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Instability of the US economy: A post-Kaleckian econometric analysis of functional income distribution, capacity utilization, capital accumulation and productivity growth*

Ozan Ekin Kurt
Department of Economics, Yeditepe University, İstanbul, Turkey
e-mail: ozan.kurt@yeditepe.edu.tr, ozanekinkurt@gmail.com
ORCID: 0000-0003-4943-5681

Abstract

This article analyzes demand and "overall" regimes in the US economy from a post-Kaleckian theoretical framework. To that end, we employed a model that takes into account the interactions between functional income distribution, capacity utilization, capital accumulation and productivity growth. This model by Hein and Tarassow posits that the demand regime of an economy might be wage-led, profit-led and "intermediate"; while the overall regime, which endogenizes the productivity growth, might be contractive, expansive or "intermediate". The model also allows unstable demand and overall regimes, which were also the findings of our econometric investigation of the full (1970-2017) and sub- (1979-2017) sample periods of the US economy. This article contributes to the literature by being the first empirical study on the US economy through a model that simultaneously characterizes demand and overall regimes.

Key words: Capital accumulation, functional income distribution, growth, post Keynesian economics, productivity, USA

JEL codes: E12; E20; E21; E22; E25; E61

1. Introduction

The impact of distribution of income on economic growth has become a more prominent issue after the global economic and financial crisis of 2007-9, which was the beginning of a period marked by low rates of growth and accumulation. The

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long-run decline in the share of total wage bill in overall income since the beginning of the neoliberal era in 1980s discredited, but did not rule out, approaches, which are mainly neoclassical, that assume the constancy of relative shares of labor and capital in total income and the neoliberal policies based on them. The neoclassical perspective treats wages as merely costs and focuses on developing supply-side policies. However, in contradistinction with the former perspective, post-Keynesian models take into account the changes in functional income distribution and view wages also as an important source of aggregate demand. This latter perspective, at least to a certain extent, might be helpful in explaining the decreasing economic growth rates, sluggish productivity growth and stagnant capital accumulation in the US economy since 1970s.

The US economy experienced a long-run decline in the labor's income share since 1970s. This was accompanied by decreasing capacity utilization and hence lower growth rates. While the capital accumulation rate remained within a certain range, economic crises that burst out during the last five decades led to sudden drops in new capital formation. The productivity growth rate has started to decline in 1970s and partially recovered in 1990s without returning back to their previous average rates. The last two decades, however, witnessed crawling rates of productivity growth in the US economy.

Post-Kaleckian models of income distribution and growth, which occupy an important place within the post-Keynesian framework, suggest that the impact of a change in labor's share in income on the economy is not unidirectional. Under certain conditions, an increase in labor share might lead to a decline or an increase in aggregate demand. The demand regime is said to be profit-led in the former case and wage-led in the latter. The seminal work of Bhaduri and Marglin (1990) put forward the analytical conditions under which these two demand regimes prevail. The theoretical literature advanced during the last three decades by integrating capital accumulation, productivity growth and financialization into this framework. The purpose of this study is to analyze the US economy employing the theoretical model of Hein and Tarassow (2010) that came forward within the post-Kaleckian tradition. This model characterizes demand and overall regimes by examining the effect of functional income distribution on the equilibrium rates of capacity utilization, productivity growth and capital accumulation.[1] This literature has also discussed the stability problems that might arise due to different reasons within the (post-)Kaleckian models. We also address and discuss these issues since our empirical results point at an unstable demand and overall regime in the US.

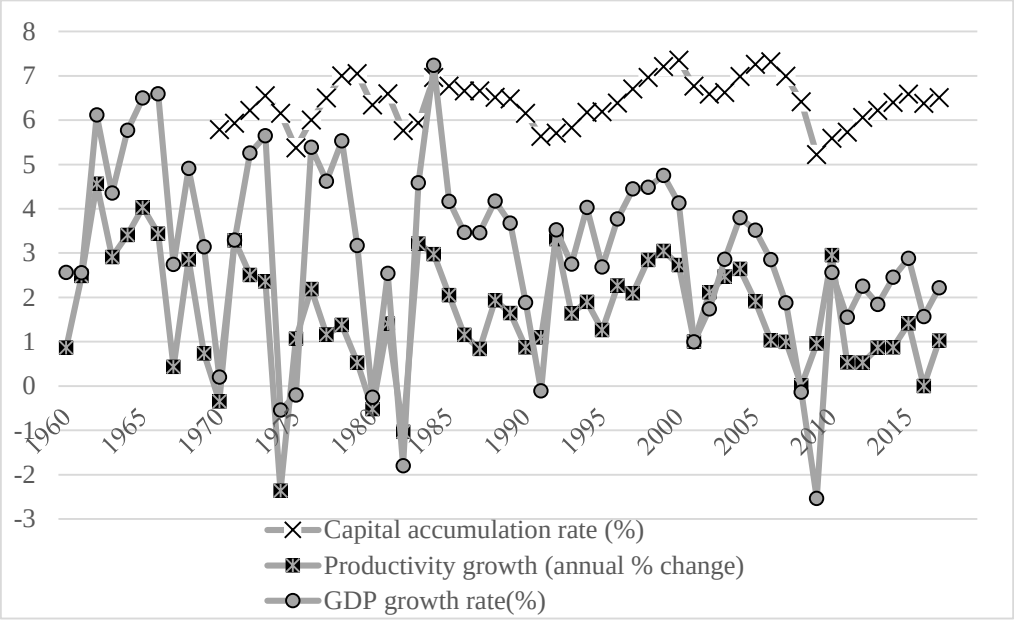
[1] Financialization and related issues are not treated in this model and the econometric analysis. Hein (2014) exhibits post-Kaleckian models (chapters 9 and 10) that account for financialization and financial variables. For a review of the financialization of the US economy see, for instance, Orhangazi (2008).

The organization of this article is as follows. In Section 2 we focus on the evolution of the key macroeconomic variables in our analysis of the US economy. Section 3 presents the theoretical model and identification and characterization of demand and overall regimes and addresses the stability issues about the model. Section 4 provides a review of the related empirical literature, with a focus on the US economy. Section 5 presents the estimation procedure of the model, synthesizes the econometric findings and makes comparisons with the existing literature. In the final section we draw some conclusions.

2. GDP growth, capacity utilization, productivity growth, capital accumulation and distribution in the US economy

A visual inspection of the growth rates of GDP and productivity since 1960s point out the following observations (see Figure 1). First, the two variables follow a similar pattern and except for the crisis periods, the growth rate of productivity is higher than that of GDP. The high growth rates achieved in 1960s gave way to lower rates in mid-1970s but partially recovered starting from the second half of 1980s up to early 2000s. During the last two decades and, especially after the economic and financial crisis of 2007-9, the growth rates of productivity and GDP have been staggering. Second, the rate of capital accumulation remained within the range of 5 to 7% without indicating a clear downward trend during the five-decade time span that starts in 1970s. However, it was also subject to abrupt drops during the crisis periods.

Figure 1
Evolution of capital accumulation, GDP growth and productivity growth rates over the period 1960-2017 in the US economy



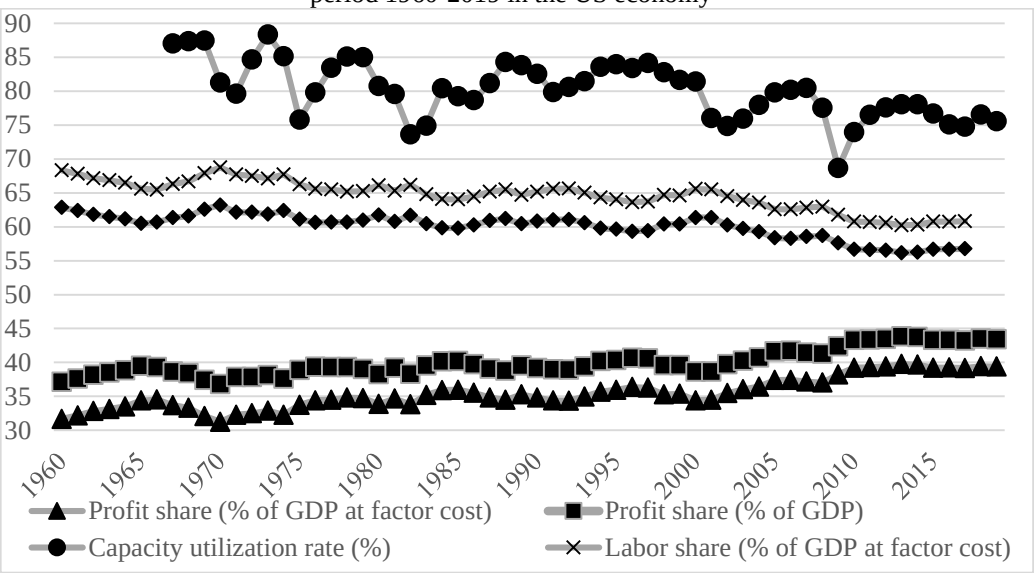
Source: Real GDP growth rate is calculated using the national accounts-based data prepared by Feenstra et al. (2015). See Appendix for capital accumulation rate and productivity growth.

During the same period, the rate of capacity utilization in the US manufacturing sector decreased from around 85% in 1970s to around 75% in 2010s (see Figure 2). The annual figures show that the capacity utilization showed an upward trend after hitting at a bottom rate of 74% in 1982 and remained above 80% during 1990s. However, as in the case of the growth rates of GDP and productivity, we observe a downward trend with the beginning of the new millennium. Within a half-century period starting in 1970, the capacity utilization hit bottom during economic crises but recovered afterwards leaving behind the previous record at each new crisis.[2] The long-run decline in the capacity utilization was accompanied by a decreasing share of labor income. Both measures of this indicator, adjusted total labor income as a percentage of GDP in market prices and as a percentage of GDP at factor cost, show a clear downward trend. The labor share decreased from around 62-67% in 1960s to around 57-61% in 2010s. This trend was more pronounced during the last two decades.

