

# Current Issues

IN ECONOMICS AND FINANCE

## SECOND DISTRICT HIGHLIGHTS



### Revenue Implications of New York City's Tax System *Jesse Edgerton, Andrew F. Haughwout, and Rae Rosen*

*A study of New York City's tax system finds that over the past three decades, the system has become less reliant on property and general sales taxes and more dependent on corporate and personal income taxes. This shift has made the city's tax revenues less stable than the revenues of the 1970s and more sensitive to cyclical swings.*

July 2008 marks the expiration of the New York State Financial Emergency Act for the City of New York, a set of regulations governing fiscal policymaking that was adopted during New York City's financial crisis of the mid-1970s. While the city's fiscal condition has improved dramatically since the act was passed, problems remain. Events of recent fiscal years—in particular, the economic downturn—have brought to light certain budgetary instabilities.

In this issue of *Second District Highlights*, we examine a key source of instability in New York City's budget: its tax revenues. We find that the city's tax system of the 1970s—one dominated by property taxes—over the years has become more dependent on personal and corporate income taxes.<sup>1</sup> This shift has tied the city to a less stable and more cyclically sensitive tax base, and has exacerbated the city's recent revenue shortfalls.

A more variable tax base places considerable challenges before city officials because expenditures—financed in large part by tax revenues—are difficult to reduce in the

short run. Accordingly, we also describe a range of policy options that city officials could consider to address these challenges, some of which would require legislative changes. However, the timing of the Financial Emergency Act's expiration could offer New York City a unique opportunity to recognize the experiences of the past thirty years and reevaluate its budget practices.

#### **New York City's Tax Revenues and Expenditures**

New York City generates revenues from four major taxes: property, personal income, general sales, and general corporation. The city's reliance on these taxes has increased over the past three decades: the taxes' share of general expenditures rose from about 40 percent in 1970 to a little more than 50 percent in 1999 (Chart 1). Smaller taxes, fees, and grants-in-aid finance most of the remainder. The decline in tax revenues that accompanied the city's recent downturn reduced the 50 percent figure to slightly less than 45 percent of general expenditures in 2002.<sup>2</sup>

The composition of the city's four-tax major revenue sources has changed markedly over the period. In 1970, personal income and general corporation tax revenues made up about 15 percent of the four-tax total (and 6 percent of general expenditures). The combined share of these two taxes peaked at about 40 percent of the four-tax total in the late 1990s, reflecting the city's trend toward income taxation. In fiscal year 2002, that share dropped—from 39.3 percent to 33.7 percent—as a result of personal and corporate income tax sensitivity to prevailing economic conditions.

When the U.S. recession began in February 2001, city revenues derived from personal income and general corporation taxation fell quickly and dramatically. Real revenues from the personal income tax declined 19 percent between fiscal years 2000 and 2002 and general corporation revenues plunged 23 percent. However, property tax revenues continued to grow, rising by 6 percent over the two years, enough to offset a relatively small 9 percent decline in general sales tax revenues. In fiscal years 2002 and 2003, the city generated additional cash by relying largely on asset sales, budget cuts, and increases in the property, general sales, and personal income taxes; it also borrowed in fiscal year 2003 from the Transitional Finance Authority.<sup>3</sup>

New York City's budgets are influenced to a large extent by the Financial Emergency Act's requirement that the city comply with generally accepted accounting principles. Under the act, the city is prohibited from running budget deficits—a projected deficit greater than \$100 million triggers a takeover of New York City finances by the Financial

