

Labour market and unemployment

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General perspective

- The demand for labour – that is, employment – is a ‘derived demand’. No spontaneous tendency of free market forces to realise full employment
- it depends on aggregate demand and output per worker
- Labour market institutions affect the bargaining position of workers.
- Income distribution affects employment only through its impact on effective demand
- Unemployment is only one indicator of labour market conditions – important but often not enough to judge labour market conditions (also employment growth, employment rate, employees versus self –employed, unemployment duration)
- Note: the last point strictly related to the first

Arguments that will be developed in the lecture

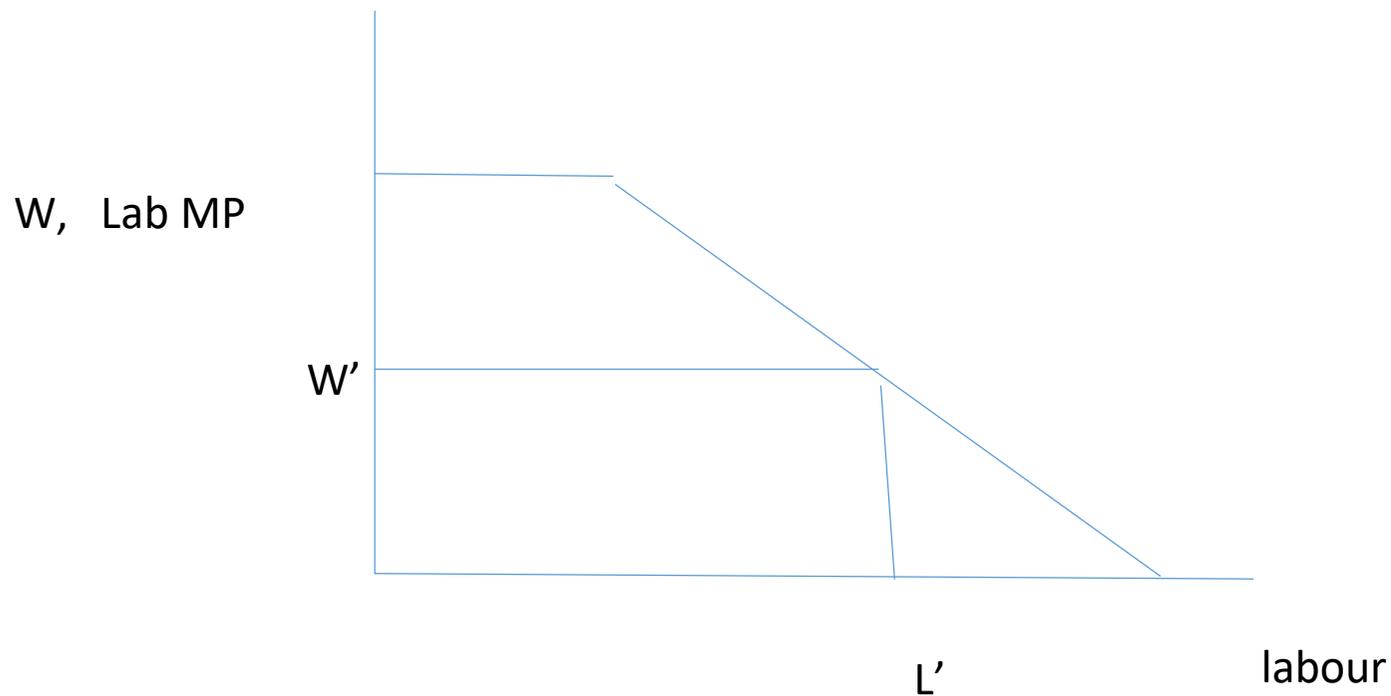
- PART I
- Neoclassical foundations of the tendency to full employment and the capital controversy
- Implications of the capital controversy for Keynesian theory
- Conclusions: the determinants of employment with a given capital stock and when capital accumulation is taken into account

- PART II
- Non accelerating inflation unemployment rate and its determinants in New-Keynesian models
- Empirical failures of the nairu
- Is Hysteresis the route? Explanations of hysteresis
- An alternative framework – persistent effects of AD on output, employment , capital formation and labour supply

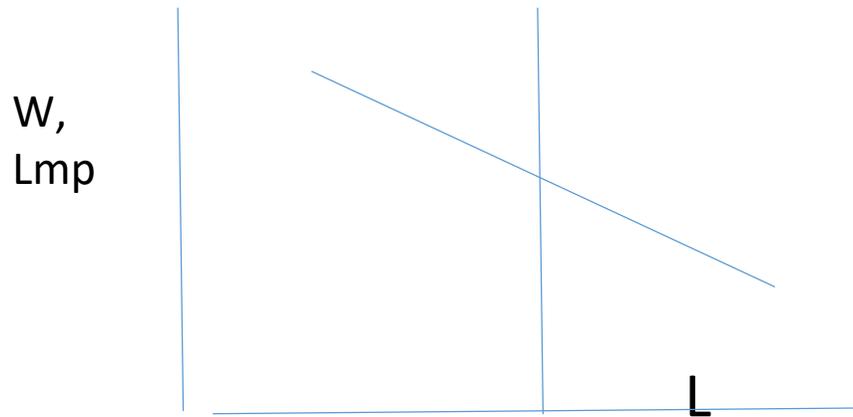
Foundations of neoclassical tendency towards full employment

- Why is the neoclassical labour demand curve decreasing?
- Is a decreasing labour demand curve and wage flexibility enough to ensure a tendency to full employment?

- Neoclassical demand for labour with land and labour that produce corn. Firm behaviour with production organized by the land-owner. Maximization of rent when lab marg prod is equal to the given real wage w^* . Why the declining segment is the only relevant one



- Aggregating over all firms and introducing labour endowment, under the assumption of competition over wages: full employment equilibrium (elasticity of demand is important)



- But: what if instead of land we have fix-capital: how to interpret the decreasing marginal product curve? Can we add labour to a given 'machinery'?
- Capital is given in 'quantity' but not in 'form'

“...a rise in the marginal productivity of labour with constant wages . . . does not necessarily lead employers to expand their demand for labour at once. Similarly, the fact that the employment of certain men has become less advantageous does not always lead to an immediate contraction in the demand for labour . . . The principal reason for this ‘lag’ is to be found in the fact that one of the cooperating factors—capital—is, at any particular moment, largely incorporated in goods of a certain degree of durability . . . if the capital is at present invested in durable goods, the change in conduct which follows from the change in relative profitability cannot immediately be realized . . . only a small portion of the total supply of capital is ‘free’—available for investment in new forms—and that in itself may make very little difference to the demand for labour. . . . Since the whole conception of marginal productivity depends upon the variability of industrial methods, little advantage seems to be gained from the attempt which is sometimes made to define a ‘short period marginal product’ . . . It is very doubtful that this conception can be given any precise meaning which is capable of useful application.” (Hicks, 1932, pp. 19–21)

- Factor substitution and consumer theory
- Suppose production with land and labour of two consumption goods: corn and barley. Both are produced with given/fixed technical coefficients.
- Suppose that in the production of barley $L_{db}/L_{ab} > L_{dc}/L_{ac}$. That is, barley is more 'land intensive' than corn. An increase in wages will cause an increase in the relative price of corn with respect to barley:
- $P_c = wL_{ac} + RL_{dc}$
- $P_b = wL_{ab} + RL_{db}$
- Consumer utility maximization (with decreasing marginal utility) will induce more demand for barley hence shift land to the production of barley and diminish labour demand (since less labour per unit of land is required in the production of barley)

- Let us go back to labour demand and supply equilibrium. Let's suppose the economy has attained the equilibrium wage and employment. Can it be maintained? is this situation sustainable?
- How do we know that the output produced at full employment will be entirely sold?

