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European Economies in Light of the Keynesian cum Kaldorian Macroeconomic Distribution Theory: A Theoretical and Empirical Investigation[1]

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Abstract: In this paper, we present a combination of Keynesian and Kaldorian macroeconomic distribution theory. After a short literature review, we proceed to assessing the actual relevance of the original contributions of Keynes and Kaldor to the theory of macroeconomic income distribution. Thereafter, we put a combination of both approaches under an empirical test. An important outcome of our theoretical research is that the (total) savings ratio is an endogenous variable which is itself (among other factors which determine its equilibrium value) a positive function of the profit quota. In the empirical section of the paper, we first present the development of the saving quotas, of the profit quotas and of the total tax quotas among 8 European countries between 1999 and 2014. This time- period covers both phases of moderation (1999-2007) and of great economic crisis (2008-2014) in Europe. Furthermore, we conduct a linear regression analysis for the countries mentioned and find empirical support for a savings function in the vein of Nicholas Kaldor and of John Maynard Keynes.

Keywords: Keynesian and Kaldorian Approaches to income distribution; Income distribution in European economies; Empirical estimates of savings function

JEL Classifications: D30, D33, D63

[1] We dedicate this paper to Gerold Blümle, Alois Oberhauser und Bernhard Külp. The authors presented it for the first time at the 83rd IAES conference (London: 14-17 March, 2018). We thank Reinhard Neck, Thomas Gries, Helena Sanz-Morales, and other participants of the session on "Macroeconomic Theory and Policy II" for their helpful comments. We also thank anonymous referees for inspired suggestions.

1. Introduction

What is the main focus of this paper? A starting point of the following exposition is the so-called second Keynesian equation (Blümle 1975, p.153). This approach, as is well known, can be considered to be a circular setting to determine the distribution of factor incomes. It should, however, be interpreted with great caution. Without making additional sensible assumptions, the second Keynesian equation (see Eatwell 1983, Rotheim 1997, Cameron 1999) easily turns into a mere tautology. Such assumptions, however, should be made explicitly in order to avoid what Karl Popper (1935) called the "immunization effect" against empircal validation/falsification. What we want to show in the following is **in the first place** that a sound combination of the first and the second Keynesian equation with Kaldorian savings functions for wage and profit earners will enable us to formulate an integrated model for the savings and the profit quota. As a result, it will be clear that, without neglecting existing interdependencies, income distribution becomes a determining variable for the size of the overall savings quota.

Based on this insight, we will **secondly analyze empirically** in detail some selected countries from the Eurozone. On the one hand, the so-called "GIIPS" countries (Greece, Ireland, Italy, Portugal and Spain) [2] which are at the center of the crisis since 2010 and, on the other hand, (a part of [3]) the so-called "GANL" respectively "GLNF" countries (Germany, Austria, Luxembourg, Netherlands, Finland) [4]. We close our findings with some conclusions and a scope for future research.

2. The Economic Relevance of the Wage and of the Profit Quota

Wage and profit quota have both lost – happily – their almost „clash of classes" connotation. The latter was very much present in the old West Germany of the 1960s and 1970s. From an historical perspective, it is interesting to see that the (corrected) wage quota increased remarkably between 1960 and 1980 from 60.1 percent to 75.8 percent. Taking into account the occurrence of two severe oil price crises in the 1970s, this is a significant hint, which points at the fact that wage policy in the oil importing countries obviously did not care about the implied deterioration in the terms of trade. In Germany, for example, unemployment raised markedly towards the end of the Schmidt-Genscher administration in 1982. This result is linked to the course of wage policy, among other things. Ever since then, the wage quota has revealed to be rather volatile around (that is above and below) a level of about 70%. What is todays relevance of the wage quota?

