What's In A Number?

Explaining the Divergent Trends in the Employment Measures from the Current Establishment Survey and the Current Population Survey

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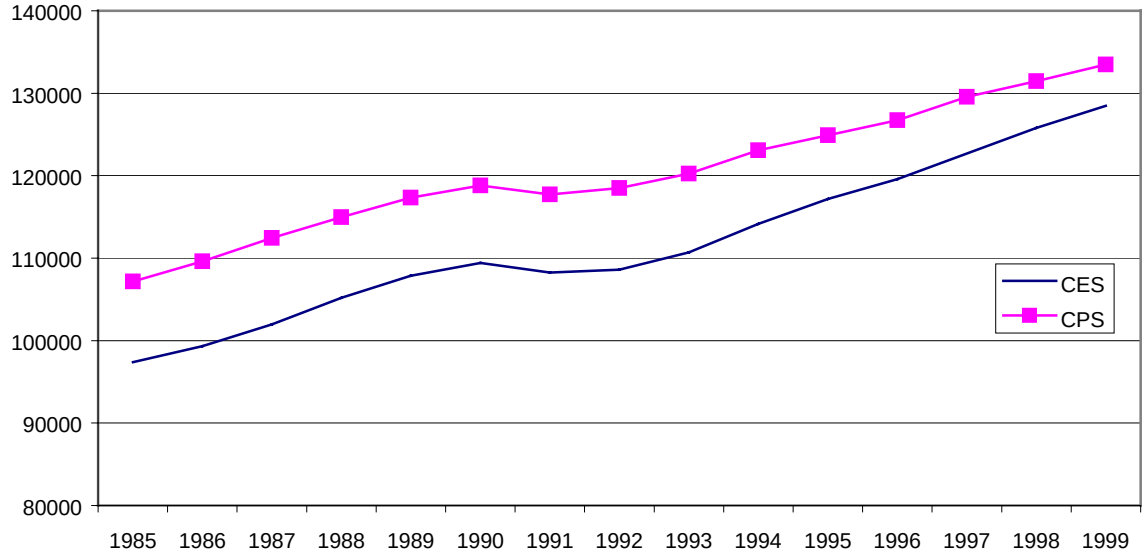
Introduction

There are two principal sources of employment data in the economy: the Current Establishment Survey, and the Current Population Survey. Both surveys measure employment at the national level and the state level, albeit via different collection methods. The trouble is, they do not agree.

While the differences in measurement methodologies lead to differences in employment counts, adjusting the data for these differences does not reconcile the series completely. All else being equal, if the methodology of the data series is unchanged, then any disparity between the series should be relatively static. However, opposite is true.

Over the past twenty years the two measures of national employment data have been diverging. Currently, the CES data outstrips the CPS data at the national level by almost 8 million jobs: see Chart 1 below. The annual data reveals that the CES data has consistently exceeded the CPS data over the past fourteen years. What is noteworthy, however, is that the gap has begun to narrow as the growth rates between the two series have begun to converge. The most recent monthly data available for 1999 shows CES growing 2.3% year over year versus 1.3% growth in the CPS.

Chart 1: U.S. Employment CPS versus CES, thousands of jobs



Source: Bureau of Labor Statistics, Center for Applied Demography and Survey Research, University of Delaware.
Note: CES is Current Establish Survey, also referred to as the payroll survey.
CPS is the Current Population Survey, also referred to as the household survey. The raw CPS employment measure is not reported due to sampling bias. Rather, the Local Area Unemployment Statistics (LAUS) is published that uses the CPS data as an input, and models employment with seasonal, trend, and noise adjustments. Henceforth, the term LAUS will be used refer to the household employment series.

Historically, the divergence between the employment measures is most pronounced at the peaks and troughs of business cycles. For example, prior to the recession in 1981, the CPS employment growth rate began its decent in May of 1981 whereas the CES employment growth rate continued to decelerate until November of 1982. These patterns between the two employment series are consistent for almost every peak/trough scenario since 1970, except for the trough at the 1990-1991 recession. In this case, both growth rates started to accelerate at the same time.

Drawing a conclusion that a widening CES-CPS serves as a leading indicator for turning points in the economy is hasty. It is true that, on a number of occasions, the CPS has reported a slowdown in employment growth prior to an equivalent downturn in the CES. However, the length of time between the CPS and CES downturns has been relatively short – in most cases only two or three months. In three of the eight recessions of the past fifty years, the CPS and CES employment hit their low points within two months of

each other. Total CPS employment hit its low point first (by more than two months) in three recessions, while CES did on two. When an adjusted-CPS employment figure (CPS employment minus agriculture, and private household workers) is used, the troughs from the two surveys were within two months of each other for five out of the eight recessions. Given the variability in turning points, it is inconclusive weather the one series is a predictor for the other.