- To be sure that all output produced at full employment will be sold, it is necessary that aggregate investment will be equal to the aggregate saving forthcoming at full employment: $I=S(Y_f)$
- In neoclassical theory this is ensured by Investment being a decreasing function of the real interest rate - in turn, derived by demand for capital as a stock being a function of the interest rate.
- Suppose K^* is the existing equilibrium capital stock at i^* if i decreases at i' than $K'(i') > K^*(i^*)$, hence there will be net investment aimed at (gradually) increasing the capital stock $I_n = K' - K^*$. Once the new equilibrium capital stock has been installed, net investment will be $= 0$, but gross investment will be permanently higher than before.

- Hence decreasing demand for factors, labour and capital, are both necessary analytical foundations for the neoclassical tendency to full employment
- the dependence of aggregate investments on interest rate based on the ordering of investment projects is analytically untenable (G. Ackley macroeconomic textbook!):
 - Under free competition all aggregate investment would go to the project with the highest return
 - Ordering of projects is NOT independent of the interest rate: changes in the latter alter the cost-structure and relative prices of inputs and outputs of each investment project

- The 'capital critique': Pasinetti, Garegnani, with analytical roots in Sraffa.
- - is a critique to the logical foundations of neoclassical decreasing factor demand curves (NOT of AGGREGATE production function) and applies to GE versions of neoclassical theory too.
- - It essentially depends on the fact that 'capital' is a set of produced commodities the relative prices of which changes with changes in distribution; the outcome of this is that
- a) the 'factor intensity' of a process cannot be determined unless distribution is given;
- b) cost minimizing choice of techniques under the usual assumption of competition may lead to results opposite to those expected by neoclassical theory, hence
- c) as the wage rate falls, the cost minimizing technique may involve lower labour/capital and labour /output ratios and the relative price of 'labour intensive' commodities may rise.

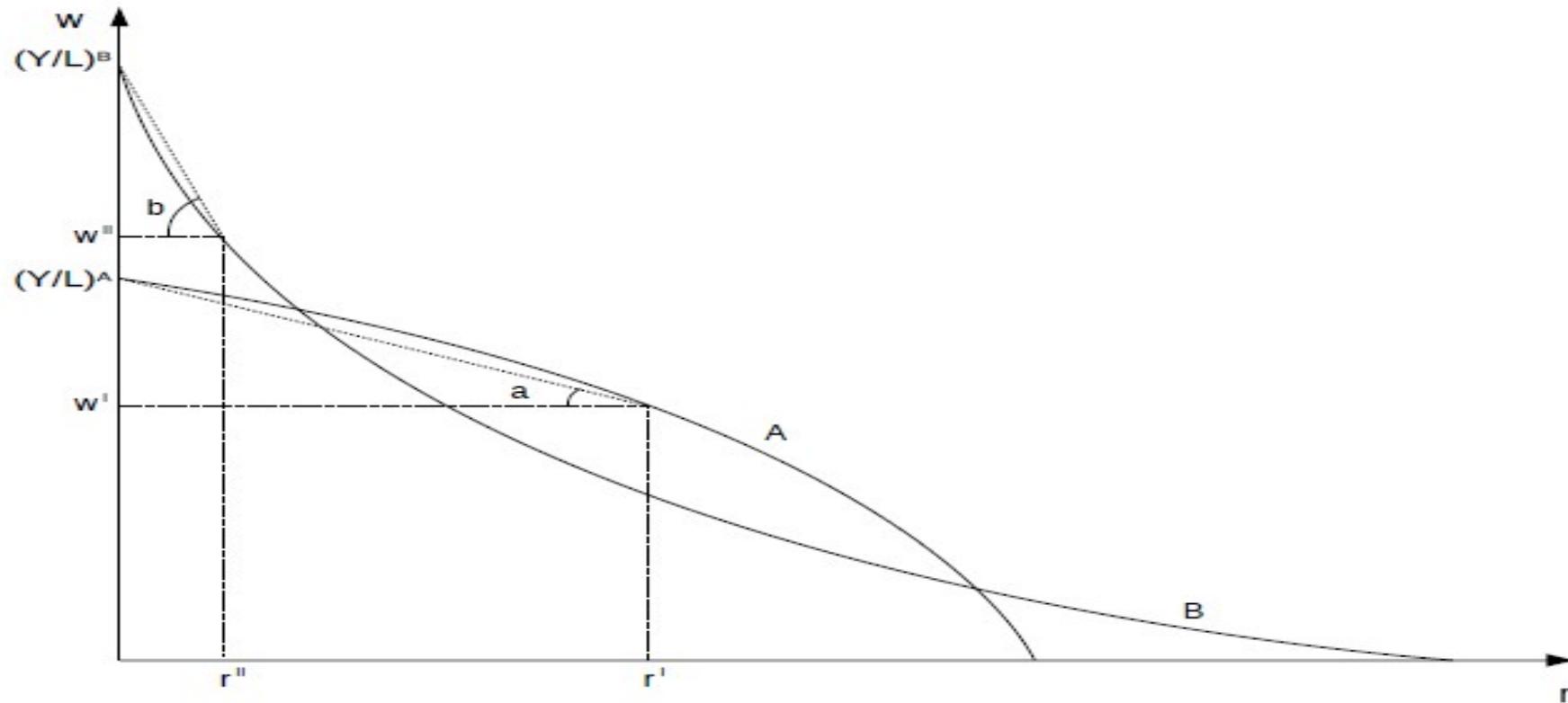
The wage-profit curve and reswitching

- Suppose a two industry economy producing the final good A by means of a capital good specific to the technique in use in this economy and labour and producing capital by means of itself and labour. Suppose VA comprises only A (no net investments) and capital is circulating.
- Under the assumptions of free competition and homogeneous labour the relative price equations will be
 - $1 = P_a = w L_a + (1+r) P_c C_a$
 - $P_c = w L_c + (1+r) P_c C_c$

Price equations represent a system with three unknowns (P_c , r , w). By assigning given values to w , (or r) we obtain the other distributive variable in terms of the output A . This is a decreasing curve with finite intercepts, which will be linear only when capital and output are the same good (that is, when the ratio between labour and capital coefficients are the same in the two industries) The shape and position of the curve depends on the given technical coefficients

