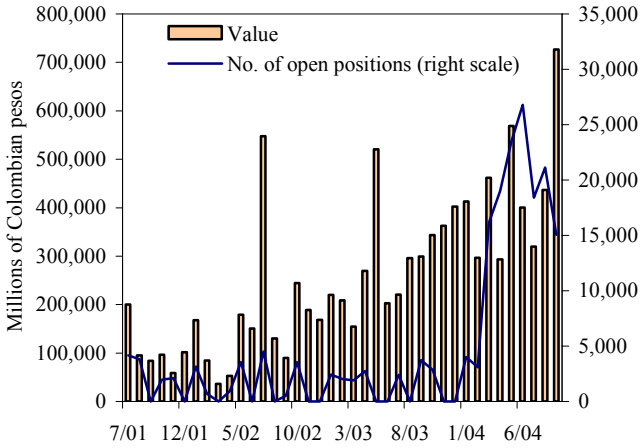


Figure 2. Real Sector Coverage with Forwards



Source: Bolsa de Valores.

Figure 3. OPCF Positions



Source: Bolsa de Valores.

6. **Trading in the offshore market is in the form of NDFs and is not regulated.** Tenors for this instrument are for up to one year. The NDF market for the peso is among the smaller ones within the Latin America, with an average daily turnover of US$50 million. Deals are executed in New York, with the *tasa de cierre representiva del mercado* (TRM) or closing market price rate on Reuters being used for settlement. Anecdotal evidence indicates that a private FX options market has been growing.

7. **As a regional comparison, the Mexican peso is one of the most liquid emerging market currencies, in both the spot and foreign currency derivatives (swaps and forwards).**[4] Much of the foreign currency trading activity moved offshore during the past five to six years, with foreigners mainly using foreign currency forwards and swaps to express their views on the currency and interest rates (without having to take the cross-border risk).

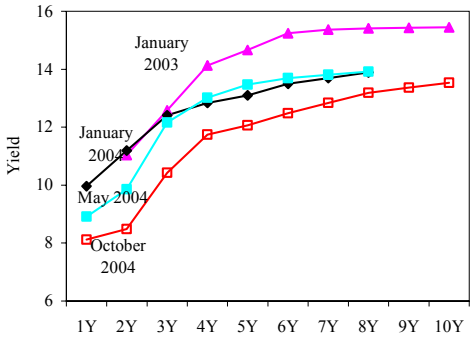
8. **In Chile, the main instruments are forwards for short-term foreign exchange rate protection and currency swaps for longer-term foreign exchange protection.** These instruments are primarily traded between financial institutions and between financial institutions and large firms.

9. **In Brazil, foreign exchange derivatives account for around half of all derivatives positions, reflecting the strong demand for currency hedges.**[5] Trading in currency derivatives is particularly high compared with the underlying foreign exchange market. That said, this market is widely characterized as suffering from a shortage of currency hedge supply. This is in part because local institutional investors have no foreign currency positions—in direct contrast to say, Chile's institutional investors—and the amount of U.S. dollar receivables by exporters and banks are insufficient to meet the demand for dollar hedge by entities with short dollar positions. To address the shortage of hedging opportunities, the authorities issued U.S. dollar-linked debt, and then unbundled the product into a domestic currency security and a currency swap to provide a more efficient foreign exchange hedging instrument.

The domestic fixed income market

10. **The existence of fixed income derivatives instruments remains very limited in Colombia.** Exchange-traded futures (*Operaciones a Plazo de Cumplimiento Financiero* OPCFs) include commodity futures (oil and Brazilian Arabic and Soft Arabic coffee) and fixed income futures. However, it currently appears that agents are more interested in developing the hedging market for foreign exchange. Market participants appear sanguine about existing debt positions, given the ample liquidity in the

Figure 4. Historical Yield Curves of Colombian Government Debt (COP)



Source: Bloomberg.

[4] The trading in Mexican peso-U.S. dollar futures on the Chicago Mercantile Exchange (CME) is very active, with many market participants saying that price discovery in the peso market takes place in Chicago.

