# Wage-led versus profit-led demand regimes: the long and the short of it

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**Abstract**

*Empirical studies have found mixed results regarding whether various countries have wage-led or profit-led demand regimes. Most of the previous literature has paid little attention to the time dimension of this distinction, but most of the studies that have found profit-led results have used methodologies that emphasize short-run cyclical relationships. This paper argues that demand is more likely to be profit led in the short run and more likely to be wage led in the longer term, because the positive effects of lower labor costs on investment and net exports are likely to be strongest in the short run, while the positive effects of a higher wage share on consumption are likely to be strongest in the longer term, at least in the US case (other countries may differ).*

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# 1 INTRODUCTION

The basic logic of the relationship between income distribution and aggregate demand in neo-Kaleckian macro models is now well understood. On the one hand, a redistribution of income toward wages boosts consumption demand because of the higher marginal propensity to consume (MPC) out of wages compared with profits. On the other hand, higher labor costs may diminish the competitiveness of national products, thereby reducing net exports, and can also lessen the profits that are one of the main incentives (or sources of finance) for private investment. Hence, demand is wage led if the positive effect of a higher wage share on consumption dominates the potentially negative effects on investment and net exports, and it is profit led in the opposite case (Blecker 2002; Lavoie and Stockhammer 2013; Hein 2014). Even if demand is wage led, economic growth (capital accumulation) can be either wage or profit led, depending on whether the positive effect of a higher wage share on capacity utilization is strong enough to outweigh the direct negative impact of lower profitability on investment.[1]

Since the possibility that demand-driven economies may be either wage or profit led was first opened up by Blecker (1989), Bhaduri and Marglin (1990), and Marglin and Bhaduri (1990), an entire generation of empirical research has attempted to determine whether various countries have wage- or profit-led demand regimes. This now vast literature has yet to reach a consensus for many countries, including some of the largest ones such as the US, Japan and various European Union (EU) members. Many studies have found that most countries have wage-led domestic demand and the larger economies have wage-led overall demand, although some smaller or more open economies have profit-led demand once foreign trade is taken into account (e.g., Hein and Vogel 2008; Stockhammer et al. 2009; Stockhammer et al. 2011; Onaran and Galanis 2012; Stockhammer and Wildauer 2015). Nevertheless, several studies have found that the US has profit-led demand (e.g., Fernandez 2005; Barbosa-Filho and Taylor 2006; Storm and Naastepad 2012), while Kiefer and Rada (2015) find that a panel of 13 OECD countries exhibits profit-led demand.

However, one should be cautious about seeking to determine whether particular countries can be unequivocally identified as either wage or profit led. The underlying theory implies that, on the contrary, the same economies can behave in either a wage-led or profit-led manner depending on various circumstances. Blecker (1989, 2011) has shown that an open economy with flexible markups may respond differently depending on the *source* of a distributional shift: the impact is more likely to be wage led if the shift is caused by a change in the monopoly power of domestic firms, and more likely to be profit led if the shift is caused by a change in relative unit labor costs. Razmi (2014) shows that stock-flow portfolio balance adjustments in an open economy that is subject to external constraints can make such an economy behave in a profit-led fashion in the medium run, even if it would be wage led in the short run. Onaran and Galanis (2012), von Arnim et al. (2014), and Obst and Onaran (2016) show that the impact of a redistribution between wages and profits can vary depending on whether the redistribution is

[1] If demand (utilization) is profit led, then growth (accumulation) is also profit led. In an intermediate case, aggregate demand or capacity utilization can be weakly demand led while growth is profit led, a case called 'conflictual stagnationist' by Marglin and Bhaduri (1990) and 'conflictive' by Palley (2016). In this paper, I use the more descriptive terms 'wage led' and 'profit led' instead of the more colorful but sometimes confusing terminology of 'stagnationism' and 'exhilarationism' employed by Bhaduri and Marglin.

limited to a single country or is global in nature. Palley (2016) shows that a redistribution of total labor income in favor of production workers' wages (at the expense of capitalist-managers' salaries) can be expansionary even in a system that is 'profit-led' overall. Similarly, models that incorporate 'financialization' (e.g., Onaran et al. 2011; Hein 2012) stress that the distribution of capital income between 'rentiers' and firms can affect demand and growth as much as the underlying distribution between labor and capital. Carvalho and Rezai (2016) show that increased inequality in the personal distribution of income can affect the degree to which an economy is wage or profit led. Nikiforos and Foley (2012) and Palley (2014) show that, in the presence of nonlinearities in either the demand or distributional relationship (or both), there may be multiple equilibria and the response of the system to exogenous shifts in distribution is not independent of initial conditions. Skott (2017) notes that, even in the absence of nonlinearities, the slope of the aggregate demand relationship does not uniquely determine the impact of changes in exogenous factors that affect both the demand and distribution curves simultaneously.

This paper will focus on the divergent empirical estimates and will suggest another possible (and less explored) explanation for their conflicting findings. That is, the empirical evidence for profit-led demand regimes in many countries (especially the larger ones like the US) is likely to be relevant mainly to short-run behavior over the business cycle, not to longer-term economic performance. The relative magnitudes of the effects of income distribution on the components of aggregate demand (consumption, investment and net exports) are likely to vary depending on the length of the time horizon considered. Specifically, it will be argued here that the positive effects of a higher profit share (or lower labor costs) on investment and net exports are mainly short-run phenomena, while the sensitivity of workers' consumption to their wage income is, if anything, likely to be stronger in the longer term. As a result, holding other factors equal, national economies are more likely to exhibit profit-led (or more weakly wage-led) demand in the short run and more likely to exhibit wage-led (or more strongly wage-led) demand in the longer term.

