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Sitting Down During Hard Times: Why Has American Labor Force Participation Declined?

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Author
Levy, Cyrus

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Sitting Down During Hard Times:

Why Has American Labor Force Participation Declined?

Cyrus Levy

Advisor: Professor Peter Kuhn

Abstract

In order to understand why labor force participation (and employment rate) have declined in the United States over the past two decades, declines in the employment to population ratio were regressed against minimum wage, labor laws and labor force characteristics during the last three major recession periods. The results yielded little significant effects of minimum wage or unionization, but a strong negative effect of the percent of the labor force employed in the service sector.

I. **Introduction**

The labor force participation rate in the United States has fallen dramatically over the last 20-30 years, from a peak of roughly 67% in the late 1990s to 61.6% in October 2021. Both the absolute level of participation and the rate of change during this time period compare unfavorably to most other OECD countries, whose labor force participation rates have risen rather than fallen.

The significance of this trend for the American economy is quite large. An inability to create a work-system in which a larger portion of the prime-age population has incentives to join the labor force has a sizable negative impact on national income. To illustrate the potential magnitude of this impact, consider a thought experiment with a simple Cobb-Douglas model of output:

$$Y = AK^{1/3}L^{2/3}$$

with Y being national output, K being the capital stock, L being the size of the labor force, and A being a residual term. If labor force participation in the United States today maintained its 1990s level of 67%, then the American labor force would be 8.8% larger, which translates to a roughly 5.9% increase in output. For an even stronger counterfactual, one could imagine the labor force

participation rate continuing to grow at the rate it did during the 1990s (roughly 0.8% over ten years). Projected into the present, that would result in the United States having a labor force participation rate of roughly 68.6%, with an 11.4% larger labor force and 7.6% larger output level than actual.

      If the decline in labor force participation rate since the 1990s is due to policy choices rather than unavoidable changes in demographics or technology, then there are enormous bills that have been left on the ground. Technology and demographics seem to be unlikely culprits, however. Most new technological innovation in the past 25 years has occurred in information and communication technologies, which have dispersed throughout the entire developed world. But as mentioned, the decline in labor force participation rate has not appeared in all other developed countries (see Chart 1). Demographics also do not appear to be behind the shift - though the decline is more severe among certain demographic groups compared to others, the trend is clearly visible along a wide cross-section of the American labor force. This suggests that even if the demographic composition of the labor force had not changed at all since the 1990s, the labor force participation rate would still have declined.
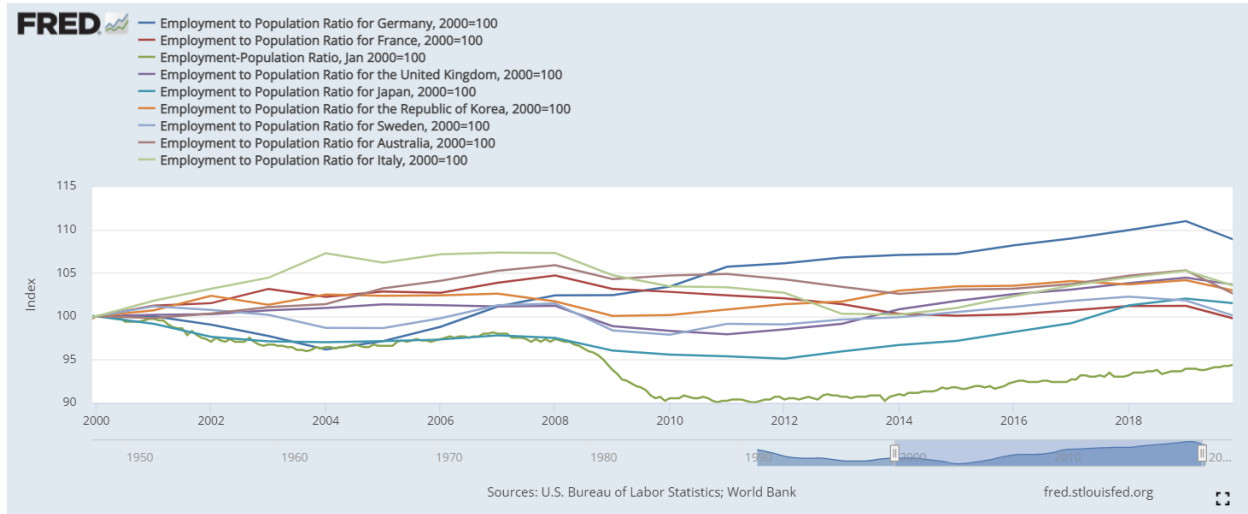
Chart 1: Employment Rates in Selected Countries, 2000-2020

