The productivity and investment effects of wage-led growth[*]

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How we got into this mess

Economists and commentators, close to the financial sector, have portrayed the Great Recession as entirely unanticipated – a "Black Swan event" – and as a crisis *in* the capitalist system, but not *of* the system, which – with today's knowledge – is argued to have been caused by a series of financial policy mistakes.[1] The implication of this view is that if these mistakes had not been made, there would have been no build-up of financial fragility, no increase in instability and no crisis. However comforting this view may be, in our view, the crisis can only be understood as part of a much wider picture, a trajectory which started with the financial deregulation and the establishment of a "flexible" labour market through the 1980s and 1990s, which weakened labour in relation to capital and resulted in a "wage squeeze": a sustained fall in the share of wages in GDP and a sharp rise in the share of profits and top salaries and bonuses.[2]

Rising inequality is at the root of the crisis. On the one hand, low wages and increased inequality depressed aggregate demand and prompted monetary policy to react by maintaining low interest rates – cheap credit in turn allowed private household and corporate debt to increase (far) beyond sustainable levels. The flip side of the coin has been a dramatic rise in the real incomes and wealth of the top 10 per cent (and especially the top 1 per cent) of households,[3] which created superabundant liquidity in US financial markets, transforming them into unstable institutions, unable to self-correct, searching for high-return investments on an unprecedented scale, based on financial innovations.[4] Net wealth became overvalued, and high asset (house) prices gave the false impression that high levels of debt were sustainable. Financial markets collapsed, once inequality-driven imbalances and instabilities became too large. So although the crisis may have emerged in the financial sector, its roots are much deeper and lie in the wage squeeze that had been going on for almost 30 years. The period of recession and slow growth which the OECD economies now seem condemned to live through is thus rooted in the political economy of the past 30 years. Specifically, macro and labour market policies shaped by the theory of the non-accelerating

1. A standard list includes the US Federal Reserve's very loose monetary policy after the dotcom crash; the failure to regulate over-the-counter derivatives trade; the decision of the US Securities and Exchange Commission to let securities firms raise their leverage sharply; and the failure to restrain the sub-prime mortgage boom.

2. See Storm and Naastepad (2011) for evidence on the wage squeeze. That the crisis is systemic has been argued by Palma (2009), Palley (2009), Taylor (2011), and Irvin (2011).

3. Income inequality has increased remarkably in recent decades in the United States and in many other Anglo-Saxon OECD countries. See Atkinson, Piketty and Saez (2011), Dew-Becker and Gordon (2005), and Palma (2011).

4. Financial innovation has been mostly demand-pull: a global excess demand for securities was the driving force behind the derivatives' boom, itself caused by the rapid accumulation of private wealth by the super-rich.

inflation rate of unemployment (NAIRU) must take a large part of the blame for unleashing, and at the same time legitimizing, a vastly unequal, and eventually unstable and unsustainable growth process.

NAIRU theory dominates macro-economic policy discussion, and so much so that further drastic deregulation of Europe's rigid labour markets and wage cuts, in the name of "increasing cost competitiveness", are widely argued to be the only way out of the recession – especially for the external debt-ridden economies of Greece, Ireland, Portugal, and Spain.[5] A typical newspaper clipping would read: "IMF urges further Spanish reforms", "Spain must follow its massive cuts in public spending with tough reforms in the labour market and far-reaching reform in pension provision, according to the International Monetary Fund" (*Financial Times*, 24 May 2010), with IMF economists claiming that the Spanish labour market is not working, that its "wage bargaining system, which hamstrings wage and firms' flexibility, is ill-suited to membership of a currency union". A recent IMF working paper (Jaumotte, 2011) claims that a full decentralization of wage bargaining ("thereby reducing excessive wage demands and allowing more wage flexibility") and a reduction of the employment protection of permanent workers would bring the Spanish unemployment rate (currently at 20 per cent) down by as much as 7 to 10 percentage points – with no further macro action required, and Spanish aggregate demand still in the doldrums of debt insolvency. Likewise, Greece faces a competitiveness problem (not a financial one): "the economy needs to be more competitive. This means pro-growth policies and reforms to modernize the economy [...]. It also means that inflation be reduced below the euro average, including by keeping wages and wage costs flat, so that Greece can regain price competitiveness."[6] The OECD follows suit and, in its recent *Going for Growth* report, calls for greater labour market flexibility – reduced employment protection, more decentralized wage bargaining, lower minimum wages, higher retirement ages, but lower pensions and lower labour taxes (OECD, 2011). It is a sad irony that a further squeezing of wages (raising profits and inequality) is seen as the remedy for the current crisis, which has been in large measure caused by falling wage

5. The *post-crisis* NAIRU narrative goes as follows: Because the single European monetary policy was too loose for the rapidly growing southern European countries (and Ireland), low (ECB) interest rates drove up domestic demand, including imports, and growth, but also raised indebtedness (as credit was cheap). The growth boom in these economies induced rapid real wage growth that outpaced productivity growth – a trend reinforced by their rigid labour markets – and hence resulted in a loss of competitiveness, rising current account deficits and huge external debts. The post-euro growth model of southern Europe and Ireland was brought to an abrupt end by the financial crisis (but was not caused by it). Europe's crisis, therefore, is not a financial crisis but a deeper crisis of (lack of) price competitiveness caused by rigid labour markets. Hence, what is needed is a drastic reform of the labour market, as is for instance argued by an influential US think-tank (Dadush, 2010), and implied by the recent German-French proposal for a European "Competitiveness Pact" (Janssen, 2011).

6. Source: http://www.imf.org/external/pubs/ft/survey/so/2010/new050910a.htm

shares, rising profits and increased inequalities. NAIRU-based economics is so dominant that there seems to be a collective inability to conceive of alternatives to it. Why do economists experience such difficulty even imagining a different non-NAIRU economic system? How should we begin to conceive of an alternative set of policies to our common advantage? Perhaps we might start by pointing out one fatal weakness in NAIRU theory itself, namely its treatment of labour, and by showing how NAIRU theory breaks down once we allow for more realistic (and humane) theoretical foundations.

The NAIRU model

The canonical NAIRU model consists of a wage-setting (WS) and a price-setting (PS) curve. The WS curve is derived from the wage bargaining process,[7] in which the bargaining power of (unionized) workers over money wage growth $\hat{W}$ is assumed to depend on the rate of unemployment u, the exogenously given growth rate of labour productivity $\hat{\lambda}$ (lettering a "hat" over a variable denotes its growth rate), expected future inflation $\hat{p}^e$, and z which is a (catch-all) variable that stands for all institutional and regulatory variables that affect the outcome of wage-setting.

$$\hat{W} - \hat{p}^e = \alpha_0 - \alpha_1\ u + \alpha_2\ \hat{\lambda} + \alpha_3\ z \qquad \alpha_0, \alpha_1, \alpha_3 > 0;\quad 0 \le \alpha_2 \le 1 \quad (1)$$

First, lower unemployment will augment union bargaining power and consequently wage demands by workers will be higher; hence α_1 has a negative sign. This wage setting relation between unemployment and (expected) real wage growth is drawn in figure 1 as the downward-sloping WS curve. According to (1), wage-setters are further assumed to build the underlying productivity growth into their real wage claims, with their share in productivity growth being dependent on the (perceived) state of the labour market, and on the nature and extent of labour market regulation.[8] Last, by convention, a higher z (e.g. higher unemployment benefits, more strict employment protection legislation or other pro-worker labour market interventions) reflects a strengthened bargaining position of workers which increases real wage growth demands at a given unemployment rate, hence $\alpha_3 > 0$.

