**Autor, Dorn, Katz, Patterson, Van Reenen (2020)**

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| **Question** | How to explain the decline in the labour share of GDP since the end of the 90s’? Propose to explain it due to the *rise of superstar firms*. |
| **Context – data** | * Context: Aggregate decline in the share of GDP paid out in compensation of Labour over time is in contradiction with one of Kaldor stylized facts that was observed during the twentieth century (However Keynes noted that it was kind of a miracle and was hiding lot of instability at industry level). Consensus that decline is real and significant, but not on the cause. * Data: micro-level data from the US Economic Census. For Europe: EU-KLEMS = industry-level panel data set for OECD countries + UN Comtrade database for imports + CompNet database that provides LS and concentration data for a wide range of industries. BVD Orbis to compute internationally firm-level decomposition of the LS. S&P Compustat database to characterize superstar firms. |
| **Main results** | 7 facts on **how the rise of superstar firms can lead to a decline of labour’s share**:   1. There’s been a **rise in sales concentration** across most industries: reflecting increasing specialization of leading firms and ‘large’ *(=large share of industry sales!!)* firms are getting bigger. 2. Industries with larger increases in product market concentration have experienced larger declines in LS. 3. Fall in LS in mainly driven by **reallocation of VA and sales between firms** rather than by an overall decline. 4. Reallocation-driven fall in the LS is most pronounced in industries that experienced the most increased sales concentration. 5. Industries that are becoming the most concentrated are those with: faster growth of productivity and innovation. 6. *Larger* firms have higher markups and size-weighted aggregate markup increased more than the non-weighted average markup! 7. Patterns are not unique to the US but present in OECD. |
| **Limitation** |  |
| **Literature** | * **General literature** on the labour share approaches the topic from an **aggregate point of view** and thus consider **homogenous changes in the LS across firms within an industry**. Which is different as the rising superstar perspective allows heterogenous changes within an industry. * Contribution:  1. Micro evidence on the decline of labour share at both industry and establishment level across six major sectors 2. “Rise of superstar firms” model that relies on the feature that most markets are characterized by a ***winner takes most* mechanism**. 3. Present evidence in the data that aligns with rising superstar firm hypothesis.  * Relates to other papers that find consistent results: * (*Bockerman and Maliranta*) on the breakdown of changes in Finnish manufacturing LS into between and within plant components. * Kehring and Vincent 2018 that also consider a micro-level decomposition from US Census. * **Barkai** that finds a negative industry-level relationship between changes in LS and changes in concentration (uses industry and aggregate data). * Contribution of *Autor, Dorn, Katz, Patterson, Van Reenen* is the **micro-level approach to apprehend the firm-level contribution to patterns identified by Barkai on the industry-level relationship**. * Link firm-level contributions to a conceptual framework: particularly what contributions for between-firm (VA/output reallocation) and within-firm components’ to the falling industry and aggregate level labour share. |
| **Method(s)** | Define a formal model of “rising superstar firms” and obtain effects of superstar firms from **increases in the toughness of product market competition that raises the market share of most productive firms in each sector at the expense of less productive competitors**.   * Can obtain same results with other mechanisms such as: *strong network effects*, rapid *fall in quality-adjusted prices of ICT and intangible capital* that could give larger firms an advantage if there is an initial large cost to adopt these tech and if marginal productivity of ICT raises with firm size (ex: large monitoring of supply chain…). Suggest that rise of superstar firms is a result of weaker antitrust laws but similar trends on firms in US and Europe where large firms are more acted upon is unlikely to be the main reason. |
| **Results:** | **1/ Model of Superstar firms**   * More productive firms (higher z) have greater output and have higher levels of factor inputs. * Markup m = P/c (ratio product price, marginal cost) inversely related to labour share.   A black arrows pointing to a black line  Description automatically generated with medium confidence   * ***Higher markup = lower labour share*** * Model predicted on the idea that superstar firms (=more productive) will be *larger* (=sell more**!!!