One clue is that the bulk of the recent decline appears to have been concentrated in short, rapid falls in the wake of recessions. Between 1997 and 2001 the labor force participation rate was steady around 67%, before falling to 66% after the recovery from the 2001 recession. It remained at that level from 2004 to the beginning of the Great Recession, after which point 2008 it declined steadily until 2013, then stabilizing between 62% and 63%. Labor force participation again mostly held steady at that level, rising slightly before the COVID recession caused it to crash down to between 61% and 62%. What this suggests is that for the last 30 years the labor force participation rate has exhibited strong cyclical behavior - that is, it appears to be highly sensitive to recessions in output. The United States' relative decline does not appear to be explicable by slower growth during non-recession periods, as employment rate growth during those periods does not appear to be significantly different from that of other developed countries (see Chart 1).

In order to shed light on the forces at work behind the cyclicality of the labor force participation rate, state and county-level data was used to try and identify policies and trends

which may have affected labor force participation. These policies were right-to-work laws and the rate of the minimum wage, in addition to two labor force characteristics: unionization rate and percent of the labor force employed in the service sector. All of these factors may have had effects on wage rigidity and labor force participation. Each was analyzed across different parts of the United States during the last three major recessions (2001, 2008, and 2020) with local BLS data on the employment rate. Causal inference suggests that minimum wage laws, labor laws, and unionization rate were not relevant factors in the decline in labor force participation, but that the increasing size of the service sector most likely is significant.

II. <u>Literature Review</u>

Much of the existing work on the decline in the labor force participation rate can be divided into two broad categories: work focusing on cyclical explanations, and work which focuses on more secular trends. Although each trend has a clear effect on labor force participation, the work which discusses either has tended to focus on only one as having a unique explanatory power. The research which covers cyclical effects sees secular trends as only manifesting through them, and the research which covers secular trends sees cyclical effects as only particularly severe instantiations of those trends over time.

The secular trend which has been covered the most as a potential cause of the decline in labor force participation is the aging of the US population. Researchers have consistently found an effect on overall participation and on employment rates of the changing demographics of the labor force (that is to say, the fall in the share of the prime-age working population). Abraham and Kearney (2018) decompose age demographic changes over the period 1999-2018 and

conclude that changes in population share caused a 2.6pp decline in the employment-population ratio. Krueger (2017) performed a similar analysis, concluding that aging labor force composition was a cause of at least half of the decline in labor force participation during that period.

The rest of the decline is attributed to falls in participation across all demographics. Abraham and Kearney's decomposition reveals that "population aging has had a notable effect on the overall employment rate over this period, but within-age-group declines in employment among young and prime age adults have been at least as important." Dotsey, Fujita, and Rudanko (2017) also document a profound decline in prime-age male labor force participation over generational cohorts, at all ages. In a 2021 literature review on the subject, Perez-Arce and Prados (2021) suggest that "examining only demographic shifts leaves unexplained more than a third and up to one-half of the decline in the LFPR" and "demographic changes do not represent the whole picture. Within each demographic group, there have been changes in LFP rates…"

Another secular trend that may have influenced labor force participation is changing technology. In theory, technological changes can alter labor supply to increase the attractiveness of non-participation or shift labor demand such that working conditions are less preferable. The latter is described as a possible explanation by Acemoglu and Restrepo (2018), who create a model under which automation can reduce long-term employment. Krueger (2017) outlines the case for two possible technological changes that may have made non-participation more appealing, increased opioid availability and video games. Regressions of changes in county-level labor force participation on opioid prescription rates showed a strong correlation, though Krueger notes that the results are "difficult to interpret" and "the direction of causality is unclear." Falling labor force participation may have caused more idle workers on disability to

seek opioid prescriptions, rather than the other way around. Krueger describes a rise in time spent playing video among the prime-age population, though this too seems more likely to be only a symptom rather than a cause of the decline in labor force participation.

Much of the literature is skeptical that there is a strong cyclical component to the decline, rather than secular trends. In Perez-Arce and Prados' literature review, they argue that the continuing decline of the labor force participation rate after the end of the Great Recession should constitute evidence that secular trends have had a larger impact than cyclical forces. However, between 2015 and 2020 labor force participation had actually begun to rise slightly. This trend is even more strongly visible when examining the employment-population ratio, which began sharply rising in the wake of the Great Recession, recovering approximately 60% of the decline before the COVID recession forced it back down. The slow and protracted falling unemployment during this period blunted the effect of the otherwise clear recovery on the labor force participation rate, which points to the recession as the major cause of the decline.

