

Economic Review

Federal Reserve Bank of Dallas
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**1 The Secondary Market
in Developing Country Debt:
Some Observations and Policy Implications**

Leroy O. Laney

The secondary market in developing country debt has received much attention recently, especially with the emergence of the debt/equity swap market. Moves by banks to reserve more against foreign exposure stimulates interest further, because they may increasingly sell their loans in this secondary market. Some controversy exists over the prices quoted, since relatively little activity occurs at these prices. This article examines both the participants in the markets and underlying determinants of observed prices. Although it is found that the quoted prices may reflect several conventional measures of economic health of the borrowing country, these prices currently do not reflect many political or structural aspects of country risk.

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The Secondary Market in Developing Country Debt: Some Observations and Policy Implications

Leroy O. Laney

*Assistant Vice President and
Senior Economist*
Federal Reserve Bank of Dallas

Since the international debt problem emerged in 1982, progress has been made toward a solution. Debtor countries generally have realized substantial improvement in their current accounts, even though this improvement has come at the expense of curtailed growth. Significant amounts of official debt relief have been avoided, although a lively normative debate continues on whether such relief is desirable or will be necessary in the long run. Finally, many lending banks have reduced developing country exposure as a percent of capital and have increasingly built up loan-loss reserves.

This progress has been marred sporadically by visible setbacks. Developing countries occasionally have adopted a more militant stance in servicing their debt and in demanding more concessionary terms in debt restructurings. At the same time, divisiveness has occurred among creditor institutions on issues such as restructuring terms and potential write-downs on the outstanding debt. In the last several years, these differences have been most obvious between the U.S. money-center banks, on the one hand, and U.S. regionals and foreign banks on the other. Regional U.S. banks have less exposure to developing countries than do major U.S. money-center institutions. Foreign banks have

built up larger reserves against developing country exposures aided to an extent by a weaker U.S. dollar—the currency in which developing country loans generally are denominated. Opinions differ on whether the less-developed countries will eventually be able to grow out of the situation and service their debt without formal relief or loan write-downs. Some continue to emphasize zero sum aspects—sooner or later the burden must fall on bank shareholders, industrial country taxpayers, developing country wage earners, or some combination thereof.¹

Banks continue to carry most foreign debt on their books at face value. Recently, however, there has developed a small but growing secondary market in developing country debt that prices it at substantial discounts. To economists, there is something appealing about market solutions. As this secondary market has developed and received more attention, increasing thought has been devoted to using discounted loan prices as a benchmark to write down to market existing developing country debt. This article examines the evolving secondary market in developing country debt in terms of the institutional environment and participants in the market, the market's actual and potential

depth, the determination of observed discount prices, and possible policy implications.

The empirical work presented here suggests that discounted loan prices do reflect several basic aspects of underlying economic country risk. Insofar as such risk is measurable, however, some aspects of political or sociostructural risk may not be captured in these loan prices. If quoted prices in this infant market now overcompensate or undercompensate for actual overall country risk, therefore, the bias is more likely from the latter than the former. An important distinction may exist here between the long-term ability to service the debt and the long-term willingness to do so.

Evolving secondary loan market

Although a secondary market in developing country debt has existed for some years, it did not receive much public attention until 1986 when public quotations of secondary market discounts on the debt of various countries became increasingly visible. A major reason for increased activity in the market and the publicity given it has been the rising prominence of the debt/equity swap market. (See the box.)

A set of monthly bid and offer quotations for eight Latin-American countries for July 1985 and for the year 1986 appear in Table 1. Although such quotations vary somewhat depending on the source, these shown here are represen-

tative. Usually discount market quotations are cast in terms of bids and offers, not single market-clearing transaction prices—one indication of a thin market. In fact, the spread between bid and offered prices is frequently rather wide. In Table 1, the spreads during 1986 generally were wider for Argentina, Brazil, Mexico, and Peru than for other countries. Sometimes the quoted spread is significant relative to the level of prices quoted. For Argentina and Mexico, the average spread for the year was close to 6 percent of the average of bid and offer prices for the year, and for Peru the comparable percentage was over 20 percent.

Regarding the level of prices quoted, it is also clear from the table that substantial variation can occur across countries.² Among the countries included here, average prices range from Colombia at about 82 cents per dollar, to Peru at about 21 cents. For some countries, little volatility is apparent in the quotations, suggesting a lack of responsiveness in the market to ongoing developments. Compared to mid-1985, Argentina, Brazil, Chile, and Colombia were generally stable over the year 1986. Prices for Mexico and Peru dropped dramatically from mid-1985, however, with a less marked but steady decline in prices for Venezuelan debt.

It is clearly possible, then, for prices to move and for countries to change position relative to each other, even though in the observed data, the downward adjustment in prices has been more common than upward movement. In

Table 1
**BID-OFFER QUOTATIONS IN THE SECONDARY MARKET FOR DEVELOPING COUNTRY DEBT:
SELECTED COUNTRIES**

	Argentina	Brazil	Chile	Colombia	Ecuador	Mexico	Peru	Venezuela
1985								
July	60-65	75-81	65-69	81-83	65-70	80-82	45-50	81-83
1986								
January	62-66	75-81	65-69	82-84	68-71	69-73	25-30	80-82
February	62-67	74-78	65-68	81-83	69-71	65-69	23-28	78-81
March	63-68	74-77	65-68	80-83	69-72	60-66	21-26	77-81
April	63-67	73-76	65-68	80-82	66-69	58-62	20-25	76-81
May	63-66	73-76	65-69	80-82	66-69	57-61	18-22	76-80
June	63-67	73-76	64-67	80-82	63-69	55-59	17-23	75-78
July	63-67	73-76	64-67	80-82	63-66	56-59	18-23	75-78
August	64-68	73-76	65-68	81-83	63-66	55-59	17-23	74-76
September	64-67	74-77	64-68	81-83	64-66	55-58	17-20	73-76
October	64-67.5	75-78	65-67.5	81-84	64-66	54-57	18-21	73-75
November	64-67	73-77.5	65-68	82-84	64-66	54-57	17-20	73-75
December	62-66	74-77	65-68	82-84	63-65	54-57	16-19	72-74

SOURCE: *International Financing Review*.

some periods, increases occurred in the average of bid and offered prices for Argentina, Brazil, Colombia, and Ecuador, so upward movement is not unprecedented. Prices for Mexico and Venezuela undoubtedly were affected by the drop in oil prices in 1986, and the fall in Peru's price was probably related to that country's announcement that debt service would be linked to exports. Some market commentaries indicated that debt/equity conversion innovations buoyed Chilean and possibly Argentine prices at times during the period. Interestingly, although oil exporters were negatively affected by the 1986 drop in energy prices, oil importers' prices did not rise symmetrically, probably because other developments masked any such potential for a rise.

An oil importer like Brazil, for example, might have seen an upward movement had not the apparent unraveling of the Cruzado Plan—that country's recent aborted attempt at wage and price controls—been a negative influence. Through April 1987, Brazilian debt quotations fell approximately 10-12 cents on the dollar following the Brazilian announcement that the country would cease indefinitely to pay interest on its debt, which forced banks to classify Brazilian loans as nonperforming.³

Increased public attention has stimulated several interesting responses from various quarters. Not surprisingly, opinions are colored by the stance of the observer—purely objective economic analysis, the regulatory authorities, the major lending institutions, other banks, those who are attempting to make a market in the debt, or the debtor countries themselves.

Understandably enough, one of the most appealing aspects to those who search for an eventual market solution to the international debt situation that has developed during the 1980s is that discount prices can provide an existing indication of the true value of various countries' outstanding debt. Those who reason along these lines frequently emphasize that this market is active and well functioning, one in which buyers and sellers are brought together without duress. One cannot say that about the environment of multibank restructurings, public sector bridging loans, and developing country debt moratorium threats.

