Wage-led Growth: Theory and Empirical Evidence

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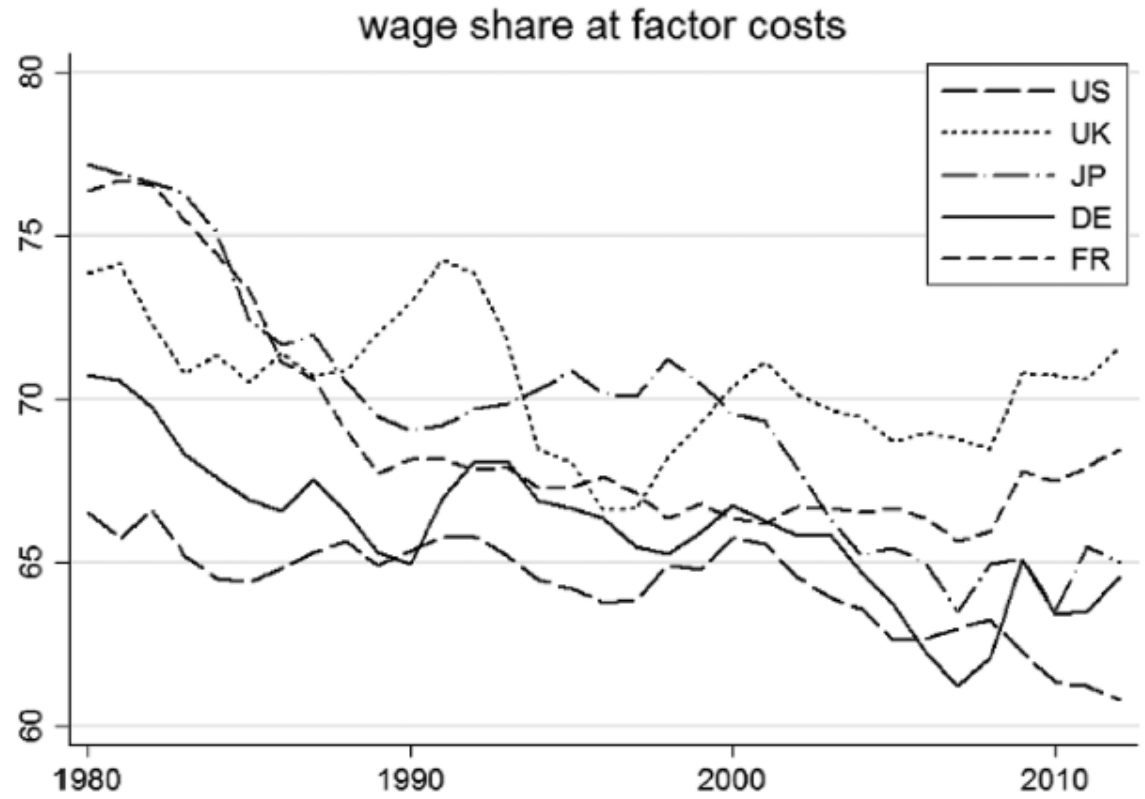
Broad perspectives on inequality and growth

- Historically, economists tended to believe that distributional equity had to be sacrificed to achieve faster growth
  - Ricardo, Marx, Lewis-Ranis-Fei, Kaldor, Okun, etc.: faster growth requires a higher profit share or more inequality, at least in early stages of development
  - Reasons included higher saving rates out of profits and greater incentives for investment and entrepreneurship
  - Kuznets curve: higher inequality in early stages of development, lower inequality in later stages
    - Data criticized by Piketty: no inevitable decrease in inequality in high-income countries
- Recent studies are finding that lower inequality is generally associated with more rapid growth, especially in the long run
  - Newer theories suggest channels for lower inequality to promote growth
    - Increased human capital formation, greater work effort, demand for public investment, etc.
  - Work on long-term “secular” stagnation recognizes inequality as a contributing factor

