Understanding Labor Flows in New York State Using Local Employment Dynamics Data

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ABSTRACT

The purpose of this paper is to understand the labor market flows in the New York State using the Local Employment Dynamics (LED) data from the United States Census bureau. The LED data provides information regarding hires, separations, employment, job flows and wages at county and industry level for the United States. The study finds that in the period between 2001 and 2008 in the New York State, there have been substantial changes in the pattern of employment, labor turnover and wages based upon gender. Though female employability improved compared to male, but the gap between male-female wage widened during the period.

INTRODUCTION

The purpose of this paper is to understand the labor market flows in the New York State using the Local Employment Dynamics (LED) data from the United States Census bureau. Modern economies are characterized by extremely dynamic labor markets. There are large flows of jobs and workers between the states of activity and inactivity every month. For example, in the New York State, during the period between 2001 and 2008, in a typical month on average 0.49 million people are unemployed and actively looking for jobs. In the same time period, about 0.531 million vacancies are posted every quarter and about 1.2 million workers hired per quarter. To complement these labor market flows, average 1.6 million workers have been separated every quarter. All these flows are significant, when compare with the average 9.4 million labor force in the New York State. Though, the unemployment behavior has caught the interest of the economists for a long time, understanding the important labor market dynamics related to hiring, separations and vacancies are fairly new in the profession.

The paper details the characteristics of the LED data and provides descriptive evidence at the aggregate levels. Aggregate level relations between vacancies, labor turnover and unemployment are also analyzed. It also characterizes the data scope, measurement and the research potential these data have.

Existing research using LED is almost non-existent. Abowd et.al (2005) summarizes the technical details associated with LEHD and the creation of LED data set from the surveys.

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DATA

Local Employment Dynamics (LED) is a part of the bigger program by United States Census Bureau called Local Employer-Household Dynamics (LEHD). LEHD use modern statistical and computing techniques to combine federal and state administrative data on employers and employees with core Census Bureau censuses and surveys. On the other hand, LED is a voluntary partnership between state labor market information agencies and the United States Census Bureau to develop new information about local labor market conditions at low cost, with no added respondent burden. The difference between LEHD and LED can be explained by the following diagram
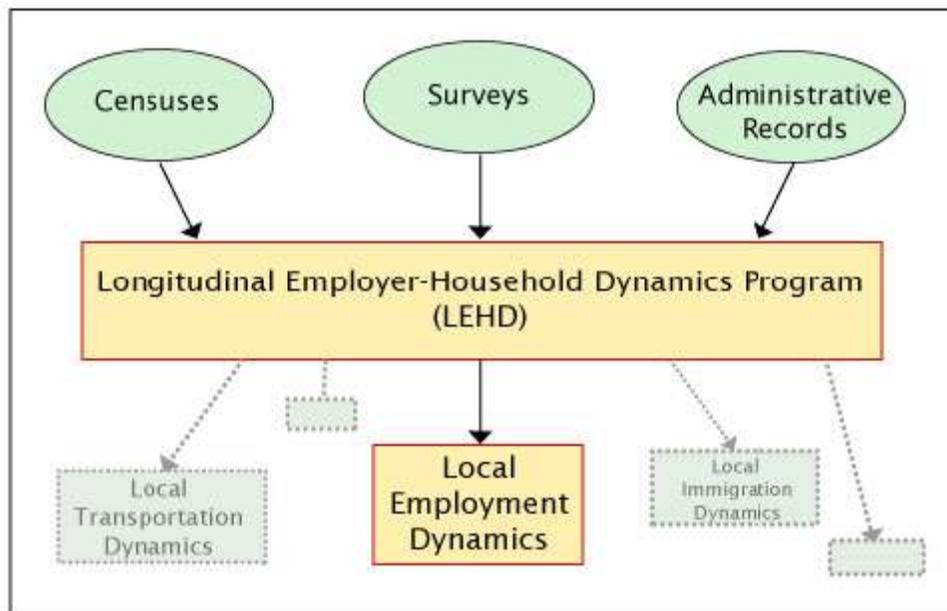
Source: Quarterly Workforce Indicators, United States Census bureau

