**Kehrig, Vincent (2021)**

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| **Question** | What can explain the aggregate decline in labour share observed in the US manufacturing sector since the 70s’? |
| **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. Suggests value added gets less distributed to those who produce that VA and more to those who own the means of production. Consensus that decline is real and significant, but not on the cause. * Data: US Census of Manufactures (establishment-level CMF): focus on manufacturing because one of the sectors with more pronounced decline + individual establishment data of high quality & long-time coverage. Homogeneity of manufacturing goods allows to disentangle roles of prices and quantities. And for prices use “product-trailer” also provided by US Census Bureau. |
| **Main results** | 1) Since the 80s’ reallocation of VA toward the low end of LS distribution.  2) Aggregate reallocation is not due to entry/exit, to “superstars” growing faster or to large establishments lowering their LS but due to units whose LS fell as they grew (in size=VA).   1. LL establishments benefit from high revenue labour productivity not low wages. 2. Enjoy a price premium = charge significantly higher price compared to peers = role of demand-side factors. 3. Only have temporary lower labour share that rebounds after 5/8 years (V-shape)  * Manufacturing aggregate labour share decline is not driven by a shift of the overall distribution of labour shares in individual establishments. The median establish. even saw a slight increase in LS. * Disconnect between VA & labour reallocation = concentration of VA did not come with similar shift in employment distribution. * Neither market share nor labour share at the individual est. level can on their own explain the historical drop in LS > **importance of joint dynamics at establishment-level**.   Labour share components (wage/ARPL = wage + employment - VA)   * Cross section: low LS establishments **do not pay lower wages than their peers, but they generate higher VA per worker**. * Level of the manufacturing LS without the bottom quintile of the distribution is much higher & does not exhibit any decline! * Dynamic evidence: **most change in LS come from increasing VA relative to non-LL establishments.**   Wages and Employment do not contribute to the differential LS dynamics of LL establishments in a meaningful way.   * **Drivers of VA**: LL establishments charge, on average, higher prices than their peers **&** contribution of prices to relative sales are crucial in characterizing those establishments (not observed for higher LS est.). * **Transitional dynamics**: transition probabilities indicate that LS at est. level is surprisingly transient even for most productive est. = even for LL est. * **V-shaped LS dynamics**: average LL est. experiences a rather temporary drop and rebound in its labour share. * **Drivers of V-shape:** initial drop entirely due to VA growth for LL est. & the rebound is mainly due to retreat in VA growth = reversal of the initial jump. Transitory nature of demand factors lends low LS establishments only *temporary* market power. * **V-shape over time:** evidence indicates a clear deepening over time of the LS V-shaped pattern. Difference between 70s’ and 2000s’ especially regarding employment response from initial VA growth = linked to disconnection b/w VA & labour reallocation = LL establishments are in a very inelastic part of their demand curve where demand shocks are passed through price increases rather than employment increases. |
| **Limitation** | * Price data drawbacks: limited coverage in time + few industries have well-defined quantity measures for a subset of products. |
| **Literature** | Literature offers different explanations for the labour share decline:   * Technical change with new equipment capital and the raise of intangible capital in the production function. * Exposure to trade (example of Finland) and the role of offshoring & outsourcing. * Shift in labour force age toward workers less capable of extracting their marginal product of labour as wage. * Rise in aggregate capital share. * Role of concentration (“winning firms”) and markups (grown over time, reducing capital and labour shares, generating high labour revenue productivity). * Rise of less durable goods (such as computers) means greater share of VA is spent on replacing depressed capital. |
| **Method(s)** | * Defined conceptual framework to interpret their findings. * Wage/productivity differences: define relative change compared to peers and run nonparametric estimation. * T-5 to census t and t-5 to t+5 regression for the dynamic of LL establishments |