Key recent empirical studies of inequality and growth

- Dabla-Norris et al. (IMF, 2015): Growth rates are inversely related to Gini coefficients and the top quintile share (positively related to bottom three quintile shares)
  - Sample of 159 countries, 1980-2012, 5-year average data, with controls for initial per capita income and other variables, country and time fixed effects, lagged dependent variable
- Berg et al. (*JDE* , 2012): Higher inequality has strong and significant effects in shortening the duration of "growth spells"
  - Growth spells are defined as periods of at least 5-8 years of sustained, rapid growth
  - Hazard model shows a higher probability of a spell ending sooner when inequality (Gini) is higher
- Halter et al. (*JEG*, 2014): Lower inequality has a positive effect on growth in the long run but not the short run
  - Data for 106 countries in 1965-2005, eight 5-year periods, usual controls
  - The effect of higher inequality is positive in next 5-year period, but negative after that ***and*** the long-run impact is negative

Trends in the functional distribution of income ("wage" or labor share), G5 countries, 1980-2013



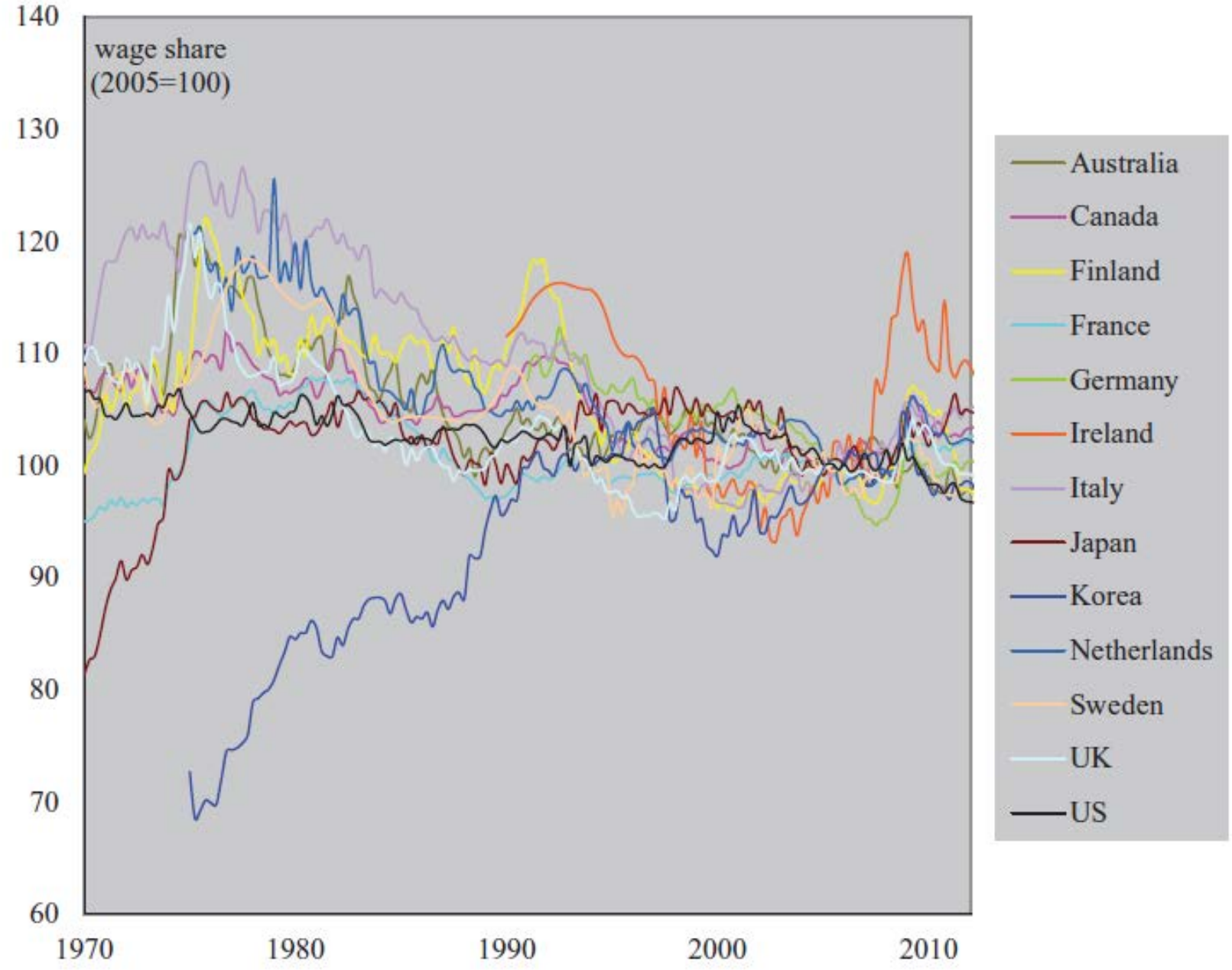
From Stockhammer and Wildauer (2016)