Other studies have found strong evidence to suggest cyclical effects. Nucci and Riggi (2018) contrast the fall in labor force participation in the United States during the Great Recession to the concomitant rise in the European Union during the same period, as well as to the performance of American labor force participation in previous recessions. They conclude that the procyclical element of labor force participation was much stronger in 2008 than in these other recessions, suggesting some recent divergence in American labor force characteristics. This idea was further reinforced by Van Zandweghe (2020), who analyzed the degree of procyclicality in all US recessions since 1948 and determined that after 1983 there was a sharp uptick. Yagan (2019) notes specifically that the localities most strongly affected by the 2008 recession continued to have depressed employment rates for years after the fact, again suggesting a strong

role for cyclical effects.

In summary, there are a number of secular trends which have influenced the decline in American labor force participation, among them demographic and technological changes. However, most analysis concludes that they do not account for the decline entirely, and comparisons between the United States and other nations which have experienced many of the same trends reveals that they certainly do not capture the factors at work in the unique decline of the American labor force participation rate. Studies of recessions in recent decades, however, demonstrate a strong cyclical effect that must be considered on its own.

III.   **Empirical Strategy**

In order to analyze the factors behind falling labor force participation in the United States, we first must address an important measurement issue. Labor force participation rate is a useful but flawed metric to work with because it includes the unemployed, the definition of which is imprecise and frequently changed. In addition, the unemployment rate tends to respond more slowly during recovery periods than the employment-population ratio. For this reason, the labor force participation rate's decline is strung out over long intervals that linger well after recessions have ended. Using labor force participation as the dependent variable would have made it very difficult to isolate our analysis to recession periods, as we intended to. On the other hand, the employment-population ratio is both well-defined and exhibits an extremely direct and brief response to recessions (see Chart 2). For this reason, the dependent variable in all regressions was the employment-population ratio, rather than labor force participation rate.
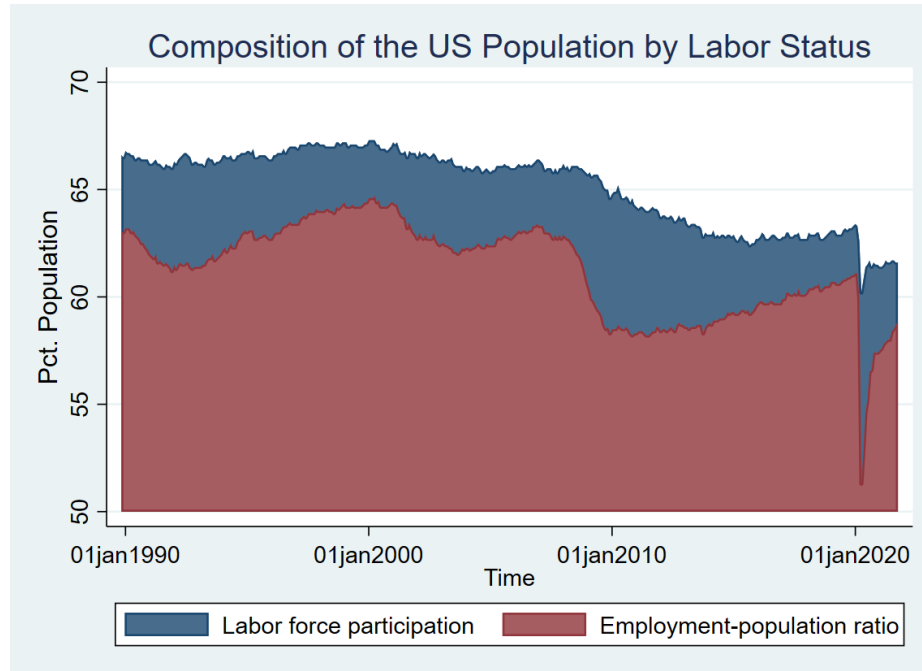
Chart 2: Labor Force Participation versus Employment Rate in the United States, 1990-2020

There are a number of policy channels by which the characteristics of the US labor force may have changed over the past couple of decades. One possible measure is an overall decline in the favorability of treatment received by American labor unions. The causal mechanism here is fairly simple - labor markets on their own can be inefficient, and mediating institutions such as labor unions may be necessary to negotiate wages that do not fall below the reservation for many workers. With a decline in such institutions, workers who drop out of the labor force during recession periods would not have a reason to return afterwards. On the other hand, unionized industries have higher labor costs, which may make them more vulnerable to recessions and more inclined to lay off workers during these periods. To determine which effect was dominant (if either), two variables were considered: the simple unionization rate (which has declined over the past few decades), and state right-to-work laws (which have become adopted by more states

in recent years) as a proxy for the overall favorability of the treatment of labor.