The PS curve indicates the rate of real wage growth consistent with the price-setting behaviour of firms – the latter is usually based on assuming

7. "Microeconomic foundations" are provided by Carlin and Soskice (2006) and Forslund, Gottfries and Westermark (2008).

8. In terms of (3), any *endogenous* change in labour productivity growth does affect the NAIRU if $0 < \alpha_2 < 1$; only if $\alpha_2 = 1$, and productivity growth is fully reflected in real wage growth, there is no impact – but this latter case is empirically not realistic (Rowthorn, 1999). Empirical evidence indicates that α_2 takes a value of about 0.5.

oligopolistic competition in product markets. Specifically, firms set prices as a mark-up over unit labour cost. If we assume a constant mark-up rate, we get equation (2), expressed in growth rates:

$$\hat{p} = \hat{W} - \hat{\lambda} \quad (2)$$

Re-arranging equation (2), we obtain the PS curve (2''):

$$\hat{w} = \hat{W} - \hat{p} = \hat{\lambda} \quad (2'')$$

Real wage growth, denoted by $\hat{w}$, has to equal labour productivity growth in a long-run steady state, because only then both inflation and the distribution of income across wages and profits are constant. If labour productivity growth is exogenous, (2'') implies that price-setting decisions determine the real wage growth paid by firms. This price-setting relation is drawn as the horizontal PS-curve in figure 1. The real wage growth implied by price setting is constant, equal to labour productivity growth (which is assumed exogenous), and therefore independent of the unemployment rate.

Equilibrium in the labour market requires that real wage growth demanded be equal to the real wage growth warranted by price setting. In figure 1, equilibrium is given by the point of intersection between the WS-curve and the PS-curve, with equilibrium unemployment or the NAIRU being u^*. If we assume that inflation expectations equal actual inflation or $\hat{p}^e = \hat{p}$, and next combine (1) and (2''), u^* is given by:

$$u^* = \frac{\alpha_0 - (1 - \alpha_2)\hat{\lambda} + \alpha_3 z}{\alpha_1} \quad (3)$$

The NAIRU is – in essence – a macroeconomic disciplining device to curb workers' wage claims, bringing them back in line with exogenous labour productivity growth, so as to maintain firm profits. NAIRU-equation (3) generates straightforward and powerful results.

First, increased regulation (a higher wage-push factor z) increases the real wage growth *demanded* by workers at a given unemployment rate. Graphically, this shifts up the wage-setting curve from *WS* to *WS'* as in figure 1. The NAIRU moves up from u_1^* to u_2^*. With more powerful unions, the system needs a higher structural rate of unemployment to stabilize inflation and bring wage demands back in line with the preordained wage share implied by firms' price setting. The key *employment policy* lesson of NAIRU doctrine therefore is that labour markets should be deregulated, welfare states trimmed down, and the institutional wage bargaining position of unions weakened, so as to reduce real wages (relative to productivity) and improve firms' profitability. This would lead to increased investment, reduced unemployment (especially of the lower-skilled) and improved macroeconomic performance. It follows that there exists an inescapable trade-off

Figure 1. More labour market regulation and the NAIRU
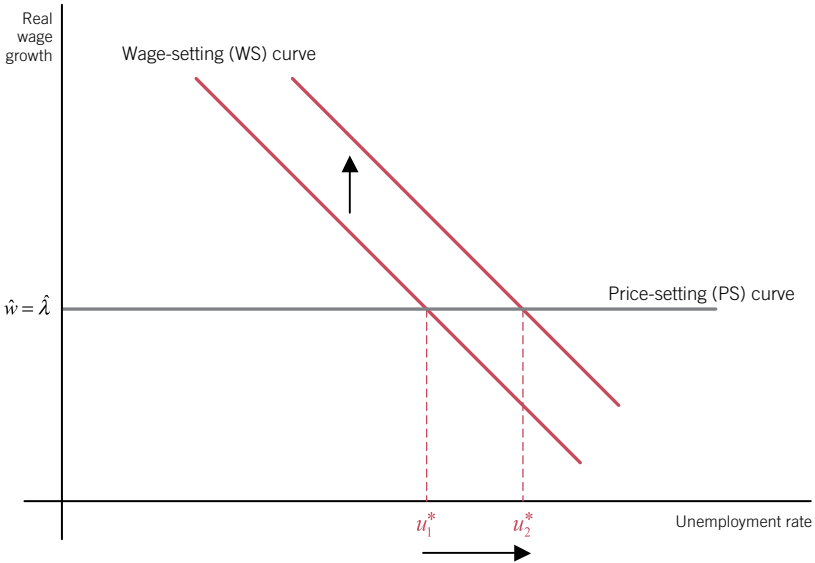
between growth and equity; the price to pay for higher employment is a low-pay sector.

Second, its key *macro policy* implication is that governments and central banks should *not* try to promote full employment, because efforts to push the unemployment rate permanently below the NAIRU will fail, as doing so will generate only accelerating inflation (not growth). Macro policy may *temporarily* lower actual unemployment, but this will strengthen the bargaining power of wage setters, leading to higher wage claims and setting off a process of (accelerating) wage-push inflation (because firms raise prices to maintain profits). The inflation, in turn, will undermine demand (which is supposed to depend negatively on prices) and raise unemployment until the equilibrium rate of unemployment is reached again. Demand will adjust itself to the "natural" level of output, corresponding to the NAIRU, either passively through the so-called "Pigou" or real balance effect,[9] or, alternatively, more actively through a policy-administered rise in interest rates by the Central Bank.[10] Hence, the implication of equation (3) is that policy should focus *exclusively* on the labour market (and not on aggregate demand and investment). Persistently high unemployment and weak growth thus reflect a deliberate policy choice to maintain egalitarian institutional arrangements, even though this creates sclerotic and dualistic labour markets and helps the "insiders" but hurts the unemployed "outsiders".

9. See Taylor (2011) for a critique of the Pigou effect.
10. We note that in the latter case, actual unemployment is determined by how large the Central Bank *thinks* the NAIRU is.