More countries and years: 13 OECD countries from 1970-2012

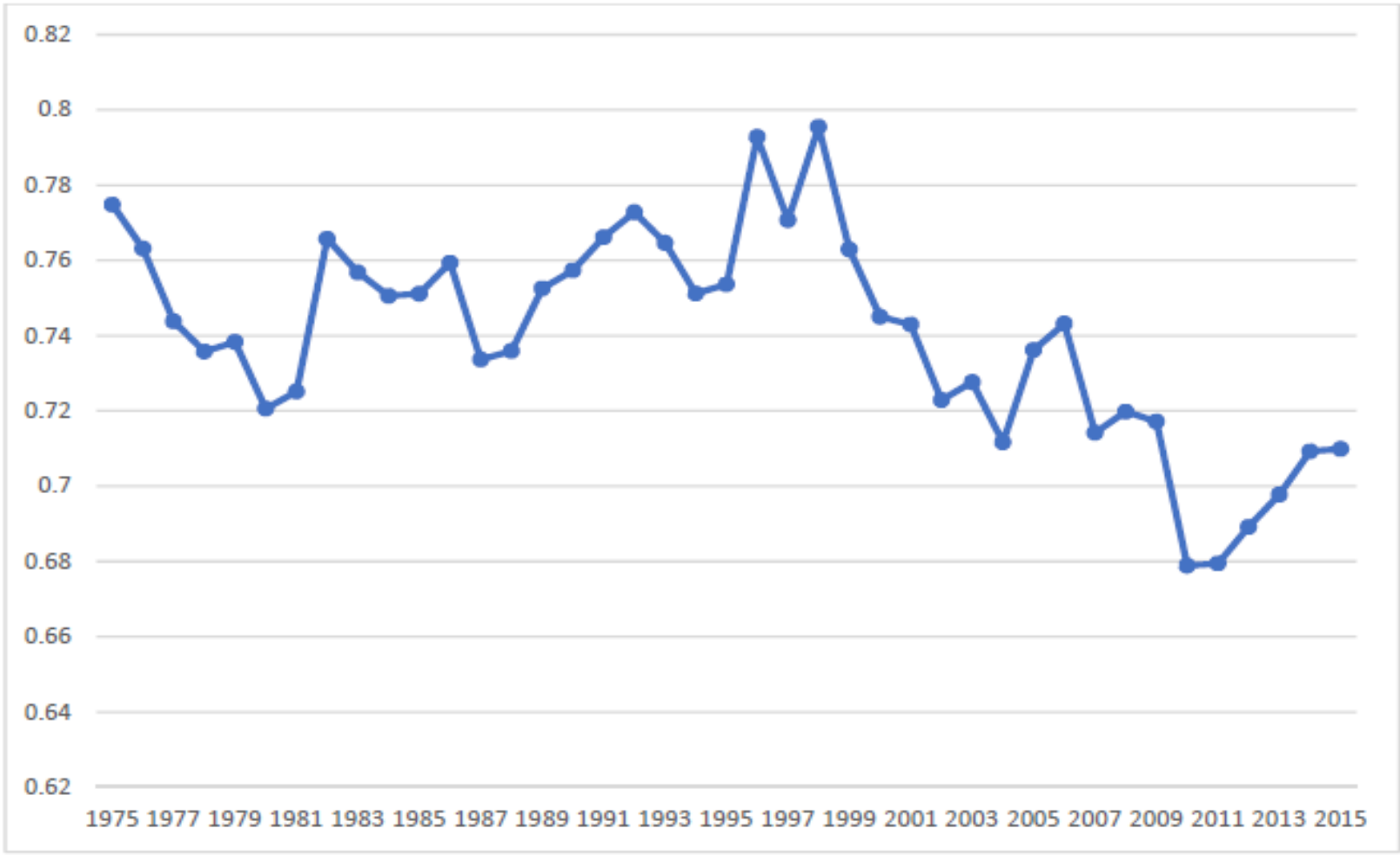
With a few exceptions, the long-term trends are mainly downward