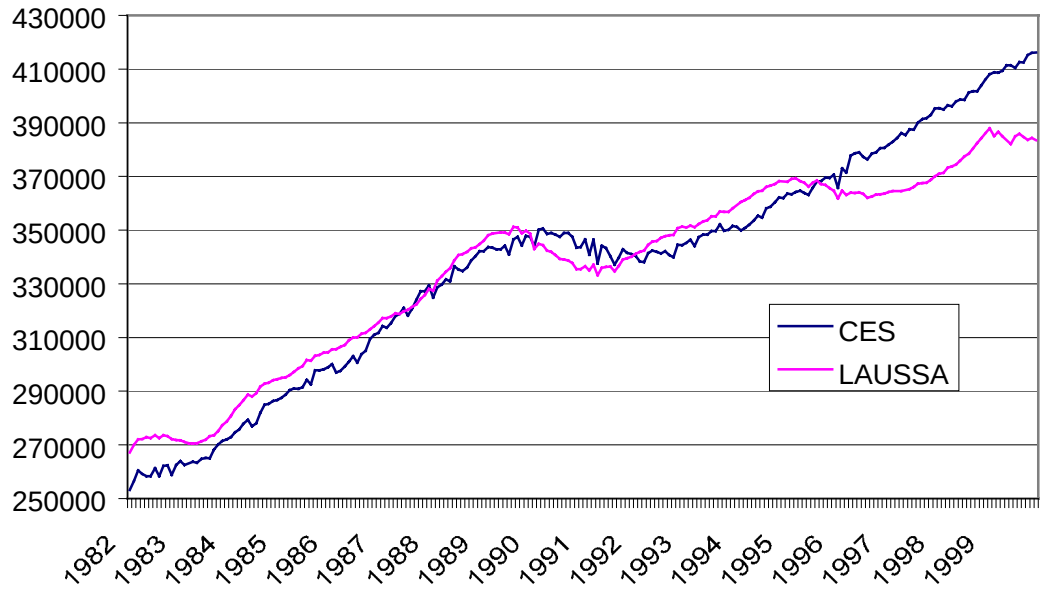
Since June 1997, the CES payroll survey has reported job growth at a fairly constant 2.5% rate on a year-over-year basis. The CPS household survey, however, indicates a growth rate of less than 1.5%. Considering the significant stress on the labor market at present, where the unemployment rate is at a thirty-year low, it is logical that employment growth will slow as firms struggle to fill available positions. This would support the slower CPS growth rate. Yet the CES employment growth continues its robust pace, seemingly unabated by the tightness of the labor market. This begs the question, which measure of employment is to be believed?

Research into this national employment gap has yet to provide a definitive answer. There are investigations into this phenomenon by the Bureau of Labor Statistics dating as far back as 1969. Several theories have been advanced for the national employment gap: population undercount, multiple job-holding, rise in self-employment, yet none have completely explained (or been accepted) as the single cause for the employment gap.

Delaware

Delaware's employment series are also diverging. For Delaware, the CES data exceeds the CPS data significantly. The chart below illustrates the relationship between the two series since 1985.

Chart 2: Delaware Employment: CES and LAUS Employment



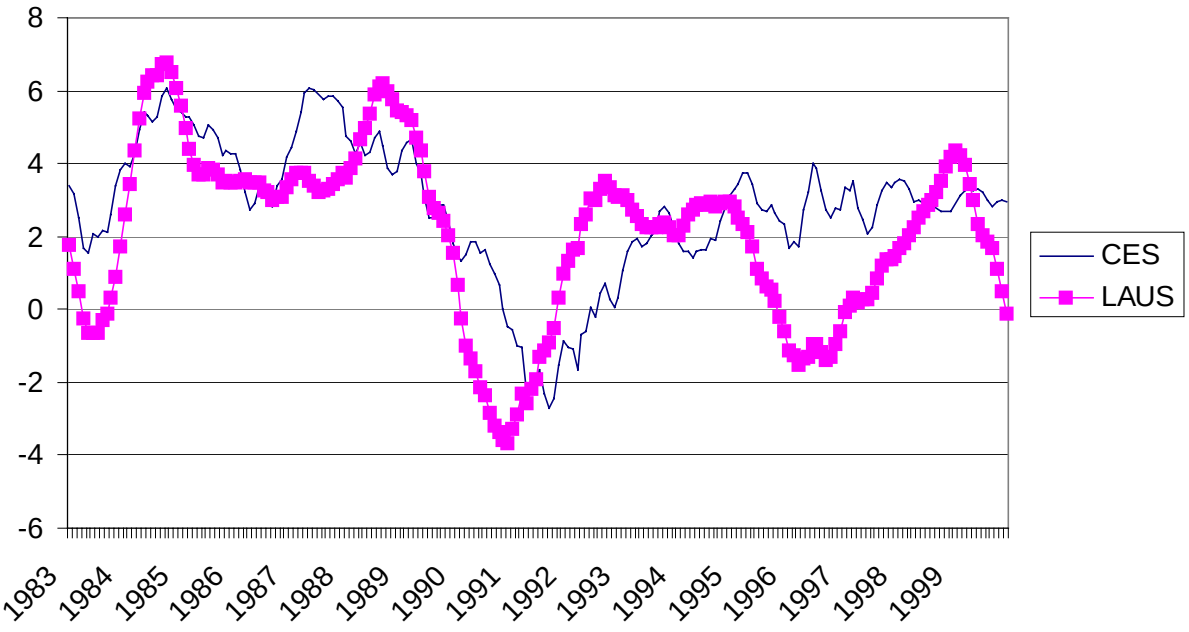
Source: Bureau of Labor Statistics
Note: CES is Current Establishment Survey employment measure. LAUSSA is Local Area Unemployment Statistics seasonally adjusted employment measure.

A number of observations can be made from the data. First, the employment counts for each survey can leapfrog each other. Second, the CPS data does exhibit some properties of a leading indicator. In 1989, the CPS foretold the slowdown in employment growth as total employment peaked midyear. It was several months before the CES reflected the downturn in employment that accompanied the 1990-1991 recession. The CPS was the first to turn out of its trough in the recovery, predating the CES recovery by several months. What is baffling is the breakdown in these relationships since 1995. The CPS fell in 1995, but was not followed by a fall in the CES data. Indeed, the CES data

suggests that employment can grow without limit, refuting the idea that the economy should slow as the labor market tightens.

