

Wage-led growth: theory, evidence, policy

Engelbert Stockhammer
Kingston University, UK

Ozlem Onaran*
University of Greenwich, UK

The paper provides an overview of the concept of wage-led growth, both as an analytical concept and as an economic policy strategy. At the core of our analysis is the distinction between wage-led and profit-led demand regimes. The Kaleckian tradition in macroeconomics asserts that a higher wage share will have expansionary effects. Bhaduri and Marglin (1990) generalize the model by allowing for classical mechanisms. The paper presents a two-country short run model to clarify the key concepts surrounding a wage-led vs a profit-led demand regime. It distinguishes carefully between partial and total effects and it analyses demand regimes with respect to national as well as international changes in the wage share. We also review the empirical literature. Our reading is that the available evidence indicates that demand in most economies is domestically wage-led. Changes in functional income distribution also have supply-side effects. Available evidence suggests that higher wage growth induces higher productivity growth. Neoliberalism resulted in an increase in inequality and a decline in the wage share, but growth has nowhere been based on the profit-led growth process. Rather neoliberalism has given rise to either debt-led or export-led growth regimes. The paper concludes by outlining a wage-led growth strategy and by discussing its limitations.

Keywords: wage-led growth, income distribution, effective demand, neoliberalism, debt-led growth, export-led growth

JEL codes: B50, E12, E24, E25

1 INTRODUCTION

Growth in advanced economies has not recovered since the Great Recession that began in 2008. While it is clear that pro-cyclical, excessive risk-taking in the financial sector are an important source of the crisis, an increasing number of authors have highlighted that rising inequality and a redistribution from labor to capital have had profound macroeconomic effects that form part of the story (Rajan 2010; Onaran 2011; Palley 2012; Stiglitz 2012; Stockhammer 2012b; van Treeck and Sturn 2012). An important policy implication that emerges from this literature is that, in addition to financial reform, there needs to be a change in distributional policy and wage policy if a viable growth regime is to be established.

This paper contributes to this strand of the literature by clarifying the concept of wage-led growth, both as an analytical concept and as an economic policy strategy.

* The authors are grateful to Paul Auerbach for helpful comments.

To that end we survey a large post-Keynesian (or neo-Kaleckian) literature¹ and, in particular, we build on the recent project *New Perspectives on Economic Growth*, commissioned by the ILO.²

The Kaleckian tradition in macroeconomics has long asserted that a higher wage share will have expansionary effects. In the models of Kalecki (1971) and Steindl (1952), an increase in the wage share unambiguously leads to an increase in effective demand. Bhaduri and Marglin (1990), among others, distinguished between wage-led and profit-led demand regimes. The model they proposed was intended as a generalization of Keynesian and Kaleckian models, to allow for classical mechanisms. Their typology has since given rise to a rich empirical literature. This paper presents one-country and two-country short-run models to clarify the key concepts of a wage-led vs a profit-led demand regime. It distinguishes carefully between partial and total effects and it analyses demand regimes with respect to national as well as international changes in the wage share. Second, we review the empirical literature. Our reading is that the available evidence indicates that domestic demand in most economies is wage-led and that the world economy overall is wage-led. Third, we proceed by discussing actual growth regimes in the recent past. We explain how neoliberalism, which typically came with a decline in wage shares, gave rise to either debt-led or profit-led growth regimes. The paper concludes by outlining a wage-led growth strategy and by discussing its limitations.

The paper is structured as follows. Section 2 will discuss the reasons for the decline in the wage share. Section 3 will discuss the demand effects and section 4 the supply-side effects of the decline in the wage share. Section 5 analyses how a debt-led and an export-led growth model emerged as neoliberal growth models. Section 6 concludes by discussing the wage-led growth strategy.

2 THE CAUSES FOR THE DECLINE IN THE WAGE SHARE

Since the early 1980s, dramatic changes in income distribution have occurred. There has been a substantial decline in wage shares across the world. The decline is well documented for advanced economies (IMF 2007), but it has also taken place in developing countries (ILO 2011; Stockhammer 2012a). The decline in the wage share is one aspect of broader changes in income distribution that also include an increase in personal income inequality, in particular in the Anglo-Saxon countries (OECD 2008; Atkinson et al. 2011). Neoclassical theory typically highlights technological changes as the main determinant of income distribution. Recent mainstream literature does concede that, in addition, globalisation has had negative effects on the wage share in advanced economies (IMF 2007; EC 2007). Heterodox economists tend to regard income distribution as a result of social struggles of income distribution, and have recently highlighted that welfare state retrenchment and financialization have put downward pressure on wages (Jayadev 2007; ILO 2008; ILO 2011; Hein and Mundt 2012).

1. Surveys of post-Keynesian economics included King (2002), Lavoie (1992), Davidson (1994), and Hein and Stockhammer (2011).

2. The full project reports include Lavoie and Stockhammer (2013), Stockhammer (2012a), Onaran and Galanis (2012), Storm and Naastepad (2012), van Treeck and Sturm (2012), and Hein and Mundt (2012); and are available on the ILO's website. Shorter versions of these papers will be forthcoming in Lavoie and Stockhammer (2013).

Stockhammer (2012a) offers a panel analysis of the determinants of the wage share for 71 countries from 1970 to 2007 that takes into account changes in technology, globalization (in production and trade), financialization, and welfare state retrenchment. While he finds some evidence for the effects of technological change, overall it is not the main driver of changes in income distribution. Globalization has had negative effects. Interestingly, globalization has *not* benefited workers in developing economies. A higher degree of openness has negative effects on the wage share in advanced as well as in developing economies – which is in contrast to what the Stolper–Samuelson (1941) theorem predicts. Financialisation has had a strong negative impact on the wage share in advanced as well as in developing economies. Welfare state retrenchment has negative effects on the wage share. For advanced economies, where better data are available, Stockhammer (2012a) finds that the decline in the organizational strength of labor unions has had a negative effect.

These results highlight that income distribution is not primarily driven by changes in technology. Governments can indeed influence income distribution, but several policy areas that might not appear directly related to social policy can have strong repercussions on income distribution. In particular financial regulation and the management of international capital flows seem to have strong effects, as does trade policy. With regard to labor and social policies, the results suggest that strengthening collective bargaining and the right to form labor unions are ways to modify income distribution.

3 DEMAND EFFECTS OF THE DECLINING WAGE SHARE

What are the demand effects of changes in the wage share? Mainstream models attach only one single role to wages: as a cost item. Thereby they recognize only the positive effects that follow a decrease in wages: it will improve competitiveness and therefore ultimately net exports, and it will have a positive effect on investment due to increased profitability. However, in post-Keynesian/Kaleckian models, wages have a dual role as both a cost item and a source of demand. While post-Keynesian models acknowledge the first two effects, they add a crucial element which is missing in the mainstream models: a wage decrease (or, to be precise, a decrease in the share of wages in national income) will certainly suppress domestic consumption, since the marginal propensity to consume out of wages is higher than that out of profits. Thus, in order to assess the effects of a redistribution of income, it is necessary to address the effects on all three components of private demand.