In the **first** place, a certain level of the profit quota may be regarded as an important signal for the relative attractiveness of income stemming from entrepreneurial activity in an economy. Its relative size should have an impact on the willingness of economic agents to endeavor into the world of self-ruled work in a market economy. The wage quota is a quite simple formula and it is seductive as well. In the "battle of distribution" which is softened in economic systems such as the "Soziale Marktwirtschaft" by the interventions of the government (taxes, transfers, supply of public goods), it is likely that the wage quota possesses a strategic function. This function resembles to the strategic role of the unemployment rate within wage negotiations (Phillips curve). A too high wage quota (a too low profit quota), on the one hand, may have a dampening effect on the propensity to invest of entrepreneurs. Hence, consequently, it will not be beneficial for economic growth. On the

[2] See. Sinn/Wollmershäuser 2012.

[3] It was impossible to gather a complete and consistent data set of time series for both groups of countries.

[4] See. Sinn/Wollmershäuser 2012.

other hand, a too low wage quota (a too high profit quota) may put (Blümle 1975, S.153) into danger social piece in a society and, hence, be detrimental for economic growth, too. In so far, it is plausible to assume the existence of an interval: when the wage quota, respective, when the profit quota are located within such an interval, this would indicate a growth-enhancing atmosphere in the economy.

Second: The profit quota can be taken to be a workable indicator for the business cycle, moving in parallel, grosso modo, that is, it will decrease in the upswing/boom and it will increase in the downswing/recession.

Third: The wage quota must not be over-interpreted. For the social cohesion in a society, one may infer that the concentration of personal incomes is slightly more important than the profit- respectively the wage quota. Looking at factor incomes and their relative share overlooks an important fact in a globalized labor market: high bonus payments given to CEO's are formally payments to engaged employees (Blümle 2016, p.1) and as such contribute to the sum of wages and not to the sum of profits. This is one reason for that the majority of actual debates which focus the distributional conflict, deal with personal incomes and personal wealth. However, make no mistake: this does not put into danger the general importance of any two-class perspective of distribution. When we look at the favorited view of many researchers who argue against a "too high" dispersion of personal incomes, we should not overlook both the theoretical and the empirical hints, which point at the risk of a "too low" dispersion of wages and profits. If income is distributed too equally, this fact may hinder the forces of dynamic growth to evolve satisfactorily. A too active government policy of taxation and transfers may have the negative side effect of leveling off the incentives of the productive economic agents to reap the benefits of their talents (Sell 2015, p.224 ff.).

3. The Second Keynesian Equation: A Brief Survey And an Assessment of Its Actual Relevance

The so-called second Keynesian equation has its origins in the "Treatise" (1930) and not in the "General Theory" (1936). Therefore, it does not yet include the famous "fundamental psychological law" of the Keynesian consumption function. In essence, it is a rather trivial combination of the enhanced first Keynesian equation (beyond private savings and private net investment, total public deficits and net capital exports (imports) are being considered) with mere definitions. These apply to the savings of entrepreneurs (out of net profits) and to the savings of employees (out of net income/net salaries or their "disposable income" for the matter).

$$S = I^{pr} + D^{gov} + (X - IM) \tag{1}$$

$$S_p = Y_p^n - C_p \tag{2}$$

$$S_w = Y_w^n - C_w \tag{3}$$

Given the fact that saving is only feasible out of disposable income, the sum of net profits and of the net wage incomes is not identical with national income (ni). Rather, this sum equals the difference between national income (Y) and direct taxes (T_{dir}). Alternatively, we may use the net national product (NNP), if we subtract total tax revenues (T) from Y. However, let us go systematically: Inserting equations (2) and (3) into equation (1) yields the so-called second Keynesian equation:

$$Y_p^n = C_p - S_w + I^{pr} + D^{gov} + (X - IM) \tag{4}$$

This equation can also presented making use of quotas:

$$\frac{Y_p^n}{Y} = \frac{C_p - S_w + I^{pr} + D^{gov} + (X - IM)}{Y} \tag{5}$$

However, it should be clear whether and if so, which interdependencies exist between the single variables: "An increase of the investment quota has an effect on national income as well as on consumption. Hence, savings of classes will be affected, also. Therefore, one cannot say that only the profit quota changes when the investment quota changes (Blümle 1975, p.154). It is furthermore ex-ante unclear how an increase in the wage sum will result overall in private investment, in the balance of the current account, or in the public sector's deficit. How all of this will fight back on net profits is a matter of speculation, even if one neglects the consumption of the profit-earning households (Blümle 1975, p.154).

