Discussant Comments on

- Wages, Productivity and Technology: What Have We Learned From Micro Evidence on Businesses

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Wage and Productivity Dispersion

- Haltiwanger, et. al. provide interesting insights to the role of computers and capital investment on productivity and wage dispersion
- Rely upon models of Caselli (1999) and Kremer and Maskin(1996) to explain wider dispersion in the data.

Caselli's story is about dynamics

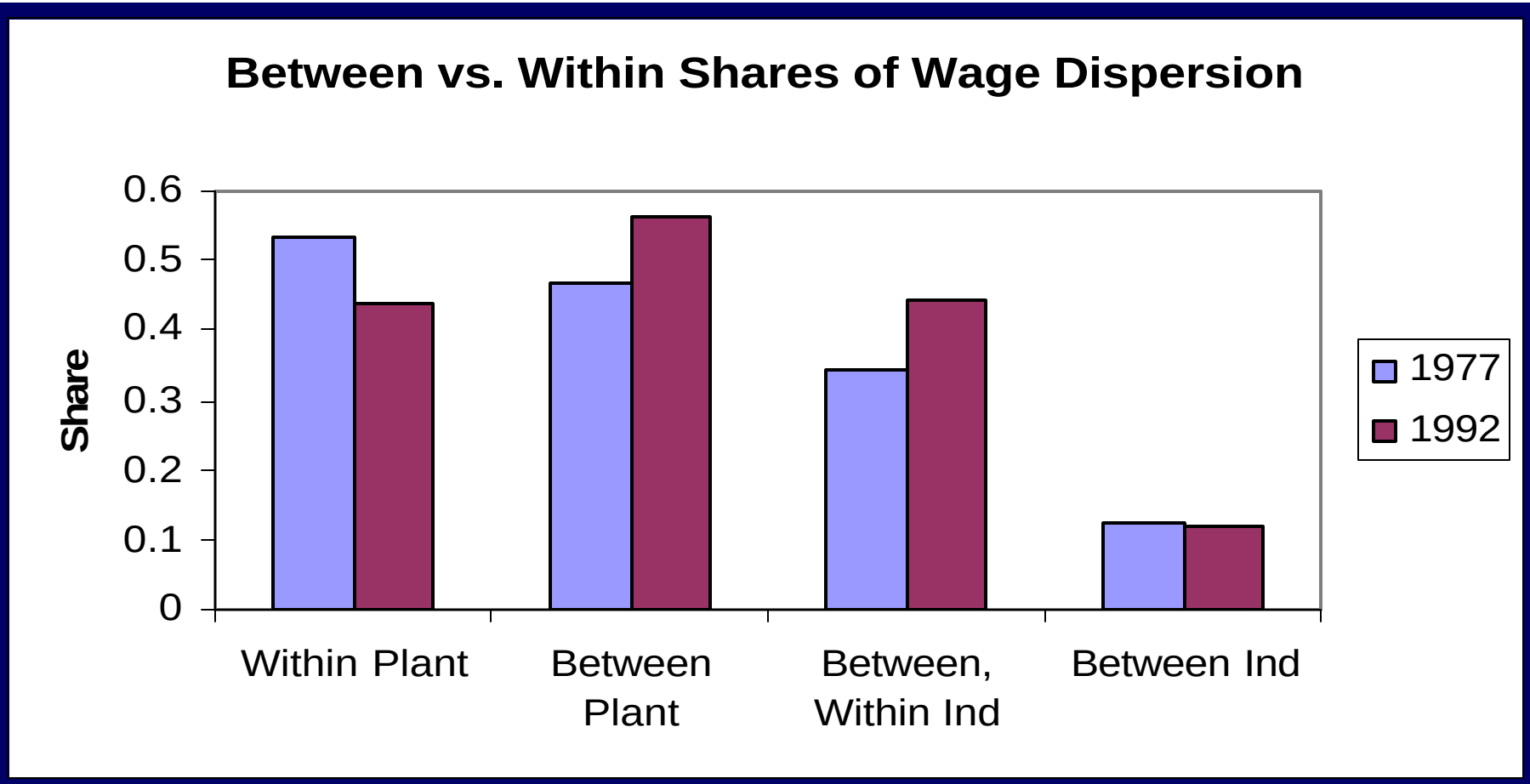
- When new technologies come out – rapid adaptors establish new plants with a new capital stock and different workers – more skilled workers are hired to use the new technologies.
- Existing workers earn relatively less and dispersion of wages increases across firms.
- To keep K/L ratios constant in equilibrium, real wages for old plants must fall.

