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.

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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 (usually measured by the rate of capacity utilization) 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 utilization is strong enough to outweigh the direct negative impact of lower profitability on investment. These theoretical distinctions recognize the two-sided character of wages emphasized by Marglin and Bhaduri (1990): wages are a cost of production to capitalist firms, but they are also the chief source of consumer demand for the products of those firms. Hence, it should not be surprising that the functional distribution of income can have such conflicting and multifaceted effects on demand and growth.

Since the possibility that demand-determined 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 that the larger economies (including the US and the EU as a whole) have wage-led overall demand, while many smaller or more open economies tend to 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 (including the US and eight EU members) 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

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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 stagnationism’ by Marglin and Bhaduri (1990) and ‘conflictive’ by Palley (2013). In this paper, we use the more descriptive terms ‘wage-led’ and ‘profit-led’ instead of the more colorful, but sometimes confusing, terminology of ‘stagnationism’ and ‘exhilarationism’ used by Marglin and Bhaduri. See also Hein (2014).
of domestic firms, and more likely to be profit led (or more weakly wage led) if the shift is caused by a change in domestic unit labor costs relative to foreign prices (or foreign unit labor costs). Onaran and Galanis (2012), von Arnim et al. (2014), and Obst and Onaran (2015) show that the impact of a redistribution between wages and profits can vary depending on whether the redistribution is limited to a single country (in which case a profit-led outcome is more likely, especially in smaller and more open economies) or is global in nature (in which case a wage-led outcome is more likely, even in small open economies that may have profit-led demand taken in isolation). Nikiforos and Foley (2012) argue that if distribution and utilization are simultaneously determined and the distributional relationship is non-linear, there may be multiple equilibria and the response of the system to exogenous shifts in income distribution cannot be uniquely predicted by the slope of the aggregate demand (utilization) curve. Palley (2014) shows that a redistribution in favor of production workers can be expansionary even in a system that is ‘profit-led’ overall, provided that production workers have a higher marginal propensity to consume than top managers. 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 generally.

Without denying the importance of the preceding analyses, this paper will suggest another possibility: that 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-term behavior over the business cycle, not to longer-term economic performance (for example, comparisons of the post-1980s neoliberal era with the ‘golden age of capitalism’ in the 1950s and 1960s, or comparisons across decadal averages). 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 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. If this hypothesis is correct, then the evidence for demand and growth sometimes being profit led in the short run or within business cycles should not be dismissed, but these findings may not be relevant to the impact of shifts in income distribution on longer-term economic growth or stagnation.

Although most of the empirical literature to date has ignored the time dimension of the effect of distribution on demand, there are a few studies that have explicitly distinguished results over different time frames. For example, Stockhammer and Stehrer (2011) show that the estimated effects of the wage share on consumption and investment are highly sensitive to lag lengths (of up to eight quarters) in time-series estimates for 12 OECD countries. 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

Specifically, Nikiforos and Foley find a U-shaped response of the wage share to capacity utilization (in a diagram with the former on the vertical axis and the latter on the horizontal axis) using US data.
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). Pérez Caldentey
and Vernengo (2013) find 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 do 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. 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.³

The contention of this paper is that the conflicting results for the same countries in the
empirical literature derive, at least to some extent, from focuses (often implicit) on different time
frames. A short time frame is most explicitly emphasized in the literature based on Goodwin
cycles, which began with Barbosa-Filho and Taylor (2006) and continues in more recent work
such as Kiefer and Rada (2015) and Carvalho and Rezai (2015). It will be argued below that the
profit-led findings of these papers pertain only to short-run business cycle fluctuations, and
should not be interpreted as implying that demand is profit led over longer time horizons. Indeed,
the idea that a higher profit share would lead to depressed aggregate demand, originally
developed by Steindl (1952 [1976]; 1979), was not intended as an explanation of business cycles,
but rather as a hypothesis about long-term secular stagnation (Hein 2016). Similarly, the
counterargument by Marglin and Bhaduri (1990) that a high profit share could cause secular
‘exhilaration’ if it has a strong effect on investment was intended as an explanation of longer-
term behavior. They were trying to explain a long-term growth slowdown, not particular
business cycles (although I will argue that strong profitability effects on investment are more
likely to be found in the short run). Nevertheless, I do not agree with those who would simply
dismiss the findings of profit-led demand obtained using Goodwin cycle models. In spite of
some potential biases in their econometric implementation, which I will discuss below, I believe
that these models capture a genuine aspect of short-run business cycle dynamics but are not
necessarily informative about longer-term impacts of distribution on demand.