Korea is an exception in this data set (1970s-80s) but see next slide.

From Kiefer and Rada (2015)



Labor Share in Korea (1975 – 2015)



Source: Bank of Korea

From Lee (2017).

Wage-led or profit-led demand: Theory

- The **functional distribution** of income
  - "Wages" are broadly defined to include all labor compensation
  - "Profits" are broadly defined to include gross operating surplus of firms or all returns to capital
    - Both categories can be disaggregated (e.g., production workers' wages vs. managers' salaries, firms' retained profits vs. interest and dividend income of "rentiers", etc.)
- Theory comes from the "post-Keynesian"/"heterodox"/"structuralist" tradition of Kalecki, Steindl, Rowthorn, Dutt, Taylor, Blecker, Marglin, Bhaduri, Lavoie, Hein, Stockhammer, Onaran, You, etc.
  - Core focus is on effects of the functional distribution on aggregate demand

$$Y = AD = C + I + G + NX$$

    - This can be embedded in larger models including supply-side considerations (productivity, markups), financial systems, asset markets, labor markets, balance of payments, monetary and fiscal policies, etc.
  - Results can vary depending on many structural characteristics of countries (size, level of development, degree of openness, financialization, etc.)

Distributional effects of wage vs. profit shares on components of aggregate demand

- Assuming that the marginal propensity to consume (MPC) is higher for wages than profits, redistributing income to wages increases C
  - Because part of profits is retained by firms (not consumed) and corporate payouts (interest, dividends, stock buy-backs) are concentrated in upper-income households
- The effect of a higher wage share on total private investment I is theoretically ambiguous
  - A higher wage share (real unit labor costs) may have a negative direct effect on corporate ("business") investment
  - But a higher wage share can also boost housing ("residential") investment *and* induce investment in labor-saving technologies by firms
  - If there is a strong accelerator effect and consumption is strongly wage-led, then there can be an indirect positive effect of the labor share on business investment (Onaran and Obst 2016)
- Higher labor costs make domestic goods less competitive, so net exports (NX = trade balance) can be negatively affected by a higher wage share = real wage/labor productivity
  - But this depends on price elasticities of demand for exports and imports, types of goods exported, etc.

From theory to empirics

- It is theoretically ambiguous whether total AD (output) is “wage-led” or “profit-led”
  - The direction of this relationship is therefore an empirical question
  - Also, distributional effects can vary for different variables (output, utilization, employment, investment, growth, etc.)
- Many econometric studies have estimated the direction of these relationships, using three methods (mostly the first two):
  - **Structural** models or “single-equation” (separate estimation of C, I, NX functions)
  - **Aggregative** models (direct estimation of wage or profit share effects on total Y)
    - Either of these can be estimated using **systems** methods, treating the wage share as endogenous
  - **Reduced form** models (estimate impact of underlying determinants of income distribution on Y)

Structural studies find wage-led demand (output) in most countries, with some exceptions (mostly smaller and more open economies)