Bank regulators, who have tended to be more doubtful, have not indicated that discount prices would be taken into account in the determination of the overall value of outstanding foreign debt.⁴ Detractors of the use of the market for policy purposes emphasize the continued thinness of the market, the width of bid-offer spreads, the apparent unresponsiveness to external events of most discount prices over long periods, and the heterogeneity of the paper traded. For example, prices for a given debtor country could

vary—depending on the borrowing country institution or agency, participants in a given loan syndication, the extent of loan guarantees, or other characteristics.

The larger money-center banks that have greater proportional holdings of developing country debt have had some incentives to side with those who view the market prices skeptically—even though several such banks have participated as brokers in the market. If outstanding loans are marked down to market, write-downs could be large, taken in a given period or even over a more prolonged time.⁵ Recent developments indicate a greater willingness on the part of at least some money-center institutions to increase loss reserves against less-developed country debt—and thereby to insulate future earnings against write-downs that could occur as a result of secondary market debt sales.

U.S. regional banks, with less of their portfolios exposed abroad and perhaps more of their existing foreign exposure reserved against, are not as concerned about a sweeping mark-to-market foreign loan exercise. However, this group, which includes institutions with serious domestic loan portfolio problems, sometimes complains that if foreign exposure is not written down, then overall policy can discriminate against regionals that may be forced to mark down bad domestic loans. The substantially increased number of outright failures of small U.S. banks in recent experience makes this issue a more visible one.

Obviously, some differences of opinion exist about how the loan discount market should be viewed. These differences are reflected to an extent in the different buyers and sellers in the market.

Participants in the market

Probably the majority of transactions in the LDC secondary loan market continue to be made between banks. One can trace the origins of the market to banks with incentives to rearrange their loan portfolios. Bank participation in the market, however, conceivably could be motivated by either concentration or diversification. The concentration motive derives from incentives to consolidate loan portfolios into a smaller number of borrowers or countries. It is simpler organizationally to accumulate and maintain expertise on one country than in a collection of diverse economies and cultures. Spreading risk by diversification, on the other hand, is an obvious incentive for management of any kind of portfolio. *A priori*, one cannot say which motive will dominate in developing country debt management. In Table 2, the correlation matrix of 1986 quotation changes indicates at least some potential incentive for diversification. Price changes are not that highly correlated positively, and there

over the discount on local currency cited by the authorities.

Several noteworthy caveats apply at various stages of this entire process:

1. Banks holding greater proportional shares of claims on a country can easily have just as long term a stake in that country as a potential multinational investor.¹
2. By no means all existing debt of countries that have established debt-equity conversion programs is available for conversion. Eligibility for conversion can depend on various aspects of the program itself as well as such things as untangling original loan syndications.
3. Avoided interest and principal payments to foreign creditors must exceed dividend and capital payments to foreign shareholders for a country's future balance of payments to be affected favorably by the transaction itself. (If the foreign investment stimulated by the conversion program leads to increased exports, reduced imports, or additional capital inflows, then future balance of payments can be favorably affected, of course, even without this condition, but these aspects may be harder to predict.)
4. Possible macropolicy implications exist for participating countries. Purchase of debt by the monetary authorities can lead to excess monetary expansion unless these operations are offset in some fashion. If the country issues new domestic debt to finance the

purchase of foreign debt, there are also fiscal policy considerations.

5. The difference between the price at which the foreign investor purchases the debt in the secondary market and the price received in local currency from the authorities may be taxable. And various other aspects of the conversion program could make potential investors hesitate (e.g., limitations on dividends that can be remitted abroad on equity obtained through the program, time limits on repatriation of equity obtained, and other conditions).

While debt-equity conversion has added recent volume to the secondary loan market, both the conversion market and the loan discount market are still small relative even to new debt creation. Nevertheless, conversion programs are a mechanism to deal with debt problems. These programs also can accelerate desired structural changes in a country—encouraging exports, decreasing imports, or privatizing state enterprises—and might be instrumental in encouraging the return of previous flight capital.

1. For one recent study that surveys and criticizes the long-term credit relationship between banks and developing countries, see Vincent P. Crawford, *International Lending, Long-Term Credit Relationships, and Dynamic Contract Theory*, Princeton Studies in International Finance no. 59 (Princeton, N.J.: International Finance Section, Department of Economics, Princeton University, March 1987).

are at least some negative correlations, but with little systematic interrelationship.

Bank entrants in the market so far have been largely European and U.S. regional banks, but generally these banks have participated more as sellers of debt than as buyers. When banks are on both sides of the transaction, anecdotal evidence indicates more consolidation than diversification strategies at work. For example, a German bank might buy discounted Polish debt from a U.S. bank because the former is already exposed to Poland more, since it is a neighboring country, and perhaps because it perceives more support from German regulatory authorities should the Polish loans become nonperforming. Likewise, U.S. regional banks are more likely to be interested in consolidating their portfolios toward the domestic side—away from foreign countries in

which they have relatively less expertise and less at stake than do U.S. money-center banks.

Continental European banks also generally have an additional inclination to sell their existing foreign debt. These banks have responded to regulatory and tax incentives in establishing loss reserves against foreign loans that are closer to the discounts in the secondary market. As a result, bank earnings are more insulated from sales. Non-European foreign banks are likely to have a similar advantage relative to larger U.S. banks in this regard.

A national financial community that holds a significant share of developing country debt but so far has not participated much in the market is that of Japan. Loan discounts could increase substantially should any such given community of banks decide to participate actively as sellers.

Table 2
**CORRELATIONS AMONG PERCENTAGE CHANGES IN DISCOUNT LOAN PRICES
 FOR EIGHT COUNTRIES: 1986¹**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Argentina	1.00							
(2) Brazil	-.16	1.00						
(3) Chile . . . . .	.06	.07	1.00					
(4) Colombia . . . . .	.10	.49	.56	1.00				
(5) Ecuador . . . . .	.35	.09	.21	.09	1.00			
(6) Mexico	-.46	.44	.33	.65	-.08	1.00		
(7) Peru . . . . .	.20	.45	.01	.38	-.26	.26	1.00	
(8) Venezuela	-.33	.08	.20	.02	-.07	.37	.12	1.00

1. Using averages of bid and offer prices; see Table 1.

Recently, an increasing number of buyers have been nonfinancial entities, usually participants in the swap market described in the accompanying box. This side of the market also could become more internationalized. Pacific newly industrialized countries such as South Korea and Taiwan also could alleviate concerns about their net export surpluses by foreign direct investment in less-fortunate developing countries.

Price determination in the discount market

An inspection of loan discount quotations will pique the curiosity of some researchers about what determines these prices. The overall ranking of countries at any given time, at least ordinally, might not be surprising. But because prices do not change that much over time and not much trading occurs at quoted prices, the question arises concerning how accurately the observed prices reflect the true value of outstanding debt.

If the observed discounts overestimate or underestimate risk of interest arrears or outright debt repudiation, there is a potential return to the effort of correctly measuring that risk. Also, it may be possible to distinguish differences in a country's *ability* to service debt and its *willingness* to do so. Likewise, because any country risk analysis has elements of political and social as well as purely economic risk, prices in the discount loan market could reflect either or both. A country could have a stable political regime but simply be unable to earn enough foreign exchange to service its outstanding debt, or it could be in relatively good economic health but have the potential for abrupt and adverse political upheaval. It is likely that at least some positive correlation will exist between the two—the more dismal the

outlook for servicing and repaying the debt, the more likely a country will be unstable politically, adopt a nationalistic stance, and blame its creditors for its plight. Some aspects, however, are distinguishable.⁶

In investigating available discount prices, perhaps because of the infancy of the market, time-series techniques are less likely to bear fruit at present than cross-sectional analysis. The absence of any significant movement in prices over time indicates little responsiveness to other variables, and univariate techniques can be eliminated for the same reason. Cross-sectional regression analysis can shed some light on the issue if enough countries can be included and if parsimony can be exercised somehow in the choice of explanatory variables.