[5] This includes the *cupom cambial* traded both in OTC markets, and the Brazilian Mercantile and Futures Exchange (BM&F).

government debt market, amidst falling domestic interest rates (Figure 4). However, it seems appropriate, in this low interest rate environment, to foster the development of derivatives instruments.

11. **In contrast to Colombia, fixed income derivatives are the most liquid instruments in Brazil.** Indeed, they represent the benchmark interest rate yield curves. Regulatory developments have paved the way for the development of an onshore credit derivatives market, and it is anticipated that the credit derivatives market will provide price discovery for the cash market, thus improving secondary market liquidity and increasing the securitization of corporate sector debt. The interest rate derivative market is largely focused on hedging and speculative position-taking, based on expectations about the future direction of the key benchmark interest rate.

12. **In Mexico, interest rate derivatives—both OTC and exchange-traded—have grown quite rapidly.**[6] The Mexican OTC market in interest rate swaps (IRS) and forward rate agreements (FRAs) has been expanding steadily over the past 5–6 years and is currently almost as liquid as the underlying bond market. The exchange-traded interest rate derivatives market was almost nonexistent prior to 2001, but has since picked up sharply; the TIIE-28 future contracts is the most traded instrument on the local derivatives exchange, MexDer.

13. **In contrast to the other two countries, the market for interest rate derivatives in Chile is very small.** In recent years, OTC derivatives in interest rates and fixed-income assets (central bank bonds, bonds and credit notes denominated in Chilean pesos and issued by resident commercial banks and financial institutions) have also been made available. Exchange-traded derivatives such as futures contracts on the IPSA and options on stocks have been very illiquid.[7]

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[6] Brazil and Mexico have among the most liquid offshore markets in credit derivatives. These markets are largely dominated by plain-vanilla credit default swaps (CDS) on sovereign issues of U.S. dollar-denominated international bonds, which are used by international investors to either augment or hedge the credit risk exposure of their bond portfolios.

[7] The Chilean authorities have implemented several measures to encourage the development of the local derivatives market. The measures include allowing banks to short-sell securities and pension funds to lend securities and to use derivatives instruments for hedging purposes. However, these measures have not had significant effect, due to implementation delays and the existence of restrictions, such as the prohibition of pension funds from writing options or trading yield spreads (which would entail short-selling securities).

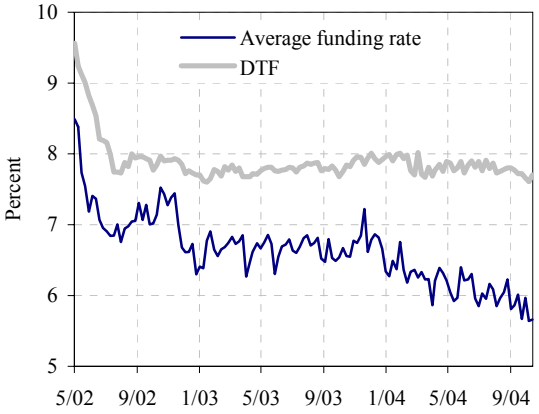
C. Steps to Foster Hedging

Establish a clear reference interest rate

14. **Although Colombia has one of the longest yield curves for domestic currency bonds in Latin America, of up to 15 years, the absence of an appropriate benchmark interest rate for the settlement of contracts in cash markets is one of the main weaknesses of the money market.** The development of a timely and credible reference rate for use by market participants across different financial operations such as credits, futures, forwards, and swaps is crucial for the consistent and accurate pricing of cash and derivative market instruments. Currently, the government is preparing a strategy to deepen the repo market, which would include the development of securities lending facilities.[8] The authorities are refocusing their bond issuance program to increase liquidity in the 2–5 year segment of the yield curve, while starting to issue treasury bills under one year. These reforms would substantially improve liquidity for short-term debt instruments (short-end of the of the yield curve) by providing a credible "anchor" for interest rates.