Methodology	Findings	
	Wage-led demand	**Profit-led demand**
Structural estimates	Naastepad & Storm (2006), France, Germany, Italy, Netherlands, UK Hein & Vogel (2008), France, Germany, UK, US Stockhammer et al. (2009), euro area Onaran et al. (2011), US Stockhammer et al. (2011), Germany Onaran & Galanis (2012), euro area, Germany, France, Italy, UK, US, Japan, Turkey, **South Korea** Stockhammer & Wildauer (2016), panel of 18 OECD countries[b] Onaran & Obst (2016), 11 European countries[c] Cauvel (2018, Chapter 2), US (systems GMM)[d]	Naastepad & Storm (2006), Japan, US Hein & Vogel (2008), Austria, Netherlands Onaran and Galanis (2012), Australia, Canada, Argentina, China, India, Mexico, South Africa[a] Onaran & Obst (2016), Austria, Belgium, Denmark, Ireland

Note: Results shown here are for distributional shifts in individual countries. Onaran and Galanis (2012) and Onaran and Obst (2016) find that some countries switch from profit-led to wage-led if there is a simultaneous change in the labor share in all countries

Aggregative studies mostly find profit-led demand, except for a few studies of long-run effects

Methodology	Findings	
Aggregative estimates	Vargas Sánchez and Luna (2014), Mexico, long run[e] Charpe et al. (2018), US, UK, France, long run (growth)[f] Cauvel (2018, Chapters 1 and 3), US and panel of OECD countries, especially long-run[g]	Fernandez (2005), US Barbosa-Filho & Taylor (2006), US Tavani et al. (2011), US Nikiforos & Foley (2012), US Vargas Sánchez and Luna (2014), Mexico, short run Kiefer & Rada (2015), panel of 13 OECD countries[h] Carvalho & Rezai (2016), US Barrales & von Arnim (2017), US[f] Charpe et al. (2018), US, UK, France, short run (growth)
Reduced form estimates	López et al. (2011), Mexico, short run[i]	

From Robert A. Blecker and Mark Setterfield, *Heterodox Macroeconomics: Models of Demand, Distribution, and Growth*, Cheltenham, UK: Edward Elgar, 2019, forthcoming.

Notes to tables (in case of questions)

Notes: For structural studies that give separate results for domestic demand and total demand (including net exports), only the results for total demand are shown here. Studies that only cover domestic demand and do not include net exports are not presented here. Some studies are shown more than once if they found different results for different countries or time horizons. Long run and short run are indicated only for studies that distinguish these.

[a]Individual country results (some of these countries flip from profit-led to wage-led in response to a simultaneous redistribution of income in all countries).
[b]Marginal effects vary for individual countries; examples given are Netherlands (profit-led) and US, France, Germany, Austria (wage-led, in declining order of the magnitude of the effect). Other countries included in the panel estimates are Australia, Belgium, Canada, Switzerland, Denmark, Spain, Finland, Ireland, Italy, Japan, Norway, Sweden, UK.
[c]Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, UK.
[d]Using systems GMM to control for endogeneity and including a wage share equation.
[e]There is a typographical error in the cointegrating equation printed in this article, but I have verified by email from Gustavo Vargas Sánchez (14 October, 2014) that the sign on the "exploitation rate" (profit share) is negative indicating that output is wage-led in the long run. This is also consistent with what the authors state in the text.
[f]Uses a different methodology (wavelets) from most other studies shown.
[g]Using a cyclically adjusted measure of the wage share or treating the real wage and labour productivity as separate variables; results are sensitive to ordering in the impulse responses.
[h]Australia, Canada, Finland, France, Germany, Ireland, Italy, Japan, South Korea, Netherlands, Sweden, UK, US.
[i]Although this methodology does not directly identify whether demand is wage-led or profit-led, this study's finding that a depreciation of the peso is contractionary is consistent with the wage-led case (since a depreciation would be expected to lower the real wage). The results are referred to as "short run" because the data are filtered and detrended.