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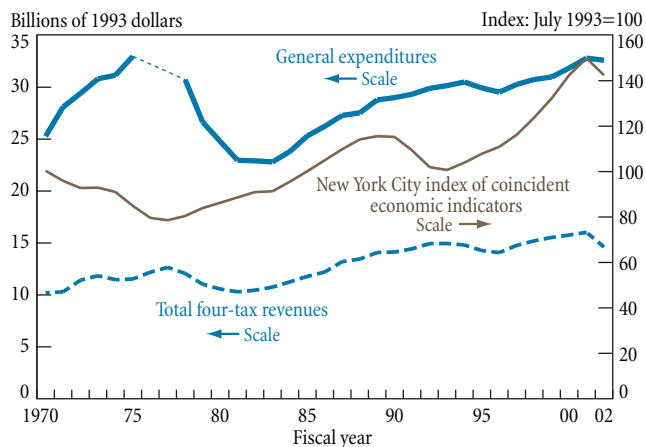
### New York City generates revenues from four major taxes: property, personal income, general sales, and general corporation.

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Control Board. The city is also limited in its ability to hold cash reserves that arise from unexpectedly strong tax receipts, and thus cannot maintain a “rainy-day” fund of more than \$100 million. At best—as it did in the 1990s—the city can use surplus funds to prepay subsidies to noncity agencies, such as the Metropolitan Transportation Authority, and to service its debt.<sup>4</sup> These constraints make it difficult for the city to cushion its budget from the effects of the business cycle.

The task of reducing expenditures in the short term also presents challenges to the city. For example, a large share of

Chart 1  
New York City General Expenditures, Four-Tax Revenues,  
and Current Economic Conditions



Sources: New York City Office of the Comptroller (various years); Federal Reserve Bank of New York (index of coincident economic indicators).

Notes: The dashed segment of the general expenditures line represents 1976 and 1977, years for which data are not available. The four taxes are property, personal income, general sales, and general corporation.

city expenses is determined by either contractual obligations or entitlements. Therefore, when the economy turns sour, as it did in 2001-2002, the combination of cyclical revenues, limited cash reserves, and fixed expenditures forces the city to resort to tax rate increases and asset sales to close budget gaps.

### Properties of Tax Bases

Revenue data do not tell the whole story of how a city's revenue sources evolve. The revenues obtained from a tax are the product of the tax's effective rate and the base upon which the tax is levied. Therefore, the changes in revenues from each tax can be broken down into base and rate changes. When projections suggest that the economy, or revenues, will grow slowly or decline, municipal officials may raise tax rates, making the revenue effect smaller than it would have been without the policy change. Since the revenue response to the economic change can thus be more muted than the tax base response, tax *revenues* alone can provide an inaccurate gauge of evolving tax *bases*.

Accordingly, a study of developments in a city's revenue sources should consider certain properties of tax bases. We examine two such properties—persistence and volatility—that economists use to describe the stability of macroeconomic series such as GDP.<sup>5</sup> We also examine a third: the economic sensitivity of a city's tax bases.

The more strongly positive the relationship is between the current year's and previous year's growth, the more *persistent* the tax base is said to be. That is, in a highly persistent base, growth in one year is unlikely to turn into a sudden decline in the next. Taxation of a persistent base thus requires relatively few rate adjustments to generate a steady stream of revenues. Put another way, if the officials who determine tax rates assume that next year's base growth will resemble this year's, then they will usually be right when the base in question is persistent. Conversely, they will often be wrong when the base is not persistent, and budget gaps, both surpluses and deficits, could ensue.

The second important property of a tax base is its *volatility*, or the size of unexpected changes in the base. A highly volatile tax base exhibits large, unanticipated deviations from its trend, while a less volatile base displays only small deviations. Volatile tax bases are uncertain—knowing the current year's performance provides little indication of what the tax base will do next year. This uncertainty leads to unpredictable revenues and the risk of large budget gaps.

