The Disappearing January Blip and Other State Employment Mysteries

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Introduction

Often economic variables are judged by how well they perform *ex post*—ignoring the significant revisions that have occurred in the data since their original release. The *ex post* reliability of the data, however, is of little use to the analyst who must depend upon preliminary estimates of the series to monitor current conditions and to make forecasts.

In recent years, there has been a growing interest in examining whether preliminary macroeconomic data can be improved to reduce the size of revisions.[1] Data revisions can affect empirical research, current analysis and forecasting. For example, policymakers at the local, state and national levels must estimate tax revenue for the coming year to enact an appropriate budget. Data that show a strong economy but which later are revised to show a much weaker economy can send officials scrambling to find alternative revenue sources and/or spending cuts. Also, since legislators are concerned about the regions they represent, regional economic data can have important political implications both at the regional and national levels.

While a multitude of timely economic data exists at the national level, data at the regional level are more limited. The time series most widely used to measure and monitor regional economic performance is nonfarm payroll employment.[2] These data are produced monthly by state agencies, in cooperation with the Bureau of Labor Statistics (BLS), under the Current Employment Statistics (CES) program.

Each year, with the release of January data, the source agencies revise state

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[1]For example see Neumark and Wascher (1991), Mankiw and Shapiro (1986), and Koenig and Emery(1991, 1994).

[2]For brevity's sake, we will subseqently use the simpler expression "employment" to refer to the more precise "nonfarm payroll employment".

employment from April two-years earlier to March of the previous year to adjust the data to conform to population estimates. Although the average annual revision in the CES data for most states[3] is quite small (see last column of Table 1), the revisions in the *monthly* changes often are quite large. The largest revision across states is in the change from December to January. As shown in the table, all states except California show a large negative revision in the December to January change, with an average revision of –0.6 percentage points across all states. The January revision is the biggest of the monthly revisions in 31 states and is larger than the average revision across months in every state.

The large revision in January means that the most current estimate of the December/January change (i.e., the estimate that has not yet been subject to annual revision) is typically smaller than the historical change. In the seasonally adjusted data this is manifested as a large jump in the most current January estimate. This large spike is usually followed by a series of three to five monthly declines. The January jump is revised away when the annual revision takes place and then another spike typically occurs with the release of new preliminary data for the subsequent January.

The January spike is apparent when looking at the sum of seasonally adjusted state data (Chart 1). As shown in the chart, the view of the economy from the perspective of the state data is quite different from that of the national data. In mid-1993, many state analysts may have thought that their economies had had an earlier surge but had since begun to turn down, yet the national series showed continued gradual improvement.

In searching for the cause of the large revisions to the monthly estimates, we find that

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[3]For convenience, we refer to Washington, D.C. as a state.

the seasonal pattern is different in the two sources of data that the BLS uses to construct the regional CES employment series. The bulk of the CES employment series is based on reports filed by firms covered by unemployment insurance, while the most recent 10 to 22 months of data are based on a survey of business establishments. The difference in seasonal patterns in the two data sources is the reason for the recurring January jump found in many of the seasonally adjusted state CES series.[4]

For each state we test whether the seasonal pattern is different in the two sources. We find that the seasonal patterns in the two sources were statistically different in 41 states. We then calculate appropriate seasonal factors for each of these states. After applying the appropriate seasonal factors to the two separate parts to the CES series, employment in the 41 states appears much smoother and does not exhibit a January jump. Chart 2 shows that after using this two-step seasonal adjustment approach, the sum-of-state data shows a much smoother pattern[5] and the direction of change is much more similar to the employment data

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[4]The reason that the UI and ES series have different seasonal patterns is not known with any degree of certainty. For the purposes of this study, the reason does not matter. However, we can speculate that the seasonal decline in employment that occurs each January is underestimated by the Establishment Survey because of its well known underestimation of employment growth due to new firm formation. To the extent that the holiday season pattern of increasing fourth quarter employment followed by a significant January decline reflects firms coming into and going out of existence, then the pattern would be accurately captured in the UI data but not in the ES data.

Additionally, if there is under-sampling of small firms in the ES which is not corrected with sampling weights and a disproportionate amount of the holiday season "action" happens in small firms, then the ES will again underestimate the true seasonal pattern.

[5]A well-known measure of smoothness is the sum of squares of the first difference of a series. That is:

$$S=\sum_{t}(X_t-X_{t-1})^2$$

where X_t is the series in question. The smaller is S, the smoother is the series X_t. According to this measure, the uncorrected sum-of-state series is more than three times as volatile as the corrected version.

published for the nation.[6]

The Two Sources of the CES—Unemployment Insurance Records and the Establishment Survey.

State CES data are constructed by state employment agencies in cooperation with the regional offices of the BLS.[7] The state employment data are constructed independently of the national data.[8]

The Establishment Survey (ES) is a monthly survey of more than 370,000 business establishments nationwide that provides employment data for the nation, states and major metropolitan areas. The national sample represents about 37 percent of all nonagricultural employees. Survey coverage varies by region. For example, 25,500 Texas firms are surveyed, representing about 40 percent of Texas employment.

A more comprehensive picture of the employment situation is given by tax reports filed by employers who are covered under state unemployment insurance (UI) laws. At the national level, about 99 percent of employees on private nonagricultural payrolls are covered by this series. The UI data are reported quarterly, with data for each month in the quarter,

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[6]Much has been made of the divergence of sum-of-state and national employment. Some analysts have gone so far as to suggest that a downward revision in the national data is looming because of the slower growth in the sum-of-state data. Our investigation shows that such a conclusion is unwarranted. Preliminary national data is a much better predictor of final national data than is sum-of-state data. This may be due primarily to the more aggressive bias adjustment done at the national level that at the state level. This adjustment is done to account for the Establishment Survey's well-known underestimation of employment growth due to failure to account for new firm formation.

[7]For more information about the Current Employment Statistics program, see U.S. Labor Department of Labor (1992).

[8]State data are released near the end of the month following the reporting month. The amount of industry detail varies by state, with the larger states generally having greater information. For the purposes of this paper, we are concerned only with total employment for each state. For Texas, however, we have applied the procedure described here at the finest level of industry detail possible. See Berger and Phillips (1993).

and are available only with a considerable lag compared to the ES data.

The regional and national offices of the BLS annually adjust the CES data to the UI data. This process is called benchmarking. The regional offices benchmark independently of the national office. The state benchmarks are released in late February or early March and cover the period from April two-years prior, to March of the previous year. The series is then extended forward using employment growth as measured by the ES. The national series is also benchmarked to the UI data and is released in early June.