A critique of the NAIRU

We are certainly not the first to criticize the NAIRU approach. There exists, for one, a sophisticated econometric literature which critically assesses the empirical evidence produced by the mainstream NAIRU literature.[11] For another, there exists a theoretical literature criticizing the structural assumptions of the NAIRU model, including the absence of money illusion (implied by the assumption that $\hat{p}^e = \hat{p}$), the neglect of fundamental uncertainty about future events, the absence of information asymmetries (between workers and firms), a constant mark-up rate, the neglect of hysteresis, and the general absence of non-linearities and multiple equilibria.[12] Without taking anything away from such structural critiques, we believe that a deeper critique can be made. Even if we accept the NAIRU model and its assumptions, we argue that the NAIRU model's view on the roles played by (real) wages and labour in OECD countries is one-sided and neglects their major alternative role: wages also provide *macroeconomic benefits*, chiefly in terms of increased demand, higher labour productivity growth and more rapid technological progress. Taking these benefits into account, the impact of higher wages on firms' profitability becomes ambiguous – because higher wages at the same time reduce and raise profits. If these opposing effects of higher wages cancel each other out, and profitability is not (or not significantly) affected, there is no reason why equilibrium unemployment would change in response to the wage increase – the NAIRU claim breaks down.

To illustrate this point, let us consider the profit rate – defined as the ratio of profits to (invested) capital – which can be shown to depend upon the following three proximate determinants:[13]

- *the real wage rate*: the higher the real wage, the lower is the profit share and hence the lower is the profit rate;

- *labour productivity*: higher labour productivity raises the profit share (with an unchanged real wage rate), and hence the profit rate increases; and

- *capacity utilization or demand*: the higher the demand, the higher is the profit rate.

Using this decomposition, we can ask: how do higher (real) wages affect the profit rate? The answer is not straightforward. Clearly, the profit rate declines in response to higher real wages, but this is just the *direct* impact. Higher

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11. Thorough assessments showing that the empirical evidence in support of the NAIRU model is not statistically robust, and often contradictory are: Baker et al. (2005); Howell et al. (2007); and Baccaro and Rei (2005).

12. Major references include: Eisner (1997); Galbraith (1997); Ball (1999); Karanassou and Snower (2004); and Arestis, Baddeley and Sawyer (2007).

13. This decomposition is available from the authors upon request.

wages also have significant offsetting *indirect effects* on profitability, which operate through capacity utilization and labour productivity.

If the economy is *wage-led*, demand and capacity utilization increase in response to higher (real) wages, and this raises profitability, in turn inducing higher investments by firms. Capital accumulation also increases in response to the growth in aggregate demand (the Keynesian accelerator effect). The result is a sequence of rounds of demand growth and increases in utilization and hence in the profit rate. In addition, the new investments result in higher labour productivity, which also is good for profits. First, the newly installed equipment embodies the latest state of production technologies and is therefore more productive than older vintages of capital stock. Second, the increase in demand, caused by higher wages, leads to an economy-wide deepening of the division of labour as well as more rapid learning-by-doing (in firms), which are processes that eventually get reflected in higher labour productivity growth. In both explanations, higher demand growth is associated with higher labour productivity growth – this positive link is known in the literature as the Kaldor-Verdoorn relation.

There is one more reason why higher real wages are associated with higher labour productivity. This explanation goes back at least to Karl Marx, who argued in *Capital* that high wages lead to a labour-saving bias in innovation and technological progress – because only labour-saving technological progress, which he identifies with rising labour productivity, ensures the reproduction of a positive economic surplus. Higher wages thus stimulate capital deepening, drive inefficient firms off the market and encourage structural change, increase the proportion of high-skilled workers in the labour force, and, in general, promote labour-saving technological progress. Marx's idea of wage-cost induced technological progress has gone through various incarnations including: Hicks (1932), Kennedy (1964) and, more recently, Foley and Michl (1999) and Funk (2002).[14]

To determine the total effect of higher wages on profitability, we must take into account *these profitability-raising impacts* of higher wages through higher demand and capacity utilization and more rapid labour productivity growth. Figure 2 illustrates what may happen to the NAIRU if these effects of higher wages are taken into account. Assume that the real wage rate increases – for example due to more extensive labour market regulation. The wage-setting curve shifts up from *WS* to *WS'*. But now the price-setting curve also shifts up due to higher labour productivity growth, which comes about *directly and indirectly* because of the increased wage rate. Steady-inflation unemployment may rise or fall, or remain roughly unchanged – in the latter

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14. It also has an important contemporary analogy in the view of climate economists that "steady pressure from [...] a high carbon price [...] would [...] unleash the decentralized power of capitalist [...] inventive genius on the problem of researching, developing, and finally investing in economically efficient carbon-avoiding alternative technologies" (Weitzman, 2007, p. 723).

**Figure 2. More labour market regulation and higher real wage growth
may either reduce (panel a) or raise (panel b) the NAIRU**
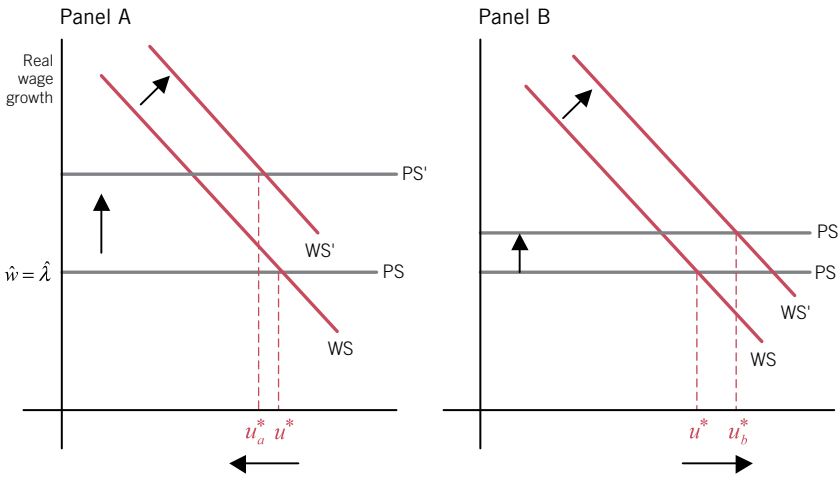
case, the conclusion must be that labour market interventions (causing higher wage demands) are not a cause of unemployment at all. If productivity growth rises very strongly (and the *PS* curve shifts up considerably), the NAIRU falls as in panel A; but if the productivity growth response is rather weak, equilibrium unemployment increases as shown in panel B. The productivity and profitability effects of higher wages are neglected in conventional NAIRU theory. This error of omission could be forgiven if it turns out empirically that the impact of higher wages on productivity is negligibly small. However, our empirical investigation (see below) suggests that it is not small: panel A is the relevant one, not panel B. It follows that the conventional wisdom that more regulation *must* lead to higher equilibrium unemployment, is false.