Another potential policy channel may be the long-term decline of the real minimum wage since the 1970s. If it represented something close to a reservation wage for unskilled workers in that period, then its fall over time due to inflation may have driven workers out of the labor force during recession periods when large amounts of existing jobs were sloughed off. Alternatively, there may also be short-term effects due to the minimum wage hikes which occurred during the 2008 and 2020 recessions that resulted in businesses being forced to lay off some of their workforce.

A third possible explanation for labor force participation decline may be the changing sectoral distribution of employment. Many existing high-skilled jobs in construction and manufacturing inherited their labor regimes from a "Fordist" era of high wage and benefits protections, but these jobs have declined as a share of the overall economy. It is possible that the service-sector jobs which have replaced them provide overall less job and wage security, and thus are more vulnerable to frictional effects. Service-sector jobs, as measured in this paper, increased from 41.4% of total employment in the United States in 2001 up to 48.9% in 2019. This could also explain why labor force participation has declined most significantly among younger and less-educated demographics, as these are the groups most likely to be employed in the service sector.

These were the independent variables in our regression. Because we analyzed policy channels, endogeneity is a concern. Certain policies such as minimum wage and right-to-work laws are more likely to be adopted in states whose political leanings may correlate to demographics endogenous with changes in the employment rate. For instance, states with higher-educated populations are more likely to take left-wing positions on these issues, but

higher-educated demographics have also seen less of a decline in employment rate. Then if minimum wage did have a negative effect on the employment rate, an OLS regression might understate it, or even return a coefficient with the wrong sign entirely.

In order to account for this, fixed-effects regressions were run across all three recessions in addition to the simple OLS regressions. This controlled for education and age, in addition to any other possible endogenous demographic characteristics that are unlikely to have shifted much within the 20-year timeframe. Because the only states to introduce new right-to-work laws during the time period examined were Indiana, Kentucky, Michigan, West Virginia, and Wisconsin, this variable was not be included in the fixed-effects regressions.

This is the simple OLS regression that was used:

$$\Delta epop_i = \beta_0 + \beta_1 minwage_i + \beta_2 \Delta unionization_i + \beta_3 righttowork_i + \beta_4 \% services_i + \varepsilon_i$$

The fixed-effects regression is only slightly different:

$$\Delta epop_{it} = \beta_{0t} + \beta_1 minwage_{it} + \beta_2 \Delta unionization_{it} + \beta_3 \% services_{it} + \alpha_i + \varepsilon_{it}$$

IV.   Data

Data for most of these considerations is available from either Bureau of Labor Statistics or the US Census Bureau. The BLS provides annual estimates of both labor force participation and employment-population ratio for all US counties (approximately 3200 data points) dating from 1990 up to the present. In addition, labor force participation and employment-population

ratios are available for all US states in each month from January 1976 up to the present. These datasets allowed the creation of a set of local employment-population dips for each state or county over recession periods. The monthly state-level data allowed for a higher degree of temporal precision, but the annual county-level data provided significantly more individual data points. Regressions were run with both datasets in order to approach the problem from all angles.

The employment-population decline for each recession period was measured slightly differently for the state-level and county-level regressions. Each state's decline was calculated as the difference between the employment rate in the first month of a recession period and the last month of that period. For instance, the employment rate in New Jersey in April of 2001 was 63.6%, and in December of that year was 62.9%. So New Jersey's employment-population ratio decline during the 2001 recession was 0.7 percentage points. For the 2008 and 2020 recessions, the periods examined were from January 2008 to June 2009 and from March to April of 2020, respectively.