Quarterly Workforce Indicators (QWI) provide detailed local estimates of variety of employment and earnings indicators based upon information from LED. Employment, earnings, gross job creation and destruction, and worker turnover is available at different levels of geography, typically down to the county or metro area. At each level of geography, they are available by detailed industry (SIC and NAICS), sex, and age of workers. Currently, QWI is available for all the states of the United States, except for Connecticut, Massachusetts, New Hampshire, District of Columbia, Puerto Rico and Virgin Islands.

The Quarterly Workforce Indicators (QWI) are derived from state administrative records and basic demographic information from the Census Bureau. Employment totals from the QWI are not exactly comparable with those from other sources. Generally, coverage and definitions differ between the QWI and data about establishments from administrative records (e.g., the Quarterly Census of Employment and Wages or QCEW), and about workers from surveys (e.g., the decennial census, the American Community Survey, and the Current Population Survey or CPS.). Detailed information is available in a paper Stevens (2007).

In the paper, state level data for New York used for the sample period ranging from 2001 quarter 1 to 2008 quarter 3.

CONCEPTS AND DEFINITIONS

The definition of the measures in QWI is as follows: -

1. **Total Employment:** Total number of workers who were employed by the same employer in both the current and previous quarter.

2. **Net Job Flows:** The difference between current and previous employment at each business.

3. **Job Creation:** The number of new jobs that are created by either new area businesses or the expansion of employment by existing firms.

4. **New Hires:** Total number of accessions that were also not employed by that employer during the previous four quarters.

5. **Separations:** Total number of workers who were employed by a business in the current quarter, but not in the subsequent quarter.

6. **Average Monthly Earnings:** Total quarterly earnings of all full-quarter employees divided by the number of full-quarter employees, divided by 3.

7. **Average New Hire Earnings:** Total quarterly earnings of all full-quarter new hires divided by the number of full-quarter new hires, divided by 3.

VACANCIES AND BEVERIDGE CURVE

The publicly available QWI estimates present a wealth of new evidence for the aggregate labor market. While the time series is short, it spans couple of recessions and slow labor market recovery, allowing researchers a glimpse of the cyclical behavior of vacancies and labor turnover. The National Bureau of Economic Research (NBER) dates the recessions during this period as starting in March and ending in November of 2001 and the second one starting in December 2007 and still ongoing. After the 2001 recession, losses in total employment continue through 2003 Q3 (Figure 1). Figure 5 illustrates the aggregate behavior of vacancies and unemployment between 2001 Q1 and 2008 Q3. The unemployment rate estimates come from the Local Area Unemployment Statistics (LAUS) and the vacancies based on the total job creation during a quarter. Though the unemployment rate shows a cyclical pattern, but vacancy rate shows a downward trend throughout the sample period. In 2001, because of recessions unemployment rises while vacancies fall. Both unemployment rate and the vacancy rate hover around 6 percent during this period. Beginning 2004 Q1, the unemployment rate begins to fall while the vacancy rate trended downward; these patterns continue until the end of 2006. From 2007 Q1, unemployment started going up, whereas vacancies show a steep decline from 2007 Q3.

An important relation in the theory of worker search and matching is the Beveridge Curve, which relates the cyclical movements of vacancies to those of unemployment. Figure 6 plots the aggregate Beveridge Curve with the vacancy rate on the vertical axis and the unemployment rate on the horizontal

axis. Search theory predicts a negative relationship between vacancies and unemployment (Pissarides, 2000). The expected negative relationship is not observed in the Beveridge curve for New York.