[2] The US economy has experienced the lowest monthly rate of capacity utilization on record at 60% in April 2020 following the severe economic crisis triggered by the COVID-19 pandemic.

Figure 2

Evolution of capital share and rate of capacity utilization in manufacturing sector over the period 1960-2019 in the US economy



Source: See Appendix.

These observations point at a positive relationship between GDP, capacity utilization, productivity growth and labor income share, while the relation of the capital accumulation with these variables is not clear. Hein and Tarassow (2010), in their comparison of a group of continental European countries including France and Germany with the US and the UK, noticed that the patterns regarding GDP and productivity growth are quite similar in the latter two countries, while the real wage growth had a different pace in them. These inspections lead us to conduct a more complete and coherent analysis through the theoretical model of the latter, which we present in the next section.

3. Theoretical model

This section presents the model by Hein and Tarassow (2010), which is employed in our econometric analysis of the US economy. We firstly present the main assumptions of the model and then exhibit the setting of the demand regime. We proceed with the endogenization of productivity growth. The section is completed with the combined characterization of the demand and overall regimes and the discussions on the stability of the post-Kaleckian models.

3.1. Main assumptions of the model

Based on the reference works of Bhaduri and Marglin (1990) and Blecker (1989), Hein and Tarassow (2010) built a model that analyzes the effects of functional income distribution on capacity utilization, capital accumulation and productivity growth. The contribution of the latter is to characterize potential demand and overall regimes of an open economy by integrating productivity, which was assumed to be constant in these two seminal studies, into a post-Kaleckian model.

Hein and Tarassow (2010), at a first step, define an open economy model with endogenous capacity utilization and capital accumulation, and exogenous productivity growth, and derive the equilibrium rates of the former two variables. At a second step, they endogenize the productivity growth and obtain the equilibrium rates of these three variables. The model does not treat monetary and financial issues, which have already been integrated into the post-Kaleckian models.[3] Functional income distribution, measured by capitalists' share in income, is assumed to be exogenous to the model. The economic class struggle between workers and capitalists determine their relative shares in income, but this struggle, itself, remains outside the model.[4] Production, accumulation and productivity growth have no feedback effects on the functional distribution of income in the model. Technical progress, or productivity growth, is assumed to be labor saving and capital embodied. This implies that Harrod-neutral technical progress, in which capital-potential output ratio ($v=K/Y^p$) is constant, is assumed in the model. The model excludes government expenditures and taxes from the analysis.[5] Capital and labor being immobile, foreign prices are exogenous to the model. The nominal exchange rate is determined by monetary policy and international financial markets, which are not treated in the model.

3.2. The demand regime

The demand regime is characterized by the reaction of capacity utilization and capital accumulation to the changes in the exogenous functional income distribution. The equilibrium condition for the goods market in an open economy is the following:

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[3] For integration of monetary and financial dimensions in to post-Kaleckian models, see Hein (2014), Chapters 9 and 10, respectively.

[4] Blecker et al. (2020) use the proxy of number of strikes in their structuralist model in order to endogenize unit labor costs.

[5] The fiscal and monetary policy also relates to the stabilization of the economy by some authors, which is discussed below.

$$S = I + Ex - Im \tag{1}$$

where S is the planned savings, I the net investment, Ex is the exports and Im the imports and NX $(=Ex\text{-}Im)$ the net exports. We obtain the following equation by dividing both sides of Equation 1 by capital stock (K):

$$\sigma = g + b \tag{2}$$

where σ $(=S/K)$ is the saving rate, g $(=I/K)$ the (capital) accumulation rate and b $(=NX/K)$ the net exports rate.

The savings consist of those out of labor income (S_W) and those of capital income (S_Π). The propensity to save out of the labor income (s_W) is assumed to be less than that out of the capital income (s_Π), both being less than 1. Denoting the total labor income by W and the total capital income by Π, the total income is equal to Y. Then, the saving rate σ can be reformulated as follows:

$$\sigma = \frac{S_\Pi + S_W}{K} = \frac{s_\Pi\,\Pi + s_W(Y - \Pi)}{K} = [s_W + (s_\Pi - s_W)h]\frac{u}{v} \tag{3}$$

where h $(= \Pi/Y)$ is the capital's share in income (or profit share) by and u the rate of capacity utilization. In order to estimate the saving propensities s_W and s_Π in the econometric analysis, we employed the following saving ratio equation, which is obtained by dividing both sides of Equation 3 by Y/K:

$$\frac{S}{Y} = s_W + (s_\Pi - s_W)\,h \tag{3'}$$

where S/Y is the ratio of savings to income (or output). However, Equation 3 is used for finding the equilibrium rates of capacity utilization and accumulation rates below.

Hein and Tarassow (2010) modeled the capital accumulation rate g $(=I/K)$ as a function of rate of capacity utilization u, profit share h and productivity growth $\hat{y}$:

$$g = \alpha + \beta u + \tau h + \omega \hat{y} \tag{4}$$

where β, τ and ω are positive parameters. An increase in capacity utilization leads to a higher rate of accumulation due to an increase in production and hence in total profits. The profit share (h) has a positive direct effect on capital accumulation and its inclusion in this function makes a profit-led demand regime possible in the model. Otherwise, the model boils down to the neo-Kaleckian model, which is merely capable to generate wage-led demand growth. The growth of productivity

encourages the capital accumulation since the technical progress is capital embodied and firms have incentives to decrease labor costs.

In order to open the closed economy depicted above, a net exports rate function is included in the model at hand. The net export rate *b* is a positive function of international competitiveness, which is proxied by the real exchange rate e^r, and a negative function of domestic demand, which is measured by the rate of capacity utilization. The net exports function can be expressed as:

$$b = \mu + \psi e^r - \phi u \tag{5}$$

where ψ and ϕ are positive parameters.[6] [7] The real exchange rate e^r is equal to $e.p_f/p$, where e is the nominal exchange rate, p_f the foreign price level and p the domestic price level. Hein and Vogel (2008) put forward three different channels that explain the relation between real exchange rate and profit share in their post-Kaleckian model. According to this theoretical framework, the relation between these two variables might be inverse or positive, depending on the factor leading to a change in real exchange rate. Hein and Tarassow (2010) asserted that this relation, if present, is likely to be positive. We test this hypothesis using the equation below:

$$e^r = \nu + \gamma h \tag{6}$$

If the hypothesis above is validated, γ must be positive since an increase in the profit share is supposed to enhance international competitiveness by depreciating the real exchange rate.[8]

Alternatively, net exports can be modeled directly as a function of profit share, in case the real exchange rate is not sensitive to functional distribution of income, as below:

$$b = \xi + \lambda h - \phi u \tag{5'}$$

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[6] ψ is positive in Hein and Tarassow's (2010) net export rate function since an increase in real exchange rate corresponds to depreciation of domestic currency. This parameter is negative in this version of the model since an increase in the real effective exchange rate series (*REER*) that we use in the econometric estimations corresponds to appreciation.

[7] Kurt (2020) employs the imports of the rest of the world as a measure of foreign demand in the net exports function for the analysis of the Turkish economy. The exogeneity of the foreign demand is a plausible assumption for such a medium-sized economy which has a global import share around 0.5 to 1% during the last three decades. However, it cannot be considered so for the US economy which has imported around 13 to 14% of the internationally traded goods and services in the same period (World Bank, 2020). Since the US economy itself induces the global trade, the use of this variable in the net exports function is not convenient.

[8] Following the footnote above, the parameter γ is negative in this version of the model.

where is expected to be $\lambda>0$. In the econometric investigation, we estimated both versions of the net exports equation. When the latter approach is adopted, Equation 6 becomes obsolete.

The stability condition, more exactly the *Keynesian stability* condition, for the demand regime of the model requires that the net investment and net export rates, together, be less sensitive to a change in the rate of capacity utilization than the saving rate:

$$\frac{\partial\sigma}{\partial u}-\frac{\partial g}{\partial u}-\frac{\partial b}{\partial u}>0 \tag{7}$$

Combining the equations 2, 3, 4, 5 and 6, one obtains the equilibrium rates of capacity utilization and capital accumulation:

$$u^{*}=\frac{\alpha+\mu+\tau h+\omega\hat{y}+\psi e^{r}}{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi} \tag{8}$$

$$g^{*}=\frac{\left\{[s_W+(s_\Pi-s_W)h]\frac{1}{v}+\phi\right\}(\alpha+\mu+\tau h+\omega\hat{y})+\beta\psi e^{r}}{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi} \tag{9}$$

The first derivates of these equations with respect to capital's share in income *h* gives us the effects of a change in *h* in on the equilibrium rates of capacity utilization and capital accumulation:

$$\frac{\partial u^{*}}{\partial h}=\frac{\tau-(s_\Pi-s_W)\frac{u}{v}+\psi\gamma}{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi} \tag{8'}$$

$$\frac{\partial g^{*}}{\partial h}=\frac{\tau\left\{[s_W+(s_\Pi-s_W)h]\frac{1}{v}+\phi\right\}-\beta(s_\Pi-s_W)\frac{u}{v}+\beta\psi\gamma}{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi} \tag{9'}$$ [9]

The signs and magnitudes of these effects are not known a priori. We expect positive effects of an increasing *h* on both of the equilibrium rates through investment and net exports, and negative effects through consumption. The magnitudes of the model parameters and the average values of the variables *u*, *v* and *h* for a given period determine their signs.