Empirical Predictions

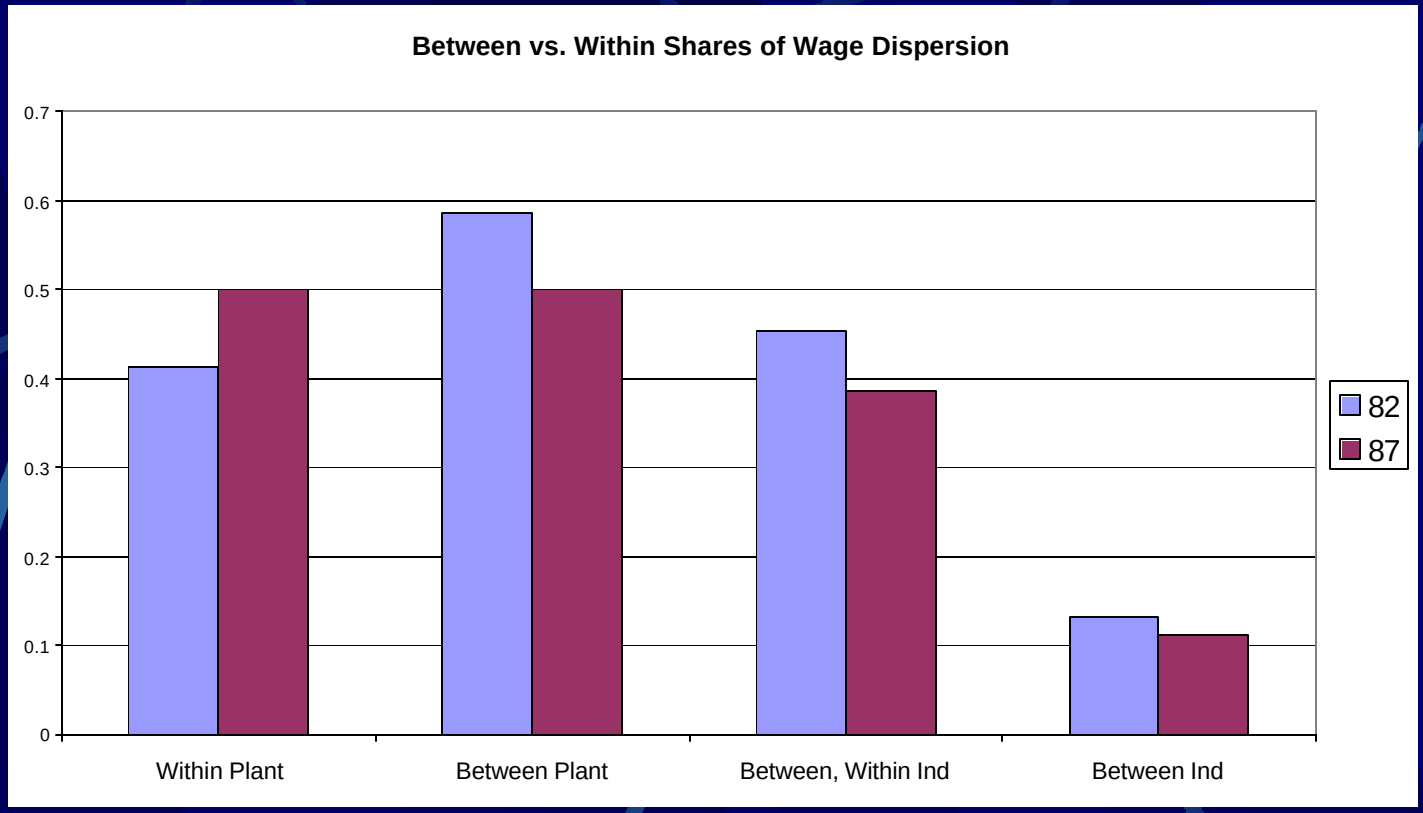
- Skilled-biased technological change gives skilled workers more and better capital so their relative wages increase.
- Skilled-biased technological change increases dispersion of both wages and productivity across plants
- Increases in productivity and wages should be positively associated with increases in capital at plants with new technologies.

