

# Aggregate demand, income distribution, unemployment

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# Outline

- Post-Keynesian/Post-Kaleckian theory and contesting theories
- Stylised facts
- Empirical PK research

## Contesting paradigms

- Mainstream economics portrays the capitalist economy as stable and full employment as the norm, and deviations from full employment to be explained by shocks, imperfections and policy mistakes
- Post Keynesian economics portrays the capitalist economy as liable to fluctuations and crisis and unemployment as the norm, and full employment to be explained by ‘special circumstances’

## Principle of effective demand, multiplier and credit creation

- The importance of demand for the level of unemployment;
- and the significance of investment and of income distribution in determining demand
- Productive capacity of the right quantity and location required for full employment;
- Changes in autonomous investment or consumption demand or government spending or export demand have multiplier effects
- Demand to become effective has to be financed
- Demand is embedded in a monetary production economy
- Endogenous money and bank credit creation

# Fundamental uncertainty

- Fundamental uncertainty and decision-making
- Fundamental uncertainty and path dependency
- Investment as a key component of the level of demand and as additions to supply potential
- The interdependence of demand and supply

# Investment

- What influences the level of investment?
- Capacity utilisation
- Profits and profitability
- Credit availability
- 'Animal spirits'
  - Investment is the Most volatile component of demand
- Technological opportunities
- The causal relationship runs from investment to savings

# Unemployment

- Unemployment as an inherent feature of capitalist economies
- Cyclical fluctuations are a key feature
- Mainstream macroeconomists largely dismiss these features with explanations of unemployment based on ‘market imperfections’
  - choice of leisure in new classical economics
- Involuntary Unemployment in Keynes
- Post Keynesians have range of approaches to unemployment – arising from:
  - Lack of demand; lack of productive capacity; political and social constraints
  - and of cyclical fluctuations (multiplier-accelerator type; Minsky cycles; Goodwin cycles etc).

## The PK/Kaleckian models: fundamental elements of modern capitalism

- Oligopolistic/monopolistic goods and capital markets, NOT perfect competition
- Prices are set via active cost-plus pricing
- Inflation: Conflict theory approach based on competing claims on income
- the mark-up on unit variable costs: degree of price competition among firms, overhead costs, bargaining power of trade unions
- Functional income distribution: distributional conflict → the mark-up
- Labour supply is not a constraint to production or growth,
- involuntary unemployment, also in the long run.
- Excess capacity is the norm; capacity utilization adjusts in the long run too.
- The principle of effective demand applies to the short, medium and long run.
- Saving is not a precondition for investment, but adjusts to investment through income effects in the long run.
- → paradox of saving also in the long run
  - higher saving/lower consumption/lower demand → lower investment and growth



# Growth: neoclassical vs Keynes

- Growth was a central issue for classical economics
- But not for Neoclassicals, who focussed on allocation
- Keynesian-Neoclassical Synthesis: Keynesian short run and classical long run
- 1950 and 60s: development of neoclassical growth theory –Solow
  - savings determines investment
  - Assumes full employment
  - Supply-side economics
  - long run is independent of the short run
- New/Endogenous growth theory:
  - Technology is not exogenous but endogenous
  - a function of human capital, R&D expenditures, and other institutional factors
  - Increasing returns to scale or external effects of capital stock
  - But essentially also neoclassical: savings determines investment

## Keynesian criticisms against the Solow growth model

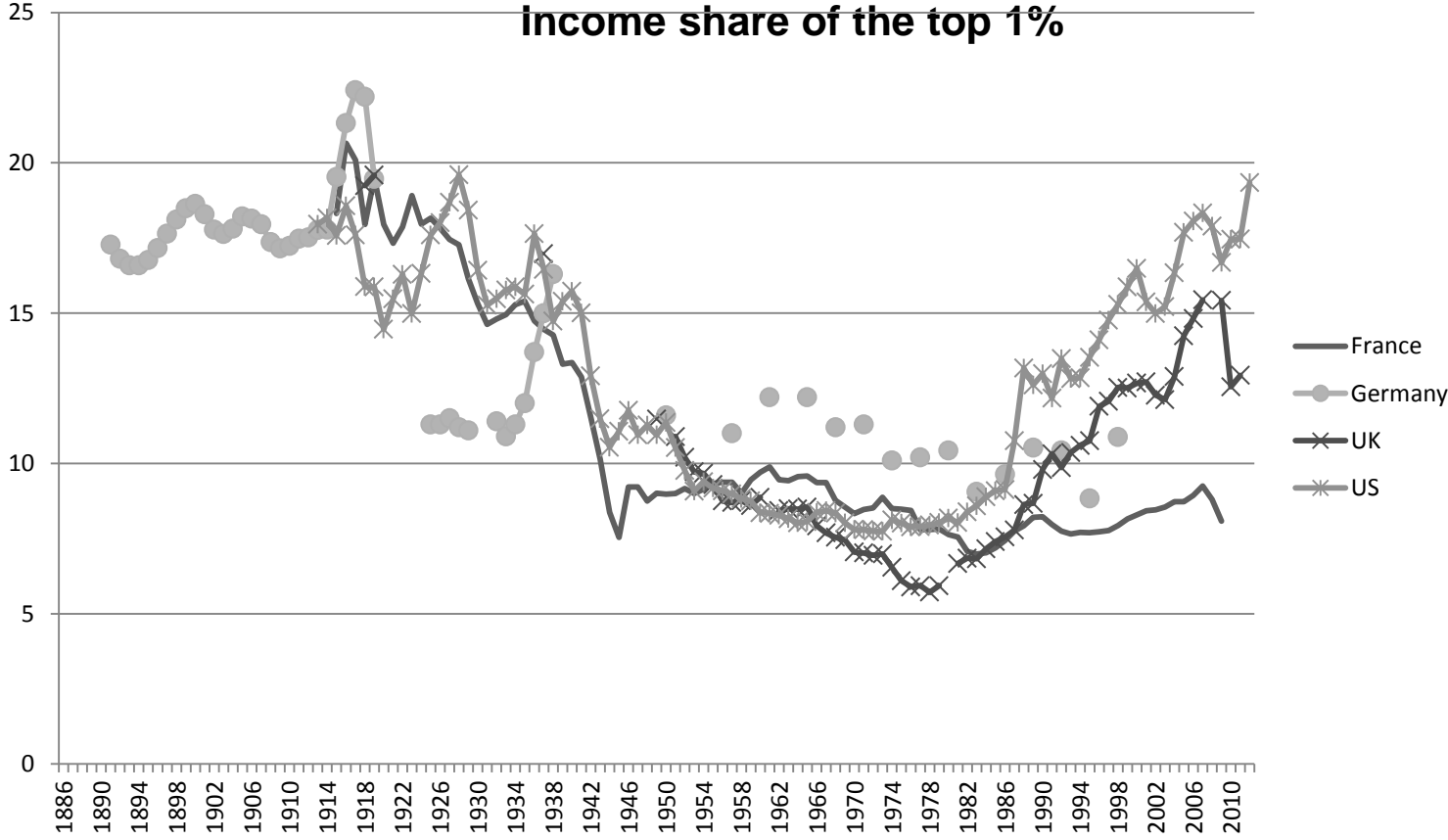
- Posits that long run is independent of the short run
- There are no 'animal spirits' in the long run.
- It effectively ignores demand-side problems.
- There is no role for institutions in influencing a country's growth path.