The characterization of the demand regime by Bhaduri and Marglin (1990) differs in some respects from that by Hein and Tarassow (2010). While the former authors assumed an economy with no productivity growth and capital accumulation, the latter integrated these into their model (see the next subsection),

[9] If Equation 5' is used instead of 5, it suffices to replace $\psi\gamma$ by λ in the equations with partial derivatives with respect to *h*.

which led to emergence of an overall regime along with a demand regime. In the former model, if the positive impact of an increase in the wage share on consumption outweighs its negative impacts on investment (and net exports in an open economy), the demand growth is wage-led, otherwise, profit-led, for a given productivity rate and no capital accumulation. In other words, a higher labor's share of income leads to an increase (decrease) in the rate of capacity utilization under a wage-led (profit-led) demand regime. In the present model by Hein and Tarassow (2010), the demand regime is characterized not only by the impact of the functional distribution of income on the rate of capacity utilization but also by that on the capital accumulation rate. Since the productivity growth is now present but assumed to be exogenous (but not dependent on functional distribution of income) in this current setting of the model, a change in the relative shares of capital and labor in total income does not influence the equilibrium rates of capacity utilization and accumulation through this variable, as can be seen through the expressions 8' and 9'.[10] If productivity and wage per worker grow at equal rates, the functional distribution of income does not change; however, if the former increases faster (slower) than the latter, this leads to a higher (lower) profit share. If the positive impact of a faster rate of increase in the wage per worker relative to productivity growth on consumption outweighs its negative impacts on investment and net exports by leading to higher rates of the capacity utilization and capital accumulation, the demand regime is wage-led. If the opposite is the case, it is profit-led. There also exists an *intermediate demand regime* under which a higher wage-share leads to an increase in the capacity utilization rate but a decline in the capital accumulation rate (Hein, 2014, p. 317). However, if the stability condition, $[s_W+(s_\Pi - s_W)h]\frac{l}{v} - \beta+\phi>0$, is not met, we obtain an unstable demand regime. The instability case and the related issues are discussed in the last subsection.

3.3. Endogenization of productivity growth

Hein and Tarassow (2010) addressed two groups of determinants of productivity growth (or technical progress) within the post-Keynesian tradition. The first one is about the dynamics of capital accumulation and output, and the second one is related to distribution of income between labor and capital. Kaldor applied different methods for endogenizing productivity growth. Capital accumulation leads to growth of productivity since technical progress is labor saving and capital embodied. Alternatively, he employed *Verdoorn's Law*, which

[10] Still, the productivity growth rate determines the *levels* of equilibrium rates of capacity utilization and capital accumulation in this current setting of the model, as can be seen in the equations 8 and 9. All else equal, if the stability condition is met, an increase in the productivity growth, due to factors other than functional income distribution, leads to a higher rate of capacity utilization and accumulation.

posits that the growth rate of output leads to an increase in labor productivity in industrial production (Hein andTarassow, 2010). This law implies that increasing returns to scale are prevalent in the production process and both internal/external and dynamic/static effects are present (McCombie et al., 2002). Within this framework, the rate of capacity utilization is used as a measure of aggregate demand and as a determinant of productivity growth.

The second group of determinants comprises wage-rates and measures of functional income distribution. Since technical progress is labor saving and capital embodied, the labor to output ratio (*L/Y*) falls and the labor productivity (*Y/L*) increases. This implies that higher real wages or labor's share in income are expected to push firms to switch to technologies that require less labor. Lower unemployment rates and increased bargaining power of workers will lead to an increase in the real wage rates and/or wage share. As a response to the higher labor costs (wages), firms will try to find ways of raising the productivity in order to keep profits from falling. This effect is called cost-push or 'Marx/Hicks' effect (Hein and Tarassow, 2010). In this framework, Naastepad (2006) employed real wage growth as a determinant of productivity growth in her model. However, Hein and Tarassow (2010) state that real wage growth could make capitalists switch to labor saving technologies as long as it is higher than the rate of productivity growth, which implies that the labor's share in income must be increasing for such a technical change. Consequently, they employed profit share as a determinant of productivity growth.

For the first group of determinants of productivity growth, we opted for the rate of capacity utilization. For the second, we followed Hein and Tarassow (2010) and employed capital's share in income. Then, the productivity growth equation takes the following form:

$$\hat{y} = \eta + \rho u - \theta h \tag{10}$$

where η, ρ and θ are positive parameters. η captures the 'learning by doing' effects (Hein andTarassow, 2010). In the next sub-section, this equation is integrated into the equations characterizing the demand regime and hence the overall regime is obtained.

3.4. The overall regime

The equations characterizing the overall regime is obtained by inserting Equation 10 into the equations 8 and 9. The resultant equations based on Hein and Tarassow (2010) and Hein (2014, p.320) for the equilibrium rates of capacity utilization, productivity growth and capital accumulation are as follows, respectively:

$$u^{**}=\frac{\alpha+\mu+(\tau-\theta\omega)+\psi e^{r}+\omega\eta}{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi-\omega\rho} \tag{11}$$

$$\hat{y}^{*}=\frac{(\eta-\theta h)\left\{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi\right\}+\rho[\alpha+\mu+\tau h+\psi e^{r}]}{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi-\omega\rho} \tag{12}$$

$$g^{**}=\alpha+\mu+\tau h+\beta\left\{\frac{\alpha+\mu+(\tau-\theta\omega)+\psi e^{r}+\omega\eta}{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi-\omega\rho}\right\}+$$

$$\omega\left(\frac{(\eta-\theta h)\left\{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi\right\}+\rho[\alpha+\mu+\tau h+\psi e^{r}]}{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi-\omega\rho}\right) \tag{13}$$

Differentiation of these equations with respect to *h* give the following expressions, respectively:

$$\frac{\partial u^{**}}{\partial h}=\frac{\tau-(s_\Pi-s_W)\frac{u}{v}+\psi\gamma-\theta\omega}{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi-\rho\omega} \tag{11'}$$

$$\frac{\partial \hat{y}^{*}}{\partial h}=\frac{\rho[\tau-(s_\Pi-s_W)\frac{u}{v}+\psi\gamma]-\theta\{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi\}}{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi-\rho\omega} \tag{12'}$$

$$\frac{\partial g^{**}}{\partial h}=\frac{(\tau-\theta\omega)\left\{[s_W+(s_\Pi-s_W)h]\frac{1}{v}+\phi\right\}-(\beta+\rho\omega)(s_\Pi-s_W)\frac{u}{v}+(\beta+\omega)\psi\gamma}{[s_W+(s_\Pi-s_W)h]\frac{1}{v}-\beta+\phi-\rho\omega} \tag{13'}$$

As above, if the expressions in the equations 11' and 13' are positive (negative) we obtain a profit-led (wage-led) demand regime. However, we obtain an intermediate demand regime if the former is negative and the latter is positive. Kurt (2020), based on Hein and Tarassow's (2010) categorization, extended the classification of the demand and overall regimes as in Table 1.

Table 1
Characterization of Demand and Overall Regimes

Demand Regime	Wage-led	Intermediate		Profit-led		
	$\partial u^*/\partial h<0$ & $\partial g^*/\partial h<0$	$\partial u^*/\partial h<0$ & $\partial g^*/\partial h>0$		$\partial u^*/\partial h>0$ & $\partial g^*/\partial h>0$		
$\partial u^{**}/\partial h$	-	-	-	-	+	+
$\partial g^{**}/\partial h$	-	-	+	-	+	+
$\partial \hat{y}^*/\partial h$	-	-	-	-	-	+
Overall regime	Contractive	Contractive	Intermediate-2	Contractive	Intermediate-1	Expansive

Source: Kurt (2020).

Table 1 shows that an increase in the profit share leads to a decrease in the equilibrium rates of capacity utilization, productivity growth and capital accumulation under the wage-led demand regime and this means that the overall regime is *contractive*. However, under the profit-led demand regime an increase in the profit share might bring about three different sub-cases. The first one is the *expansive* sub-case, which is completely opposite to the contractive case and might emerge as a sub-case under a profit-led demand regime. The third sub-case, which Kurt (2020) renames as *intermediate-1,* corresponds to the intermediate overall regime in Hein and Tarassow's (2010) categorization. A higher profit share leads to an increase in the equilibrium rates of capacity utilization and capital accumulation, but it has a negative impact on the equilibrium rate of productivity growth under this sub-case. As for the intermediate demand regime, two sub-cases might emerge. The first one is the contractive case above. Under the other one, which is called *intermediate-2* (Kurt, 2020), a higher profit share leads to a decline in the equilibrium rates of capacity utilization and productivity growth, but an increase in the capital accumulation rate.[11] As a summary, contractive overall regimes might emerge under wage-led, profit-led and intermediate demand regimes, however, expansive overall regimes are only feasible under a profit-led demand regime. Two different types of intermediate overall regimes might arise under intermediate and profit-led demand regimes. However, if the stability conditions are not satisfied, in addition to these regimes, unstable demand and overall regimes might also emerge. The stability condition $[s_W+(s_\Pi - s_W)h]\frac{1}{v} - \beta+\phi - \rho\omega>0$, due to the additional term $\rho\omega$, is now stricter under the overall regime compared to that under the demand regime. Even though the demand regime turns

[11] See the proof by Kurt (2020) for the two subcases that might emerge under the intermediate demand regime.

out to be stable in an economy, the overall regime might be unstable when the productivity growth endogenized and integrated into the model.

3.5. Stability of the model and related discussions

The stability problems within the framework of (post-)Kaleckian models have been extensively discussed in the literature in the last decade. Here we address some of these studies in relation to the model presented above. The contributions of Hein et al. (2011), Skott (2012) and Stockhammer and Michell (2016) outline the main discussions on the (in)stability problem in Kaleckian models.

Hein et al. (2011) made a distinction between the Keynesian and Harrodian instability and focused on the mechanisms that have been put forward to tame the latter. The Keynesian instability refers to a relatively higher sensitivity of investment to capacity utilization (or output) compared to that of savings to capacity utilization (or output), i.e., the violation of the condition in Equation 7. The Harrodian instability emerges when the constant term in the investment function increases (decreases) whenever the capacity utilization rate exceeds (is less than) its normal rate if the investment (or accumulation) function takes the following form:

$$g=\alpha+\beta(u-u_n) \tag{4'}$$

The long run discrepancy between the actual and desired (or target, or normal) utilization rate and the endogenization of the latter becomes the center of attention regarding the discussion on the latter type of instability. The authors evaluated various propositions which aim to contain Harrodian instability and adjust the economy to the desired rate of capacity utilization. However, authors were not satisfied with any of those since the long-run versions of the paradox of thrift and the Kaleckian paradox of costs disappeared through these mechanisms and criticized the deterministic approach of convergence towards an exogenous ‘normal’ rate of capacity utilization. Alternatively, in another survey article, the authors argued that a more sophisticated form of the Kaleckian model can maintain an endogenous rate of capacity utilization along with the long-run versions of paradox of thrift and that of costs (Hein et al., 2012).