Further critique

Standard NAIRU accounts treat workers' motivation, work intensity, and hence labour productivity, as *exogenous* to the nature of a country's system of industrial relations. This is not realistic, however. Driving home a simple point: an industrial relations system based on shared values and based on cooperation and coordination (rather than conflict), which relies on the "carrot" and not on the "stick" (Gordon, 1994), is conducive to productivity growth in two major ways. First, workers, who typically have more (tacit) knowledge of how the job is best done than their supervisors or their engineers, more easily accept and contribute to (radical) technological change, because they feel safe that their jobs are not at risk as a consequence of the resulting productivity growth and because they view the productivity gain sharing as being fair; as a consequence, they eschew their narrow self-interest in favour of a broader "public

spirited" form of behaviour (Lorenz, 1992). Second, because significant employment security (in combination with a compressed wage structure) provides workers with insurance against (ex ante) wage risk (Agell, 1999), workers will invest more in education, which has a strong positive impact on productivity growth. Likewise, as argued in the firm-specific human capital model (Auer, Berg and Coulibaly, 2005), firms invest more in training, when employment protection is stricter, labour taxes are high and average job tenure is long.

Productivity improvements in general depend crucially on the cooperation of workers and upon their tacit knowledge, ideas and suggestions, which will be withheld if workers feel their jobs are at risk as a consequence. This is an important paradox: the more "rigid" (using the conventional label) is the industrial relations system, the more flexible and open to technological progress is the social organization of production.[15] This means that the more cooperative are the social relations of production, the more strongly workers will reciprocate firms by providing higher productivity – and the higher will be the rate of productivity growth. Our findings (reported in Storm and Naastepad, 2011) suggest that more regulation has a bigger impact on labour productivity growth than on real wage claims and, hence, is associated with lower structural unemployment. Our world resembles figure 2 (panel A): more regulation means higher wage growth claims (the WS curve shifts up) but even higher productivity growth (the PS curve shifts up even more), and the result is a lower NAIRU.

Empirical evidence

We argue that any change in the wage rate, any change in aggregate demand (and capacity utilization), or any reform of labour market regulation affects labour productivity, and this, in turn, necessarily influences profitability as well as the NAIRU. How important are these effects? What does the empirical evidence tell us? We can summarize the preceding discussion in terms of the following productivity-growth equation:

$$\hat{\lambda} = \beta_0 + \beta_1\,\hat{x} + \beta_2\,\hat{w} + \beta_3\,z \qquad \beta_0, \beta_2, \beta_3 > 0; \quad 0 < \beta_1 < 1 \quad (4)$$

where $\hat{x}$ is real GDP growth. We claim that the coefficients are positive and statistically significantly so. Evidence on the coefficients is provided in tables 1 to 3.

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15. The argument is that worker cooperation and commitment depend on the trustworthiness of the employers in honouring their commitments to long-term employment and fair productivity sharing. The most solid foundation for this kind of trust, as Lorenz (1992) has eloquently argued, is that labour is able to *enforce* those commitments. This, in turn, requires an institutional and regulatory environment which offers legal protections to workers' rights.

The most comprehensive study on coefficient β_1 – which captures the impact of demand on productivity growth – is McCombie, Pugno and Soro (2002), who review 80 empirical studies and conclude that the overwhelming majority of these studies – irrespective of the differences in econometric methods and data employed – find a causal link from demand growth to productivity growth. Table 1 lists ten more recent studies which confirm their conclusion. The (simple) average value of β_1 for the group of OECD countries is 0.46; estimates for individual countries are quite close to the OECD average.

Table 2 summarizes recent findings on the impact of real wage growth on labour productivity growth – coefficient β_2. The statistical evidence assumes that causality runs from wage growth to productivity growth, which appears reasonable in view of the fact that wage growth mostly follows from an institutionalized process of bargaining (as in NAIRU theory) and therefore "leads" movements in aggregate labour productivity, as autonomous real wage pressures drive profit-seeking firms to increase labour

Table 1. Estimates of the impact of (investment) demand growth on productivity growth

Study	France	Germany	Nether-lands	United Kingdom	United States	Nordic countries	OECD countries
McCombie, Pugno and Soro (2002)							0.3–0.6
Cornwall and Cornwall (2002)							0.5
Leon-Ledesma (2002)							0.64–0.67
Knell (2004)	0.43			0.53	0.43	0.40–0.76	
Naastepad (2006)			0.63				
Angeriz, McCombie and Roberts (2009)							0.50–0.67
Crespi and Pianta (2008)							0.27–0.38
Hein and Tarassow (2010)	0.54	0.43	0.45	0.23	0.11		
Storm and Naastepad (2009)						0.31	0.39–0.46
Alexiadis and Tsagdis (2009)							0.43–0.49
Vergeer and Kleinknecht (2010–11)							0.24–0.37
Simple average (standard deviation)	0.49 (0.08)	0.43	0.54 (0.13)	0.38 (0.21)	0.27 (0.23)	0.45 (0.19)	0.46 (0.12)

Notes: McCombie, Pugno and Soro (2002): average of 80 empirical studies; Cornwall and Cornwall (2002): based on data for 16 OECD countries (1960–89); Leon-Ledesma (2002): for 18 OECD countries (1965–94); Angeriz, McCombie and Roberts (2008): for European regions (1986–2002); Crespi and Pianta (2008): data cover 22 manufacturing and ten service industries in France, Germany, Italy, the Netherlands, Portugal and the United Kingdom (1994–2000); Alexiadis and Tsagdis (2010): based on data (1977–2005) for 109 EU12 regions; Storm and Naastepad (2009): OLS estimates using five-year average data for 20 OECD countries (1984–2004); and Vergeer and Kleinknecht (2010–11): panel data results based on annual data for 19 OECD countries (1960–2004).

Table 2. Estimates of the impact of real wage growth on productivity growth

Study	France	Germany	Nether-lands	United Kingdom	United States	Nordic countries	OECD countries
Rowthorn (1999)	0.11–0.24	0.33–0.87	0.24–0.44	0.25–0.60	0.13–0.28	0.10–0.54	0.24–0.30
Nymoen and Rødseth (2003)						0.50	
Naastepad (2006)			0.52				
Carter (2007)							0.60
Hein and Tarassow (2010)	0.31	0.32	0.33	0.25	0.36		
Storm and Naastepad (2009, 2011)							0.29
Vergeer and Kleinknecht (2010–11)							0.31–0.39
Simple average (standard deviation)	0.24 (0.10)	0.46 (0.20)	0.43 (0.13)	0.34 (0.12)	0.28 (0.11)	0.41 (0.13)	0.38 (0.15)

Notes: Rowthorn (1999): data are from his Table 2, panel (b); Nymoen and Rødseth (2003): for the four Nordic countries (1965–94); Carter (2007): based on data for 15 OECD countries (1980–96); Storm and Naastepad (2009): OLS estimates using 5-year average data for 20 OECD countries (1984–2004); and Vergeer and Kleinknecht (2010–11): panel data results based on annual data for 19 OECD countries (1960-2004).