TRENDS IN TOTAL EMPLOYMENT

In LED, total employment is defined as the total number of workers who were employed by the same employer in both the current and previous quarter. By definition total employment reported by QWI measure is indicative of jobs, which are more stable in nature. In the period under study, in New York, total employment declined steadily from 2001 Q1 to 2003 Q3 and then started rising. It is indicative of the fact that employment takes time to recover after a recession (Figure 1). Since the beginning of 2001 recession, total employment in New York declines 4.6 percent by 2003 Q3. The recovery in total employment is slow and could only reach the pre 2001 recession only by the first quarter of 2008. But the first quarter of 2008 is marked by the start of another recession and the trends show a decline in total employment since the beginning of 2008 recession. It is interesting to note that, total employment rate defined as the total employment as proportion of the labor force declined steadily throughout the decade under consideration (Figure 2).

The QWI provides gender specific data. Figure 7 show trend in male-female total employment and it varied substantially over the period under study. In 2001 Q1, total employment among male and female were 4.31 million and 4.18 million respectively. Till 2003 Q3, both the male-female total employment shows declining trend but the rate of decline among males surpassed the decline rate among females. Though total employment started recovering since 2003 Q3, but the rate of recovery is faster among females than among males and by 2004 Q4, females surpassed males. By 2008 Q1, though female total employment reached the level in 2001 Q1 but the male numbers still remain well below the initial levels.

LED data can be used to measure the year-over-year annual net job gain or loss[1]. In turn from net job gains we can calculate net job gain rate[2]. Net job gain rate is shown in Figure 3 and 4. In Figure 3, during recession the net job growth declined, but it became positive only in the 2004 Q3. This indicates that job recoveries since recessions are slow. Figure 4 show the net job gain rate among male and female. Job gain rate among females are faster than males and also net job loss among females are less than for males.

LABOR TURNOVER

The LED data tracks labor turnover. The Figure 8 plots the time series of aggregate hires and separation rates over the sample period. Both hires and separations trended downward throughout the sample period. During recessions, both hires and recessions declined at a faster rate compare to other periods. After the 2001 recession, hires remained steady around 1.2 million jobs per quarter, but it never reached the pre 2001 levels of 1.4 million hires per quarter. Though separations declined throughout the period, but the faster rate of decline in separations during recessions is counter intuitive. Recessions must be marked by more separations because of increased layoffs, but the trend in data shows other way round. One possible reason for this trend is labor hoardings during recessions. During recessions workers

tend to hold on to a job and at the same time, often employers tend to hoard workers with the expectation that the market will improve in the near future.

The aggregate time series statistics of labor turnover are presented in Table 1. Separation rate is 17.4 % per quarter, which is higher than the hire rate of 13.5 %. Both hires and separations are positively correlated with unemployment. Vacancies, hires and separations are all highly positively correlated. Also, all the three variables show considerable persistence as shown by the autocorrelation.

The gender specific trends in labor turnover are shown in Figure 9. For both hires and separations, males surpassed females throughout the period. Male-female gap between hires and separations reduced over the sample period.

WAGE TRENDS

In the period under study, both new hire earnings and average monthly earnings trended upwards. But the rate of increase of average monthly earnings is around 1% per quarter, which is higher than the rate of increase of average new hire earnings of 0.7% per quarter. During recessions, both the earnings of new hires and the average earnings showed a downward trend as expected.

Figure 10 and Figure 11 show the average monthly earnings and average monthly earnings of new hires for male and female employees respectively. Female earnings remained well below the male earnings throughout the period. Over the decade, the gap between average monthly earnings for male and female widened from $1,912 in 2001 Q1 to $ 2,751 in 2008 Q3, whereas the gap between the male and female new hire earnings remained constant at around $1200 per month.

CONCLUSION AND FURTHER RESEARCH POTENTIAL

The LED data provide a wealth of labor market information at both the aggregate and micro levels. This is the only labor market flow data, which is available at the state and the county levels. Since the data is also available at the industry level, hence it can be used for various policy related studies. For example, LED has been used for the targeted response to economic shocks (Saleh, 2009).In the state of New Jersey, information from LED has been used to provide relief to dislocated workers in the wake of financial crisis. LED data can also be used for economic assessment and industry targeting. The gender and age specific information can be used for better targeting of the groups in need. The LED based QWI is still evolving. Much better and detailed economic analysis can be performed when relatively long-term information are available overtime.