Skott (2012) discussed the Keynesian stability condition by focusing on and criticizing the Kaleckian investment function on theoretical and empirical grounds. He employed a Harrodian type of investment function through which short and long run Keynesian stability conditions are distinguished. While the short run stability condition only takes into account the contemporaneous effect of the capacity utilization rate on the investment, the long run version incorporates the lagged effects, as well. Compared to the survey of Hein et al. (2011), Skott rejected not

only the mechanisms that adapts the actual rate of utilization to its desired rate, but the author also concluded that the empirical and, especially, the theoretical evidence is weak in order to support the Kaleckian investment function.

The discussion of Stockhammer and Michell (2016) focused on the dynamics of a Minskian model, which can be up to a certain extent related to the present model through some stabilizing feedback effects integrated in their model. They proposed the concept of *pseudo-Goodwin cycle* and show that the Goodwin cycles do not necessarily emerge under a profit-led demand regime but might also exist under a wage-led demand regime. For this purpose, they built and step by step developed a Minskian model. In one version of their model with three differential equations, each for wage share, output (demand) and financial fragility, they integrated negative own-feedback effects in order to eliminate the tendency for these variables to diverge to infinity. This system of equations can generate damped and explosive cycles on the wage share-output sphere (and other spheres) depending on the values of parameters. The demand equation also includes the wage share in order to generate a wage-led demand regime. They stated that in this equation the own-feedback effects might be due to counter-cyclical government intervention or supply-side shortages which might enforce a stabilizing effect on the system during an expansion. It is clear that in this *predatory-prey model with over-crowding* (Shone, 2002, p. 617) the own-feedback effects might stabilize the system; however, it is not assured whether this effect is due to the above-mentioned mechanisms or any other ones. Furthermore, as the authors stated, the size of the wage-led effect compared to stabilizing feedback effects matter for the determination of the stability of the system. If the wage-led effect is sufficiently high, the system explodes, otherwise the cycles dampen, and the system becomes stable. It can be asserted that any potential empirical results that imply the instability of the model might be related to the lack of such mechanisms in the present model.

4. Review of empirical literature

We provide a review of the related empirical studies within the framework of post-Kaleckian (and in a wider sense, post-Keynesian) models in this section. As far as we know, this is the first study that examines the character of demand and overall regimes of the US economy by estimating the effects of functional income distribution on rates of capacity utilization, capital accumulation and productivity growth in a coherent model. Onaran and Stockhammer (2007) analyzed the effect of profit share on capacity utilization, capital accumulation and employment, but their theoretical and empirical methodology is not comparable to that of Hein and

Tarassow (2010).[12] Our review in this section is not intended to cover all previous post-Keynesian empirical studies in this field but we want to focus on the main lines of research and present the findings on the US economy. We also address some research related to some of the equations of the model presented above.

It can be asserted that determination of the character of demand regimes has been a central research theme in post-Keynesian empirical studies.[13] The majority of them use two main approaches in order to characterize demand regimes of countries under investigation. The first category is based on estimation of single equations for private consumption (or alternatively, savings), investment, exports and imports (or net exports). Bowles and Boyer's (1995) theoretical and empirical work on a group of advanced capitalist countries including the US and that of Gordon (1995) on the US economy were the pioneer studies in this line of research. Bowles and Boyer (1995, p.146) defined employment and productivity regimes and searched for the feasibility of a wage-led employment regime and stated that a necessary condition for the latter is a wage-led aggregate demand regime. Their econometric analysis showed that the demand regime in the US is both domestically, i.e., when only consumption and investment is considered, and totally wage-led. Gordon (1995), in his analysis of the US economy, employed single equations in which saving, investment and net exports are normalized by potential output. In this model demand regime is characterized with respect to the sign of the effect of profit rate on capacity utilization. The U.S. economy turned out to be profit-led according to this analysis. In Naastepad and Storm's (2006) approach, the demand regime is categorized according to the sign of the derivative of aggregate demand growth with respect to real wage growth. The US turned out to be profit-led in this study, which comprises the analysis of eight OECD countries. Hein and Vogel (2008) analyzed a narrower set of OECD countries and found that both domestic and overall economy is wage-led in the US. Onaran, Stockhammer and Grafl (2011) integrated some dimensions of financialization into their theoretical model and made a distinction between capital income as rentier and as non-rentier profits. They found the US economy to be moderately wage-led. In all these studies, economies under investigation were treated in isolation from rest of the world. Onaran and Galanis (2014) adopted a different approach that took into account global interactions among countries. Their main finding was that the global demand regime is wage-led and some countries which were found to profit-led in isolation turned profit-led after integrating global interactions. The US economy turned out to be wage-led in isolation and even more wage-led with global interactions.

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12 Another empirical study, which was also based on the latter's model, was on Turkey by Kurt (2020), which we address in the next section in order to directly compare our empirical findings with.

13 For an early literature review summarizing findings on demand regimes, see Onaran and Stockhammer (2008). For a more recent and extensive one, see Kurt (2016: p.65-9).

The second group of studies employed a systems approach and use vector autoregression (VAR) models, in which past values of all variables, if there are no restrictions, might influence present values of all other variables. Some hypotheses on demand, accumulation, capacity utilization and other economic variables are tested within this framework. The parameters estimated using this approach are used in impulse response functions (Onaran and Stockhammer, 2005). Stockhammer and Onaran (2004) employed this approach in order to analyze three countries including the US and they found that no effect of profit share on capacity utilization and accumulation. Hein (2014) underlined that it is difficult to separate the effects of distribution on demand and accumulation employing this approach (p. 298).

Some other studies that do not directly fall into abovementioned categories should also be addressed. Barbosa-Filho and Taylor (2006), in their model based on Goodwin's (1967) cyclical analysis, found that the US economy is profit-led. In this study the movement of capacity utilization and labor's share in income, both being endogenous variables, is analyzed using a VAR model. Following another Goodwinian approach, Stockhammer and Stehrer (2011) analyzed 12 OECD countries and found the US demand regime to be profit-led.

In addition to the studies mentioned above, there exists an important literature on the Verdoorn's Law, which concerns the productivity equation in the model. McCombie et al. (2002) delved into the origins of this law and conducted an empirical literature review that tests it. Storm and Naastepad (2013) made a more recent review on the topic and found that the majority of the studies they examined, including those on the US economy, confirmed the law.

5. Econometric analysis and findings

5.1. Variables and data

We employed two alternative series for capital's share in income in the econometric analysis: Adjusted share of profits in GDP at factor cost (h_{fac}) and adjusted share of profits in GDP at market prices (h). We made use of capacity utilization in the manufacturing sector as a proxy for the overall rate of capacity utilization in the US economy.[14] In the econometric analysis, the real exchange rate, e^r, is operationalized through *REER*, real effective exchange rate. The variables in ratios, which are S/Y, h, h_{fac}, g, u, b, are directly employed in the equations, while *REER* is logarithmically transformed. We used the difference of the logarithm of

[14] While the manufacturing sector is not the leading sector in the US economy, there exists a strong correlation between the change in the rate of capacity utilization in this sector and the GDP growth rate. Over the period 1970-2017, we found the correlation between the two to be 0.79.

the productivity series, Δlny, for the productivity growth $\hat{y}$. The double difference of the logarithm of the latter, $\Delta^2 lny$, reflects the change in the productivity growth rate. The series are annual and cover the period 1970-2017. Table A1 in the appendix gives detailed information about data and their sources.

5.2. Estimation procedure

At the first step of the econometric analysis, we tested the stationarity properties of the variables through Augmented Dickey–Fuller (ADF), Kwiatkowski–Phillips–Schmidt–Shin (KPSS) and Phillips-Perron (PP) tests. The unit root tests gave consistent results for all the series except for *S/Y*. All three tests indicate that the variables *lnREER*, *g*, *u* and Δlny are stationary, i.e. I(0), while *h*, h_{fac} and *b* are difference stationary, i.e. I(1). As for *S/Y*, the ADF and PP tests point at difference stationarity of the series, while the KPSS test concludes that it is I(0). We opted for treating this variable as I(1).

These findings point that the five model equations should be classified into two categories for the econometric estimation. In the first category we have the savings equation, which only consists of I(1) variables. We firstly tested for cointegration between *S/Y* and *h* (or h_{fac}) series, however, we found no sign of cointegration.[15] Eventually, we estimated this equation in the first differences of the variables. The other equations are composed of I(0) variables and a single I(1) variable. We used the first differences of the variables for the estimation of these equations.[16] The estimated model equations are presented in Table 2.

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[15] The results for the unit root and cointegration tests are not reported due to space limitations and they are available upon request.

[16] Since common shocks might be relevant for the model equations, we also tried the Seemingly Unrelated Regression (SUR) method for the econometric estimation. While the Breusch-Pagan test rejected the null hypothesis of no variance among equations, this method did not turn out to be convenient for our estimations since the Hansen-Sargen rejected the validity of instruments used in all different specifications of the model we tested.

Table 2
Model Equations Used in Estimations of Parameters

Dependent Variable	Equation
Saving ratio	$\Delta \frac{S}{Y} = s_W + (s_{\Pi} - s_W)\Delta h$
Capital accumulation rate	$\Delta g = \alpha + \beta\Delta u + \tau\Delta h + \omega\Delta^2 lny$
	$\Delta b = \mu + \psi\Delta lnREER - \phi\Delta u$ or alternatively
Net exports rate	$\Delta b = \mu + \lambda\Delta h - \phi\Delta u$
Productivity growth rate	$\Delta^2 lny = \eta + \rho\Delta u - \theta\Delta h$
Real effective exchange rate	$\Delta lnREER = \nu + \gamma\Delta h$

Notes: Both profit share at market prices (h) and profit share at factor cost (h_{fac}) are used in the estimations. Δ and Δ^2 represent first and double differences of a variable, respectively.