What is found

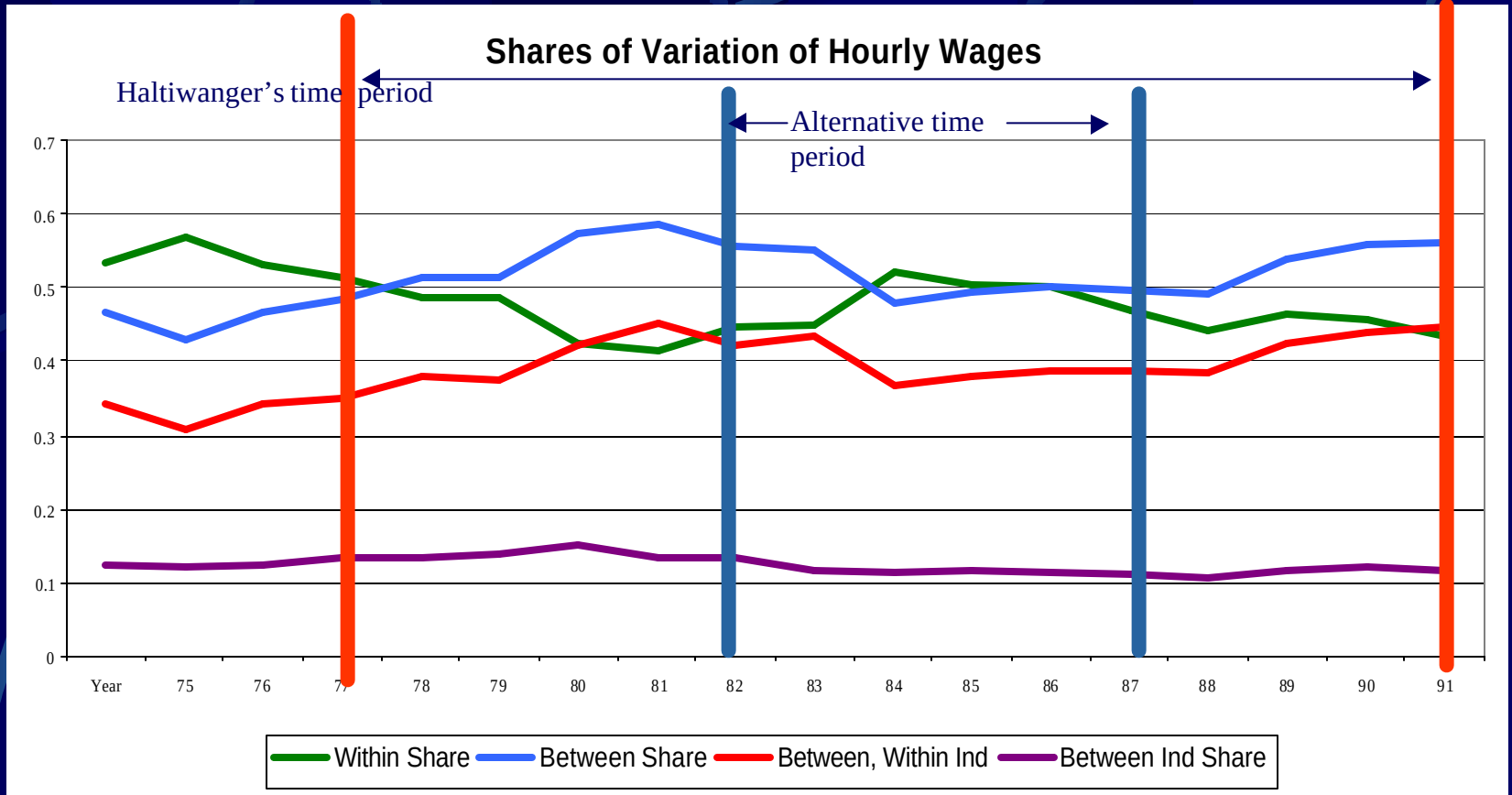
- Virtually all the disparity in wages over 1975-1992 period is accounted for by between plants as are productivity increases within narrowly defined industries.
- Large percentage of changes in dispersions of wages and productivity are associated with capital intensity or computers.



- Within plant dispersion has declined
- Between plant dispersion has increased
- Between industry dispersion is unchanged and low
- However, it can be shown that these results are dependant upon time periods examined