Each month, when a new month of CES data is released, the previous month is revised—creating a second estimate for that month. In this study we concentrate on the revision from the second estimate of the CES to the benchmarked value. For the purposes of this paper, we are not concerned with the revision from the first to the second estimate. When the benchmark data are released, in addition to revising the post-benchmark data to the new benchmark level, the BLS can also revise the monthly changes in the post-benchmark data to correct errors or incorporate new information. We ignore this intermediate revision that we call the third estimate of the CES data.[9]

While the national and regional employment estimates are all benchmarked to the UI data, the procedure used differs. The national data incorporate only the March to March change in the UI data. To estimate the intervening months, the BLS uses a procedure they call the "wedge-back" to spread the March revision evenly across the previous 12 months. This procedure ignores the information contained in the individual monthly changes in the UI

[9]As defined here, January, February and March have no third estimate, going directly from the second estimate to the benchmarked value. December, on the other hand, gets a combined second and third estimate when the January data is released.

data over the period and retains the seasonal pattern inherent in the ES. This explains why the problem we are investigating does not appear in the national data.

The regional offices of the BLS employ a different method in benchmarking the state-level data than that used at the national level. The regional offices of the BLS incorporate *all* of the monthly changes in the UI data. Therefore, if the seasonal pattern is different in the ES than in the UI data, then the state-level CES employment series will exhibit two different seasonal patterns. The bulk of the CES series will have the UI seasonal pattern but the post-benchmarked part of the data (the most current 10 to 22 months of data) will have the ES seasonal pattern. While the X-11 seasonal adjustment procedure can account for gradually changing seasonal patterns, it cannot handle abrupt changes such as this. Seasonally adjusting CES employment in the normal fashion is clearly inappropriate in such a case.

Comparing the Seasonal Patterns of Source Data

To compare the seasonal patterns of the two source series in the CES, we first need to construct a continuous time series of ES data. Since the published CES data always embody a combination if UI-related and ES-related data, no continuous time series of the ES is readily available. For each state we constructed a continuous ES series based on the reported changes in the second estimate of nonbenchmarked CES data. These data were taken from the BLS publication, *State and Metropolitan Area Employment and Unemployment* from January 1984 to December 1992. A series was constructed for each state in the following manner:

$$RTSEMP_t = BASE184 \times \prod_{t=1}^{T} \left(\frac{ESEMP_t}{ESEMP_{t-1}}\right)$$

where *BASE184* is the originally-reported second estimate of employment for January 1984 and $ESEMP_t$ is the originally-reported second estimate of employment in period t.[10] The time subscript t is equal to zero in January 1984 and continues to December 1992. The ratio of second estimates was used to extend the series forward in order to avoid level shifts that would occur if third estimates were used.[11]

We then test whether seasonal patterns in the ES data were statistically different from the UI-based data for each state. We do this by regressing each state employment series on individual month dummies, using data from January 1984 to June 1992.[12] For each state we first test whether the estimated seasonal dummies are jointly different in the ES data than in the UI data. The joint F-test results, shown in the first column of table 2, show that, at the 10 percent level of significance, the two parts of the CES series have different seasonal patterns in 30 states.[13]

Because there is a particularly pronounced January blip in many states, we also perform a separate test on the January seasonal dummy for each state. The t-test results (column 3 of table 2) show that the January dummy coefficient differs in the two parts of the CES series in 39 states. Of the 21 states not significantly different according to the F-test, 11

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[10]The only exception is December. Since December has no second estimate, for the December/November ratio the December first estimate was used.

[11]Note that for the purpose of estimating ES-appropriate seasonal factors, the month chosen as the base in constructing the ES series does not matter.

[12]Officially, state data are benchmarked through March 1992. However, state employment agencies incorporated enough information from the second quarter UI data during the last benchmarking process that the data are effectively benchmarked through June 1992.

[13]We accept a somewhat greater risk of type 1 error than is customary. When the series have the same seasonal pattern, estimating separate seasonal factors introduces no bias.

were significantly different using the January test. We conclude that in 41 states there is a break in the seasonal pattern in the CES employment series.

For each of the 41 states whose seasonal patterns differ in the UI-based and the ES-based employment data, we estimate seasonal factors appropriate to each series. The seasonal adjustment procedure used is the X-11 method developed by the U.S. Department of Commerce.

In seasonally adjusting the CES data for each state, we apply the UI-based seasonal factors through June 1992.[14] To seasonally adjust the data since June 1992, we use changes in the ES seasonal factors from July forward to extend the UI seasonal factors from June. This method is used to avoid a level shift in the seasonal factors, similarly to the construction of the real-time ES data described previously.

More formally, we linked the ES seasonal factors to the UI seasonal factors using the following simple procedure:

$$ADSFES_t = SFUI692 \times \prod_{t=1}^{T} \left(\frac{SFES_t}{SFES_{t-1}}\right)$$

where $ADSFES_t$ is the adjusted seasonal factor for the ES-based part of the CES series, $SFES_t$ is the seasonal factor derived from the real-time ES employment series, and *SFUI692* is the seasonal factor for the UI-based employment data at the end of the (unofficial) benchmark period in June 1992. The time subscript t is equal to zero in June 1992 and continues to

[14] See footnote 12.

December 1993.

For most states and regions the two-step seasonal adjustment method produces a pattern of growth that is less volatile since mid-1992 than if the standard seasonal adjustment procedure was used. This is evident in Charts 3 to 11, which plot CES employment by Census geographic division using both the standard seasonal adjustment and the two-step method we propose. Table 3 demonstrates the impact of the two-step seasonal adjustment method on first quarter 1993 growth by state. As shown in the table, the seasonal adjustment method used can have a large impact on measured employment growth. On a sum-of-state basis, the two-step method shows employment growth at a 0.93 percent annual rate in the first quarter 1993, versus 2.59 percent using the standard seasonal adjustment method.

Summary and Conclusions

In recent years economists have begun to take a closer look at revisions to macroeconomic time series. This research has highlighted how revisions may substantially reduce the usefulness of preliminary data for empirical analysis and forecasting. Data revisions at the regional level can be particularly important, since the sources of data are limited and analysts often must rely on just a few key indicators.

This study assesses the annual revisions in a key regional indicator—nonfarm payroll employment from the Current Employment Statistics program produced by the Bureau of Labor Statistics. We found that the month-to-month revisions for many states were quite large. In particular, the December to January employment change was consistently revised to show a larger decline than originally reported. This pattern of error results in a January blip in the seasonally adjusted employment data in the current year.

For 41 states we find that there is a different seasonal pattern in the two sources of data that the BLS uses to create the CES series. For these states we use a two-step seasonal adjustment technique that first estimates separate seasonal factors for the two different data sources. The two series of seasonal factors are then linked together and used to seasonally adjust the CES series. This two-step method creates a much smoother employment series and eliminates the January blip often found in the state employment data. The procedure developed here should reduce the size of the annual revisions to seasonally adjusted state CES data, and should provide a more useful indicator of current economic conditions in most states.

