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Weak Labor Markets: Soft GDP Rebound or Structural Phenomenon?

With U.S. economic growth accelerating late in this second year of expansion, continued soft labor markets stand out as a glaring weakness. During the so-called “jobless recovery” of 1991-1992, employment began turning 15 months into the recovery; we are now 22 months past the November 2001 recession trough, and according to the establishment survey, with 7 consecutive monthly declines in payrolls prior to September’s modest gain, private employment is 3.3 million, or 2.9%, below the trough. Manufacturing employment has declined for 38 consecutive months. While expectations for employment gains are building, an assortment of pessimistic explanations are gaining attention and headlines. They tend to imply that there has been a significant structural shift in labor markets and business production processes. One argument is that the sustained strong gains in labor productivity represent a “substitution” for labor, and that many of the job losses in recent years are permanent. A complementary explanation is that an acceleration of outsourcing of jobs overseas has substituted for domestic jobs. Both paint a pessimistic outlook for employment, and subsequently the sustainability of healthy economic expansion.

Whether the pattern of employment is structural or cyclical with admittedly longer lags than typical recoveries has far-reaching implications for economic and financial market performance as well as Federal Reserve policy and the political landscape. We are certainly impressed by the strong gains in labor productivity and acknowledge anecdotal evidence of overseas labor outsourcing, and the possibility that they may be valid explanations of current labor market conditions. But there is no way to quantify the magnitude of overseas’ outsourcing (to get a gauge of its importance and how much it has accelerated). Also, labor productivity is measured as the ratio of private output and aggregate hours worked, and as such effectively is a result of aggregate hours worked; productivity typically surges early in economic recoveries. So to address the broader issue of the magnitude of any structural shift, we look at cyclical patterns of employment. In addition, we look at differences in reported employment in the establishment and household surveys, and make some inference, based on historic trends, about the employment outlook.

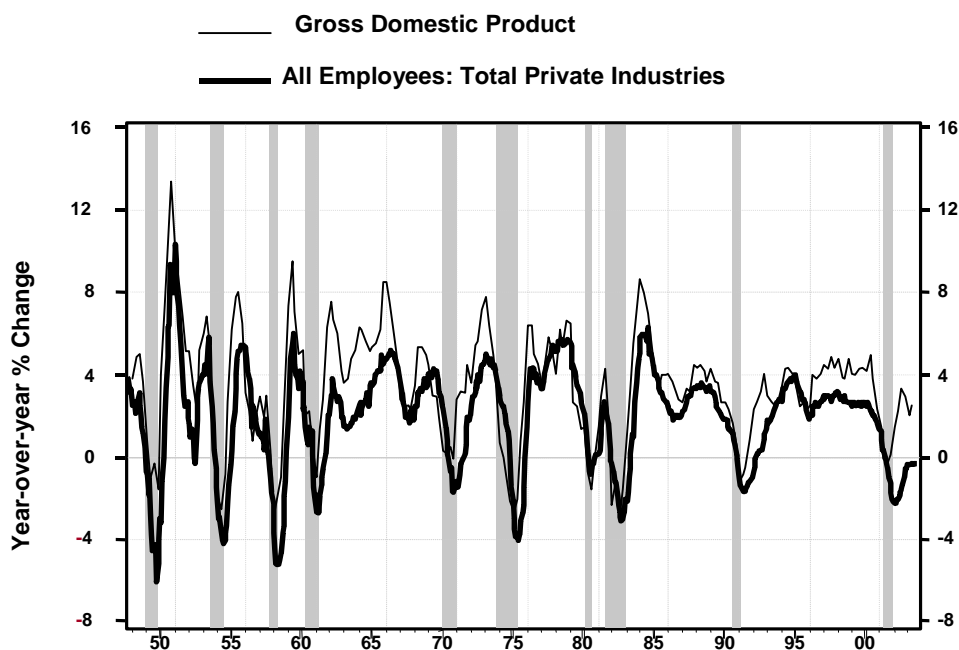
In summary, we find:

- (1) Historically, there has been a close cyclical correlation between real GDP and private payrolls. Using regression analysis, we find that about 80 percent of the variability in quarterly employment growth rates can be explained by concurrent and lagged GDP growth, as well as last quarter’s unpredicted employment growth. Above- (and below-) expectations payroll growth tends to persist.
- (2) Soft economic growth in the current expansion to-date explains a significant portion of the recent labor market weakness. This long period of payroll weakness has been somewhat analogous to the “jobless recovery” of the early-1990s, similarly characterized by a slow rebound in aggregate demand and related concerns.
- (3) The regression evidence indicates that currently rapid productivity gains, perhaps accentuated by the soft and uneven rebound in real GDP and associated business uncertainty about the sustainability of product demand, are suppressing payrolls to a larger degree than explained by GDP growth alone. This suggests that other factors may be at work. Unlike the early 1960s, when employment was similarly weak *relative to GDP growth*, but both labor productivity and payrolls still exhibited strong gains, the historically weak nominal spending growth during this recovery may be constraining payroll gains.

- (4) Although manufacturing job loss has been severe in recent years, the service-producing sectors have also experienced below-normal payroll growth relative to recent real GDP gains. This may suggest structural explanations for job losses in both service-producing and manufacturing sectors.
- (5) The establishment survey of employment historically has tended to overstate the weakness in labor markets at early stages of recovery; the current divergence between the establishment survey and the household survey, which now shows a modest year-over-year rise in employment, is expected to close as the expansion matures, in part as the count of newly created firms in the establishment survey is revised upward.
- (6) Our forecast, based on historic patterns and analysis of the trajectory of real GDP growth is that establishment employment will begin rising moderately in 4Q03, but the unemployment rate will not recede below 6% until mid-2004.

Along with the sustained declines in establishment payrolls so far this recovery, the persistent, robust gains in labor productivity stand out. Indeed, we were early to embrace them as one explanation of strong growth and declining inflation. Looking forward, we anticipate labor productivity to slow from its recent pace but remain healthy, suggesting that it may now take a faster real GDP growth rate to generate the same job growth as in the past. ***But note that faster trend productivity growth does not imply a permanent slowdown in job creation:*** (1) even with elevated productivity growth, an acceleration in final demand and GDP growth will lead to labor market improvement; (2) faster trend productivity growth implies less job creation for any given rate of GDP growth, but over time it implies faster (real) GDP growth. Historically, strong gains in labor productivity have always been complemented by--or have been precursors to--job creation. However, in the current instance, the analysis also suggests concerns about generating sufficient nominal demand growth with the U.S. economy already near price stability.

Chart 1
Trends in Real GDP Growth and Employment



Evidence from total private payrolls and real GDP

Chart 1 displays almost 60 years of year-over-year percentage growth in real GDP and private employment (recessions are shaded). An examination of the two time series provides some cyclical and trend characterizations of output and employment, and allows comparison of the current expansion with the previous 8 recoveries. Note that the difference between output and employment is an *approximate* measure of changes in labor productivity (approximate in that productivity in the nonfarm business sector is based on private output, i.e. real GDP less government output, and aggregate hours worked rather than employment). Several observations are apparent:

First and foremost, casual observation suggests a strong correlation between changes in real GDP and private employment. Cyclical pickups in employment generally seem to have lagged (slightly) behind accelerations in GDP.

Second, there have been two prior episodes in which employment growth lagged real GDP for a sustained period (see Chart 1): in the early 1960s and in the late-1990s. Both were characterized by robust productivity gains, low inflation and strong stock markets.

Third, the rebound in real GDP from the 2001 recession has been notably weaker than prior recoveries. Prior to the 1990s, material gains in employment closely followed strong accelerations in GDP. In the early 1990s recovery and the current one, the rebound in GDP growth has been more gradual following relatively shallow recessions. The current rebound in real GDP growth has been slower than in any prior recovery, and the quarterly pattern in both GDP and consumption has been uneven and hesitant; note that in past recoveries, year-over-year real GDP growth quickly reached or exceeded 4%, a level not yet reached through 3Q03.