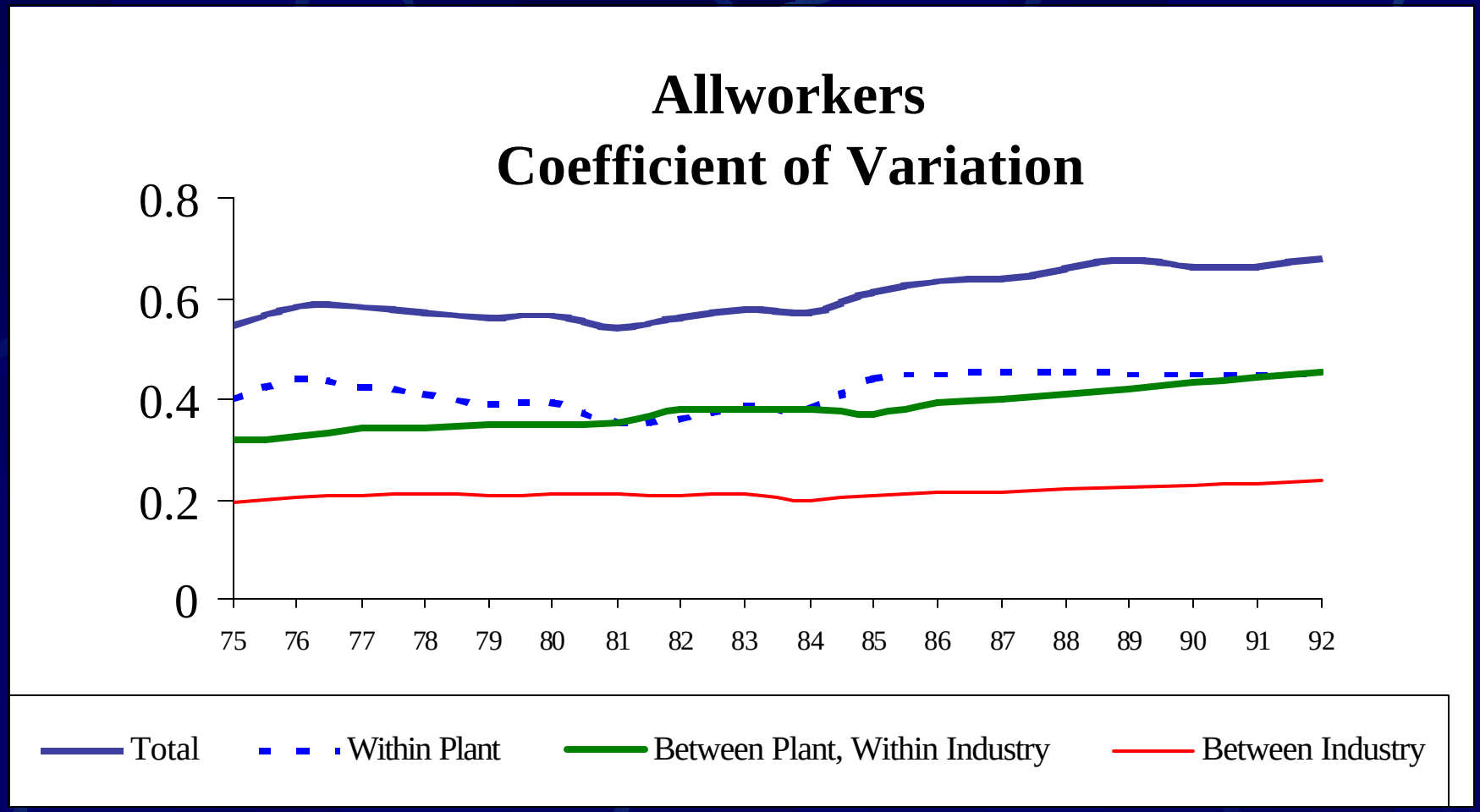
- Just by changing the observation years to start in 1982 and end in 1987 we can change the conclusions
- Within firm dispersion increasing
- Between plant dispersion for both within firms and within indusrty decreasing, and
- Little impact, but negative on between industry dispersions.
- Here is another way of looking at these same data in next chart