Principal component approach

Principal component analysis is one common multivariate tool useful on a large number of admissible variables as a data-compression technique and as a means to gain degrees of freedom for a subsequent linear-regression application. Briefly, the principal component method is an attempt to determine how many orthogonal dimensions there are to a set of variables. The approach reported here applies a separate calculation of principal components to a chosen set of 10 economic variables and also to a chosen set of 10 sociostructural variables. Then it uses the first principal component of each exercise to derive country cross-sectional indexes to represent "economic risk" and "sociostructural stability." Regressing the vector of available LDC secondary-loan market prices on these two independent variables then allows some insight into which is a more important determinant of these prices.⁷

The research methodology taken here was developed beginning with a data set that included 31 countries and a large set of cross-sectional variables representing various characteristics of these countries. The number of countries was limited partly by available market quotations on loan discounts in late 1986 and somewhat by the general availability of the variables applied to these countries. Conceptually, the number of possible variables that might explain observed discount prices has no upper limit, but the universe of such variables considered in this analysis should capture major characteristics. Although space here prohibits a complete list of variables considered for the following empirical analysis, such a list would include a wide range of variables measuring recent overall economic performance, debt-servicing capacity, socioeconomic characteristics, political stability, and other aspects of a comprehensive country risk analysis.⁸

A total of 74 variables, approximately evenly split between those chosen to represent economic risk and those chosen in an attempt to capture sociopolitical stability, were considered as candidates for inclusion in the two groups of 10 variables for the principal component applications. These variables were examined initially for their correlation with the vector of loan discount prices, and the candidate variables were then narrowed to groups of 10 each as a manageable number to discuss explicitly.

The 10 economic variables (see Table 3)—with hypothesized reasoning for inclusion—were specified as follows. The first two shed light on the disruption that inflation can cause in an economy. It is appropriate to include such measures especially because inflation is frequently a problem in many of the countries investigated here. Instead of simply using recent rates of inflation, an acceleration measure was included in an attempt to capture the extent to which inflation is increasingly becoming endemic, while a variation measure was included to focus on unpredictability aspects. If inflation were predictable—even if the rate itself were relatively high—price increases would produce fewer problems than they would in an environment in which inflation uncertainty makes it difficult to plan.⁹

The next four variables were used in an attempt to capture the pressure of the debt burden. The ratio of total debt to exports of goods and services gives one indication of debt-servicing capacity, and the ratio of debt to GNP simply scales the debt by the size of the economy. In addition, percent changes in the debt/exports and debt/GNP ratios in recent years were included—assigning a 0.5 weight to the year immediately prior, 0.3 to the year before that, and 0.2 to the year before that.¹⁰ Both trends and levels in these ratios might be important. The level of real GNP per capita

also was included as a measure of economic health, as was a similarly weighted average of this ratio.

An overall country risk index, one of several presumably compiled to measure all aspects of a country's creditworthiness, is more difficult to classify *a priori* as either an economic or a sociostructural variable. Such an index probably reflects economic aspects more, however, by assigning a higher rating to countries with better economic creditworthiness. (For substantiation of this point, see the factor analysis results reported in the Appendix.) One other ratio included as an economic variable—the international reserves/imports ratio—simply measures official monetary reserves available to cover imports in the most recent year.

The 10 variables included in the sociostructural application (see Table 4) may be less precise measures of the intended aspect than are those included to capture economic risk. These variables, which were chosen from among others that might suggest themselves, again were selected because of a demonstrated initial correlation with the vector of loan discount prices. More so here than in the economic risk analysis, one should view these variables simply as indicators of underlying politicosocial or structural stability rather than as exactly specified theoretical yardsticks.

Although country size (as measured by the level of real GNP) could be interpreted here in one sense as an economic variable, it might also be viewed as a measure of relative stability. (Again, see the Appendix for support on this classification.) The larger an economy, the more resources are at its command and possibly the more stable it is. Other things equal, a larger economy also might be considered a better credit risk than a small economy simply because it is less likely that national and international authorities would allow an actual default on its debt to occur.

Food production per capita is important because the degree of self-sufficiency in agricultural production can reflect the relative likelihood that the populace will be content to service a relatively large debt burden. Likewise, the literacy rate reflects education or intellectual enlightenment of the population.

Both televisions and telephones per capita can be measures of external enlightenment and a developed communications network, interpreted here as fostering social stability. Because the former could capture standard of living aspects more effectively while the latter might be more indicative of a communications infrastructure, it is reasonable not to include the two for exactly the same reason. Some available indexes undertake the perhaps more intractable task of measuring the overall physical quality of life in a country, and one such measure is included here.

Table 3

**FIRST PRINCIPAL COMPONENT
EIGENVECTOR: ECONOMIC ANALYSIS**

Variable	
Acceleration of inflation . . . . .	.26
Variation of inflation . . . . .	.16
Debt/exports ratio . . . . .	.47
Change in debt/exports ratio . . . . .	.33
Debt/GNP ratio . . . . .	.36
Change in debt/GNP ratio . . . . .	.15
Real GNP per capita	-.30
Change in real GNP per capita	-.25
Country risk index	-.46
Reserves/imports ratio	-.25
<hr/>	
Proportion of total variance explained =	.32

The total debt reschedulings or renegotiations for each country over the past 10 years were included in an attempt to capture some "nuisance" aspects to creditors of continuing to lend to the countries. Other series might be used to measure political stability. Other things equal, the size of the government cabinet could reflect on the vulnerability of a sitting government to an overthrow, as well as the sophistication of its bureaucratic structure. The level of official U.S. economic aid (to the extent that this variable reflects strategic importance to the world's largest capitalist economy) could throw light on the propensity of the system not to allow an ultimate default on outstanding bank debt to occur. Another measure of internal stability—a "homogeneity index" that attempts to gauge the ethnic, religious, and political mix—also might be indicative of civil strife or possible revolution. (Obviously, no existing numerical index could predict accurately the occurrence of another Iranian revolution, for example, but naturally the factors leading to such an event are difficult to quantify.)

The choice of all these variables for the present study—especially in the sociostructural category—may appear *ad hoc* to some. It is important to recall, however, that the choice was determined by the availability of existing measures as well as the theoretical underpinning. Variables were subjected to an initial screening of correlation to the vector of loan discount prices, the universe of possibly imperfect candidate variables was large, and several different combinations were investigated.

The results for the first principal component using standardized data (variables were transformed to have zero mean and unit variance) from the economic variables are shown in Table 3, and the first principal component for the sociostructural variables in Table 4. In Table 3, the sign convention is that a positive value indicates higher economic risk, while in Table 4 a positive sign indicates greater structural stability. All signs are as hypothesized, except for the size of cabinet variable in the sociostructural group, which has a very small value in any case. For the economic data, 32 percent of the variation is explained by the first principal component. For the sociostructural variables, 46 percent of the variance is explained.

These vectors can also be used to compute an economic-risk measure and a sociostructural-stability measure for each country, using a linear combination of the weights and the standardized original data. This, in turn, permits the use of the resulting two 31-observation series as independent variables in a regression, with country loan discount prices as the dependent variable.¹¹ Other series computed similarly using more principal components than the first one from each subgroup could have been included,

Table 4

**FIRST PRINCIPAL COMPONENT
EIGENVECTOR: STRUCTURAL ANALYSIS**

Variable	
Country size . . . . .	.25
Food production per capita . . . . .	.31
Literacy rate . . . . .	.41
Televisions per capita . . . . .	.42
Telephones per capita . . . . .	.41
Physical quality-of-life index . . . . .	.44
Number of debt renegotiations (1975-85)	-.17
Size of cabinet	-.04
U.S. economic aid . . . . .	.13
Index of homogeneity . . . . .	.30
<hr/>	
Proportion of total variance explained =	.46

but the use of only the first has the advantage of parsimony and at least some simpler understanding of general meaning attached to the independent variables.