Examining the year over year growth rates of the two series, there does appear to be a non-synchronous relationship between the two measures, see Chart 3. For instance, the period 1995 to 1999 saw CES growth average more than 2.5%, while the corresponding LAUS number was a mere 1.5%.

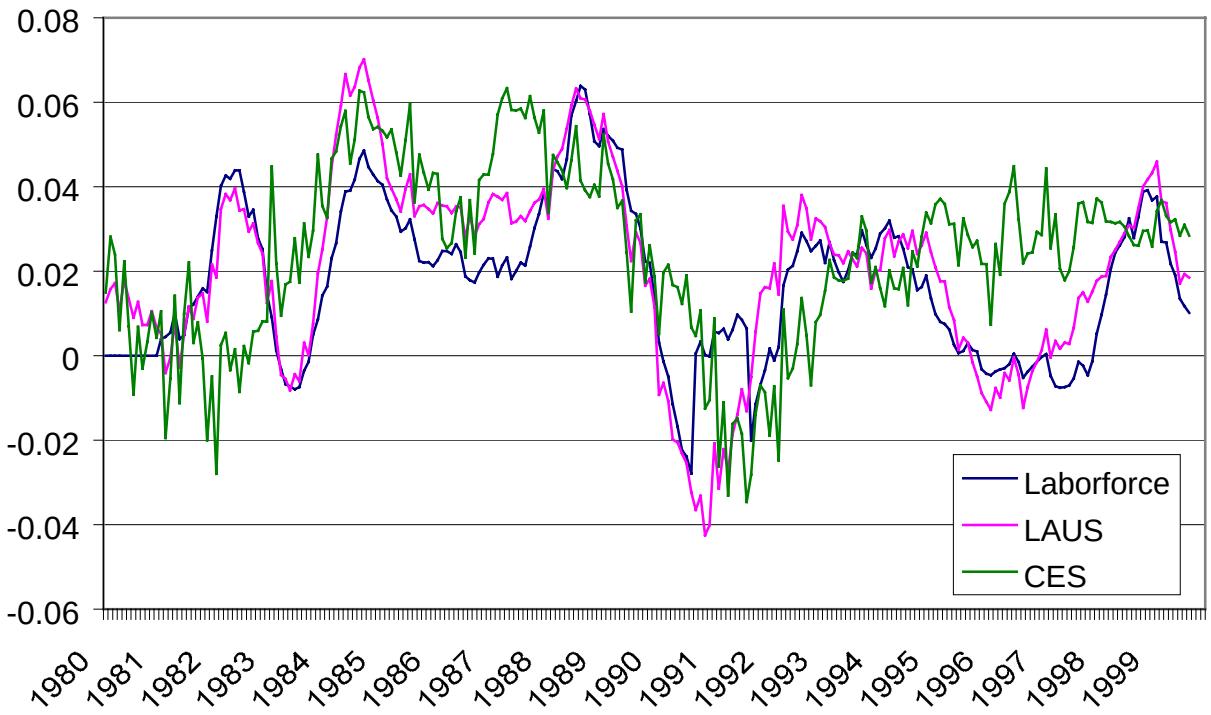
Chart 3: Delaware Employment Growth: % change year over year, three month moving average CES versus LAUS



Source: Bureau of Labor Statistics, Center for Applied Demography and Survey Research, University of Delaware

Plotting Delaware's labor force growth alongside the CES and LAUS employment growth, shed light on the disparate performance of the two series. The LAUS employment data tracks the growth of the labor force extremely closely. Moreover, during the period 1995-1998, when the employment gap widened most significantly, the labor force growth was flat. See Chart 4 below.

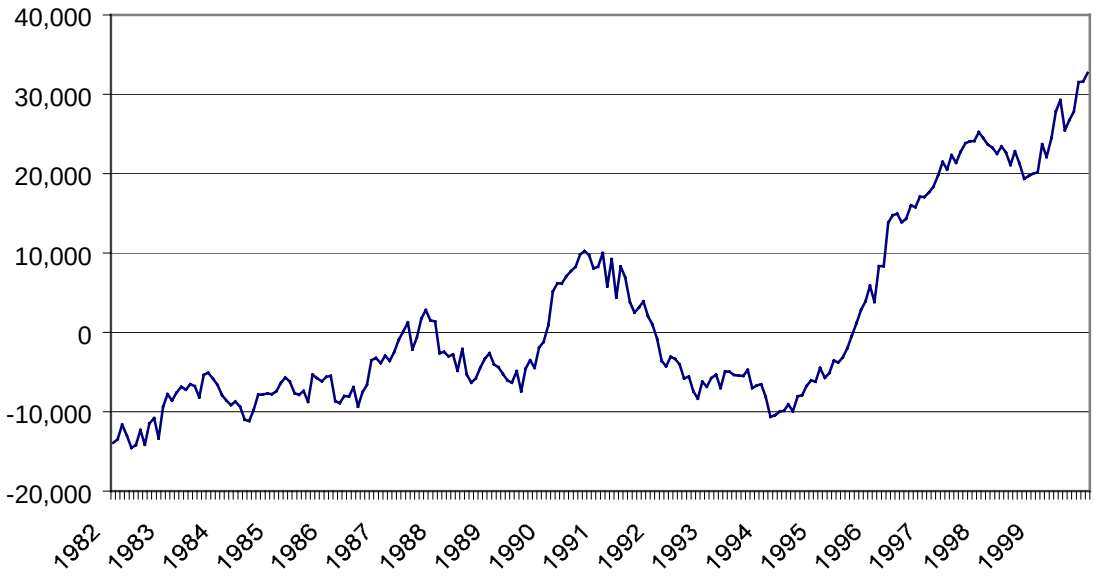
Chart 4: Delaware Labor force and Employment Growth, % change year ago



Source: Bureau of Labor Statistics, Center for Applied Demography and Survey Research, University of Delaware.