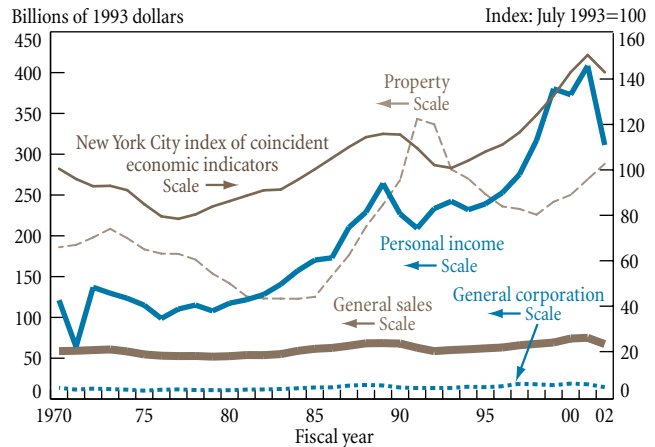
Finally, *economic sensitivity* describes the strength of the relationship between a tax base and the current state of the economy. Sensitive, or procyclical, bases move in close step with the economy—falling, for example, when the economy declines—while insensitive ones are relatively unaffected by short-run economic shifts. Tax bases that tend to drop sharply when the economy slows can expose a city to budgetary shortfalls, because many city-financed expenditures do not automatically shrink with a slowing economy.

Other features of a tax base can also affect its strength. One is its relationship to other taxes. In particular, a base that tends to rise or remain constant when other bases are falling can be a useful cushion against sharp declines in aggregate revenues. Another important consideration is the relationship between the base of a tax and changes in its rates. When the base is unaffected by changes in the rate, taxation has little or no effect on the level of the taxed activity. When the base is responsive to rate changes, additional revenue can be raised only at a substantial cost in efficiency to the overall economy.<sup>6</sup>

### Analyzing the Properties of New York City's Major Tax Bases

Important information about the behavior of New York City's four major taxes can be obtained by charting their bases over time. Chart 2 shows in real terms the paths of the city's four major tax bases since 1970, and Chart 3 presents the relevant rates.<sup>7</sup> We use this information to examine the properties of the bases.

Chart 2  
Four Major New York City Tax Bases and Current Economic Conditions



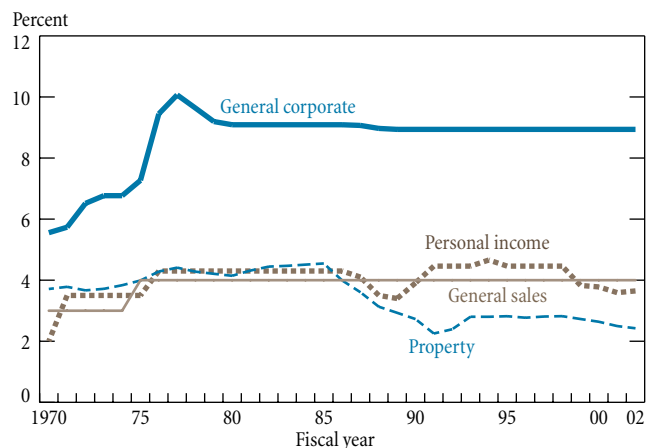
Source: Authors' calculations, using data from New York City Office of the Comptroller (various years) and New York City Office of Management and Budget (2002).

Notes: A large decline occurs in the personal income tax base in 1971, followed by an immediate rise in 1972. Although the data for these years are calculated the same way as they are for other years, the data could have been affected by the timing of a tax increase in 1971. Eliminating 1970 and 1971 from the data has no qualitative effect on the results in Tables 1 and 2.

### Persistence

The city's property tax base is more persistent than the personal income tax base, as demonstrated by the relatively long periods over which it is either rising or falling (Chart 2). For both the general sales and property tax bases, one year of above-trend growth tends to be followed by another. The

Chart 3  
Rates of Four Major New York City Taxes



Source: New York City Office of Management and Budget (2002).

