

# What Do Quarterly Workforce Dynamics Tell Us About Wal-Mart? Evidence from New Stores in Pennsylvania

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**JEL Classification:** R11, R51, H71

**Abstract:** In this paper I seek to better inform debate regarding Wal-Mart's local impact on wages, and employment dynamics by combining data on Wal-Mart stores with the recently release Quarterly Workforce Indicators provided by the US Census. Use a panel of Pennsylvania counties, who saw entrance of a Wal-Mart in 2002, I find a new store has no effect on existing employee wages in the retail sector. However, new retail sector hires experience a roughly \$0.50 an hour increase in total compensation in the quarter Wal-Mart enters. The entrance of a Wal-Mart draws employees from existing businesses, reducing job creation while increasing net job flows. Wal-Mart also has a longer term effect on net employment of a little more than 50 jobs in a total year. This employment finding is quite similar to findings in Hicks and Wilburn [2001] and Basker [2005]. Perhaps most importantly, Wal-Mart entrance is associated with a dramatic decline in retail sector job turnovers (over 40 percent). This result challenges much of the received wisdom of Wal-Mart's role in the retail sector. The policy implications of these findings echo those of Ken Stone, who cautions against activist policy in support, or against Wal-Mart at the local level.

**Disclosure:** The author of this study owns no stock in Wal-Mart or any related firm (other than that held by the mutual fund companies Vanguard and TIAA-CREF). I have performed no paid consulting services from any retail firm, its developers, local governments or related entities since 2002 (though I continue to field frequent questions on my earlier research). I have received no honoraria related to Wal-Mart research (other than travel costs paid by the Federal Reserve Bank of Richmond in 2001). In short, except for roughly \$1,500 purchases of diapers annual since 1999 I have no financial relationship with Wal-Mart or any affiliate that I am aware of.

**The views expressed in this paper are those of the author and do not reflect the official policy or position of the United States Air Force, Department of Defense or the U.S. Government**

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## **Introduction**

The contentious debate surrounding Wal-Mart focuses heavily on the role the retailer plays in local employment dynamics, especially wages, job turnover, and job creation and destruction in the retail sector. And while there are many other facets to the Wal-Mart debate these questions matter for policymakers concerned about local economic development and the role changing retail market structure plays on employment opportunity for local residents. While local officials may play a far more muted role in such matters as local retail location decision than they believe, understanding whether or not to expend resources supporting or opposing a Wal-Mart (or any other business) ought to be informed by at least some understanding of the potential net impact. At the heart of the question are an understanding of Wal-Mart's influence on wages for new and existing workers, and how job creation, separation and turnovers are affected by the entrance and presence of a Wal-Mart store.

In this paper I seek to better inform this debate by combining data on Wal-Mart stores with the recently release Quarterly Workforce Indicators provided by the US Census. This unique data set offers much in understanding the role Wal-Mart entrance plays in local labor force dynamics. I begin by reviewing previous studies on the local economic impact of Wal-Mart. I then review the data and offer an empirical model to test the impact of Wal-Mart entrance and presence in eight Pennsylvania counties. I conclude with a summary and conclusions.

## **Empirical Analysis of Wal-Mart**

Stone's [1988] study of the impact of Wal-Mart on small towns and communities in Iowa. This study and other subsequent analysis by Stone and his co-authors present mixed evidence regarding the impact of Wal-Mart. He finds that counties with Wal-Mart's, and host towns generally experience a sharp, but short term growth in retail. He also concludes that Wal-Mart stores locating outside small towns reduced retail employment and businesses within the small towns, even if the overall impact was positive.<sup>1</sup>

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<sup>1</sup> See Stone (1989, 1995, 1997) these papers restate many of the same findings, but with further analysis of the cause and the interim changes to the state of the literature. Also see Stone, Artz and Myles, 2002. These studies also offer both policy guidance and recommendations for retailers coexisting with Wal-Mart.

These studies are among the most often cited analysis of Wal-Mart, and while particularly important early analysis they suffer from the common problems of case studies in their absence of control variables. Perhaps most important the policy guidance offered by Stone [1997] is entirely free of the later polemics against Wal-Mart and recognizes the potential for unintended consequences for community policies both opposing and supporting Wal-Mart.