Fourth, an analysis of cyclical inflection points in GDP growth and employment suggests that the real GDP growth to date has not been sufficient to lead business to feel comfortable rehiring. Sustained elevated trend productivity growth since the mid-1990s may also be playing a key role.

Table 1: Cyclical Inflection Points in GDP Growth and Employment

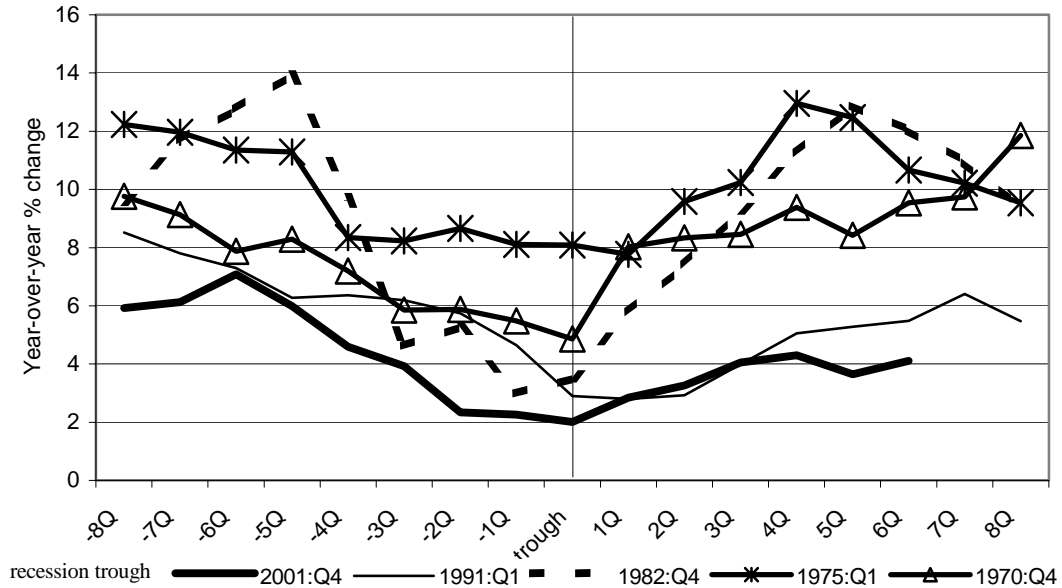
Qtr of positive yr-on-yr payroll growth	Associated yr-on-yr GDP growth	Previous qtr's yr-on-yr GDP growth	First qtr of payroll growth	Associated GDP growth
2Q50	7.4	3.9	1Q50	17.6
1Q55	6.2	2.7	4Q54	8.2
1Q59	7.3	2.3	3Q58	9.3
4Q61	6.3	2.8	2Q61	7.7
3Q71	3.0	3.1	1Q71	11.6
1Q76	6.4	2.6	3Q75	7.1
3Q83	5.5	3.1	1Q83	4.7
2Q92	2.7	2.3	2Q92	3.8
3Q03 - most recent	3.3	2.5	still unknown	7.2

Table 1 compares the acceleration of payroll and GDP growth in the recoveries from prior recessions. Column 1 lists the first quarter in each expansion in which year-over-year payroll growth turned positive, while column 2 shows the corresponding year-over-year GDP growth in that quarter and column 3 shows year-over-year GDP growth in the prior quarter. Column 4 lists the first quarter of payroll gains (measured quarter-over-quarter), and column 5 shows quarter-over-quarter annualized real GDP growth in that quarter.