Before proceeding further, a few caveats are in order. Most importantly, when I refer to
‘longer-term’ behavior or effects, I emphatically do not mean a theoretical long-run, steady state
in the neoclassical sense (i.e., all quantities grow at the same rate, adjusted for productivity
growth) or a theoretical long period in the classical sense (i.e., capacity utilization necessarily
returns to a ‘normal’ rate, while rates of profit are equalized across sectors). I use the term
‘longer term’ in the spirit of Kalecki’s own 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). Second, there is likely to be simultaneous causality between distribution and demand, as
recognized in much of the theoretical literature (see Lavoie 2014) and at least some of the
empirical literature (surveyed in the next section). Because of space constraints, this paper will

³ 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 correct sign on the exploitation (profit share) variable is
negative. However, the short-run results may be spurious because the variables are measured in log levels in the
VAR estimation (as confirmed in the same email correspondence), but the variables have unit roots so the VAR
should have been estimated using first differences of logs.
focus mainly on the ‘demand relationship’ (how distribution affects demand) and not the ‘distributional relationship’ (how demand affects distribution), except insofar as the latter affects the empirical estimates reviewed below. Finally, I do not enter here into the long-running theoretical debate about whether capacity utilization must revert to some ‘normal’ rate in the long run (see Lavoie 2014, pp. 387-405 for a survey), but the empirical evidence shown below does indicate a long-term decline in the utilization rate in the US economy.

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 fairly standard version of aggregate demand a neo-Kaleckian macro model, taken (with some modifications) from Stockhammer et al. (2011):4

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

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,\(^5\) 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 \( CY > 0, C \psi > 0, IY > 0, I \psi < 0, NX_Y < 0, P \psi > 0, \) and \( NX_P < 0.\(^6\) Then the effect of a change in the wage share on output, holding all the exogenous terms \( Z_j \) constant, is given by

\[ \frac{\partial Y}{\partial \psi} = \frac{\partial AD}{\partial \psi} \cdot \frac{1}{1 - \frac{\partial AD}{\partial Y}}. \]

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.\(^7\) 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.

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4 For simplicity, we omit the role of intermediate imports and cyclical responses of \( G \) from the model of Stockhammer et al. (2011). Of course, equation (1) could alternatively be specified in terms the profit share \( \pi = 1 - \psi \).

5 In practice, researchers often use different price indexes for exported goods and import-competing goods, but we simplify here for expositional purposes.

6 The last partial derivative, \( NX_P < 0 \), assumes that the Marshall-Lerner condition holds.

7 Some studies refer to the structural approach as the ‘single equation’ approach, but I find this confusing because it really relies on multiple equations. Also, some studies short-circuit the price channel and estimate direct effects of distribution on net exports or exports and imports separately, which could result in underestimating those effects.
share on the domestic price level \( P \):  

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

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

\[
3 \quad Y = Y(\psi, Z_C, Z_I, Z_{NX}, Z_P),
\]

and calculates the derivative \( \partial Y/\partial \psi \) directly by regressing output \( Y \) on (various lags of) the wage share and any control variables that may be included. 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.

Sometimes equation (3) is combined with an equation representing the opposite direction of causality, i.e., the distributional relationship

\[
4 \quad \psi = \psi(Y, Z_{\psi})
\]

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:  

\[
5 \quad \dot{u} = f(u, \psi)
\]

\[
6 \quad \dot{\psi} = g(u, \psi)
\]

Empirically, 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 model. The authors concluded that \( \partial \psi/\partial \dot{u} < 0 \) and \( \partial \psi/\partial \dot{u} > 0 \), i.e., demand is profit-led and there is a ‘profit squeeze’ on the distributive side, using US data. Later studies in this genre, in spite of some differences in econometric specification and country coverage, tend to find the same qualitative results (e.g., Kiefer and Rada, 2015; Carvalho and Rezai, 2015).

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.,

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8 Depending on the precise specification used, it may be necessary to weight the estimated effects of the wage share on the various components of GDP (\( C, I, \) and \( NX \)) by their respective shares in total GDP. See Stockhammer et al. (2011) and Stockhammer and Wildauer (2015).