Keon, Robb and Franz [1989] and Ozment and Martin [1990] examined Wal-Mart entrance on different geographical regions with both finding some modest positive impacts on wages, employment and number of businesses within counties with Wal-Mart stores. Ozment and Martin [1990] note the possibility that Wal-Mart chose faster growing counties as potential new store sites distorts the results. This endogeneity concern continues to plague analysis of Wal-Mart entrance.

Barnes and Connell [1996] and Ketchum and Hughes [1997] evaluated the impacts of Wal-Mart entrance on wages, employment and retail industry structure using sampled counties with and without Wal-Marts. Both studies examined retail sales and employment growth, but found no evidence of increases in the number of retail firms. Barnes and McConnell found a modest decline in the number of specialty retail stores at the county level. A 1994 Congressional Research Study (Hornbeck, 1994) performed a literature review on the existing studies and estimated that small towns would observe a decline in retail employment and establishments. McGee and Gresham [1995] examined towns in the upper mid-west following Wal-Mart entrance finding growth in retail trade in the Wal-Mart towns and very large declines in surrounding towns. Artz [1999] and Artz and McConnon [2001] examined the impact of Wal-Mart in several retail sectors in towns in Maine. They found Wal-Mart towns experienced large growth in general merchandise retail sales, but that surrounding towns lost sales, and that differences in existing conditions within the local economies accounted for part of this difference. Stone, Artz and Myles [2002] found a similar pattern in Mississippi Counties for food and general merchandise, and furniture stores. Mehta, Baimann and Persky [2004] estimates the economic impact of Wal-Mart in Chicago employing an input-output model, employing the assumptions of a smaller workforce, and lower retail expenditures, which results in the unsurprising result of lower employment in the region.

The preceding studies suffer some common weaknesses. Absence of control for underlying conditions, potential concern over selection bias and failure to make statistical

comparisons of impacts weaken many of the conclusions of these studies. Also, in at least some of these studies simple means comparisons were not presented, so for example the statistical certainty of employment, establishment and wage differences in regions with and without Wal-Mart are unavailable (see Artz and McConnon, 2001). The use of more advanced modeling in recent years clarified some, but certainly not all of these questions.

Hicks and Wilburn [2001], in the first of the econometric studies, analyzed a panel of county level data in West Virginia from 1988 through 2000, testing the impact of Wal-Mart's presence on retail industry structure, wages and employment. The model included corrections for spatial autocorrelation and entrance of Wal-Mart in adjoining counties, which accounts for the pull factor considerations noted by Stone [1995]. This study found that the entrance of a Wal-Mart store led to a modest increase in the number of retail establishments, a permanent retail employment increase of roughly 54 workers and no impact on retail wages.

Hicks and Wilburn [2001] evaluated endogeneity of the Wal-Mart entrance decision by testing entrance on contemporaneous and lagged growth variables. This is similar to the method used by Franklin [2001] who examined the Wal-Mart Supercenter impacts on the structure of grocery stores in metropolitan areas. Both studies concluded empirically that Wal-Mart entrance decisions are independent of regional growth conditions. Also, these researchers offered anecdotal evidence that Wal-Mart is largely unconcerned with local economic conditions when making decisions to open new locations. However, this approach has been criticized for failing to include an endogeneity test within the estimation framework (Curs, State and Visser, 2004). Also, criticism of the general nature of the results has been raised since West Virginia, the study region, is poorer and more rural than average states.<sup>2</sup>

Basker [2005] performed a similar analysis of a much larger sample of U.S. counties. This analysis used an instrumental variable method to control for endogeneity with the planned entrance date as an instrument. This study reports that following an initial increase in retail employment, within roughly three years this dissipates to a 55 worker increase, with a modest reduction in the number of small retail firms. Basker also found very modest impacts of Wal-Mart entrance on adjoining counties. The concordance of these employment findings to those of Hicks and Wilburn [2001] was highlighted by Villareal (2005).

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<sup>2</sup> See [www.preservationist.net/sprawl](http://www.preservationist.net/sprawl) for a remarkably balanced review by an advocacy group of this and other studies.