Chart 5 below highlights the size of the employment gap since 1982. The employment gap (CES employment minus LAUS employment) has ballooned from –5,000 in 1990 to greater than 30,000 at the end of 1999. The standard deviation of the employment gap is 11,906.52. Clearly then, the present gap of greater than 30,000 is well outside the normal bounds.

Chart 5: Payroll Employment Minus Household Employment



Source: Bureau of Labor Statistics, Center for Applied Demography and Survey Research, University of Delaware.

Before delving into possible explanations for the recent rise in the employment gap, it is useful to map out the fundamental differences in the two survey's methodologies.

Methodological differences between the series.

CES Methodology

- Measures employment by any worker (part time or full time) that worked part of the pay period including the 12th of the month.
- Samples 390,000 establishments across the country.
- In small states, about 1,500 establishments are surveyed.
- All establishments with greater than 250 employees are asked to respond.
- A "representative" sample of establishments with less than 250 employees is taken.
- CES does not include agriculture workers, but does include agricultural services.
- Adjustment bias is made for firm births and failures. BLS utilizes a model-based technique to estimate this part of the population. Model is based on historical total estimation differences between the survey and the corresponding universe counts, and thus does not yield a pure estimate of business birth employment for any given month.
- CES is benched to ES202 data every March. Employment estimates are adjusted annually to a complete count of jobs, called benchmarks, derived principally from tax reports which are submitted by employers who are covered under state unemployment insurance (UI) laws. The benchmark information is used to adjust the monthly estimates between the new benchmark and the preceding one and also to establish the level of employment for the new benchmark month. Thus, the benchmarking process establishes the level of employment, and the sample is used to measure the month-to-month changes in the level for the subsequent months.
- The UI claims data covers 98% of U.S. nonfarm employment, and supplemental sources are used to estimate the remaining 2%.
- What about people leaving one position and taking another within the pay period including the 12th of the month? Double counting would occur. So, with

increased turnover in a red-hot job market, this may lead to a slight over estimation in the CES figures.

- There is no lower age limit to CES employment measures.

CPS Methodology

- The CPS surveys households: approximately 50,000 nationally, 1,300 in Delaware.
- Employment is reported by place of residence, not by place of employment.
- Sampling techniques are used to move from the limited household sample to an estimate of statewide employment.
- The household survey reports on the number of workers, not the number of jobs. Therefore, multiple jobholders are only counted once in household employment survey, but more than once in establishment employment survey.
- Since the CPS does not account for multiple job holding, has multiple job holding increased in Delaware, and by enough to explain the divergence of the survey? Nationally, multiple job holding is 6% of employment, and has not increased significantly, which suggests Delaware is likely the same.
- CPS employment data is not published as a state total because of sampling issues. It is available on request, but is not published as a rule.
- Local Area Unemployment Data (LAUS) is published. The LAUS data for employment and unemployment is constructed in using estimating equations based on regression techniques. One regression is used for employment data, one for unemployment. The inputs for the regression are CPS data, CES data, and UI (though the latter is only included in the unemployment data regression).
- The labor force includes those persons aged 16 and over.

Reconciliation of the series

Each month the BLS performs a back-of-the-envelope calculation to reconcile the methodological differences between the series. The table below contains one such calculation. CPS employment is reduced by the number of agricultural workers, nonagricultural self-employed workers, private household workers, and unpaid absences, while adding back agricultural services.

For the period January 1994 to November 1999, the CES employment grew by 17.2 million, the adjusted-CPS grew by 13 million. Therefore, the employment gap widened over this period by more than 4 million workers.

Table 1: U.S. Reconciliation of CES and CPS

Item	Jan. 1994	Nov. 1999	Change
Payroll jobs (CES)	112,302	129,545	17,243
Household employment (CPS)	121,966	134,085	12,063
Less: Agriculture	3,302	3,304	2
Nonagricultural self- employed	9,000	8,672	-328
Nonagricultural unpaid family	143	112	-31
Private household workers	914	941	27
Unpaid absences	2,125	1,742	-383
Total deductions	15,484	14,771	-713
Plus: Agricultural services	686	915	229
Adjusted Household employment	107,168	120,229	13,005
Payroll Employment – Adjusted Household	5,134	9,316	4,238

Note: All numbers in thousands. Source: Bureau of Labor Statistics

Research has suggested that a better means to reconcile the two surveys is by comparing non-government payroll employment against private, nonagricultural household employment, excluding private household services. See table below.

Table 2: Delaware Payroll versus Household Employment, March 1999

Category	Employment
Payroll Survey	410,100
Private	355,300
Government	54,800
Household survey	379,695
Agriculture	11,352
Wage and salary	8,447
Self-employed	2,905
Unpaid family	0
Nonagriculture	368,343
Wage and salary	339,352
Government	43,233
Private, excluding domestic services	293,749
Domestic services	2,370
Self-employed	28,456
Unpaid family	535

Source: Bureau of Labor Statistics, Current Population Survey, Center for Applied Demography and Survey Research.

Comparing March, 1999 CPS data with First Quarter CES data reveals an employment gap of almost 60,000. In this case, adjusting the CPS has only served to widen the gap. The other differences in the measures must be addressed, therefore.