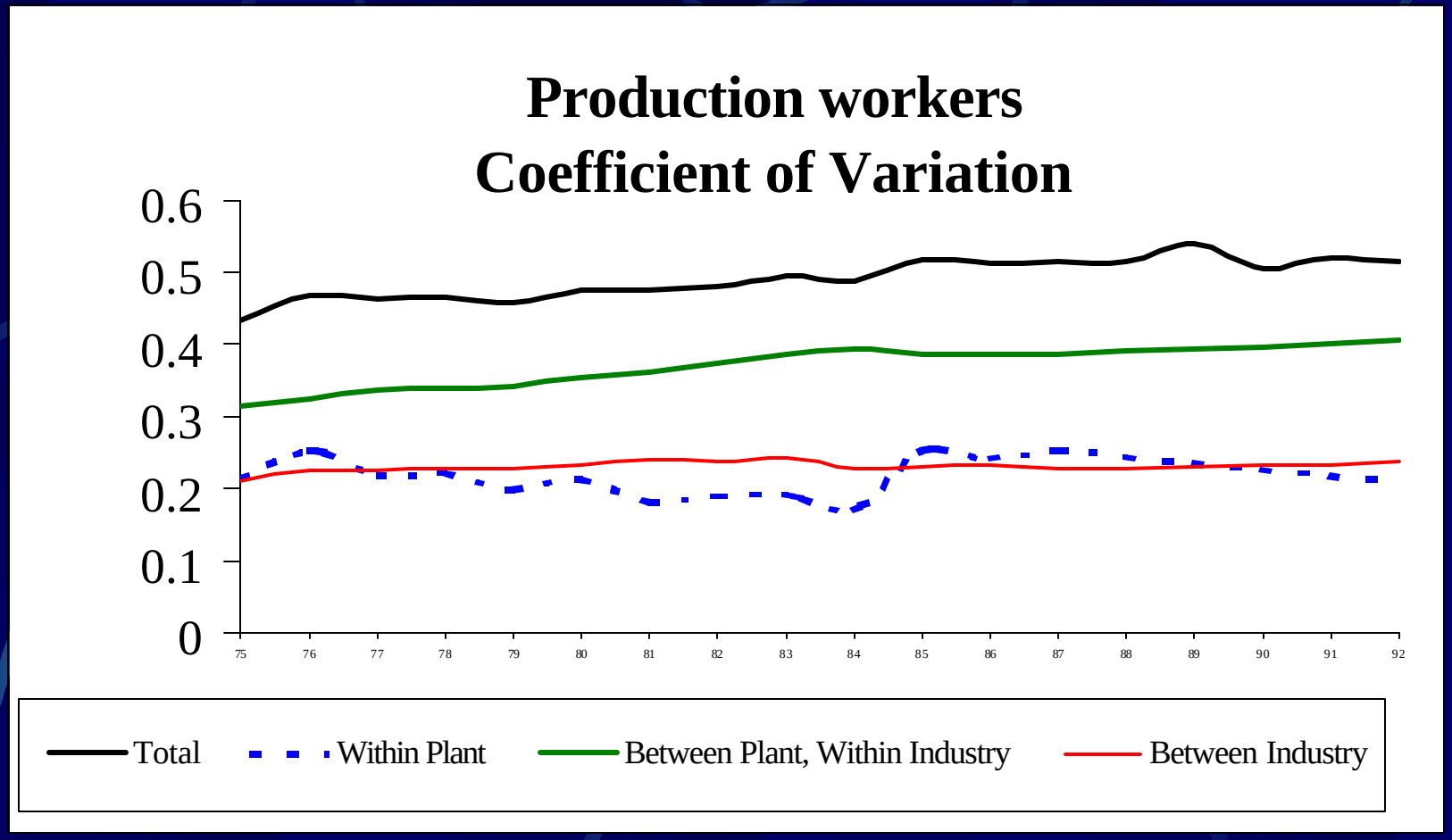
Complete data suggest authors may be claiming more for the results than are apparent over the time series.

Between plant variation share has trended up but not much.

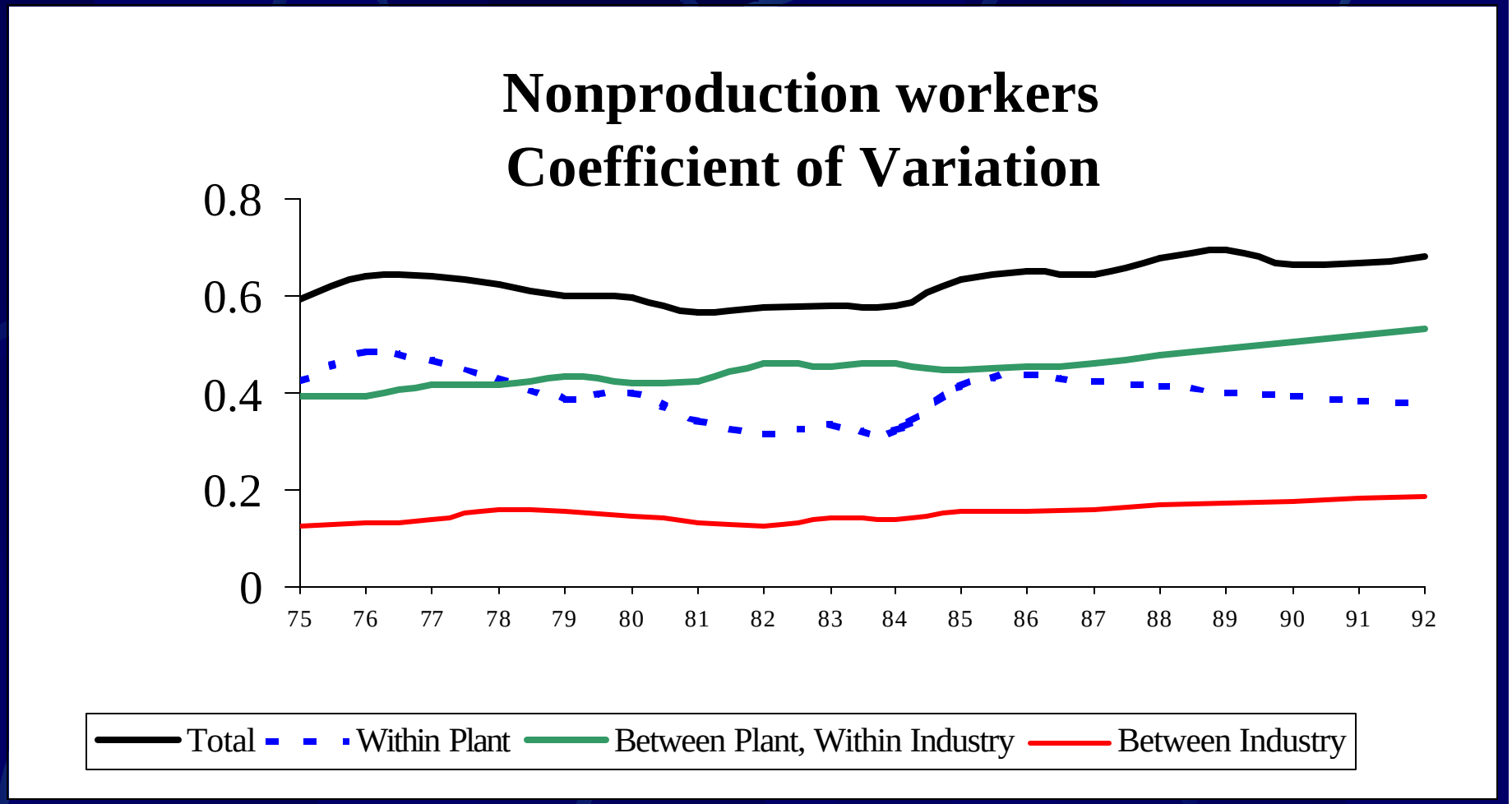
Look now at details of dispersions in next series of charts