Basker has been criticized for instrumental variable choice (Curs, Stater and Visser, 2004); though I believe this criticism is misplaced. More credible concern about this study surrounds the censoring of the sample (counties with employment levels above 1,500 in 1964, with positive employment growth and without a Wal-Mart prior to 1977). This censoring of the date eliminates from consideration virtually all of the counties with urgent and compelling policy concerns (Goetz and Swaminathan, 2004). This latter criticism also raises the specter of selection bias problems in the study as earlier research (Graff, 1998) which identified a specific expansion pattern for Wal-Mart Supercenters in mid-sized towns (which may well have been censored by Basker). Further, failure to control for interstate fiscal differences may offer a different endogeneity concern as states with high levels of local financing may actively seek Wal-Mart stores (Wassmer, 2002). Of greater concern than these issues is the absence of a correction for spatial autocorrelation in the model providing concern of bias in the estimation results.

Despite the criticisms of both Hicks and Wilburn [2001] and Basker [2005] the remarkable concurrence of findings in the most rigorous studies to date, it is clear that claims of the critics regarding Wal-Mart's employment and wage impacts at the county level would fail to enjoy much significant empirical support.

The impact of Wal-Mart on economic well being, measured differently than through retail wages was performed by Goetz and Swaminatham [2004], in an evaluation of county wide poverty impacts of Wal-Mart's presence. This study is important in addressing a major criticism of Wal-Mart in general, and changing retail structural conditions perhaps evidenced by the increase in the number of Wal-Mart stores around the nation.

The authors estimated poverty rates in two time periods, thus permitting a much richer choice of explanatory variables than are typically employed in more dynamic time series models.<sup>3</sup> Employing a two stage estimation technique, which should account for some endogeneity concerns, the authors found that a new Wal-Mart, entering a county between 1987 and 1998 had a marginal impact of 0.2 percent on the county poverty rate, and that stores that existed prior to 1987 increased the poverty rate by just under half that amount.

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<sup>3</sup> The choice of the two time period model permitted the use of more detailed (but less frequently collected) Census and USDA data on poverty and regional population characteristics.

The authors attribute this effect to three possible causes. First, the loss of “mom and pop” retail employment may cause workers to settle for less well paying jobs (though they acknowledge the extensive criticism leveled at this argument). Second, philanthropy by Wal-Mart may be less than the incumbent firms. Third, which they argue is the most important; Wal-Mart would weaken local entrepreneurship resulting in greater poverty through a chain of leadership and social capital.

There two major concerns with this study. First, the magnitude of the poverty impact of Wal-Mart estimated by these authors is small at 0.099 percent for existing Wal-Marts and 0.204 percent for new Wal-Marts respectively, and was not fully elaborated. This is in contrast to a strong discussion of the potential causes. Perhaps the greatest flaw in this study is the incomplete development of the assertion that the poverty result implies an externality of exchange at Wal-Mart. While this is a convenient method of explaining possible policy interventions, it is more likely that Wal-Marts behavior is better explained as a result of public choices rather than a market failure.<sup>4</sup> Importantly, neither weakness impugns the empirics, only the potential policy interventions which may be inferred from their findings. Notwithstanding this criticism, Goetz and Swaminathan [2004] offer an important study in that while acknowledging that earlier research has found little of the criticism of Wal-Mart to enjoy empirical support, it has examined a more extensive set of regional issues.

One possible extension of these studies is to test, on more frequent data, employment dynamics and wages. The creation and dissemination of the US Census’ Longitudinal Employer – Household Dynamics database offers a remarkable opportunity to evaluate Wal-Mart’s role in a highly disaggregated setting. The key source for data is the Quarterly Workforce Indicator dataset maintained by the Census.

## **Quarterly Workforce Indicators and Wal-Mart**

The explosion of analytical possibilities created by the Longitudinal Employer-Household Dynamic Program at the US Census Bureau cannot be overstated. Beginning with Davis, Haltiwanger, and Schuh [1996] analysts have developed much improved econometric

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<sup>4</sup>As I have earlier said, I believe the claims of benefit based externalities are on very shaky theoretical ground. Even the most compelling of these arguments (Waddoups, 2004) asserts market failure for employer based health insurance in the construction industry based upon an argument of scale economies in the provision of private sector health insurance (both in financial access and firm production costs).