In order to check the robustness of our results, we ran standard tests for residuals and also tested the adequacy of specifications and the parameter stability. The null hypotheses of the Durbin-Watson[17] and LM tests for autocorrelation are that residuals are not autocorrelated, that of the White's heteroskedasticity is that residuals are homoskedastic, that of the ARCH test is that there is no autoregressive conditional heteroskedasticity, that of the Doornik-Hansen normality test is that residuals are normally distributed[18], that of Regression Equation Specification Error Test (RESET) test is that a linear specification is adequate, and that of Cumulative Sum of Recursive Residuals Test (CUSUM) test is that there is no change in parameters. In addition to these, in order to locate potential structural breaks, we applied Quandt Likelihood Ratio (QLR) tests, whose null hypothesis is that there is no structural break at the point selected by the test.

5.3. Econometric findings and comparison with existing literature

We estimated the model equations over the period 1970-2017 employing two alternative measures of profit share and tried several specifications of them until we obtain estimations that conform the standards on overall fit, residuals and parameter stability. We reported the ones that do not meet these conditions at the tables below,

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17 If the Durbin-Watson Test statistic d is less than the lower critical value d_L or higher than 4-d_L the null hypothesis of no autocorrelation is rejected. If d is between the upper critical value d_H and 4-d_H, the null hypothesis is not rejected. If d is between d_L and d_H or, between 4-d_H and 4-d_L, the test is inconclusive. Savin and White (1977) report the lower and upper critical values of this test for regressions with number of regressors up to 20 and sample sizes ranging continuously from 6 up to 40, discretely thereafter up to 200. If a lagged dependent variable is employed in a regression this statistic is no more valid, however, *Durbin's h,* which has a standard normal distribution, is used instead. The critical values for the test are provided at the footnotes of the regression tables in the econometric analyses below.

18 Gelman and Hill (2007) state that the normal distribution is the least important assumption and furthermore, it is almost not important if the aim of the estimation is the regression line, rather than predicting individual observations (p. 46). Hence, even though this assumption is violated in some estimations this does not violate its overall validity.

however, we did not use their coefficient estimates in our calculations.[19] In line with the findings of the structural break tests we opted for conducting a sub-sample analysis over the period 1979-2017. The coefficients that are used in calculations are synthetically presented at the tables 8 and 9 for these two samples, respectively.

The estimation results of the savings equation, presented at Table 3, confirmed the savings rate differential between capitalists and workers. The overall fit of the first set of specifications for the two measure of capital (specifications 1 and 1') were poor, therefore we estimated this equation by adding the first lag of h (or h_{fac}) in the second set and, alternatively, we used the Prais-Winsten (PW) method in the third. These specifications improved the quality of results; however, Specification 2 suffered from heteroscedasticity, therefore, we opted for using the findings of the third set of specifications in our calculations. While the QLR test for Specification 2' points at a structural break in 2009 at 5%, this is not confirmed by Specification 2.[20] The findings of the latter indicate that the propensity to save out of wages is zero and the savings rate differential (and the propensity to save out of profits) for the US economy lies between the range of 0.40-0.42. Bowles and Boyer (1995) estimated this differential to be 0.46 for the period 1961-87 (p.154), while Storm and Naastepad (2012) found 0.22 for the period 1960-2000 (p. 131).

The findings of the estimation of the capital accumulation rate equation at Table 4 shows that while capacity utilization and productivity growth effects on accumulation are confirmed, the profit share has no significant effect on the latter. Since there were autocorrelation and heteroscedasticity problems in the first set of specifications, we employed PW method in the second and added the first lag of the dependent variable in the third, which we used in our computations. The estimated values of parameters and their statistical significance levels (at least 5%) are identical for both measures of capital share in the specifications 3 and 3'. Using these coefficients, we computed the implied long run effects which suggest that a 1% increase in the capacity utilization rate in the US economy leads to 0.15% rise in the accumulation rate and that in the productivity growth rate brings about 0.10% (Specification 3) and 0.09% (Specification 3') increments. Kurt (2020) found the former within the range of 0.18-0.19% and the latter within the range of 0.04-0.06% for Turkey, while the effect of profit share turned out to be insignificant. The third set of specifications suggested a structural break around 1978-1979, which we take into account in our sub-sample analysis.

[19] The only exception is the real effective exchange rate equation through which the γ coefficient is estimated. However, since the impact of profit share on the net exports rate is estimated directly in an alternative specification (Equation 5'), this coefficient becomes irrelevant. For comparison we used the findings of both types of equations in our calculations.

[20] When the PW method is applied, as we did in the third set of specifications; heteroscedasticity, RESET, CUSUM and QLR tests are not available in the GRETL (Gnu Regression, Econometrics and Time-series Library, v. 2021c-git) software that we used for our estimations.

Table 3
Estimation of the savings equation for the full sample (1970-2017)

Dependent variable: $\Delta(S/Y)$	Specifications											
	1		**2**		**3**		**1'**		**2'**		**3'**	
Regressors	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio
Constant	0.00	-1.06	0.00	-1.40	0.00	-1.01	0.00	-1.19	0.00	-1.65	0,00	-1.09
Δh *(or* Δh_{fac}*)*	0.35	1.55	0.35	1.31	0.42**	2.09	0.35*	1.69	0.34	1.40	0.40**	2.08
$\Delta h(-1)$ *(or* $\Delta h_{fac}(-1)$*)*			0.32*	1.72					0.35*	1.92		
Diagnostics												
R^2	0.06		0.11		0.09		0.07		0.13		0.09	
Adjusted R^2	0.04		0.06		0.07		0.05		0.09		0.07	
F-test	0.13		0.01		0.04		0.10		0.00		0.04	
DW statistic (or Durbin's h)[a]	1.68		1.74		1.94		1.71		1.79		1.95	
rho value for PW method					0.17						0.16	
LM test for autocorrelation (order 1)	0.21		0.31				0.26		0.42			
White's heteroscedasticity test	0.11		0.04				0.07		0.07			
ARCH test (1 lag)	0.39		0.57		0.32		0.37		0.39		0.31	
Normality test	0.67		0.56		0.61		0.56		0.51		0.51	
RESET test (with squares)	0.00		0.84				0.00		0.88			
CUSUM test	0.52		0.55				0.64		0.80			
QLR test	0.34		0.12				0.24		0.04			
QLR test break year	2009		2009				2009		2009			
Sample size	47		46		47		47		46		47	

Notes: *, ** and *** represent 10%, 5% and 1% significance levels, respectively. The numbers corresponding to the diagnostic tests are P-values. The capital share measure employed in the first set of regressions (1, 2 and 3) is h and it is h_{fac} in the second set (1',2' and 3'). Source: Author's elaboration.

[a] At 5% significance level, the lower and upper critical values for a regression with a single (two) regressor(s) and a sample size of 45 are 1.48 (1.43) and 1.57 (1.62), respectively. For a regression with a single (two) regressor(s) and a sample size of 50 these values are 1.50 (1.46) and 1.59 (1.63), respectively (Savin and White, 1977, p.1994). The inferences are made with respect to these critical values.

Table 4

Estimation of the capital accumulation rate equation for the full sample (1970-2017)

Dependent variable: Δg	Specifications											
	1		**2**		**3**		**1'**		**2'**		**3'**	
Regressors	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio
Constant	0.00	0.57	0.00	0.44	0.00	0.43	0.00	0.50	0.00	0.41	0.00	0.36
Δg *(-1)*					0.27***	2.93					0.27***	2.84
Δh *(or* Δh_{fac}*)*	0.02	0.24	0.09	1.54	0.06	0.85	0.03	0.37	0.08	1.47	0.06	0.88
Δu	0.11***	10.56	0.11***	12.82	0.11***	10.99	0.11***	10.57	0.11***	12.74	0.11***	10.94
$\Delta^2 lny$	0.03	1.36	0.02	1.07	0.07**	2.20	0.03	1.27	0.02	1.17	0.07**	2.10
Diagnostics												
R^2	0.74		0.79		0.79		0.75		0.79		0.79	
Adjusted R^2	0.73		0.78		0.77		0.73		0.78		0.77	
F-test	0.00		0.00		0.00		0.00		0.00		0.00	
DW statistic (or Durbin's h) [a]	1.22		2.05		0.94		1.21		2.05		0.92	
rho value for PW method			0.44						0.42			
LM test for autocorrelation (order 1)	0.01				0.40		0.01				0.42	
White's heteroscedasticity test	0.02				0.37		0.01				0.26	
ARCH test (1 lag)	0.69		0.60		0.71		0.63		0.65		0.71	
Normality test	0.65		0.97		0.45		0.73		0.99		0.47	
RESET test (with squares)	0.08				0.22		0.06				0.18	
CUSUM test	0.74				0.98		0.94				0.86	
QLR test	0.00				0.00		0.00				0.00	
QLR test break year	1979				1979		1992				1978	
Sample size	47		47		46		47		47		46	

Notes: *, ** and *** represent 10%, 5% and 1% significance levels, respectively. The numbers corresponding to the diagnostic tests are P-values. The capital share measure

employed in the first set of regressions (1, 2 and 3) is h and it is h_{fac} in the second set (1',2' and 3'). Source: Author's elaboration.

[a] At 5% significance level, the lower and upper critical values for a regression with three regressors and a sample size of 45(50) are 1.38(1.42) and 1.67(1.67), respectively

(Savin and White, 1977, p.1994). At 5% significance level, the critical values for the Durbin's h are -1.96 and 1.96 for the regressions with lagged dependent variables.

The inferences are made with respect to these critical values.