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Saleh, Yustina, 2009. "Targeted Response to Economic Shocks:The Case of New Jersey", Department of Labor and Workforce Development, New Jersey.
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Stevens, David W. 2007. "Employment that is not covered by state unemployment insurance Laws", *United States Census Bureau Technical Paper TP-2007-04.*

ENDNOTES

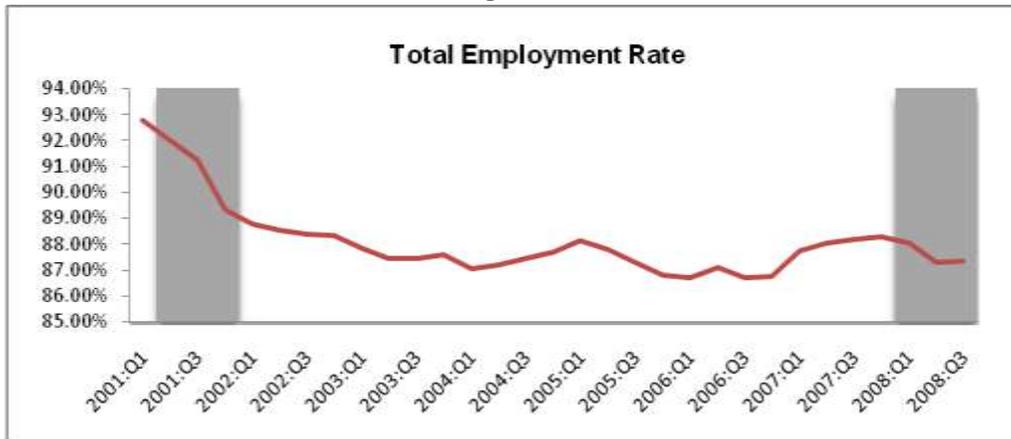1. Net Job Gain = $E_t - E_{t-4}$, where E_t is employment in year t.

2. Net Job Gain Rate = $\dfrac{Net\ Job\ Gain}{\frac{(E_t + E_{t-4})}{2}}$ x 100
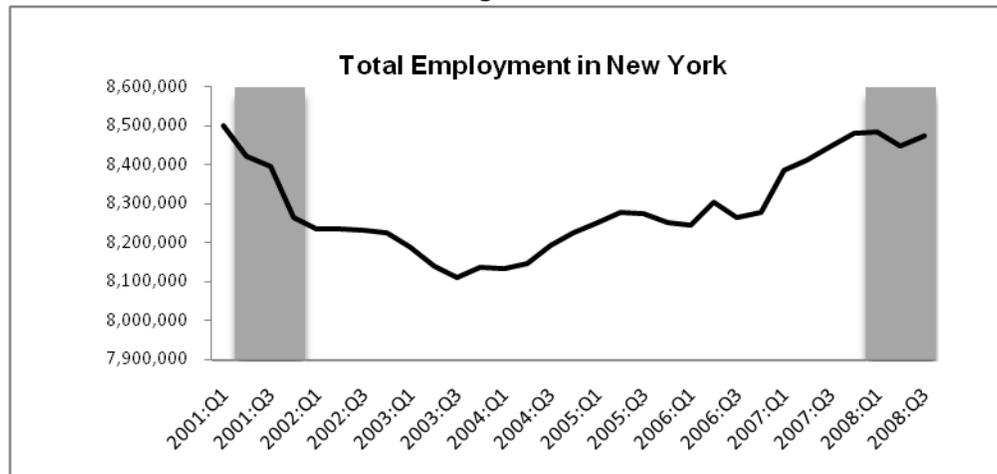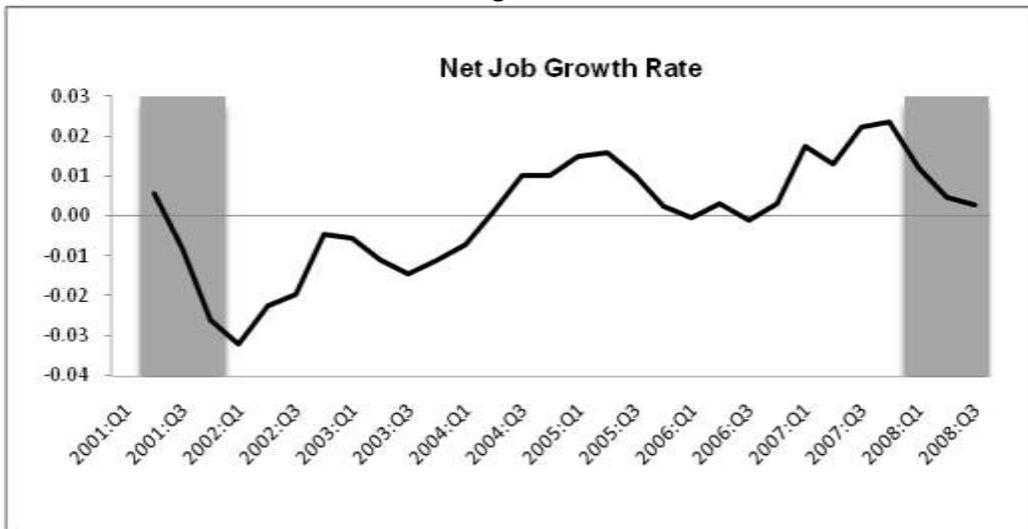
Figure: 1