- Variation in wages has increased across time
- Most of the increase is between plant, within industry



- Pattern is especially pronounced for production workers
- Unlike Allworker case, between industry and within plant variation is virtually the same



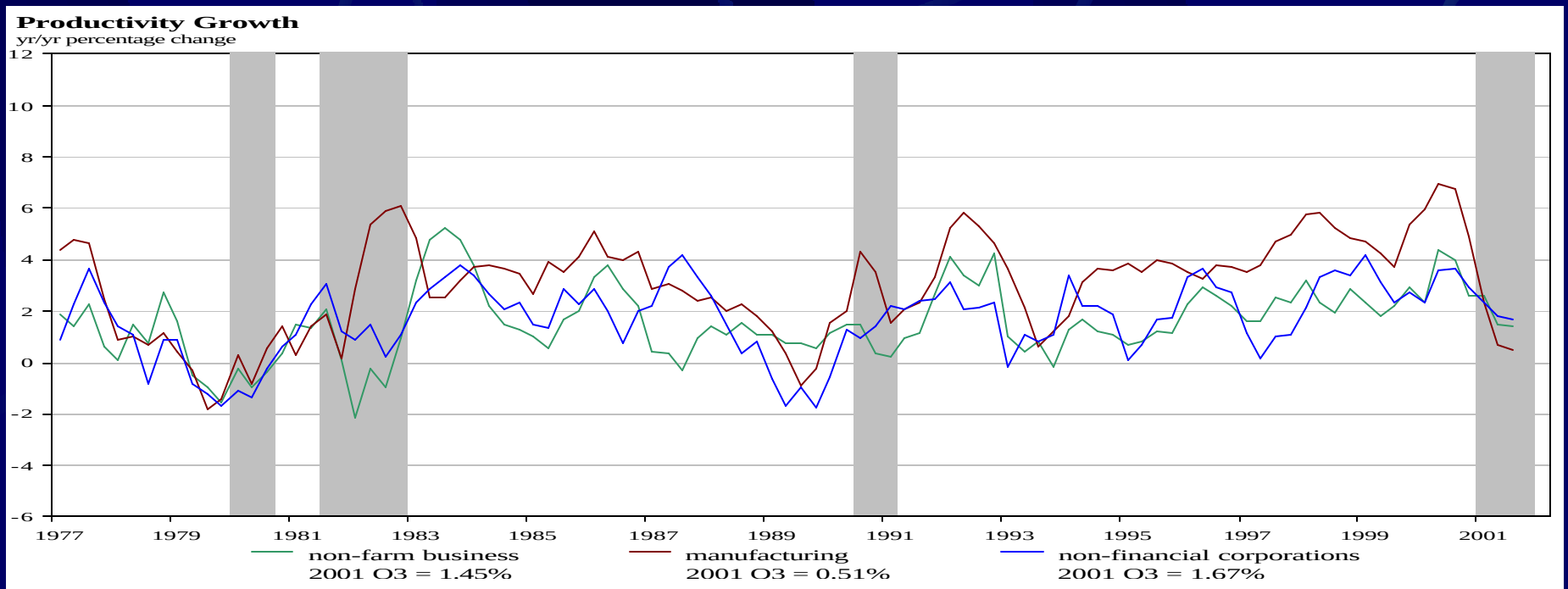
- For non production workers, dispersion is wider than for production workers
- And between plant and within plant track for a while.
- Turn now to the accounting regressions to account for computers and capital investment