9 These equation can have various mathematical solutions (stable or unstable, limit cycles, clockwise or counter-clockwise rotation, etc.) depending on the signs and magnitudes of the various partial derivatives.
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

Aside from these general pitfalls and caveats, each approach has its own advantages and disadvantages. Perhaps the main advantage of the structural method is that it can identify the sign and magnitude of the effect of income distribution on each component of demand, and thus allows for a distinction between domestic effects (measured by \( \frac{\partial C}{\partial \psi} + \frac{\partial I}{\partial \psi} \)) and the total effect including foreign trade 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). As the structural models have become more sophisticated in recent years, authors in this literature are now incorporating a larger set of control variables in their estimates. For example, Stockhammer and Wildauer (2015) control for financial variables (various debt ratios and asset prices) in panel estimates for 18 OECD countries. However, most estimates in this genre have not only ignored the potential endogeneity of income distribution, but have also neglected the systems aspects of their models by estimating the individual equations using OLS (thus ignoring the possibility of common shocks or cross-equation residual correlation).

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 VAR or VEC methods to systems of equations like (3) and (4) or (5) and (6) above. The aggregative approach may also capture interaction effects 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).11 However, a key drawback of the aggregative approach is that, by its very nature, it

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10 Fernandez (2005) estimated a distribution relationship for the US economy similar to equation (4) or (6), using the profit share as the dependent variable and including a measure of international competitiveness (ULC relative to import prices) as a regressor. He found that the profit share was explained only by the competitiveness variable and lagged profit shares, with no significant effects of capacity utilization.

11 Obst and Onaran (2015) address this problem by calculating the direct and indirect effects of the wage share on investment using a structural model, and find that the indirect effects make investment (growth) wage led in many European countries. They do not, however, address the issue of direct and indirect effects of distribution on consumption.
cannot separate the effects of the wage share on domestic demand and net exports, and so does not give us any insight into which component(s) of aggregate demand are driving the results.

However, the greatest limitation of the aggregative/systems estimates (especially those using the Goodwin cycle approach) to date is that they only provide information on short-term behavior over periods of business cycle length. The focus on the short run is seen clearly not only in the theoretical framework (Goodwin cycles), but also in how the variables in these models are usually specified empirically. Barbosa-Filho and Taylor (2006) and Carvalho and Rezai (2015) measure $u$ by deviations of real GDP from a Hodrik-Prescott (HP) filtered trend, which means that only very short-run fluctuations are incorporated and longer-term variations in output or growth are not explained. By this methodology, the mean $\bar{u}$ is forced to equal zero, so longer-term variations in utilization are ruled out by assumption. Similarly, $\psi$ is measured by deviations of the wage share from its mean in natural logarithms, thus ignoring possible long-run variations in income distribution. As noted earlier, Kiefer and Rada (2015) allow for longer-term trends in (or shifts in the means of) these variables, as well as for deviations of the actual variables from those trends (or shifted means), in a Goodwin cycle framework, but their methodology can only identify the longer-term trends or shifts and cannot explain them. In this entire approach, the findings of ‘profit-led demand’ pertain only to the short-run dynamics of fluctuations in utilization relative to its mean or trend.12

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 HP-filtered real GDP with the utilization rate as calculated by the US Federal Reserve (Fed) based on surveys of firms’ output (production) 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 two important differences. First, 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 and the subsequent sluggish recovery, and the deviations from this lower trend appear much smaller than the deviations from true productive capacity.13 In contrast, the Fed index shows that capacity utilization was lower in 2009 than at any point in the past five decades. Second, the Fed’s utilization rate shows a downward long-term trend, which is especially pronounced after 2000, but is not reflected in the HP-filter based measure which is restricted to

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12 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 labor productivity) during recessions, which implies that a positive correlation of the profit share and utilization rate does not necessarily imply causality flowing from the former to the latter. Stockhammer and Michell (2014) demonstrate theoretically that Minskyan debt dynamics based on financial fragility can foster cycles in which utilization appears to be profit led even when no causal linkage between distribution and demand is assumed, or if demand is actually wage led. This suggests that the omission of debt variables from the Goodwin-type studies could affect their results. See Palley (1994) and Kim (2013) for econometric evidence on how debt affects output in the US economy.

13 The HP filter was applied using the conventional value of 1600 for the lambda smoothing parameter. Of course, using a different value for lambda could generate different results, which shows the sensitivity of these sorts of estimates to assumptions made in measuring the variables.
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 more prone to find wage-led demand regimes. For the US case, wage-led results are found only in some of the structural studies, and never in the aggregative ones. Of course, the structural studies have not been intended to identify long-run relationships any more than the aggregative ones have. Most of the structural studies use annual data, often in difference form, and some authors have acknowledged that their results pertain only to the short run (e.g., Stockhammer and Stehrer 2011; Stockhammer et al. 2011). Nevertheless, for various reasons the structural estimates may come relatively closer to identifying long-run relationships than the aggregative studies. First, the fact that the structural estimates have not used measures of capacity utilization based on HP filters as dependent variables makes them less susceptible to finding purely 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 will be 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 specification problems, 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 → investment → income → consumption). Overall, the structural studies seem 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, but on the whole they have tended to find wage-led demand much more often than the aggregative/systems studies.