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Table 1.
Average Percentage Point Revision to Nonfarm Payroll Employment, 1985-1992

State	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Avg.
Alabama	-0.223	0.153	0.471	0.184	0.154	0.219	0.093	0.190	0.189	-0.123	0.014	0.014	0.111
Alaska	-0.763	0.443	0.370	0.194	0.475	0.375	0.005	0.284	-0.254	-0.638	-0.112	0.459	0.070
Arizona	-0.642	0.246	0.078	0.330	0.231	0.159	-0.557	0.296	0.218	-0.002	0.004	0.194	0.046
Arkansas	-0.573	0.060	0.338	0.206	0.268	0.296	-0.366	0.175	-0.083	-0.248	0.055	-0.026	0.009
California	0.158	0.053	0.034	0.076	0.092	0.084	-0.039	0.026	0.002	0.038	-0.018	0.004	0.043
Colorado	-0.761	0.105	0.327	0.093	0.110	0.628	-0.011	0.190	-0.079	-0.484	-0.034	0.384	0.039
Connecticut	-0.547	0.055	0.164	0.094	0.181	-0.117	-0.254	0.026	0.269	-0.105	-0.067	0.019	-0.023
Delaware	-0.750	0.153	0.262	0.618	0.390	0.554	-0.220	0.352	0.075	-0.642	0.114	-0.046	0.072
D.C.	-0.207	0.130	0.006	-0.147	0.266	0.021	-0.111	0.252	0.225	-0.375	0.005	-0.006	0.005
Florida	-0.681	0.213	0.336	-0.185	0.221	0.192	-0.478	0.308	0.074	-0.171	0.033	0.191	0.004
Georgia	-0.721	0.191	0.373	0.150	0.332	0.292	-0.129	0.248	0.241	-0.349	0.143	0.133	0.075
Hawaii	-0.333	0.213	0.351	-0.112	0.285	0.206	-0.032	0.264	0.028	0.158	0.278	0.194	0.125
Idaho	-0.876	0.355	0.471	0.360	0.304	0.441	0.278	0.094	-0.166	-0.482	-0.158	0.074	0.058
Illinois	-0.513	-0.001	0.221	0.135	0.170	0.315	-0.152	0.094	-0.022	-0.260	0.094	0.213	0.025
Indiana	-0.246	-0.112	0.226	0.080	0.064	0.110	-0.514	0.235	0.186	-0.180	-0.083	0.058	-0.015
Iowa	-0.955	0.051	0.315	0.685	0.349	0.339	-0.303	0.340	0.250	-0.518	0.064	0.320	0.078
Kansas	-0.567	0.002	0.213	0.363	0.186	0.107	-0.936	0.096	0.728	-0.193	-0.005	0.230	0.019
Kentucky	-0.840	-0.063	0.411	0.800	0.331	-0.244	-0.214	0.506	0.426	-0.331	0.105	0.039	0.077
Louisiana	-0.862	0.092	0.355	0.714	0.614	0.055	-0.747	0.387	0.052	-0.106	-0.053	0.188	0.057
Maine	-0.630	0.080	0.219	0.584	0.378	0.541	-0.186	-0.087	0.104	0.066	-0.241	-0.061	0.064
Maryland	-0.638	0.160	0.317	0.260	0.284	0.430	-0.248	0.450	0.136	-0.617	0.167	0.225	0.077
Massachusetts	-0.636	0.050	0.083	0.047	0.178	0.349	-0.098	0.046	0.049	-0.357	0.058	0.149	-0.007
Michigan	-0.367	0.121	0.196	0.227	0.151	0.237	0.229	0.115	0.098	0.039	0.036	0.051	0.095
Minnesota	-0.232	0.074	0.128	0.032	0.037	0.021	-0.171	-0.012	-0.086	-0.070	0.132	0.174	0.002
Mississippi	-0.373	0.000	0.274	0.243	0.347	0.305	-0.187	0.260	0.049	-0.249	0.045	0.021	0.061
Missouri	-1.004	0.646	0.207	0.284	0.245	0.382	-0.111	0.253	0.100	-0.226	0.022	0.119	0.077
Montana	-0.805	0.035	0.225	0.964	0.468	0.330	0.280	0.373	0.364	-0.545	-0.220	-0.129	0.112
Nebraska	-0.540	0.018	0.269	0.228	0.204	0.431	0.295	-0.512	-0.184	-0.493	-0.090	0.229	-0.012
Nevada	-0.626	0.380	0.439	0.374	0.468	0.098	-0.264	0.399	0.163	-0.359	0.079	-0.047	0.092
New Hampshire	-0.554	0.073	0.131	0.158	0.389	0.106	0.059	-0.100	-0.275	-0.539	0.298	0.491	0.020
New Jersey	-0.231	0.142	0.137	-0.132	0.050	0.037	0.022	-0.041	-0.089	-0.217	0.013	2.975	0.222
New Mexico	-0.284	-0.094	0.260	0.202	0.213	0.170	-0.059	0.431	0.002	-0.265	-0.508	0.563	0.053
New York	-0.554	0.052	0.120	-0.121	0.143	0.052	-0.257	0.253	0.096	-0.124	0.094	0.014	-0.019
North Carolina	-0.321	0.147	0.344	0.193	0.328	0.170	0.104	0.346	-0.269	-0.111	-0.040	0.011	0.075
North Dakota	-0.587	0.082	0.060	0.438	0.322	0.002	-0.112	0.027	-0.161	-0.131	-0.081	0.064	-0.006
Ohio	-0.347	0.063	0.091	0.013	0.088	0.049	0.037	0.008	-0.033	-0.049	-0.157	0.155	-0.007
Oklahoma	-0.122	-0.179	0.335	-0.012	0.154	-0.435	-1.819	1.525	1.338	-0.486	0.014	0.057	0.031
Oregon	-0.867	0.130	0.141	0.292	0.134	0.183	0.170	0.122	0.062	-0.231	0.136	-0.007	0.022
Pennsylvania	-0.329	0.138	-0.051	0.341	0.043	-0.028	0.064	0.067	0.049	-0.247	0.051	0.099	0.016
Rhode Island	-1.076	-0.101	0.062	0.396	0.376	0.296	-0.078	0.067	0.538	0.049	0.212	-0.020	0.060
South Carolina	-0.467	0.065	0.209	0.235	0.175	0.129	-0.379	0.117	-0.062	-0.154	0.136	0.045	0.004
South Dakota	-0.361	0.206	0.059	0.359	0.332	0.113	0.365	0.067	0.006	-0.276	-0.015	0.397	0.104
Tennessee	-0.825	0.134	0.455	0.217	0.291	0.315	-0.289	0.402	0.214	-0.335	0.137	0.168	0.074
Texas	-0.631	0.163	0.359	0.207	0.190	0.163	-0.425	0.205	0.272	-0.289	0.022	0.081	0.027
Utah	-0.310	0.096	0.080	0.060	0.126	0.132	-0.209	0.145	-0.146	-0.044	0.190	0.010	0.011
Vermont	-1.218	0.348	0.471	0.795	0.261	0.691	0.337	0.192	-0.568	0.069	-0.402	0.240	0.101
Virginia	-0.669	0.131	0.250	0.052	0.282	1.510	-1.716	0.333	0.057	-0.299	0.051	0.089	0.006
Washington	-0.586	0.115	0.247	0.166	0.280	0.215	0.163	0.059	0.228	-0.482	0.165	0.084	0.054
West Virginia	-0.612	-0.034	0.276	0.247	0.223	0.209	0.207	0.176	0.067	-0.558	-0.177	0.330	0.029
Wisconsin	-0.721	-0.026	0.324	0.380	0.175	0.253	-0.032	0.014	-0.031	-0.021	0.054	0.059	0.036
Wyoming	-0.564	-0.146	0.086	0.102	0.568	-0.116	0.403	0.403	0.008	-0.996	-0.220	0.369	-0.009
Average	-0.568	0.106	0.238	0.245	0.253	0.223	-0.168	0.205	0.087	-0.266	0.007	0.189	0.046