techniques (Abowd, Creedy and Kramarz, 2002) and have attempted to answer much more sophisticated questions than was previously possible (Lane, Burgess and Theuses, 1998). Though these data continue to offer much for researchers, accessing the data in its fullest form (consistent with Census privacy constraints) makes some uses restrictively resource intensive. In order to bridge this gap, a publicly available set of data, the Quarterly Workforce Indicators (QWI) is available for several states from 2001 through early 2005.<sup>5</sup>

The QWI data offer gross, not net job flows and calculated weekly wages for both existing and new workers. This data set also offers job turnovers. The data is parsed by industry (1-2 digit NAICS or SIC), age category, gender, firm type (private or all firms), at the county, MSA or state level. The resulting series, though more aggregated than other LEHD data, offer the potential to explain a number of workforce dynamics not addressed by other publicly available data sources. A more complete description is contained in Table 1.

**Table 1, Quarterly Workforce Indicators**

| <b>QWI Series</b>         | <b>Description</b>  |
|---------------------------|---|
| Average Monthly Earnings  | Total quarterly earnings of all full-quarter employees divided by the number of full-quarter employees, divided by 3.   |
| 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.   |
| Job Creation              | The number of new jobs that are created by either new area businesses or the expansion of employment by existing firms. |
| Net Job Flows             | The difference between current and previous employment at each business.  |
| New Hires                 | Total number of accessions that were also not employed by that employer during the previous four quarters.              |
| Separations               | Total number of workers who were employed by a business in the current quarter, but not in the subsequent quarter.      |
| Turnover                  | Turnover Rate = (1/2) * (accessions + separations) / employment stable jobs   |
| Total employment          | Total number of workers who were employed by the same employer in both the current and previous quarter                 |

The chief limitation of the QWI data is its recent introduction, and that it is currently limited to only 20 states. Those has proven especially problematic for analysis of Wal-Mart entrance, since the retail giant has a well known proclivity for entering states and expanding operations in rapid bursts (see Hicks, 2005). Thus, I was able to match only one state with Wal-Mart entrance in the middle of the 2001-2005 QWI data – Pennsylvania. And, even in this state, only eight counties saw new Wal-Mart entrance (with only a total of 10 Wal-Mart and Supercenter stores). This is however, the population of new Wal-Marts in the State during the available time period, not a sample. Following findings by Wassmer [2002], who concluded

<sup>5</sup> Full resourcing of these data may not occur until closer to the end of the decade.



cross-state fiscal structures influenced the location decision of big-box retailers, I have safely confined my analysis to a single state. Summary statistics for the employment dynamics and Wal-mart appear in Table 2.

**Table 2, Summary Statistics 2001:Q1 through 2005:Q2**

|                           | Mean      | Median   | Maximum   | Minimum   | Std. Dev. |
|---------------------------|-----------|----------|-----------|-----------|-----------|
| Average Monthly Earnings  | 2,009.21  | 2,047.96 | 2,716.96  | 1,454.39  | 365.56    |
| Average New Hire Earnings | 1,313.79  | 1,255.42 | 2,078.92  | 877.91    | 270.93    |
| Job Creation              | 1,133.79  | 657.50   | 9,952.00  | 55.00     | 1,558.42  |
| Net Job Flows             | 16.27     | -10.50   | 7,507.00  | -5,398.00 | 1,300.84  |
| New Hires                 | 3,190.96  | 1,788.50 | 18,639.00 | 186.00    | 4,123.93  |
| Separations               | 3,777.34  | 2,177.50 | 16,782.00 | 237.00    | 4,522.77  |
| Turnover                  | 0.13      | 0.12     | 0.71      | 0.07      | 0.07      |
| Total Employment          | 16,545.68 | 9,182.5  | 60,889    | 1,561     | 18,221.4  |
| Wal-Mart Entrance         | 0.09      | 0.00     | 1.00      | 0.00      | 0.29      |
| Wal-Mart Presence         | 0.78      | 1.00     | 2.00      | 0.00      | 0.68      |

Note: earnings are real, adjusted by the GDP Deflator and include a wide range of fringe benefits