In most recoveries, the rebound to positive employment gains was associated with both robust growth in real GDP (col. 5) and accelerating growth momentum (compare col. 2 and 3). The only exceptions were the expansions following the 1970 recession and the 1990-91 recession. In each case where payroll recovery was relatively gradual, the first quarter of employment growth occurred in a quarter of above-trend GDP growth (the early 1990s episode was the most sluggish economic recovery, but the 3.8% quarter-over-quarter growth in real GDP in 2Q92 was well above what was then perceived to be trendline growth).

Even with the expected robust annualized real GDP growth in 3Q03, the pace of economic rebound in this expansion has fallen shy of the rate of GDP growth associated with an upturn in employment in every previous recovery. Compared to most previous recoveries, GDP growth in 2002-03 has been uneven as well as soft, and the period seemingly has been fraught with uncertainties. Several times, consumer spending has accelerated but the momentum did not persist. The terrorist attack of 9/11, the corporate accounting scandals of 2002 and the Iraq War added uncertainties and business caution. Since the recession trough, cumulative growth of nominal GDP has fallen far below any prior expansion, suggesting businesses top-line revenue product has grown more slowly than in any analogous cyclical stage (see Chart 2). ***Reflecting this, businesses have not rebuilt inventories following their record-breaking depletion during the 2001 recession. As a result, production has grown more slowly relative to demand compared to prior recoveries, contributing to a diminished demand for labor.***

Chart 2: Nominal GDP Growth Around Recession Troughs



This line of argument suggests that growth in demand and output have not been sufficiently strong or displayed sufficient momentum to lead businesses to feel comfortable to rehire and add to fixed costs. Putting the current pace of GDP growth into the context of prior recoveries suggests that the declines in employment, while clearly disappointing, are not extraordinarily out-of-line with respect to historic relations. This is particularly true in light of the recent outsized gains in labor productivity. Despite September’s encouraging payroll gain, average private employment declined again in 3Q03 even amid estimated 7.2% annualized growth in real GDP. The implied productivity gains, well in excess of 4% year-over-year, reflect in part stronger trend productivity growth as well as the cyclical business caution described above, and are not likely to be sustained indefinitely. As a result, the large gap between GDP growth and recent payroll behavior suggests continued and significant improvement in job growth over the next few months.

Evidence from regression equations

For a more rigorous analysis of the cyclical nature of employment, we estimate the following equation:

$$EMPLOY_t = c + b_0 * GDP_t + b_1 * GDP_{t-1} + b_2 * GDP_{t-2} + b_3 * GDP_{t-3} + e_t \quad (1)$$

where EMPLOY is the quarterly (annualized) growth rate of private nonfarm payrolls and GDP the quarterly (annualized) growth rate of real GDP. A constant term, c, is also included, allowing for trend productivity growth, and e is a white noise error term.

We estimate the equation using quarterly observations from 2Q48 – 2Q03, with the following result,

$$EMPLOY = -0.85 + 0.38 * GDP + 0.23 * GDP(-1) + 0.13 * GDP(-2) + 0.079 * GDP(-3) + -1.28 * dum1$$

(-3.0) (15.03) (8.98) (5.02) (3.26) (-2.70)

$$+ -0.86 * dum2 \quad AR(1) = 0.49$$

(-1.76) (7.79)

$R^2 = 0.80$ (adjusted); D-W = 1.96

The equation above reports coefficients and t-statistics in parenthesis. The two additional included variables are dummies for the last quarter of recession and first quarter of expansion, times of generally higher productivity growth and commensurately lower employment growth. Adding the dummies has little effect on the forecast analysis.¹

¹ From 1948 to 2003, the U.S. labor force grew about 1.6 percent annualized. Our equation implies that generating 1.6 percent employment growth, producing a nearly constant unemployment rate, required about 3 percent annualized GDP growth over the period. The implied “productivity” growth trend is about 1.4 percent per year.

The equation demonstrates a high degree of stability of the relationship: the estimated coefficients change little when estimated over shorter subperiods. The autoregressive parameter, AR(1), estimates a statistically significant positive relationship between the forecast error this period and next period, i.e. it indicates that unusual payroll growth tends to persist (and exponentially decay in accord with the parameter).