The Post-Keynesian/Kaleckian models regarding demand regimes and the effect of income distribution on demand have been formally modeled by Rowthorn (1981), Dutt (1984), Taylor (1985), Blecker (1989; 2011), and extended by Bhaduri and Marglin (1990). In these models, the total effect of the decrease in the wage share on aggregate demand depends on the relative size of the reactions of consumption, investment and net exports to changes in income distribution. If the total effect is negative, the demand regime is called wage-led; otherwise the regime is profit-led. Whether the negative effect of lower wages on consumption or the positive effect on investment and net exports is larger in absolute value essentially becomes an empirical question. The total effect of a pro-capital redistribution of income depends on the relative size of the consumption differential, the sensitivity of investment to profits and the sensitivity of net exports to unit labor costs.

We will first clarify the concepts of profit-led and wage-led demand for a single country and then proceed to a two-country case. Consumption (C), investment (I),

and net exports (NX) can be written as function of income (Y), the profit share (π), and some other exogenous variables (z) such as interest rates or exchange rates. Government expenditures (G) are considered a function of output because of automatic stabilizers and exogenous variables. Aggregate demand then is:

$$Y = C(Y, \pi) + I(Y, \pi, z_I) + NX(Y, \pi, z_{NX}) + G(Y, z_G) \quad (3.1)$$

Consumption is a negative function of the profit share. Other things being equal, a higher profit share has a positive partial effect on investment, reflecting the effects of higher expected future profitability and the availability of internal funds. Exports and imports depend on relative prices, which in turn are functions of unit labor costs for a given import price. Unit labor costs are nothing but the price deflator multiplied by the real unit labor costs, which is closely related to the wage share (which is $[1 - \pi]$).³ The effect of changes in the profit share on GDP via the international trade channel depends also on the degree of openness of the economy in addition to the elasticity of exports and imports to prices. Thus in relatively small open economies net exports may play a major role in determining the overall outcome; the effect of changes in distribution on GDP via the changes in net exports becomes much less important in relatively closed large economies.

The total effect of a change in the profit share on GDP for a single country is given by

$$\frac{dY^*}{d\pi} = \frac{\left(\frac{\partial C}{\partial \pi} + \frac{\partial I}{\partial \pi} + \frac{\partial NX}{\partial \pi}\right)}{1 - \left(\frac{\partial C}{\partial Y} + \frac{\partial I}{\partial Y} + \frac{\partial NX}{\partial Y} + \frac{\partial G}{\partial Y}\right)} \quad (3.2)$$

The term $1/(1 - (\frac{\partial C}{\partial Y} + \frac{\partial I}{\partial Y} + \frac{\partial NX}{\partial Y} + \frac{\partial G}{\partial Y}))$ in equation (3.2) is the standard multiplier, and we will assume that it is positive. The sign of the effect of the profit share on GDP depends on the sign of the numerator $(\frac{\partial C}{\partial \pi} + \frac{\partial I}{\partial \pi} + \frac{\partial NX}{\partial \pi})$, which is the sum of the partial effects of a change in the profit share on the components of aggregate demand. This is the change in private demand in response to a change in income distribution *at a given level of income*; that is, prior to the multiplier effects. We will refer to this as *private excess demand* (see also Bowles and Boyer 1995). The partial effect on private consumption is expected to be negative; the partial effects on private investment and net exports are both expected to be positive. If the differential in marginal propensity to consume out of wages and that out of profits is relatively large, and the responsiveness of investment to profitability and exports and imports to relative price changes are low, then the total effect of the increase in the profit share on aggregate demand would be negative ($\partial Y^*/\partial \pi < 0$), in which case the demand regime is called *wage-led*. If the effect is positive ($\partial Y^*/\partial \pi > 0$), the demand regime is called *profit-led*.

Two points are worth noting. First, the nature of the demand regime depends on the sign of private excess demand – that is, the numerator of equation (3.2); the denominator will change the size of the effect, but not its sign. Most empirical studies have thus focused on private excess demand rather than on private total demand. Second, we have defined the demand regime in one country – that is, assuming that the country

3. Real unit labor cost is the wage share times GDP at factor cost as a ratio to GDP in market prices.

experiences an increase in the profit share for a given labor cost abroad. In other words, we have investigated a case where a country experiences a change in the wage share *with a given wage share abroad*. The country thereby is able to harvest the full benefits of the net exports effects of a pro-capital redistribution. In order to distinguish between domestic and external effects, some previous studies have only highlighted domestic effects – that is, domestic excess demand $(\frac{\partial C}{\partial \pi} + \frac{\partial I}{\partial \pi})$. This is an effective and simple way of subtracting external effects.

A more elaborate way of addressing the issue of simultaneous changes in the wage share across countries – that is, addressing factors which may moderate the external effects – is to develop a multi-country model. What if all the trade partners of the country implement the same distributional strategy? Let us take the case of two countries which trade only with each other.⁴ What is the effect of a simultaneous 1 percentage-point decrease in the wage share in both countries? The effect on each country’s GDP will thus incorporate the effects of a change in the profit share of the other country via the changes in imports prices and the GDP of the trade partner in addition to the national effects.

The percentage change in the GDP of each country is the sum of the effect of a change in its own profit share on its own private excess demand and the effect of a change in the profit share of the trade partner on the net exports of the country. The national multiplier effects of a change in its own private excess demand on *C*, *I*, and *M*, as well as the effect of changes in the income of the trade partner on income of the country via the effects on exports, as indicated by the matrices *E*, *P*, *H*, *W* and *K* in the equation below:

$$\begin{bmatrix} \frac{dY_1}{Y_1} \\ \frac{dY_2}{Y_2} \end{bmatrix} = E \begin{bmatrix} d\pi_1 \\ d\pi_2 \end{bmatrix} + P \begin{bmatrix} d\pi_1 \\ d\pi_2 \end{bmatrix} + H \begin{bmatrix} \frac{dY_1}{Y_1} \\ \frac{dY_2}{Y_2} \end{bmatrix} + W \begin{bmatrix} \frac{dY_1}{Y_1} \\ \frac{dY_2}{Y_2} \end{bmatrix} + K \begin{bmatrix} dz_1 \\ dz_2 \end{bmatrix} \quad (3.3)$$

The diagonal elements of matrix *E* – for example, the first diagonal element – show the effect of a change in the profit share in country 1 on private excess demand in country 1:

$$E = \begin{bmatrix} \frac{\frac{\delta C}{Y_1} + \frac{\delta I}{Y_1} + \frac{\delta NX}{Y_1}}{\delta \pi_1} & 0 \\ 0 & \frac{\frac{\delta C}{Y_2} + \frac{\delta I}{Y_2} + \frac{\delta NX}{Y_2}}{\delta \pi_2} \end{bmatrix}$$

4. More realistically one could analyse the case of one country and its trade partners in a consolidated fashion. Onaran and Galanis (2012) present the theoretical model and the empirical analysis for the case of 16 countries which are part of the G20 – that is, the 20 largest economies in the world, which constitute more than 80 percent of the global GDP. Capaldo and Izurieta (2012), Rezai (2011), and von Arnim et al. (2012) offer two-country models to analyse the impact of changes in income distribution on aggregate demand in a similar spirit.