# Post Keynesian/ post-Kaleckian growth

- Long run is a succession of short-run equilibria = no fundamental difference between short and long run
- Role of institutions
- $I=S$  also at the centre of long run analysis.
- Animal spirits in the long run.
  - Note: there is no behavioural investment function in the neoclassical Solow growth model.
- Saving rate depends on demand and income distribution
- Dual role of wages
  - Income distribution and demand-led growth
  - wage-led vs profit-led growth

## Income distribution: Glossary

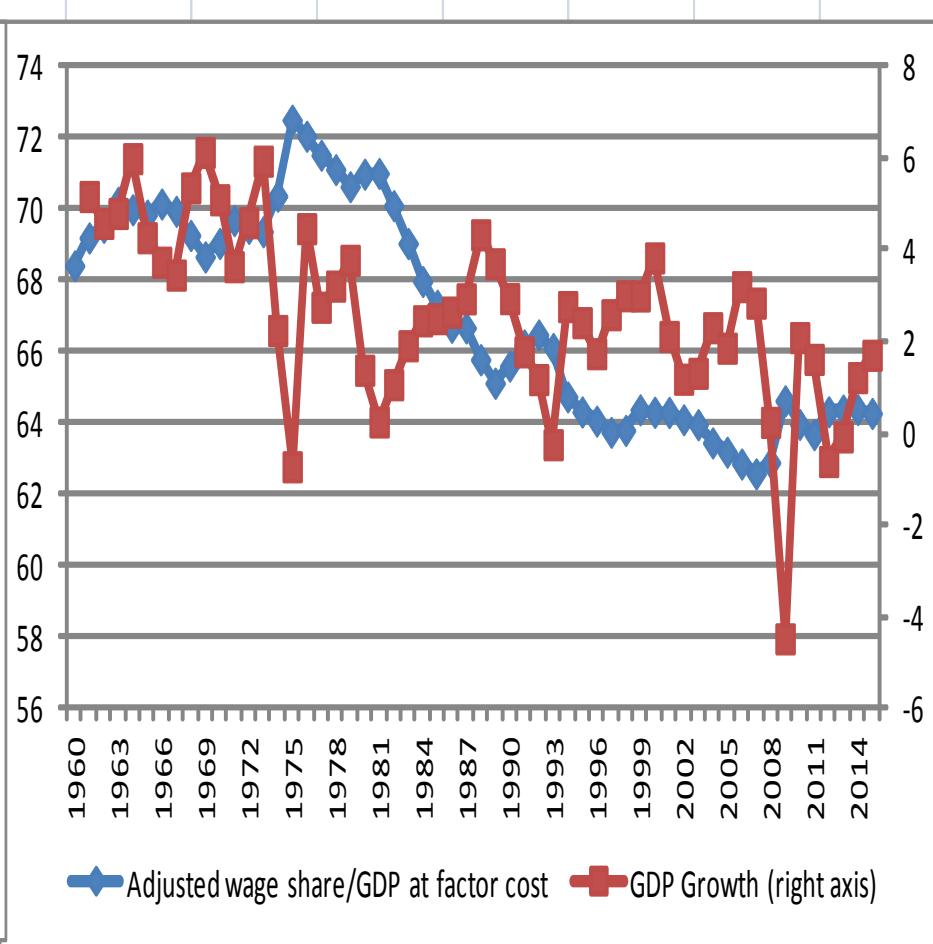
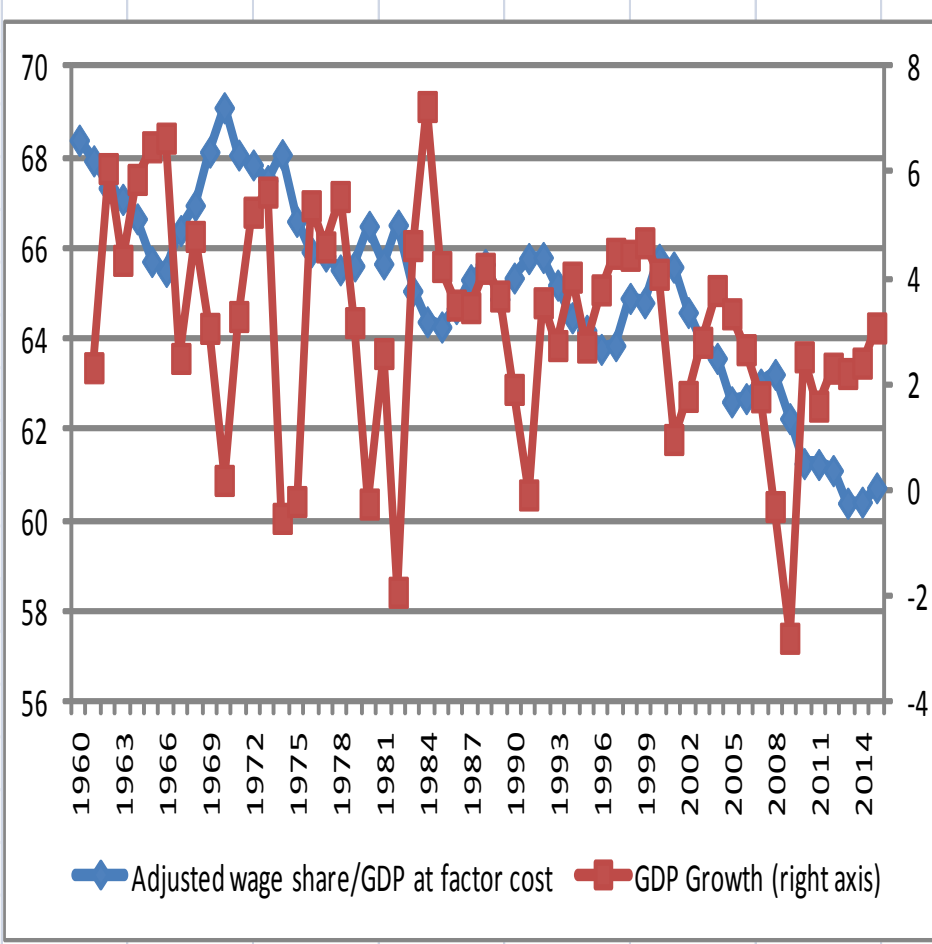
- Personal income distribution: High vs. low income groups
- Functional income distribution
  - source of income - class
  - profit income (capital) vs. wage income (labor)
    - Value added ( $Y$ )=profit ( $R$ ) + wage ( $W$ )
    - Profit: gross operating surplus
    - Wage: labour compensation
    - Wage share=wage/value added
    - Profit/value added=1- wage/value added
    - High profit share in income (high profitability)= low wage share
- Wage share vs. unit labor cost
- Wage share=(wage per employee\*No of employees)/Value added  
=real unit labor cost
- Wage share=wage per employee/(Value added/No of employees)  
=wage per employee/productivity



Wage share vs. growth

US, 1960-2015

EU15, 1960-2015





# Capital gobbles labour's share, but victory is empty

## The big picture

**Steve Johnson** looks at the wider negative implications of falling wages

In 1958, Walter Reuther, a powerful US union leader was taken on a tour of a newly automated Ford Motor plant. "Aren't you worried about how you're going to collect union dues from all these machines?" he was asked by a (no doubt smug) company manager.

"The thought that occurred to me," Mr Reuther replied, "was how are you going to sell cars to these machines?"

Fifty-five years on, such a debate may be even more pertinent. In the innocent days of 1958, wages accounted for half of America's gross domestic product.

labour's share of the pie than the US or UK.

Richard Lewis, head of global equities at Fidelity Worldwide Investment, who has studied this trend, believes it to be structural rather than cyclical, and therefore unlikely to reverse.

Mr Lewis says globalisation has "lowered the power of labour to bargain," resulting in de-unionisation and the "emasculat[i]on" of workers.

Simultaneously, companies have been able to optimise their tax regimes and can engage in both "financial expense" arbitrage (borrowing in the cheapest countries) and regulatory arbitrage.

Most importantly, however, he says globalisation and a move towards supranational corporate entities has made it possible for companies to consolidate their industries more effectively.