| **Results:** | **1/ Aggregate vs Median:**  *Aggregate labour share = Average of individual labour shares, weighted by market share*  *(w\_it = P\_i.Y\_i/somme(P\_i.Y\_i))*  A diagram of mathematical equations  Description automatically generated  *1st term* ***common trend effect****:**unweighted average of the distribution of labour shares*  *2nd term* ***composition effect****: joint distribution of individual labour shares and market shares*    A close up of a number  Description automatically generated  > Since 80s’ decline in in the aggregate (=weighted average) manufacturing labour share (-4.5%) while the median and top/bottom quintiles labour share have remained steady and slightly increases. As the unweighted average strongly correlates with median -> **change in aggregate is not mainly driven by a common trend** = declining unweighted average.  > And manufacturing labour share decline is not driven by a shift of the overall distribution of labour shares in individual establishments (not all LS\_i declined).  => Importance of “**reallocation**” = **changes in the market share as the main driver = composition effect** of manufacturing labour share dynamics.  **2/ Reallocation of value added:**  > **Distribution** of (number of) establishments against the labour share did not change much except slight fattening of the tails.  > Limited reallocation of labour input (employment) to low-labour share establishments.  > Dramatic/**large reallocation of output = VA toward low labour share est.**:  - Before: most VA generated by the est. in the middle of the labour share.  - After: most VA generated by the est. on the lower bound of the labour share.  => By 2012, economic activity shifter toward the low labour share spectrum, with **low LS est. -though remaining small in number- producing more than their peers (=higher VA share=higher market share) without accounting for a similar share in employment**.  => **Disconnect between VA & labour reallocation** = concentration of VA did not come with similar shift in employment distribution.  => Common trends effect (changing overall labour share distribution) unlikely to drive the decline in the aggregate LS: rather driven by **strong decline in the covariance b/w establishment-level labour shares and market shares**  - What lead to VA reallocation?  **3/ Labour share/market share joint dynamics:**   * Three possible drivers of changes in covariance b/w individual market share and labour share: * ‘**Big player**’ scenario: ***decline of aggregate LS driven by initial large establishments?***   > Counterfactual aggregate LS with fixed 1982 market share and labour share changes from data.  > Counterfactual does not exhibit similar decline compared to actual aggregate LS: which we would expect if LS was predominantly driven by initial large est. (=high market share in 82) lowering their LS over time.  > Fall in the manufacturing LS does not appear to be driven by a divergence in the relative LS of initially large (high market share) versus small est.   * (2) ‘**Superstar**’ scenario: ***decline of aggregate LS driven by reallocation of market share toward initial low LS establishments?***   (Superstar = high productivity and low labour share = all else equal is an advantage to take over the market)  > Counterfactual aggregate LS with fixed 1982 LS and market share changes from data.  > It seems that establishments with initially low LS did not experience relative higher VA growth than their peers = ie these establishments did not see market share growing so much as to bring down the aggregate LS.  > Taking panel with continually active est. or full panel: decline in LS of the counterfactual falls short to explain most of the change in manufacturing LS.  > Hints at limited role played by entry and exit.   * (3) ‘**Rising star**’ scenario:   > Neither market share nor labour share at the individual est. level can on their own explain the historical drop in LS.  => There must be a negative correlation at the firm level between changes in the labour share and changes in the market share.  => Joint dynamics at the micro level. What’s behind? Conceptual framework provides a few elements: Demand or TFP shocks or gaining monopsonistic power.  **4/ Micro-level labour share components:**   * **LS are driven by VA: not wages or employment.**     (*ARPL*: revenue labour prod = VA(P.Y)/worker(L))  - *Cross sectional evidence*: study an establishment’s wage and value added per worker relative to that of its peer group > compute relative wage and labour prod. *Nonparametric regression of (relative to peers) outcome variable on labour share.*  > Low LS establishments **do not pay lower wages** than their peers (under theories that rely on labour market power) relative wage almost orthogonal to LS.  > Instead, they **generate higher VA per worker** compared to the similar average establishment = generate high revenue labour productivity compared to peers (theories of superior efficiency) = more productive.  - *Dynamic evidence*: LL establishments = lowest quintile of LS distribution.  > Unsurprisingly, level of the **manufacturing LS without LL establishments is much higher & does not exhibit any decline!**  > With cross sectional nonparametric estimate, show LL establishments produces around 3 times more VA per worker than typical non-LL establishment!  - *Dynamics of LS components*: **how LL establishments LS components dynamics differ from non-LL?