3 AGGREGATE DEMAND OVER DIFFERENT TIME HORIZONS

In this section, we discuss the theoretical reasons which lead us to believe that 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.

3.1 Investment

Although the aggregative methodology cannot distinguish which components of aggregate demand account for the finding of profit-led demand in short-run cycles, both economic theory and empirical evidence suggest that these results are largely driven by the cyclical behavior of investment. Investment is by far the most volatile component of aggregate demand, with cyclical fluctuations that are typically much larger than those of total GDP. In the US economy, profits are normally a leading variable driving investment up and down in expansions and recessions, respectively, while investment in turn is a leading indicator of cyclical movements in output.14

14 Weisskopf (1979) demonstrated that the profit rate was a leading variable in explaining postwar US business cycles, and that reductions in the profit rate after its cyclical peak were driven mainly by reductions in the profit
Figure 2 compares the short and long-term trends in the profit share (net operating surplus as a percentage of corporate value added) and the investment rate (gross business fixed investment as a percentage of GDP) for the US economy. These series exhibit a strong correlation in their cyclical fluctuations, as the upturns and downturns in the investment rate generally follow the variations in the profit share with some lags. 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 which is especially notable after 2000. After the financial crisis and Great Recession of 2008-9, the profit share reaches record levels, while the investment rate remains below normal levels for a recovery or expansion period. Thus, the longer-term relationship between these variables differs markedly from their strongly positive cyclical relationship.

The argument that profitability effects on investment are largely short run in nature can be justified more formally by reference to the accelerator theory of investment. A modern version of the accelerator model, which combines all of the main determinants of investment and explicitly reflects the different timing of their effects, can be found in this equation which is adapted from Chirinko et al. (1999):\(^{15}\)

\[
\frac{I_t}{K_{t-1}} = \beta_0 + \sum_{i=0}^{m} \beta_i \Delta Y_{t-i} + \sum_{i=0}^{n} \beta_{i1} \frac{\Delta UC_{t-i}}{UC_{t-1-i}} + \sum_{i=0}^{q} \beta_{i2} \frac{CF_{t-i}}{K_{t-1-i}} + \epsilon_t
\]

where investment (\(I\)), output (\(Y\)), and capital (\(K\)) are measured in ‘real’ (deflated) terms, \(UC\) is the ‘user cost’ of capital,\(^{16}\) \(CF\) is cash flow (in real terms), the \(\beta_{ki}\) are coefficients (\(k = \text{variable}, i = \text{lag}\)), \(\epsilon_t\) is the error term, and \(m, n, q\) 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 of their desired investment plans (Stiglitz and Weiss 1981; Minsky 1986; Fazzari et al., 1988). By definition, \(CF\) equals firms’ gross retained profits (net profits minus corporate income taxes, net interest payments, and dividend payouts, plus depreciation allowances), so it represents the profit variable in this model of investment.

According to equation (7), 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 investment represents changes in the (actual) capital stock. In contrast, the cash flow variable (also normalized by the value of the capital stock), 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 (Chirinko et al. 1999).

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\(^{15}\) Chirinko et al. (1999) include additional subscripts for firms, but we suppress these and focus on the time dimension given the macroeconomic orientation of this paper.

\(^{16}\) 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, relative prices of capital goods, and tax rates that affect incentives for investment. See Chirinko et al. (1999, p. 57) for details.
According to this specification, therefore, profits (as reflected in cash flow) affect only short-run fluctuations in investment, and in fact 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 rates $\Delta Y/Y$) 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 (often using sales in place of output at the firm level) 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; Ballinger 2013 – the last two of these studies find smaller cash flow effects than were found in previous studies using older data).

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

(8) \[ I/K = f(\pi, u) \]

where the dynamics are usually specified in an ad hoc way. This specification has been justified by the claim that $\pi$ and $u$ together reflect the underlying determinants of the profit rate, and hence represent expected future profit rates. 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. Also, the theories of financial constraints suggest that profits (whether measured by cash flow or any other accounting concept) should be expressed relative to the value of the firms’ capital stocks, not as a share of value added.