We estimated four different specifications for the net exports rate using the two alternative approaches presented above. The specifications 1 and 2 at Table 5 estimate Equation 5 (along with the auxiliary Equation 6, whose estimations are presented below) and the two other specifications estimate Equation 5' directly using two different measures of the profit share. Since Specification 1 suffers from (positive) autocorrelation, we re-estimated Equation 5 using the first lags of the net exports and capacity utilization rate variables in Specification 2. While this specification is free of autocorrelation, the real effective exchange rate turns out to be insignificant in the estimated regression. The contemporaneous effect of the capacity utilization rate has the expected (negative) sign; however, the first lag of this variable has the opposite (positive) one, still the sum of the two is negative. Alternatively, we estimated the specifications 3 and 3', employing h and h_{fac}, respectively. The estimated profit share coefficients are 0.07 and (marginally, see the note *b* at Table 5) significant at 10%. For the capacity utilization rate the same results above apply to these two estimations. When these short-run effects are translated into long-run effects, we find that a 1% increase in the capacity utilization rate leads to 0.01 to 0.02% decline in the net exports rate in the US economy. Kurt (2020) found a much stronger effect for the Turkish economy within the range of 0.17-0.19%. According to the findings, the real effective exchange rate has no effect on the net exports rate in the US economy[21], however, the direct effect of the profit share on the net exports is positive. A 1% increase in the profit share leads to 0.07% increase in the net exports rate in the short run and to 0.11% increase in the long run. The QLR tests point at a structural break around 1978-1979 in the regressions.

[21] This finding requires further explanation, as noticed below.

Table 5

Estimation of the Net Exports Rate Equation for he Full Sample (1970-2017)

Dependent variable: Δb	Specifications							
	1		**2**		**3**		**3'**	
Regressors	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio
Constant	0.00	-0.96	0.00	-0.74	0.00	-1.06	0.00	-1.09
$\Delta b(-1)$			0.33**	2.50	0.36***	3.06	0.37***	3.12
Δu	-0.03**	-3.01	-0.03***	-3.45	-0.04***	-3.49	-0.04***	-3.50
$\Delta u(-1)$			0.02***	2.85	0.03***	4.13	0.03***	4.21
$\Delta lnREER$	0.00	1.44	0.00	0.30				
Δh (or Δh_{fac})					0.07*	1.74	0.07[b]	1.64
Diagnostics								
R^2	0.32		0.43		0.47		0.47	
Adjusted R^2	0.29		0.37		0.42		0.42	
F-test	0.01		0.00		0.00		0.00	
DW statistic (or Durbin's h) [a]	1.37		-0.82		0.19		0.17	
LM test for autocorrelation (order 1)	0.03		0.34		0.81		0.83	
White's heteroscedasticity test	0.23		0.12		0.16		0.12	
ARCH test (1 lag)	0.64		0.92		0.98		0.99	
Normality test	0.18		0.04		0.10		0.10	
RESET test (with squares)	0.14		0.94		0.31		0.37	
CUSUM test	0.67		0.94		0.73		0.63	
QLR test	0.00		0.00		0.00		0.00	
QLR test break year	1979		1979		1978		1978	
Sample size	47		46		46		46	

Notes: *, ** and *** represent 10%, 5% and 1% significance levels, respectively. The numbers corresponding to the diagnostic tests are P-values. Source: Author's elaboration.

[a] At 5% significance level, the lower and upper critical values for a regression with two regressors and a sample size of 45(50) are 1.43(1.46) and 1.62 (1.63), respectively. These values for a regression with three regressors and a sample size of 45(50) are 1.38(1.42) and 1.67(1.67), respectively (Savin and White, 1977, p.1994). At 5% significance level, the critical values for the Durbin's h are -1.96 and 1.96 for the regressions with lagged dependent variables. The inferences are made with respect to these critical values.

[b] The p-value for this variable turned out to be exactly 0.1085. Since it is marginally significant at 10%, we included it in our calculations

The estimation of the coefficients of the productivity growth equation requires a special treatment since an increase in the productivity contemporaneously (or simultaneously) has a positive effect on the profit share at a given wage rate *w* (equal to total labor income *W* divided by total employment), as can be seen in the identity equation below:

$$h = 1 - \frac{w}{y} \tag{14}$$

This might lead to a reverse causality bias in the estimation of the parameter θ in Equation 10 if the contemporaneous value of the profit share is used in the regressions.[22] In order to solve (or alleviate) this problem, we tried two different methods. The first approach was testing some instrumental variables that do not directly influence productivity growth but determine the profit share. Since the functional income distribution is determined by the economic class struggle between workers and capitalists in the model, the most likely instruments are number of strikes, number (or percentage) of workers participating strikes, union density and bargaining coverage ratio of employees.[23] However, none of these potential instruments nor their combinations, with or without their lags, gave any significant results.

Consequently, we decided to use the first two lags of the profit share without including the contemporaneous variable in the estimation of the productivity growth equation. We estimated two sets of specifications for the two measures of the profit share. The first specification in each set includes the first lag of the profit share and the second one includes the first two lags. The estimations also employ the first lag of the dependent variable in order to correct the autocorrelation problem. The estimation results presented at Table 6 show that while the first lag of the profit share is not significant in any of the regressions, the second lag is significant and has the expected (negative) sign, which implies a positive value for the parameter θ. The findings indicate that an increase in the profit share by 1% leads to a 0.64 to 0.70% decline in the productivity growth rate in the short run, while the long run effect is a 0.40 to 0.43% decline. We also found that an increase in the capacity utilization rate by 1% increases the productivity growth rate by 0.17 to 0.21%. The QLR test gave indication of a structural break in 1977 or in 1979 in the productivity growth rate equation. Hein and Tarassow (2010) separately employed real wage rate and profit share as cost-push variables in their estimations of the productivity growth equation along with GDP growth rate, instead of capacity utilization rate. They found that a 1% increase in the wage rate led to 0.36% increase in the productivity growth, while a 1% increase in the profit share led to 0.33% decline in the US economy. They also found that a 1% increase in the GDP boosted the productivity growth rate by 0.11% and 0.39% in these two separate estimations,

[22] This point was not addressed by Kurt (2020) in his estimations on the Turkish economy, however, the contemporaneous effect of the profit share on productivity turned out to be insignificant in his findings.

[23] The number of strikes and the number of workers involved are provided by the Bureau of Labor Statistics (BLS, 2021), while the statistics on union density and bargaining coverage ratio by OECD and AIAS (2021).

respectively. However, their findings for the sub-period analysis for Germany, France, the Netherlands and Austria from 1960 to early 80s period point at an opposite effect that lies between the range of -0.67 to -0.15% for these countries.

Table 6

Estimation of the Productivity Growth Rate Equation for the Full Sample (1970-2017)

Dependent variable: $\Delta^2 lny$	Specifications							
	1		**2**		**1'**		**2'**	
Regressors	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio
Constant	0.00	0.17	0.00	0.51	0.00	0.32	0.00	0.76
$\Delta^2 lny(-1)$	-0.46***	-3.87	-0.60***	-4.80	-0.45***	-3.90	-0.61***	-4.70
$\Delta h(-1)$ (or $\Delta h_{fac}(-1)$)	-0.40	-1.07	-0.29	-0.76	-0.47	-1.30	-0.33	-0.88
$\Delta h(-2)$ (or $\Delta h_{fac}(-2)$)			-0.64**	-2.64			-0.70***	-2.86
Δu	0.17*	2.48	0.20***	3.00	0.17**	2.50	0.21***	2.92
Diagnostics								
R^2	0.26		0.32		0.27		0.34	
Adjusted R^2	0.21		0.25		0.22		0.28	
F-test	0.00		0.00		0.00		0.00	
Durbin's h [a]	0.51		1.02		0.52		1.29	
LM test for autocorrelation (order 1)	0.63		0.30		0.60		0.26	
White's heteroscedasticity test	0.61		0.86		0.44		0.77	
ARCH test (1 lag)	0.04		0.22		0.03		0.15	
Normality test	0.03		0.01		0.03		0.02	
RESET test (with squares)	0.18		0.76		0.14		0.80	
CUSUM test	0.39		0.17		0.30		0.26	
QLR test	0.00		0.00		0.03		0.00	
QLR test break year	1979		1979		1977		1979	
Sample size	46		45		46		45	

Notes: *, ** and *** represent 10%, 5% and 1% significance levels, respectively. The numbers corresponding to the diagnostic tests are P-values. The capital share measure employed in the first set of regressions (1 and 2) is h and it is h_{fac} in the second set (1' and 2'). Source: Author's elaboration.

[a] At 5% significance level, the critical values for the Durbin's h are -1.96 and 1.96 for the regressions with lagged dependent variables. The inferences are made with respect to these critical values.

We estimated the real effective exchange rate equation at two steps. The first set of regressions at gave very poor results in terms of overall fit and autocorrelation, however, the inclusion of the first two lags of the dependent and the independent variables improved the estimations significantly (See Table 7).

Table 7

Estimation of the Real Effective Exchange Rate Equation for the Full Sample (1970-2017)

Dependent variable: $\Delta lnREER$	Specifications							
	1		**2**		**1'**		**2'**	
Regressors	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio
Constant	0.00	0.14	0.00	0.61	0.00	0.19	0.01	0.67
$\Delta lnREER(-1)$			-0.29**	-2.60			-0.30**	-2.67
$\Delta lnREER(-2)$			-0.37***	-3.59			-0.37***	-3.51
Δh (or Δh_{fac})	-0.79	-0.59	-0.03	-0.03	-0.81	-0.63	-0.05	-0.04
$\Delta h(-1)$ (or $\Delta h_{fac}(-1)$)			0.39	0.31			0.16	0.13
$\Delta h(-2)$ (or $\Delta h_{fac}(-2)$)			-1.70*	-1.75			-1.63*	-1.82
Diagnostics								
R^2	0.01		0.18		0.01		0.18	
Adjusted R^2	-0.01		0.08		-0.01		0.08	
F-test	0.56		0.00		0.53		0.00	
DW statistic (or Durbin's h) [a]	2.37		-0.55		2.37		-0.48	
LM test for autocorrelation (order 1)	0.20		0.41		0.19		0.47	
White's heteroscedasticity test	0.73		0.89		0.67		0.92	
ARCH test (1 lag)	0.30		0.53		0.30		0.56	
Normality test	0.36		0.64		0.39		0.60	
RESET test (with squares)	0.27		0.26		0.29		0.29	
CUSUM test	0.60		0.81		0.63		0.69	
QLR test	0.96		0.00		1.00		0.00	
QLR test break year	1979		2010		1994		2010	
Sample size	47		45		47		45	

Notes: *, ** and *** represent 10%, 5% and 1% significance levels, respectively. The numbers corresponding to the diagnostic tests are P-values. The capital share measure employed in the first set of regressions (1 and 2) is h and it is h_{fac} in the second set (1' and 2'). Source: Author's elaboration.