Table 2.
Tests of Seasonal Differences in Unemployment Insurance and Establishment Data

State	Joint F-Statistic	Prob.	T-Statistic for Jan.	Prob.
Alabama	0.8280	0.6214	1.301	0.1953
Alaska	1.4654	0.1410	1.888	0.0610*
Arizona	2.8827	0.0012*	3.661	0.0004*
Arkansas	3.7064	0.0001*	3.271	0.0013*
California	0.1098	0.9999	0.753	0.4525
Colorado	6.4058	0.0001*	5.223	0.0001*
Connecticut	0.9642	0.4849	2.822	0.0055*
Delaware	1.2236	0.2699	2.012	0.0461*
D.C.	0.4223	0.9533	0.653	0.5148
Florida	4.0937	0.0001*	3.698	0.0003*
Georgia	4.0516	0.0001*	5.497	0.0001*
Hawaii	1.1478	0.3247	3.197	0.0017*
Idaho	3.7633	0.0001*	3.582	0.0005*
Illinois	1.9335	0.0332*	3.845	0.0002*
Indiana	2.3309	0.0085*	1.435	0.1534
Iowa	10.6669	0.0001*	6.582	0.0001*
Kansas	5.1580	0.0001*	2.425	0.0166*
Kentucky	5.9665	0.0001*	4.760	0.0001*
Louisiana	7.3530	0.0001*	4.896	0.0001*
Maine	1.4090	0.1653	2.798	0.0059*
Maryland	3.4942	0.0001*	3.495	0.0006*
Massachusetts	1.9041	0.0365*	2.987	0.0033*
Michigan	0.5090	0.9071	2.434	0.0162*
Minnesota	1.0525	0.4033	1.956	0.0524*
Mississippi	2.7054	0.0022*	1.940	0.0544*
Missouri	1.7046	0.0690*	3.415	0.0008*
Montana	3.5030	0.0001*	3.017	0.0030*
Nebraska	2.3072	0.0093*	1.834	0.0688*
Nevada	3.5063	0.0001*	3.778	0.0002*
New Hampshire	0.9648	0.4843	1.385	0.1683
New Jersey	0.5133	0.9044	0.340	0.7346
New Mexico	0.8428	0.6063	0.920	0.3592
New York	2.0672	0.0212*	3.421	0.0008*
North Carolina	2.7003	0.0023*	2.297	0.0231*
North Dakota	2.9058	0.0011*	3.713	0.0003*
Ohio	0.8947	0.5535	1.557	0.1218
Oklahoma	16.1270	0.0001*	0.470	0.6392
Oregon	3.7308	0.0001*	5.044	0.0001*
Pennsylvania	1.4357	0.1534	1.661	0.0989*
Rhode Island	2.3830	0.0071*	3.699	0.0003*
South Carolina	1.4285	0.1565	2.246	0.0263*
South Dakota	1.2590	0.2468	1.921	0.0567*
Tennessee	4.8664	0.0001*	5.537	0.0001*
Texas	4.6157	0.0001*	4.601	0.0001*
Utah	0.8942	0.5540	1.729	0.0861*
Vermont	3.5814	0.0001*	4.319	0.0001*
Virginia	1.2760	0.2363	0.841	0.4016
Washington	3.6974	0.0001*	4.270	0.0001*
West Virginia	0.7725	0.6781	1.620	0.1076
Wisconsin	6.4269	0.0001*	7.516	0.0001*
Wyoming	0.9086	0.5396	0.602	0.5481

* Significant at 10% level.

Table 3.
Seasonally Adjusted First Quarter 1993 Nonfarm Payroll Employment Growth Rates (Annualized)

State	Not Berger/Phillips Unadjusted	Berger/Phillips Adjusted	
Alabama	3.08	3.08	*
Alaska	8.04	7.67	
Arizona	2.02	0.18	
Arkansas	3.92	2.95	
California	-0.98	-0.98	*
Colorado	2.82	1.59	
Connecticut	-0.87	-2.95	
Delaware	2.33	-2.44	
District of Columbia	0.12	0.12	*
Florida	4.05	2.35	
Georgia	4.32	1.57	
Hawaii	0.32	-0.47	
Idaho	4.27	2.38	
Illinois	1.63	-1.62	
Indiana	2.95	2.25	
Iowa	2.64	-0.11	
Kansas	5.11	2.76	
Kentucky	3.66	-0.05	
Louisiana	3.77	0.50	
Maine	2.61	-2.00	
Maryland	1.26	-0.72	
Massachusetts	2.03	-0.18	
Michigan	4.78	2.85	
Minnesota	2.85	2.44	
Mississippi	4.35	2.66	
Missouri	4.18	2.36	
Montana	6.13	2.63	
Nebraska	0.11	-1.32	
Nevada	5.48	4.22	
New Hampshire	5.96	5.96	*
New Jersey	-0.66	-0.66	*
New Mexico	2.92	2.92	*
New York	1.36	-1.27	
North Carolina	5.05	2.85	
North Dakota	5.20	3.64	
Ohio	2.55	2.55	*
Oklahoma	4.87	3.50	
Oregon	4.10	0.62	
Pennsylvania	1.71	0.68	
Rhode Island	5.91	-0.38	
South Carolina	2.97	2.43	
South Dakota	5.19	5.54	
Tennessee	3.36	0.70	
Texas	5.52	2.23	
Utah	6.16	6.02	
Vermont	4.27	-1.01	
Virginia	2.03	2.03	*
Washington	3.11	0.62	
West Virginia	3.13	3.13	*
Wisconsin	4.44	1.18	
Wyoming	1.11	1.11	*
Sum-of-States	2.59	0.93	

* States for which test results indicated no significant seasonal differences in the UI and ES data were not adjusted.