Thus, different techniques, each involving the use of a different capital good, for the production of A can be represented by different wage – profit curves

The tangent of angles a and b is the value of capital per unit of labour in points P and Q. As we move from technique A to technique B for lower wages we have a higher capital to labour ratio and a lower labour to output ratio



Implications for:

-‘substitution in production’: NOT ‘well behaved’ under the usual assumption of neoclassical theory (competition, cost-minimization, choice among many available techniques to produce a given good)

-‘substitution in consumption’: NOT ‘well behaved’ under the usual assumption of neoclassical theory of utility maximization, decreasing marginal utility (or equivalent properties of preferences) choice among many available commodities produced with different techniques and factor intensity.

conclusions

- Demand curves for labour, capital, investments cannot be regarded as a 'driving force' in market economies. Hence

- alternative theory of prices and distribution (The Classics, Marx, Sraffa)

- Alternative theory of output and employment:

The principle of effective demand with no 'feedback effects' from interest rate (unlike the neoclassical synthesis). Monetary policy alone cannot keep the economy at or around full-employment since no investment function decreasing with respect to interest rate.

(But interest rate policy important in other respects: public debt management, consumer credit, real estate sector, exchange rate; income distribution)

Implications of capital controversy for Keynes' theory of output

- It is the only legitimate theory of output
- Need not rest on (ad hoc?) assumptions concerning interest rate flexibility, nominal or real wage flexibility, uncertainty, expectations, animal spirits, price rigidities etc....
- Keynes's views concerning the desirability of nominal wage rigidity are confirmed and can be extended to real wage rigidity:
Unlimited nominal **and** real wage flexibility when there is unemployment cannot reduce unemployment and would therefore be economically destabilizing and socially destructive

- The independence of aggregate demand from supply (existing capital stock and labour) implies that 'factor' supply must be regarded as potentially endogenous with respect to aggregate demand:
- Capital formation or destruction depends on degree of utilization and aggregate demand growth
- Labour force size and participation rates depend (to an extent) on employment opportunities (for example: migration flows; female participation rates)
- Endogeneity of labour force may explain why we do not observe very long term trends in unemployment (By contrast, according to Arrow and others: evidence that in the long run demand adjusts to supply)

Hence:

- With a given capital equipment

- $L = mA/q$ with

- $m = 1 - c(1 - t) + z$ $A = Ca + I + Ex + G + Ba$

- When we take into account accumulation, aggregate investment is endogenous with respect to aggregate demand (NOT a function of the profit share or profit rate)

- $L = mA-/q$ with $m = 1 - c(1 - t) + z - \gamma uvge$ $A = Ca + Ba + Ex + G$

- $c = cwWS + cp(1 - WS)$ with $cw > cp$

- Level effects and growth effects from changes in the parameters

Effects of increased labour market flexibility:

- Labour market flexibility cannot affect the overall unemployment rate given by
- $L_s - L$
- With $L = mA/q$
- It may increase the flows in and out the unemployment 'stock'. If average duration of unemployment is reduced, given total unemployment this will entail that a greater number of people are experiencing unemployment, for a shorter duration
- (in fact, duration depends more on the size of the stock than on flexibility)

Effects of increases in productivity

- - With given Effective demand and output an increase in productivity reduces employment
- Increases in productivity *may* increase effective demand, the main channels being *exports* and *propensity to import; consumption* (product innovation) – however, no necessary ‘compensation’ effects (*aggregate investments?*)

Hence ‘compensation’ of technological unemployment depends on policy: working time (over the life cycle; during the day or week), public expenditure

Effects of labour market conditions on income distribution

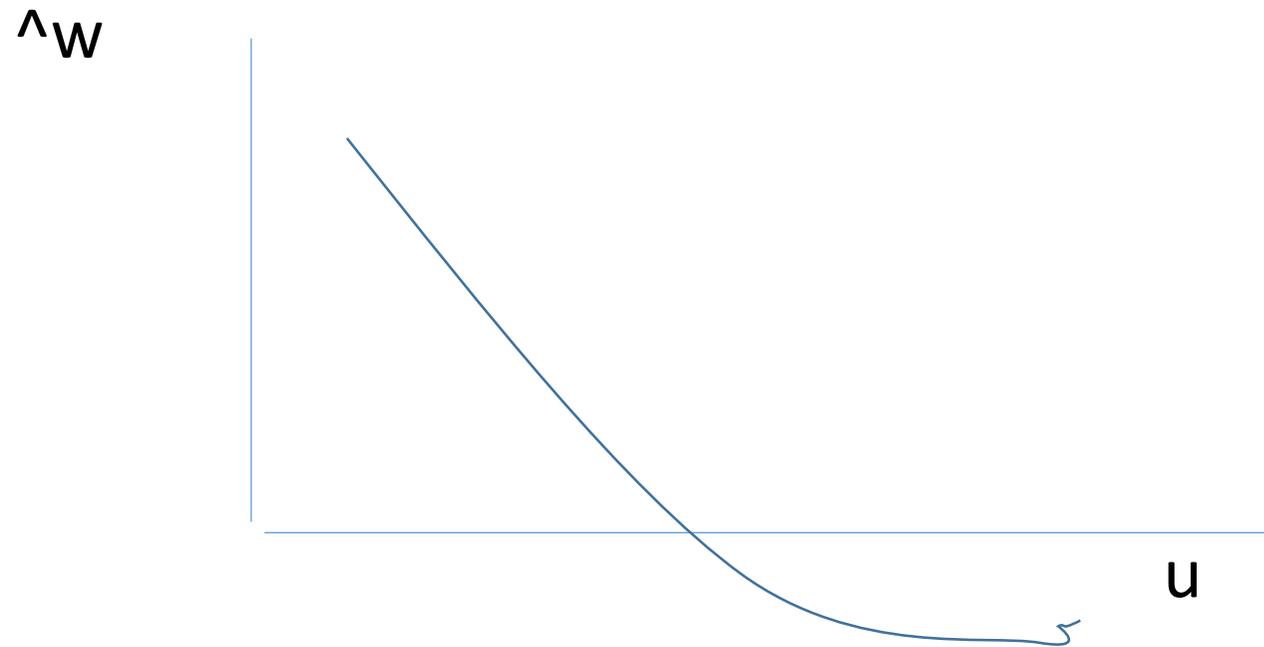
- Return to the broad views held by the Classical economists and Marx:
- Real wages depend on historically acquired living standard and bargaining power
- The latter reflects labour market conditions (the reserve army in its various components), institutions (labour market regulation, Union strength, political representation of workers interests), and of course may be affected by other economic conditions (exchange rate regime, capital international mobility, trade)
- Empirical evidence from various streams of enquiry (Stockhammer 2013; Shaikh 2016; Blanchfower and Oswald 1990; Levrero and Stirati 2006; Stirati 2011); more concerning long-run relation work would be useful and interesting (pro-cyclical real wages well established)