Indeed, the idea that a higher average profit share would lead to chronically depressed aggregate demand, originally developed by Steindl (1952 [1976]), was not intended as an explanation of business cycles, but rather as a hypothesis about long-term secular stagnation (see Hein 2016). Similarly, the counterargument by Marglin and Bhaduri (1990) that a high profit share could cause secular 'exhilaration' if it has a strong positive effect on investment was also intended as an explanation of longer-term behavior. In contrast, most of the empirical literature based on the Goodwin cycle approach (e.g., Barbosa-Filho and Taylor 2006; Carvalho and Rezai 2016), which has tended to find profit-led demand, only estimates the role of distribution in short-run business cycle fluctuations.

Only a few empirical studies have explicitly distinguished results over different time horizons. Stockhammer and Stehrer (2011) show that the estimated effects of the wage share on consumption and investment are highly sensitive to lag lengths. Kiefer and Rada (2015) find that demand is profit led in terms of short-run cyclical dynamics, but also identify a longer-term decline in both the wage share and capacity utilization that is at least consistent with long-term wage-led behavior (even though their method does not allow them to test for the direction of causality between distribution and utilization in the longer term). Kiefer and Rada suggest that common factors, such as a 'race to the bottom' by various countries seeking to become more competitive by lowering their unit labor costs simultaneously, could potentially account for the

long-run correlation of a lower wage share and depressed utilization. Vargas Sánchez and Luna (2014) find that the profit share (Marxian 'rate of exploitation') has a positive effect on output in the short run and a negative effect in the long run using vector autoregression (VAR) and vector error correction (VEC) methods for Mexico.[2] Barrales and von Arnim (2017) perform a 'wavelet' analysis that detects cyclical patterns in the data at different frequencies. Using US data with three alternative measures of demand (the income-capital ratio, output gap and employment rate), these authors find evidence of Goodwin-type cycles reflecting profit-led demand and a 'profit squeeze' (i.e., rising demand pressure increases the wage share) at all short-run and medium-run frequencies. However, the long-term dynamics show a similar pattern only up to about 1980. Barrales and von Arnim also find that the covariance of their demand measures and the wage share was negative before 1980 at all frequencies, but became positive after 1980 at longer horizons.[3]

Before proceeding further, a few caveats are in order. First, when this paper refers to 'longer-term' behavior or effects, it does not mean a theoretical long run or steady state in the neoclassical sense (i.e., all quantities grow at the same rate) or a theoretical long period in the classical sense (i.e., capacity utilization necessarily returns to a 'normal' rate). The phrase 'longer term' is used here in the spirit of Kalecki's view that 'the long-run trend is but a slowly changing component of a chain of short-period situations; it has no independent entity' (Kalecki 1971, p. 165).[4] Second, income distribution is endogenous and there is likely to be simultaneous causality between distribution and demand. Because of space constraints, this paper will focus mainly on the 'demand relationship' (how distribution affects demand) and not the 'distributional relationship' (how demand affects distribution) or other feedbacks (e.g., accumulation of financial assets and liabilities). Finally, the hypothesis proposed here is driven by the author's familiarity with the US case. It is entirely possible that the temporal behavior of consumption, investment and net exports may differ in other countries that have different economic structures, implying that the short-run and long-term effects of income distribution could vary from those argued here. Some of these potential variations are noted below.

## 2 EMPIRICAL METHODOLOGIES AND FINDINGS

There are two main approaches to estimating the effects of income distribution on demand, which will be called the 'structural' and 'aggregative' approaches. To see this distinction, consider a standard version of aggregate demand in a neo-Kaleckian macro model, taken (with some modifications) from Stockhammer et al. (2011):[5]

[2] There is a typographical error in the published cointegrating equation for output, but I have verified (in email from Gustavo Vargas Sánchez, 14 October 2014) that the sign on the exploitation rate (profit share) should be negative.

[3] Earlier, Pérez Caldentey and Vernengo (2013) found that the real wage has a greater 'coherence' and 'dynamic correlation' with output and investment in several countries using low frequency data compared with medium or high frequency data, but they did not test for the wage share (i.e., the real wage adjusted for productivity) and their methods cannot identify the direction of causation between the real wage and the other variables.

[4] Therefore, we do not enter here into the long-running theoretical debate about whether capacity utilization must revert to a given 'normal' rate in the long run (see Lavoie 2014, pp. 387–405, for a survey).

[5] For simplicity, we omit the role of intermediate imports and cyclical responses of *G* from the model of Stockhammer et al. (2011).

(1) $Y = AD = C(Y, \psi, Z_C) + I(Y, \psi, Z_I) + G + NX(Y, P, Z_X, Z_M)$ ,

where $Y$ is output, $AD$ is aggregate demand, $\psi$ is the wage share, $C$ is consumption, $I$ is investment, $G$ is government purchases, $NX = X - M$ represents net exports ($X$ and $M$ are exports and imports, respectively), $P = P(\psi, Z_P)$ is the domestic price level[6] and $Z_j$ is a vector of exogenous (control) variables affecting endogenous variable $j$ ( $j = C, I, X, M, P$). It is generally assumed that $C_Y > 0$, $C_\psi > 0$, $I_Y > 0$, $I_\psi < 0$, $NX_Y < 0$, $P_\psi > 0$ and $NX_P < 0$.[7] Then the effect of a change in the wage share on output, holding all the exogenous terms $Z_j$ constant, is given by

$$\frac{\partial Y}{\partial \psi} = \frac{\frac{\partial AD}{\partial \psi}}{1 - \frac{\partial AD}{\partial Y}} .$$

Assuming $\frac{\partial AD}{\partial Y} = \frac{\partial C}{\partial Y} + \frac{\partial I}{\partial Y} - \frac{\partial M}{\partial Y} < 1$ for Keynesian (goods market) stability, the sign of $\partial Y/\partial \psi$ depends only on the sign of the numerator, $\partial AD/\partial \psi$.