Table 1  
**Persistence, Volatility, and Economic Sensitivity  
 of Four Major New York City Tax Bases**

Characteristic	Property	Personal Income	General Sales	General Corporation
Persistence	0.619 (0.142)	-0.440 (0.132)	0.520 (0.184)	0.082 (0.197)
Volatility	7.6	14.5	3.6	9.5
Sensitivity	0.072 (0.412)	1.355 (0.525)	0.749 (0.108)	0.825 (0.373)

Source: Authors' calculations.

Notes: Persistence figures are calculated as the coefficient on the lagged growth rate in a regression of the annual growth rate on the lagged growth rate and a constant. Volatility figures are calculated as 100 multiplied by the standard error of the residuals in a regression of the annual growth rate on the lagged growth rate and a constant. Sensitivity figures are calculated as the coefficient on the growth rate of economic activity in a regression of the annual growth rate on the growth rate of economic activity and a constant. Standard errors are in parentheses.

personal income tax base, however, changes direction much more frequently. Indeed, above-trend growth in one year tends to be followed by below-trend growth in the next.

Table 1 presents statistical evidence supporting these observations. The coefficient on lagged growth in the personal income base is -0.440, indicating an absence of persistence: above-trend (below-trend) growth in one year is, on average, followed by below-trend (above-trend) growth in the next. Conversely, positive figures for the property and general sales bases suggest persistence: above-trend (below-trend) growth in one year is, on average, followed by above-trend (below-trend) growth in the next. The general corporation figure is statistically indistinguishable from zero, providing no evidence for the presence of persistence. Accordingly, the assumption that current changes in New York City's general sales and property taxes would persist into the next year would generally be correct, while a similar assumption for personal income tax revenues would typically be incorrect.

### Volatility

The four taxes we consider are each volatile in the sense that unexpected changes in their bases are quite substantial compared with unexpected changes in the city's index of coincident economic indicators.<sup>8</sup> But how do the four bases compare in volatility? Table 1 presents the unexplained variation for each tax base; higher numbers indicate greater volatility. It is evident from the table that the bases of New York City's property (7.6 percent) and general sales (3.6 percent) taxes are less volatile than the personal income (14.5 percent) and general corporation (9.5 percent) tax bases.

### Economic Sensitivity

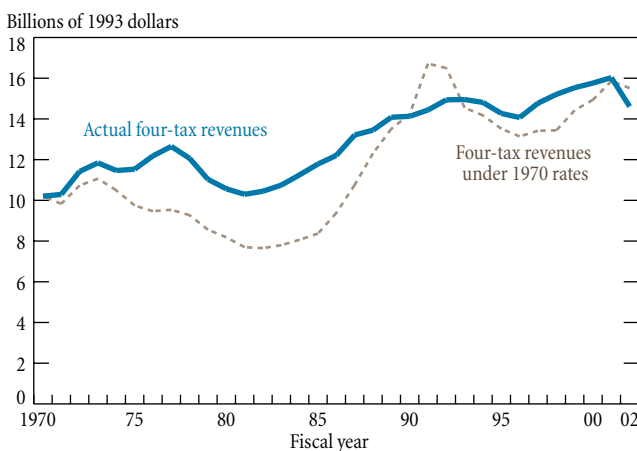
Tax bases that are sensitive to shifts in economic conditions can expose a city to budgetary shortfalls. New York City's personal income, general corporation, and general sales tax bases appear to rise and fall at the same time as the index of coincident economic indicators, while the property tax base appears to move independently (Chart 2). Table 1 offers evidence supporting this observation. Higher numbers reflect greater sensitivity. The city's personal income and general corporation tax bases are shown to be the most economically sensitive, responding immediately and strongly to changes in the index. The general sales tax base also responds immediately, but less strongly. Significantly, changes in the property tax base show no clear short-run sensitivity to changes in the index.

### Implications of New York City's Tax Rate Structure

Our analysis suggests that New York City's current tax rate structure produces revenues that are more sensitive to local economic shifts than were tax revenues three decades ago.