** Larger = large share of industry sales) because they produce more efficiently, charge lower prices, and capture higher share of industry output = higher market share. * Markup generally falling in absolute value of demand elasticity **&** Marshall second law of demand: consumers are more price inelastic (=lower elasticity of demand) at higher levels of C and lower price levels => more **productive firms(=larger) =charge lower P =>** face lower elasticity of demand = have **higher markup = lower LS for larger firms** * Lower LS for larger firms => shocks that reallocates market share toward larger firms (=high market share) will depress aggregate LS even if individual LS don’t change. * “Market toughness” characterized by cut-off marginal cost: firms with higher marginal cost exit market because they earn negative profits. * Low-productivity firms have higher marginal cost by definition: when low prod firms exit the market there is reallocation of market share toward more productive firms. * **increase degree of sales concentration = decrease LS because more output is produced by superstar firms** (high productivity). * **Also, increase in market toughness reduce all firms’ markup so reallocation effect = between firms effect must be greater than the within-firm effect.** * **Prediction of the model: after an increase in market toughness** * **(1) Increase in firm sales concentration** = market share of larger (=more productive) firms will rise = decrease LS > **rising concentration correlates with falling LS** * **(2)** Industries where concentration ++ = LS falls the most & more reallocation toward larger/more productive firms = superstars * **(3)** **Decline in aggregate LS is mainly product of between-firm effect** = reallocation of output / VA **toward more productive** firms, rather than the individual decline in LS. * **(4)** Industries that become more concentrated will have the largest productivity growth. * **(5)** High markup-firm expanding > aggregate markup rises**.** * **(6)** Similar patterns of changes in concentration and LS across countries should be expected.   **2/ Take model predictions to real data**   * **Data description**  1. **Labour share**  * Measure of labour share = **payroll to sales** ratio is Payroll (+broader measures of compensation)/sales and not VA because this is the measure that can be constructed for other sectors than manufacturing. * All sectors show an aggregate decline of LS since the early 2000s’ at least. * Late 90s’ peculiar: all sectors witnessed an increase in LS except manufacturing = period characterized by strong labour market with high wage and employment growth.  1. **Product concentration**  * CR4 = fraction of total sales accrued by 4 largest firms in an industry * CR20 = fraction of total sales accrued by 4 largest firms in an industry   *‘Largest’ = sales-based or employment-based.*   * Clear upward trend over time: according to all concentration measures **industries have become more concentrated**. * **Trend is stronger when measuring concentration in sales** rather than employment: **firms may attain large market share with relatively few more workers.** * **(?)** Increased concentration is due to: superstar firms expanding their scope over multiple industries **or** superstar firms become more concentrated in their line of work? * Data suggest firms are becoming **more concentrated in their** **primary** **line of** **work but less integrated across other activities.** *Companies like Amazon (dominant across multiple industries) are an exception.* * **Empirical tests on model predictions** * **Rising concentration correlates with falling LS:**   A black and white text  Description automatically generated  - *Manufacturing industries*: regression LS on concentration and control variables. Striking correlation (beta significantly negative) with all concentration measures: *industries j where concentration rose the most were those where the LS fell the most*. Robustness test by considering broader measures of LS. Also include industry-specific trends (with dummies) to exclusively identify the accelerating/decelerating **concentration effect on LS which remains significant and negative**.  - Trade concerns: concentration measures may overstate effective concentration as it only takes domestic sales > include growth of import relative to VA and still find that concentration effect is significantly negative.  - Effect of falling investment goods prices: under this hypothesis capital-intensive industries should see their LS decline. Include capital intensity in the regression: expect significant negative coefficient under this hypothesis.  Result = concentration coeff is little changed when taking into account capital intensity (initial capital/VA) = superstar mechanism linking falling industry-level average LS to rising concentration is not the effect of differentiated industry capital intensity trends.  - *All sectors*: *lack consistent data and especially do not have VA outside of manufacturing!*  => **LS = payroll to sales** ratio instead of Payroll to VA  => **Across main sectors and different measures of concentration: rising concentration is uniformly associated with a fall in the LS.**  **=>** Because most of employment and output is produced outside of manufacturing this makes the result much more important!  **Increases relevancy of Concentration/LS relationship** for the US economy.   * **Between-firm (Within-industry!) reallocation drives the fall in LS:**   **! (LS = payroll/VA(manuf) sinon LS=payroll/sales) !