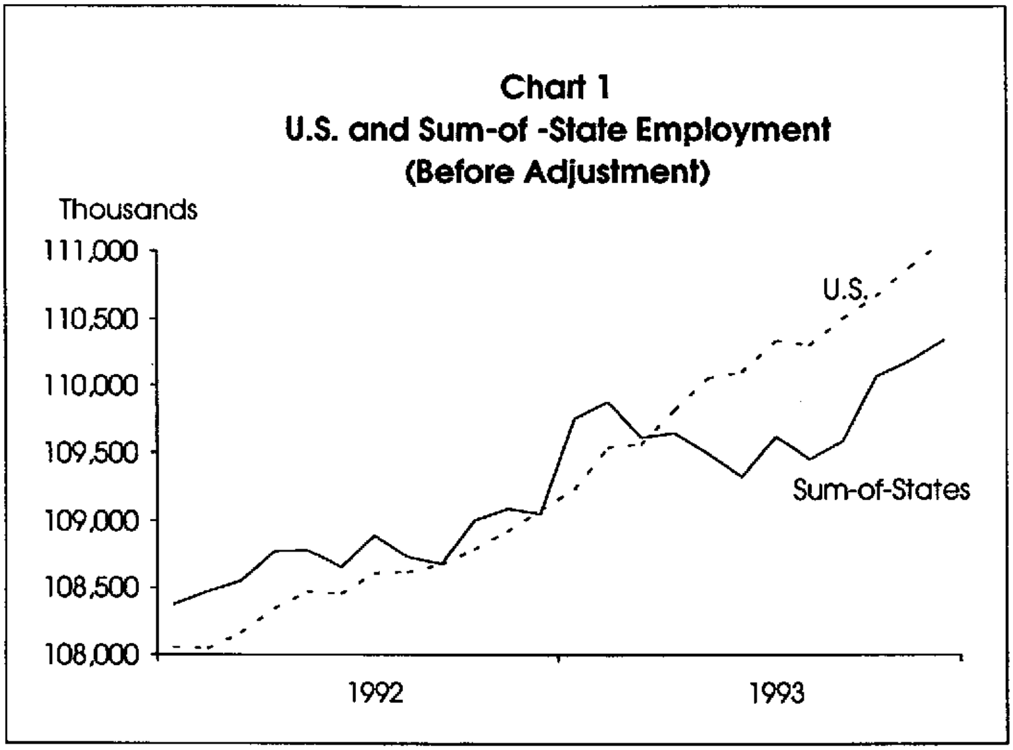


Chart 1
U.S. and Sum-of -State Employment
(Before Adjustment)
Thousands
111,000
110,500
110,000
109,500
109,000
108,500
108,000
1992
1993
U.S.
Sum-of-States