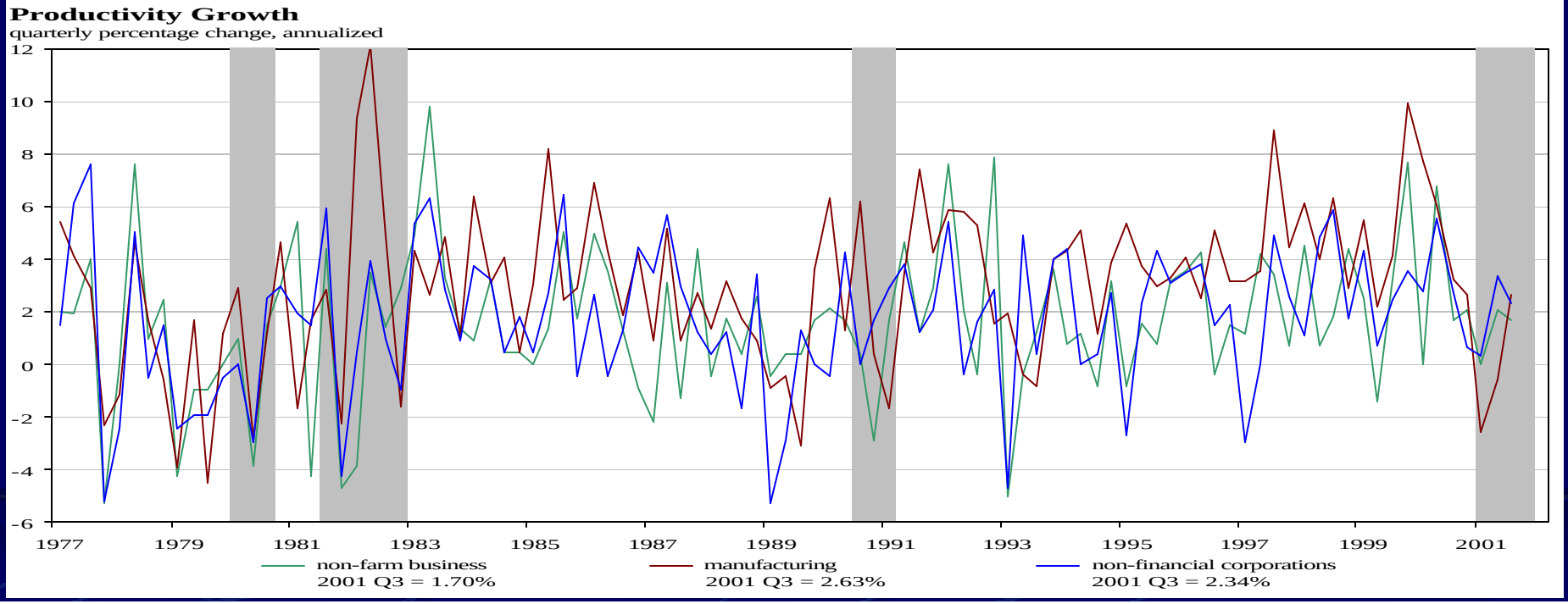
Fraction of Wage Dispersion Accounted for by	Differential Computer investment 27%	Unexplained Dispersion 62%
Fraction of Wage Dispersion Accounted for by	Differential Capital Intensity 38%	Unexplained Dispersion 64%
Fraction of Productivity Dispersion Accounted for by	Computer Investment 20%	Unexplained Dispersion 86%

Regressions to decompose sources of dispersion leave most of the dispersion unexplained