The role of real interest rate in determining income distribution (Sraffa, Pivetti)

- Real interest rate as a benchmark minimum return on capital
- It is the opportunity cost of capital, even on own funds - hence must be reflected on prices
- For a given nominal wage, it affects the ratio W_n/P
- However: nominal wage dynamics, real wage resistance, monetary policy not in a vacuum...(see Stirati, 2001)
- Interest rate policy a further element to be considered when interpreting changes in income distribution, but not in isolation from other factors – for example evidence that labour market conditions affect real wages and the wage share

Part II

- Natural unemployment, the nairu and the phillips curve
- According to Phillips: long run, non linear, nominal wage dynamics



- A very straightforward interpretation: bargaining over nominal and real wage depends on labour market conditions (Marx, the classical economists)
- BUT not quite consistent with neoclassical theory: increasing or falling wages: out of equilibrium

Neoclassical theory and the Phillips curve

- Phillips interpretation at variance with received neoclassical theory: the intercept must be interpreted as 'equilibrium'. Hence the other points on the curve are 'disequilibrium' and cannot hold persistently, unless some form of 'money illusion'. Hence the declining Phillips curve must be short-run, and it is vertical in the long-run
- Why is there unemployment in equilibrium?
- A) Frictions and imperfect information
- B) but also frictional unemployment reinterpreted as the result of maximizing behaviour. Workers compare costs of continuing search with benefits in terms of expected earnings

Empirical problems for monetarist views

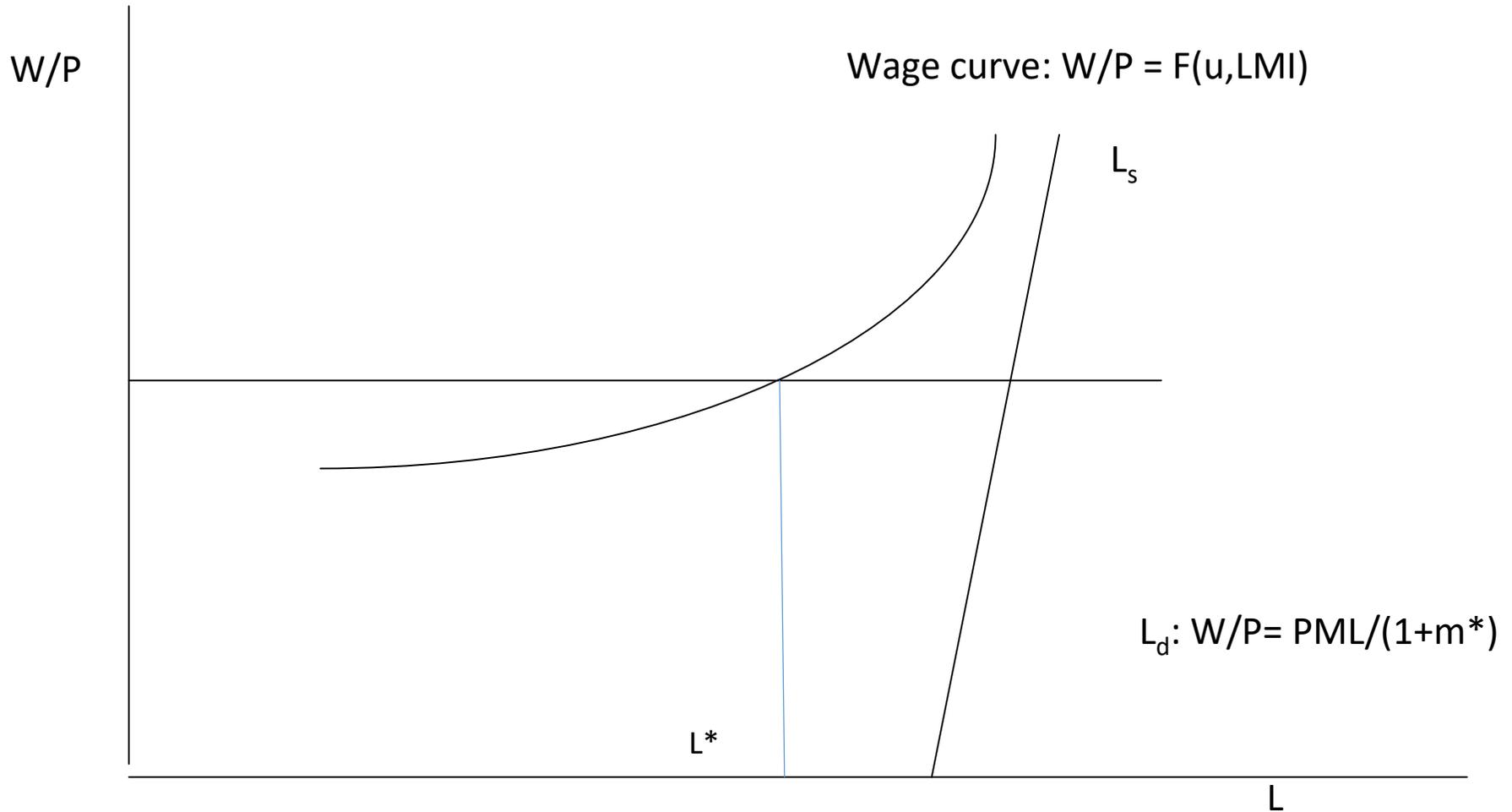
- On logical grounds: bargaining is about real wages; and ‘you cannot fool all the people all the time’. Monetarist views are logically well grounded *within* the neoclassical framework....but....soon found not very good empirically:
- Acceleration not the rule and persistent changes in unemployment rate (European unemployment)
- Changes in ‘equilibrium unemployment’ not explained by underlying factors: Unempl. benefits; intensity of structural change
- problems with empirically observed comovements of real wages and employment over the cycle: procyclical real wages conflict with movements along decreasing labour demand function

More on search models

- a number of empirical studies find that the probability that an unemployed person will accept a job offer is close to 1 and, accordingly, the duration of unemployment actually depends on the probability of receiving a job offer (Devine and Kiefer, 1991, p. 302; Layard *et al.*, 1991, p. 242), which in turn has been found to be highly correlated with demand conditions in the labour market relevant for the unemployed (Osberg *et al.*, 1986).
- The results obtained concerning the relation between individual duration of unemployment and the access to unemployment benefits are weak. Devine and Kiefer conclude on this point that ‘the effect of unemployment benefits . . . appears to be positive, but with uncertain magnitude. . . estimates vary across samples . . . also vary with the estimation techniques, and this sensitivity of results suggests specification error in modelling the effects of benefits’ (1991, p. 304; see also Layard *et al.*, 1991, p. 249).

New-Keynesians and the nairu

Apparently no necessity of decreasing MLP (and countercyclical wages). What leads back to equilibrium? Why acceleration outside equilibrium?