Problems with aggregative estimates of profit-led demand

- At best, the results only pertain to short-run business cycles
  - Using a capacity utilization rate (actual/potential output) or output gap (actual – potential) removes long-run trends in output
  - Profitability typically falls in a recession and rises in a recovery, so utilization appears to be profit-led
- Most commonly used measures of the capacity utilization rate or the output gap are statistically flawed, leading to biased estimates (Cerra and Saxena, IMF 2017)
  - See Hamilton (*REStat*, forthcoming), "Why you should never use the Hodrick-Prescott filter"
    - Hodrick-Prescott and other filters bring future information into the measure of potential output and the utilization rate or output gap at any time *t*, resulting in spurious dynamics that do not reflect the underlying data-generating process
- Cyclical movements in the profit or wage share are driven mostly by changes in labor productivity (due to overhead labor), not wages
  - Failing to control for this leads to biased estimates creating a false appearance of profit-led cycles
  - As argued by Sherman and Lavoie, and confirmed by Cauvel (AU PhD dissertation, in progress)

Structural estimates finding mostly wage-led growth are more robust

- They do not rely on spurious measures of potential output and utilization
  - They are not biased by the cyclical behavior of productivity
- The major criticism of “single equation” estimates has been that the wage share and total income should be treated as endogenous
  - Cauvel (AU PhD dissertation, in progress) finds that the wage-led results are robust in systems GMM estimates that control for endogeneity
- This literature recognizes that results vary for different countries depending on their size, structure, openness, development level, etc.
  - Results may differ when distributional shocks are global instead of national (Onaran and Galanis ILO 2012; Onaran and Obst *CJE* 2016)
    - Since competitive effects of higher wages roughly cancel out, a simultaneous redistribution toward labor is more likely to be expansionary

Caveats and qualifications to wage-led findings

- A complete macro model needs to incorporate other relationships besides income distribution effects on demand or growth
  - Financial stocks and flows, balance of payments, exchange rates, monetary and fiscal policies, labor markets, etc.
  - Such feedback mechanisms can either amplify or offset effects of distributional shifts and can also affect income distribution
- Because higher wages encourage more labor-saving technical innovation and faster growth of labor productivity, employment may not be wage-led even if output is (Naastepad and Storm 2012, 2017)
  - Hence redistributive policies may need to be accompanied by other employment-creating policies, such as public investment, limits on overtime, etc.
- Distributional effects can differ for different time horizons; wage-led growth is most robust in low-frequency (long-term) data
  - Low-income, less developed countries (“dual economies” and “small open economies”) may not fit the wage-led model (Razmi 2017, Ros 2017)

Recent studies of long-run vs. short-run effects

- **Charpe et al. (2018):** Using time frequency (wavelet) analysis applied to very long-term data for the US (1898–2010), UK (1856–2010) and France (1896–2010), the labor share leads the growth rate negatively over shorter cycles (higher frequencies, such as 2–4 and 4–8 years), but positively over longer cycles (lower frequencies, such as 16–32 and 32+ years)
- **Cauvel (2018):** Using a panel VAR model for 13 OECD countries, and comparing results for different frequencies (time periods) and measures of output or utilization, the output gap is profit-led using quarterly data, but wage-led at lower frequencies (annual, 3-year, 5-year).
  - The OECD output gap is the same variable used by Kiefer & Rada (2015)
  - Results vary with other measures of output or utilization
- Cauvel also decomposes the wage share into the real wage (real hourly compensation) and labor productivity, and finds that both of these have positive effects on output, and on each other
  - ***This suggests that the wage share may be the wrong variable to focus on; what matters are the real wage and labor productivity separately rather than their ratio***
- Overall, these results suggest that output is more wage-led in the longer term, and that higher real wages drive both output *and* productivity to increase (hence the wage *share* need not rise!)

Concluding remarks

- Having a higher wage (labor) share can be a win-win situation
  - There are plausible cases in which realized profits and profit rates (rates of return) and growth (investment) rates can be higher, even if profits are a lower share of national income
- Alternatively, a high-wage, high-productivity growth scenario can promote growth, without the wage (labor) share necessarily rising
  - There is a “virtuous circle” or “cumulative causation” between rising real wages and higher productivity, which benefits the entire economy
  - See the presentation of Dr. Sangheon Lee for complementary supply-side perspectives
- Regardless of whether demand is wage-led or profit-led overall, less inequality among wage and salary earners can still be expansionary (Palley 2017)
  - Between workers with higher and lower education levels, or professionals/managers vs. production workers
  - This can work in the short run as well as the long run, and can help to avoid excessive and unsustainable household debt

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