The diagonal elements of matrix P are zero, and the off-diagonal elements – for example, row one, column 2 – show the effect of a change in country 2's profit share on the net exports of country 1:

$$P = \begin{bmatrix} 0 & \frac{\delta NX}{Y_1} \\ \frac{\delta NX}{Y_2} & 0 \end{bmatrix} \frac{1}{\delta \pi_2}$$

This effect will depend on the effect of a change in the profit share of country 2 on its export prices (that is, price elasticities of exports and the pass-through from unit labor costs to export prices in country 2), which is by definition country 1's import prices. This change in the import prices of country 1 will then affect its exports and imports, depending on the price elasticities of trade in country 1.

H reflects the national multiplier effects as discussed in Equation (3.2):

$$H = \begin{bmatrix} \frac{\delta C_1}{\delta Y_1} + \frac{\delta I_1}{\delta Y_1} + \frac{\delta NX_1}{\delta Y_1} + \frac{\delta G_1}{\delta Y_1} & 0 \\ 0 & \frac{\delta C_2}{\delta Y_2} + \frac{\delta I_2}{\delta Y_2} + \frac{\delta NX_2}{\delta Y_2} + \frac{\delta G_2}{\delta Y_2} \end{bmatrix}$$

Finally, the matrix W shows the effects of a change in its trade partner's GDP on the exports (X) of each country:

$$W = \begin{bmatrix} 0 & e_{XYW1} \frac{X_1 Y_2}{Y_1 Y_W} \\ e_{XYW2} \frac{X_2 Y_2}{Y_2 Y_W} & 0 \end{bmatrix}$$

The off-diagonal elements – for example, W_{12} – are the effect of a change in country 2's income on country 1's exports (as a ratio to GDP), and is calculated as the elasticity of exports of country 1 with respect to the GDP of the rest of the world (e_{XYW1}) multiplied by the share of exports in GDP in country 1 and weighted by the share of country 2 in world GDP. In our two-country model, world GDP is simply $Y_1 + Y_2$.

The matrix K summarizes the partial effects of the exogenous variable. For simplicity we only consider one exogenous variable for each country.

$$K = \begin{bmatrix} \frac{\delta C_1}{\delta z_1} + \frac{\delta I_1}{\delta z_1} + \frac{\delta NX_1}{\delta z_1} + \frac{\delta G_1}{\delta z_1} & 0 \\ 0 & \frac{\delta C_2}{\delta z_2} + \frac{\delta I_2}{\delta z_2} + \frac{\delta NX_2}{\delta z_2} + \frac{\delta G_2}{\delta z_2} \end{bmatrix}$$

Solving equation (3.3), we get the following equilibrium solutions:

$$\begin{bmatrix} \frac{dY_1}{Y_1} \\ \frac{dY_2}{Y_2} \end{bmatrix} = (I - H - W)^{-1} (E + P) \begin{bmatrix} d\pi_1 \\ d\pi_2 \end{bmatrix} + (I - H - W)^{-1} K \begin{bmatrix} dz_1 \\ dz_2 \end{bmatrix} \quad (3.4)$$

The two-country model is important because it goes beyond the issue of a single country being wage-led or profit-led in isolation. Even if one of the two countries is profit-led, if the other one – for example, the larger country – is wage-led due to relatively low positive effects of a wage-cut on net exports, it is likely that a simultaneous wage-cut across two highly integrated economies leaves both countries with only the negative domestic demand effects, with their combined GDP contracting. This result would be more likely if in both countries, or at least in the originally profit-led country, net exports were very sensitive to relative prices and the trade partner's GDP. Thus a profit-led country may find its GDP contracting when it decreases its wage-share, as would its trading partner when following a similar distributional strategy. Thus beggar-thy-neighbor policies cancel out the competitiveness advantages in each country and are counter-productive. Even if the positive effects of a wage-cut are not totally reversed in an originally profit-led country, the positive effects of a wage-cut will be more moderate when both countries implement the same policy of wage-cut. Similarly, in the wage-led country, the negative effects will be stronger.

To sum up, the post-Keynesian theory suggests that the nature of the demand regime is an empirical issue; whether it is wage-led or profit-led depends on the empirical parameters of a country. Hence many contributions have tried to empirically identify whether the demand regimes of selected countries are wage-led or profit-led. First, we review the literature which has focused on single country cases, and then we summarize the findings of Onaran and Galanis (2012), who have addressed the issue of a simultaneous decrease in the wage share in the major economies of the world.

One striking common finding stands out in this empirical literature: most studies conclude that *domestic* demand is wage-led – that is, the effect of a pro-capital redistribution of income on the sum of private consumption and private investment is negative because consumption is much more sensitive to an increase in the profit share than is investment.⁵ Thus demand is profit-led only when the effect of distribution on net exports is high enough to offset the effects on domestic demand, and this is likely only in small open economies.

In most of the large economies such as the US, Japan, and the Euro area in aggregate, as well as individual large European countries – Germany, France, Italy – the effects due to net exports are not large enough to change the nature of the demand regime to profit-led, since foreign trade forms only a small part of aggregate demand (Bowles

5. See Onaran and Galanis (2012) for 16 developing and developed countries which are members of the G20; Stockhammer et al. (2011) for Germany; Onaran et al. (2011) for the US; Stockhammer and Stehrer (2011) for Germany, France, Austria, the Netherlands, the US, Japan, Canada, and Australia; Stockhammer et al. (2009) for the Euro area; Stockhammer and Ederer (2008) for Austria; Hein and Vogel (2008) for Germany, France, Austria, the UK, and the US; Ederer and Stockhammer (2007) for France; Naastepad and Storm (2006) for Germany, France, Italy, the UK, and the Netherlands; Bowles and Boyer (1995) for Germany, France, the UK, the US, and Japan.

and Boyer, 1995; Naastepad and Storm, 2006; Ederer and Stockhammer 2007; Hein and Vogel 2008; Stockhammer and Ederer 2008; Stockhammer et al. 2009; Onaran et al. 2011; Stockhammer et al. 2011; Stockhammer and Stehrer 2011; Onaran and Galanis 2012).⁶ Table 1 presents a summary of the empirical literature.