The **structural** approach estimates the individual components of $AD$ using *separate econometric equations* for $C$, $I$, $X$, $M$, and $P$. In this approach, $\partial AD/\partial \psi$ is then calculated by summing the various partial derivatives for consumption, investment and net exports with respect to the wage share, with the effects on net exports mediated by the impact of the wage share on the domestic price level $P$:[8]

(2) $$\frac{\partial AD}{\partial \psi} = \frac{\partial C}{\partial \psi} + \frac{\partial I}{\partial \psi} + \left( \frac{\partial X}{\partial P} - \frac{\partial M}{\partial P} \right) \frac{\partial P}{\partial \psi} .$$

In contrast, the **aggregative** approach relies on estimation of the *reduced form solution* for output written as

(3) $Y = Y(\psi, Z_C, Z_I, Z_{NX}, Z_P)$ ,

and calculates the derivative $\partial Y/\partial \psi$ directly by regressing output $Y$ on (various lags of) the wage share $\psi$ and any control variables that are included.[9]

Regardless of which method is used to estimate $\partial Y/\partial \psi$, both of these procedures only aim to estimate the slope of the aggregate demand relationship (1). Such estimates are subject to

[6] In practice, empirical researchers often use different price indexes for exported and imported goods, but we simplify here for expositional purposes.

[7] The last partial derivative, $NX_P < 0$, assumes that the Marshall-Lerner condition holds.

[8] If these effects are estimated as elasticities, then it is necessary to weight them by the shares of the various components of GDP in total GDP.

[9] If autoregressive distributed lag (ARDL) or VAR/VEC methods are used (and they usually are), then lags of the dependent variable ($Y$) are also included on the right-hand side of the regression equation.

simultaneity bias if the wage share $\psi$ is endogenous and is a function of output $Y$ through some other channel such as wage- or price-setting behavior on the supply side (see, e.g. Sasaki et al. 2013). To address this problem, equation (3) is sometimes combined with an equation representing the opposite direction of causality, i.e., the distributional relationship

$$(4) \qquad \psi = \psi(Y, Z_\psi)$$

where $Z_\psi$ is a vector of exogenous factors affecting income distribution, and again lagged dependent variables may be included in the estimation. A model that combines equations (3) and (4) can be deemed a 'systems' approach in addition to being aggregative. A special case of the systems approach is the Goodwin cycle model developed by Barbosa-Filho and Taylor (2006), which consists of two simultaneous differential equations in the utilization rate $u$ (defined as actual output relative to capacity or trend output) and the wage share:

$$(5) \qquad \dot{u} = f(u,\psi)$$

$$(6) \qquad \dot{\psi} = g(u,\psi)$$

Barbosa-Filho and Taylor (2006) used a linearized version of the system (5)–(6) written as a system of difference equations in discrete time with lags, which could be estimated as a VAR. The authors concluded that $\partial u/\partial \psi < 0$ and $\partial \psi/\partial u > 0$, i.e., demand is profit led and there is a profit squeeze on the distributive side, using US data. Later studies in this genre (e.g., Kiefer and Rada, 2015; Carvalho and Rezai, 2016) tend to find the same qualitative results.

All econometric estimates using any of these methods are highly sensitive to various aspects of their specifications, including: data frequency and lag lengths; measurement or transformation of the variables (e.g. logs, differences, normalizations, filtering, etc.); functional forms (e.g., linear or nonlinear); control variables included or omitted; and whether the methodology controls for the endogeneity of income distribution. The conflicting results in the literature discussed earlier undoubtedly result to some extent from different choices made by different researchers in regard to various of these issues. Although many of these differences are idiosyncratic to particular authors or papers, some general tendencies can be observed. Especially, the estimates of structural models generally treat the wage or profit share as exogenous, thus creating possible simultaneity bias, while many of the aggregative/systems estimates (especially those using the Goodwin cycles approach) often lack control variables, which suggests the likelihood of omitted variable bias.[10] Also, with a few exceptions, most

[10] Several economists have argued that debt and other financial indicators could be key omitted variables in this literature. Stockhammer and Michell (2016) demonstrate theoretically that Minskyan debt dynamics based on financial fragility can foster cycles in which utilization appears to be profit led (because profitability is squeezed at the same time as output falls) even when no causal linkage between distribution and demand is assumed, or if demand is actually wage led. On the empirical side, Palley (1994) and Kim (2013) provide econometric evidence demonstrating how debt variables affect output in the US economy, while Stockhammer and Wildauer (2015) estimate a structural model (in the sense defined above) that controls for financial factors using international panel data. In regard to simultaneity, Fernandez (2005) controlled for endogeneity of the profit share in an aggregative approach by using instrumental variables (IV) methods applied to estimates of simultaneous equations for the US profit share and utilization rate. He found that changes in the profit share were largely explained by a variable reflecting international competitiveness (relative unit labor costs). Barrales and von Arnim (2017) find bidirectional causality between each of their three alternative measures of demand (discussed earlier) and the wage share,

studies using both approaches have paid scant attention to trying to identify common factors that could drive changes in both distribution and utilization or to testing whether different causes of variations in distribution have different impacts on aggregate demand.[11]

Aside from these general pitfalls and caveats, each approach has its own advantages and disadvantages. The main advantage of the structural method is that it can identify the sign and magnitude of the effect of distribution on each component of demand, and thus allows for a distinction between domestic effects (measured by $\partial C/\partial \psi + \partial I/\partial \psi$) and the total effect including net exports per equation (2). This method also allows for comparing the impact of distributional shifts within an individual country with the impact of global distributional shifts (Onaran and Galanis, 2012). However, most estimates in this genre not only have ignored the potential endogeneity of income distribution, but also have neglected the systems aspect of their models (e.g., common shocks) by estimating the individual equations using OLS. Moreover, the procedure of simply adding up the estimated partial effects of distribution on the various components of demand à la equation (2) potentially misses out on important dynamic interactions between the variables.