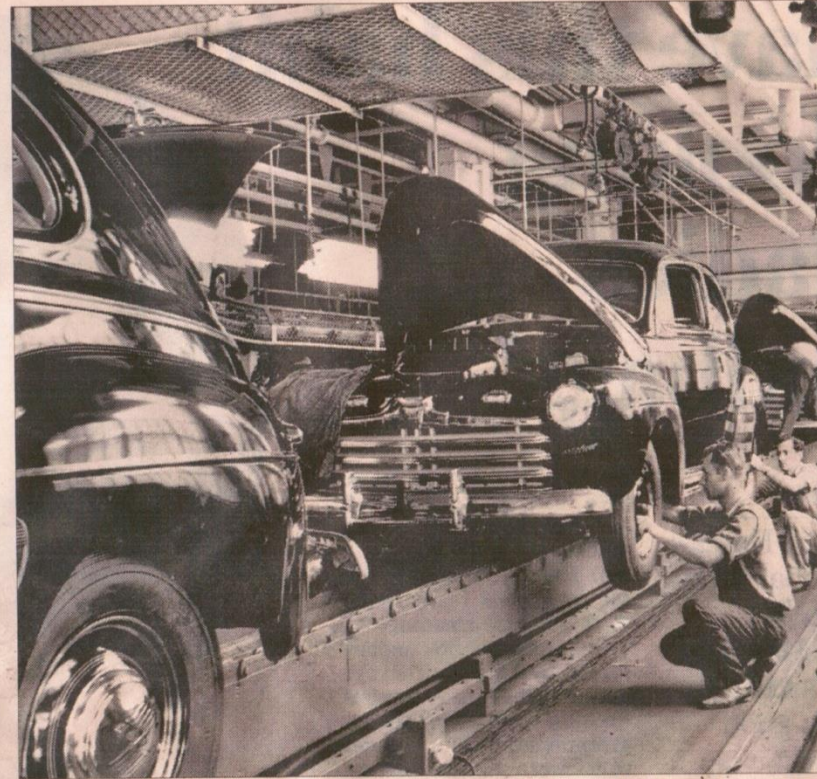
What all this means for the investment community is perhaps a little less clear. Onaran and Galanis

labour will continue to be squeezed.

Frances Hudson, global thematic strategist at Standard Life Investments, believes this geographic divide opens the way for relative value trades that favour companies in countries that are becoming more competitive.

To complicate matters further, the academics found the global effect of a squeeze on labour was negative, as the heightened export competitiveness enjoyed by countries with weak wage growth simply reduced the competitiveness of its trading partners - a form of "beggar thy neighbour". A one percentage point fall in labour's share was found to reduce global GDP by 0.36 points.

With this in mind, Mr Greenberg believes we may have to start thinking about a "post-growth" world. "The revenue numbers of the S&P 500 are basically stagnant. Is that going to reverse any time soon? I don't see how it



In 1958, labour's share of economic output accounted for half of US GDP, but this has fallen to 42% today. Increasing globalisation and technology, this has fallen to 42%

right all along, and that capitalism ultimately sows the seeds of its own destruction, "when there is no consumer demand and it all falls over".

Mr Greenberg paints a picture of a bleak future

with, barring a "mass uprising", "McJobs" increasingly the norm.

"One thing that does need to change is the idea of shareholder value being the only responsibility of a company," he says, alluding

to the 19th century workers, "who took responsibility for their communities. They sense that your responsibility for them is a responsibility for them. Mr Reuther and I doubt have con-





## Effect of income distribution on growth: Contesting theories

- Effect of increasing profit share (falling wage share, rising inequality) on growth?
- Neoclassical
  - wage=cost
  - positive effect on investment
  - Positive effect on exports
- Puzzle: Why is growth lower despite a rise in the profit share?
- Keynes
  - Demand-led growth; excess capacity; involuntary unemployment
  - Inequality → negative effect on consumption (underconsumption)
  - Not much effect on investment (demand driven, animal spirits)
- Marx/Goodwin cycle
  - Positive effect on investment
  - High growth, depleting the reserve army of labour: profit squeeze
  - Investment falls
  - Large reserve army of labour; low wages → Realization crisis
- Post-Keynesian/Post-Kaleckian: Synthesis of Marx and Keynes



# Post-Keynesian/Post-Kaleckian models

- Wages are
  - Cost item: lower wages=
    - higher profitability
    - higher international competitiveness
  - Source of domestic demand
- Lower share of wages in national income (higher profit share) →
  1. lower domestic consumption
    - Marginal propensity to consume (mpc) out of wages > mpc out of profits
  2. A positive partial effect on investment
    - Investment depends on profitability, but also demand
    - the sensitivity of investment to profits (partial)?
  3. higher foreign demand (Net exports=Exports-Imports)
    - Unit labor costs ↓ → higher international competitiveness
    - the sensitivity of net exports to unit labor costs; price elasticity of exports and imports; labour intensity of exports

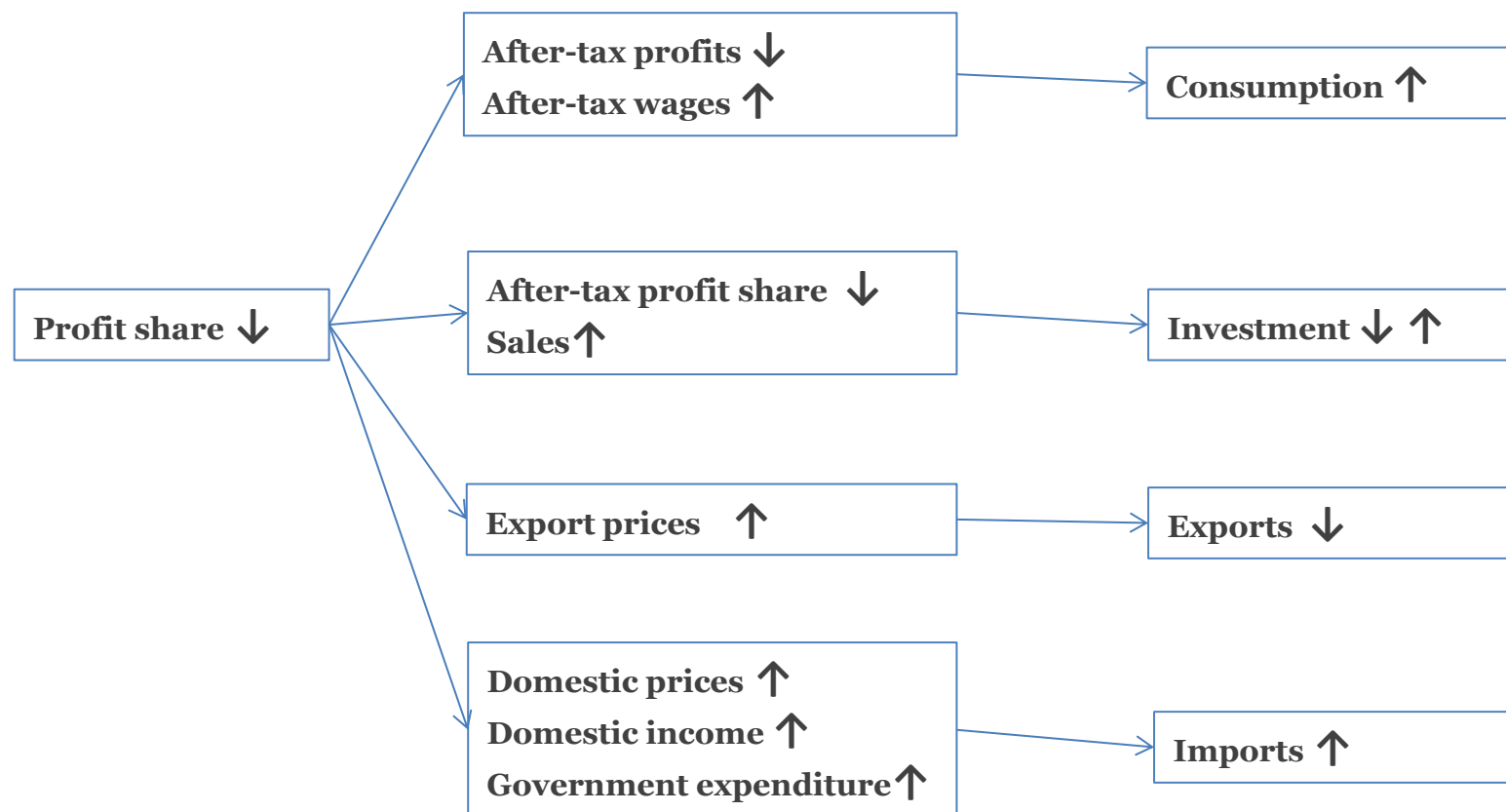
### ...Post-Keynesian/Post-Kaleckian models