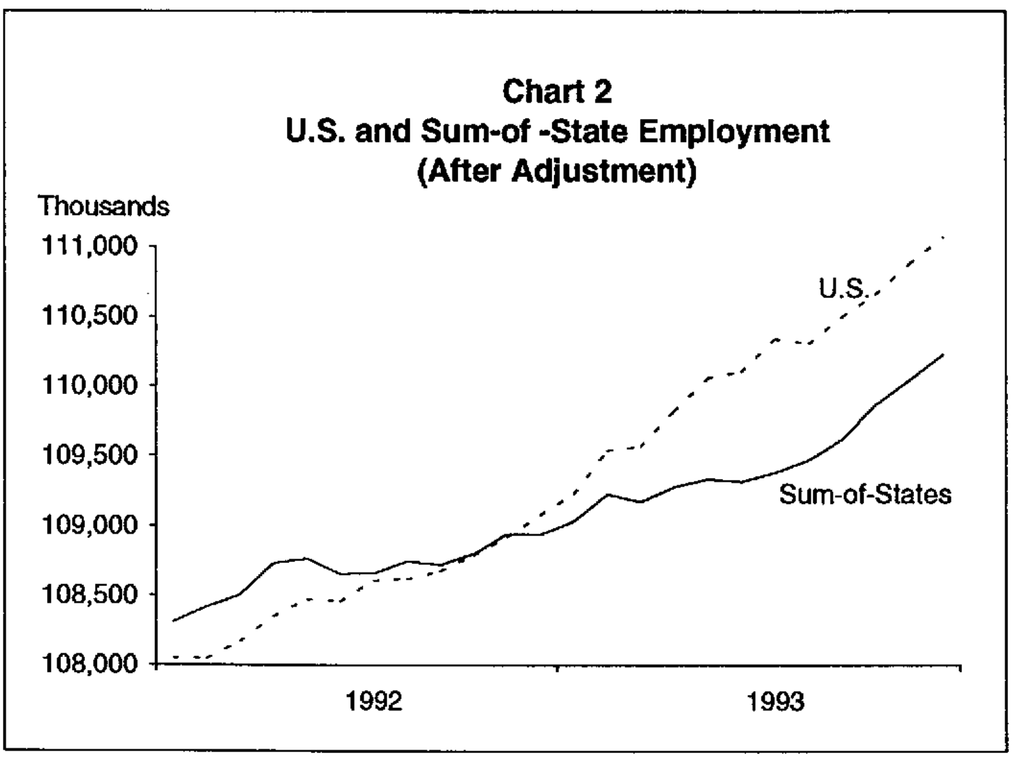
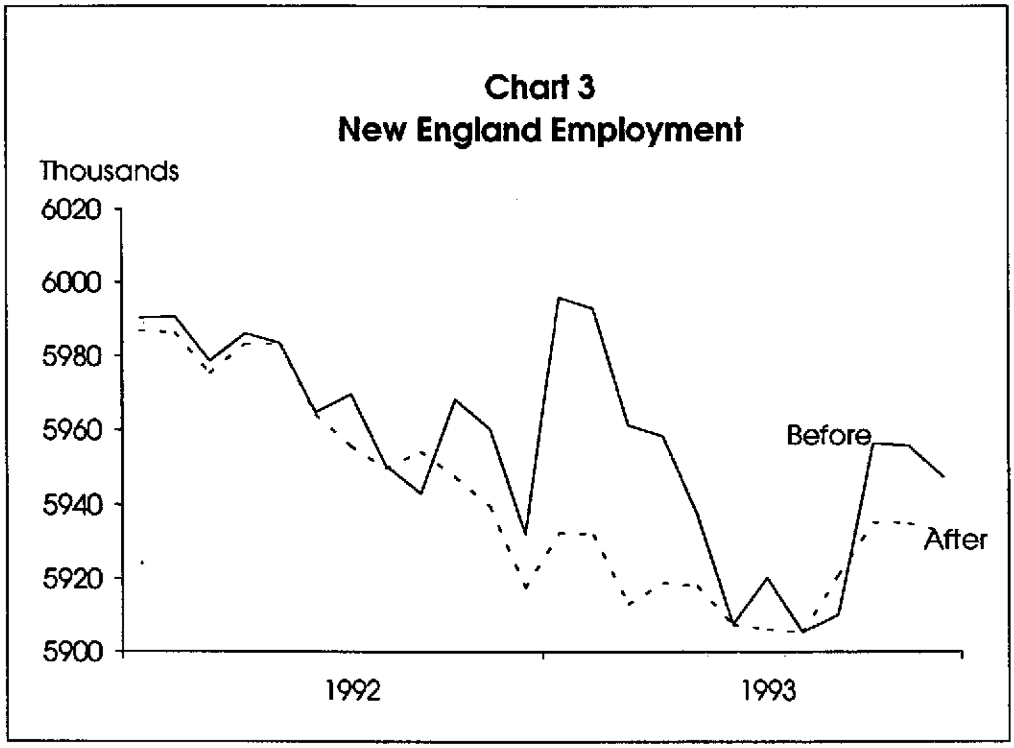
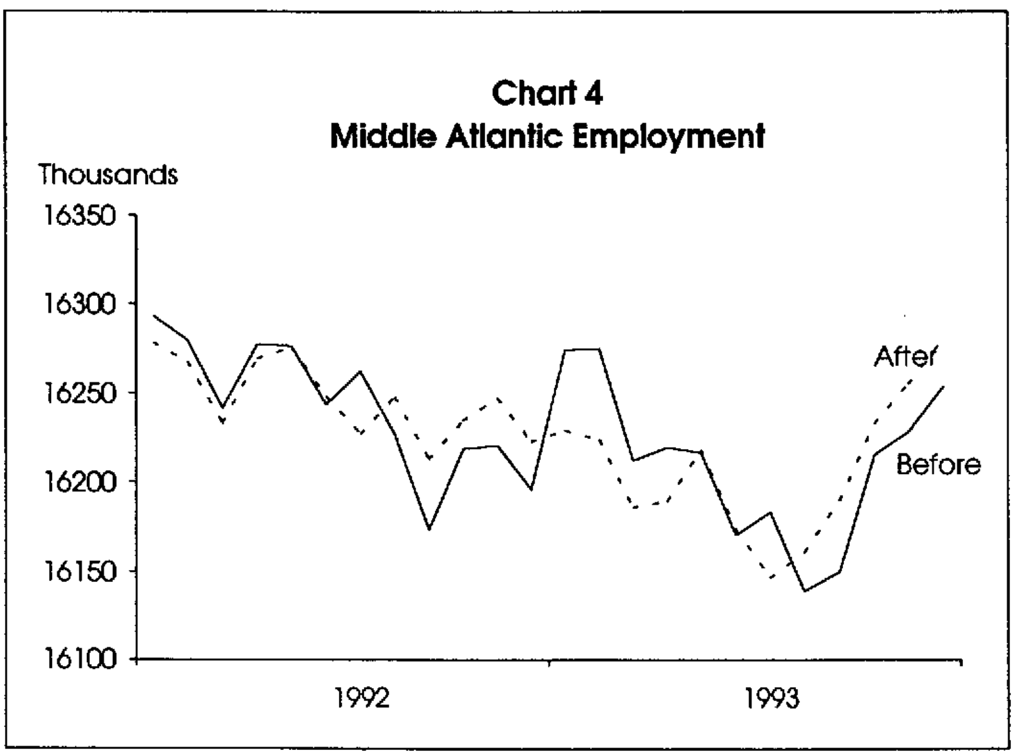
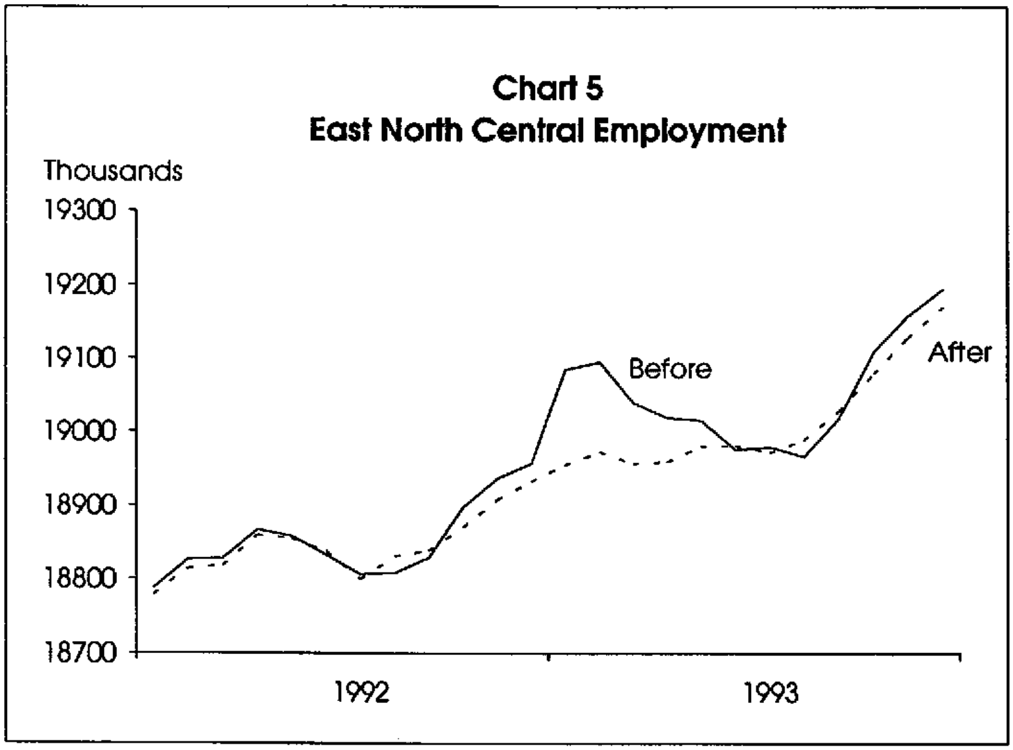


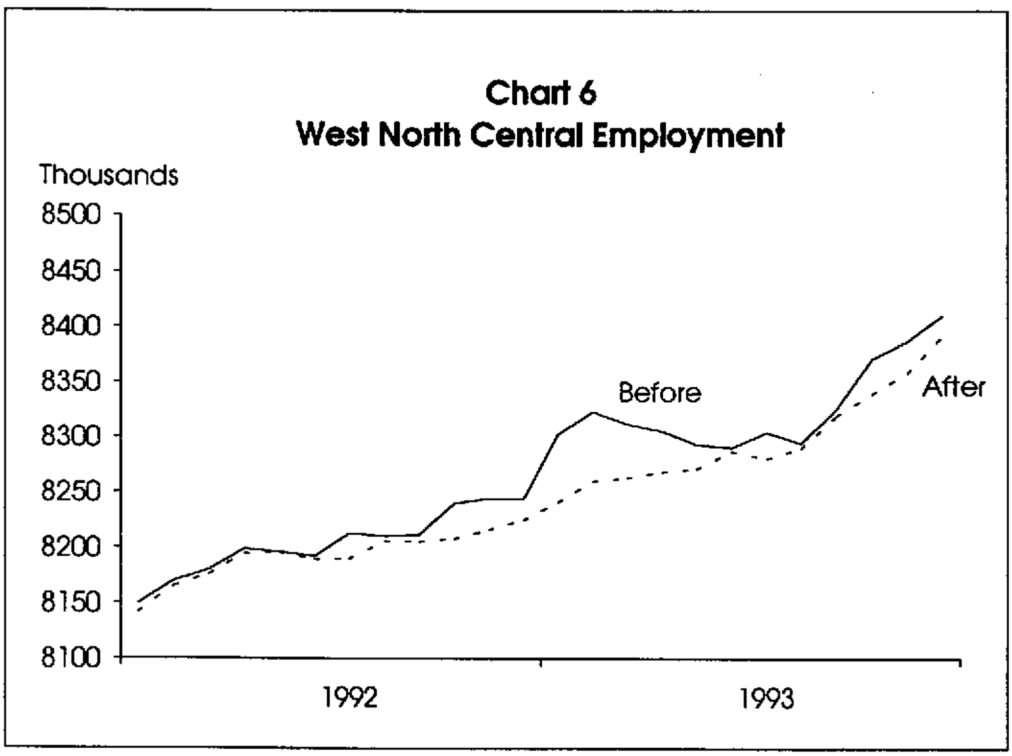
Chart 2
U.S. and Sum-of -State Employment
(After Adjustment)
Thousands
111,000
110,500
110,000
109,500
109,000
108,500
108,000
1992
1993
U.S.
Sum-of-States