[a] At 5% significance level, the lower and upper critical values for a regression with a single regressor and a sample size of 45(50) are 1.48(1.50) and 1.57(1.59), respectively (Savin and White, 1977, p.1994). At 5% significance level, the critical values for the Durbin's h are -1.96 and 1.96 for the regressions with lagged dependent variables. The inferences are made with respect to these critical values.

While the contemporaneous and first-lag effects of the profit share turned out to be insignificant, the second-lag effects are only significant at 10% with the expected

negative sign. The findings of the specifications 2' and 2 imply that a 1% increase in the profit share leads to 0.98 to 1.02% depreciation of the US dollar, respectively. Kurt (2020) found the corresponding effects ranging from 0.47 to 0.56% using different specifications and measures of capital income for Turkey.[24] The QLR test gave indications of a structural break in 2010 in both specifications of the exchange rate equation.

As noticed above, the QLR tests applied to the equations above pointed at structural break in years 1977, 1978, 1979, 2009 and 2010. This implies that we should either divide the sample into two around 2009-10 or at around 1977-79 and estimate the model parameters again. However, under both cases the shorter sub-period will have insufficient number of observations to conduct an econometric analysis. We opted for reconducting the analysis over the period 1979-2017; thus, we can exploit more recent data and the beginning of the sub-period almost coincides with the early years of the neoliberal capitalist era. In other words, the sub-sample analysis is an examination of the neoliberal period of the US economy. We followed the same procedure described above for the econometric analysis of this sub-period.[25] The summary of the results of these estimations are presented and the econometric findings for both samples are interpreted in the next sub-section.

5.4. Total effects and interpretation of findings

In this sub-section we synthetically present the estimated coefficients and implied long run effects and compute the effects of an increase in the profit share on the equilibrium rates of capacity utilization, capital accumulation and productivity growth under the demand and overall regimes for the full and sub samples, respectively (See the tables 8 and 9). As stated above, calculation of the multipliers that characterize the demand and overall regimes requires the stability condition in Equation 7 to be met under both regimes. An unstable demand regime occurs due to a stronger elasticity of capital accumulation rate with respect to capacity utilization rate (β), relative to workers' propensity to save (s_W), savings rate differential (s_Π - s_W) and elasticity of net exports rate with respect to capacity utilization rate (ϕ) at a given level of profit share (h or h_{fac}) and capital-potential output ratio (v). If the stability condition $[s_W+(s_\Pi - s_W)h]\frac{1}{v} - \beta+\phi>0$ is not met, categorization of the demand regime as wage- or profit-led is irrelevant. The same applies to the characterization of the overall regime, which requires the satisfaction

[24] Since the profit share is not the only determinant of exchange rate in the model, in order to provide a better explanation of the relation between exchange rate and functional income distribution, monetary policy and institutional issues should also be integrated into this analysis in future studies.

[25] The results of the econometric analysis are not reported in tables due to space limitations, but all relevant tests and tables are available upon request.

of the stability condition $[s_W+(s_\Pi - s_W)h]\frac{1}{v} - \beta+\phi - \rho\omega>0$. Even if the former stability condition is met, that of the latter might not be met due to integration of endogenous productivity growth into the model, which renders the stability condition more difficult to be satisfied. Such a case was the finding of Kurt (2020) on the Turkish economy, whose demand regime turned out to be wage-led but the overall regime unstable. Our findings on the US economy show that not only the overall regime, but also the demand regime is unstable.

Table 8

Estimated Coefficients, Stability Conditions for the Demand and Overall Regimes, and the Relevant Multipliers Calculated Using Different Configurations Of Coefficients in Different Specifications for the Full Sample (1970-2017)

	h				h_{fac}			
Configurations / Coefficients	1	2	3	4	1'	2'	3'	4'
s_W	0 (S_3)	0 (S_3)	0 (S_3)	0 (S_3)	0 ($S_{3'}$)	0 ($S_{3'}$)	0 ($S_{3'}$)	0 ($S_{3'}$)
s_P	0.42 (S_3)	0.42 (S_3)	0.42 (S_3)	0.42 (S_3)	0.40 ($S_{3'}$)	0.40 ($S_{3'}$)	0.40 ($S_{3'}$)	0.40 ($S_{3'}$)
β	0.11 (0.15) (S_3)	0.11 (0.15) (S_3)	0.11 (0.15) (S_3)	0.11 (0.15) (S_3)	0.11 (0.15) ($S_{3'}$)	0.11 (0.15) ($S_{3'}$)	0.11 (0.15) ($S_{3'}$)	0.11 (0.15) ($S_{3'}$)
τ	0 (S_3)	0 (S_3)	0 (S_3)	0 (S_3)	0 ($S_{3'}$)	0 ($S_{3'}$)	0 ($S_{3'}$)	0 ($S_{3'}$)
ω	0.07 (0.10) (S_3)	0.07 (0.10) (S_3)	0.07 (0.10) (S_3)	0.07 (0.10) (S_3)	0.07 (0.09) ($S_{3'}$)	0.07 (0.09) ($S_{3'}$)	0.07 (0.09) ($S_{3'}$)	0.07 (0.09) ($S_{3'}$)
ψ	0 (S_2)	NA	0 (S_2)	NA	0 (S_2)	NA	0 (S_2)	NA
λ	NA	0.07 (0.11) (S_3)	NA	0.07 (0.11) (S_3)	NA	0.07 (0.11) ($S_{3'}$)	NA	0.07 (0.11) ($S_{3'}$)
ϕ[a]	0.01 (0.02) (S_2)	0.01 (0.01) (S_3)	0.01 (0.02) (S_2)	0.01 (0.01) (S_3)	0.01 (0.02) (S_2)	0.01 (0.01) ($S_{3'}$)	0.01 (0.02) (S_2)	0.01 (0.01) ($S_{3'}$)
ρ	0.17 (0.11) (S_1)	0.17 (0.11) (S_1)	0.20 (0.12) (S_2)	0.20 (0.12) (S_2)	0.17 (0.12) (S_1)	0.17 (0.12) (S_1)	0.21 (0.13) ($S_{2'}$)	0.21 (0.13) ($S_{2'}$)
θ	0 (S_1)	0 (S_1)	0.64 (0.40) (S_2)	0.64 (0.40) (S_2)	0 (S_1)	0 (S_1)	0.70 (0.43) ($S_{2'}$)	0.70 (0.43) ($S_{2'}$)
γ	-1.70 (-1.02) (S_2)	NA	-1.70 (-1.02) (S_2)	NA	-1.63 (-0.98) ($S_{2'}$)	NA	-1.63 (-0.98) ($S_{2'}$)	NA
$[s_W+(s_{II}-s_W)h]\frac{l}{v}-\beta+\phi$	-0.09	-0.09	-0.09	-0.09	-0.09	-0.10	-0.09	-0.10
$\partial u^*/\partial h$	0.86	-0.40	0.86	-0.40	0.78	-0.38	0.78	-0.38
$\partial g^*/\partial h$	0.13	-0.06	0.13	-0.06	0.11	-0.06	0.11	-0.06
$[s_W+(s_{II}-s_W)h]\frac{l}{v}-\beta+\phi-\rho\omega$	-0.10	-0.11	-0.10	-0.11	-0.11	-0.11	-0.11	-0.11
$\partial u^{**}/\partial h$	0.77	-0.36	1.14	0.00	0.70	-0.34	1.07	0.03
$\partial g^{**}/\partial h$	0.12	-0.15	0.14	-0.13	0.11	-0.14	0.13	-0.12
$\partial \hat{y}^*/\partial h$	0.13	-0.06	-0.20	-0.43	0.12	-0.06	-0.24	-0.46

Notes: The numbers before the first parentheses are the short-run effects and the ones inside the parentheses are the long-run effects that are estimated through the equations that include a lagged dependent variable. The latter are used in the calculations. For the insignificant coefficients these two effects are identical, i.e., zero. S_i stands for the i'th specification of the related equation through which the coefficient is estimated. The coefficients estimated through the same specification are used together in the calculations. The coefficients are sorted in order of appearance in Table 2. NA stands for "Not Applicable".

[a] Since the first lag of the difference of the capacity utilization rate is also used in the estimation of this coefficient, the reported value before the parenthesis is the sum of the contemporaneous and lagged effects.