Chart 4 compares the city's actual revenues with the revenues the city would have received had it left the 1970 rate structure in place for the entire thirty-three years. It is evident that the city raised rates overall after 1970, and the resulting system generated much more revenue over the next thirty years—\$43 billion in 1993 dollars—than the city would have received had it left rates at their 1970 levels.<sup>9</sup> Nevertheless, we estimate that the 1970 structure would have actually generated *more* revenue than the city received

Chart 4  
**Actual Revenues versus Revenues under Fixed 1970 Rates**



Source: Authors' calculations, using data from New York City Office of the Comptroller (various years).

Note: The four taxes are property, personal income, general sales, and general corporation.

Table 2  
**New York City Revenue Characteristics under Different Rate Combinations**

Category	Tax Rate (Percent)				Revenue Characteristic		
	Property	Personal Income	General Sales	General Corporation	Persistence	Volatility	Sensitivity
Actual revenues	—	—	—	—	0.436	4.1	-0.008
Fixed 1970 rates	3.71	0.64	3.0	5.6	0.548	5.9	0.347
Fixed 2002 rates	2.40	1.17	4.0	8.9	0.329	5.8	0.552

Source: Authors' calculations.

Note: Persistence, volatility, and sensitivity figures are described in Table 1.

during both the recent downturn and that of the early 1990s. This result reflects the fact that the city's property and general sales tax bases, which dominated the 1970 structure, are far less sensitive to the economy than are the personal income and general corporation bases, upon which the city now relies more heavily.

The city's current (2002) tax structure also provides a less persistent revenue stream than the 1970 structure did. Table 2 compares the revenue characteristics of the current tax system with those of a system based on 1970 rates. The key difference between them is the current system's shift from property taxes to personal income and general corporation taxes. In addition, the personal income and general corporation taxes tend to decline (along with the general sales tax) at the same time. Therefore, by increasing the importance of the personal income and general corporation tax bases in its revenue structure, New York City has developed a revenue system that is less persistent and more sensitive to the economy.<sup>10</sup> Changes in the city's tax structure have, in fact, generated more revenue—yet this outcome has been achieved by relying on the less stable and more economically sensitive bases.

### Policy Options

The increased sensitivity of New York City's four major tax bases to the economic cycle can complicate the task of budget officials. Accordingly, we describe a range of possible options available to policymakers interested in reducing the city's revenue variability. Moreover, if legislation is required to amend the budget process, the July 2008 expiration of the Financial Emergency Act affords an opportunity to introduce such changes.

One option for policymakers is to do nothing. The city would likely continue to encounter revenue shortfalls during downturns and could temporarily adjust tax rates to raise revenues and balance its budget. Over the past thirty years, the city has made its revenue stream almost completely insensitive to the business cycle by increasing rates when tax

base growth was slow or negative. As Table 2 shows, our measure of the economic sensitivity of the city's actual four-tax revenues is statistically indistinguishable from zero, suggesting that rate increases have almost exactly offset the declines in tax bases that accompany downturns. This practice of raising tax rates during downturns and lowering them during upswings is often thought to amplify the magnitude of the business cycle. However, as Edgerton, Haughwout, and Rosen (2004) argue, it is difficult to determine whether New York City's cyclical adjustments of the personal income tax rate do, in fact, have this effect.

A second option is for the city to reduce permanently its reliance on the personal income tax<sup>11</sup> and general corporation tax and increase the effective tax rate on property. As we have shown, the city's property tax base is the least economically sensitive of its four major bases (Table 1); therefore, a revenue system that relied more heavily on the property tax

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**The increased sensitivity of New York City's four major tax bases to the economic cycle can complicate the task of budget officials.** ❧

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than does the current system might be more resistant to changing economic conditions (Table 2). An increased reliance on the property tax could also reduce the magnitude of the revenue shortfalls that accompany downturns as well as decrease the need for procyclical tax rate adjustments.