- Increase in the profit share: + & - effects on aggregate demand
  - if total effect is -: wage-led demand
  - if total effect is +: profit-led demand
  - Bhaduri and Marglin (1990)
- a flexible/synthesis distribution and growth model
- “Particular *models* such as that of ‘cooperative capitalism’ enunciated by the left Keynesian social democrats, the Marxian model of ‘profit squeeze’ or even the conservative model relying on ‘supply-side’ stimulus through high profitability and a low real wage... become particular *variants* of the theoretical framework presented here.” (Bhaduri/Marglin 1990, p. 388)’
- social and historical framework determining the parameters
- An empirical research question?
- Onaran and Obst 2015; Onaran and Galanis, 2014; Onaran, Stockhammer , Grafl 2011; Stockhammer, Onaran, Ederer 2009; Stockhammer and Onaran 2004; Onaran and Stockhammer 2005; Hein and Vogel 2009; Naastepad and Storm, 2007; Bowles&Boyer, 1995...

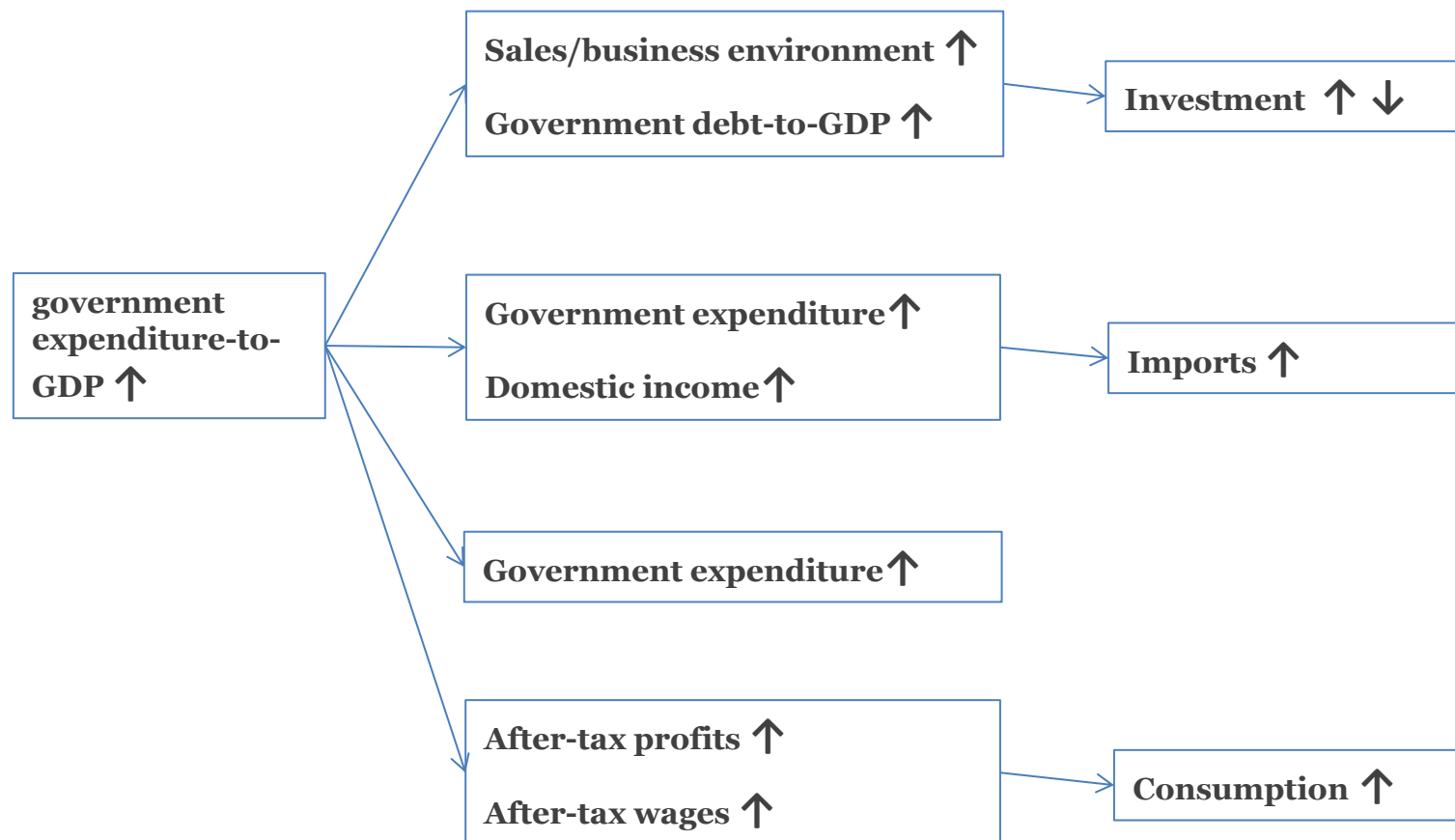
## A structuralist demand-led post-Keynesian/Kaleckian econometric model (Obst, Onaran, and Nikolaidi 2017)

- behavioural specifications for consumption, private investment, exports, imports, tax revenues, government spending, and prices
- Consumption: function of level and distribution of income; different marginal propensity to consume out of wage vs. profit income
- Investment: function of profit share, demand, government spending, interest rate
- Exports: function of price of exports/foreign prices and foreign income;
- Imports: function of income and domestic prices/import prices.
- Domestic & export prices: set as a mark-up on unit labour costs & other input costs
- Structuralist: real world structural features of the economy matter
  - the existence of excess capacity & involuntary unemployment
  - demand matters
  - income distribution → demand
  - oligopolistic market structure and price setting by firms
  - labour intensity of exports

# Effects of an increase in the wage share



# Effects of an increase in government expenditure-to-GDP



# National and global multiplier effects

- National multiplier
  - private demand changes → changes in
    - Investment
    - Consumption
    - imports
- Global effects of a simultaneous fall in the wage share
  - Effects of changes in trade partners' wage share via changes in
    - import prices
    - trade partners' GDP

## **Fallacy of composition: Inconsistency of the Macro vs. Micro rationale**

- Firm vs. aggregate/national
- National vs. regional/global level
- Economic globalization may make small open economies more likely to be profit-led
- But political globalization → race to the bottom in labour share
  - international competitiveness effects are eliminated
  - makes economies more likely to be wage-led

## Summary of the results

(Onaran & Galanis 2012, UN/ILO; Onaran and Obst 2015 FEPS)

- Domestic demand (consumption+investment) is wage-led
- Large/relatively closed economies are wage-led
  - ↑wage share : egalitarian; does not harm growth potential
  - EU as a whole, US, Japan, as well as Turkey, Korea
- although some individual states have a profit-led regime- e.g. if a small country, Belgium, is the only one who decreases labor share, it can grow, but if every country does the same, they all contract
- Global race to the bottom: a 1%-point fall in the wage share
  - global GDP↓ by 0.36%; EU15 GDP↓ by 0.27%; UK GDP↓ by 0.2%
- Conversely a global wage-led recovery scenario:
  - Global GDP↑ by 3.05%, EU GDP ↑ by 2.4%; UK GDP ↑ by 1.9%
- Fallacy of composition
- **Planet earth is wage-led, unless we trade with Mars!**