In contrast, perhaps the greatest advantage of the aggregative approach is that it easily addresses the simultaneity of demand and distribution, for example, by applying IV, VAR or VEC methods to systems of equations like (3) and (4) or (5) and (6). The aggregative approach may also capture the dynamic interactions that the estimation of individual structural equations could miss. For example, if a rise in profitability stimulates investment and this in turn boosts consumption via the multiplier, this will be captured by an aggregative model as a positive effect of profits on demand, whereas in separate estimates of consumption and investment functions the effect on consumption would be picked up by the total income variable rather than the distributional variable. Similarly, if a rise in the wage share boosts consumer demand and this in turn stimulates investment via the accelerator effect, this would be incorporated in an aggregative model but might not be reflected in separate estimates of an investment function (in which the impact would be picked up by the utilization or accelerator term, not by the distributional variable).[12] However, a key drawback of the aggregative approach is that it cannot provide any insight into which components of aggregate demand (consumption, investment, or trade) are driving the results.

The greatest limitation of the aggregative/systems estimates to date is that they mostly provide information on short-term behavior over periods of business cycle length. This focus is seen clearly not only in the theoretical framework of Goodwin cycles, which most of these studies employ, but also in how they specify the variables in these models empirically. For example, Barbosa-Filho and Taylor (2006) and Carvalho and Rezai (2016) measure $u$ by

suggesting that any estimates that treat the wage (or profit) share as exogenous are subject to simultaneity bias.

[11] One exception is López et al. (2011), who did not attempt to estimate the effects of the wage share on demand and instead estimated the impact of underlying, exogenous determinants of both output and distribution. Another exception is Kiefer and Rada (2015), who found evidence for a 'race to the bottom' of many countries simultaneously seeking to drive their labor costs lower.

[12] Obst and Onaran (2016) address the latter type of interaction by calculating the direct and indirect effects of the wage share on investment using a structural model, and find that the indirect effects (via consumption) make investment (growth) wage led in many European countries. They do not, however, address the former type.

deviations of real GDP from a Hodrick-Prescott (HP) filtered trend. By this methodology, the mean $\bar{u}$ is forced to equal zero, so longer-term variations in utilization are ruled out by assumption.[13] In this approach, the findings of profit-led demand pertain *only* to short-run fluctuations in utilization relative to its mean or trend.[14]

Figure 1 shows the type of information that can be lost by using an HP filter to measure capacity utilization. The graph compares the US utilization rate measured by the percentage deviation (in logs) of actual real GDP from its HP-filtered trend with the utilization rate as calculated by the US Federal Reserve (Fed) based on surveys of firms' output and capacity. Of course, the two series generally rise and fall around the same times in recessions and recoveries, as one would expect. Nevertheless, the two series also reveal important differences. The deviations from HP-filtered GDP show, rather anomalously, that the Great Recession of 2008–9 was milder than several earlier recessions. This results from the fact that the HP-filtered trend automatically adjusts to reflect the lower trend of real GDP since the financial crisis of 2008.[15] In contrast, the Fed index shows clearly that capacity utilization was lower in 2009 than at any point in the past five decades and also exhibits a downward long-term trend that cannot be seen in the HP-filter based measure (which is constructed to have a constant zero mean).

[Figure 1 about here]

The studies using the structural approach have obtained more mixed results, but on the whole have been much more prone to find wage-led demand regimes (especially in the US case, which is the most studied). Of course, the structural studies have not been intended to identify long-run relationships any more than the aggregative ones have. Nevertheless, for various reasons the structural estimates may come relatively closer to identifying long-run relationships than the aggregative studies. First, the fact that most structural estimates have not relied upon measures of capacity utilization based on HP filters makes them less susceptible to finding purely short-run, cyclical effects. Second, the most robust finding in the structural estimates is a strongly positive effect of the wage share on consumption; to the extent that this effect should dominate in the long run (as argued below), this would tend to make these studies more likely to obtain results that are relevant to the longer term. Third, some of the structural studies may underestimate the short-run effects of profitability on investment as a result of misspecification of the investment function, as discussed in the next section. Fourth, as noted earlier, the structural studies do not capture certain accelerator-multiplier interactions that are likely to dominate during short-run cycles, some of which lean in a profit-led direction (especially the nexus of profits $\rightarrow$ investment $\rightarrow$ income $\rightarrow$ consumption). Overall, the structural studies seem

[13] As noted earlier, Kiefer and Rada (2015) allow for longer-term trends in (or shifts in the means of) these variables, but their methodology cannot determine the longer-term causal relationships between those variables.

[14] Some economists argue that the finding of profit-led demand may be misleading even in the short run. Lavoie (1995, 2014) observes that the profit share varies procyclically because firms hoard overhead labor (and therefore experience a fall in measured labor productivity) during recessions, which implies that a positive correlation of the profit share and the utilization rate does not necessarily imply causality flowing from the former to the latter.

[15] The HP filter was applied using the conventional value of 1600 for the lambda smoothing parameter with quarterly data. The fact that HP filters tend to put too much of the cycle into the trend is noted by Gordon and Krenn (2010), among others. Cogley and Nason (1995) show that HP filters can also generate spurious cycles where none exist. I am indebted to Gabriel Mathy for these references.

to pick up a mix of short-run and long-run relationships, with the exact mix depending on the precise specifications used in the econometric estimation, so it is not surprising that these studies come up with such varied results.

# 3 AGGREGATE DEMAND OVER DIFFERENT TIME HORIZONS

This section discusses the theoretical reasons why the negative effects of the wage share on investment and net exports are likely to prevail mainly in the short run, while the positive effects of the wage share on consumption are more likely to dominate in the longer term (with some notes on how other countries may differ from the US in this regard).