Source: Quarterly Workforce Indicators, United States Census bureau
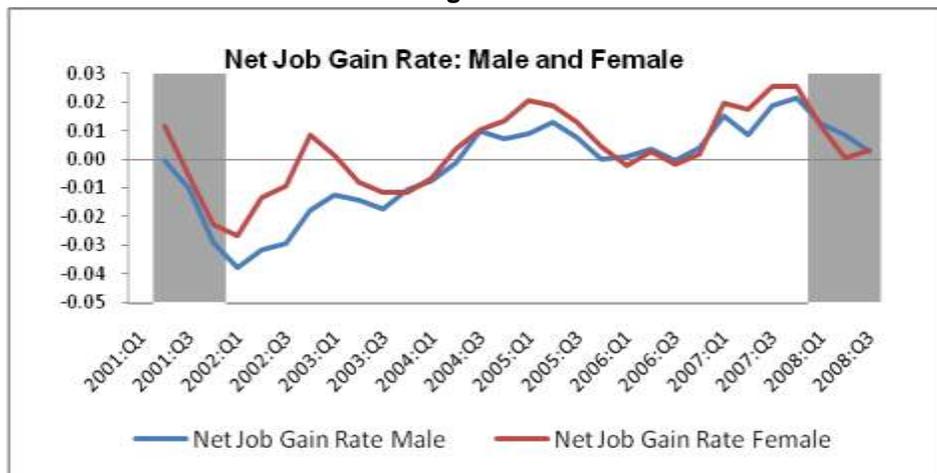
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Source: Quarterly