I offer an empirical model of Wal-Mart entrance that closely mimics that of Hicks and Wilburn [2001], Basker [2005], and Hicks [2005]. I model changes to employment dynamics and wages as a function of Wal-Mart entrance and presence, economic, seasonal and an autoregressive component. Since this model is a panel of employment dynamics in 8 non-conterminous counties, I use a cross sectional fixed effects model without spatial considerations. The basic model thus appears as:

$$Y_{i,t} = \alpha_1 + \alpha_i + \beta_1 \text{WMentrance}_{i,t} + \beta_2 \text{WMPresence}_{i,t} + \beta_3 \text{GDP}_t + \beta_4 \text{Recession}_t +$$

$$\dots + \beta_5 Q:1 + \beta_6 Q:2 + \beta_7 Q:3 + \beta_8 \theta_{i,t} + \mu_{i,t}; \quad \mu_{i,t} \square i.i.d.N(0, \sigma^2)$$

**Equation 1**

Where the dependent variable Y, changes with the test to be performed, and  $\alpha_1$  is an intercept and  $\alpha_i$  county dummies. The variables WMentrance and WMPresence are entrance dummy and presence count variables for Wal-Mart and Wal-Mart Superstores respectively. The subscripts  $i$ , are for each county in time  $t$ . I employ three quarter dummies, and an autoregressive component. The GDP data are national, and designed to capture business cycle adjustments, while the recession is a quarterly dummy obtained from the NBER business cycle series. The dependent variables are all for the retail trade sector. There does not appear to be a unit root, though the

length of the sampled period is such that tests are not robust, however I employ levels in the estimation.

One advantage of employing a sample in which all counties experience and entrance of a Wal-Mart, all within a year, is that this avoids the endogeneity concern expressed by Franklin [2001], Hicks and Wilburn [2001] and Basker [2005]. I assume local labor market idiosyncrasies are fully captured by the fixed effects, and otherwise do not vary across the sample. This motivates a simple ordinary least squares estimator, with only the common heteroscedasticity corrected standard errors. The major concern regarding distributional characteristics involved the turnover rate. To mitigate this concern I transformed the rate into a [0,100] scale and employed a semi-log transformation. The results for the earnings estimates appear in Table 3.

**Table 3, Wal-Mart Affect on Earnings**

|                   | Average Monthly Earnings | Average New Hire Earnings |
|-------------------|--------------------------|---------------------------|
|                   | Coefficient              | Coefficient               |
|                   | (t-statistics)           | (t-statistics)            |
| C                 | 2059.111<br>(124.89)     | 1229.313<br>(23.29)       |
| Wal-Mart Entrance | -2.41529<br>(-0.15)      | 89.15631<br>(1.88)        |
| Wal-Mart Presence | 13.00027<br>(1.73)       | -14.6503<br>(-0.54)       |
| GDP               | -1.49E-05<br>(-1.27)     | -4.55E-05<br>(-1.61)      |
| Recession         | -16.8091<br>(-1.04)      | -9.83796<br>(-0.25)       |
| Q1                | -107.693<br>(-6.08)      | 182.3455<br>(5.09)        |
| Q2                | -59.4259<br>(-5.20)      | 91.15887<br>(4.83)        |
| Q3                | -24.2666<br>(-1.67)      | 33.13275<br>(2.38)        |
| AR(1)             | 0.057813<br>(0.933)      | 0.322688<br>(3.36)        |
| Adj R-2           | 0.99                     | 0.90                      |
| F-statistic       | 2304.68                  | 66.46                     |
| D-W statistic     | 1.92                     | 1.78                      |

Note: county fixed effects not reported

These results suggest that Wal-Mart plays no significant role in influencing wages for existing employees in the retail sector; either statistically through entrance, or economically through its presence (though the latter does enjoy statistical significance, it translates into roughly one more hours wages per month). For new hires in the retail sector, Wal-Mart entrance

is associated with a roughly \$90 increase in monthly earnings. These findings are consistent with those of Hicks and Wilburn [2001] who find no Wal-Mart impact in average retail wages using county level net changes. The effect holds in a more disaggregated series in this analysis. It is other factors (primarily seasonality) which play the chief role in influencing monthly retail wages in these counties.

Turning our attention to employment dynamics, the accounting for employment changes attributable to Wal-Mart in this estimation appear in Table 4.