15. **Presently, the most widely used reference interest rate is that of the 90-day certificates of deposit (DTF).** However, the use of the DTF in its current formulation is considered to be a major barrier to establishing credible pricing of domestic securities. The main problem associated with the DTF rate is that it does not appear to reflect the market environment—the DTF has remained practically flat since 2002, while the average cost of funding has fallen in line with the reduction in inflation (Figure 5).[9] It would

Figure 5. Domestic Interest Rates 1/



Sources: Central Bank of Colombia; and staff estimates.
1/ The average funding rate corresponds to the weighted average interest paid on deposits in the Colombian financial system.

[8] The most common transactions are repurchase ("repo") agreements in the Colombian money market. A repo is an operation in which the seller of the securities agrees to repurchase them at a specified time and price; the collateral is usually held at the central securities depository (DCV). The repo is the main monetary policy instrument in Colombia, and is widely used by the treasury for its cash management operations. The central bank and the treasury account for more than 90 percent of the repo market which had, during 2003, a daily average turnover equivalent to US$872 million.

[9] The weak link with market conditions is further noted by the relatively low and declining volatility of the DTF rate compared to other market-determined rates. Furthermore, the share of the 90-day certificates of deposit to total deposits has fallen. This has occurred even as the concentration of financial instruments—as measured by the Herfindhal index—has increased.

be difficult to change the DTF as the official reference rate, given its importance in many laws. However, the formula used in its calculation could be changed to incorporate: (i) rates that are provided by a spectrum of market makers; and (ii) rates that would reflect market movements, and enable clear transmission of monetary policy decisions and credible pricing of risk. It would also be useful to publish a reference interest rate daily, instead of weekly.

16. **As a comparison, the central bank of Mexico introduced in March 1996 a floating peso reference rate, known as the *Tasa de Interes Interbancaria de Equilibrio* (TIIE).** The central bank of Mexico provides a 28-day TIIE daily and a 91-day TIIE on a weekly basis. All floating rate debt, a large proportion of bank loans and the most liquid interest rate derivatives are based on the 28-day TIIE, which uses bid-ask quotes presented by financial intermediaries to the central bank. This rate has become a credible benchmark for bank loans and security yields, and represents the underlying rate for futures and swap markets, as noted earlier.

17. **Similarly, overnight rates are one of the most important elements of the local market in Brazil.** Banks usually express their cost of funding as a percentage of the CDI interest rate—the uncollateralized overnight interbank loan rate. It is an average of all inter-bank overnight transaction rates, and is the rate at which the floating parts of interbank swaps accrue. The CDI rate is the most widely-traded benchmark rate and is particularly important to the BM&F swap contracts. Another key interest rate is the Selic interest rate—the Brazilian central bank-controlled repo rate on public bonds. [10] The most liquid fixed income securities, as well as a large part of domestic debt are linked to both CDI and the Selic rate. There can be differences between these two rates, which affect asset pricing, especially for short-term financial instruments.

Standard valuation of forward foreign exchange positions

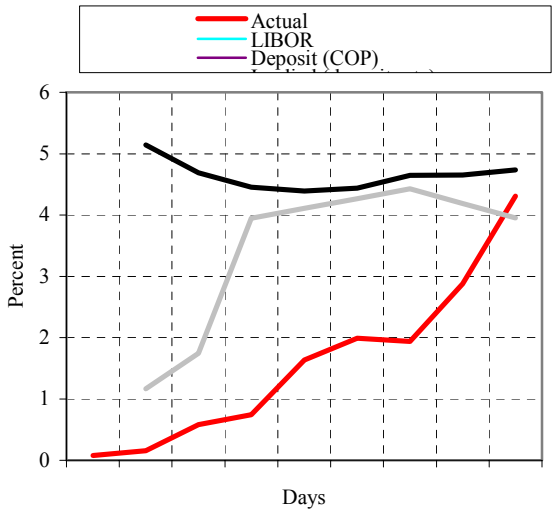
18. **A clear reference interest rate would help lead to a standard method for valuing positions in foreign exchange.** An accepted forward differential curve is needed in order to provide a standard mechanism for the pricing of market risk. The implied forward differential is calculated based on or interest rate parity, as follows:

[10] This interest rate serves as (i) the overnight interest cost of government credit; (ii) the rate set by the central bank for borrowing and lending money to banks; and (iii) the rate at which floating rate government bonds accrue on a daily basis.

$$\frac{f}{s} - 1 = \frac{r_{COL} - r_{USD}}{1 + r_{USD}},$$

where $(f/s - 1)$ is the actual forward differential, r_{COL} is the peso interest rate and r_{USD} is the U.S. dollar interest rate, and $(r_{COL} - r_{USD})/(1 + r_{USD})$ is the implied forward differential. In other words, the implied forward differential changes depending on the selection of the representative interest rate. For example, two banks could use different interest rates (deposit rates or money market rates) for computing market risk and for valuing the same transaction in forward markets. Thus, there may be cases in which the implied foreign exchange forward curves are different simply because agents choose different interest rates for valuation purposes. Figure 6 shows a marked difference between the actual and implied forward differentials (of around 5 percentage points for 30 days) when deposit rates for both the United States and Colombia are used in the calculations. However, the difference between the implied and actual curves is much narrower at the short-end (about 1 percentage point for 30 days) when the money market rate for Colombia and the LIBOR rate are used instead.

Figure 6. Forward Differentials



Source: Bloomberg.

19. **The establishment of a standard method for calculating the implied forward curve would also improve disclosure.** Presently, banks report their open forward positions in their balance sheets, using interest rates of their choice. This means that individual institutions with identical positions may actually show different valuations on their books.

Ease restrictions on cash position and the investment holding period

20. **Another obstacle is the restriction imposed on banks' foreign currency cash positions against having a negative balance.** This regulation was issued in March 2004, and could impede the development of the foreign exchange derivatives market. To date, it has reportedly precluded some banks from hedging their purchase of foreign currency forwards (usually from exporters and pension funds) in the spot market, beyond a certain point (Box 1). Even though the aggregate data suggest that the foreign currency cash position for the banking system remains positive overall (Figure 7), discussions with market

participants indicate that *individual* banks have, from time to time, had to stop trading in this market when they reached their cash position limits. This "friction" could potentially lead to market stoppages, acting against government's efforts to improve the smooth functioning of local markets. Another potential concern is that some banks may choose to "speculate" on one side of the transaction by not hedging their open forward position, to circumvent the restriction. One way to soften the effects of this restriction may be to set it as a share of the financial intermediaries' equity, which would preserve the prudential regulatory capacity of the government.

Figure 7. Stock of Forward Purchases from and Sales to the Real Sector by the Interbank Sector

21. **The incidents of "friction" in the purchase of U.S. dollar forwards by banks, relative to the desire by exporters and pension funds to sell the currency forward, have reduced the forward premium on the U.S. dollar.** The narrowing forward differential has led to resistance from some exporters against hedging; discussions with market participants suggest that exporters are reluctant to lock into "unattractive" forward rates. The increasing pressure from the demand and supply imbalance has also resulted in a wide spread between the implied and actual forward curves, especially at the short end.

22. **These banks were initially able to overcome this cash restriction by tapping into offshore interest in negotiating "synthetic pesos"**—attributable to the strengthening peso and the attractive interest rate differential between the Colombian peso and the U.S. dollar. This trade involved offshore investors borrowing U.S. dollars in the United States, converting the loan into pesos and investing the loan in peso TES bonds, while purchasing U.S. dollars in the forward market. The imposition of a one-year holding period on offshore investors in local markets, since December 2004, caused further friction in forward exchange rate market by making such transactions very costly.[11] A potential concern is that banks are looking for vehicles to circumvent these restrictions, potentially decreasing the transparency in this market.

[11] Recently, the government announced its decision to dismantle this restriction within the next six months.

Box 1. Restrictions on Foreign Currency Cash Position of Banks

We define a bank's net worth (PP) as:

(1) $PP = A - L$,

where A represents the bank's total assets, and L its total liabilities. Its foreign currency cash position (CP) is defined as:

(2) $CP = PP - F_B + F_S$
$= A - L - F_B + F_S$,

where F_B is the purchase of forwards in foreign currency and F_S is the sale of forwards in foreign currency. If we assume that the bank buys an additional $100 forward, then the new net worth and offsetting cash positions are:

(3) $PP_1 = (A + 100) - L$ and

(4) $CP_1 = PP_1 - F_B + F_S$
$= [(A + 100) - L] - (F_B + 100) + F_S$
$= A - L - F_B + F_S$.