## 3.1 Investment

Investment is by far the most cyclically volatile component of aggregate demand, with fluctuations that are typically much larger than those of total GDP or the other components. In the US economy, profits are normally a leading variable driving investment up and down in expansions and recessions. Figure 2 compares the corporate profit share and the nonresidential investment rate for the US economy from 1980Q1–2015Q2. These series exhibit a strong correlation in their short-run, cyclical fluctuations, with evidence of lagged effects of the former on the latter. However, Figure 2 also shows a notable divergence in the longer-term behavior of these two variables: the profit share trends upward (across cycles) from about 1995 to 2015, while the investment rate exhibits a secular decline that is especially notable after 2000. After the financial crisis and Great Recession of 2008–9, the profit share reached record levels, while the investment rate remained below normal levels for an expansion period. Thus, the longer-term relationship between these variables differs markedly from their strongly positive cyclical correlation.

[Figure 2 about here]

The argument that profitability effects on investment are largely short run in nature can be justified theoretically by reference to the accelerator model of investment. A modern version of the accelerator model can be represented by the following equation, which is adapted from Chirinko et al. (1999):[16]

$$(7) \qquad \frac{I_t}{K_{t-1}} = \beta_0 + \sum_{i=0}^{m} \beta_{1i} \frac{\Delta Y_{t-i}}{Y_{t-i-1}} + \sum_{i=0}^{n} \beta_{2i} \frac{\Delta UC_{t-i}}{UC_{t-i-1}} + \sum_{i=0}^{q} \beta_{3i} \frac{CF_{t-i}}{K_{t-i-1}} + \varepsilon_t$$

where investment ($I$), output ($Y$) and capital ($K$) are measured in 'real' (deflated) terms, $UC$ is the 'user cost' of capital,[17] $CF$ is cash flow (also in real terms), the $\beta_{ki}$ are coefficients ($k$ = variable, $i$ = lag), $\varepsilon_t$ is the error term, and $m$, $n$ and $q$ are the number of lags for each variable. $CF$ is the variable posited by theories (both post-Keynesian and mainstream) of financial constraints on investment to be the key factor that relaxes those constraints and allows firms to carry out more

[16] Chirinko et al. (1999) include additional subscripts for firms, but we suppress these given our macroeconomic focus.

[17] The user cost of capital is a measure that combines the costs of external funds (interest rates on bonds and dividend payouts to stockholders), depreciation costs and relative prices of capital goods, adjusted for tax policies that affect incentives for investment. See Chirinko et al. (1999, p. 57) for details.

of their desired investment plans (Stiglitz and Weiss 1981; Minsky 1986; Fazzari et al., 1988). *CF* is equivalent to firms' gross retained profits (net profits minus corporate income taxes, net interest payments and dividend payouts, plus depreciation allowances), and thus represents the profit variable in this investment model.

In this approach, investment (normalized by the capital stock) depends on the *rates of change* of output and user cost, because these variables affect the level of the desired capital *stock*, while the *flow* of investment represents *changes* in the capital stock. In contrast, the cash flow variable, which is used to capture financial (liquidity) constraints, enters the equation in *levels* because it influences the *current flow* of investment spending rather than the desired capital stock. Therefore, profits (as reflected in cash flow) affect *only short-run fluctuations* in investment and are omitted when the long-run determinants of investment are estimated (Chirinko et al. 2011). This implies that the profit (cash flow) variable should *only* matter in the short run; longer-term variations in investment should be driven primarily by accelerator effects (output growth $\Delta Y/Y$) and secondarily (if at all) by changes in the user cost of capital ($\Delta UC/UC$). The vast majority of empirical studies using this approach finds that accelerator effects are strong and robust, user cost effects are sometimes statistically significant but usually relatively small, and cash flow is sometimes significant but only has short-run effects (e.g., Fazzari 1993; Chirinko et al. 1999, 2011; Spatareanu 2008; Schoder 2013).

In contrast, most structural estimates of neo-Kaleckian macro models have used investment functions of the Marglin-Bhaduri variety:

$$(8) \qquad I/K = f(\pi, u)$$

where $\pi = 1 - \psi$ is the profit share and the dynamics are usually specified in an *ad hoc* way. This specification was justified by Bhaduri and Marglin with the claim that since $\pi$ and $u$ are underlying determinants of the profit rate, they influence the expected future profit rates that govern current investment decisions. But the accelerator theory of investment implies that the level or rate of investment should depend on *changes* in output rather than the level of output or the utilization rate, in which case the investment function (8) is misspecified. The accelerator approach also implies that longer-term trends in capital accumulation are driven mainly by output growth, while profitability only affects the short-run timing of investment and plays no independent role in the long run.[18]

### 3.2 Net exports

A rise in the wage share can have a negative impact on net exports if it is caused by a rise in unit labor costs (ULC) for domestic goods relative to foreign goods (Blecker 1989, 2002, 2011).[19]

[18] This characterization might not apply in a structurally different situation, such as a developing or emerging market country in which capital markets are weak and investment is typically internally financed. Also, in countries where industries are highly export-oriented and a large portion of investment is dependent on international competitiveness in regard to attracting foreign capital inflows, domestic profit margins compared with those of rival nations could matter to long-term investment decisions.

[19] However, Blecker also shows that a rise in the wage share caused by a reduction in the monopoly power of firms will not have this consequence, and could have a positive impact on net exports if markups are reduced on

Based on the standard Marshall-Lerner (ML) analysis, this negative impact will occur only if the sum of the price elasticities of export and import demand is sufficiently high.[20] Although there is much controversy about whether the ML elasticities condition is normally satisfied, for purposes of this discussion we will stipulate that it is satisfied in order to focus on whether the negative impact of a rise in the wage share on net exports in the short run is likely to persist in the longer term.