**Table 4, Wal-Mart and Employment Dynamics**

| Variable                    | <b>Job</b>                   | <b>Net Job</b>               | <b>New Hires</b>             | <b>Separations</b>           | <b>Total</b>                 | <b>Turnover</b>              |
|-----------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
|                             | <b>Creation</b>              | <b>Flows</b>                 |                              |                              | <b>Employment</b>            |                              |
|                             | Coefficient<br>(t-statistic) | Coefficient<br>(t-statistic) | Coefficient<br>(t-statistic) | Coefficient<br>(t-statistic) | Coefficient<br>(t-statistic) | Coefficient<br>(t-statistic) |
| C                           | 1355.06<br>(18.62)           | -98.6723<br>(-1.24)          | 3064.427<br>(20.78)          | 3815.3<br>(125.40)           | 16714.76<br>(307.7)          | 2.511047<br>(111.5)          |
| Wal-Mart<br>Entrance        | -143.83<br>(-2.01)           | 30.49821<br>(0.27)           | 181.3526<br>(1.76)           | -55.3669<br>(-0.53)          | -181.651<br>(-2.30)          | -0.03838<br>(-2.22)          |
| Wal-Mart<br>Presence        | 71.78703<br>(1.18)           | 119.1457<br>(1.46)           | -177.357<br>(-1.22)          | -149.815<br>(-3.20)          | 47.34926<br>(1.46)           | -0.05<br>(-4.15)             |
| GDP                         | -0.00018<br>(-1.36)          | -0.00031<br>(-2.09)          | -0.00011<br>(-0.51)          | -5.80E-05<br>(-1.44)         | -7.90E-05<br>(-1.62)         | 9.29E-09<br>(0.28)           |
| Recession                   | -51.7735<br>(0.74)           | -24.1028<br>(-0.12)          | -262.66<br>(-1.46)           | -146.423<br>(-3.37)          | 111.333<br>(2.55)            | -0.01364<br>(-0.66)          |
| Q1                          | -225.483<br>(-2.40)          | 126.9711<br>(1.39)           | 197.9209<br>(2.06)           | 8.787816<br>(1.03)           | -86.3034<br>(-2.56)          | -0.01106<br>(-0.55)          |
| Q2                          | -170.8<br>(-5.04)            | 206.6218<br>(1.63)           | 418.4632<br>(3.43)           | 334.2003<br>(15.07)          | -77.7514<br>(-4.50)          | 0.005913<br>(0.73)           |
| Q3                          | -153.249<br>(-1.41)          | 462.7771<br>(2.36)           | 833.2119<br>(5.41)           | 236.3251<br>(7.21)           | -63.4872<br>(-4.15)          | 0.055321<br>(2.77)           |
| AR(1)                       | -0.19696<br>(-1.97)          | -0.15889<br>(-1.52)          | -0.0394<br>(-0.17)           | 0.045706<br>(0.44)           | 0.326184<br>(1.82)           | 0.130248<br>(1.71)           |
| <b>County Fixed Effects</b> |                              |                              |                              |                              |                              |                              |
| Beaver                      | -679.482                     | -21.8372                     | -1792.01                     | -2106.25                     | -9343.86                     | 0.004377                     |
| Chester                     | 697.9271                     | 191.7329                     | 2110.41                      | 2109.882                     | 8411.291                     | 0.087284                     |
| Cumberland                  | 29.03712                     | -510.04                      | -305.003                     | 428.6238                     | 7607.371                     | -0.19186                     |
| Jefferson                   | -1053.94                     | -44.8995                     | -2951.79                     | -3436.14                     | -14841.9                     | -0.01798                     |
| McKean                      | -1054.3                      | -47.4951                     | -2952.85                     | -3435.95                     | -14995.7                     | -0.00042                     |
| Montgomery                  | 3242.569                     | 454.3536                     | 9713.549                     | 10758.98                     | 41873.51                     | 0.193229                     |
| Northampton                 | -304.027                     | 33.84629                     | -905.279                     | -1130.74                     | -5122.06                     | 0.022447                     |
| Warren                      | -877.787                     | -55.6606                     | -2917.03                     | -3188.41                     | -13588.8                     | -0.09707                     |
| Adj R-2                     | 0.68                         | 0.10                         | 0.91                         | 0.95                         | 0.99                         | 0.99                         |
| F-statistic                 | 15.78                        | 1.82                         | 76.11                        | 132.87                       | 2216.6                       | 687.53                       |
| D-W statistic               | 2.16                         | 2.13                         | 2.09                         | 1.92                         | 1.50                         | 1.97                         |