1. Multiple job holding.

Multiple job holding is one methodological difference between the CPS and the CES data. The CES would naturally report more jobs in the economy than the CPS, since the payroll survey counts the number of jobs in the economy while the household survey reports the number of people employed. Therefore, a person holding two jobs would count twice in the CES and only once on the CPS.

The question is then raised; can the recent dramatic rise in the employment gap be accounted for by increases multiple job holding?

Nationally and in Delaware, the answer is no. Multiple job holding is not insignificant in Delaware. Workers already employed in one position hold approximately 25,000 extra jobs. Certainly, this 25,000 would significantly close the employment gap between the two series. But for this to explain the recent widening of the employment gap there would have to be a large increase in multiple job holding in the latter half of the decade. This is not the case.

It might be argued that multiple job holding may increase with the expansion of an economy; the greater availability of jobs coaxing workers to take additional positions. However, the opposite appears to be true. Nationally, 6% of employment is due to multiple jobholders, and this has been the case both before and after 1994. Moreover, since 1997 multiple jobholders' share of total employment actually declined, while the employment gap continued to rise. This opposing direction of the national employment gap and national jobholding suggests that multiple jobholding by itself cannot account for the recent increase in the employment gap.

Further, it can be argued that times of robust expansion are more likely to decrease multiple jobholding rather than increase it. Most multiple jobholding will involve part

time work, which is often viewed as inferior to full time employment since it does not always carry the benefits associated with full time work. Therefore, as the expansion ages and more full time jobs are created, workers who had held multiple part time jobs because of an unavailability of full time work, now find themselves in a position to take full time employment. A decline in the level of multiple job holding in a period of strong expansion is plausible, and the case for multiple job holding being the key to the employment gap is refuted.

2. Age.

The monthly estimate of CPS employment is limited to persons age 16 and over. The CES has no lower age boundary. The CPS can provide information on the number of those working who are 15 year olds, but no employment information for those younger. The number of working 15 year olds did not change significantly over the period in Delaware. Given this, it seems unlikely that there has been a significant amount of change in workers aged 15 years or younger. Therefore, the theory that the different age limits between the measures is the cause of the recent growth in the employment gap can be dismissed.

3. Commuting.

Interstate commuting complicates the measurements of employment. Since the CES measures jobs by place of employment, and the CPS by place of residence, interstate commuting can be another source of divergence.

A person living in Delaware, but working in Pennsylvania, would be counted in Delaware's CPS employment measure but not in Delaware's CES employment. Equivalently, a person living in Pennsylvania and working in Delaware is counted in Pennsylvania's CPS employment measure, but Delaware's CES employment measure.

For Delaware, a state with sizeable borders with Maryland, Pennsylvania, and New Jersey, the rate of interstate commuting is significant. In 1990, 12,000 more people entered Delaware for work than left it (at that time, approximately 46,000 people were commuting into Delaware for work versus 34,000 commuting out of the state). Estimates put today's number of commuters at almost 31,000, with 51,000 expected by the year 2010.

Since commuting data from the 2000 Census will not be available until 2002, it is necessary to estimate the growth of net commuting during the decade, in order to discern if this can account for the widening of the employment gap.

Personal income tax filings can provide insight into the intra-census trends in commuting. Nonresident tax returns filed in Delaware can serve as a proxy for the number of out-of-state workers employed in Delaware. The number of nonresident tax filers will overstate the number of in-commuters since included in the nonresident returns are not only persons who worked in Delaware but reside in another state, but also non-Delaware residents who have non-wage or salary income from Delaware. The latter might include persons who hold an interest-bearing account in Delaware, which necessitates them to file a return.

Delaware residents claiming credit for taxes paid to another state can proxy for Delawareans working outside of the state. Again, there is an upward bias to the estimate since Delaware residents may pay taxes in other states for reasons other than wage and salary earnings.

Table 3, below, details the tax filing data and implied commuting trends.

Table 3: Proxies for Commuting

Tax Year	Nonresident Returns	Credit for Taxes Paid to Another State	Implied Commuting	S-Corp Filers	Adjusted Implied Commuting	Growth (%)
	(a)	(b)	(a)-(b)=(c)	(d)	(c)-(d)=(e)	
1990	66,976	28,493	38,483	993~	37,490	
1991	66,899	29,132	37,767	1,106~	36,661	-2.2
1992	63,606	32,063	31,543	1,233	30,310	-16.3
1993	67,914	33,290	34,624	1,907	32,717	7.9
1994	70,434	34,494*	35,940	2,073*	33,867	3.5
1995	74,348	35,698	38,650	2,239	36,411	7.5
1996	80,657	37,206	43,451	2,586	40,865	12.2
1997	85,249	38,467	46,782	2,775	44,007	7.7
1998	90,857	39,931	50,926	3,091	47,834	8.7
1999	96,834	41,451	55,383	3,444	51,939	8.6

Source: Delaware Division of Revenue
Note: Implied Commuting equals the difference between the number of nonresident income tax returns filed in Delaware and the number of Delaware residents claiming credit for taxes paid to another state. S-Corp Filers is the number of nonresident persons filing S-Corporation returns in Delaware. These returns are required for distributions received by nonresidents from Delaware entities, but do not reflect jobs held in Delaware.
The shaded years are projected filers based on the three-year average of historic values.
* Data not available. Estimate derived from average 1993 and 1995 data.
~ Data not available. Estimate derived from average growth of last two observations.

Net commuting, as implied by the 1990 tax filings, is 37,490, approximately 25,000 greater than the 1990 Census estimate. The majority of this difference may represent those non-Delawareans filing in Delaware for non-wage/non-salary income. Assuming that this figure remains relatively unchanged over the decade, then subtracting 25,000 from the implied net commuting from the tax returns, will provide a reasonable proxy (albeit on the upside) for Delaware's net-commuting.