However, offsetting factors associated with this option would also have to be considered. For instance, permanent increases in the city's property tax rate have been shown to have negative effects on its base—an outcome that could limit the tax's revenue potential (Haughwout et al. 2003). Therefore, a heightened emphasis on the property tax could be most effective as part of a comprehensive reform plan<sup>12</sup>

that remedies inefficiencies in the tax while reducing any negative revenue effects on the city.

Third, with legislative changes to the Financial Emergency Act, the city could establish a meaningful rainy-day fund to reconcile future budget gaps. Research and the experience of recent downturns indicate that adequate funding for such accounts is important for determining the accounts' success in cushioning downturns, but states have had difficulty maintaining sufficiently large fund accumulations.<sup>13</sup>

A fourth possibility is for New York City to continue to prepay debt service and certain smaller expenses to external agencies for each oncoming fiscal year.<sup>14</sup> This option could preserve current spending patterns, yet it could also limit the city's ability to manage finances in a prolonged downturn.

Finally, the city could create a new external agency for capital projects and finance it with windfall tax revenues as well as with ongoing funding. In addition to providing dedicated funds for capital projects that would persist through a downturn, this option could offer a major policy benefit in the sense that windfall tax revenues would not become embedded in the city's operating budget, permanently raising planned expenditures. The city could thus develop a "pay-as-you-go" plan for capital projects. While such pay-as-you-go plans represent a common form of financing in most municipalities, New York City funds all capital spending through debt. A change in the financing of the city's capital budget could therefore lower the cost of debt service, free up additional funds for city services, and accordingly reduce the need for tax increases.

Any of these last three options would likely be even more effective in conjunction with rules defining surplus funds or windfall tax revenues.<sup>15</sup> The label windfall tax revenues characterizes the funds as unusual—collected, perhaps, at a cyclical peak—and implies that such growth rates are unlikely to be sustained. Windfall tax revenues might therefore be segregated and placed in a rainy-day fund or the capital budget, because they are not viewed as a stable source of revenue for the operating budget.

## Conclusion

The mix of New York City's four major tax revenue streams has shifted over the past three decades to become more dependent on the personal income and general corporation taxes and less reliant on the property and general sales taxes. This change has made the city's tax revenues less stable than the revenues of the 1970s and more sensitive to cyclical swings.

Today's tax system places considerable challenges before New York City officials, who must impose sudden and large tax increases or budget cuts when the local economy contracts. Our analysis suggests that there are other policy options for these officials to consider—some of which would require new legislation or amendments. Significantly, the opening for such a change is on the horizon, with the upcoming expiration of the New York State Financial Emergency Act for the City of New York. This occasion could enable the city to build upon its experiences of the past three decades and move its budget practices in a new direction.

## Notes

1. In this sense, New York City is not unlike other state and local governments. However, by 2002, the city was unusually dependent on the income tax for a local government. See George Sweeting, "Tax Tales: The City's Changing Tax Revenue Mix over Twenty-Five Years," NewsFax no. 108, New York City Independent Budget Office, October 2002.
2. Note that our analysis excludes the city's fiscal year 2003 tax increases, which raised personal income, general sales, and property taxes. Our conclusions are unaffected by this exclusion.
3. Alan G. Hevesi, State Comptroller, Office of the State Deputy Comptroller for the City of New York, *Review of the Four-Year Financial Plan for the City of New York*, Report no. 9-2004, July 2003.
4. *New York State Financial Emergency Act for the City of New York*, New York Unconsolidated Laws, §§ 5401-5420, L. 1975, c. 868, § 2; and H. Carl McCall, State Comptroller, Office of the State Deputy Comptroller for the City of New York, *Review of the Financial Plan for the City of New York: Fiscal Years 2001-2004*, Report no. 6-2001, December 2000.
5. See McConnell, Mosser, and Perez-Quiros (1999).
6. The responsiveness of tax bases to revenue changes is discussed more fully in other studies. For example, Haughwout et al. (2003) explore the responsiveness of tax bases to tax rates in New York City and three other cities.
7. For the city's property tax, we use as our base measure market value of taxable property, as estimated by the State Office of Real Property Services. For the other taxes, we estimate the base from average rate and revenue information. See New York City Office of Management and Budget (2002).
8. The index of coincident economic indicators is a measure of local economic conditions. The New York City index is described fully in Orr, Rich, and Rosen (1999).
9. These figures are obtained by applying the 1970 rate to the observed tax base in each year, then aggregating across taxes. Thus, they ignore the possibility that changes in rates since 1970 have affected the bases upon which they are levied. If that is true, and Haughwout et al. (2003) argue that it is, then this procedure overstates the aggregate revenue that the 1970 structure would have generated for those taxes whose rates ultimately fell (property), and understates it for those taxes whose rates rose (personal income, general sales, and general corporation).
10. Figures in Table 2 suggest that the volatility of the 1970 rate system is marginally *higher* than that of the 2002 system. This result is due to the fact that the overall variance of revenues is lower in the 2002 system because revenues have