The results suggest the following:

- 1) This simple equation explains over 80 percent of the variability of quarterly growth in private nonfarm payrolls using current and 3 quarterly lags of real GDP growth, and a first-order autoregressive error correction that captures the tendency for deviations from estimated changes in payrolls to persist. The results show that that employment growth has an important cyclical component. Historically, on average, a one percent innovation in real GDP has been associated with a roughly 0.8 percent rise in private payrolls, according to the estimates.
- 2) An equation of this sort tracks private payroll growth quite closely, even when forecasting out-of-sample and dynamically. (For example, estimating the equation from 1948 to 1999, and using the estimated coefficients to forecast from 1Q00 to 2Q03.) Not surprisingly (for regression analysis), most significant forecast errors occur at business cycle turning points; the magnitudes of large declines in payrolls during recession and large gains near business cycle peaks tend to be underestimated by the forecast equation.
- 3) ***An analysis of the forecast errors generated by the equation reveals that the current period has been characterized by persistent and substantially below-expectations private payroll growth.*** Several other periods of persistent forecast errors are identified and provide context (see Table 2).
 - a. In the current period of persistent forecast errors (summarized in row 7), payroll growth has run about 2.8 percent below forecast. Based on this equation, this recovery's underperformance of private payrolls relative to estimates has significantly exceeded the employment weakness of 1991-92, in a comparable length of time. The shortfall has been less than the 1960s payroll deficit but over a period only about half as long. Perceptions in the current expansion have of course been colored by the outright declines in payrolls, in stark contrast to payroll growth in the 1960s.
 - b. Employment gains were more unpredictable early in the sample period (late-1940s and 1950s), generating large forecast errors, but these errors tended to be quickly corrected in subsequent quarters. However, the occurrence of frequent recessions from 1948-1961 generated several bouts of larger-than-forecast payroll declines, which in general were only partially offset by above-forecast employment growth during the expansion period preceding "the next" recession. Well below-expectations payroll growth occurred during the recessions of 1949, 1953-54, and 1957-58.
 - c. Beginning in the early-1960s, periods of below- or above-expectations payroll growth were associated less closely with business cycle turning points. The early part of the long-1960s expansion was characterized by below-expectations payroll gains. In particular, over the almost 3-year period from 4Q61 to 2Q64 (first row of Table 2), private payroll growth fell 4.0 percent short of expectations. However, although disappointing for a period of 5.4% average annualized GDP growth, payrolls still grew 6.3 percent over the period. Notably, a roughly offsetting period of excess payroll growth took place beginning about two years later (1966-69) (second row).
 - d. In the 1970s, while the deep 1974-75 recession generated substantial payroll losses, the only large forecast errors occurred late in the decade. From 4Q76 to 1Q80, payroll growth significantly outperformed expectations (third row).
 - e. Another but more minor period of above-expectations payroll growth occurred in the 1986-89 period. Similar to the current episode, ***the initial phase of the 1990s expansion (2Q91 to 4Q92) was also characterized as a "jobless recovery". While employment did under perform, the forecast error, or difference between actual payroll growth and that expected given GDP growth, was relatively small*** (see row 5). By contrast, a more sustained period of unexpectedly strong (given GDP growth) payroll gains took place from 1993-1997 (row 6), much more than offsetting the early-1990s weakness.
- 4) The regression evidence also sheds light on the issue of whether the current payroll shortfall is largely a manufacturing phenomenon, as the current trend toward outsourcing might suggest, or a more general pattern. To make this assessment, we estimated equations for employment growth in both the manufacturing and service-producing sectors.

While outright payroll losses have been concentrated in manufacturing, where the greatest pain has undoubtedly been felt, the estimated equations show that *the current shortfall in payroll growth, relative to GDP growth, has been spread across the economy, and includes the service-producing sectors*. Put differently: the forecast errors generated for the service-producing sector equation have been significant, although this large portion of the U.S. economy has been characterized by approximately flat, rather than declining, payrolls in the recent period. Our results suggest that to the extent that there has been a structural employment phenomenon, it applies to a wide array of industries and sectors, and not just manufacturing. More manufacturing background is provided below.