Onaran and Galanis (2012), who estimate the demand regimes in the G20 countries, find that Canada and Australia stand out as two profit-led countries among the nine developed members of the G20 group. This is not surprising given that these countries are relatively small. Similarly, within the Euro area, Hein and Vogel (2008) and Stockhammer and Ederer (2008) find evidence of a profit-led demand regime in two small economies – the Netherlands and Austria. As may be expected, this is in striking contrast to the results indicating that the demand regime in the Euro area in aggregate (12 countries) is wage-led, as shown by Onaran and Galanis (2012) and Stockhammer et al. (2009). The net export effects are higher for the individual countries, in particular for the small economies, with a much higher export and import share in GDP. However the aggregated Euro area is a rather closed economy with low extra-EU trade, albeit a high intra-EU trade. Thus, although small countries like Austria or the Netherlands in the Euro area seem to have profit-led regimes, wage moderation in the Euro area as a whole is likely to have only moderate effects on foreign trade but large detrimental effects on domestic demand. When wages decrease simultaneously in all Euro-area countries, the net export position of each country changes little because extra-Euro-area trade is comparatively small. Thus, when all Euro-area countries pursue beggar-thy-neighbor policies, the international competitiveness effects are only minor, and the negative domestic effects dominate the outcome.

Ederer and Stockhammer (2007) report a wider range of specifications for France, some of which indicate a profit-led demand regime. Bowles and Boyer (1995) find profit-led regimes in Germany, France, and Japan, but being the first empirical paper in this literature there are concerns about some econometric problems, such as unit root and cointegration issues. Naastepad and Storm (2006) find profit-led demand regimes in the US and Japan, but these results are outliers, given that they also imply a profit-led domestic demand regime in these countries, which is different from the majority of the other findings in the literature. Using a structural Vector Autoregression (VAR) model, Stockhammer and Onaran (2004) find that the impact of income distribution on demand and employment is very weak and statistically insignificant in the US, UK, and France. However, it is hard to compare the results of the VAR estimations with the rest of the literature, which rely on single equation estimations for each component of demand. Although VAR is appropriate in terms of incorporating simultaneity, it is weak in identifying the individual behavioral equations and effects. Again using VAR methodology, Barbosa-Filho and Taylor (2006) find that the US economy is profit-led; however their estimations suffer from autocorrelation issues.⁷

While there is substantial research on the effects of distribution on demand in advanced economies, there are few empirical studies for developing countries, though

6. Onaran and Galanis (2012) and Stockhammer et al. (2009) for the case of the Euro area; Onaran and Galanis (2012), Stockhammer et al. (2011), Hein and Vogel (2008), and Naastepad and Storm (2006) for Germany; Onaran and Galanis (2012), Hein and Vogel (2008), and Naastepad and Storm (2006) for France and Italy; Onaran and Galanis (2012), Hein and Vogel (2008), Naastepad and Storm (2006), and Bowles and Boyer (1995) for the UK; Onaran and Galanis (2012), Onaran et al. (2011), Hein and Vogel (2008), and Bowles and Boyer (1995) for the US; and Onaran and Galanis (2012) for Japan find evidence of wage-led private demand.

7. See Stockhammer and Stehrer (2011) for a more detailed discussion.

Table 1 A summary of the literature on the demand regimes in the developed countries

	Domestic demand		Total demand	
	Wage-led	Profit-led	Wage-led	Profit-led
Euro area	Onaran and Galanis (2012); Stockhammer et al. (2009)		Onaran and Galanis (2012); Stockhammer et al. (2009)	
Germany	Onaran and Galanis (2012); Stockhammer et al. (2011); Stockhammer and Stehrer (2011); Bowles and Boyer (1995); Naastepad and Storm (2006); Hein and Vogel (2008)		Onaran and Galanis (2012); Stockhammer et al. (2011); Naastepad and Storm (2006); Hein and Vogel (2008)	Bowles and Boyer (1995)
France	Onaran and Galanis (2012); Bowles and Boyer (1995); Naastepad and Storm (2006); Ederer and Stockhammer (2007); Hein and Vogel (2008); Stockhammer and Stehrer (2011)		Onaran and Galanis (2012); Stockhammer and Onaran (2004); Naastepad and Storm (2006); Hein and Vogel (2008)	Bowles and Boyer (1995); Ederer and Stockhammer (2007)
Italy	Onaran and Galanis (2012); Naastepad and Storm (2006)		Onaran and Galanis (2012); Naastepad and Storm (2006)	
NL	Naastepad and Storm (2006); Stockhammer and Stehrer (2011)	Hein and Vogel (2008)	Naastepad and Storm (2006)	Hein and Vogel (2008)
Austria	Stockhammer and Ederer (2008); Hein and Vogel (2008); Stockhammer and Stehrer (2011)			Stockhammer and Ederer (2008); Hein and Vogel (2008)
UK	Onaran and Galanis (2012); Bowles and Boyer (1995); Naastepad and Storm (2006); Hein and Vogel (2008)	Stockhammer and Stehrer (2011)	Onaran and Galanis (2012); Bowles and Boyer (1995); Naastepad and Storm (2006); Hein and Vogel (2008)	
US	Onaran and Galanis (2012); Onaran et al. (2011); Bowles and Boyer (1995); Hein and Vogel (2008); Stockhammer and Stehrer (2011)	Naastepad and Storm (2006)	Onaran and Galanis (2012); Onaran et al. (2011); Bowles and Boyer (1995); Hein and Vogel (2008)	Stockhammer, Onaran (2004); Naastepad and Storm (2006); Barbosa-Filho and Taylor 2006
Japan	Onaran and Galanis (2012); Bowles and Boyer (1995); Stockhammer and Stehrer (2011)	Naastepad and Storm (2006)	Onaran and Galanis (2012)	Bowles and Boyer (1995); Naastepad and Storm (2006)
Australia	Onaran and Galanis (2012); Stockhammer and Stehrer (2011)			Onaran and Galanis (2012)
Canada	Onaran and Galanis (2012); Stockhammer and Stehrer (2011)			Onaran and Galanis (2012)

Source: Onaran and Galanis (2012).

