PACE DOWNTOWN INDEX
Executive Summary of Methodology

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Introduction
This document summarizes the process we used for creating and testing a meaningful and representative economic activity index for Lower Manhattan. Full technical details are in our paper, “Pace Downtown Index – Background Report,” available on the Pace website at www.pace.edu/paceindex.

Such an index is a convenient way for planners and policy makers in business, government and the nonprofit sector to assess quickly the direction of changes in the level of economic activity in this area undergoing stress and revitalization.

The Pace Downtown Index will be compiled monthly and made available by 10 AM on the third Thursday of each month at www.pace.edu/paceindex.

To define the geographic boundary of Downtown New York we relied on postal zip codes that include Canal Street South to Battery Park between the East and Hudson Rivers.

Rationale for variables
Various entities such as the Alliance for Downtown New York, Inc. (ADNY, January 2001) have identified five major economic markets in the Downtown area – office space, residential space, retail, tourism and commercial activities. In addition, the area contains commuter employees and residential dwellers, and entertainment and cultural establishments. The financial markets affect the area’s economy, as do the economies of the City of New York and the nation. The index had to include variables reflecting these influences.

We winnowed our final variables from an initial 28, ranging from the Conference Board Composite Index to the NYC Hotel Occupancy Rate and Embarkation on Subways (downtown subway ridership). In examining this list we encountered two major problems. First, some data did not have compatible periodicities and were not available on a timely basis. Second, some of the variables were highly correlated and would not have added much new information.

1 10002, 10004, 10005, 10006, 10007, 10013, 10038, 10041, 10048, 10152, 10270, 10271, 10272, 10278, 10279, 10280, 10281, 10282, 10285, 10286, and 10292.
The variables we ended up with were generally representative of the Downtown economy; were available regularly so we could compile our index in a timely fashion, and went back in time so we could test our results against what actually had happened. The monthly data set begins in January 1996, runs to the present, and will be updated monthly. The ingredients are:

- Total Commercial Real Estate Inventory in Lower Manhattan (TI)
- Gross Lower Manhattan Product (GLMP)
- Standard & Poor’s 500 (SP500)
- Federal Funds Rate (FFR) (The interest rate spread sometimes is suggested to be of more significant importance, but our estimated equation was more responsive to FFR than to the spread.)

**Weighting the variables**

We had to weight the impact of our variables according to an acceptable measure of significance, but there were no known weights. Since linear regression coefficients are known to represent the impact of various variables, we used the coefficient of the estimated regression as a fixed weight for the impact of our selected variables on the state of the Lower Manhattan Economy. That meant determining an appropriate proxy for the state of that Economy and finding a relatively stable period that represented the postulated relationship. We then used a linear regression model to determine the impact and significance of the selected variables on our dependent proxy (explained below), applying a stepwise approach starting with the variable with the strongest theoretical justification and the highest correlation.

It is an economic dictum that the level of employment and the state of an economy are highly correlated. Therefore, we chose the number of Downtown jobs as our dependent proxy, and decided on the interval of July 1996 to December 2000 to estimate the impact of our explanatory variables. Though the period we selected coincided with part of the dotcom bubble phenomena, it can be considered relatively stable for two reasons. First, the period in question followed the 1990-1991 recession. The turnaround of this recession was influenced by technological advances, which provided a sound basis for economic growth. Second, the “bubble” had not yet developed, so the economy was on a stable path. For a variety of economic reasons, a lag of six months was used in the estimation process. We used the same period for calculating the index itself.
The Pace Downtown Index (PDI): A Lower Manhattan Index of Economic Activity

The Pace Downtown Index is calculated as follows:

1. The Lower Manhattan Economy (LME) is represented by the number of jobs in the region. This variable is the endogenous-proxy in the regression model.
2. LME is assumed to be a function of several variables deemed essential, and is represented as a linear regression function of the form:
   \[ LME = a + b_1L_1 + \ldots + b_sL_s + c_1N_1 + \ldots + c_tN_t + e_n \]
   Where
   - \( L_i \): Local economic indicator \((i=1\ldots s)\)
   - \( N_j \): National Economic Indicator \((j=1\ldots t)\)
   - \( e_n \): Random shock
   - \( a \): Beginning fixed constant
3. LME is estimated from July 1996 to December 2000 as a linear function of the selected variables.
4. The coefficient estimates of the variables are taken as fixed weights to measure the impact of the selected variables on the Lower Manhattan Economy.
5. The 1996 value of the Lower Manhattan Economy is taken as the base value and set to 100.
6. The Pace Downtown Index (PDI) is calculated from July 1996 to the present.

The Variables in Detail

National
The federal funds rate (FFR) is the interest rate at which depository institutions lend to each other, measured as a percentage. This rate is a monthly rate and is included in various New York City indicators as well.

The S&P 500 (SP500) is an index of 500 stocks chosen for market size, liquidity, and industry group representation. This measure is compiled monthly in the thousands. (In fact, the S&P 500 is measured daily, but we use the monthly average.)

Lower Manhattan
The Gross Lower Manhattan Product (GLMP) equals the value of all the goods and services produced in Lower Manhattan over a specified period. This variable is not independently measured, but it has a historical estimate of being twenty-five percent of the Gross City Product before 9/11. According to the New York City Comptroller’s Office and various business organizations, the terrorist attack and SARS epidemic reduced the economy of Lower Manhattan by an additional 20 percent. Accordingly, we
adjusted our GLMP value by five percent, to 20 percent, from October 2001 to the present. This variable is measured quarterly and is included in hundred billion dollars.

The total commercial real estate inventory in lower Manhattan (TI) measures what its title states. We believe this measure is an excellent proxy for the economic activity in the real estate market. This is a quarterly variable measured in the ten millions and is calculated by the real estate firm of Cushman Wakefield with a 3 – 4 month lag.

Results
The resulting estimate has acceptable t-stats and a good F-stat to pass various null hypotheses about the feasibility of the estimate. Notice that the regression estimate is performed only for the selected period, July 1996 to December 2000. There is no regression after December 2000. The regression analysis yielded an R square of 0.96, which is quite impressive. The step-wise regression also had positive results as the adjusted R Square increased systematically. The Durbin-Watson test was also positive at 1.3165.

The behavior of the index proved to be quite an accurate description of the economy when compared with several economic benchmarks. PDI findings were supported, for example, by a report in the Financial Times (FT Thursday September 11, 2003) on the state of the economy of the City of New York based on the data released by the Federal Reserve Bank of New York and the City Comptroller’s Office. More recent data (NY Times, May 10, 2004) support the findings of the index as well.