- Acceleration depends on the fact that the 'mark-up' – hence the profit rate – cannot change. Any departure from the equilibrium real wage causes inconsistent claims on output and (unless some form of money 'illusion', stickiness etc is assumed) this leads to accelerating inflation/deflation.
- Return to equilibrium requires that investment is a function of the interest rate, which rises as inflation develops (and viceversa)
- Partial equilibrium determination of the 'mark-up': elasticity of product demand for the representative firm with imperfect competition. Or 'marxist' interpretation of the nairu as a discipline device in the face of conflict over income distribution.
- Same empirical problems as the monetarists on the macro-level – since the '80s evidence of persistent changes in unemployment without accelerating deflation/inflation

New-Keynesians....

- Also same policy prescriptions (for the medium and long run):
deregulate the labour markets to decrease equilibrium
unemployment (note that equilibrium wage does NOT depend on
Institutions if MLP is not decreasing)

Changes in the Nairu

- Should substantially depend on changes in labour market institutions, yet evidence not very supportive (see Howell et al, 2007)
- Arestis (2007) and Stockhammer (2014) include capital formation along with a variety of LMI and find that only the former consistently explains persistent unemployment changes in a set of Oecd countries

In fact, estimated 'nairus' simply reflect actual average unemployment

Stylized facts that should be explained but mainstream approaches have difficulties explaining.

- i) A large proportion of unemployment in the '80s is involuntary and cannot be explained either in terms of mistaken expectations ... or in terms of search activity;
- ii) changes in nominal aggregate demand produce changes in output and employment in the same direction, and only subsequently changes in prices and wages;
- iii) shifts in unemployment arising from changes in aggregate demand do not roll back to their original level ... a rise (say) in unemployment above the equilibrium rate of unemployment...does not produce permanently falling inflation...**Approximately constant inflation is observed at many different rates of unemployment.** (Carlin & Soskice, 1990, p. 372)

The ambiguous nature of hysteresis...

- By hysteresis is meant that changes in potential output and the nairu tend to persist and are not associated to accelerating inflation or deflation, perhaps not even to persistently higher or lower inflation
- Europe in the 1980s and afterwards – higher unemployment – no accelerating deflation
- US in the 1990s – decreasing unemployment, no accelerating inflation, slow wage and price dynamics
- Many papers after the 2008 recession: changes in nairu and potential output; persistent effects of recessions and fiscal consolidations in general
- Blanchard *et al* 2015: the Phillips curve is decreasing, flat, and large standard errors

BUT

- Most explanation/models of hysteresis by new-keynesian authors tell that increases in unemployment caused by aggregate demand may become persistent, but as the nairu increases, then attempts to expand output and employment will cause high and accelerating inflation....ASYMMETRY!

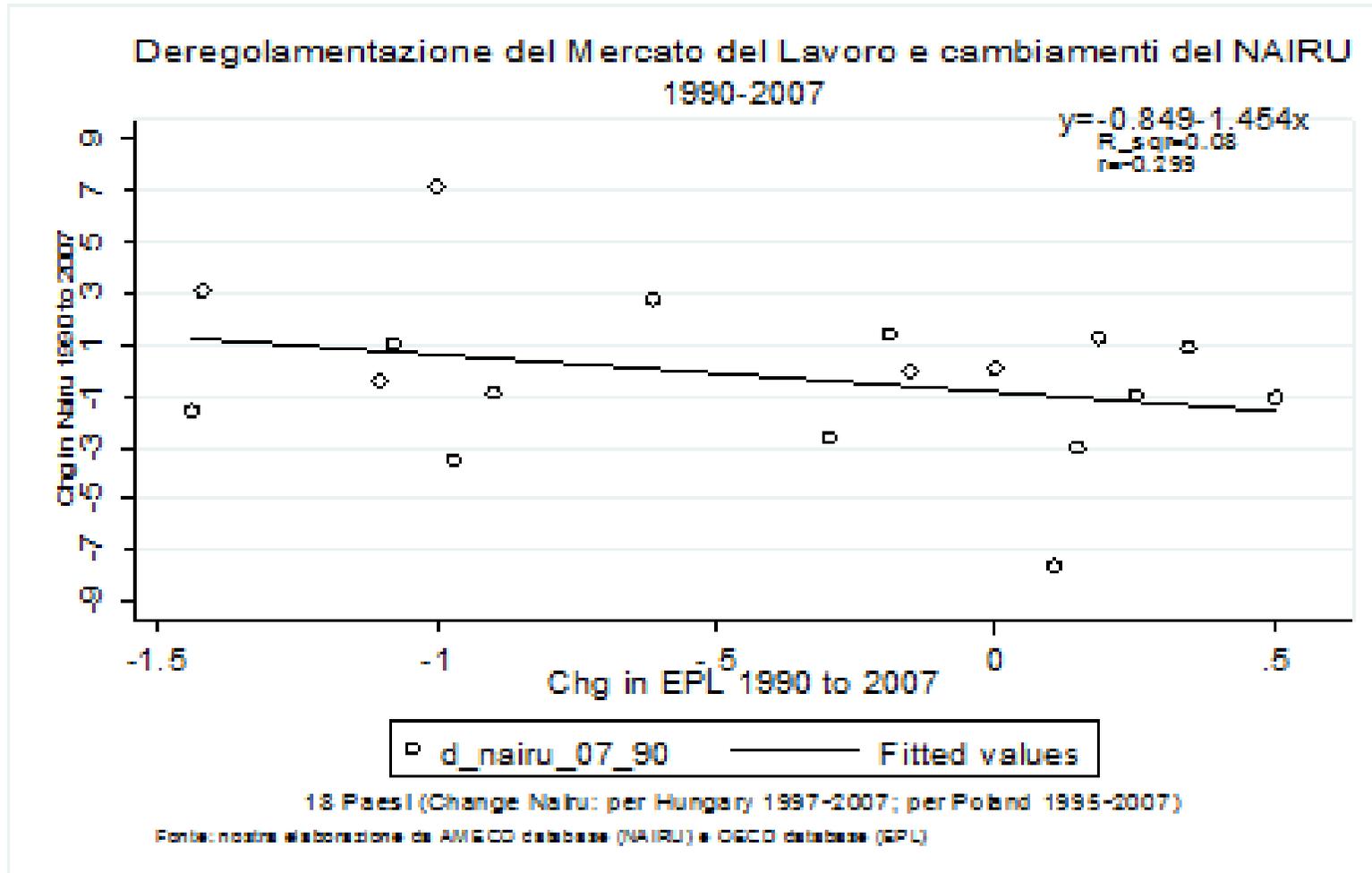
New-Keynesian explanations of hysteresis

- ‘protective’ labour market institutions by themselves or in interaction with adverse shocks increase equilibrium unemployment (insider-outsider models; technological or external trade shocks and wage differentials): but, some N-K economists now very cautious...see Ball (1999; 2009)
- Long-term unemployed become non-employable and stop exerting downward pressures on wages: but, evidence that it has a constant relation with total unemployment (Webster 2005) and reversible in expansions (Ball 1999, 2009)
- Capital scrapping: once capital stock has diminished during a recession, expansions will cause high capacity utilization and inflation: but, evidence that capital formation can work both ways....and Phillips curve decreasing and flat