The regression results (with *t* statistics in parentheses) are:

$$LP = 56.32 - 10.53 E + 1.06 S$$

$$(20.33)(-6.11) \quad (.74)$$

$$\bar{R}^2(F) = .62 (25.0),$$

where

- LP* = the vector of secondary market loan prices,
- E* = the first principal component series computed from the group of economic variables, and
- S* = the first principal component series computed from the sociostructural group.

Both independent variables are correctly signed. The economic-risk measure is highly significant even though the underlying principal component explained less of the total variation in the group of economic variables than the chosen sociostructural principal component did for that group of variables. The *S* variable is not significant, even though its coefficient has the expected sign.

These results suggest that economic aspects are a greater determinant of observed secondary market quotations than quantifiable political or sociostructural factors. This may not be surprising, either because one simply would expect the market to reflect economic aspects more or because any data that purports to measure underlying political risk would necessarily be less precise. The two are not mutually exclusive, however. This outcome could mean, in other words, that observed market prices are biased up or down depending on the relative structural characteristics of the country; perhaps a major reason is the inability to quantify these characteristics. These aspects are no less important in the potential valuation of developing country debt, however, regardless of their intractability.

Conclusion

The secondary market in developing country debt may offer guidelines to the underlying value of loans outstanding, but there has been some hesitancy about reading too much into a market that is now very thin and is obviously only in its incipient stages. Such a market could easily overcompensate or undercompensate for underlying risk. In this article, it has been suggested that any error in accurately incorporating risk is more likely to come from an inability to correctly read political or sociostructural aspects of a country than from any inaccuracy in measuring economic risk or debt-servicing ability.¹² The reflection of political risk in secondary market prices can be important not only for

banks trading in the market, but also in the context of expropriation risk for multinational firms participating in debt/equity swaps.

At very least, however, discount loan prices can be an indication of the need to modify underlying economic policies in the subject countries. As the market develops, prices are likely to incorporate all forms of country risk more efficiently, but this development is likely to occur gradually.

1. See, for example, Stanley Fischer, "Sharing the Burden of the International Debt Crisis," *Papers and Proceedings of the Ninety-Ninth Annual Meeting of the American Economic Association*, in *The American Economic Review* 77 (May 1987): 165-70.

The international debt situation has already had an impact on bank-share prices. See, for example, Stephen C. Kyle and Jeffrey D. Sachs, "Developing Country Debt and the Market Value of Large Commercial Banks," National Bureau of Economic Research Working Paper no. 1470, September 1984; and Bradford Cornell, Wayne Landsman, and Alan C. Shapiro, "The Impact on Bank Stock Prices of Regulatory Responses to the International Debt Crisis," in *Studies in Banking and Finance* (Supplement to the *Journal of Banking and Finance*, North-Holland) 3 (1986): 161-78. For bank stock analyses specific to Mexican exposure only, see Michael Smirlock and Howard Kaufold, "Foreign Lending, Disclosure and the Mexican Debt Crisis," in *Proceedings, A Conference on Bank Structure and Competition*, Federal Reserve Bank of Chicago, 1-3 May 1985 (Chicago, 1985), 576-84; and Robert F. Bruner and John M. Simms, Jr., "The International Debt Crisis and Bank Security Returns in 1982," *Journal of Money, Credit, and Banking* 19 (February 1987): 46-55.

For one recent analysis from the perspective of creditor governments' management of the situation, see Jeffrey Sachs, "Managing the LDC Debt Crisis," *Brookings Papers on Economic Activity*, vol. 2 (Washington, D.C.: The Brookings Institution, 1986), 397-440. For discussions from a broader policy perspective, see the following: Edwin M. Truman, "The International Debt Situation," International Finance Discussion Paper no. 298, December 1986; Rudiger Dornbusch, "International Debt and Economic Instability," and Rimmer de Vries, "Commentary on International Debt and Economic Instability," *Economic Review*, Federal Reserve Bank of Kansas City, January 1987, 15-32 and 33-40; and Leroy O. Laney and Eugenie D. Short, "An American Perspective on the Current International Debt Situation," in *Proceedings of the Fourth Annual Institute on International Finance*, Southern Methodist University School of Law, Dallas, Texas, 16-18 April 1986.

2. The secondary loan market quotations for some countries in 1986 indicate that prices can fall in an even wider range. Turkey was quoted at about 98 cents per dollar, while Bolivia was quoted as low as 7 cents per dollar.
3. Quoted prices for other countries in Table 1 also moved somewhat through the first four months of 1987, but not as much as for Brazil. On balance, there was some downward movement for Argentina, Peru, and especially Ecuador. Mexico's price moved up slightly, perhaps reflecting the terms and successful renegotiation of its debt in March; there was also some minor upward movement for Chile and Colombia.
4. This stance is reinforced by guidance from the American Institute of Certified Public Accountants issued in May 1985. The AICPA accounting standards executive committee and the banking committee ruled

that an institution realizing a loss on a particular loan sale will not be required to write down the rest of the outstanding debt to the involved foreign country, provided reasonable confidence exists that the remaining loans will be serviced and are collectible. The implication is that any write-downs taken would be based on management judgment. For elaboration, see "Notice to Practitioners Accounting for Foreign Loan Swaps," *The CPA Letter* (Special Supplement), May 27, 1985.

5. Cross-border outstandings to major Latin-American borrowers for several money-center banks are still in excess of primary capital, even though ratios have improved markedly since 1982. One study—using recent loan discounts for Argentina, Brazil, Chile, Mexico, Peru, and Venezuela—applied to nine major U.S. institutions found that on an after-tax basis, after considering existing loss reserves, write-downs to market would average 18 percent of primary capital and 17 percent of book value. While significant, these percentages were less than some might have thought. See "Emerging Trends," *Banks and Financial Services* (Smith Barney Research), 28 November 1986, for other assumptions and discussion.

Recent 1987 actions by major money-center banks to set aside more loss reserves against outstanding LDC loans puts them in an even stronger position to weather potential future write-downs.

6. For one recent survey of the economic causes of country default (from the perspective of default as an option to be exercised by a country depending on the relative costs and benefits involved), see Anthony Saunders, "The Determinants of Country Risk: A Selective Survey of the Literature," *Studies in Banking and Finance* (Supplement to the *Journal of Banking and Finance*, North-Holland) 3 (1986), 1-38.

7. This investigation included as many countries as possible, subject to limitations on market quotations and the availability of other data used in the study to match these countries. Prices used were the average of bid and offer quotations for November 1986. For some countries, the quotations used are merely indicative prices and do not reflect market transactions at all. (Caveats to this effect usually accompany any written list of quoted prices by various brokers, but that, of course, is one reason an investigation of latent determinants of these quotations is interesting.)

Countries included were Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Honduras, Ivory Coast, Jamaica, Madagascar, Malawi, Mexico, Morocco, Nicaragua, Nigeria, Panama, Peru, Philippines, Romania, Senegal, Sudan, Togo, Turkey, Uruguay, Venezuela, Yugoslavia, Zaire, and Zambia.

8. Broadly speaking, it is easier to obtain accurate measures of economic performance and debt-servicing capacity than to gauge political, social, and cultural aspects of a country that might affect its creditworthiness. Such measures do exist, however, and were investigated where possible.

Representative economic variables that might have been chosen included real economic growth, inflation, trade and current account balances, and recent changes in these balance of payments measures.

Typical measures of debt-servicing capacity and related variables are

ratios such as debt/GNP, debt/exports, external interest payments/exports, total debt service/exports, international reserves/debt, international reserves/imports, as well as recent changes in these ratios. Oil exporter or importer status also might be important in a world in which the relative price of energy changes so abruptly.

Those variables that shade into overall risk as opposed to purely "economic" risk include total debt renegotiations or reschedulings over time, amounts rescheduled relative to total outstanding debt, measurable capital flight over various periods, as well as various existing country risk indexes.

Finally, some of the available variables shed light on quality of life, standard of living, political stability, and culture. Examples are real per capita GNP, foreign economic and military aid, measures of ethnic and linguistic homogeneity, age of the country, measures of civil disorder and deaths by violence, frequency of changes in the head of state (and the extent to which these might involve major philosophical swings), population growth (and the proportion of such growth that occurs in cities), and measures of education and communication. Although these factors are likely to change less rapidly than economic variables, their change in recent periods also might be important.