Table 3. Estimates of the impact of labour market regulation on productivity growth

Study	Period of analysis	Independent variable	Estimated coefficient
Nickell and Layard (1999)	1976–99	• EPL • Replacement ratio • Total tax rate • Benefit duration	+0.09 Insignificant −0.03 Insignificant
Buchele and Christiansen (1999)	1979–94	Worker rights and labour–management cooperation index	+0.45
Scarpetta and Tressel (2004)	1984–98	EPL	Insignificant
Auer, Berg and Coulibaly (2005)	1992–02	Average job tenure	+0.16
OECD (2007)	1982–03	• EPL • Minimum wage • Unemployment benefits	−0.02 +0.17 /+0.20 0.15
Autor, Kerr and Kugler (2007)	1976–99 (US data)	Dismissal costs	Positive
Dew-Becker and Gordon (2008)	1980–2003	EPL	+0.23
Bassanini, Nunziata and Venn (2009)	1982–03	EPL	−0.14
Acharya, Baghai and Subramanian (2010)	1970–02	Dismissal law index	+0.26
Storm and Naastepad (2009, 2011)	1984–04	Labour market regulation (factor score)	+0.16

Notes: Macro studies: Nickell and Layard (1999); Buchele and Christiansen (1999); Dew-Becker and Gordon (2008), and Storm and Naastepad (2009–11). Industry-level studies: Scarpetta and Tressel (2004), Auer, Berg and Coulibaly (2005), OECD (2007), Autor, Kerr and Kugler (2007), and Bassanini, Nunziata and Venn (2009). Firm-level study: Acharya, Baghai and Subramanian (2010).

productivity by means of labour-saving technological progress.[16] Long-run evidence for 19 OECD countries (1960–2004), provided by Vergeer and Kleinknecht (2010–11) shows that β_2 varies between 0.31 and 0.39. Our own findings for 20 OECD countries during 1984–2004 indicate that β_2 is about 0.3 (Storm and Naastepad 2009, 2011). Estimates of β_2 for individual economies including France, Germany, the Netherlands, the Scandinavian countries, the United Kingdom, and the United States are consistent with the (simple) average value of 0.38 for the group of OECD countries, which means that an increase in real wage growth by 1 percentage point is associated with an increase in productivity growth by 0.38 percentage points.

Table 3 presents findings on the impact of labour market regulation on productivity. On the whole, studies using industry data suggest that regulation, if other factors are held constant, has a *positive* (statistically significant) impact on productivity growth; for example, using 3-digit ISIC industry data for five countries (France, Germany, India, the United Kingdom and the United States) during 1970–2002, Acharya, Baghai and Subramanian (2010) find a statistically significant positive association between the strictness of a country's dismissal laws and its rate of economic growth.[17] *Macroeconomic* examinations of the effect on productivity growth of labour market regulation (controlling for capital intensity growth) find that coefficient β_3 is positive indeed; such examinations include the early study for 15 OECD countries (1979–94) by Buchele and Christiansen (1999), our own survey (Storm and Naastepad, 2009) of 20 OECD countries (1984–2004), and the macro study by Dew-Becker and Gordon (2008), for 15 European countries (1980–2003), which concludes that "two of the policy variables (the replacement rate of unemployment benefits and an index of employment protection legislation) have significant direct positive effects on productivity growth …"

Likewise, investigations of establishment data generally find that labour productivity rises substantially following a strengthening of employment protection as a consequence of both capital deepening and compositional shifts in labour quality (e.g. Autor, Kerr and Kugler, 2007) for US firms (1976–99).[18]

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16. Marquetti (2004), using data for the US economy over the 130-year period 1869–1999, finds unidirectional Granger causality from the real wage to labour productivity.

17. Bassanini, Nunziata and Venn (2009) conclude, using industry data, that the *net effect* of labour market regulation on *aggregate* labour productivity growth is negative. But their conclusion is not strong because their empirical approach suffers from limitations and the impact of regulation on aggregate productivity growth is basically imputed – not estimated.

18. There is also a mountain of studies on human-resource management and industrial relations, which unambiguously suggest that secure, permanent employment contracts, stable employer–employee relationships characterized by low labour turnover, and a corporate culture in which risk taking and learning are actively encouraged and there is substantive worker involvement in decision-making, are important for innovation and productivity performance. See Levine and D'Andrea Tyson (1990), Appelbaum et al. (2000), Hailey (2001) and Storey et al. (2002).

What do these findings on the productivity (and investment) effects of *higher wages* imply for the profit rate – and ultimately for unemployment? To answer this question, we begin by noting that a 1 percentage point increase in real wage growth reduces profit rate growth one-to-one by 1 percentage point. But this is only the *direct effect*. As we have argued, higher wage growth has offsetting macroeconomic effects on profitability:

(a) it raises demand and utilization, and

(b) it speeds up labour productivity growth – directly by inducing labour-saving technological progress and indirectly through higher demand.

However, these impacts of higher wage growth depend critically on how "strongly" aggregate demand responds to wage growth, whether it is *strongly* or *weakly* wage-led. *Strongly* wage-led economies can be found in Europe's Nordic economies (Storm and Naastepad, 2011); here, a 1.0 percentage point rise in real wage growth raises aggregate demand growth by as much as 0.8 percentage points. In contrast, France, Italy, the Netherlands and Spain, and the European Union as a whole appear to be cases of *weakly* wage-led economies (Storm and Naastepad, 2006/7; Stockhammer, Onaran and Ederer, 2009). Here, a 1.0 percentage point rise in real wage growth raises aggregate demand growth by only 0.25 percentage points.

The more strongly wage-led an economy is, the larger will be the profitability-raising effects of higher real wage growth.[19] Consider first impact (a) we find that a 1.0 percentage point increase in real wage growth *raises* profit rate growth *through higher demand* by 0.13 and 0.37 percentage points in weakly and strongly wage-led economies, respectively. Consider next impact (b) the *total* impact of higher real wage growth on profit rate growth through labour productivity growth. We find that productivity growth increases by 0.47 percentage points in weakly wage-led economies, and by 0.59 percentage points in strongly wage-led ones. Taken together, this means for the weakly wage-led economies that a 1.0 percentage point rise in real wage growth reduces profit rate growth by about 0.4 percentage points (i.e. –1% + 0.13% + 0.47%). Higher wage growth hurts profitability but less than proportionally so. For strongly wage-led economies we find – perhaps remarkably – that the impact of a 1.0 percentage point rise in real wage growth on profit rate growth is about zero (i.e. –1% + 0.37% + 0.59%).