Suppose, then, that a country lowers its ULC relative to other nations (through some combination of reducing wages, boosting productivity or depreciating its currency), thereby improving its external competitiveness and also increasing its net exports in the short run (after any *J*-curve lags are overcome).[21] There are several adjustment mechanisms that could come into play that would act to offset the country's improved competitive advantages in the longer term. First, if the rise in net exports leads to increased domestic employment, wages may eventually be bid up, thereby offsetting the initial decrease in ULC. Second, the country could experience a real appreciation of its currency, either via a nominal appreciation (if the exchange rate is flexible) or through increased inflation (if the exchange rate is fixed or managed).

Of course, the operation of these or other adjustment mechanisms is far from automatic, as argued long ago by Robinson (1946–47). For example, either a highly elastic labor supply in a dual economy or a repressive set of labor market institutions could prevent wages from rising in spite of a boom in net exports. Exchange rate management can be used to prevent currency appreciation, and nominal devaluations can be used to offset higher domestic inflation. Financial inflows can sustain current account imbalances for some time, albeit at the cost of creating international debt positions that may be unsustainable in the long run. Also, trade imbalances can be sustained for some period of time if Kaldorian cumulative causation sets in. That is, if faster export growth leads to faster output growth which in turn stimulates productivity growth via Verdoorn's Law, then a country's international competitive advantages can be sustained and even amplified over time (Setterfield and Cornwall 2002; Blecker 2013). These sorts of mechanisms could account for why some hyper-competitive countries like China exhibit very strongly profit-led demand (Onaran and Galanis 2012).

Nevertheless, even if the standard adjustment mechanisms do not work or if Kaldorian cumulative causation starts to operate, reactions by other countries may also act to offset the home country's initial improvement in competitiveness. Most obviously, foreign countries can engage in competitive devaluations, wage cuts or efforts to boost productivity, as analyzed by

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internationally traded goods.

[20] The standard ML condition is that the sum of these elasticities must exceed unity in absolute value under certain simplifying assumptions, including initially balanced trade. Modified ML conditions can be derived under more general assumptions.

[21] The price elasticities of demand for exports and imports are likely to be low in the very short run (when firms are locked into contracts and goods have already been ordered or are being shipped) and to increase over time (as ordering and delivery lags are overcome, and firms can recontract with new suppliers). The result is that the trade balance (net exports) often worsens in the immediate aftermath of a currency devaluation, when the main impact is to raise import costs, but then subsequently improves, leading to a trajectory that roughly follows a '*J*' shape. Most analyses show that the *J*-curve turns upward within about 1–2 years, which is still within the short run for present purposes.

Robinson (1947) in her critique of 'beggar-my-neighbour remedies for unemployment'. Technology transfers may lessen the competitive advantages of a home country by lowering costs for foreign producers. If any of these responses occur, a country that enjoys a period of profit-led growth will eventually lose its initial gains in net exports, but the negative consequences of the reduced wage share for domestic consumption will still remain. In a similar vein, even if some countries have profit-led demand as a result of strong negative effects of ULC on net exports, those same countries may end up behaving in a wage-led manner in response to a simultaneous change in ULC and wage shares globally (because then the international competitive effects roughly cancel out), with the implication that the world economy as a whole is likely to have wage-led demand even if some countries have profit-led demand individually (Onaran and Galanis 2012; von Arnim et al. 2014; Obst and Onaran 2016).

However, it may take several years for the competitive responses of other nations to cancel out the initial competitive gains of any particular country. Thus, a country may get a competitive advantage from lower ULC (and a lower wage share) that boosts its net exports in the short run, even if this advantage is eventually dissipated by the responses of other nations or other adjustments in the longer term.

### 3.3 Consumption

Consumption is the one part of aggregate demand for which the impact of income distribution is, if anything, likely to be greater in the longer term than in the short run. Consumption is expected to respond positively to the wage share because of the higher MPC out of labor income compared with capital income. The reasons for a lower MPC out of capital income are well-known. On the one hand, a portion of profits is retained by firms to finance investment or for other purposes (e.g., stock buy-backs, mergers and acquisitions), and all of these retained profits are counted as corporate saving in the national income accounts. On the other hand, payouts of dividends and interest go mainly to wealthier households (rentiers) who typically have a much higher propensity to save than middle-class or working-class families. Working-class households, in contrast, typically spend all or most of their wage income on current consumption (although some East Asian countries may be exceptions). The implication that the wage share has a positive effect on consumption is one of the most robust results in the structural estimates surveyed earlier. This same conclusion is supported by numerous cross-sectional or panel studies confirming that consumption-income ratios are inversely related to households income levels (e.g., Bunting 1991; Jappelli and Pistaferri 2014), given that higher-income households receive much larger shares of their income from capital than middle or lower-income households.

However, this evidence leaves open the question of how the responsiveness of consumption to labor or capital income varies over different time horizons. Some considerations from standard theories of the consumption function may help to illuminate this issue. A key 'stylized fact' about aggregate consumption is that the MPC is higher in the long run than in the short run. This difference was the basis for many of the classic theories of the consumption function, including Duesenberry's (1949) relative income hypothesis, Friedman's (1957) permanent income hypothesis and Ando and Modigliani's (1963) 'life-cycle' hypothesis. A common foundation of all these theories is the idea that households attempt to maintain relatively steady consumption expenditures in the face of short-run fluctuations in income (albeit for different reasons) but are more constrained by income flows in the long run. One does not have to believe in neoclassical

ultra-rationality or strict optimizing behavior to recognize that most households attempt to maintain *some* degree of stability in consumption in response to transitory fluctuations in income.