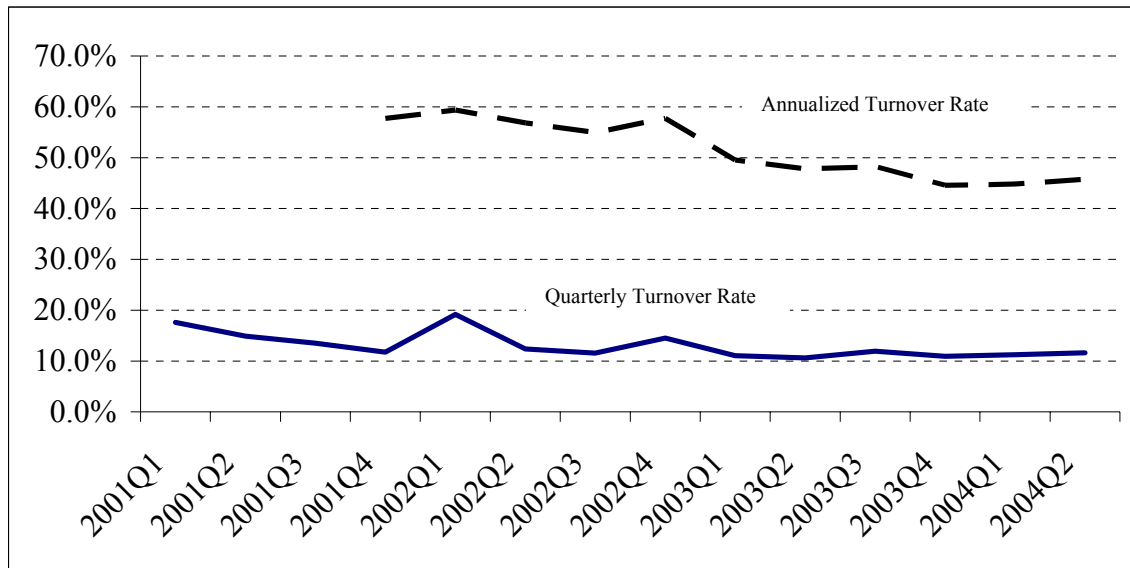
These estimates tell a much more compelling story about Wal-Mart and local labor market dynamics than earlier studies. First, job creation, or new jobs in new and existing firms

suffers a reduction of roughly 140 workers due to the entrance of a Wal-Mart. The presence of a Wal-Mart reverses this impact, with a smaller (roughly 70 job) increase following entrance, albeit with much weaker statistical significance. This is consistent with Stone's [1988, 1995] examination of the retail sector in Iowa. Net job flows are unaffected by the entrance of a Wal-Mart, but increases with a Wal-Mart presence at the rate of nearly 120 jobs. New hires experiences a transient jump of roughly 180 jobs in the quarter Wal-Mart opens, but falls by an equal amount thereafter. This would be consistent with the initial hiring by Wal-Mart. Anecdotal evidence suggests that many Wal-Marts hire employees from competing stores, primarily other similar retailers such as K-Mart, Ames and Dollar General Stores (though I do not know if any of these were present in these counties during this period). Separations (or job losses) are unaffected by Wal-Mart's entrance, but decline substantially thereafter, with on average 150 fewer separations per quarter. Total employment sees a one quarter decline of roughly 180 jobs, but rebounds slightly in the subsequent quarter. Recall total employment measures the stationary employment across firms from one quarter to the next, not total jobs in the industry. The net effect of the dynamics is an increase in employment of a little more than fifty jobs in a year. This is a remarkable concordance with the findings of Hicks and Wilburn [2001] and Basker [2005].

Importantly, employment appears to stabilize, with a significant decline in the rate of turnover due to Wal-Mart's entrance (almost 4 percent quarterly) which adjusts to Wal-Marts presence of a decline of roughly 5 percent. Thus Wal-Mart has a dramatic effect on workforce stability, accounting for more than a remarkable 40 percent reduction in net employment turnover. This impact is preserved even with increases in the autoregressive lag length and the inclusion of a trend.