**  *> Addition compared to Barkai!*  > **Melitz-Polanec decomposition of changes in the industry-aggregate** labour share taking into accounts entry E, exits X, and survivors S!  A black and white symbol  Description automatically generated  *wi valued-added share of firm i in industry and Si LS. Bar = unweighted.*  A close-up of a math problem  Description automatically generated  *First term is unweighted-average change in labour share. (among survivors).*  *WE/WS = value-added weighted average LS of E or X firms.*  > Reallocation component = change in covariance between firm size = VA-share and LS for survivors.  => Melitz-Polanec decomposition of changes in the industry-aggregate LS: consistent with superstar framework **reallocation term (among survivors) was the main component of the fall** for both 82-97 / 92-12  - Reallocation effects from entry and exit: exiting firms contribute to decrease in LS = bc exiting firms are most likely to have high LS = most likely not to be profitable. New firms tend to have higher LS: bc to build market share charge low output price…  > Decomposition by five-year periods for Manufacturing:  Consider LS = payroll share of VA & broader measure of LS = compensation share of VA  - Reallocation among surviving firms contributes negatively and **with broader measure of LS almost all the fall in LS can be explained by between-survivor-firm reallocation of VA**.  => **Between-survivor reallocation effect contributes to the decline of payroll share** *(weighted-average)* **generalizes to each major sector.**   * **/!\** The unweighted firm mean LS contribution is positive for almost all sectors: coherent with model predictions. For productivity distribution sufficiently skewed, an **increase in toughness of competition reduces margins thus raising individual LS of all firms BUT reallocates so much market share *(=sales)* to firm with high markups/low LS that the aggregate *(weighted)* LS falls, and aggregate markup rises /!\**   > Assess the magnitude of **between-industry reallocation**:  A black and white image of symbols  Description automatically generated  Decompose overall (weighted) aggregate LS into between-industry & within-industry components. Within-industry (deltaSj) component is decomposed into 4 components using Melitz-Polanec.  - 5-component decomposition of **aggregate LS**: show that the fall in **aggregate LS is dominated by within-industry-between-survivor reallocation!**   * Across most US private sector economy, there has been a decline in aggregate LS and a rise in sales concentration > the fall in the LS is greater in industries that saw greater increase in concentration. The **fall in aggregate LS is mainly accounted for by within-industry-between-firm reallocation *of sales*** *and VA* rather than by individual LS decline. * **Between-firm reallocation is stronger in concentrating industries:**   Reallocation component of falling LS should be most pronounced in industries where concentration is differentially rising as superstar firms capture market share with their relatively high productivity and toughening competition.  If concentration was rising due to weakening competition, would expect general rise in markups, profit shares and fall in LS common across firms within an industry.  - Relationship between Melitz-Polanec components of industry-aggregate LS decomposition and change in concentration: identified correlations between rising concentration and falling LS (1) are mainly driven by reallocation component of LS (beta most significant and negative for concentration on between-firm comp).  > Consistent with superstar hypothesis, concentrating industries experienced a reallocation of economic activity toward firms with lower LS.   * **Larger firms have higher markup & aggregate markup rises:**   Can either obtain markups via econometric approach by estimating a production function and assuming constant return to scales or via an accounting approach where markup is ratio of sales to total cost.  - Both case pb is to get data, especially regarding capital (outside of manufacturing). Focus on Census of Manufactures, where richer data available.  > **VA-weighted average markup always exceeds unweighted markup = larger firms have higher markup**.  > **Aggregate markup have risen considerably over sample period** (80s-2010).  > Across all measures of markup **aggregate markup has risen much more quickly that the typical-firm markup** (median) = **aggregate markups are driven by changing market shares and markup of largest firms**.   * **Concentrating industries have higher growth of innovation and productivity:**   -Technology: use patent-intensity and TFP to measure technical change to investigate whether rising concentration = rapid technological advances. Result= rise in concentration positively correlated with growth of patenting advances.  Also true with labour productivity rising faster for sectors with rising concentration, even when controlling for labour, capital, energy inputs… positive correlation between concentration growth and TFP growth   * Rising concentration = faster technological progress. |