Part of the reason for this is that productivity is noisy as next chart shows

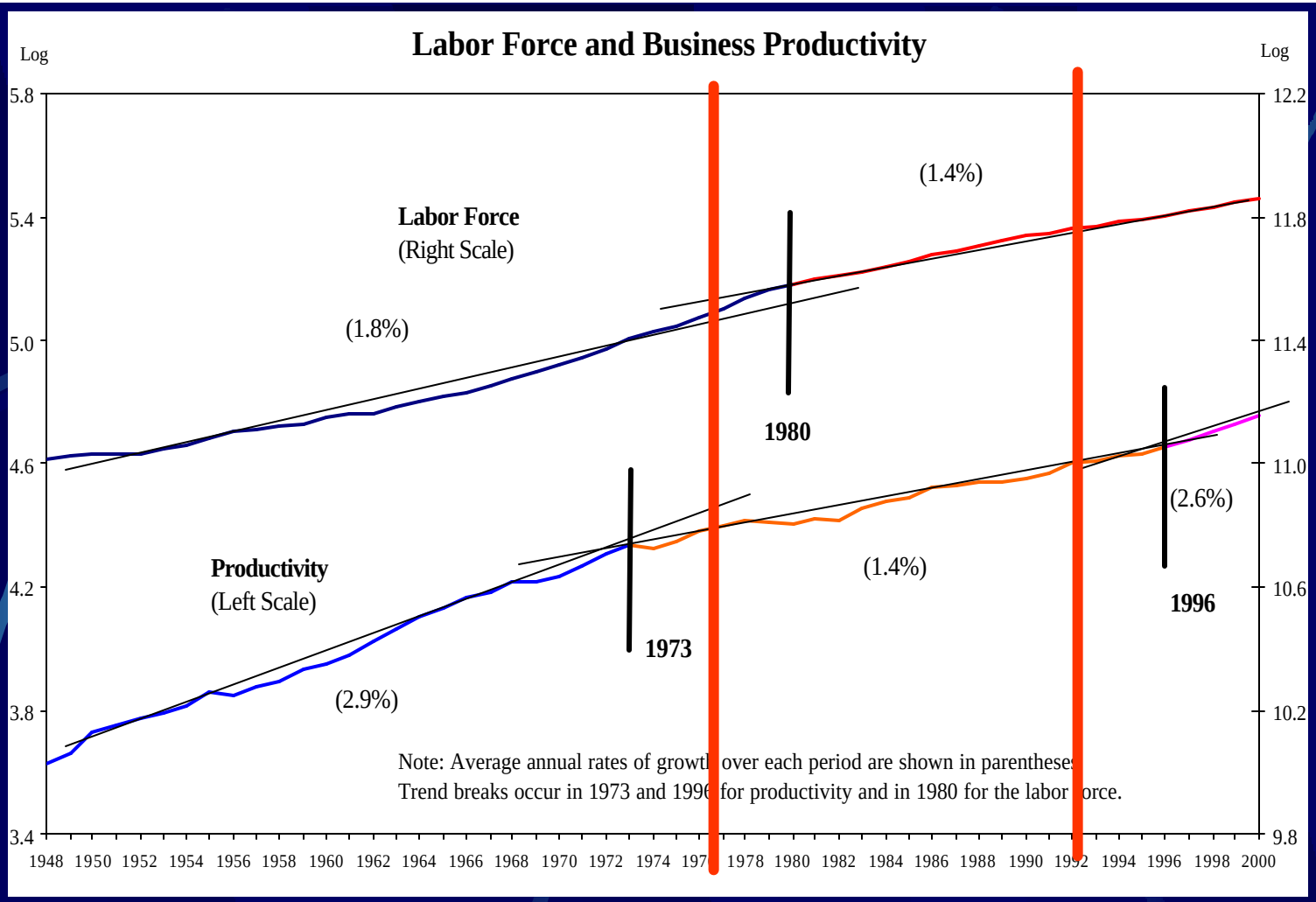
Computers are still a small part of the capital stock


Productivity Growth
yr/yr percentage change
12
10
8
6
4
2
0
-2
-4
-6
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
non-farm business
2001 Q3 = 1.45%
manufacturing
2001 Q3 = 0.51%
non-financial corporations
2001 Q3 = 1.67%


Productivity Growth
quarterly percentage change, annualized
12
10
8
6
4
2
0
-2
-4
-6
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
non-farm business
2001 Q3 = 1.70%
manufacturing
2001 Q3 = 2.63%
non-financial corporations
2001 Q3 = 2.34%

Some Suggestions for Further Work

- Expand the time period to look at earlier as well as later time periods



1977-1992 period was one of relatively slower productivity growth

Rapid pickup in productivity growth occurred after 1996

Mosaic came out in 1993, and Netscape, the internet and networks followed

Most of the new economy developments aren't captured in Haltiwanger's data

Some Suggestions for Further Work

Separating secular and cyclical changes would be critical and part of the story about noisy data

- Look at declining v expanding industries – steel and apparel versus autos or computer chips

Firm location and wage and productivity dispersion within firms

- Wage dispersion may be understated when consider how companies tend to locate – move to low wage areas where real wages may be increased more than apparent.
- Shed high cost and relatively less productive workers who won't move.

Some Suggestions for Further Work

- Profitability and the stock market
  - Also suggest that companies with wide disparities should be shedding old plants and if this is the case, they should see profit improvement.
  - Does the stock market look at this and recognize the successful from unsuccessful firms.
- Large v Small firms?
  - According to recent data, small firms produce 55 percent of innovations.
  - Small firms generate twice as many product innovations per employee as large firms, including the employees of firms that do not innovate.
  - Small firms obtain more patents per sales dollar, even though large firms are more likely to patent a discovery, implying that small firms have more discoveries
  - What about productivity and wage dispersions within single plant firms v efficient multi-plant firms?

Some Suggestions for Further Work

Dispersion story is really about dynamics of wage dispersion and productivity
Why wouldn't the dynamics of dispersion about
mean wage trends over time look as follows?
First increasing, then decreasing around an upward trend wage?