The high turnover in firms was among the most compelling findings in Davis, Haltiwanger and Schuh's [1996] initial description of the LEHD data elements (though they focused on manufacturing in the Longitudinal Employer Database, a precursor to LEHD). In these Pennsylvania counties (as indeed is common throughout the county) the retail trade sector experiences a great deal of annual turnover, ranging from almost 60 to roughly 45 percent of workers in the industry. See Figure 1.

**Figure 1, Retail Employment Turnover Rates in Select Pennsylvania Counties**



The finding that Wal-Mart is associated with reductions in the turnover rates in the retail sector challenges many oft repeated descriptions of the firm (see for example, Lichtenstein, 2005). The employment data otherwise reinforces earlier research, albeit with a much more useful explanation of the dynamics associated with the retail sector in the wake of Wal-Mart's entrance. Thus the findings of Hicks and Wilburn [2001] and Basker [2005] whose use of annual data suggests that Wal-Mart has at worst no negative net employment effects, and at best a modest (roughly 50 job) net increase in retail sector employment remain intact. However, this analysis tells us more about how employment dynamics are decomposed at the county level to accommodate Wal-Mart stores. There is a trade-off of jobs when Wal-Mart enters the market. There are net increases in net new hires, offset by an initial reduction in job creation. Job creation rebounds, and there is a marked longer term reduction in separations and turnovers in the retail sector. These effects net to a low positive value over roughly a year a finding consistent with earlier research. Finally, the wage impact on existing workers is insignificant, while new hires enjoy a roughly \$90 per month premium, suggesting that overall earnings (if not hourly wages) improve by just over 6 percent when Wal-Mart enters the market.

## Summary and Discussion

There are myriad issues considered in the policy debate surrounding Wal-Mart. This paper evaluated some of those related to employment dynamics, job turnovers and compensation.

As mentioned above we find net employment impacts of Wal-Mart on the retail sector to be consistent with the earlier studies (Hicks and Wilburn, 2001; Basker, 2005). There is modest local employment reallocation at the county level, which nets to very modest positive increases when aggregated over a year. I find no impact on compensation for current employees, but see a small, but non-trivial increase in compensation for new hires (roughly 6 percent) in the quarter Wal-Mart enters the market. This translates into a boost in total compensation for new hires of roughly \$0.50 cents per hour (per full time equivalent). Whether this occurs at Wal-Mart or in other stores is not determinable with these data. Wages for new hires in subsequent quarters are unaffected (they do not continue to grow in subsequent quarters). The most remarkable impact however, is a marked reduction in employee turnover in the retail trade sector. The coefficient estimates that Wal-Mart is responsible for the over 40 percent reduction in observed employee turnover. Whether this is a marketplace effect (tighter labor markets) or due to firm or industry wide efforts to reduce employment transactions costs is unobservable in these data. Anecdotal evidence exists to support (but not test) both of these hypotheses.

In total, the employment dynamic findings and the wage findings are not inconsistent with earlier research, and suggest that criticisms of Wal-Mart based on wages and net employment changes are ill founded. The magnitude of the impacts is sufficiently small that policy innovations that attempt to influence Wal-Mart location decisions (either positively or negatively) are ill advised.

The marked reduction in turnovers associated with Wal-Mart entrance serves primarily to refute a number of claims to the contrary by analysts (other than economists) who have made this assertion in a number of settings absent supporting empirics. And, while lower job turnovers undoubtedly provide benefits to firms, extensions of these benefits to the public in general are not known. Policy adjustments would therefore be unwarranted.

These results serve to evaluate Wal-Mart in the context of an exciting newly available data series which focuses on job dynamics at the county level. As with earlier econometric studies, these findings do not speak to sub-county redistribution that may occur as a result of Wal-Mart. Extending this research to more counties with available QWI data is warranted. Further, a fuller understanding of the role of firm size, impacts in other sectors, and a more employee based analysis of flows (by age category and gender) would provide important insights into the role Wal-Mart in particular, and changes in retail structure in particular have on

communities, their businesses and residents. Finally, any policy recommendations that emanate from this analysis echo Ken Stones original caution to avoid unintended consequences resulting from efforts to attract or repel Wal-Mart entrance.

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