become less dependent on a single tax base (property). Although the strength of persistence in revenues also declines, the reduction in overall variance offsets this effect, leaving volatility hardly changed.

11. By de-emphasizing the personal income tax, New York City would essentially be harking back to its policy of the 1970s. To understand why the policy may have changed—that is, why the city increased its reliance on income taxes after 1975—see Fuchs (1992, pp. 185-6).

12. Some commentators contend that New York City's property tax as currently constituted is in need of reform (see, for example, George Sweeting, "City Tax System Is Out of Whack," *New York Daily News*, November 25, 2002).

13. See Steve Gold, "Preparing for the Next Recession: Rainy-Day Funds and Other Tools for States," Legislative Finance Paper no. 41, State-Local Finance Project, National Council of State Legislators, December 30, 1983; and Russell S. Sobel and Randall G. Holcombe, "The Impact of State Rainy-Day Funds in Easing State Fiscal Crises during the 1990-91 Recession," *Public Budgeting and Finance* 16, no. 3 (fall 1996): 28.

14. For example, the city used surplus revenues to prepay expenses to the Metropolitan Transportation Authority in fiscal year 2001.

15. "Windfall tax revenues," for instance, could be considered tax revenue growth in excess of the current rate of inflation plus 3 percentage points, or any growth in excess of the average growth rate of tax collections over the prior business cycle or past two cycles.

## References

- Edgerton, Jesse, Andrew F. Haughwout, and Rae Rosen. 2004. "Institutions, Tax Structure, and State-Local Fiscal Stress." *National Tax Journal* 57, no. 1 (March): 147-58.
- Fuchs, Ester R. 1992. *Mayors and Money: Fiscal Policy in New York and Chicago*. Chicago: University of Chicago Press.
- Haughwout, Andrew F., Robert Inman, Steven Craig, and Thomas Luce. 2003. "Local Revenue Hills: Evidence from Four U.S. Cities." NBER Working Paper no. 9686, May.
- McConnell, Margaret M., Patricia C. Mosser, and Gabriel Perez-Quiros. 1999. "A Decomposition of the Increased Stability of GDP Growth." Federal Reserve Bank of New York *Current Issues in Economics and Finance* 5, no. 13 (September).
- New York City Office of the Comptroller. Various years. *Comprehensive Annual Financial Report*.
- New York City Office of Management and Budget. 2002. *Tax Revenue Forecasting Documentation: Financial Plan Fiscal Years 2002-2006*. Tax Policy, Revenue Forecasting, and Economic Analysis Task Force, April 3.
- Orr, James, Robert Rich, and Rae Rosen. 1999. "Two New Indexes Offer a Broad View of Economic Activity in the New York–New Jersey Region." Federal Reserve Bank of New York *Current Issues in Economics and Finance* 5, no. 14 (October).

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