"Before" and "after" refer to application of our two-step adjustment procedure.





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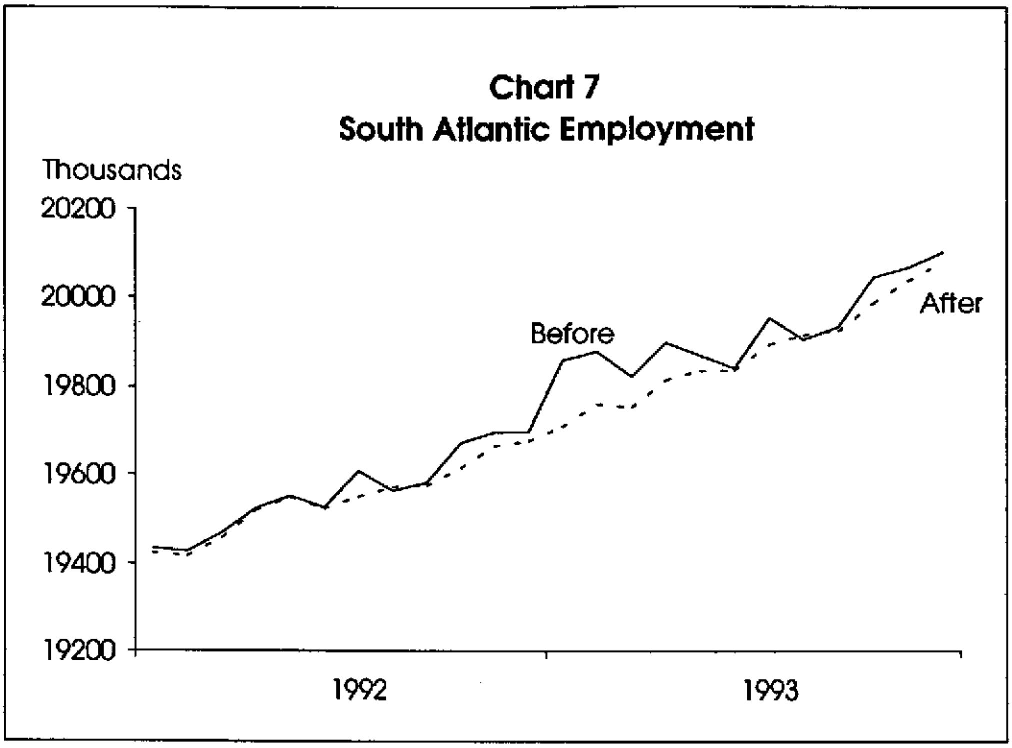