In other words, the cash position remains unchanged as a result of the forward operation. However, the bank must now sell $100 in exchange for pesos in the spot market, in order to hedge the open forward position. Since this cash position is for foreign currency only, the purchase of pesos (increase in local currency cash position) is not recognized. Effectively, the foreign currency cash position now becomes:

(5) $CP_2 = (A - 100) - L - F_B + F_S$

Thus, as $F_B \to \infty$, that is, as the hedged forward purchase transactions increase, $CP_2 \to 0$. When $CP_2 = 0$, the forward purchase transactions must cease.

Given the existing central bank restriction on the foreign currency cash position, the bank would no longer be able to buy foreign currency forwards (usually from exporters and pension funds) once the position is at zero. The only way for the bank to build more "capacity" to purchase foreign currency forwards would be to (i) increase the *sale* of foreign currency forwards (usually to importers); and (ii) simultaneously purchase foreign currency (sell pesos) in the spot market to hedge these open forward position. The first part of this transaction would not change the foreign currency cash positions, per equation (4), but the second (hedging) leg would have the opposite effect to equation (5). In other words, as $F_S \to \infty$, that is, the hedged forward purchase transactions increase, $CP_2 \to \infty$.

Strengthen the domestic capital market

23. **The Securities Market Law (SML), currently before Congress, would strengthen the domestic hedging market (futures, options, swaps) in several ways (Box 2).** It would address the issue of counter-party risk in the trading of derivatives, which is an important concern to the extent that trading is not immune to credit risk. The SML would require the

establishment of centralized clearing and settlement systems, which would improve the protection of and reduce the risks to investors, and thus reduce costs.

Box 2. Key Features of the Draft Securities Market Law

Objectives: Foster a liquid and efficient capital market by enhancing investors' rights, preventing systemic risks and promoting more confidence on investment and trading of securities.

Investor Protection and Enforcement: The law adopts principles of corporate governance and dissemination of information oriented to foster the transparency and equity among investors. At the same time, the law unifies the, currently disperse, criteria to describe infractions and establishes severe penalties for felonies in securities trading.

Regulation and Supervision: Under the proposed law, entities conducting similar types of capital markets activities—either bank or non bank intermediaries—would be subject to same standards of surveillance. This would reduce incentives to pursue regulatory arbitrage.

Settlement and Trading: The principle of finality would become a cornerstone in the trading of securities. By this principle, securities trading are deemed as final transaction. This would enhance the legal protection for trading, as the assets cannot be set aside in favor of a third party as a consequence of another contract liability. The law establishes central counterparty risk clearing houses, which assume all obligations involving the trading of securities, and thereby reduce risks and costs.

D. Concluding Remarks

24. The development of well-functioning money markets is a critical first step in developing hedging instruments in both, domestic and foreign currencies. Towards this end, the establishment of a credible reference interest rate is crucial. In the meantime, the authorities would need to revisit the restriction imposed on banks' foreign currency cash positions, as this could impede the development of the foreign exchange derivatives market. On a broader scale, the passage of the SML would promote greater confidence in the market, by enhancing investors' rights and reducing systemic risks.

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EXPOSURE OF THE CORPORATE SECTOR TO FOREIGN CURRENCY RISK

The foreign exchange exposure of a particular industry sector in Colombia can be estimated using factor analysis.[1] Essentially, this entails estimating a regression of the stock return of a particular firm or industry on exchange rate changes, while controlling for returns on the overall stock market. The econometric model is specified as follows:

(1) $$R_{i,t} = a + b_1 R_{s,t} + b_2 R_{m,t} + \varepsilon_{i,t},$$

Where $R_{i,t}$ is the stock return for sector i in period t, $R_{s,t}$ is the rate of change in the Colombian peso relative to the U.S. dollar, $R_{m,t}$ is the return on the overall stock market and $e_{i,t}$ is an independent and identically distributed error term. The coefficient b_1 measures the exchange rate exposure of a sector. A higher number for the coefficient b_1, either positive or negative, represents a higher exposure of a particular sector to changes in the exchange rate.