The data for reported outcomes came from the following sources: (1) *Euromoney*, Euromoney Publications PLC, London; (2) *International Financing Review*, IFR Publishing, Ltd., London; (3) *International Financial Statistics*, International Monetary Fund, Washington, D.C.; (4) George Thomas Kurian, *The New Book of World Rankings* (New York: Facts on File, Inc., 1984); (5) *World Debt Tables: External Debt of Developing Countries*, 1985-86 ed. (Washington, D.C.: The World Bank, 1986). Cross-sectional observations applied were in all cases the most recently available public data that could be compared to secondary market quotations.

9. For evidence on the positive correspondence between the rate of inflation and the variability of inflation, see Deborah A. Frohman, Leroy O. Laney, and Thomas D. Willett, "Uncertainty Costs of High Inflation," *Voice of the Federal Reserve Bank of Dallas*, July 1981, 1-9, and the references cited therein.
10. Other similar weighting schemes did not yield significantly different results.
11. For additional discussion of the use of principal components in regression analysis, see, for example, J. Johnston, *Econometric Methods* (New York: McGraw-Hill Book Company, Inc., 1972), 322-30.
12. For one development emphasizing willingness rather than ability to pay, see Jonathan Eaton, Mark Gersovitz, and Joseph E. Stiglitz, "The Pure Theory of Country Risk," National Bureau of Economic Research Working Paper no. 1894, April 1986. To quote from the abstract, "Traditional concepts of solvency and liquidity are of little help in understanding problems of sovereign debt. Creditors do not have the means to seize the assets of a borrower in default. . . . A problem that is essential to a theory of international lending is that of enforcement."

Appendix

A Factor Analysis Application

Factor analysis is a multivariate technique somewhat similar to principal components but is less frequently used in economic analysis than in the other social sciences. A distinguishing characteristic of the factor analysis results reported in this Appendix is that all variables, including the vector of secondary market loan prices, are treated symmetrically, with no implied causation in one direction or the other. By including the secondary market price with other chosen economic and structural variables in a factor analysis application, one can obtain results that support both the overall outcome reported in the text and some of the underlying assumptions.

Factor analysis can be applied to a given set of observed variables to isolate a smaller number of common factors that maximally reproduce the correlations in the entire set. The tool is useful for situations in which qualitative as well as quantitative distinctions are important, and it is possible to interpret results by actually labeling the common factors that emerge. There is no single correct interpretation of these common factors, and sometimes results are obtained in which given factor weights do not accord with intuition. However, by observing the overall correspondence of various factor weights to the observed variables that are inputs to the analysis, labels that seem reasonable can be applied.¹

This application includes, for tractability, only a subset of the variables used in the text with principal components and classified *a priori* as either economic or socio-

structural.² The table presents the weights obtained in one application limiting the number of common factors to two. Again, as with principal components, more than two might have been reported, but one has the same problem of interpreting and adequately labeling results.³ In the table, the two columns are labeled as economic and sociostructural viability. (Note that using these labels means the sign on the economic column is opposite of that for the principal component results reported in Table 3 of the text.)

The configuration of weights in the two columns, along with their sizes and signs, is generally as hypothesized. Those variables that were characterized as "economic" here usually have large negative weights (e.g., acceleration of inflation, variation of inflation, the debt/exports ratio, and the debt/GNP ratio). Of these four variables, the latter two also enter negatively in the sociostructural context. It is more difficult to explain the positive weightings on the inflation variables in the sociostructural column. Acceleration of inflation may have some positive social/political benefits if there is money illusion in the population or to the extent that seigniorage accrues to the government. It is harder to conceive that variation of inflation would have any positive social benefit; it can only be surmised that this term captures the generally positive correspondence between inflation's level and its variability. The only other two signs that are counterintuitive are in the economic viability column—on the literacy rate and the physical quality-of-life index. The coefficients are relatively small in

FACTOR WEIGHTS ON COUNTRY ECONOMIC AND STRUCTURAL ASPECTS

Variable	Economic viability	Socio-structural viability
Acceleration of inflation	-.62	.30
Variation of inflation	-.60	.40
Debt/exports ratio	-.66	-.15
Debt/GNP ratio	-.51	-.25
Size of economy (real GNP level) . . .	.16	.53
Food production per capita . . . . .	.07	.69
Literacy rate	-.15	.89
Televisions per capita . . . . .	.02	.85
Physical quality-of-life index	-.08	.90
Country risk index . . . . .	.72	.30
Secondary market price . . . . .	.81	.20

these cases—especially relative to the weights in the sociostructural viability column for these and other variables thought to represent this characteristic. Coefficients strongly suggest that food production per capita, the literacy rate, televisions per capita, and the physical quality-of-life index are properly considered as sociostructural variables. Outcomes here also confirm the use of the size-of-economy variable as a sociostructural one and the country risk index as an economic one.

Finally—and most important for the case at hand—are the weights on the secondary loan market price, which is considered in this analysis coequally with the other variables, unlike the principal component application in the text. This vector of prices enters positively in both columns, an indication that there might be both economic and sociostructural factors included in these prices. The weight is four times as large in the economic column, however, as in the sociostructural column, which confirms the regression outcome derived from principal components that the market is driven more by basic economic than by structural country aspects.

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1. Economists probably use factor analysis less than practitioners in other fields for several reasons. There is less precision with a tool in which variables are treated only as indicators of unobservable underlying forces. Some analysts also may be bothered by the latitude to define factors after the fact. In cases of well-understood causation and well-measured variables, other more frequently used tools are obviously more appropriate. In cases such as the one at hand, however, the insights obtained may overcome these drawbacks. For development, see Harry H. Harman, *Modern Factor Analysis*, 2d ed., rev. (Chicago: University of Chicago Press, 1967). For an elaboration on the statistical procedures used here, see *SAS User's Guide: Statistics*, Version 5 Edition (Cary, N.C.: SAS Institute, Inc., 1985).
 2. Choice of included variables and their number was made in this case partially on the basis of Kaiser's Measure of Sampling Adequacy (MSA). The reported outcome had an overall MSA of .72. An MSA of .5 was considered unacceptable for individual variables that were candidates in various runs for inclusion in the analysis.
 3. The eigenvalues for factors excluded were markedly lower than for the two included ones, and those included account for 88.2 percent of the standardized common variance in the data.

New Directions for Economic Growth: Redesigning Fiscal Policies in Louisiana, New Mexico, and Texas

Stephen P. A. Brown

Senior Economist
Federal Reserve Bank of Dallas

Introduction

From 1972 to 1982, expansion of the energy-extraction industries was a major source of economic growth in the Eleventh Federal Reserve District states—Louisiana, New Mexico, and Texas. In Texas, for instance, growth of the energy industry and associated multiplier effects accounted for about 45 percent of the total growth in state employment.¹

Since 1982, however, lower oil prices and a decline in energy industry employment have slowed economic expansion. In the absence of a resurgent energy sector, Louisiana, New Mexico, and Texas must look to other industries for economic growth. To some extent, a smaller energy industry will free resources for new uses, promoting diversification and providing new sources for future economic growth.² Nevertheless, citizens of these states may naturally look to state and local governments to provide leadership for such growth. Indeed, state and local government policies can significantly influence the course of economic growth in a state.

In recent years, economists have conducted a number of studies to find the determinants of regional economic growth.³ Though some important variables—such as cli-

mate, location, and natural resources—are beyond the scope of government action, research suggests that state and local fiscal policies can have a considerable impact on economic growth. Increased taxation to provide a greater level of some government services may promote economic growth, but increased taxation to provide more welfare or other transfer payments retards economic growth.