Table 2 A summary of the literature on the demand regimes in the developing countries

	Domestic demand		Total demand	
	Wage-led	Profit-led	Wage-led	Profit-led
Turkey	Onaran and Galanis (2012)		Onaran and Galanis (2012); Onaran and Stockhammer (2005)	
Korea	Onaran and Galanis (2012)		Onaran and Galanis (2012); Onaran and Stockhammer (2005)	
Mexico	Onaran and Galanis (2012)			Onaran and Galanis (2012)
Argentina	Onaran and Galanis (2012)			Onaran and Galanis (2012)
India	Onaran and Galanis (2012)			Onaran and Galanis (2012)
China	Onaran and Galanis (2012)	Molero Simarro (2011); Wang (2009)		Onaran and Galanis (2012); Molero Simarro (2011)
South Africa	Onaran and Galanis (2012)			Onaran and Galanis (2012)
Thailand		Jetin and Kurt (2011)		Jetin and Kurt (2011)

Source: Onaran and Galanis (2012).

the field has been recently growing (see Table 2). Onaran and Galanis (2012) and Onaran and Stockhammer (2005) find that Turkey and Korea are both wage-led. Onaran and Galanis (2012), Molero Simarro (2011), and Wang (2009) for China;⁸ Onaran and Galanis (2012) for the cases of South Africa, Argentina, Mexico, and India; and Jetin and Kurt (2011) for Thailand find evidence of profit-led private demand regimes.

Onaran and Galanis (2012) is the only study in the literature which estimates the effects of simultaneous changes in the profit share in several countries, thus not just an isolated change in one single country. Based on estimations of country-specific behavioral equations for the components of private aggregate demand for the 16 developed and developing members of the G20, they simulate the effects of a simultaneous pro-capital redistribution of income – that is, a 1 percentage-point increase in the profit share. Their results show that a simultaneous decline in the wage-share in these 16 countries leads to a decline in global growth. Furthermore, Canada, Argentina, Mexico, and India, which are profit-led countries in isolation, also contract when they decrease their wage-share along with their trading partners, thereby being exposed to the effects of decreasing import prices on net exports in a simultaneous race-to-the-bottom scenario. When these countries implement a similar wage competition

8. In both Molero Simarro (2011) and Wang (2009), investment also includes public investment, whereas the post-Keynesian demand-led growth models are fundamentally about the nature of private demand in response to changes in the profit share.

strategy, the expansionary effects of a pro-capital redistribution of income are reversed, as relative competitiveness effects are reduced and world GDP decreases. According to Onaran and Galanis (2012), the contraction in private excess demand in the originally wage-led countries (the Euro area, the UK, US, Japan, Turkey, and Korea) is much deeper in the case of a global race to the bottom than what would have been the case in a nationally isolated pro-capital redistribution process. The Euro area, the UK, and Japan contract by 0.18–0.25 percent and the US contracts by 0.92 percent as a result of a simultaneous 1 percentage-point decline in the wage share; in the developing world, the two wage-led economies of Turkey and Korea contract at very high rates – by 0.72 and 0.86 percent respectively (Onaran and Galanis 2012). Australia, South Africa, and China are the only three countries that can continue to grow in the context of a simultaneous global decline in the wage share. Even in these countries, however, growth rates are reduced in comparison to a generalized regime of expansion. Overall, Onaran and Galanis (2012) find that a 1 percentage-point simultaneous decline in the wage share in the G20 leads to a decline in the global GDP by 0.36 percentage points. Finally they simulate the effects of an alternative scenario of a simultaneous wage-led recovery in the G20 as opposed to a race to the bottom: if all wage-led countries (the Euro area, the UK, US, Japan, Turkey, and Korea) returned to their previous peak wage-share levels (for example, as in the late 1970s), and moreover if all originally profit-led countries (Canada, Australia, South Africa, China, Argentina, Mexico, and India) increased their wage-share by 1–3 percentage points, all countries could grow and the global GDP would increase by 3.05 percent.

4 SUPPLY-SIDE EFFECTS OF THE DECLINE IN THE WAGE SHARE

On the supply side, the key question is how changes in the wage share or in real wages affect productivity growth (or more broadly speaking, technological progress). Mainstream economists typically argue that competitive markets are most conducive to growth and, in the next step, argue for labor market (and product market) deregulation.⁹ Heterodox economists highlight that labor market institutions can not only have positive social effects in helping to overcome market failures, but they also may have positive effects on economic growth because good labor relations will improve the propensity of workers to contribute to the production process. High wages may also force capitalists to rationalize and thus speed up technological progress. Thus economic historians have pointed out the positive effects of wages in the industrialization process. Allen (2009) argues that the industrial revolution took place in England because of its comparatively high wages.

Recent econometric studies are surveyed by Storm and Naastepad (2009; 2012). Naastepad (2006) found that a 1 percentage-point increase in real wages would lead to a 0.52 percentage-point increase in labor productivity for the Netherlands. Storm and Naastepad (2009) investigate labor market institutions in 20 OECD countries from 1984 to 2004. They find that relatively regulated and coordinated ('rigid') institutions lead to higher productivity growth. Vergeer and Kleinknecht (2010) perform a panel analysis for OECD countries from 1960 to 2004 and also find that stronger labor market institutions lead to faster long-run growth. Both studies also look at the impact of real wage growth on productivity growth. Both Storm and Naastepad (2009) and

9. There are exceptions, however. Aghion et al. (1999) highlight the negative supply-side effects of increasing inequality in a new growth-theory framework.

Vergeer and Kleinknecht (2010) find that higher real-wage growth leads to higher productivity growth. Hein and Tarassow (2010) analyse the link between income distribution and productivity growth for six OECD economies by means of time-series analysis over the 1960–2007 period. They also report that faster real-wage growth leads to higher productivity growth.¹⁰

Storm and Naastepad (2012) summarize these findings by positing that, as a reasonable order of magnitude (for advanced economies), one can assume that a 1 percentage-point increase in real wage growth leads to a 0.38 percentage-point increase in labor productivity growth. This illustrates that higher real wages induce firms to increase labor productivity in order to protect their profitability.¹¹ Hence, the available evidence suggests that real-wage growth has a positive long-run effect on labor productivity growth. This is important for economic policy, as it suggests that excessive wage constraint is likely to lead to weak productivity performance, while a wage-led growth strategy is consistent with positive developments on the supply side.

5 NEOLIBERALISM IN A WAGE-LED ECONOMY: DEBT-LED GROWTH AND EXPORT-LED GROWTH

If, as we have concluded in the previous section, demand regimes are indeed wage-led in most economies and certainly in the world economy overall, how do we explain the actual growth performance of the last few decades? Under neoliberalism there has been a massive redistribution of income and, in the Anglo-Saxon countries in particular, a period of growth followed by a financial crisis. If economies were wage-led, the pro-capital redistribution ought to have dampened growth. We argue that this is indeed what has happened. So how could neoliberalism have led to growth at all? Neoliberalism is a policy package that encompasses an attack on organized labor, a deregulation of the financial sector, and the privatization of public services (Glyn 2006; Harvey 2003).¹² In our view, it is the deregulation of the financial sector that generated boom–bust cycles rather than generating a sustainable growth pattern based on the profits–investment nexus of a profit-led demand regime; two unsustainable growth patterns,

10. All these studies face challenges in identifying the direction of causality and the distinction between short-run and long-run effects, and more research is certainly needed, in particular to address the problem of reverse causality. Marquetti (2004) reports that while real wages appear to Granger-cause productivity, the reverse is not true – there is unidirectional causality. This supports the case for an impact of real-wage growth on productivity growth, but hardly settles the issue.