Policy mix: public investment, progressive taxation, Increasing equality  
Obst, Onaran, Nikolaidi 2017

- increase public investment by 1% of GDP
- + increase wage share by 1% of GDP
- + more progressive taxation (1% higher tax on capital and 1% lower tax on labour)
- Multiplier: 2.2
- The impact of wage policies is positive but small
  - Demand is wage-led
- the overall stimulus becomes much stronger with fiscal expansion.
  - public investment self-finances part of itself
- The effects are stronger if policies are implemented simultaneously in all the EU countries.
- need for wage and fiscal policy coordination
- →6.7% higher GDP in the EU15, 4.5% higher GDP in the UK,

...Policy mix:  
public investment, progressive taxation, Increasing equality  
Obst, Onaran, Nikolaidi 2017

- Private investment increases by 2.3% as a ratio to GDP in the EU, and by 0.9% in the UK
  - Public spending crowds in private investment, it does not crowd out
  - >Demand
  - >improved business environment
- Budget balance improves by 0.9% as a ratio to GDP in the EU, and 0.1% in the UK
- Impact on inflation is very modest
  - a 1%-point rise in the wage share → 1.5% ↑ in prices in the EU, and 2% ↑ in prices in the UK
-

## A coordinated policy mix of wage-led recovery and public investment

- A wage-led recovery scenario and public investment stimulus in G20 (Onaran 2014 L20)
- increase wage share by 1%-5% +public investment by 1% of GDP in each country in the next 5 years in G20
- →3.9-5.84% more growth in G20
- Only wage-led recovery: 1.96% more growth in G20
  - Effects of wage-led recovery on growth and hence employment however is modest, albeit positive.
- Only public investment : 1.94-3.88% higher growth in G20
- Potential crowding in effects of public investment on private investment  
→ growth ↑

# The size of the multiplier

- Meta regression of 98 studies published 1992-2013 (Gechert, 2013)
  - a sample of 1882 observations of multiplier
- Multipliers from public spending are significantly positive and on average close to one
- vary a lot with study design and the underlying sample.
- Public investment: most effective fiscal impulse, mean multiplier: 1.22
- Multipliers are higher in recession phases, but also positive during growth phases (Gechert and Rannenber, 2014)

## Financialization, distribution, accumulation, productivity

- Missing link between profits and investment
- The non-financial companies' financial activities → private investment↓
  - Interest payments+dividends to shareholders as well as their financial revenues (Tori and Onaran, 2015, EU15)
  - Orhangazi 2008; van Treeck 2008; Stockhammer 2006
- Increasing profits does not always lead to higher private investment
  - increasing demand → investment↑↑
  - Investment is wage-led in the majority of the EU MS (Onaran and Obst, 2016; Obst, Onaran, Nikolaidi, 2017)
- Financialization + inequality→lower productivity & potential growth

## Demand and supply side effects in the short run and long run

Onaran, Oyvat, Fotopoulou 2018

- Demand side effect in the short run and long run
- Long run supply side effect on productivity
  - public and private investment in social and physical infrastructure, demand, wages
  - productivity↑
  - moderates the effect of higher public borrowing or wages on the profit share
  - + Distinguish public spending in physical vs. social infrastructure (health and social care, education, child care)
  - + Feminist features: gender effects

## ...Long run productivity effects (Onaran, Oyvat, Fotopoulou 2018)

- inequality→lower productivity & potential growth
- High public investment and high road labour market policies lead to high productivity in the long run
- Slightly higher multiplier effects in the long run
- higher effects of spending in social infrastructure
  - high productivity effects
  - highly labour intensive, in particular more female labour intensive with higher marginal propensity to consume

## Wage-led growth in the age of globalization?

- Globalization is not a barrier to these policies.
- the limits of strategies of international competitiveness based on wage competition in a highly integrated global economy
- Economic globalization may make small open economies more likely to be profit-led
- But political globalization → race to the bottom in labour share
  - international competitiveness effects are eliminated
  - makes economies more likely to be wage-led
- Europe and the UK is one of the main beneficiaries of coordinated wage-led growth.
  - Hence potentially policy leader



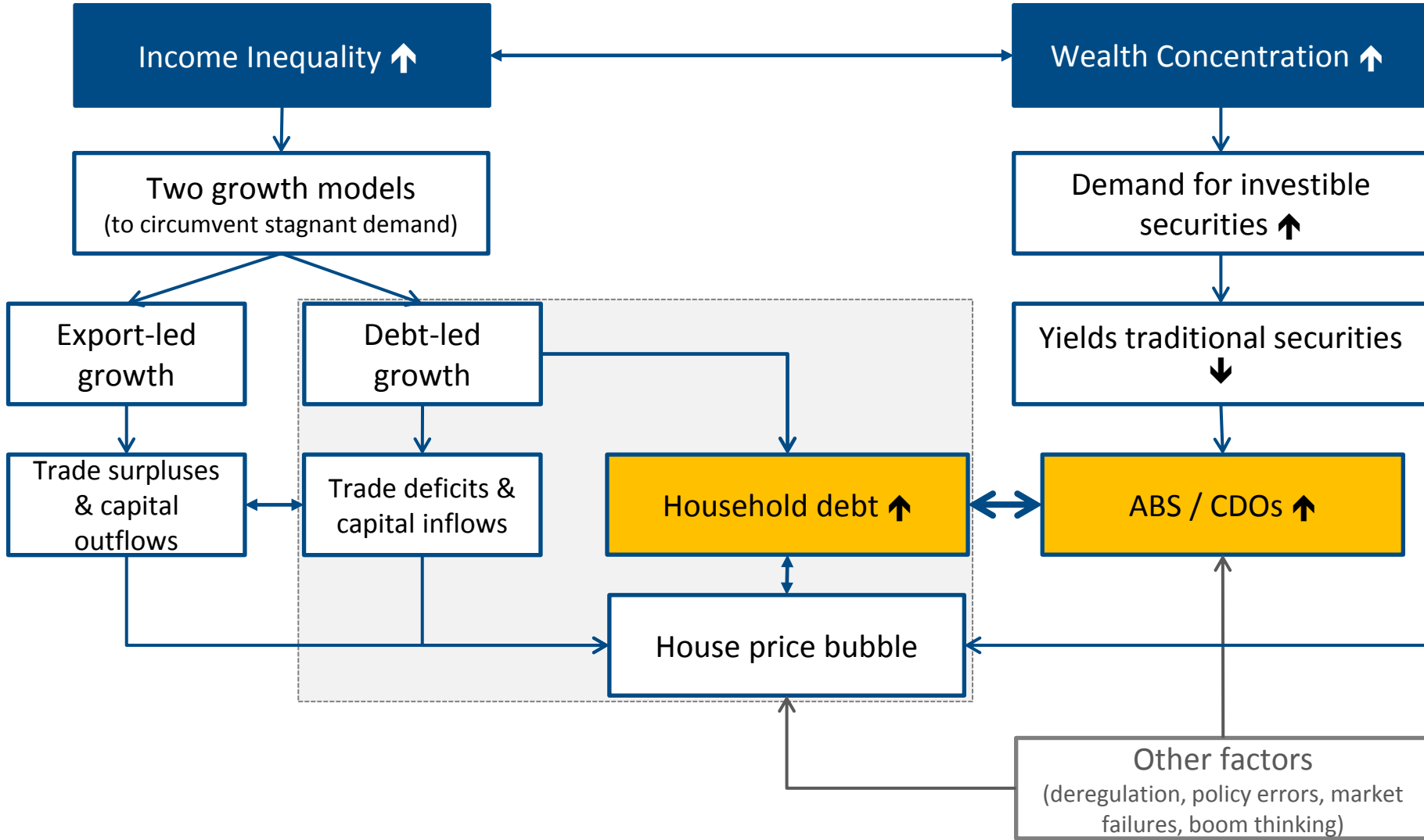
# Planet earth has not traded with Mars but still grew despite declining wage share until the Great Recession. How?