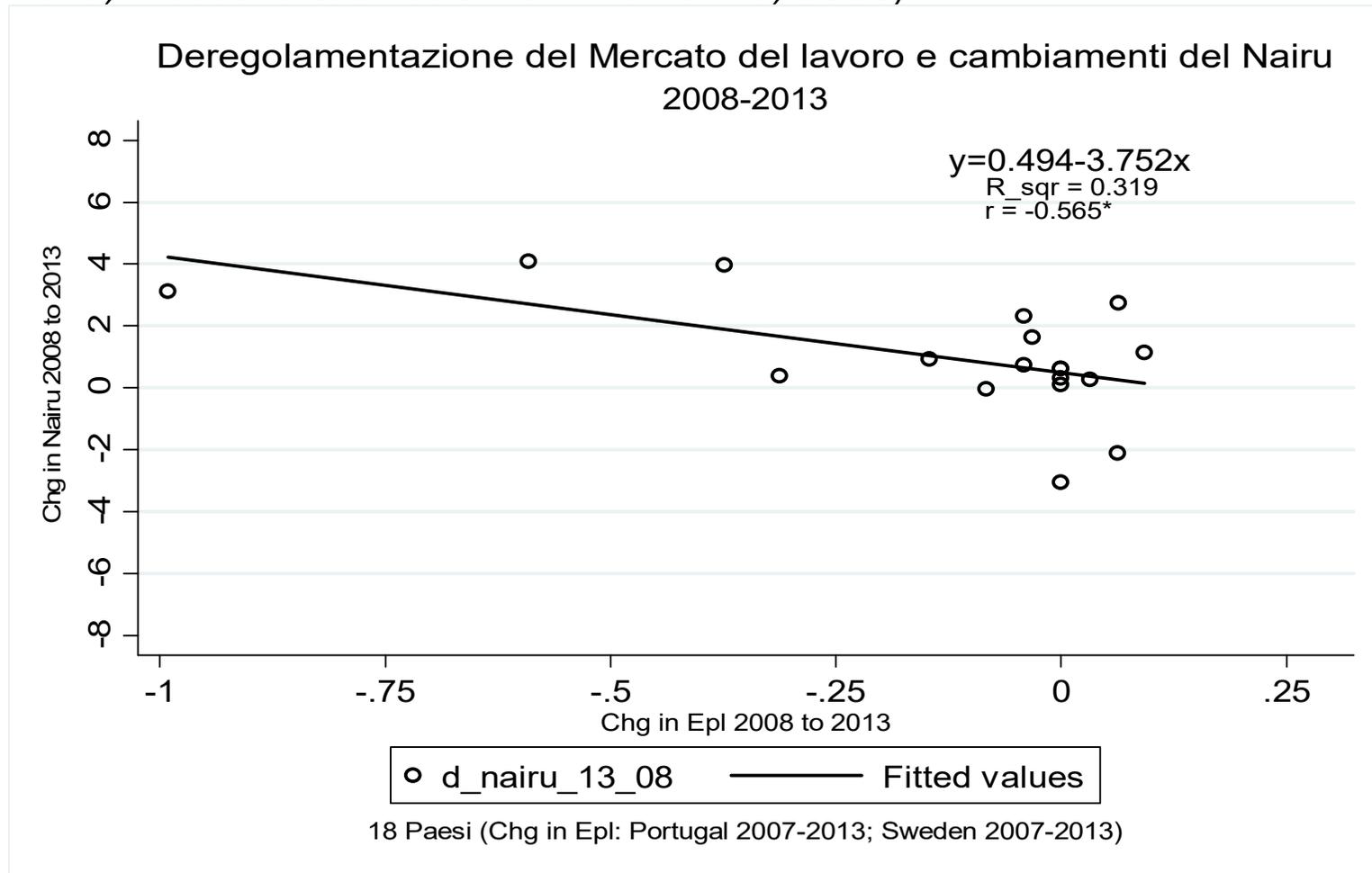
Deregulation a remedy to Unemployment? NO

(from D. Romaniello, Master dissertation Un. Roma Tre, 2016)

no significant statistical relation between structural unemployment and Employment protection legislation; and the sign is 'WRONG'



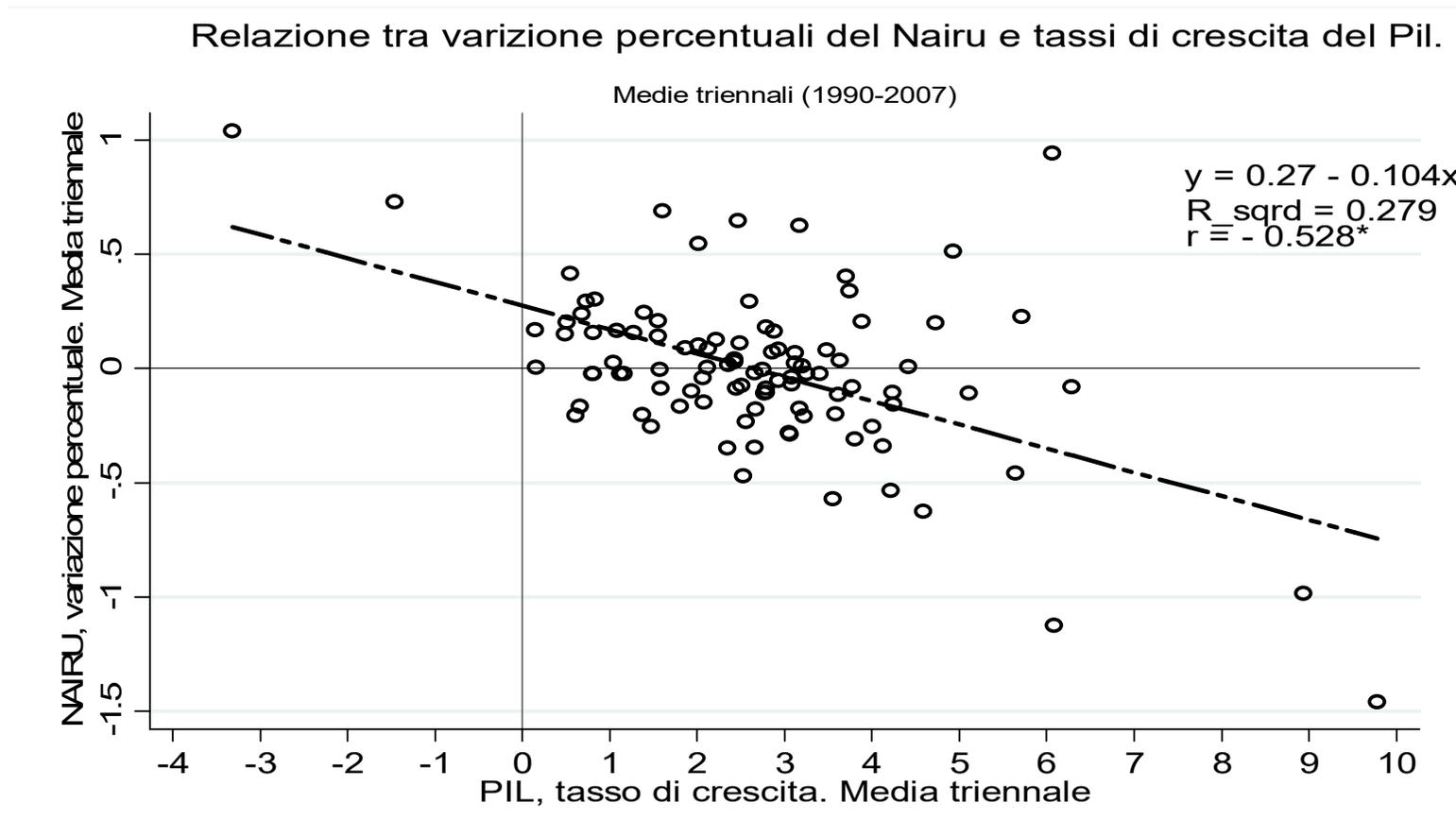
After the crisis: the countries with *more* labour market de-regulation in 2008-2013 had higher increases in unemployment
(from D. Romaniello, Master dissertation Un. Roma Tre, 2016)