This article examines how state and local fiscal policies affect a state's economic performance, and it reviews current state and local fiscal policies in Louisiana, New Mexico, and Texas. Comparisons of current fiscal policies in these three states with those that would most promote economic growth demonstrate that there is room for improvement. By changing fiscal policies, state and local governments in Louisiana, New Mexico, and Texas could foster greater economic growth within their boundaries.

How state and local fiscal policies affect state economic growth

This section presents nine principles relating state and local fiscal policy to economic growth. Four basic principles are obtained from empirical research appearing in the economics literature. The other five principles are corollaries developed in this study from the four basic principles.

A common element linking these nine principles is the effect of state and local fiscal policy on the location decisions of mobile resources—capital and labor. The attractiveness of a state to capital and labor largely determines its economic growth.⁴ These mobile resources are generally attracted to states where they can earn and retain the largest income—both pecuniary and nonpecuniary. State and local government expenditures and taxation greatly affect both the pecuniary and nonpecuniary income of mobile resources located within a state. In doing so, these policies can help determine the attractiveness of a state to mobile resources.

Four basic principles. This subsection presents four basic principles relating state and local fiscal policy to state economic growth. Empirical research provides evidence supporting all four principles.⁵ Although the first two principles presented here cannot be used directly to analyze state and local fiscal policies, five corollaries which are applicable can be derived from these principles. These five corollaries and the other two basic principles can thus be used to assess the impact of current state and local fiscal policies on economic growth in Louisiana, New Mexico, and Texas. The four basic principles follow:

Principle 1. In the absence of an offsetting increase in public services, increased taxation of mobile resources within a state is harmful to the state's economic growth. Such taxation reduces the pecuniary income of mobile resources in the state.

Principle 2. If provided without increased taxes on mobile resources, enhanced provision of some public services within a state encourages economic growth in that state. Expenditures for some public services increase the nonpecuniary income accruing to mobile resources in a state.

Principle 3. When the additional revenue is used to finance enhanced public services within a state, the improvement in public services may more than offset the harmful effects of increased state and local taxation of mobile resources on economic growth in that state. However, the increased taxation of mobile resources retards economic growth when used to finance welfare or other transfers.⁶

Empirical research indicates that, at the margin, expenditures on educational services, health and hospitals, and roads and highways enhance economic growth the most. The stimulus to economic growth arising from state and local government expenditures on these public services greatly outweighs the detrimental effect of any taxes required to finance the expenditures. On the other hand, additional expenditures on sewerage and sanitation, natural

resources, parks and recreation, transportation other than roads and highways, and public safety only moderately enhance economic growth. The stimulus to economic growth arising from state and local government expenditures on these public services outweighs the detrimental effects of any required taxes to a lesser degree.⁷ Although expenditures on transfers may further some social goals other than economic growth, when provided at the state and local level, these expenditures harm a state's overall economic performance.

Principle 4. When compared to broad-based taxes, increased reliance on narrowly applied taxes (or other charges) on mobile resources within a state is harmful to economic growth in that state. This is true unless the revenue is used to finance public services that are beneficial to the ownership of those mobile resources from which the revenues are obtained.

State and local government reliance on user fees or narrow taxes that proxy for user fees (such as motor fuel taxes) to support government services for the benefit of the taxed individuals can foster economic growth. Nevertheless, reliance on narrow taxes on mobile resources (such as property taxes) to provide public services for which the benefits are not confined to the taxed individuals can harm economic growth. This assumes that the alternative is to use broad-based taxes (such as income and sales taxes) to finance the state and local government expenditures in question. Broad-based taxes are less harmful to economic growth because they do not alter the relative prices of productive resources; that is, no one particular use of a given mobile resource is discouraged relative to other uses and other resources.⁸

Five corollaries. The first two principles cannot be used directly to analyze state and local fiscal policies. From these two principles, however, the following five corollaries can be derived to assess current state and local fiscal policies in Louisiana, New Mexico, and Texas from the perspective of economic growth.

Corollary 1. It follows from the first two principles that increased tax revenue from immobile resources promotes economic growth, provided that the additional revenue is used to reduce taxation of mobile resources and/or to provide enhanced public services that benefit the owners of mobile resources.

Severance taxes fall largely on immobile resources while property taxes fall largely on mobile resources. Although a small portion of severance taxation falls on the capital used to develop the immobile resources, most of the tax falls on ownership of the immobile resources themselves. On the

other hand, property taxes fall largely on the capital used to develop real property, not on the immobile factor—land.

Corollary 2. Economic growth is discouraged in a state when its state or local governments engage in deficit financing of current expenditures.⁹ This type of financing probably discourages economic growth in a state because it represents potential tax liabilities for mobile resources in the future for which there will be no offsetting future benefits. State and local government borrowing to fund capital spending does not have the same implications, however. In that case, future tax liabilities may be offset by future benefits.¹⁰

Corollary 3. Selected reductions in state and local government expenditures for administration could foster greater economic growth in a state. The low accountability of government agencies combined with economic incentives suggests that such bureaucracies tend to grow unnecessarily large.¹¹ If cuts in administrative expense are made without reducing the quality of state and local government services, these governments can offer lower taxation to mobile resources, a greater provision of public services, or both.

Corollary 4. Introducing market incentives into the production of some public services, while maintaining public funding, could foster greater economic growth in a state. Market incentives could be introduced by allowing private producers to compete with each other to supply the publicly funded services. In education, for example, state and local governments could issue vouchers redeemable at the school of the parent's choice. Competition between suppliers could lead to improved service, lower costs, or both. In addition, competing suppliers could meet more readily the diverse tastes of individual consumers.

Corollary 5. A greater reliance on taxes that are deductible against the federal income tax, and a reduced reliance on those that are not, could improve economic growth in a state. State and local government reliance on deductible taxes permits the same level of public service at a lower effective cost for the average taxpayer or a greater level of public service at the same effective cost. Forty-one percent of U.S. taxpayers itemized their deductions in 1982, and these taxpayers had an income-weighted average marginal federal income tax rate of 28 percent in that year. Thus, the price of state and local government services financed with deductible taxes was 89 cents on the dollar for the average U.S. taxpayer in 1982. For the average taxpayer in Texas, the average price of state and local government goods financed with deductible taxes was 90 cents on the dollar. For the average taxpayer in Louisiana or New Mexico, it was 91 cents on the dollar.¹² The recent elimination of the de-

duction for the sales tax makes this a more expensive means of financing state and local expenditure than many other taxes.¹³

Some economists have argued that the state and local government tax treatment of high-income individuals is more important to business location decisions than the tax treatment of the average taxpayer because high-income individuals make decisions about business location.¹⁴ Assuming that high-income individuals are more likely to itemize deductions than low-income individuals, the deductibility of state and local taxes can assume a greater importance to state economic growth. For the average U.S. taxpayer who itemized deductions in 1982, the price of state and local government services financed with deductible taxes was 72 cents on the dollar. For the average taxpayer who itemized in New Mexico, the average price of state and local government goods financed with deductible taxes also was 72 cents on the dollar. For the average taxpayer who itemized in Louisiana or Texas, it was 71 cents on the dollar.¹⁵

Current state and local fiscal policies in Louisiana, New Mexico, and Texas

Changes in state and local fiscal policies that would improve economic growth in Louisiana, New Mexico, and Texas depend not only on the principles that relate those policies to economic growth, but also on current policies in the three states. An absolute interpretation of the principles presented in the previous section would suggest that there is room for improving most areas of state and local fiscal policy in most states. Because states compete for the mobile resources that are significant for economic growth, however, a comparison of the state and local fiscal policies within a state with those of the nation as a whole provides a relative measure of that state's fiscal attitude toward growth.¹⁶

In light of the principles presented in the previous section, this section compares the composition of state and local government expenditures and revenues in each of the three states with the national average. (See Tables 1 and 2.) The comparison shows that from the perspective of economic growth, there is room for improving state and local fiscal policies in all three states.

Expenditures. From the perspective of economic growth, state and local government expenditures in Louisiana and Texas show some advantages and only slight disadvantages when compared with the nation as a whole. New Mexico shows only advantages over the nation as a whole. Nevertheless, changes in the amount and composition of state and local government expenditures could improve economic performance in all three states.