Table 4: Adjusting LAUS for methodological differences with CES

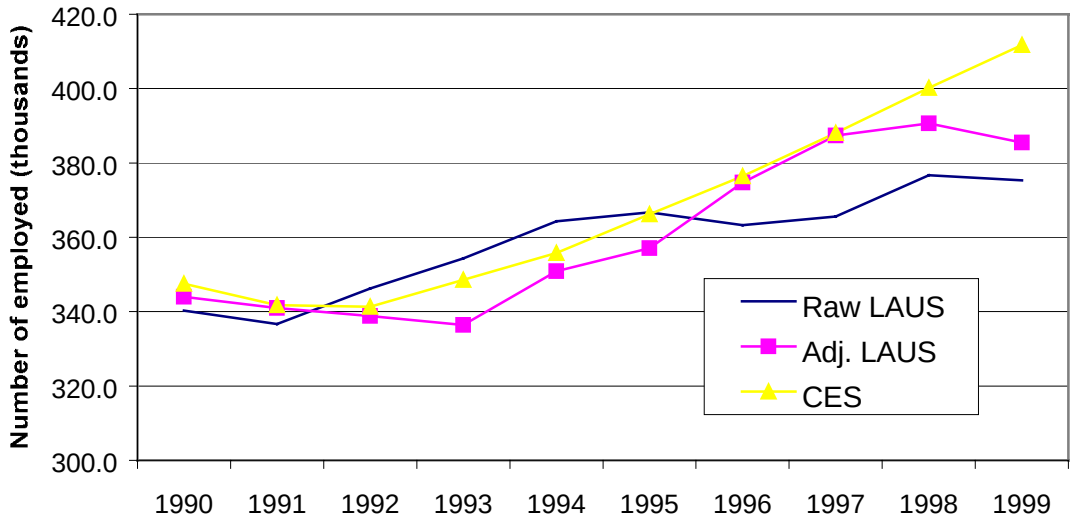
	Raw LAUS	Agriculture	Self employed	Multiple Job Holding	Private Domestic Services	Aged 15 workers	Agricultural services	Commuting	Adj. LAUS
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1990	340.3	6.6	29.4	*26.0*	1.8	1.1	2	13	344.0
1991	336.7	6.9	25.6	*26.0*	4.0	*1.0*	2	12	341.0
1992	346.2	9.0	30.9	*26.0*	1.7	*1.0*	1.9	5.3	338.8
1993	354.3	12.2	40.0	*26.0*	2.6	*1.0*	2	7.8	336.4
1994	364.3	9.1	38.8	*26.0*	3.7	1.0	2.2	*8.9*	350.9
1995	366.8	12.2	35.7	*26.0*	2.4	0.9	2.4	11.4	357.1
1996	363.3	8.9	23.6	*26.0*	1.2	0.7	2.5	15.9	374.7
1997	365.6	3.4	23.5	26.5	1.6	2.0	2.8	19.0	387.4
1998	376.7	7.7	28.8	26.1	2.2	0.8	2.9	22.8	390.6
1999	375.3	11.4	31.4	24.6	2.4	0.6	3	27.0	385.5

Source: Bureau of Labor Statistics, Center for Applied Demography and Survey Research, University of Delaware.
Note: All numbers are in thousands.
Adj. LAUS is the LAUS employment data adjusted for the methodological differences with the CES. (i)= (a)-(b)-(c)+(d)-(e)+(f)+(g)+(h)
Agricultural services employment is an estimate.

Table 4 above, computes an adjusted LAUS series, taking into account its methodological differences with the CES.

Plotting the adjusted LAUS data against the CES and raw LAUS measures reveals that the employment gaps is narrower, see Chart 6 below. Further, the stagnant period of LAUS employment growth that exits 1995-1998, does not appear in the adjusted LAUS data. Alarmingly, the gap widens in 1999. The pace of growth in the CES contrasts with a decline in LAUS employment.

Chart 6: Delaware Employment: Raw LAUS, Adjusted LAUS, CES



Source: Bureau of Labor Statistics, Center for Applied Demography and Survey Research, University of Delaware.
Note: Adj. LAUS = Raw LAUS – Agricultural employment – Self Employed + Multiple job holding – Private domestic services + Age 15 workers + Agricultural services + Estimated Net Commuters.

Table 5 below highlights the differences between the CES and adjusted LAUS series. Initially, the gap fluctuates between 2,000 and 5,000 jobs; equivalent to a one percent point disparity. In 1993, the gap widens considerably, thanks to a sharp fall in net commuting implied by the tax revenue information. This fall could be the belated effects of the 1991-2 recession working their way through the tax filing patterns.

At the end of the decade, the gap again widens significantly. In 1999, a 7% employment gap exists, equivalent to 28,000 workers. So, while the adjustments to the LAUS narrows the gap to within 3% in most years, but at the tail end of the decade, the gap is still great.

Table 5: Delaware Employment: Comparison of Measures.