11. Storm and Naastepad (2012) go so far as to argue that because productivity is more strongly wage-led than demand, employment is overall profit-led. This is at odds with parts of the post-Keynesian literature (Lavoie 2003, Stockhammer 2011). Our reading of the evidence is that the demand effects and the productivity effects are of approximately similar sizes and that effective labor demand is thus likely to be neutral with respect to changes in real wages.

12. The characterisation in the main text focuses on the dimensions that are immediately relevant for our macroeconomic analysis. Foucault (2008) and Mirowski and Plehwe (2009) highlight that there are important theoretical differences between the liberalism of the nineteenth century (which would also be consistent with the policy package) and neoliberalism. Whereas liberalism regarded markets as a naturally occurring phenomenon and advocated a *laissez-faire* policy, neoliberalism is much more interventionist since it regards markets as something to be constructed and maintained. Moreover, the logic of competition and markets is extended into social spheres that were conceptualized as outside economics in classical liberalism.

one based on debt growth and another one based on export surpluses, have emerged (Stockhammer 2012b). This section will try to clarify the relations of these growth regimes to distribution-led demand regimes.¹³

Recall that, in equation (3.1), demand depends on exogenous factors. In a wage-led demand regime, higher aggregate demand is possible if either the wage-share rises exogenously or if some of the other exogenous factors change accordingly. If this is the case, the ratio z/Y will increase. In the medium run, this effect may feed back onto Y ; an example might be household debt. Increases in household debt may increase consumption expenditures. Eventually a higher debt-to-income ratio is likely to have a negative effect on consumption, with the actual temporal structure of the effects likely to be complex as it typically involves movements in property prices.¹⁴

Two of these processes have been particularly important in practice. First, there is a group of countries where debt, and in particular household debt, has been rising. This process is inherently unstable. While it may be difficult to assess which level of debt is unsustainable, continuous increases in debt-to-income ratios are clearly so. The actual relation between the debt ratio and aggregate demand is a complex one, as the link is mediated by rising asset prices or property prices and by credit creation mechanisms. The details of these vary by country, with property bubbles playing a prominent role in the 1990s and 2000s in the advanced countries. In many cases credit expansion was financed by capital inflows. Once the credit expansion stops, the growth model is in crisis. As credit expansion typically relies on some form of a financial bubble, one would expect the link between the debt ratio and aggregate expenditures, mediated by asset prices and credit creation, to be highly non-linear.

A second unstable growth mechanism has been rising export surpluses. A group of countries has relied on rising net exports as a stimulus for economic growth. While such an export-led growth model seems intuitively unsustainable, as it relies on ever-growing external demand stimulation, the mechanism that generates the crisis is less straightforward. Since the export-led country is accumulating foreign assets, it is not likely to be the victim of currency crises. Rather the instability is likely to occur in the countries with current account deficits. In some sense, the export-led regime externalizes the crisis. In particular, if the export-led country is wage-led, as in the case of Germany, growth along with suppression requires ever stronger export stimulus based on increasing deficits and fragility in those countries which grow based on debt-led consumption.

Stockhammer (2012b) provides evidence for the grouping of debt-led versus export-led economies in the 2000s, but Hein and Mundt (2012) provide the most detailed empirical study classifying empirical growth regimes in a similar spirit (see Table 3). Based on a decomposition of the contributions of aggregate demand growth for the period 2000–2008, they distinguish between debt-led consumption boom and strongly export-led mercantilist regimes as the extreme cases, and propose domestic demand-led and weakly export-led regimes as intermediate cases. Domestic

13. There is a subtle conceptual difference between the definitions of wage-led and profit-led demand regimes on the one hand, and debt-led and export-led growth regimes on the other. The demand regimes are defined with respect to the change in income distribution and no claim about the actual change in distribution in a certain time period is implied. However, debt- and export-led regimes assert that the underlying variables have changed in a certain direction in the period prior to the crisis.

14. Dutt (2006), Hein (2006), and Lavoie (2008) are rigorous post-Keynesian treatments that allow for debt-led as well as debt-burdened demand regimes.

Table 3 Demand regimes and distributional policies

		Demand regime	
		Profit-led	Wage-led
Distributional policies	Pro-capital	Profit-led growth process	Stagnation or unstable growth process
	Pro-labour	Stagnation or unstable growth process	Wage-led growth process

Source: Lavoie and Stockhammer (2012).

Table 4 An empirical classification of neoliberal growth regimes

Debt-led consumption boom	Domestic demand-led	Weakly export-led	Strongly export-led
Australia	France	Argentina	China
Mexico	Italy	Brazil	Germany
United Kingdom	India	Canada	Indonesia
USA	South Africa	Russia	Japan
	Turkey	Saudi Arabia	South Korea

Source: Hein and Mundt (2012, table 7).

demand-led regimes were characterized by negative growth contributions of net exports, but these countries did not experience a debt-fuelled consumption boom despite, in some cases, increasing levels of household debt. Weakly export-led regimes comprise a group of countries, most of them commodity exporters, which have had export surpluses, but the growth contribution of net exports had been negative in the relevant period. In other words, these are countries with export surpluses, which have been shrinking. Table 4 summarizes Hein and Mundt's classification of countries.

6 A WAGE-LED GROWTH STRATEGY

A wage-led growth strategy¹⁵ aims at establishing a full-employment growth model in which sustained wage growth drives demand growth via consumption growth and via accelerator effects of investment growth as well as productivity growth via labor-saving-induced technological change. A wage-led growth strategy will result in stable or rising wage shares. How can changes in income distribution be achieved? The starting point for pro-labor distributional policies is minimum wage policies in combination with legislation that strengthens the status of labor unions and collective bargaining institutions. While our motivation for strengthening unions and minimum-wage policies here is a macroeconomic one, it would be naïve to assume that they are likely to be implemented for macroeconomic purposes. If such policies are implemented, it is more likely that they are motivated by the distributional goals of the labor movement.

15. Hein and Truger (2010), Palley (2011), and Lavoie and Stockhammer (2013) offer more detailed discussions of the wage-led growth strategy.

For example, for the European Union, a system of European minimum wages has been suggested as strategy for labor unions to deal with and campaign around wage issues (Schulten and Watt 2007). The available evidence indicates that financialisation and globalization also have played an important role in reducing the wage share.

