Figure 1: Group Specific Employment Patterns

(A) Routine & Non-Routine Occupations

(B) Endogenous Clusters

Notes: Panel A plots employment trends as grouped in the polarization literature. Data prior to 1983 are taken from the US Department of Labor’s Employment & Earnings publications and from FRED thereafter. The occupations are grouped as suggested in Acemoglu and Autor (2011). Panel B illustrates the cumulative growth of employment/population in each occupation assigned to factors 1 and 2 in model (1), which are listed in Table 2. Data for this graph are directly constructed from the monthly basic CPS files for the consistent panel of occupations compiled by Dorn (2009). The levels in both figures are imputed from quarterly growth rates and start with the level of employment/population at the beginning of each sample. We seasonally adjusted all time series from both data sources using the US Census X11 method.

If these stark cyclical patterns are truly due to a distinguishing feature, that is common to occupations within each broad category plotted in Figure 1, then we should be able to identify this group-specific characteristic as well as potential structural breaks from high frequency employment dynamics in the underlying detailed occupations.

Motivated by this observation, we develop a statistical framework that serves two purposes: first, we provide an “agnostic” approach to group detailed occupations into “clusters” that share common business cycle dynamics. Second, and jointly with our classification of occupations, we identify structural breaks in the cluster-specific cyclical dynamics, which allows us to revisit and formally test Jaimovich and Siu’s (2018) hypothesis that labor market polarization may play an important role in explaining the emergence of “jobless recoveries” in the US since 1990. Our test refines their original analysis in several ways: we conduct formal statistical inference on the estimated effects, we explicitly model the dynamics of occupation specific per-capita employment, we account for heterogeneity (across occupations) and asymmetry (across business cycle phases) in the effects of aggregate shocks, and we control for idiosyncratic, occupation-specific shocks.

To accomplish this, we estimate a dynamic factor model with latent clusters using detailed occupation level data from the US Current Population Survey (CPS) for the period 1976q1-2013q3. Even though our identification is based entirely on common cyclical employment dynamics across detailed occupations, our model uncovers two occupation clusters that almost perfectly coincide with “routine” and “non-routine” occupations, as identified in the polarization literature.

This finding is remarkable, as the original classification is based on cross-sectional variation in the “task content” of each occupation (see Acemoglu and Autor, 2011, for a survey). While conceptually intuitive, this approach faces numerous practical challenges, including the lack of high quality longitudinal information and difficult to interpret ordinal task-content metrics (see Autor, 2013, for a detailed discussion of these difficulties). Reassuringly, our “agnostic” clustering approach suggests that traditional blue collar jobs as well as sales and administrative support are most strongly associated with the gradually disappearing occupation group (routine/cluster 1), while managerial and

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3For a detailed discussion of “jobless recoveries”—a recovery of output starting at the business cycle turning point, without a parallel recovery in employment—see for example Gordon and Baily (1993), Groshen and Potter (2003), Bernanke (2003), and Bernanke (2009). While there is no dominant theory for the emergence of this phenomenon, some recent theoretical contributions include Koenders and Rogerson (2005), Bachmann (2012), and Berger (2012).