Therefore, a more appropriate investment function would be (omitting cost-of-capital effects for simplicity)

(9) \[ I/K = g(\Delta Y/Y, r) \]

where $r$ is the profit rate (rather than the share) for the short run, and

(10) \[ I/K = h(\Delta Y/Y) \]

17 Schoder (2013) finds that accelerator effects are stronger during cyclical downturns in a sample of US firms, and also finds that cash flow effects are weaker in more recent years.

18 If the variables have unit roots, Marglin-Bhaduri investment functions are sometimes estimated as $\Delta I = f(\Delta \pi, \Delta u)$, which is a functional form that has no foundation in any theory of investment outside of the Marglin-Bhaduri literature itself. Another problem is the frequent use of total investment (business plus housing) as a dependent variable in estimating investment functions. Since the theories of investment being tested are intended only for business investment, the inclusion of data on residential investment may bias the coefficients on profitability effects downward.

19 Note that equation (9) is not subject to the Marglin-Bhaduri critique of the Kalecki-Steindl investment function, $I/K = f(u, r)$, for double-counting utilization (since $r$ depends on $u$), because (9) uses $\Delta Y/Y$ instead of $u$. Equation (9) was used in the pioneering neo-Kaleckian model of del Monte (1975). Nevertheless, our argument implies that what Marglin and Bhaduri (1990) called a ‘strong accelerator condition’ does make sense for a long-term investment function, while profitability effects are mainly connected to short-run cycles.
for the long run. In other words, longer-term trends in capital accumulation are driven mainly by output growth following the accelerator principle (possibly modified by cost-of-capital effects affecting desired capital-output ratios), while profitability only affects the short-run timing of investment and plays no role in the longer term.

### 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) that makes domestic goods and services less competitive compared with foreign products (Blecker 1989, 2002, 2011). Based on the standard Marshall-Lerner (M-L) analysis, this negative impact will occur only if the sum of the price elasticities of export and import demand is sufficiently high. Although there is much controversy about whether the M-L 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). 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. 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.

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20 The standard M-L condition is that the sum of these elasticities must exceed unity in absolute value under certain simplifying assumptions, including initially balanced trade. Alternative M-L 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.
for some period of time (Setterfield and Cornwall 2002; Blecker 2013).

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 in Robinson’s (1947) 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 (often as a result of offshoring by home-based multinational corporations). If any of these responses occur, the home country 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 being wage led if there is a simultaneous lowering of ULC and wage shares globally, with the implication that the world economy as a whole is likely to have wage-led demand even if some individual countries have profit-led demand individually (Onaran and Galanis 2012; von Arnim et al. 2014; Obst and Onaran 2015).

However, it may take several years for the competitive responses of other nations to cancel out the initial competitive gains of a 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. Indeed, one major branch of post-Keynesian growth theory – the model of balance-of-payments-constrained growth (BPCG) – is based on the assumption that the competitive cost advantages that may arise in the short run do not persist in the long run (see McCombie and Thirlwall 2004; Blecker 2013). In the BPCG approach, this proposition is manifest in the assumption that international relative prices (real exchange rates) do not change significantly in the long run. However, BPCG theorists have never denied that real exchange rates can fluctuate and some countries can achieve competitive cost advantages over others in the short run. This long-accepted distinction also matters to theories of wage-led versus profit-led demand. Because competitive advantages in international trade that are based on low ULC do not last forever, the degree to which net exports make a country profit led instead of wage led is likely to diminish over time.

### 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., 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 have a 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) 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 led or profit led (Blecker 2002).

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 found more
robust results 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 (Blecker 2016; Hein 2016). What is especially striking is the fact that the empirical studies have largely bifurcated into two camps: one that 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 results 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 various 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 profit-led demand. We have argued here that this bias is not accidental, 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, and accelerator effects are also likely to dominate profitability effects on investment in the longer term. As a result, demand regimes are 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. If, as argued here, such results only pertain to short-run, cyclical behavior, then those findings may have no implications for long-term economic performance. 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. The forces that determine long-term growth or stagnation may be different from those that drive cyclical upswings and downturns. Thus, a significant long-term fall in the wage share can potentially depress utilization and growth in the longer term, even if rising profits may be associated with a short-run cyclical recovery. To test this hypothesis, it will be essential for future empirical research on this topic to more explicitly compare short-run and long-run effects of distributional shifts on output or utilization as well as economic growth using appropriate econometric techniques.


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.


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](http://www.bea.gov); and author’s calculations.

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