Workforce Indicators, United States Census bureau
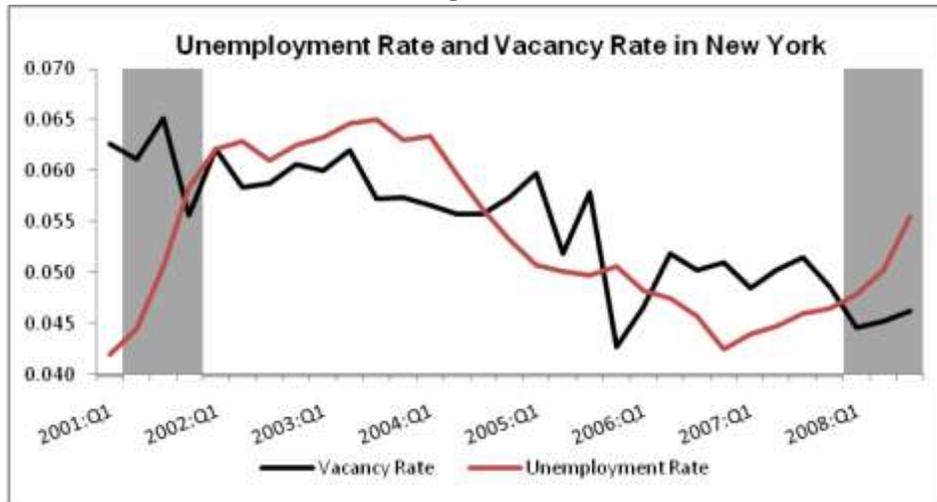
Figure: 3
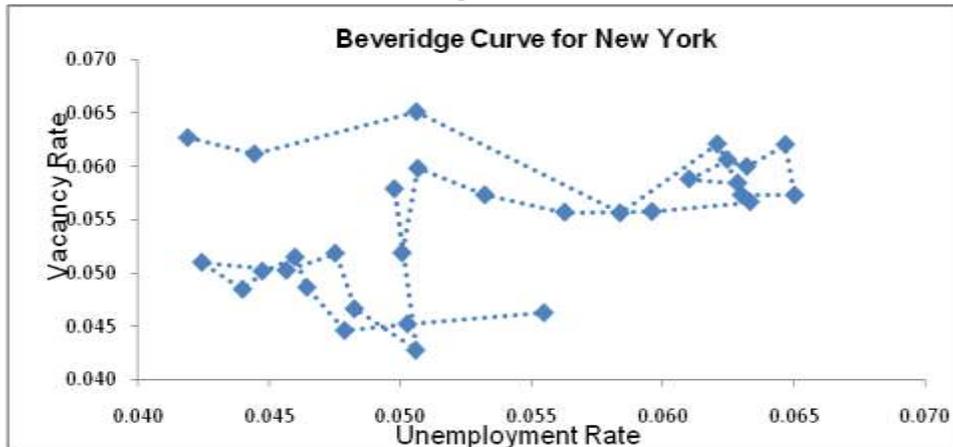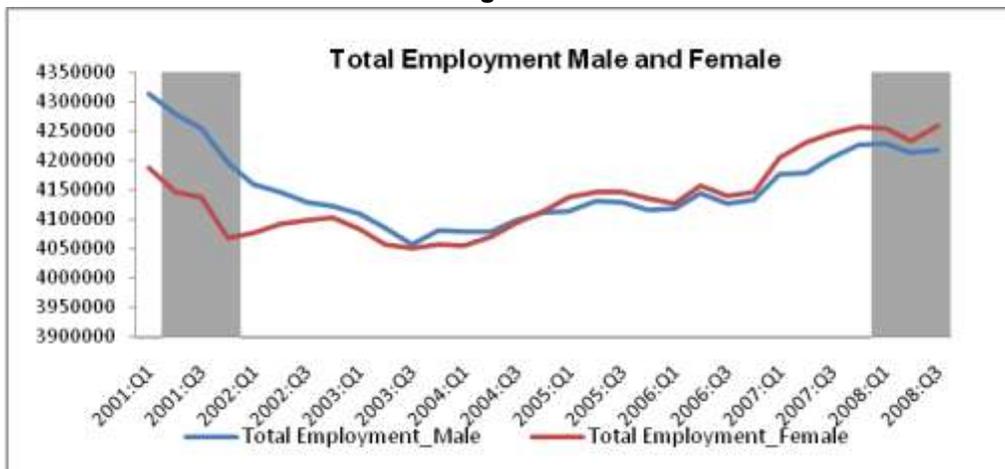