Changes in 'structural' unemployment and in GDP 1997-2007

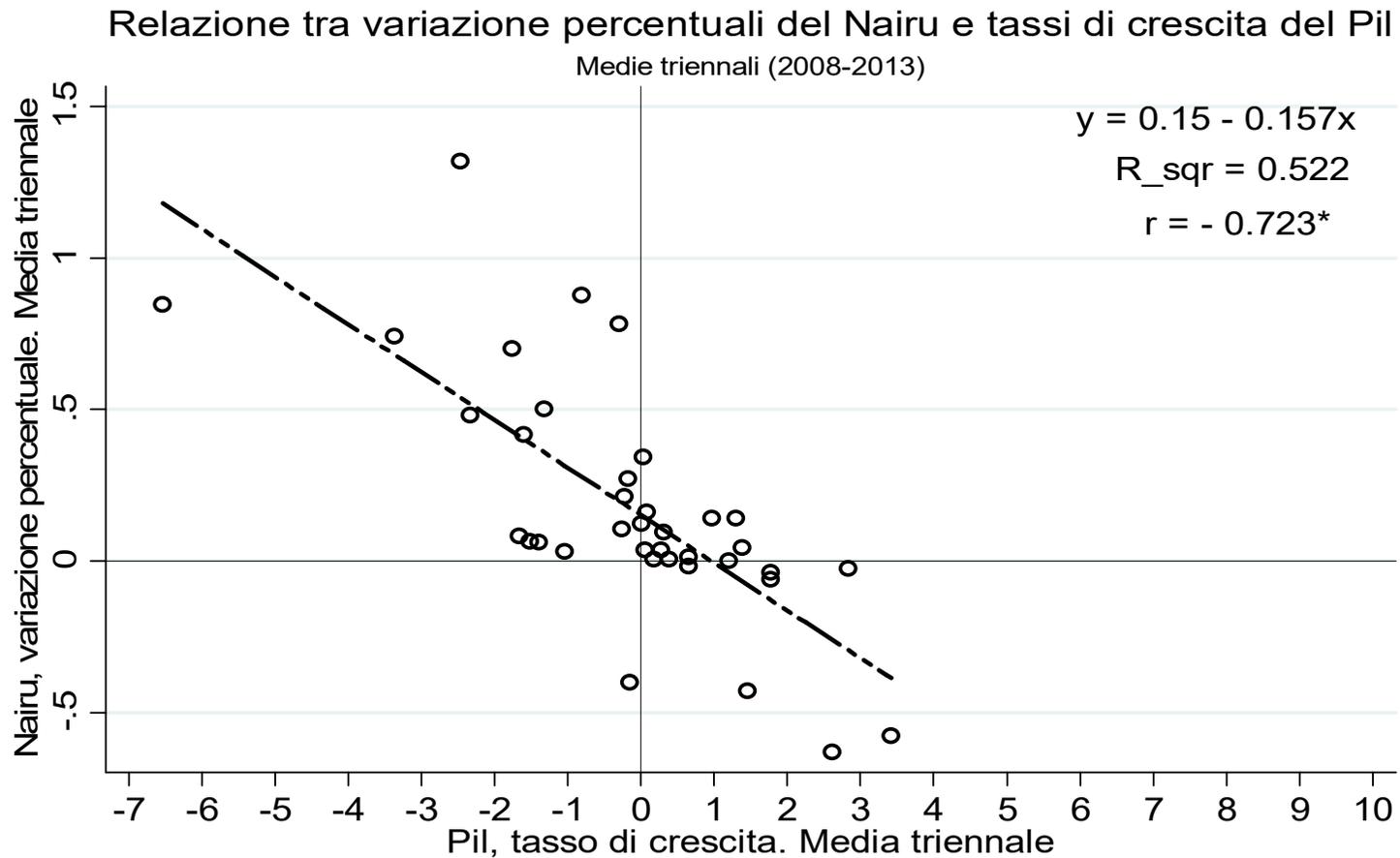
'Structural' unemployment largely depends on changes in GDP

(from D. Romaniello, Master dissertation Un. Roma Tre, 2016)