- Potential crisis of aggregate demand deficiency
- The expected outcome should have been a stagnation of global demand and growth
- This was mainly circumvented by two distinct growth models
  - a root cause of the great recession

	<i>Debt-led growth</i>	<i>Export-led growth</i>
<b>Center</b>	<b>US, UK, Australia,</b> New Zealand	<b>Germany, Japan, Netherlands,</b> Norway, Sweden, Austria, Canada, Finland, Belgium, Denmark
<b>Periphery</b>	<b>Spain, Greece, Turkey, Portugal,</b> South Africa, Ireland, Hungary, Czech Rep., Slovakia, Estonia, Cyprus, Slovenia	<b>China, Korea</b>

Fragile → Great Recession 2008-2013

# Distributional issues are at the very root of the recent crisis



## Conclusion

- The importance of demand for the level of unemployment;
- and within demand the significance of investment
- and of income distribution;
- Wage/macro policy coordination and avoid beggar thy neighbor policies

## Political and social constraints on full employment

- Creating sufficient demand
- Creating sufficient productive capacity in the right quantity and quality
- Changes in the balance of economic power
- Ecological limits

Long run?

Michal Kalecki on

“Political Aspects of Full Employment,” 1943

- “the maintenance of full employment would cause social and political changes which would give a new impetus to the opposition of the business leaders. Indeed, under a regime of permanent full employment, the 'sack' would cease to play its role as a 'disciplinary' measure. The social position of the boss would be undermined, and the self-assurance and class-consciousness of the working class would grow. ... It is true that profits would be higher under a regime of full employment than they are on the average under *laissez-faire*... But 'discipline in the factories' and 'political stability' are more appreciated than profits by business leaders. *Their class instinct tells them that lasting full employment is unsound from their point of view, and that unemployment is an integral part of the 'normal' capitalist system.*”

## In the long run?

- Keynes: “in the long run we are all dead”
  - Short run unstable: save capitalism from capitalism itself
- Can policy save capitalism from capitalism itself?
- **Marx**: profit squeeze? Limits to capitalism?
- Kalecki: Full employment not consistent with capitalism
  - similar to Marx & Stiglitz?
- **Ecological economists** (e.g. Victor): Limits to growth?
  - Managing with lower growth?
    - shorter working hours?
      - » Keynes, 1930, “Economic Possibilities for our Grandchildren”:  
“Three-hour shifts or a fifteen-hour week may put off the problem for a great while.”
  - **Green jobs**
- **Feminist economics**: Care crisis and ecological crisis needs **purple jobs**
  - Social infrastructure (eg care): More labour intensive; more jobs with lower growth; way to solve also gender inequality crisis
- Synthesis and policy informed by multiple theories?

- Panel –Policy debate

## Policy Implications

- mobilize all the tools of economic policy with an aim to achieve full employment, ecological sustainability, and equality.
- → Multiple targets requires mobilizing all the tools of policy
- a comprehensive mix of
  - fiscal policy and public investment at the core
  - labour market policy for equality-led development
  - industrial policy
  - monetary policy



## ...Policy Implications

- Pre-distributive policies
  - Increase the bargaining power of labour via
    - reregulating the labour market
    - improving the union legislation,
    - increasing the coverage of collective bargaining
  - Close gender wage gaps
  - establishing sufficiently high minimum wages
  - regulating high/executive pay by enforcing pay ratios

## ...Policy Implications

- Re-distribution: median linked taxation of high incomes and wealth holdings (Goda, Onaran, Stockhammer 2013)
  - Higher marginal top income tax rates
    - e.g. 10/70 income tax rule:
    - rate of 70% for income above 10 times the median income
  - Wealth tax
    - 100/10 wealth tax rule:
    - 10% wealth tax on personal net wealth that is above 100 times the median wealth (excluding primary residence and own businesses)
  - Higher inheritance tax rates
    - 100/90 inheritance tax rule:
    - highest marginal tax rate of 90% for inheritance above 100 times the median wealth

## Fiscal and industrial policy: Public investment priorities

- Physical infrastructure: **green** investment
  - Public transport, renewable energy, housing (building and insulation)
  - Ecological deficit
- Social infrastructure: **Purple** investment
  - education, health and social care, child care
  - care deficit
  - Both direct and indirect impact on productivity
    - Educated, creative and healthy workforce
    - socializing the invisible, unpaid domestic care work
      - » More options for women: Female labour force participation↑
      - » Recognize, reduce, redistribute
    - Social security → more innovative and productive workers
  - **improve pay and working conditions** in these industries
  - **Purple is green**: More jobs with lower Carbon emissions
    - labour intensive services with low carbon intensity

- Substantially **shorten** working time in parallel with the historical growth in productivity.
- Reverse financialisation; reregulate finance

## How to finance?

- Progressive tax policy on income and wealth
- Borrowing
- National Investment Bank
- Monetary policy

# Borrowing

- Fiscal credibility rule of the Labour Party: borrow only for public infrastructure investment
  - Impact on public budget –partly self-financing; there is money!
  - Increases national income in the short run (“multiplier”)
  - Increases productivity in the long run
  - Leads to higher tax revenues
- Critical question: What is infrastructure?
- Define spending in social infrastructure as investment (Women’s Budget Group)
- Currently, public spending in education, childcare, health and social care are considered as current spending as opposed to capital spending in public infrastructure investment
- Implications for the fiscal credibility rule:
  - borrow to invest in both social and physical public social infrastructure

## Tackling 3 myths of the budget surplus ideology

- 1. compares public sector budget to households: doubly wrong
- Households borrow: Buying a House, education, job loss...
- Different from households, a government can obtain funding from
  - self-financing: Spending creates income and tax revenues;
  - bond sales to the private sector
  - borrowing directly from the Bank of England (“monetization”).
- 2. crowding out of private investment?
- interest rates are currently low; public sector deficits do not always put upward pressure on interest rates
- Private investment is encouraged by public infrastructure
- 3. inflationary pressures?
- inflation in the UK is about import dependency and low productivity; public investment improves productivity
- no empirical or theoretical basis, budget cuts are ideological

## Monetary policy

- Going beyond inflation target and financial stability
  - Labour Party: Productivity as a goal?
  - Why not full employment?
  - But independence of the BoE still taboo
- Alternatives: Employment, equality and ecological sustainability
- Bank of England can use ‘Quantitative Easing (QE)’ to buy NIB bonds or government bonds to finance public investment
  - versions of Peoples’ QE
- Questions regarding the remit of the BoE
  - Should be independent from financial markets and vested interests
  - Should be accountable to deliver policy consistent with the targets of elected governments



- Recovery and sustainability needs **green** and **purple** public jobs for women and men with **pay rise** and **shorter hours**!
- Take care of full employment, decent pay for women and men, equality, and ecological sustainability, and the budget will take care of itself.

## ... Policy Implications: Macro economic context

- 2.1. Reverse financialisation; reregulate finance
- 2.2 Bring the welfare state and public investment back
  - public investment in social and physical infrastructure
  - Physical infrastructure: **green** investment
  - Social infrastructure: **Purple** investment
    - create jobs in labour intensive services -education, child care, nursing homes, health, community and social services
    - More jobs with lower growth
    - **improve pay and working conditions** in these industries
    - different from the former reliance on low pay service jobs with weaker labour unions
    - socializing the invisible care
- 2.4 Substantially **shorten** working time in parallel with the historical growth in productivity.
- Recovery and sustainability needs **green** and **purple** public jobs for women and men with **pay rise** and **shorter hours**!
- Take care of full employment, decent pay for women and men, equality, and ecological sustainability, and the budget will take care of itself.
- Synthesis of **Kaleckian**, **Feminist**, **Ecological** economics

## Suggested Readings

Bhaduri, A. and Marglin, S. (1990). Unemployment and the real wage: the economic basis for contesting political ideologies. *Cambridge Journal of Economics*, 14(4): 375-93.