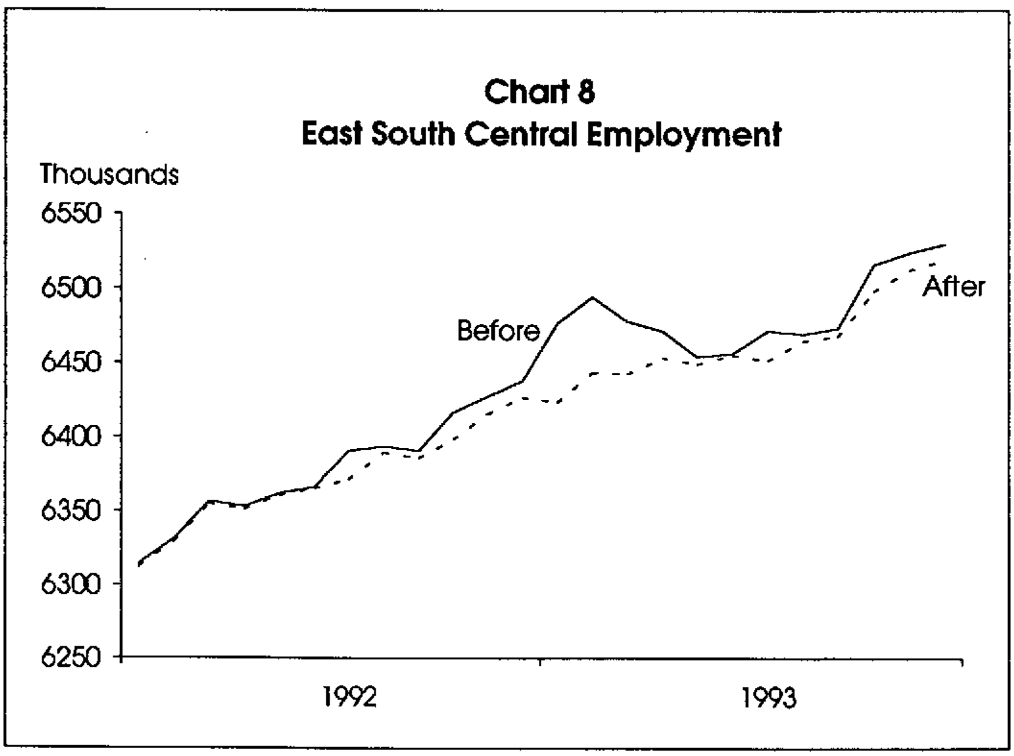

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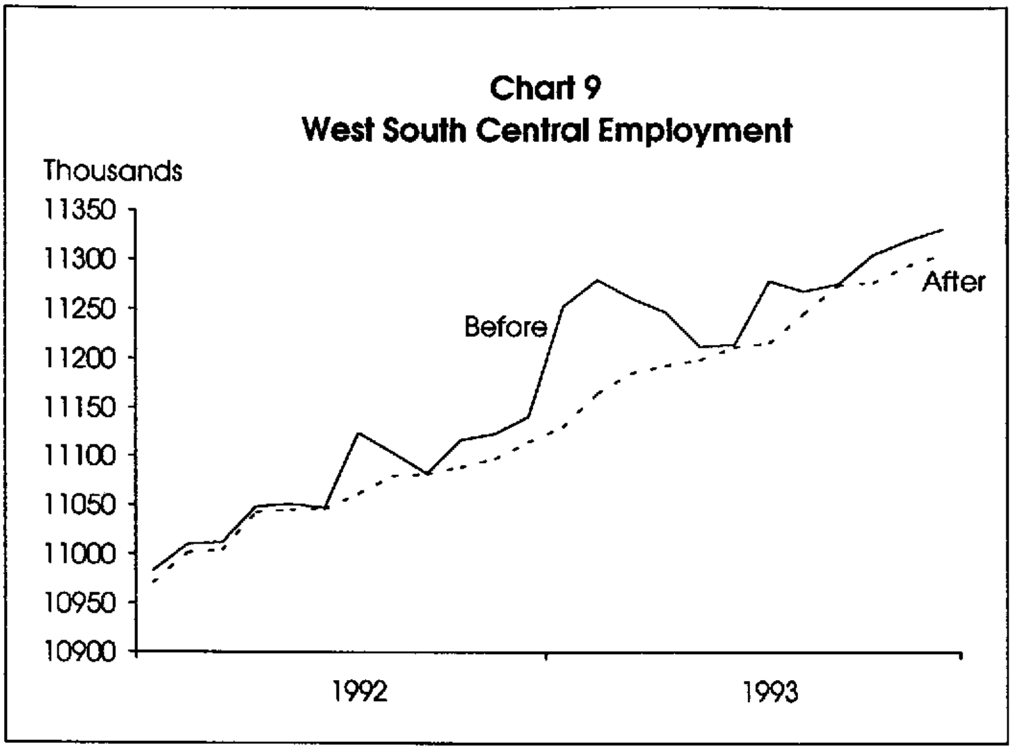

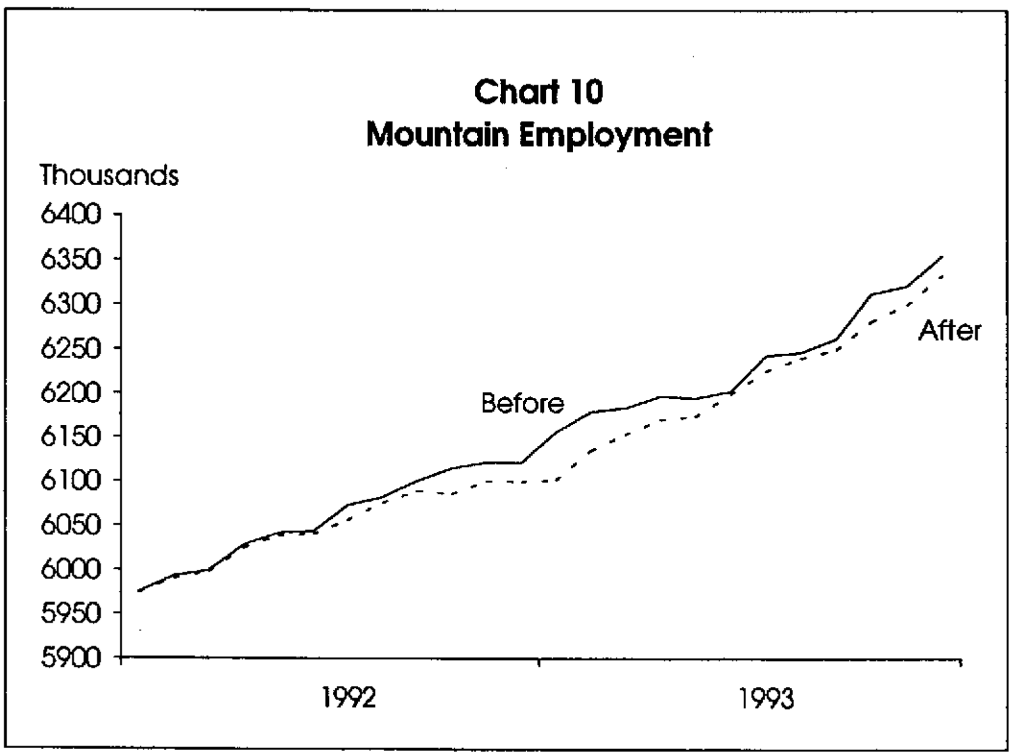

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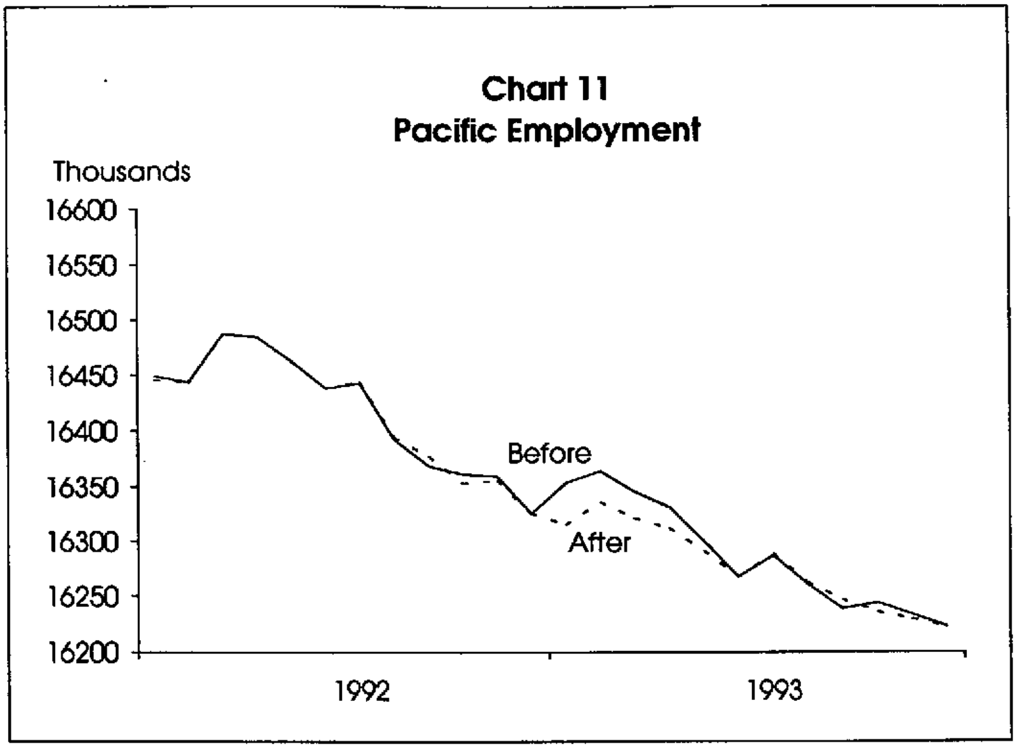

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