Table 2: Periods of Persistent Payroll Forecast Errors

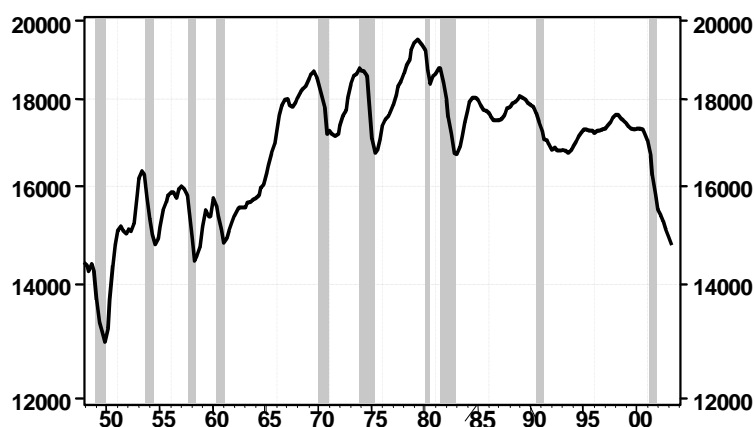
Period	# of quarters	Cumulative GDP growth	Average annualized GDP growth	Actual (cumulative) payroll growth	Forecasted payroll growth	Cumulative forecast error
4Q61 – 2Q64	11	15.6%	5.4%	6.3%	10.3%	-4.0%
2Q66 – 4Q69	15	11.6%	3.0%	11.9%	8.1%	+3.8%
4Q76 – 1Q80	14	14.7%	4.0%	14.6%	9.3%	+5.3%
3Q86 – 1Q90	15	14.2%	3.6%	10.3%	8.4%	+1.9%
2Q91 – 4Q92	7	5.4%	3.1%	0.5%	1.6%	-1.1%
1Q93 – 4Q97	20	18.3%	3.4%	14.5%	10.4%	+4.1%
1Q02 – 2Q03	6 (to date)	4.1%	2.7%	-1.0%	1.8%	-2.8%

Trends in manufacturing employment

The recent focus of attention on manufacturing employment makes sense given the following basic facts: more than 17% of manufacturing jobs have been lost since early-1998, a dramatic decline totaling just over 3 million jobs (see Chart 3). As of September 2003, the sector had lost jobs for 38 consecutive months. Also, the manufacturing job losses since the recession began in 1Q01 (just over 2.4 million) account arithmetically for 76 percent of the economy's total private payroll decline (just over 3.2 million).

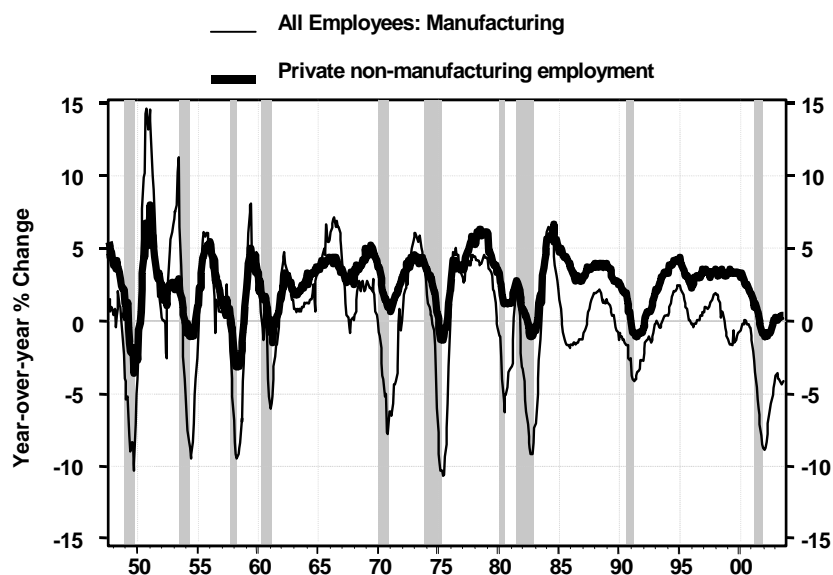
Chart 3

All Employees: Manufacturing (SA, Thousands)