Hein, E. *Distribution and Growth after Keynes: A Post-Keynesian Guide*, Edward Elgar, Ch. 5-7. Note: all of the book is useful for a comparative analysis

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Kalecki, M. 1943. "Political Aspects of Full Employment" *Political Quarterly*, <http://mrzine.monthlyreview.org/2010/kalecki220510.html>

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Onaran, Ö., Nikolaidi, M and Obst, T. (2017) "The role of public spending and incomes policies for investment and equality-led development in the UK", *GPERC Policy Briefs*, University of Greenwich, [#PB17-2017](#).

Onaran, Ö., Nikolaidi, M. and Obst, T. (2017) "A coordinated mix of public investment and incomes policies for sustainable development in Europe", *GPERC Policy Briefs*, University of Greenwich, [#PB15-2017](#).

# Appendix

# Consumption

$$\log C = c_0 + c_R \log((1 - t_r)R) + c_W \log((1 - t_w)W + \log B + \log CTO)$$

□ Consumption(C) is estimated as a function of adjusted after-tax profits((1-tr)R), adjusted after-tax wages((1-tw)W) and social benefits in cash/ other current transfers(B+CTO) which augment disposable income of HH

□

# Investment

$$\log I = i_a + i_Y \log(Y_p) + i_\pi \log((1 - t_r)\pi) + i_g \log(G) + i_d \log(D/Y)$$

- Private investment depends positively on private output and the after-tax profit share
  
- Total Government expenditure enhances private investment through demand and crowding in effects (Commendatore, 2011; Seguino, 2012)
  - Alternative specification: disaggregate G in social and physical infrastructure and other current spending
  
- Private investment depends negatively on public debt to GDP (crowding out) (Dutt, 2013; Tavani and Zamparelli, 2015)

## Private Investment (I)

### Private Investment depends on

Profitability (profit share,  $\pi$ )

Demand (sales & production (output))

Capacity utilization : proxy  $Y$  (accelerator effect)

+Digression:  $I=f(\text{profit rate})$

Profit rate= $R/K=(R/Y)(Y/Y^*)(Y^*/K)$

$Y^*$ : full capacity output

$Y^*/K$ : full capacity capital productivity: technology: assume constant  
=assume 1

$Y/Y^*$ =capacity utilization

Problems in measuring  $Y^*$ : trend growth??

Hence we simply use  $Y$  =accelerator effect in standard models

## Foreign sector

- stepwise approach
- domestic prices =  $f(\text{nominal unit labor costs, import prices})$
- export prices =  $f(\text{nominal unit labor costs, import prices})$
- Exports =  $f(\text{export price/import price, } Y_{rw})$
- Imports =  $f(\text{domestic price/import price, } Y)$



# Domestic and Export Prices, Exports, Imports

$$\log P = p_0 + p_{ulc} \log(ulc) + p_m \log(Pm) + p_{tc} \log(1 + t_c) \quad (6)$$

$$\log P_x = p_{x_0} + p_{xulc} \log(ulc) + p_{xm} \log(P_{xm}) + p_{tcf} \log(1 + t_{cfi})$$

$$\log X = x_0 + x_{pxm} \log(Px/Pm) + x_{Yrw} \log(Yrw) + x_e \log(E)$$

$$\log M = m_0 + m_{ppm} \log(P/Pm) + m_Y \log(Y) + m_g \log(G) + m_e \log(E)$$

- Real unit labour cost  $\approx$  wage share
- $Rulc = \text{nominal unit labor costs} / P = ulc / P$

$$\frac{\partial X / Y}{\partial (WS)} = \left( \frac{\partial \log X}{\partial \log P_x} \frac{\partial \log P_x}{\partial \log (ulc)} \frac{\partial \log (ulc)}{\partial \log (rulc)} \frac{\partial \log (rulc)}{\partial \log (ws)} \right) \frac{X / Y}{rulc}$$

$$= \left( e_{XP_x} e_{P_x ULC} \frac{1}{1 - e_{P ULC}} \frac{Yf}{Y} \right) \frac{X / Y}{rulc}$$

The first part is elasticity of X to ws and then it is multiplied by X/Y / rulc to find marginal effect

- Similarly for M

Then

$$\frac{\partial\left(\frac{NX}{Y}\right)}{\partial\pi} = \frac{\partial\left(\frac{X}{Y}\right)}{\partial\pi} - \frac{\partial\left(\frac{M}{Y}\right)}{\partial\pi}$$