Recent work by Cynamon and Fazzari (2008, 2013), Palley (2010) and Kim et al. (2014), among others, has revived Duesenberry's institutionalist approach, in which 'households will seek to maintain consumption relative to standards achieved in the past and contemporary standards established by others' (Kim et al. 2015, p. 3). These studies emphasize the role of household borrowing and debt in the context of financialization: consumers are induced to increase consumption in the short run by the easy availability of borrowing, but remain constrained by income in the long run when increased debt levels may become unsustainable. Kim et al. (2015) estimate consumption functions that include variables for household wealth, borrowing and debt burdens, along with disposable personal income and an index of consumer sentiment. They confirm that the MPC is notably higher in the long run (about 0.6 to 0.9 using two alternative estimation methods) than in the short run (about 0.4 for the whole sample 1952–2011, and 0.1 for the more recent period 1980–2011).

Given that most consumers are reliant primarily on labor income, we may infer from these results that that the MPC out of wages is also likely to be higher in the long run than in the short run. In contrast, upper-class households who receive mostly capital income are likely to have MPCs that are not only low, but also do not vary as much between the short run and the long run. Because these households have very high saving rates and large accumulations of assets, their consumption is not closely tied to their income over any particular time horizon. Thus, the variations in MPCs out of wages between the short run and the long run are also likely to imply similar variations in the *difference* between the MPCs out of wages and profits, which is what matters for whether aggregate demand is wage or profit led (Blecker 2002). Nevertheless, this conclusion might not hold in countries where consumers have less access to credit, so that their consumption expenditures are more closely tied to their disposable income even in the short run. This could account for why, for example, López et al. (2011) find strongly negative effects of a real exchange rate depreciation in the short run (using detrended data) for Mexico: such a depreciation usually results in a steep fall in the real wage in Mexico, where workers lack the ability to sustain consumption levels via borrowing. In such countries, demand could be strongly wage led in the short run.

## 5 CONCLUSIONS

Of course, it is not unusual for econometric studies to find conflicting results. Nevertheless, it is disconcerting that empirical researchers in the neo-Kaleckian tradition have not obtained more consistent findings about an issue as important as the links between distribution, demand and growth, especially in an era in which rising inequality is increasingly seen as linked to long-term economic stagnation in many countries. What is especially striking is the fact that the empirical studies have largely bifurcated into two camps: one which finds almost exclusively profit-led demand regimes using the Goodwin cycles version of the aggregative approach; and another which finds mainly wage-led results (especially for larger countries or groups of countries) using the structural approach.

This paper has argued that these conflicting estimates may result, at least in part, from the different time dimensions of the various distributional effects on aggregate demand, which

(implicitly or explicitly) receive different degrees of emphasis in the alternative econometric methodologies. In particular, the studies using the Goodwin cycle approach, which most explicitly emphasize short-run, cyclical effects, have been the most prone to find that utilization is profit led. We have argued here that (aside from some concerns about potential econometric biases, such as omitted variables or measurement error) this finding is not accidental, at least in the US case, because the positive effects of a higher profit share on investment and net exports are likely to be felt mainly in the short run, while the negative effects on consumption are likely to be felt more strongly in the longer term. As a result, the demand regime is more likely to be profit led (or more weakly wage led) in the short run and wage led (or more strongly wage led) in the longer term.

If this argument is correct, then the policy implications of the studies that have found that demand is profit led in the short run need to be reconsidered. It is entirely possible that, in a typical business cycle, profits drive investment both up in the recovery and down in the recession, but a sustained higher profit share of income will not lead to higher investment or growth in the longer term – as we have seen, for example, in the sluggish US recovery since the Great Recession of 2008–9 (Blecker 2016). As a result, a significant long-term fall in the wage share could potentially depress utilization and growth in the longer term, even if rising profits may be associated with typical short-run cyclical recoveries.

This argument is subject to certain qualifications and limitations. First, as noted earlier, the timing of these different effects of distribution on demand may vary in other countries that have different economic structures from the US and can also vary for different sources of distributional shifts. Second, this argument only concerns the direct effects of changes in distribution on the aggregate demand relationship; it does not address the complex, dynamic feedbacks that can result if other macroeconomic relationships (e.g., wage and price setting, financial markets) are taken into account. Third, this argument is more of a hypothesis rather than a conclusion. To test this hypothesis, it will be essential for future empirical research on this topic to more explicitly compare short-run and long-term effects of distributional shifts on output or utilization as well as economic growth using appropriate econometric techniques, while also addressing the other econometric issues (e.g. simultaneity bias, measurement error and omitted variables) that have plagued the empirical literature on this topic to date.

Finally, it is important to stress two caveats for future research. First, the last few decades may have been qualitatively different from earlier periods. Historically, it was a stylized fact of capitalism that relative shares of wages and profits in national income varied only cyclically and had no long-run trends. Yet, the data shown in Figures 1–2 in this paper and several of the most recent empirical studies (e.g. Kiefer and Rada 2015; Stockhammer and Wildauer 2015; Barrales and von Arnim 2017) verify that, since roughly the late 1990s, we have witnessed an unprecedented secular decline in the wage share in the US and various other countries coupled with weaker performance in terms of any measure of utilization or growth – a combination often referred to as ‘secular stagnation’ (Blecker 2016; Hein 2016). Thus, it may well be that the potentially wage-led nature of demand in the long run (at least for some causes of distributional shifts) will only become observable after we are able to obtain some historical hindsight on the present era, in which wage shares have sunk to unusually low levels on sustained basis. Second, it is also clearly time to rethink the simple wage-led versus profit-led dichotomy and to develop a more complex understanding of the dynamic linkages between income distribution and economic

performance over various time horizons and under different structural conditions.