What these admittedly stylized estimations show and what the NAIRU approach fails to recognize is that higher wages do not always automatically, and one-for-one, hurt profitability, kill investment and stifle productivity growth if the economy is wage-led (as is true for most European economies)

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19. The numerical derivations of these effects are available from the authors. We assume that the wage share equals 0.50, not unrealistic for the EU countries (Stockhammer et al., 2009), capacity utilization is 80 per cent and coefficients $\beta_1 = 0.5$ and $\beta_2 = 0.4$.

and if higher wages are sufficiently productivity–growth–enhancing (as our evidence suggests). This conclusion is critical: it shows that there is a *basis for a cooperative (wage-led) capitalism*, in which there is no, or only a limited trade-off, between egalitarianism and economic growth or technological dynamism – quite unlike the zero-sum "conflicting-claims" version of profit-led capitalism *presupposed* by the NAIRU approach. Profitability – defined as the *profit rate* – need not fall (and shareholders are as well-off as before) as the wage share rises and distribution becomes more egalitarian. This may hold true even for weak wage-led economies, if governments and monetary authorities provide sufficient macro-policy support, e.g. if a low long-term real interest rate underpins investment growth, which by contributing to faster labour productivity growth helps raising the profit rate. However, co-operative wage-led capitalism faces one inherent problem: lack of employment growth. Higher real wage growth likely leads to bigger increases in productivity than in output growth, which implies that employment growth declines. While this deeper problem may lose importance in the near future (due to the ageing of Europe's labour force), a more pro-active approach is to cut annual working hours (as in the 1960s) and/or to expand, often essential, public-sector (tax-financed) employment in health, education and environmental protection ("green jobs") – what Lowe (1988) aptly called "planned domestic colonization".

Conventional NAIRU economics does not allow any of these productive and egalitarian options to be pursued. Rather, NAIRU policy-makers focus single-mindedly on condition (2''), noting that it is not satisfied: real wages grow more (by 1.0 percentage point) than productivity (which increases by between 0.47 and 0.59 percentage points), thus causing the *profit share* to fall and leading to (some) extra inflation. Accordingly, the NAIRU policy response would be to raise the interest rate, reduce demand growth, and create the additional unemployment needed to stabilize inflation. But depressing (investment) demand means depressing productivity growth – and hence a vicious circle is created in which unemployment must rise even higher to reduce wage growth down to the (endogenously) lowered rate of productivity growth. Not only much unnecessary unemployment will be created, but productivity growth and technological dynamism in general suffer. If stopping inflation is really that important, the alternative approach to meeting condition (2''), would be to try and increase productivity growth – by additional expansionary fiscal and/or monetary policy. If effective, there would be no need whatsoever for a higher NAIRU. It is high time to wake up to the reality that the NAIRU claim does not hold water and is socially excessively costly. Let us conclude by outlining, on a postage stamp, the implications of our argument for economic recovery.

Wages and economic recovery

The NAIRU "remedy" – real wage cuts and further deregulation of OECD labour markets – will not create the conditions for a viable, sustained economic recovery but is a recipe for prolonged stagnation – the reasons being twofold.

First, with households, firms, and governments burdened by debts, stagnant wages mean lacklustre demand and growth, as there is no longer an escape route through borrowing. The only available source of demand appears to be exports – and each OECD country is now trying to cut wages more than its trading partners are doing, in the hope to improve international cost competitiveness, boost exports, and kick-start the recovery process. These mercantilist attempts will backfire however – not only because the fallacy-of-composition argument applies (not everyone can engage in this), but also because OECD (and EU) export demand is not very sensitive to relative unit labour costs.[20] Policies to improve cost competitiveness by depressing wages (as in the wage-led eurozone) will cause domestic demand to contract while having limited effect on (net) exports. One does not need to be a rocket scientist to foresee a period of slow, or no, growth and persistent high unemployment.

Second, the standard remedy reduces productivity growth and slows down technological progress – as we have argued. Cutting the real wage does not improve the profit rate when autonomous demand is declining at the same time, and hence it will unlikely give a boost to investment demand. Further labour market deregulation will not only increase inequalities, but also depress productivity growth, thus reducing profitability. Weak investment demand, stagnant (or declining) consumption, and sluggish export growth, combined with the debt overhang, introduce a deflationary bias and create a non-negligible risk of debt deflation. "Perhaps", as John Maynard Keynes (1919, p. 238) once wrote, "it is historically true that no order of society ever perishes save by its own hand." European and US policy responses to the Great Recession are in more than one way self-destructive. We need to change course. But how?

First, as Tony Judt (2010) aptly reminds us, the task of the State is not just to pick up the pieces when an under-regulated economy bursts apart, it is also to contain the effects of immoderate gains and to intervene when markets and private interest so obviously do *not* come together to collective advantage. Judt presents a pragmatic case in favour of regulation, cooperation, and coordination – for which we see a macroeconomic basis – and singles out growing

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20. This lack of empirical relationship between the growth in unit labour costs and export growth is known in the literature as Kaldor's paradox (Kaldor, 1978). For recent evidence on this paradox, see Fagerberg (1996), Carlin, Glyn and Van Reenen (2001), European Commission (2010), Storm and Naastepad (2009 and 2011), and Felipe and Kumar (2011). The real problem of Greece, Portugal, Italy and Spain is one of lack of *non-price* competitiveness.

inequality as the cause of many social and economic pathologies – just as we see greater inequality as the root of the crisis. "We need to learn to *think* the State again", he writes (Judt, 2010, p. 199). We believe this is possible only if we free ourselves from NAIRU theory and consider which "social-productivist" interventions best fit our collective purpose. This may sound not very exciting, but it remains a crucial exercise: as Keynes observed, ideas are powerful and it is extremely difficult to escape from old modes of thinking.

Second, our finding that higher wages do have important investment and productivity impacts, and do not harm profitability one-for-one, provides a direction in the road to recovery. It indicates that macroeconomic performance can be improved by "social pacts" to protect wages as well as profits, jobs as well as technological progress, and egalitarian outcomes as well as international *non-price* competitiveness. Such pacts should entail:

1. A fair sharing of the gains of labour productivity growth and technological progress between business and labour;

2. An allowance for high enough profits to stimulate investment; and

3. A commitment to providing employment security both at the level of the firm and as a (full-employment) macroeconomic strategy.

Put differently, regulation, coordination and cooperation pay off in terms of a macro performance superior to that of zero-sum "conflictual" systems – as is illustrated by Europe's wage-led Nordic economies (Storm and Naastepad, 2011). However, these pay-offs can only materialize and there can only be a real recovery if the ideas of lenders and the ideas of borrowers for the purpose of genuine capital investment are brought together. In fact, what Keynes (1931, pp. 145–146) wrote concerning the recovery of the Great Depression, is as true for us today:

> A wide gulf [...] is set between the ideas of lenders and the ideas of borrowers for the purpose of genuine capital investment. [...] there cannot be a real recovery, in my judgment, until the ideas of lenders and the ideas of productive borrowers are brought together again. [...] Seldom in modern history has the gap between the two been so wide and so difficult to bridge.