**  A red line drawing on a white background  Description automatically generated  A close up of a logo  Description automatically generated  (delta = growth rate relative to previous census ie t-5 to t)  > Regression approach to quantify the change of a specific variable for LL establishments relative to their peers: quantify beta.  > Relative to the previous census year, an establishment that has LL status at time t saw its LS fall by 46% = 18pp.  > **Most change in LS come from increasing VA relative to non-LL establishments**. (beta+/- 0 for W and L) & **relative dynamics of wages and employment do not contribute to the differential LS dynamics of LL establishments** in a meaningful way.   * Key role played by value added in LS decline: **what drives VA though**?   Two elements: Nominal price dynamics and real labour productivity.   * **Product price premium**   - Price data are sales based, we switch to sales per worker (pq/L), rather than value added per worker (py/L).  - Aggregate relative prices across all products offered by an establishment (for given year) to obtain the establishment-level sales-weighted average relative product price for each year = *referred as the average product price premium that an est. charges relative to its peers across its product lines.*  - Relative sales/worker and relative price:  A math equation with black text  Description automatically generatedand A black and white image of a mathematical equation  Description automatically generated  > *Relative physical productivity is defined as relative sales/w – relative price*  - *Cross sectional evidence*:  > **LL establishments charge, on average, higher prices than their peers** for the same products. (LL relative sales/worker >>0 and with relative price on average 50% of this wedge)  > Contribution of prices to relative sales are crucial in characterizing those establishments with the lowest LS compared to higher LS: because they don’t show this feature = no relative price component in the relative sales/worker for them.  - *Dynamic evidence*: (same regression as dynamic of LS components with relative)  > Strong evidence of a rise in prices concomitant to the drop in LS for low LS units: compared to their non-LL peers, the relative prices of LL establishments increase by a statistically significant 16.8% on average from the previous census year.  > **Fact that relative prices and LS comove negatively represents strong evidence that demand shocks** are key to rationalizing the LS dynamics of LL establishments: under technology shocks, we would expect relative prices to fall alongside LS.  **5/ Impact of underlying demand drivers: highly persistent of transient?**   * Analysis of the LS persistence at the micro level. * Markov **transitional dynamics:**   > Conditional on an establishment’s LS at time t, what is the probability that it has LL status at time t + 5?  > Probability that an establishment retains LL status from census year to census year (a five-year window) is only 41.7%.  > Transition probabilities indicate that LS at establishment level is surprisingly transient even for most productive est. = even for LL est.  > Transition matrix weighted by economic activity and confirm the transient dynamics of LL establishments.   * **V-shaped LS dynamics of LL establishments:**   A close up of symbols  Description automatically generated  > Quantify the LS dynamics that occur in the years following LL status.  *= Plot the estimated beta*  > Typical LL est. at time t est. experienced a relative LS decline since t-5, yet in the five-year period thereafter t to t+5 the change in the LS of est. that are LL in year t will expand <>Transient nature of LL status.  > Unweighted regression shows that *small LL est.* face more extreme dynamics.  > Average LL est. experiences a rather temporary drop and rebound in its labour share.   * **Drivers of V-shaped LS dynamics of LL establishments:**   *> Previous regressions on each component below*  A red line drawing on a white background  Description automatically generated  > Drop in labour share mainly due to strong increase in VA for LL establishments already established.  > What drives the rebound: wages or employment?  > Downward trend (cumulative growth rate): entirely due to differential in value added growth.  > Overall, **the rebound is mainly due to reversal of the initial jump in VA of LL est. = retreat of VA growth:** in the subsequent five years **most of the initial jump in product price premium of LL est. is reversed!** Such that cumulative effect b/w t-5 and t+5 is significantly lowered compared to t-5 to t.   * V-shape pattern over time:   > **70s’**: initial drop preceding census driven by rise in VA. Next five years LS share growth differential close to zero = retreat of VA + positive response of employment.  => Hiring for LL est. seems to respond to the strong prior VA growth *with delay*.  > **2000s’**:  - Initial VA growth advantage of LL est. is larger.  - **More pronounced V-shape** pattern as retreat in VA is stronger  - Noticeable different response of employment: no strong increase in employment!  => **Establishments are in very inelastic part of their demand curve where most demand shock is passed through into higher prices rather than higher employment.** |