A wage-led growth strategy includes measures to restrict financial speculation, encourage a more long-term view in corporate governance (such as strengthening the role of stakeholders) and reining in excessive pay in the financial sector; these are complementary with the distribution goals of a wage-led growth strategy. A restructuring of the financial sector is needed to prevent or reduce the frequency and severity of financial crises. Such measures are likely to include restrictions on bank bonuses, financial transactions taxes, pro-cyclical credit management, regulation of the shadow banking industry, closing of secrecy jurisdictions (tax havens)¹⁶ as well as the establishment of a sizable not-for-profit segment within the banking industry and a strengthening of stakeholders within corporate governance that will also lead to an improvement in labor's bargaining power and the wage share.

How much can a wage-led growth strategy contribute to economic recovery? The results of Onaran and Galanis (2012) as well as the other available literature indicate that the effects are substantial, particularly if implemented simultaneously at the global level, but are certainly too small in magnitude to be sufficient as a stabilization policy in the medium term. The wage-led growth strategy is a medium-term growth strategy that ensures that over longer periods consumption expenditures can grow without rising debt levels. However, fiscal and monetary policy is needed to restore full employment along with such a strategy.

Finally, the wage-led growth strategy is open to the ecological criticism that it neglects ecological limits to growth and aims at restoring full employment by more growth. To make the wage-led growth strategy consistent with ecological constraints it will have to be complemented by a reduction in working time and a shift in taxation towards non-renewable resources and pollution rather than value added.

REFERENCES

- Aghion, P., Caroli, E., and Garcia-Penalosa, C. (1999). Inequality and economic growth: the perspective of the new growth theories. *Journal of Economic Literature*, 37(4): 1615–1660.
- Allen, Robert (2009), *The British Industrial Revolution in Global Perspective*. Cambridge: Cambridge University Press.
- Atkinson, A., Piketty, T., and Saez, E. (2011). Top incomes in the long run of history. *Journal of Economic Literature*, 49(1): 3–71.
- Barbosa-Filho, N. and Taylor, L. (2006). Distributive and demand cycles in the US economy – a structuralist Goodwin model. *Metroeconomica*, 57(3): 389–411.
- Bhaduri, A. and Marglin, S. (1990). Unemployment and the real wage: the economic basis for contesting political ideologies. *Cambridge Journal of Economics*, 14: 375–393.
- Blecker, R. (1989). International competition, income distribution and economic growth. *Cambridge Journal of Economics*, 13: 395–412.
- Blecker, R. (2011). Open economy models of distribution and growth. In E. Hein and E. Stockhammer (eds): *A Modern Guide to Keynesian Macroeconomics and Keynesian Policies*. Cheltenham, UK: Edward Elgar, 215–239.
- Bowles, S. and Boyer, R. (1995). Wages, aggregate demand, and employment in an open economy: an empirical investigation. In G. Epstein and H. Gintis (eds), *Macroeconomic Policy*

16. Shaxson (2011) offers a useful treatment of the history and significance of secrecy jurisdictions.

- after the Conservative Era. *Studies in Investment, Saving and Finance*. Cambridge: Cambridge University Press, pp. 143–171.
- Capaldo, J. and Izurieta, A. (2012). The imprudence of labour market flexibilization in fiscally austere work. Working paper.
- Davidson, Paul (1994). *Post Keynesian Macroeconomic Theory. A Foundation for Successful Economic Policies for the Twenty-first Century*. Aldershot, UK: Edward Elgar.
- Dutt, A. (1984). Stagnation, income distribution and monopoly power. *Cambridge Journal of Economics*, 8: 25–40.
- Dutt, A.K. (2006). Maturity, stagnation and consumer debt: a Steindlian approach, *Metroeconomica*, 57: 339–364.
- EC (European Commission) (2007). The labour income share in the European Union. Ch. 5 in *Employment in Europe*.
- Ederer, S. and Stockhammer, E. (2007). Wages and aggregate demand in France: an empirical investigation. In E. Hein and A. Truger (eds), *Money, Distribution, and Economic Policy – Alternatives to Orthodox Macroeconomics*, Cheltenham, UK: Edward Elgar, pp. 119–138.
- Foucault, M. (2008). *The Birth of Biopolitics. Lectures at the College de France, 1978–79*. Houndmills: Palgrave Macmillan.
- Glyn, A. (2006). *Capitalism Unleashed: Finance, Globalization and Welfare*. Oxford: Oxford University Press.
- Harvey, D. (2003). *A Short History of Neoliberalism*. Oxford: Oxford University Press.
- Hein, E. (2006). Interest, debt and capital accumulation – a Kaleckian approach. *International Review of Applied Economics*, 20: 337–352.
- Hein, E. and Mundt, M. (2012). Financialisation and the requirements and potentials for wage-led recovery – a review focussing on the G20. Paper written for the project ‘New perspectives on wages and economic growth: the potentials of wage-led growth.’ ILO Working Paper, forthcoming.
- Hein, E. and Stockhammer, E. (2011). *A Modern Guide to Keynesian Economics and Economic Policies*. Cheltenham, UK: Edward Elgar.
- Hein, E. and Tarassow, A. (2010). Distribution, aggregate demand and productivity growth: theory and empirical results for six OECD countries based on a post-Kaleckian model. *Cambridge Journal of Economics*, 34(4): 727–754.
- Hein, E. and Truger, A. (2010). Finance-dominated capitalism in crisis: the case for a global Keynesian new deal, Berlin School of Economics and Law IPE Working Papers 06/2010.
- Hein, E. and Vogel, L. (2008). Distribution and growth reconsidered – empirical results for six OECD countries, *Cambridge Journal of Economics*, 32: 479–511.
- ILO (2008). World of Work Report 2008. Income inequalities in the age of financial globalization. Geneva: ILO.
- ILO (2011). The labour share of income: determinants and potential contribution to exiting the financial crisis. Chapter 3 of World of Work Report 2011: Making Markets Work for Jobs. Geneva: ILO.
- IMF (2007). The globalization of labor. Chapter 5 of *World Economic Outlook April 2007*. Washington, DC: IMF.
- Jayadev, A. (2007). Capital account openness and the labour share of income. *Cambridge Journal of Economics*, 31: 423–443.
- Jetin, B. and Kurt, O. (2011). Functional income distribution and growth in Thailand: single equation estimations based on Bhaduri/Marglin model. Annual Conference of the Research Network Macroeconomics and Macroeconomic Policies, October 28–29, Berlin. Unpublished manuscript.
- Kalecki, M. (1971). *Selected Essays in the Dynamics of the Capitalist Economy*. Cambridge: Cambridge University Press.
- King, J. (2002). *A History of Post Keynesian Economics since 1936*. Cheltenham, UK: Edward Elgar.
- Lavoie, M. (2008). Financialisation issues in a post-Keynesian stock-flow consistent model. *Intervention: European Journal of Economics and Economic Policies*, 5: 331–356.