Source: Quarterly Workforce Indicators, United States Census bureau

Figure: 4

Source: Quarterly Workforce Indicators, United States Census bureau

Figure: 5

Unemployment Rate and Vacancy Rate in New York

Source: Quarterly Workforce Indicators, United States Census bureau

Figure: 6

Beveridge Curve for New York

Source: Quarterly Workforce Indicators, United States Census bureau

Figure: 7

Total Employment Male and Female

Source: Quarterly Workforce Indicators, United States Census bureau

Figure: 8

New Hires and Separations in New York

Source: Quarterly Workforce Indicators, United States Census bureau

Figure: 9

Separations in New York: Male and Female

Source: Quarterly Workforce Indicators, United States Census bureau

Figure: 10

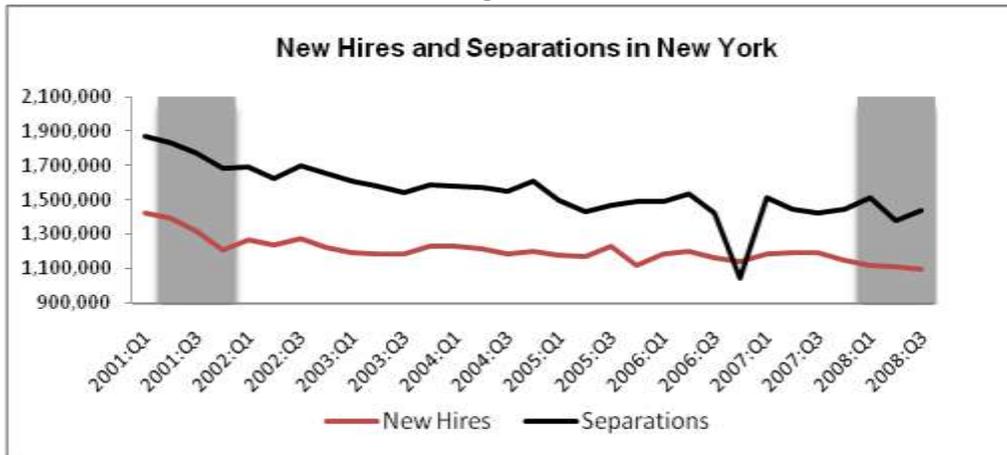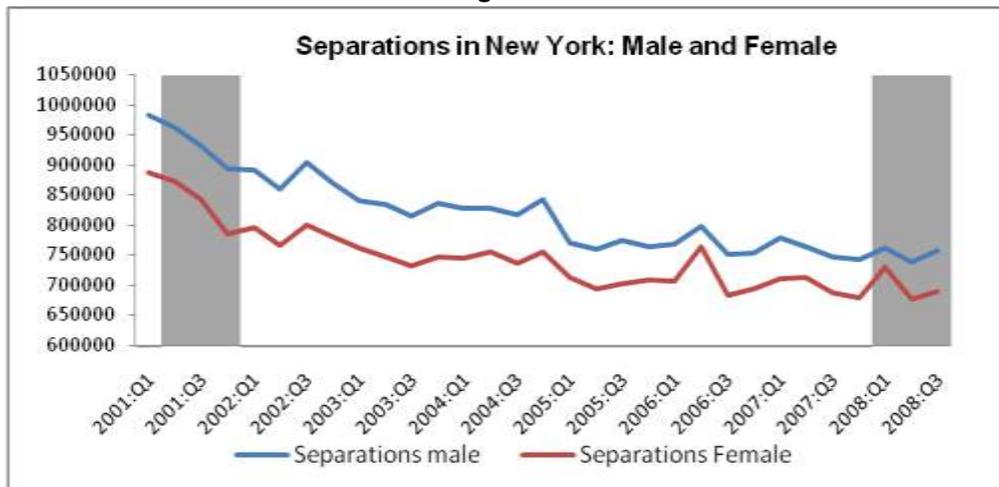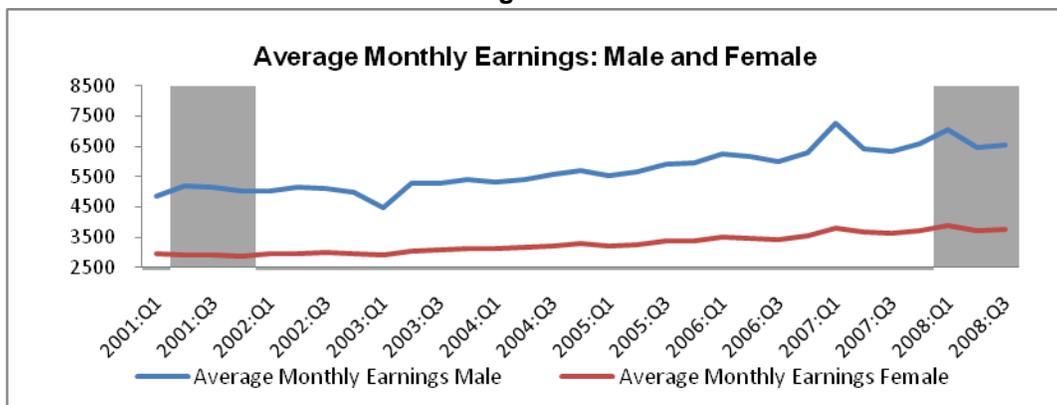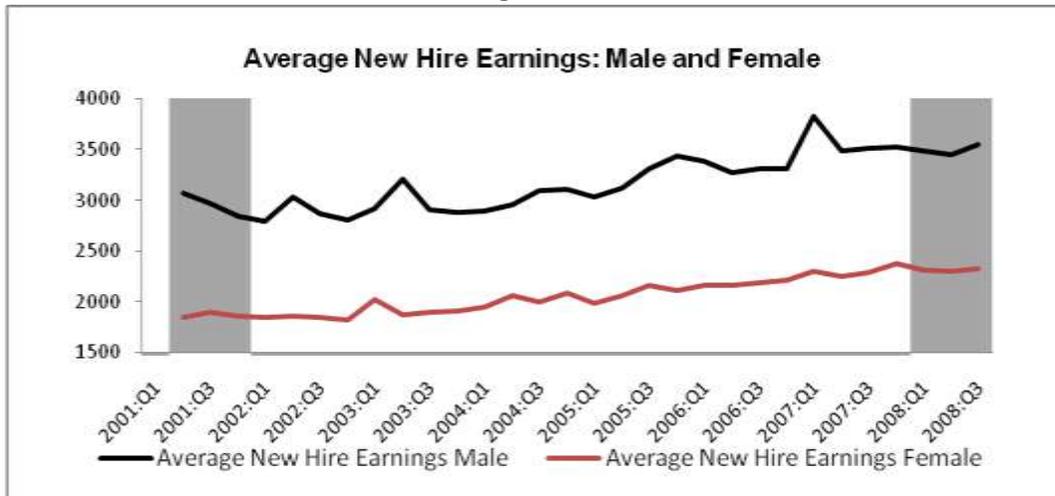**Average Monthly Earnings: Male and Female**

Source: Quarterly Workforce Indicators, United States Census bureau

Figure: 11

Source: Quarterly Workforce Indicators, United States Census bureau

Table: 1

Vacancy and Labor Turnover Aggregate Summary Statistics

	Vacancies	Hires	Separations	Unemployment
Mean	0.055	0.135	0.174	0.053
[Standard Deviation]	[0.006]	[0.01]	[0.019]	[0.007]
Correlation with...				
Vacancies	1	0.837079811	0.723719493	0.440879196
Hires		1	0.860771175	0.190190631
Separations			1	0.392727796
Unemployment				1
Autocorrelations				
AR(1)	0.586*	0.648*	0.575*	
AR(2)	0.522*	0.403*	0.438*	
AR(3)	0.348*	0.280*	0.363*	

Source: Author's calculations based on QWI and LAUS aggregate data (seasonally adjusted). Statistics are based on data from 2001 Q1 through 2008 Q3. Asterisks (*) denote significance at the 5 percent level.