Table 1
**PER CAPITA STATE AND LOCAL GOVERNMENT EXPENDITURES, BY TYPE, 1984:
 UNITED STATES, LOUISIANA, NEW MEXICO, AND TEXAS**

Expenditure	United States	Louisiana	New Mexico	Texas
Total	\$2,131.13	\$2,239.22	\$2,465.03	\$1,860.95
Public services that most enhance economic growth	1,119.82	1,231.89	1,463.90	1,142.73
Educational services	755.94	722.79	948.24	804.25
Health and hospitals	196.56	262.64	212.57	181.78
Roads and highways	167.33	246.46	303.09	156.71
Public services that moderately enhance economic growth	335.25	355.78	400.63	297.35
Public safety	176.94	162.15	213.06	141.85
Sewerage and sanitation	68.70	68.33	70.15	64.27
Natural resources, parks, and recreation	66.75	100.78	96.21	60.62
Other transportation	22.86	24.52	21.21	30.61
Transfers	324.56	266.47	205.20	158.88
Welfare	274.00	232.65	169.45	132.18
Housing and urban renewal	39.31	27.23	19.45	15.72
Other transfers	11.24	6.59	16.29	10.99
Administration	111.60	115.91	136.80	93.55
Interest	121.51	175.77	184.69	104.82
Other	118.39	93.39	73.74	63.70

SOURCE OF PRIMARY DATA: U.S. Department of Commerce, Bureau of the Census.

As shown in Table 3, state and local governments in Louisiana and New Mexico spend more per capita on growth-enhancing public services than does the nation on average. Although state and local governments in Texas do spend slightly more than the national average on the most growth-enhancing public services, they spend slightly less than the national average on all public services that enhance economic growth. Of the three states, only Louisiana's expenditure per capita on education is less than the national average. Raising taxes to increase expenditures on growth-enhancing public services in Texas and education in Louisiana likely would stimulate greater economic growth in the two states.

Little or no use of market incentives is found in the provision of publicly funded services throughout the nation. Therefore, it is difficult to compare this aspect of expendi-

ture in the Eleventh Federal Reserve District states with the national average. Those states where governments innovate and introduce competition between suppliers could gain a significant edge in promoting future economic growth. Education is one public service in which such innovation is feasible.

From the perspective of economic growth, all three states show an advantage over the nation as a whole with respect to expenditures on transfers. State and local governments in all three states spend less on welfare and other transfers per capita than the nation on average. Though the state and local government expenditure in Louisiana is less per capita on transfers than the national average, there may be room to reduce transfers in the state. At more than 80 percent of the national average, per capita expenditures on

Table 2
**PER CAPITA STATE AND LOCAL GOVERNMENT GENERAL REVENUES,
 BY SOURCE, 1984: UNITED STATES, LOUISIANA, NEW MEXICO, AND TEXAS**

Revenue	United States	Louisiana	New Mexico	Texas
Total	\$2,298.66	\$2,210.01	\$3,048.46	\$1,934.54
Broad-based taxes	664.31	561.33	554.50	284.32
General sales	318.48	411.36	464.40	284.32
Income	345.83	149.98	90.10	0.00
State severance taxes	30.77	177.52	258.04	138.77
Other taxes	660.78	375.45	381.21	692.29
Property	408.44	165.77	147.60	417.85
Motor fuels and vehicles	82.11	58.38	104.57	59.51
Other narrow taxes	170.23	151.41	129.04	214.94
Current charges	292.27	305.56	279.00	268.02
Education	87.29	84.47	94.80	91.26
Hospital	87.03	125.73	96.21	75.38
Other	117.95	95.36	87.92	101.39
From federal government	410.96	403.13	458.85	274.51
For public welfare	151.61	146.41	123.46	81.98
For education	65.00	67.48	127.88	63.84
General revenue sharing	19.23	20.46	22.82	15.22
Other	175.12	168.78	184.69	113.47
Interest	116.26	122.14	352.74	113.86
Other	123.32	264.86	764.19	162.77

SOURCE OF PRIMARY DATA: U.S. Department of Commerce, Bureau of the Census.

transfers are higher in Louisiana than in its neighboring states.

If lower government expenditure on administration enhances economic growth, Texas and New Mexico have a slight edge over the rest of the nation, but Louisiana is at a disadvantage. In the nation as a whole, in 1984 the administrative expenses were 2.58 percent of state and local government revenues plus nonadministrative expenditures. In Texas and New Mexico, the comparable figures were 2.53 percent and 2.54 percent, respectively. In Louisiana, on the other hand, administrative expenses amounted to 2.67 percent of state and local revenues plus nonadministrative expenditures. Reducing the administrative expenses of state and local governments is likely to stimulate economic growth in Louisiana.

Composition of revenues. In some respects, the composition of state and local revenues in Louisiana, New Mexico, and Texas is more conducive to economic growth than is the national average. In other respects, however, the composition of these revenues is less conducive to growth. Changes in the composition of state and local government revenues could improve economic performance in all three states.

The three state governments obtain greater revenues per capita from severance taxes than does the nation on average—boosting economic growth in all three states. In addition, all three state governments earn sizeable rent and royalty income from oil and natural gas production. In recent years, however, lower oil and natural gas prices have reduced severance taxes and state income from rents and

Table 3
SELECTED ELEMENTS OF STATE AND LOCAL GOVERNMENT BUDGETS, 1984:
UNITED STATES, LOUISIANA, NEW MEXICO, AND TEXAS
(Dollars per capita)

Selected budget element	United States	Louisiana	New Mexico	Texas
Expenditure				
Public services that enhance economic growth	\$1,455.07	\$1,587.67	\$1,864.53	\$1,440.08
Public services that most enhance economic growth	1,119.82	1,231.89	1,463.90	1,142.73
Public services that moderately enhance economic growth	335.25	355.78	400.63	297.35
Transfers	324.56	266.47	205.20	158.88
Administration	111.60	115.91	136.80	93.55
Finance				
State severance taxes	30.77	177.52	258.04	138.77
General sales taxes	318.48	411.36	464.40	284.32
Revenues obtained with narrowly applied taxes and charges (excluding presumed user fees) ¹	480.59	176.76	131.98	526.78
Surplus (+) or deficit (-)	+167.53	-29.21	+583.43	+73.59

1. As presumed user fees are defined quite liberally, these figures probably represent lower-bound estimates. Figures are revenue from property taxes, other narrow taxes, and other current charges less expenditure for other fire protection, transportation, sewerage, sanitation, natural resources, parks, and recreation. Revenue and expenditure data were adjusted for their presumed share of administrative expense. Revenues were reduced and expenditures were increased 2.58 percent for the United States, 2.67 percent for Louisiana, 2.54 percent for New Mexico, and 2.53 percent for Texas.

SOURCE OF PRIMARY DATA: U.S. Department of Commerce, Bureau of the Census.

royalties—eroding somewhat the advantage that these three states enjoyed throughout the 1970s and early 1980s.

Now that sales taxes are no longer deductible, data from 1984 suggest that state and local governments in Louisiana and New Mexico rely too heavily on general sales tax revenue, when the implications for economic growth are considered. And given recent increases in the sales tax rates in Texas, more recent data may show that Texas now relies more heavily on general sales taxes than does the nation on average. It would likely enhance economic growth in all three states to reduce reliance on nondeductible sales taxes and increase it on deductible income taxes—assuming that the income tax adopted was not too progressive.¹⁷

The heavy reliance of state and local governments in Texas on narrowly applied taxes on mobile resources that are not like user fees probably discourages economic growth in the state. Local governments in Texas rely very heavily on property taxes to finance their expenditures, yet little of this expenditure benefits property ownership. Texas also has a quilt of other narrow taxes and charges on mobile resources that are not user fees. Compared with Texas and the nation as a whole, Louisiana and New Mexico are relatively free of these growth-discouraging taxes. It would likely enhance economic growth for state and local governments in Texas to reduce their reliance on these narrow

taxes and increase it on income taxes—again, assuming that the income tax was not too progressive.