What it means is a drastic tightening of regulation of financial capital, not just to control its speculative and manipulative excesses, but also to direct it to financing productive investment, turning shareholders into more committed investors (Lazonick, 2009; Palma, 2009; Wade, 2009). The rationale for imposing constraints on capital has to be understood as a socially legitimate form of "self-restraint" in Adolph Lowe's (1988) profound sense of term: a constraint that we all accept because it enhances public freedom or self-governance in other, non-financial, segments of our lifespace. Otherwise, reform will ultimately prove unsustainable.

213

References

Acharya, V.V.; Baghai, R.P.; Subramanian, K.V. 2010. *Labor laws and innovation*, NBER Working Paper 16484 (Cambridge, MA, National Bureau of Economic Research).

Agell, J. 1999. "On the benefits from rigid labour markets: norms, market failures, and social insurance", in *The Economic Journal*, Vol. 109, F143–F164.

Alexiadis, S.; Tsagdis, D. 2009. "Is cumulative growth in manufacturing productivity slowing down in the EU12 regions?", in *Cambridge Journal of Economics*, Vol. 34 (6), pp. 1001–1017.

Angeriz, A.; McCombie, J.S.L.; Roberts, M. 2009. "Increasing returns and the growth of industries in the EU regions: Paradoxes and conundrums", in *Spatial Economic Analysis*, Vol. 4 (2), pp. 127–148.

Appelbaum, E.; Bailey, T.; Berg, P.; Kalleberg, A.L. 2000. *Manufacturing advantage. Why high-performance work systems pay off* (Ithaca, NY, Cornell University Press).

Arestis, P.; Baddeley, M.; Sawyer, M. 2007. "The relationship between capital stock, unemployment and wages in nine EMU countries", in *Bulletin of Economic Research*, Vol. 59 (2), pp. 125–148.

Atkinson, A.B.; Piketty, T.; Saez, E. 2011. "Top incomes in the long run of history", in *Journal of Economic Literature*, Vol. 49 (1), pp. 3–71.

Auer, P.; Berg, J.; Coulibaly, J. 2005. "Is a stable workforce good for productivity?", in *International Labour Review*, Vol. 144 (3), pp. 319–343.

Autor, D.H.; Kerr, W.R.; Kugler, A.D. 2007. "Does employment protection reduce productivity? Evidence from US States", in *The Economic Journal*, Vol. 117 (521), F189–F217.

Baccaro, L.; Rei, D. 2005. *Institutional determinants of unemployment in OECD countries: A time-series cross-section analysis (1960–98)*, International Institute for Labour Studies Discussion Paper 160/2005 (Geneva, ILO).

Baker, D.; Glyn, A.; Howell, D.; Schmitt, J. 2005. "Labor market institutions and unemployment: A critical assessment of the cross-country evidence", in D. Howell (ed.): *Questioning liberalization: Unemployment, labor markets and the welfare state*, pp. 72–118 (Oxford, Oxford University Press).

Ball, L. 1999. "Aggregate demand and long-run unemployment", in *Brookings Papers on Economic Activity 1999* (2), pp. 189–251.

Bassanini, A.; Nunziata, L.; Venn, D. 2009. "Job protection and productivity", in *Economic Policy*, April, pp. 349–402.

Buchele, R.; Christiansen, J. 1999. "Labor relations and productivity growth in advanced capitalist economies", in *Review of Radical Political Economics*, Vol. 31 (1), pp. 87–110.

Carlin, W.; Soskice, D. 2006. *Macroeconomics. Imperfections, institutions and policies* (Oxford, Oxford University Press).

—; Glyn, A.; van Reenen, J. 2001. "Export market performance of OECD countries: An empirical examination of the role of cost competitiveness", in *The Economic Journal*, Vol. 111 (468), pp. 128–162.

Carter, S. 2007. "Real wage productivity elasticity across advanced economies, 1963–1999", in *Journal of Post Keynesian Economics*, Vol. 29 (4), pp. 573–600.

Cornwall, J.; Cornwall, W. 2002. "A demand and supply analysis of productivity growth", in *Structural Change and Economic Dynamics*, Vol. 13 (2), pp. 203–229.

Crespi, F.; Pianta, M. 2008. "Demand and innovation in productivity growth", in *International Review of Applied Economics*, Vol. 22 (6), pp. 655–672.

Dadush, U.; Aleksashenko, S.; Ali, S.; Eidelman, V.; Naím, M.; Stancil, B.; Subacchi, P. 2010. *Paradigm lost. The euro in crisis* (Washington, DC, The Carnegie Endowment for International Peace).

Dew-Becker, I.; Gordon, R.J. 2005. *Where did the productivity growth go? Inflation dynamics and the distribution of income*, NBER Working Paper 11842 (Washington, DC, National Bureau of Economic Research).

—; —. *The role of labor-market changes in the slowdown of European productivity growth*, NBER Working Paper 13840 (Cambridge, MA, National Bureau of Economic Research).

Eisner, R. 1997. "A new view of the NAIRU", in P. Davidson and J.A. Kregel (eds): *Improving the global economy* (Cheltenham, Edward Elgar).

European Commission. 2010. "The impact of the global crisis on competitiveness and current account divergences in the euro area", in *Quarterly Report on the Euro Area*, Vol. 9 (1) (Brussels).

Fagerberg, J. 1996. "Technology and competitiveness", in *Oxford Review of Economic Policy*, Vol. 12 (3), pp. 39–51.

Felipe, J.; Kumar, U. 2011. *Unit labor costs in the Eurozone: The competitiveness debate again*, Working Paper No. 651 (Levy Economics Institute, Bard College).

Foley, D.K.; Michl, T.R. 1999. *Growth and distribution* (Cambridge, MA, Harvard University Press).

Forslund, A.; Gottfries, N.; Westermark, A. 2008. "Prices, productivity and wage bargaining in open economies", in *Scandinavian Journal of Economics*, Vol. 110 (1), pp. 169–195.

Funk, P. 2002. "Induced innovation revisited", in *Economica*, Vol. 69 (273), pp. 155–171.

Galbraith, J.K. 1997. "Time to ditch the NAIRU", in *The Journal of Economic Perspectives*, Vol. 11 (1), pp. 93–108.

Gordon, D.M. 1994. "Bosses of different stripes: A cross-national perspective on monitoring and supervision", in *American Economic Review*, Vol. 84 (2), pp. 375–379.

Hailey, V. 2001. "Breaking the mould? Innovation as a strategy for corporate renewal", in *The International Journal of Human Resource Management*, Vol. 12 (7), pp. 1126–1140.

Hein, E.; Tarassow, A. 2010. "Distribution, aggregate demand and productivity growth-theory and empirical results for six OECD countries based on a post-Kaleckian model", in *Cambridge Journal of Economics*, Vol. 34 (4), pp. 727–754.

Hicks, J.R. 1932. *The theory of wages* (London, Macmillan).