However, perspective is quite important insofar as manufacturing jobs have been on the decline since 1979. Manufacturing jobs also have been lost in each recession, the most recent downturn being no exception. Manufacturing payroll losses in 2001 were fairly typical for a recession period; however, jobs have since continued to decline at a rapid pace. If the pattern since the 1979 peak in sectoral employment persists, a portion of the manufacturing jobs recently lost may in fact not be recovered, continuing an ongoing structural phenomenon.

Chart 4: Trends in manufacturing and private non-manufacturing employment



These trends are more clear on a year-over-year percentage change basis (see Chart 4). Job declines have persisted for longer, but the annualized rate of decline in manufacturing employment has reached similar magnitudes (8.9 percent in the 4 quarters ending 1Q02) in previous downturns (the sole exception was more gradual job loss in 1990-91). Moreover, manufacturing employment has long been far more cyclically variable than private non-manufacturing employment, with most of the greater variability in manufacturing concentrated to the downside in recent decades. While these trends do not rule out a recent shift to greater permanent outsourcing of jobs, the patterns in the recent cycle appear far less unusual when seen in this context.

Household and Establishment Surveys

There has been a tendency for the household and establishment surveys of employment to diverge near the end of recessions or early in new expansions; in this regard, the current cycle is typical. The divergence in year-over-year growth from the two surveys is often widest very early in a new expansion (see Chart 5). Further, the percentage difference between the alternative measures of total employment has widened at the start of most, if not all, expansions (see Chart 6). Neither percentage difference is currently large in an historical context, though the present episode is unusual in that one survey shows net job gains over the past year while the other shows losses.

The establishment survey is sent monthly to about 400,000 U.S. businesses, including all firms with 250 or more employees and a selected sample of smaller firms. Given its size, the establishment survey displays less month-to-month volatility in total employment, and has become the widely referenced standard for monthly payroll changes. It is also useful for charting the relative growth rates of employment in the wide variety of industries that make up the U.S. economy.

In contrast, the household survey canvasses about 50,000 households each month, asking individuals to classify themselves as employed, unemployed (and actively searching for a job), or out of the labor force. The questions also gather detail on employment trends by age, sex, race, and occupation.

One potential source of error in the establishment survey is that it makes annual assumptions about the creation (and destruction) of (new) firms, a task that is particularly difficult around business cycle turning points. Currently, the household survey may be a more accurate indicator as a result of its better real-time reflection of jobs created at new firms.

Chart 5
Employment Measures: Divergence of the Household and Establishment Surveys