Since monthly data was unavailable on the county level, the estimate of the decline was made using annual data. An unfortunate weakness of this dataset is that the time interval includes significant portions of non-recession periods, resulting in the decline being generally understated among the county data (contrast state vs. county figures in Table 1). This is especially the case for the 2020 recession, where no employment level data was available prior to July 2020 to use as an ending benchmark - significantly after that recession's nadir. As an example of how the figure for counties was calculated, the employment-population ratio in Mercer County, New Jersey was 49.5% in 2001 and 49.4% in 2002, and so the decline in employment rate in that county during the 2001 recession was estimated to be 0.1%.

	2001 Recession	2008 Recession	2020 Recession
National E-Pop Fall	-1.1%	-3.5%	-8.6%
Best-Off State	Vermont (-0.3%)	Vermont (-0.3%)	Wyoming (-2.2%)
Worst-Off State	Michigan (-2.4%)	Utah (-5.7%)	Nevada (-19.8%)
Best-Off County	Yuma County, CO (+0.14%)	St. Bernard Parish, LA (+0.17%)	Bristol Bay Borough, AK (+0.83%)
Worst-Off County	Webster County, MS (-0.12%)	Rio Blanco County, CO (-0.16%)	Loving County, TX (-1.3%)

Table 1: Summary Statistics of the Employment-to-Population Ratio in Recession Periods, State and County Level (Bureau of Labor Statistics)

Some data is more directly available. Policy provisions such as state and federal minimum wage, as well as each state's right-to-work status are gleaned easily enough from state and county ordinances in these areas. On the county level, supplemental data on minimum wage laws was taken from the UC Berkeley Center for Labor Research and Education's Inventory of Local Wage Ordinances.

The BLS also provides important industrial data at the state level. Releases dating back to 1997 document the unionization rate for each state, though not for each county.

Sectoral employment was gathered from BEA releases which gave detailed industry-employment breakdowns by county and by state for each year dating back to 2001. The figure for percent employed in services was obtained by summing the employment levels under the categories "real estate and rental and leasing", "professional, scientific, and technical services", "management of companies and enterprises", "administrative and support and waste

management and remediation services", "educational services", "health care and social assistance", "arts, entertainment, and recreation", "accomodation and food services", and "other services (except government and government enterprises)", then dividing this sum by the total employment level in that locality.

V.   <u>**Results**</u>

On analysis, the simple OLS regression at the state level yielded insignificant results for most of the variables that were examined. Minimum wage appeared to have a small positive effect in 2020, though the fact that it is only barely statistically significant, and that it does not also appear in 2008 and 2001, makes it seem most likely to be an artifact.

Only the portion employed in services had a clearly visible significant effect, and that only during the 2008 and 2020 recessions. This may be a consequence of the 2001 recession being much less severe than those that followed - the effects may have simply been too weak to be separated from noise. That may be evinced by the fact that the effect associated with services employment was much stronger during the 2020 recession than the 2008 recession - a one percentage point higher share employed in services was associated with a 0.07 percentage point increase in employment rate decline in 2008, but an astonishingly high half a percentage point increase in 2020. Explanations for this discrepancy might include the fact that at its nadir, the 2020 recession was much deeper than the 2008 recession, though the latter lasted much longer. It is also worth noting that the pandemic attacked large numbers of service sector jobs, such as food and hospitality services, much more directly in 2020 than in previous recessions.

Effect on employment rate, percentage points:	In 2001:	In 2008:	In 2020:
Minimum wage, in dollars…………………..…….	0.001 *(0.152)*	0.041 *(0.530)*	0.698 *(0.241)*
Unionization rate………………………..……....…	0.020 *(0.018)*	0.024 *(0.057)*	-0.333 *(0.100)*
Right-to-work status…………………...………….	0.224 *(0.224)*	-0.002 *(0.653)*	-1.014 *(1.191)*
Percent employed in services………………….	-0.002 *(0.018)*	-0.071 *(0.052)*	-0.532 *(0.108)*

Table 2: OLS Regressions at State Level in Recession Periods

(Coefficients and Standard Errors)

When run at the county level, similar overall results were obtained but with a notable difference. Minimum wage and labor laws were again found to be of little effect, while percent employed in services had a significant negative effect, though much smaller than the state-level regression. In addition, while the state level regression found significant differences in the size of the effect of employment in services, the results from the county level yield a much more even and mild result. This may be in part due to certain results being exaggerated by the smaller sample size of the state-level regression, but is most likely due to the weakness of the county-level employment data discussed previously.