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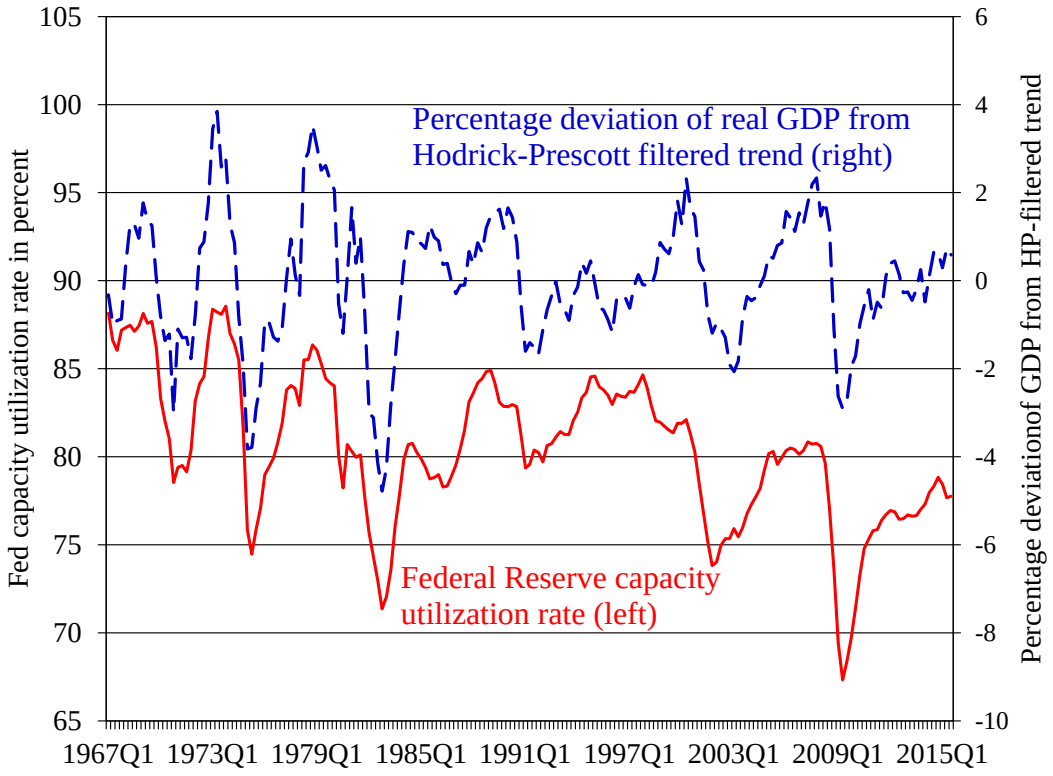
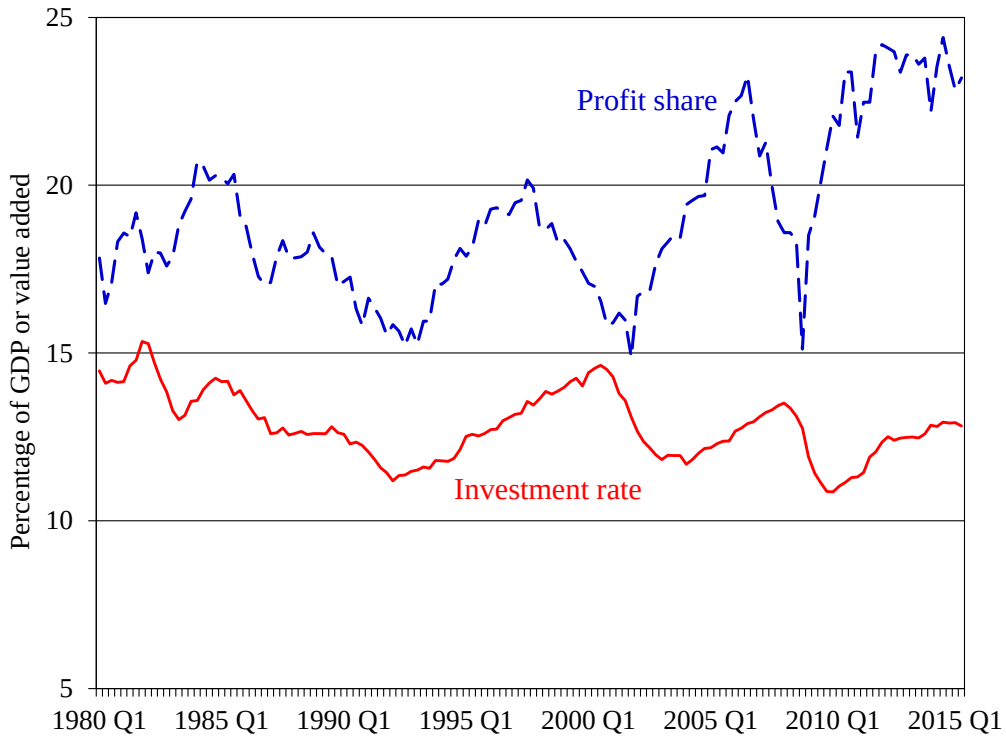



*Note:* The percentage deviation of real GDP from the HP-filtered trend is measured by log differences. The Federal Reserve capacity utilization rate is measured by industrial production as a percentage of capacity. All data are seasonally adjusted.

*Source:* US Bureau of Economic Analysis (BEA), National Income and Product Accounts (NIPAs), Table 1.1.6, release of October 29, 2015, www.bea.gov; Board of Governors of the Federal Reserve System, G.17 - Industrial Production and Capacity Utilization for October 16, 2015, total index (all industries), http://www.federalreserve.gov/datadownload/; and author's calculations.

*Figure 1 Alternative measures of US capacity utilization, quarterly, 1967Q1 to 2015Q3*




*Note:* The profit share is measured by net operating surplus as a percentage of value added for all corporations. The investment rate is gross fixed nonresidential investment as a percentage of GDP.

*Source:* US BEA, NIPAs, Tables 1.1.5 and 1.14, release of September 25, 2015, www.bea.gov; and author's calculations.

*Figure 2 US corporate profit share and business fixed investment rate, quarterly, 1980Q1 to 2015Q2*