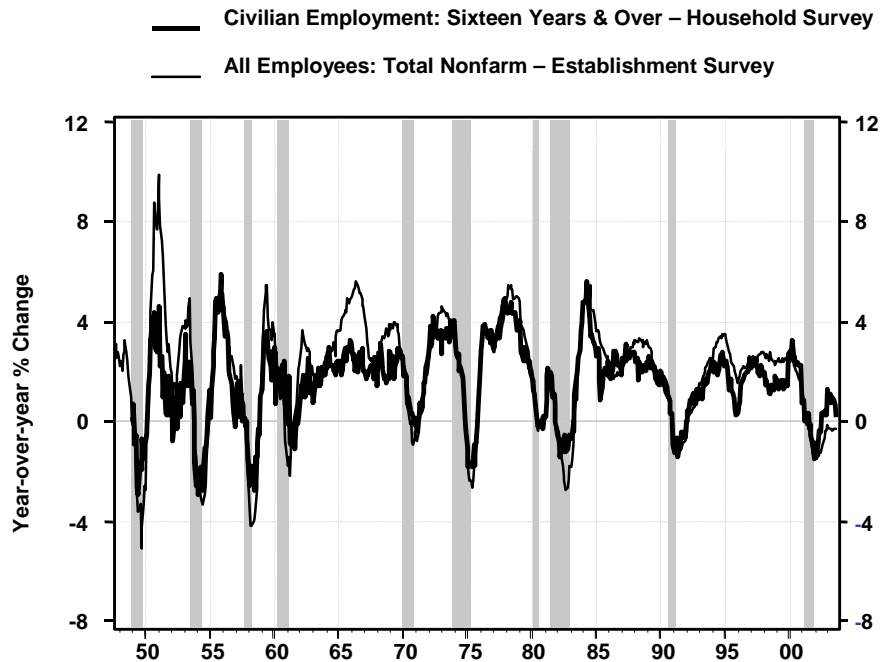
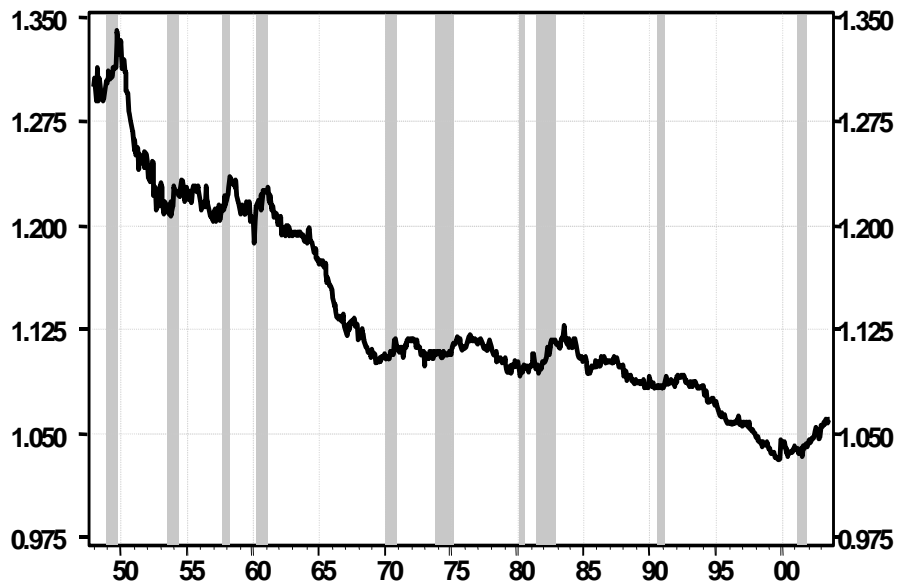


Chart 6: Ratio of total household to total establishment employment



Conclusions

Our analysis of cyclical employment trends suggests caution in interpreting the recently soft labor markets as evidence of a major structural shift in which labor productivity is permanently substituted for jobs and employment declines continue. Much of the decline in jobs during this episode can be explained by the soft and uneven economic recovery, which has generated considerable uncertainty about whether demand will be sustained. This caution may have been aggravated by an acceleration of overseas outsourcing of jobs. There is insufficient hard data to verify or reject this notion, but outsourcing

overseas has been occurring for decades. In the past, the pattern of jobs going overseas has created new, different employment in the U.S.: increased global economic activity and rising demand for U.S. exports, and the benefits of overseas production in terms of reducing costs and prices, has raised consumer purchasing power and ultimately the total demand for labor in the U.S. While a large proportion of recent job losses have occurred in manufacturing, our analysis also suggests that (1) the current sectoral trends are neither as new nor as unusual as popular discussion would suggest, and (2) below-expectations payroll growth has not been restricted to the manufacturing sector. Even if outsourcing has accelerated, it is premature to declare a new structural shift that will work to the detriment of U.S. labor markets.

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