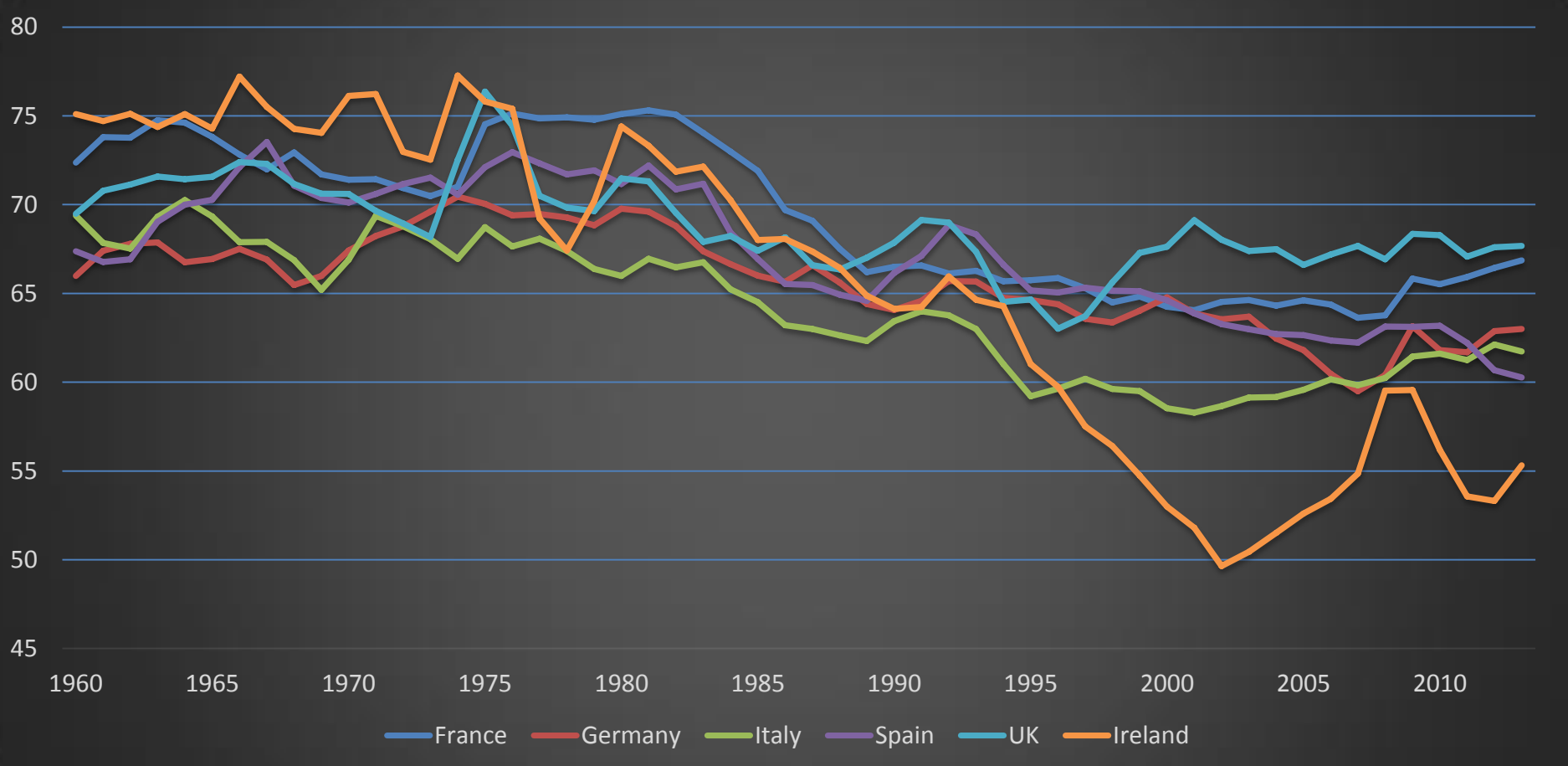
# Government

$$G = \kappa_g Y$$

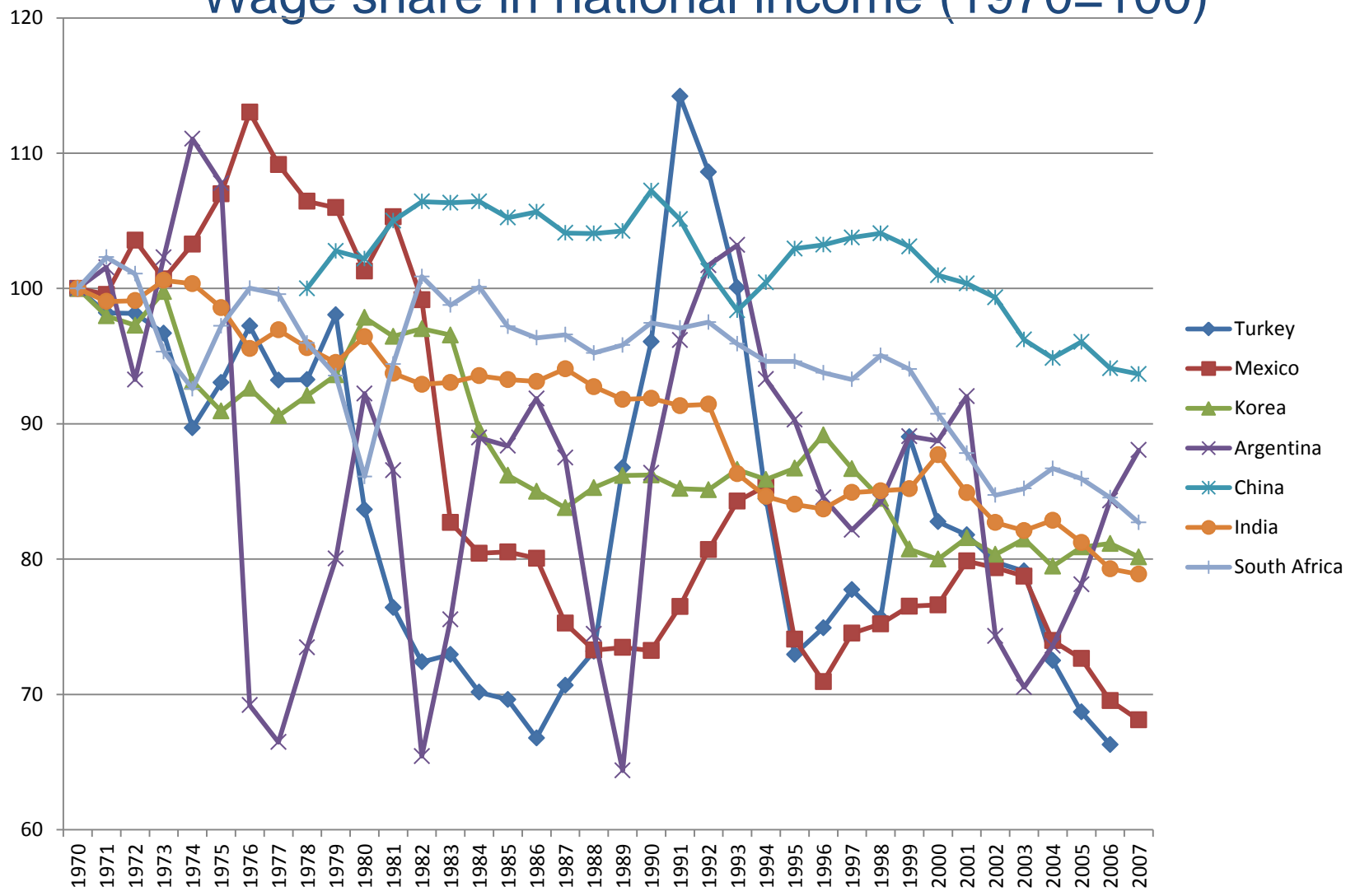
$$T = t_w W + t_r R + t_c C$$

$$D = D_{-1} + G_{tot} + rD_{-1} - T$$

# Wage share (adjusted, ratio to GDP at factor cost, 1960-2013)



# Wage share in national income (1970=100)



\* Adjusted labour share = compensation per employee \* Total employment / GDP at factor cost

Source: Onaran and Galanis 2012

The effects of a 1%-point increase in the profit share

Wage led

	C/Y	I/Y	X/Y	M/Y	NX/Y	% change in total private excess demand
Euro zone-12	-0.439	0.299	0.057	0.000	0.057	-0.084
Germany	-0.501	0.376	0.096	0.000	0.096	-0.029
France	-0.305	0.088	0.036	-0.162	0.198	-0.020
Italy	-0.356	0.130	0.037	-0.089	0.126	-0.100
United Kingdom	-0.303	0.120	0.048	-0.110	0.158	-0.025
United States	-0.426	0.000	0.006	-0.031	0.037	-0.388
Japan	-0.353	0.284	0.028	-0.026	0.055	-0.014
Canada	-0.326	0.182	0.063	-0.203	0.266	0.122
Australia	-0.256	0.174	0.049	-0.223	0.272	0.190

Onaran and Galanis 2014

## The effects of a 1%-point increase in the profit share

	C/Y	I/Y	X/Y	M/Y	NX/Y	% change in total private excess demand
Turkey	-0.491	0.000	0.140	-0.144	0.283	-0.208
Mexico	-0.438	0.153	0.128	-0.253	0.381	0.096
Korea	-0.422	0.000	0.178	-0.181	0.359	-0.063
Argentina	-0.153	0.015	0.014	-0.178	0.192	0.054
China	-0.412	0.000	1.095	-0.891	1.986	1.574
India	-0.291	0.000	0.080	-0.230	0.310	0.018
South Africa	-0.145	0.129	0.000	-0.506	0.506	0.490



	The effect of a 1%-point increase in the profit share in only one country on private excess demand/Y	The effect of a 1%-point increase in the profit share in only one country on % change in aggregate demand (A*multiplier)	The effect of a simultaneous 1%-point increase in the profit share on the % change in aggregate demand (including effects of trade partners' export prices and GDP))
	A	B	D
Euro area-12	-0.084	-0.133	-0.245
United Kingdom	-0.025	-0.030	-0.214
United States	-0.388	-0.808	-0.921
Japan	-0.014	-0.034	-0.179
Canada	0.122	0.148	-0.269
Australia	0.190	0.268	0.172
Turkey	-0.208	-0.459	-0.717
Mexico	0.096	0.106	-0.111
Korea	-0.063	-0.115	-0.864
Argentina	0.054	0.075	-0.103
China	1.574	1.932	1.115
India	0.018	0.040	-0.027
South Africa	0.490	0.729	0.390

	Scenario 2	
	Change in profit share	The % change in aggregate demand (includes national and global multiplier effects, i.e. changes in Pm and Yrw)
Euro area-12	-11.05	2.36
United Kingdom	-7.83	1.91
United States	-6.31	6.15
Japan	-16.71	1.49
Canada	-3.00	2.84
Australia	-3.00	0.03
Turkey	-18.41	10.81
Mexico	-3.00	1.45
Korea	-8.64	7.46
Argentina	-3.00	1.27
China	-1.00	5.56
India	-3.00	0.43
South Africa	-1.00	1.93

A wage-led  
recovery scenario  
(Onaran and  
Galani 2014)

Global GDP↑ by 3.05%