Table 9

Estimated coefficients, stability conditions for the demand and overall regimes, and the relevant multipliers calculated using different configurations of coefficients in different specifications for the sub-sample (1979-2017)

	H				h_{fac}			
Configurations / Coefficients	1	2	3	4	1'	2'	3'	4'
s_W	0.00 (S_2)	0.00 (S_2)	0.00 (S_2)	0.00 (S_2)	0.00 ($S_{2'}$)	0.00 ($S_{2'}$)	0.00 ($S_{2'}$)	0.00 ($S_{2'}$)
s_P	0.54 (S_2)	0.54 (S_2)	0.54 (S_2)	0.54 (S_2)	0.49 ($S_{2'}$)	0.49 ($S_{2'}$)	0.49 ($S_{2'}$)	0.49 ($S_{2'}$)
β	0.11 (0.17) (S_2)	0.11 (0.17) (S_2)	0.11 (0.17) (S_2)	0.11 (0.17) (S_2)	0.11 (0.17) ($S_{2'}$)	0.11 (0.17) ($S_{2'}$)	0.11 (0.17) ($S_{2'}$)	0.11 (0.17) ($S_{2'}$)
τ	0 (S_2)	0 (S_2)	0 (S_2)	0 (S_2)	0 ($S_{2'}$)	0 ($S_{2'}$)	0 ($S_{2'}$)	0 ($S_{2'}$)
ω	0.09 (0.14) (S_2)	0.09 (0.14) (S_2)	0.09 (0.14) (S_2)	0.09 (0.14) (S_2)	0.09 (0.13) ($S_{2'}$)	0.09 (0.13) ($S_{2'}$)	0.09 (0.13) ($S_{2'}$)	0.09 (0.13) ($S_{2'}$)
ψ	0.01 (0.01) (S_2)	NA	0.01 (0.01) (S_2)	NA	0.01 (0.01) (S_2)	NA	0.01 (0.01) (S_2)	NA
λ	NA	0 (S_3)	NA	0 (S_3)	NA	0 ($S_{3'}$)	NA	0 ($S_{3'}$)
ϕ[a]	0.03 (0.05) (S_2)	0.01 (0.02) (S_3)	0.03 (0.05) (S_2)	0.01 (0.02) (S_3)	0.03 (0.05) (S_2)	0.01 (0.02) ($S_{3'}$)	0.03 (0.05) (S_2)	0.01 (0.02) ($S_{3'}$)
ρ	0.20 (0.14) (S_1)	0.20 (0.14) (S_1)	0.20 (0.13) (S_2)	0.20 (0.13) (S_2)	0.20 (0.14) ($S_{1'}$)	0.20 (0.14) ($S_{1'}$)	0.21 (0.14) ($S_{2'}$)	0.21 (0.14) ($S_{2'}$)
θ	0 (S_1)	0 (S_1)	0.47 (0.31) (S_2)	0.47 (0.31) (S_2)	0.57 (0.40) ($S_{1'}$)	0.57 (0.40) ($S_{1'}$)	0.47 (0.31) ($S_{2'}$)	0.47 (0.31) ($S_{2'}$)
γ	0 (S_1)	NA	0 (S_1)	NA	0 ($S_{1'}$)	NA	0 ($S_{1'}$)	NA
$[s_W+(s_\Pi - s_W)h]\frac{1}{v} - \beta+\phi$	-0.07	-0.09	-0.07	-0.09	-0.08	-0.10	-0.08	-0.10
$\partial u^*/\partial h$	1.40	1.05	1.40	1.05	1.13	0.87	1.13	0.87
$\partial g^*/\partial h$	0.23	0.18	0.23	0.18	0.19	0.15	0.19	0.15
$[s_W+(s_\Pi - s_W)h]\frac{1}{v} - \beta+\phi - \rho\omega$	-0.09	-0.11	-0.09	-0.11	-0.10	-0.12	-0.10	-0.12
$\partial u^{**}/\partial h$	1.10	0.87	1.59	1.25	1.45	1.17	1.34	1.08
$\partial g^{**}/\partial h$	0.21	0.16	0.25	0.19	0.22	0.16	0.21	0.16
$\partial \hat{y}^*/\partial h$	0.22	0.17	-0.02	-0.08	-0.13	-0.19	-0.06	-0.11

Notes: The numbers before the first parentheses are the short-run effects and the ones inside the parentheses are the long-run effects that are estimated through the equations that include a lagged dependent variable. The latter are used in the calculations. For the insignificant coefficients these two effects are identical, i.e., zero. S_i stands for the i'th specification of the related equation through which the coefficient is estimated. The coefficients estimated through the same specification are used together in the calculations. The coefficients are sorted in order of appearance in Table 2. NA stands for "Not Applicable".

[a] Since the first lag of the difference of the capacity utilization rate is also used in the estimation of this coefficient, the reported value before the parenthesis is the sum of the contemporaneous and lagged effects.

The findings show that the stability conditions are not met in any of the estimations based on different profit share measures or samples. The overall regime turns more unstable due to productivity growth effect. Lavoie (2014), drawing from Boyer (1988), asserts that structurally unstable accumulation regimes might emerge and trigger big depressions in the economy (Kurt, 2020). This explanation is in line with our findings on the US economy.

6. Discussion and conclusion

We conducted in this study an econometric analysis on the US economy through a post-Kaleckian model that integrates productivity growth and capital accumulation in order to characterize the prevailing demand and overall regimes in this economy. For this purpose, we applied this analysis to both a full sample (1970-2017) and a sub-sample (1979-2017) by employing two different measures of functional income distribution and at least two sets of specifications for each model equation. Both the demand and overall regimes turned out to be unstable within the framework of the model.

While some a priori expectations on the model parameters are not met, the findings of our econometric analysis shed light at some important relations among macroeconomic variables in the US economy. Our estimations confirm the savings differential between the capital and the labor, the latter consuming its total income. The capital accumulation is positively influenced by increments in the rates of productivity growth and capacity utilization; however, functional income distribution does not seem to have an impact on it. The productivity growth accelerates when the capacity utilization rate increases. The lagged effect of the profit share on the capacity utilization rate is negative, however, if present, the use of appropriate and significant instruments in further studies might improve the estimation of the productivity growth equation. Higher capacity utilization rates lead to a decline in net exports; however, the real exchange rate turned out to be an insignificant factor for the latter. Increased profit share seems to depreciate the US dollar; however, this equation deserves to be studied more extensively in further research.

The combined effects through the estimated parameters and the resulting configurations suggest that both the demand and overall regimes are unstable for the full and sub samples in the US economy. It might be argued that, in the present model, the existence of instability implies that a shock on the functional income distribution leads to an infinite increase (or decrease) in the accumulation rate through capacity utilization. However, though not integrated into this model, there exists some other mechanisms which are claimed to prevent such behavior of an

economy. As discussed above, the government intervention or supply shortages might dampen the values of the variables and stabilize the system during an expansion if they are sufficiently strong (Stockhammer and Michell, 2016). However, these mechanisms have to be (explicitly) integrated into the present model and the relevant parameters be estimated in order to draw more accurate conclusions.

According to our results, the instability in the US economy does not only emerge due to productivity growth, which is an indispensable engine of the capitalism, and even the demand regime that is theoretically free of the latter is unstable in this economy. This finding renders irrelevant the discussion on the application of pro-labor or pro-capital policies in the US due to the inherent instability of the economy and points at the instability of capitalism and the mechanisms that are proposed to tame it. The debate around the struggle for higher wage rates cannot, *per se*, lead the way out of an inherently unstable system.

Appendix

Table A1

Data and sources

Variable	Explanation	Source	Note
S/Y	Gross domestic savings percentage of GDP	WDI	
h	Capital income share as percentage of GDP at market prices	AMECO	Calculated by subtracting the adjusted wage share in total economy as percentage of GDP at current prices (Compensation per employee as percentage of GDP at market prices per person employed) from 1.
h_{fac}	Capital income share as percentage of GDP at current factor cost	AMECO	Calculated by subtracting the adjusted wage share in total economy as percentage of GDP at current factor cost (Compensation per employee as percentage of GDP at factor cost per person employed) from 1.
g	Capital accumulation rate, the ratio of gross capital formation to capital stock	WDI and PWT 9.1	Calculated by multiplying the percentage of gross capital formation in GDP from the World Bank's WDI database by the real GDP at constant 2011 national prices, the *rgdpna* variable from the PWT 9.1. The capital stock is at constant 2011 national prices, the *rnna* variable from the PWT 9.1.
u	Rate of capacity utilization in manufacturing sector	MEI	Obtained from business tendency surveys.
y	Productivity	PWT 9.1	Calculated by dividing *rgdpna* by *emp* variable (number of persons engaged) from the PWT 9.1 database.
REER	Real effective exchange rate	Bruegel Datasets	Based on 66 trade partners of the US. An increase corresponds to appreciation of the US dollar.
b	Net export rate, the ratio of net exports to capital stock	WDI and PWT 9.1	Calculated by the difference between the share of exports of goods and services in GDP and that of imports of goods and services in GDP, both obtained from the World Bank WDI database, and multiplying it by the *rgdpna* variable, defined above. The capital stock is at constant 2011 national prices, the *rnna* variable, defined above.
v	Capital stock to potential output ratio	MEI and PWT 9.1	Capital stock is the *rnna* variable and the potential output is calculated by dividing the *rgdpna* variable by the rate of capacity utilization.

Note: All the data are annual and cover the period 1970-2017 and downloaded in July 2020. They were retrieved from European Commission's (2020) Directorate General for Economic and Financial Affairs' AMECO (Annual macro-economic database of the European Commission) database, OECD's (2020) MEI (Main Economic Indicators) database, PWT 9.1 (Penn World Table version 9.1) database, prepared by Feenstra, Inklaar and Timmer (2015), World Bank's (2020) WDI (World Development Indicators) database and Bruegel Datasets, prepared by Darvas (2012).

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Özet

ABD ekonomisinin kararsız yapısı: Gelirin fonksiyonel dağılımı, kapasite kullanımı, sermaye birikimi ve üretkenlik artışının Post-kaleckigil ekonometrik bir analizi

Bu makale ABD ekonomisinin talep ve "genel" rejimlerini post-Kaleckigil bir teorik çerçeveden analiz etmektedir. Bu amaçla gelirin fonksiyonel dağılımı, kapasite kullanımı, sermaye birikimi ve üretkenlik artışı arasındaki etkileşimleri dikkate alan bir model kullandık. Hein ve Tarassow tarafından önerilen bu model bir ekonominin talep rejiminin ücret-çekişli, kâr-çekişli veya "ara-form"; üretkenlik artışını içselleştiren genel rejiminin ise daraltıcı, genişleyici veya "ara-form" olabileceğini varsaymaktadır. Model aynı zamanda ABD ekonomisinin tam (1970-2017) ve alt (1979-2017) örneklem dönemleri üzerine yaptığımız ekonometrik analizimizin de bulguları olan kararsız talep ve genel rejimlerine de imkân vermektedir. Bu makale, ABD ekonomisini talep ve genel rejimleri birlikte tanımlayan bir model vasıtasıyla inceleyen ilk ampirik çalışma olarak literatüre katkıda bulunmaktadır.

Anahtar kelimeler: sermaye birikimi, gelirin fonksiyonel dağılımı, büyüme, post-Keynesyen iktisat, üretkenlik, ABD

JEL kodları: E12; E20; E21; E22; E25; E61