	Raw LAUS	Adj. LAUS	CES	Difference	Difference (%)
	(a)	(b)	(c)	(b)-(c)=(d)	(d)/(c)
1990	340.3	344.0	347.6	-4	-1
1991	336.7	341.0	341.8	-1	0
1992	346.2	338.8	341.3	-2	-1
1993	354.3	336.4	348.6	-12	-3
1994	364.3	350.9	355.7	-5	-1
1995	366.8	357.1	366.2	-9	-2
1996	363.3	374.7	376.4	-2	0
1997	365.6	387.4	388.1	-1	0
1998	376.7	390.6	400.2	-10	-2
1999	375.3	385.5	411.7	-26	-6

Source: Bureau of Labor Statistics, Center for Applied Demography and Survey Research, University of Delaware.
Note: All figures in thousands, unless otherwise stated.
Adj. LAUS = Raw LAUS – Agricultural employment – Self Employed – Age 15 workers + Estimated Net Commuters.

The relative employment performance of Delaware's counties and their neighbors corroborates the increased commuting trends. See table 6 below:

In the period 1995-1999, New Castle County experienced the fastest employment growth of the all counties it has significant commutation ties with. Chester County is a close second, but the next fastest growing county reports only half the job gains of New Castle County. Given the robust performance of New Castle County, which comprises two-thirds of the state's total employment, it is reasonable to expect this to draw out of state workers.

Table 6: Relative County Employment Growth

	Employment Growth (thousands)		
	1990-94	1995-1999	1990-1999
Total Employment			
New Castle County DE	-0.15	30.77	36.94
Chester County PA	8.6	25.29	37.61
Gloucester County NJ	2.61	14.26	20.9
Delaware County PA	-1.5	14.02	13.17
Sussex County DE	4.8	10.19	17.51
Wicomico County MD	0.76	8.91	12.21
Cecil County MD	2.16	6.8	9.63
Salem County NJ	-0.3	5.03	4
Kent County DE	5.47	4.21	11.49
Worcester County MD	1.14	3.79	5.5
Philadelphia County PA	-59.32	3.25	-67.51

Source: Bureau of Labor Statistics, Center for Applied Demography and Survey Research, University of Delaware.

Further, New Castle County's unemployment rate for the period 1995-1999 fell to its record low. Only Chester County has an unemployment rate lower than New Castle County's, see Table 7 below. Indeed, Delaware's three counties boast lower unemployment rates than their neighboring counties, save Chester County. In some cases the unemployment differential is as great as 100%. Again this is a natural draw for out of state workers to take Delaware jobs. Moreover, Delaware's torrid growth in New Castle County during the period 1995-1999 coincides with the widening of the employment gap.

Table 7: Relative County Unemployment Rates

	Unemployment Rate (%)		
	1990-94	1995-1999	1990-1999
Chester County PA	4.412	3.138	3.775
New Castle County DE	5.496	4.024	4.76
Sussex County DE	4.766	4.146	4.456
Kent County DE	5.67	4.398	5.034
Delaware County PA	5.718	4.486	5.102
Gloucester County NJ	7.178	5.342	6.26
Wicomico County MD	7.336	5.69	6.513
Salem County NJ	6.936	5.788	6.362
Philadelphia County PA	8.406	6.744	7.575
Cecil County MD	9.748	7.422	8.585
Worcester County MD	10.024	9.842	9.933

Source: Bureau of Labor Statistics, Center for Applied Demography and Survey Research, University of Delaware.

This economic data bolster the claims that net commuting has increased significantly in the second half of the nineties, and help justify the estimated net commuting rates.

4. Household Data and the Undercount of the U.S. Working Age Population

Recent research suggests that the employment gap is caused by the CPS dependence on census data. The CPS uses the decennial census data to estimate the size of the workforce, which in turn is used to estimate the employment using the sample survey. An undercount of the population in the decennial would feed into the labor force estimates that the CPS uses as an input.

The inclusion of the census data presents a number of problems. First, the CPS is rendered sensitive to population miscounts in the population data. Second, as each decade ages, increasing the time since the last census, the greater the miscount's impact on the CPS can become.

It is estimated that the 1990 census did provide an undercount of the population. Nationally, 4 million persons were overlooked in the census. This is equivalent to 1.6% of the population.

Further, the population undercount was not indiscriminate. Minority groups such as black and Hispanic were overlooked more than the white population-- the miscount was as large as 4% and 5% for black and Hispanic groups respectively. Since these groups are particularly sensitive to the business cycle, because their employment is concentrated in highly cyclical industries such as manufacturing and construction, these groups may be experiencing rapid employment growth during the nation's record-breaking expansion. However, since the CPS employment is pegged to the decennial count, the employment growth over these groups may be underrepresented, and may be contributing to the widening employment gap.