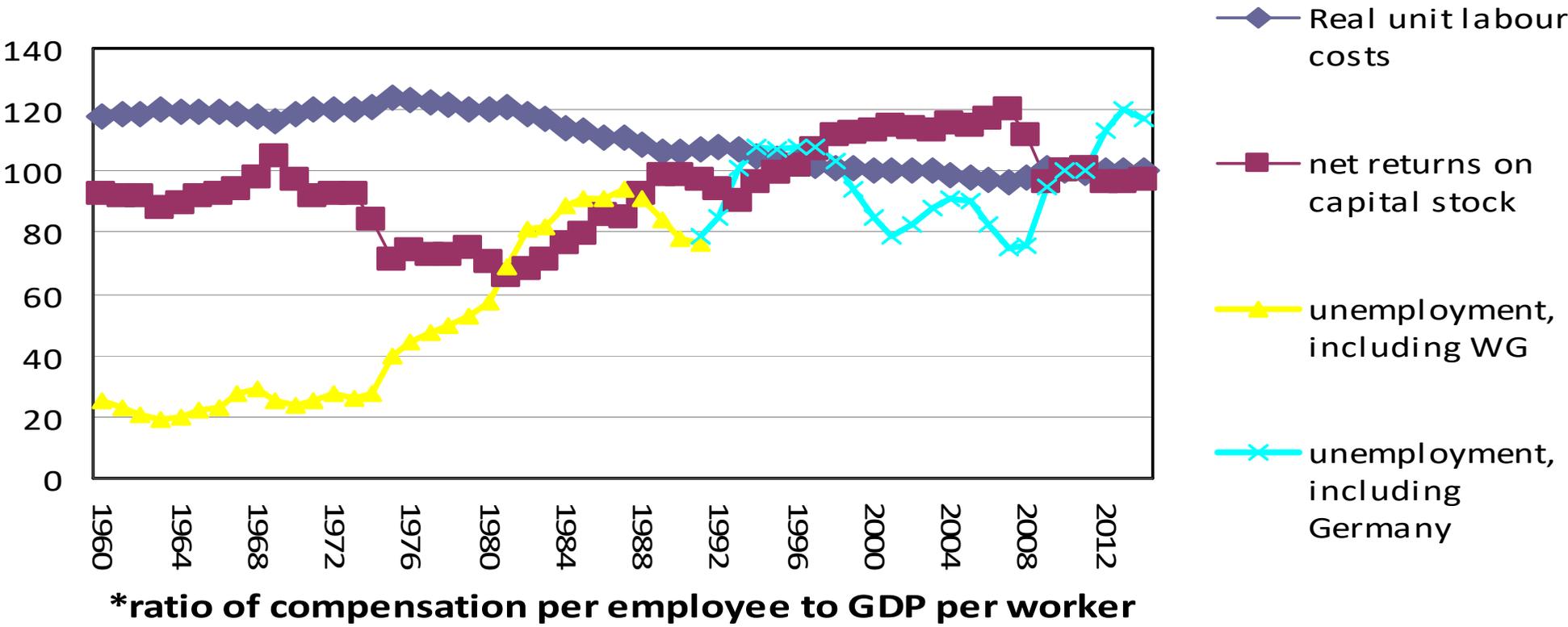
Very strong statistical relationship between GDP growth and structural unemployment after 2008

(from D. Romaniello, Master dissertation Un. Roma Tre, 2016)



Falling wages and increasing profits not a cure for unemployment

Fig. 2. Real unit labour costs,* returns on capital and unemployment. EA 12
Indexes 2010 = 100; source: ameco



Alternative view

- No endogenous adjustment of demand to 'potential output' and to the 'nairu': hence persistent effects of aggregate demand (example: austerity policies)
- Dependence of capital formation on output and aggregate demand: a symmetric process
- Much evidence about the role of capital formation in determining unemployment and the nairu (no empirical support to the role of labour market institutions)
- Much evidence about the endogeneity of Investment with respect to output growth and aggregate demand

Empirical evidence on induced investment

“The discrepancy between theory and empirical work is perhaps nowhere in macroeconomics so obvious as in the case of the aggregate investment function. ...The theory from which the neoclassical investment function was initially derived implies that one should be able to specify the model equally well whether using only factor prices or using output and the user cost of capital. We all know that this is not the case. ... it is very hard to make sense of the distributed lag of output on investment. Finally, **it is well known that to get the user cost to appear at all in the investment equation, one has to display more than the usual amount of econometric ingenuity, resorting most of the time to choosing a specification that simply forces the effect to be there**”

(Blanchard, 1986)

See also Chirinko 1993 and several others (references in my INET post – see reading list)

Persistent Effects of autonomous demand expansions (Exp + primary public expenditure). One-off expansion +5% on average – C and Y fixed effects. (provisional results from Girardi, Paternesi, Stirati, forthcoming)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Output	0.96***	2.09***	2.63***	2.72***	2.19***	2.30***	3.18***	2.79***	2.64***	2.88***	2.86***
	(0.22)	(0.37)	(0.52)	(0.52)	(0.63)	(0.76)	(0.78)	(0.78)	(0.77)	(0.74)	(0.75)
Obs.	1,121	1,120	1,088	1,054	1,020	986	952	918	884	850	816
Countries	34	34	34	34	34	34	34	34	34	34	34
Expansions	91	90	90	90	89	89	89	89	88	84	83
Capital Stock	-0.04	0.17	0.58*	0.94**	1.19***	1.46***	1.58**	2.12***	2.29***	2.09**	2.78***
	(0.07)	(0.19)	(0.29)	(0.35)	(0.39)	(0.47)	(0.60)	(0.73)	(0.82)	(0.84)	(0.90)
Obs.	1,090	1,056	1,022	988	954	920	886	852	818	784	750
Countries	34	34	34	34	34	34	34	34	34	34	34
Expansions	91	90	89	89	89	89	88	84	83	74	70
Employment (persons)	-0.17	0.18	0.75**	1.31***	1.06**	1.09*	1.49**	1.59**	1.68**	1.56**	1.24**
	(0.17)	(0.31)	(0.35)	(0.47)	(0.51)	(0.60)	(0.66)	(0.70)	(0.67)	(0.63)	(0.56)
Obs.	1,073	1,042	1,009	976	943	910	877	844	811	778	745
Countries	33	33	33	33	33	33	33	33	33	33	33
Expansions	86	86	86	85	85	85	85	84	80	79	70
Unemployment rate	-0.04	-0.32*	-0.59***	-0.74***	-0.34	-0.24	-0.51*	-0.42	-0.40	-0.52*	-0.45
	(0.11)	(0.16)	(0.15)	(0.19)	(0.22)	(0.28)	(0.26)	(0.28)	(0.27)	(0.28)	(0.30)
Obs.	1,074	1,043	1,010	977	944	911	878	845	812	779	746
Countries	33	33	33	33	33	33	33	33	33	33	33
Expansions	87	87	87	86	86	87	88	87	84	83	74

Continuation...

L.F. Participation Rate	-0.19**	-0.22	-0.09	0.07	0.13	0.26*	0.34*	0.51**	0.53**	0.51**	0.50**
	(0.09)	(0.14)	(0.16)	(0.18)	(0.17)	(0.15)	(0.17)	(0.19)	(0.22)	(0.20)	(0.20)
	1,075	1,044	1,011	978	945	912	879	846	813	780	747
	33	33	33	33	33	33	33	33	33	33	33
	87	87	87	86	86	87	88	87	84	83	74
Long-term unemployment	-0.17*	-0.39**	-0.54***	-0.57***	-0.43***	-0.13	0.01	0.02	-0.11	-0.12	-0.01
	(0.08)	(0.15)	(0.14)	(0.13)	(0.13)	(0.18)	(0.22)	(0.24)	(0.30)	(0.33)	(0.26)
Obs.	759	724	691	658	624	592	558	528	496	465	432
Countries	33	33	33	33	33	33	33	33	33	33	33
Expansions	47	49	49	52	53	55	58	56	57	52	50

Conclusions

- Output and employment depend on aggregate demand in the 'short' and in the 'long' run
- No spontaneous adjustment towards full utilization of capital stock and towards full employment of labour
- Income distribution depends on bargaining strength of the parties affected by labour market conditions and institutions. Hence, nominal wage dynamics *can* affect real wages and profit rates: the 'mark-up' is not given independently of bargaining over wages.
- Tensions over income distribution *may* cause inflation