We apply the factor analysis model in equation (1) using Ordinary Least Squares with correction for serial correlation in the error term, to the following sectors: consumer discretionary, consumer staples, financials, industrials and utilities. To calculate sectoral and overall stock market returns we use Datastream sectoral indices, derived from companies listed in Colombia Stock Exchange; the sample covers January 1998 to October 2004. The sensitivity of equity returns of each sector to exchange rate changes is presented in (Table).

The results suggest that the consumer staples sector has been the most exposed to foreign exchange risk over the period January 1998 to October 2004 holding period.[2] However, when the data is split into two sub-samples, from January 19, 1998 to July 2, 2001 and from July 3, 2001 to October 4, 2004, the results show that the foreign exchange exposure of the consumer staples became insignificant in the latter period. This may suggests that the companies in this particular sector may have improved their risk management over time by using hedging or other operational techniques, thus offsetting any significant impact from exchange rate movements on its profits, and therefore in its stock price.

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[1] See Jorion (1990).

[2] As a comparison, Chan-Lau (2004) finds that the financial sector in Chile has been the most exposed to foreign exchange rate risk, although the consumer staples sector was consistently exposed as well.

Table. Colombia: Foreign Exchange Exposure of Industry Sectors 1/

	Consumer Discretionary		Consumer Staples		Financials		Industrials		Utilities	
				Sample period: 10 January 1998 to 4 October 2004						
Constant	0.000	*-0.053*	0.002	*1.764*	-0.001	*-1.037*	-0.010	*-2.452*	0.001	*0.609*
Exchange rate	0.010	*0.056*	0.452	***2.033***	0.254	*1.429*	-0.400	*-0.835*	0.076	*0.677*
Stock market	0.341	***3.722***	0.437	*6.100*	0.425	***6.740***	0.748	***3.999***	0.129	*1.693*
Adjusted R-squared	0.096		0.191		0.282		0.085		0.020	
F-statistic	19.560		42.442		69.674		17.168		4.582	
D-W statistic	2.380		2.365		2.327		2.149		2.021	
				Sub-sample period: 19 January 1998 to 2 July 2001 2/						
Constant	0.001	*0.351*	0.003	*1.140*	-0.005	*-2.750*	-0.008	*-1.458*	0.000	*0.036*
Exchange rate	-0.027	*-0.106*	0.773	***2.513***	0.320	*1.278*	-0.286	*-0.441*	0.153	*1.269*
Stock market	0.283	***3.047***	0.311	***2.831***	0.248	***3.381***	0.596	***3.064***	-0.016	*-0.501*
Adjusted R-squared	0.058		0.106		0.106		0.044		0.000	
F-statistic	6.503		11.686		11.673		5.156		1.015	
D-W statistic	2.430		2.256		2.166		2.231		2.342	
				Sub-sample period: 3 July 2001 to 4 October 2004 2/						
Constant	-0.002	*-1.096*	0.001	*0.665*	0.001	*1.076*	-0.013	*-2.012*	0.000	*-0.095*
Exchange rate	0.106	*0.677*	-0.071	*-0.595*	0.067	*0.049*	-0.539	***-0.941***	-0.058	*-0.291*
Stock market	0.433	***2.479***	0.605	***9.663***	0.620	***6.162***	0.968	***2.658***	0.316	***2.127***
Adjusted R-squared	0.148		0.566		0.602		0.142		0.065	
F-statistic	15.770		109.355		129.706		15.075		6.874	
D-W statistic	2.174		2.007		2.126		1.937		1.881	

Sources: Datastream; S&P; IFC; EMDB; and staff calculations.

1/ T-statistics in italics; bold fonts indicate significance at the 5 percent level or lower.

2/ The sub-samples were defined on the basis of the merger of the IGBC index of the Colombian Stock Exchange with Medellin and Occidente on July 2001.