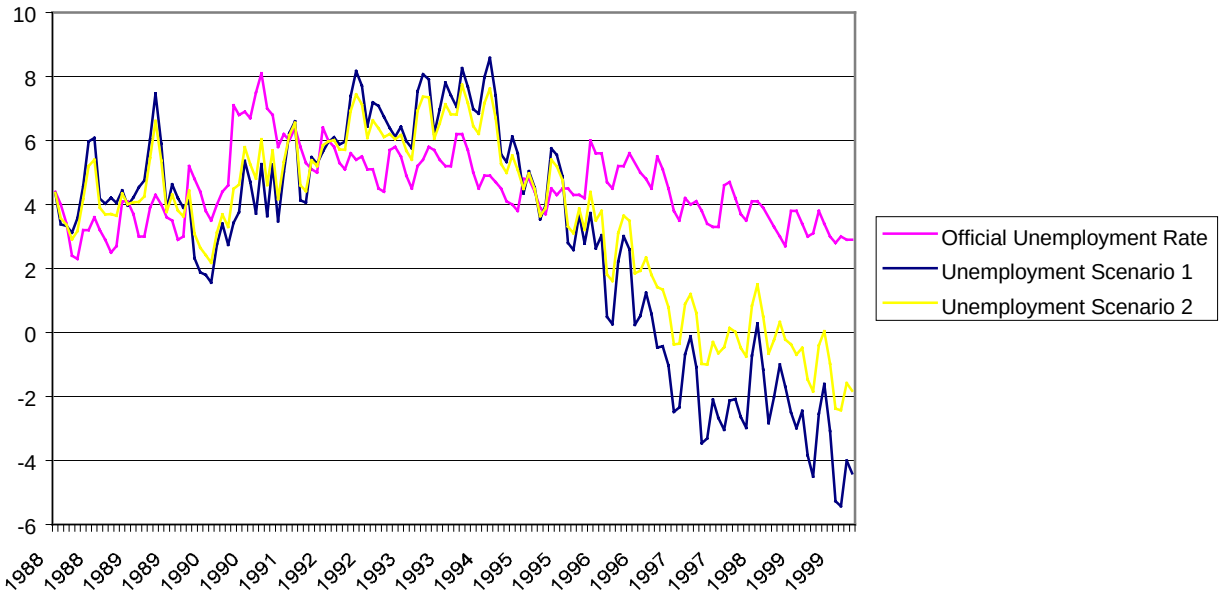
In Delaware, the census count in 1990 was not significantly inaccurate. The original 1990 count placed the total population at 666,168. The estimated undercount for Delaware is 12,217, or 1.8% of the population. While larger than the national undercount in percentage terms, the undercount is within the standard deviation of the series. This suggests that a population miscount is not responsible for Delaware's employment gap.

Implications of the Employment Gap

Aside from producing confusing employment reports of simultaneous increases in jobs and in unemployment, the large gap between the employment measures may affect other key statistics as well. The unemployment rate is one such statistic.

Delaware's official unemployment is drawn from the CPS data. The number of unemployed and the labor force are compared to derive an unemployment rate. The number of unemployed is related to the number of employed reported in the CPS survey. The effect of the employment gap on unemployment can be measured by calculating the unemployment rate using the higher employment growth rate reported by the payroll survey.

Chart 7: Implications for Delaware's Unemployment Rate



Source: Bureau of Labor Statistics
Unemployment Scenario 1: the number of unemployed persons from the household survey is reduced the employment gap between the payroll and household survey, while the size of the labor force is left at its reported level.
Unemployment Scenario 2: the level of unemployment us calculated by subtracting two-thirds of the employment gap from household unemployment and increasing the labor force by the total employment gap.

Logically, lower unemployment corresponds with higher employment levels, and therefore one would expect a lower unemployment rate from using the payroll survey than the official estimates. To estimate the effect of the payroll employment growth, one needs to know the prior status of the additional employed workers. This information cannot be determined, necessitating the use of assumptions.

If it were assumed that all of the additional employed workers are drawn from the ranks of the unemployed, this would maximize the effect of the payroll growth on the unemployment rate (see scenario 1, in Chart 7 above). Under this scenario, the unemployment rate plummets from its 1994 peak to the present. Moreover, the implied unemployment rate turns negative in 1996, which is clearly impossible.

This is an extreme case, however. A more reasonable assumption is that the additional employed workers are drawn from a mix of both the ranks of the unemployed and from outside the current labor force. In fact, one-third of the net employment gains (as measured in the CPS) in the 1990s represent workers who were previously counted out of the labor force-neither unemployed (looking for work) nor employed (Schweitzer and Ransom, 1999). Applying this proportion to the employment gap yields scenario 2 above. Again, the unemployment rate plummets after 1994, and also turns negative, but not nearly so greatly as under scenario 1.

Official unemployment rates are at historically low levels. Applying this scenario demonstrates how lower they could be if the payroll employment gains are correct.

Observations

- Delaware's employment gap is substantial indeed. Swelling to more that 30,000, at year's end 1999, the disparity between the payroll and household measures of employment is greater than it has ever been.
- Multiple job holding, or a dramatic change in the number of self-employed, cannot explain the significant widening of the gap.
- Nor has there been a significant enough rise in employment for the under sixteen's to explain the employment gap.
- What if agricultural workers or the self-employed also held other jobs? This would make stripping out agricultural workers or the self-employed from the CPS understate the household employment numbers. The CPS provides employment by major industry, but no data is available on secondary jobs.
- Delaware is not the only state that observes divergent employment data. Fifteen other states including Virginia, West Virginia, Texas, and Massachusetts, have a similar data anomaly. The BLS reports that there is no common link between these states: they are different sizes, and different economies. Virginia considered commuting as a contributing deciding factor, but ruled out this out as the estimated commuting patterns suggest that as many workers leave VA for work as enter, leaving the net effect as zero.
- Increased commuting patterns are the largest factor contributing to the gap. Tax return data suggest rapid growth in the balance of net commuter to Delaware.
- Adjusting the LAUS data for estimated commuting and the methodological differences between the CES and LAUS, closes the employment gap significantly. Until 1999, no employment gap exceeded 4% of CES employment.
- Given Delaware's geography- that of sharing significant borders with other states, and being a small state in which interstate commuters can manageably reach work while maintaining a residence outside of the state- in times of rapid expansion, Delaware will tend workers from other states. Nevertheless, the present estimates of net commuting are insufficient to completely close the employment gap in 1998 and 1999. If the 2000 Census were to reveal even greater growth of net

commuting, this would help to explain the divergent trends of the employment measures. Net commuting would have to be closer to 60,000 to bring the two series together.

It is the finding of this paper that the employment gap between the payroll and household surveys cannot be explained away completely by the adjusting for methodological and measurement differences. Further investigation into the estimating techniques of the two surveys is warranted.

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