Howell, D.R.; Baker, D.; Glyn, A.; Schmitt, J. 2007. "Are protective labor market institutions really at the root of unemployment? A critical perspective on the statistical evidence", in *Capitalism and Society*, Vol. 2 (1), pp. 1–71.

IMF. 2003. "Unemployment and labour market institutions: Why reforms pay off", in *World Economic Outlook 2003,* Apr. (Washington, DC).

Irvin, G. 2011. "Inequality and recession in Britain and the US", in *Development and Change*, Vol. 42 (1), pp. 154–182.

Janssen, R. 2011. "European economic governance: The next big hold-up on wages", in *Global Labour Column Number 45*, Global Labour University. Also available at: http://column.global-labour-university.org/2010/01/european-economic-governance-next-big.html (accessed 7 July 2011).

Jaumotte, F. 2011. *The Spanish labor market in a cross-country perspective*, IMF Working Paper 11/11, Jan. (Washington, DC, IMF).

Judt, T. 2010. *Ill fares the land. A treatise on our present discontents* (London, Penguin Books).

Kaldor, N. 1978. "The effect of devaluations on trade in manufactures", in N. Kaldor (ed.): *Further essays on applied economics* (London, Duckworth).

Karanassou, M.; Snower, D. 2004. "Unemployment invariance", in *German Economic Review*, Vol. 5 (3), pp. 297–317.

Kennedy, C. 1964. "Induced bias in innovation and the theory of distribution", in *The Economic Journal*, Vol. 74, pp. 541–547.

Keynes, J.M. 1919. *The economic consequences of the peace* (New York, Harcourt, Brace and Howe).

—. 1931. "The great slump of 1930", in *Essays in persuasion* (New York, W.W. Norton & Company).

Kleinknecht, A.; Oostendorp, R.; Pradhan, M.; Naastepad, C.W.M. 2006. "Flexible labour, firm performance and the Dutch job creation miracle", in *International Review of Applied Economics*, Vol. 20 (2), pp. 171–187.

Knell, M. 2004. "Structural change and the Kaldor-Verdoorn law in the 1990s", in *Revue d'économie industrielle*, Vol. 105 (1), pp. 71–83.

Lazonick, W. 2009. "The New Economy Business Model and the crisis of US capitalism", in *Capitalism and Society*, Vol. 4 (2).

Léon-Ledesma, M. 2002. "Accumulation, innovation and catching-up: An extended cumulative growth model", in *Cambridge Journal of Economics*, Vol. 25 (2), pp. 201–216.

Levine, D. I.; D'Andrea Tyson, L. 1990. "Participation, productivity and the firm's environment", in A.S. Blinder (ed.): *Paying for productivity: A look at the evidence* (Washington, DC, Brookings Institution).

Lorenz, E.H. 1992. "Trust and the flexible firm: International comparisons", in *Industrial Relations*, Vol. 31, No. 3, pp. 455–472.

Lowe, A. 1988. *Has freedom a future?* (New York, Praeger Publishers).

Marquetti, A.A. 2004. "Do rising real wages increase the rate of labor-saving technical change? Some econometric evidence", in *Metroeconomica*, Vol. 55 (4), pp. 432–441.

McCombie, J.S.L.; Pugno, M.; Soro, M. 2002. *Productivity growth and economic performance: Essays on Verdoorn's Law* (London, Macmillan).

Naastepad, C.W.M. 2006. "Technology, demand and distribution: A cumulative growth model with an application to the Dutch productivity growth slowdown", in *Cambridge Journal of Economics*, Vol. 30 (3), pp. 403–434.

—; Storm, S. 2007. "OECD demand regimes (1960–2000)", in *Journal of Post Keynesian Economics*, Vol. 29 (2), pp. 211–246.

Nickell, S.; Layard, R. 1999. "Labor market institutions and economic performance", in O. Ashenfelter and D. Card (eds): *Handbook of labor economics*, Vol. 3, pp. 3029–3066 (Amsterdam, Elsevier Science).

Nymoen, R.; Rødseth, A. 2003. "Explaining unemployment: Some lessons from Nordic wage formation", in *Labour Economics*, Vol. 10 (1), pp. 1–29.

OECD. 2007. "More jobs but less productive? The impact of labour market policies on productivity", in *OECD employment outlook 2007* (Paris), Chapter 2.

—. 2011. *Economic Policy Reforms: Going for Growth 2011* (Paris).

Palley, T. 2009. *America's exhausted paradigm: Macroeconomic causes of the financial crisis and the great recession*, New American Contract Policy Paper (Washington, DC, New America Foundation).

Palma, J.G. 2009. "The revenge of the market on the rentiers. Why neo-liberal reports of the end of history turned out to be premature", in *Cambridge Journal of Economics*, Vol. 33 (4), pp. 829–869.

—. 2011. "Homogeneous middles and heterogeneous tails, and the end of the 'inverted U': The share of the rich is what it's all about", in *Development and Change*, Vol. 42 (1), pp. 87–153.

Rowthorn, R.E. 1999. "Unemployment, wage bargaining and capital-labour substitution", in *Cambridge Journal of Economics*, Vol. 23 (4), pp. 413–425.

Scarpetta, S.; Tressel, T. 2004. *Boosting productivity via innovation and adoption of new technologies: Any role for labor market institutions?*, World Bank Research Working Paper 3273 (Washington, DC, World Bank).

Stockhammer, E.; Onaran, Ö.; Ederer, S. 2009. "Functional income distribution and aggregate demand in the Euro area", in *Cambridge Journal of Economics*, Vol. 33 (1), pp. 139–159.

Storey, J.; Quintas, P.; Taylor, P.; Fowle, W. 2002. "Flexible employment contracts and their implications for product and process innovation", in *The International Journal of Human Resource Management*, Vol. 13 (1), pp. 1–18.

Storm, S.; Naastepad, C.W.M. 2009. "Labour market regulation and labour productivity growth: Evidence for 20 OECD countries 1984–2004", in *Industrial Relations*, Vol. 48 (4), pp. 629–654.

—; —. 2011. *Macroeconomics beyond the NAIRU* (Cambridge, MA, Harvard University Press).

Taylor, L. 2010. *Maynard's revenge: Keynesianism and the collapse of free market macroeconomics* (Cambridge, MA, Harvard University Press).

Vergeer, R.; Kleinknecht, A. 2010–11. "The impact of labor market deregulation on productivity: A panel data analysis of 19 OECD countries (1960–2004)", in *Journal of Post Keynesian Economics*, Vol. 33 (2), pp. 369–405.

Wade, R. 2009. "On the global financial crisis" (interviewed by Alex Izurieta), in *Development and Change*, Vol. 40 (6), pp. 1153–1190.

Weitzman, M. 2007. "A review of the Stern review on the economics of climate change", in *Journal of Economic Literature*, Vol. 45 (3), pp. 703–724.