Effect on employment rate, percentage points:	In 2001:	In 2008:	In 2020:
Minimum wage, in dollars…………….……….0.106 *(0.121)*		-0.172 *(0.125)*	0.125 *(0.054)*
Right-to-work status……………….....……….0.176 *(0.076)*		0.421 *(0.106)*	0.140 *(0.197)*
Percent employed in services……………….-0.001 *(0.003)*		-0.031 *(0.003)*	-0.026 *(0.005)*

Table 3: OLS Regressions at County Level in Recession Periods

(Coefficients and Standard Errors)

As mentioned earlier, these models are prone to endogeneity and might possibly disguise the effects of certain policies behind demographics. To ensure that the results were rigorous beyond this, regressions with fixed-effects terms were also conducted at the state and county levels. The state level fixed-effect analysis mostly confirms the earlier results, with percent employed in services again being a clear standout. One additional percentage point of the labor force in the service sector was associated with a staggering three-tenths percentage point higher drop in the employment rate across all the examined recession periods. This would imply that roughly 2.25 percentage points of the decline in employment between 2001 and 2020 could be explained by shifting employment into the service sector. Unionization rate generally appeared to be insignificant, though intriguingly minimum wage was found to have a slight negative effect, in contrast to the result of the OLS state-level regression for 2020. This serves as additional evidence that the earlier result was anomalous and that minimum wage most likely does not offer protections against a decline in employment.

Effect on employment rate, percentage points (all recessions)
Minimum wage, in dollars…………………………………………………...…-1.074 *(0.158)*
Unionization rate……………………………………………………………...0.293 *(0.151)*
Percent employed in services…………………………………………...…-0.299 *(0.125)*

Table 4: Fixed-effects Regression at State Level in All Recession Periods

(Coefficients and Standard Errors)

The county-level fixed-effects regression corroborates the broad results of the other regression, with the main finding being a strong negative effect on the employment rate of percent employed in the service sector. Notably the effect here was again milder than the state-level result (only a one-thirtieth percentage point decline in employment per percent more employed in services, explaining only one quarter-percentage point of employment decline), most likely due to the inherent limitations of the data source.

Effect on employment rate, percentage points (all recessions)
Minimum wage, in dollars………………………………………….………….-0.524 *(0.019)*
Percent employed in services…………………………………………...…-0.032 *(0.006)*

Table 5: Fixed-effects Regression at County Level in All Recession Periods

(Coefficients and Standard Errors)

VI.   <u>**Conclusion**</u>

The question of why the United States alone in the developed world has experienced a decline in labor force participation is both vexing and important, and one which has resisted simple answers. In the last ten years, many attempts have been made to piece together the mechanism behind this phenomenon, but without conclusive results.

The analysis conducted here does not itself offer any terminal answers, but it has produced some clear and relevant findings. First, changes in labor laws such as the increasing prevalence of right-to-work and the declining real minimum wage do not seem to be the culprit, and neither does the falling unionization rate. Variation in these factors across US states and counties over the last 20 years has little apparent effect on the decline in employment, and in those cases where an effect was visible it could only explain a marginal amount of that decline.

Second, there was a highly significant association between those localities which had greater portions of their labor force employed in the service sector, and those where the decline in employment during recession periods was steepest. The association was strong enough that a sizable portion of the decline in the employment rate over the last two decades could be attributed to it. The statistical significance, magnitude, and replicability of this finding makes it difficult to doubt, though what it suggests about the overall decline in employment is much harder to parse.

For instance, if rising employment in the service sector is the cause of the decline, then why is this not seen in other developed countries? Although some of these countries have maintained high levels of employment in manufacturing, this is not true of *all* of the developed

world. But the United States *is singular* in its decline in the employment-population ratio. This is the same reason that demographic and technological explanations for this phenomenon were rejected, so the growth of the service sector as a putative explanation for the decline in the employment rate should give us pause.

Is service sector employment in the United States significantly different from other developed countries? If so, how? This is where we run into the limitations of our analysis, which looked only at the variation in labor laws across US states. Labor laws in the rest of the developed world include a variety of provisions such as employment protection laws and greater amounts of mandatory paid leave. In addition, employment during recession periods is highly sensitive to the behavior of government institutions, which begs questions about macroeconomic variables such as automatic stabilizers and central bank actions. The United States is certainly unique in the developed world along these dimensions and so it is possible, indeed highly likely, that an international analysis might yield very different results.

Although this analysis did not fully plumb the depths of what lies behind the decline in 21st-century American employment, isolating service sector employment as a key correlate should be a strong clue as to where future research ought to look, and what kinds of mechanisms it ought to be looking for.

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