- Lavoie, Marc (1992). *Foundations of Post-Keynesian Economic Analysis*. Aldershot, UK: Edward Elgar.
- Lavoie, Marc (2003). Real wages and unemployment with effective and notional demand for labor. *Review of Radical Political Economics*, 35(2): 166–182.
- Lavoie, M. and Stockhammer, E. (2013). *Wage-Led Growth*. Forthcoming.
- Marquetti, A. (2004). Do rising real wages increase the rate of labor-saving technical change? Some econometric evidence. *Metroeconomica*, 55: 432–441.
- Mirowski, P. and Plehwe, D. (2009). *The Road from Mont Pelerin: The Making of the Neoliberal Thought Collective*. Cambridge, MA: Harvard University Press.
- Molero Simarro, R. (2011). Functional distribution of income and economic growth in the Chinese economy, 1978–2007. School of Oriental and African Studies, Department of Economics Working Papers, No. 168.
- Naastepad, R. (2006). Technology, demand and distribution: a cumulative growth model with an application to the Dutch productivity slowdown. *Cambridge Journal of Economics*, 30(3), 403–434.
- Naastepad, C.W.M. and Storm, S. (2006). OECD demand regimes (1960–2000). *Journal of Post-Keynesian Economics*, 29: 213–248.
- OECD (2008). *Growing Unequal? Income Distribution and Poverty in OECD Countries*. Paris: OECD.
- Onaran, Ö. (2011). From wage suppression to sovereign debt crisis in Western Europe: who pays for the costs of the crisis? *International Journal of Public Policy*, 7(1–3): 51–69.
- Onaran, Ö. and Galanis, G. (2012). Is aggregate demand wage-led or profit-led? National and global effects. Geneva: ILO, ILO Working Paper, Conditions of Work and Employment Series No. 40.
- Onaran, Ö. and Stockhammer, E. (2005). Two different export-oriented growth strategies: accumulation and distribution à la Turca and à la South Korea. *Emerging Markets Finance and Trade*, 41(1), 65–89.
- Onaran, Ö., Stockhammer, E., and Grafl, L. (2011). The finance-dominated growth regime, distribution, and aggregate demand in the US. *Cambridge Journal of Economics*, 35(4): 637–661.
- Palley, T.I. (2011). The economics of wage-led recovery: analysis and policy recommendations. *International Journal of Labor Research*, 3(2): 219–244.
- Palley, T.I. (2012). *From Financial Crisis to Stagnation: The Destruction of Shared Prosperity and the Role of Economics*. Cambridge: Cambridge University Press.
- Rajan, Raghuram (2010). *Fault Lines. How Hidden Fractures Still Threaten the World Economy*. Princeton: Princeton University Press.
- Rezai, A. (2011). The political economy implications of general equilibrium analysis in open economy macro models. Working paper, Department of Socio-Economics, Vienna University of Economics and Business.
- Rowthorn, R. (1981). Demand, real wages and economic growth. *Thames Papers in Political Economy*, Autumn: 1–39 (reprinted in *Studi Economici*, 1982, (18): 3–54).
- Schulten, T. and Watt, A. (2007). European minimum wage policy – a concrete project for a social Europe. ETUI European Economic and Employment Policy Brief No 2-2007.
- Shaxson, Nicholas (2011). *Treasure Island. Tax Havens and the Men Who Stole the World*. London: Random House.
- Steindl, Josef (1952). *Maturity and Stagnation in American Capitalism*. New York: Monthly Review Press.
- Stiglitz, Joseph (2012). *The Price of Inequality: The Avoidable Causes and Invisible Costs of Inequality*. New York: Norton.
- Stockhammer, E. (2011). Wage norms, capital accumulation and unemployment. A Post Keynesian view. *Oxford Review of Economic Policy*, 27(2): 295–311.
- Stockhammer, E. (2012a). Why have wage shares fallen? A panel analysis of the determinants of functional income distribution. ILO Working Paper, forthcoming.
- Stockhammer, E. (2012b). Rising inequality as a root cause of the present crisis. PERI Working Paper 282.

- Stockhammer, E. (2012c). Financialization, income distribution and the crisis. *Investigación Económica*, 71(279): 39–70.
- Stockhammer, E. and Ederer, S. (2008). Demand effects of a falling wage share in Austria. *Empirica*, 35(5): 481–502.
- Stockhammer, E., Hein, E., and Grafl, L. (2011). Globalization and the effects of changes in functional income distribution on aggregate demand in Germany. *International Review of Applied Economics*, 25(1): 1–23.
- Stockhammer, E. and Onaran, Ö. (2004). Accumulation, distribution and employment: a structural VAR approach to a Kaleckian macro-model. *Structural Change and Economic Dynamics*, 15: 421–447.
- Stockhammer, E., Onaran, Ö., and Ederer, S. (2009). Functional income distribution and aggregate demand in the Euro area. *Cambridge Journal of Economics*, 33(1): 139–159.
- Stockhammer, E. and Stehrer, R. (2011). Goodwin or Kalecki in demand? Functional income distribution and aggregate demand in the short run. *Review of Radical Political Economics*, 43(4): 506–522.
- Stolper, W. and Samuelson, P. (1941). Protection and real wages. *Review of Economic Studies*, 9, 58–73.
- Storm, S. and Naastepad, C.W.M. (2009). Labor market regulation and productivity growth: evidence for twenty OECD countries (1984–2004). *Industrial Relations*, 48(4): 629–654.
- Storm, S. and Naastepad, C.W.M. (2012). Wage-led or profit-led supply: wages, productivity and investment. ILO Working Papers, Conditions of Work and Employment Series No. 36.
- Taylor, L. (1985). A Stagnationist model of economic growth, *Cambridge Journal of Economics*, 9: 383–403.
- van Treeck, T. and Sturn, S. (2012). Debates on inequality as the cause of the current economic crisis. Paper written for the project 'New perspectives on wages and economic growth: the potentials of wage-led growth'. ILO Working Paper, forthcoming.
- Vergeer, R. and Kleinknecht, A. (2010). The impact of labor market deregulation on productivity: a panel data analysis of 19 OECD countries (1960–2004). *Journal of Post Keynesian Economics*, 33(2): 371–408.
- Von Arnim, R., Tavani, D., and Barbosa de Carvalho, L. (2012). Globalization as coordination failure: a Keynesian perspective. Working paper 02/2012, Department of Economics, New School for Social Research.
- Wang, P. (2009). Three essays on monetary policy and economic growth in China. Unpublished PhD Thesis, University of Ottawa.