As shown in Table 3, Louisiana was running a budgetary deficit in 1984. Although state and local governments in Texas showed a small surplus in that year, a state budgetary deficit seems likely in 1987. Because such deficits are harmful to economic growth, reducing or eliminating the actual budgetary deficit in Louisiana and the prospective one in Texas can be expected to enhance economic growth in the two states. From the perspective of economic growth, reducing expenditures on transfers is the most attractive means for reducing budgetary deficits. If it is not possible to reduce these expenditures sufficiently, increased taxation would be the second most attractive means for reducing such deficits. In contrast, the least attractive means would be reducing expenditure on growth-enhancing public services.

Summary and conclusion: redesigning state and local fiscal policies in Louisiana, New Mexico, and Texas

In an absolute sense, the changes in state and local fiscal policy that would enhance economic growth are essentially the same for Louisiana, New Mexico, and Texas. Basic principles and corollaries derived from empirical research in the economics literature suggest that adoption of the following measures likely would enhance economic growth in all three states:

1. Raise taxes to increase expenditures on some public services—such as education, health and hospitals, and roads and highways.
2. Reduce the provision of welfare and other government transfers.
3. Increase reliance on income taxes and reduce reliance on taxes narrowly applied on mobile resources—when those taxes do not proxy user fees.
4. Increase reliance on income taxes and reduce reliance on sales taxes—taxes that are no longer deductible against the federal income tax.
5. Reduce actual or prospective state and local government deficit spending.
6. Reduce state and local government administrative expense.
7. Possibly introduce market incentives in the production of some public services—through vouchers or other means.

The importance of implementing these changes in any one of the states depends on the extent to which economic growth is desired over other social goals and the extent to

which current policies in that state are less conducive to economic growth than the national average. From the perspective of economic growth in Louisiana, the areas of state and local fiscal policy that show the greatest room for improvement relative to the national average are deficit financing, possibly a high administrative expense, and a high reliance on the general sales tax. Though the figure is lower than the national average, state and local governments in Louisiana also provide a relatively high level of transfers when compared with New Mexico and Texas. In New Mexico, only a high reliance on the sales tax shows room for improvement relative to the national average. From the perspective of economic growth in Texas, the areas of state and local fiscal policy that show the most room for improvement relative to the national average are prospective deficit financing, possibly a high reliance on sales taxes (given recent increases in the Texas sales tax rate), low expenditures on growth-enhancing public services, and a high reliance on property and some other narrow taxes and charges that are not user fees.

It will be no easy task to make the changes in fiscal policies that would improve economic performance in Louisiana, New Mexico, and Texas. If not carefully designed, those changes in fiscal policy necessitated by reduced severance tax revenues—brought about by lower oil prices—likely will harm economic growth. And the influence of special interest groups that seek to avoid taxes while receiving the benefits of government-provided services remains an obstacle to any growth-promoting change. Nevertheless, changes in state and local fiscal policy along the lines discussed here could improve the climate for economic growth in all three states for years to come.

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1. See John K. Hill, "Energy's Contribution to the Growth of Employment in Texas, 1972-1982," *Economic Review*, Federal Reserve Bank of Dallas, May 1986, 11-18.
 2. See Douglas E. Booth, "Long Waves and Uneven Regional Growth," *Southern Economic Journal* 53 (October 1986): 448-60.
 3. For examples, see L. Jay Helms, "The Effect of State and Local Taxes on Economic Growth: A Time Series-Cross Section Approach," *The Review of Economics and Statistics* 67 (November 1985): 574-82; Thomas Romans and Ganti Subrahmanyam, "State and Local Taxes, Transfers and Regional Economic Growth," *Southern Economic Journal* 46 (October 1979): 435-44; Robert J. Newman, "Industry Migration and Growth in the South," *The Review of Economics and Statistics* 65 (February 1983): 76-86; Michael Wasylenko and Therese McGuire, "Jobs and Taxes: The Effect of Business Climate on States' Employment Growth Rates," *National Tax Journal* 38 (December 1985): 497-511; Thomas R. Plaut and Joseph E. Pluta, "Business Climate, Taxes and Expenditures, and State Industrial Growth in the United States," *Southern Economic Journal* 50 (July 1983): 99-119.

Although these studies have variously defined economic growth as rising employment and increasing production, their findings generally show congruence. In the present article, therefore, economic growth can be taken to mean rising employment, increasing production, or both.

4. See Mancur Olson, *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities* (New Haven and London: Yale University Press, 1982); "The South Will Fall Again: The South as Leader and Laggard in Economic Growth," *Southern Economic Journal* 49 (April 1983): 917-32; and "Maintaining a Healthy Business Climate: A Broader Perspective on the Rates of Economic Growth and Unemployment in the Southern and Southwestern States," in *Energy and the Southwest Economy* (Dallas: Federal Reserve Bank of Dallas, 1987), 271-304.
5. See Helms, "The Effect of State and Local Taxes on Economic Growth: A Time Series-Cross Section Approach."
6. Empirical research contradicts the intuition that federal funding of state and local expenditure would foster state economic growth. Though federal funding would seem to permit greater provision of state and local government services and/or lower taxes on mobile resources, most of the federal funds provided to state and local governments finance transfers and require matching state and/or local effort in financing.
7. See Helms, "The Effect of State and Local Taxes on Economic Growth: A Time Series-Cross Section Approach."
Much of the state and local government expenditure found to enhance economic growth provides services that economists would regard as private goods. That is, nonpayers can be excluded from using the services, and the cost of providing service to additional consumers is positive. Economic theory predicts that the private sector could provide these goods more efficiently. To date, however, empirical research has not addressed the issue of whether private provision of those private goods now provided by state and local government would better promote economic growth. Instead, empirical research has taken a pragmatic approach and has addressed the issue of whether increased expenditure on publicly provided private goods enhances or harms economic growth—given the reality that most state and local government expenditure provides private goods.
8. For a more complete discussion, see Arnold C. Harberger, *Taxation and Welfare* (Boston: Little, Brown and Company, 1974).
9. Though unconstitutional or otherwise illegal in many states, budgetary deficits are not prohibited in all states. In 1984, Louisiana was one of several states with a budgetary deficit. In Texas, furthermore, the state attorney general recently ruled that it is legal for the state to carry forward a deficit from 1987 to 1988.
10. Empirical research verifies that it harms economic growth for state and local governments to finance current expenditures by borrowing; see Helms, "The Effect of State and Local Taxes on Economic Growth: A Time Series-Cross Section Approach."
11. See William A. Niskanen, "Bureaucrats and Politicians," *Journal of Law and Economics* 18 (December 1975): 617-43.
12. These prices were estimated with data from the Office of Tax Analysis, Office of the Secretary of the Treasury, "Tabulations from the 1982 Statistics of Income File for the Fiscal Relations Study," U.S. Department of the Treasury, 14 December 1984, as cited by Daphne A. Kenyon, Advisory Commission on Intergovernmental Relations, in "Federal Tax Deductibility," Discussion Draft, January 1985.
13. To some extent, the general sales taxes can be exported to residents outside the taxing jurisdiction. This reduces the effective price of public services financed through sales taxes to residents of the taxing jurisdiction. Nevertheless, the reduction in the effective price is likely to be greater with deductible taxes.
14. See Romans and Subrahmanyam, "State and Local Taxes, Transfers and Regional Economic Growth."
15. These prices were estimated with data from the Office of Tax Analysis, Office of the Secretary of the Treasury, as cited by Kenyon.
16. Comparison with the national average should not be taken as suggesting that the national average represents the most growth-enhancing of state and local fiscal policies.
17. Empirical evidence suggests that economic growth is discouraged in those states with highly progressive income taxes. See Romans and Subrahmanyam, "State and Local Taxes, Transfers and Regional Economic Growth."