Alois Oberhauser, who was familiar with the second Keynesian equation both in teaching and in research for decades, chose a slightly different approach. He had a look at the empirical observable changes in the distribution relations (between wages and profits) in the years 1980 through 1986 (Oberhauser 1988, p.349). "The strong rise of the profit quota by 5.3 percentage points … can be attributed to the increase of the balance of the current account quota by 5.8 percent, although unions had been fighting this development. The private investment quota has not been reduced, rather it recorded an increase, too. Hence, the wage quota had to fall accordingly. Higher private savings, which were necessary for the improvement in the balance of the current account, were enabled, hence, by a change of income distribution in favor of profits (ibid, p.349). One may calculate, therefore, that changes in private investment, in the government's deficit, in the consumption of entrepreneurs and in the savings of employees accounted for -0.5 percent of GDP.

This way of proceeding is legitimate, even if one considers that the second Keynesian equation "per se" – something, which also Oberhauser had to acknowledge – is far away from providing us with a full theory of macroeconomic income distribution (see Oberhauser 1988, p.349). We may conclude, hence, that the second Keynesian equation provides important insights into circular "mechanics" of macroeconomic income distribution, but needs to be complemented by a theory, which "explains" economic behavior, such as savings and consumption. Nicholas Kaldor (1955) for example, makes such a theory available.

4. Complementing the 2nd Keynesian Equation with Insights of Nicholas Kaldor

Nicholas Kaldor (1955) recognized the problem with the second Keynesian equation early and, therefore, he introduced explicit assumptions about the savings behavior of entrepreneurs and workers/employees (see O'Connell 1987, Skott 1989, Thompson Araújo 1995, Park 2001 and Park 2004). Notice that, as opposed to the later Keynes of the General Theory, he does not include a term for "autonomous consumption". This term, as is well known, has proven to be crucial for the prediction of a secular fall in the average rate of consumption.

$$S_p = s_p Y_p^n \tag{6}$$

$$S_w = s_w Y_w^n \tag{7}$$

$$S = S_w + S_p = s_p Y_p^n + s_w Y_w^n \tag{8}$$

From here, there are only two steps more necessary (see Külp 1994) in order to detect that, given the class-specific savings ratios, the overall savings ratio is a positive function of the profit quota:

$$\frac{S}{Y} = s_p \frac{Y_p^n}{Y} + s_w \frac{Y_w^n}{Y} \tag{9}$$

$$\frac{S}{Y} = \frac{Y_p^n}{Y}\left[S_p - S_w\right] + S_w\left(1 - \frac{T}{Y}\right) \text{ for Y = net national product} \tag{10}$$

where T is the total taxes.

$$1 = \frac{Y_p^n}{Y} + \frac{Y_w^n}{Y} + \frac{T}{Y} \text{ with Y = net national product} \tag{11}$$

Inserting these type of savings functions into the second Keynesian equation (in its quota version), yields – after some easy algebra – the following result:

$$\frac{Y_p^n}{Y} = \frac{1}{S_p - S_w}\left[\frac{I^{pr}}{Y} + \frac{D^{gov}}{Y} + \frac{(X-IM)}{Y} - S_w\left(1 - \frac{T}{Y}\right)\right] \text{ for Y = net national product} \tag{12}$$

Notice that equations (12) is somehow remarkable in the following sense: on their respective right side, they include not less than three heavily disputed policy variables of actual European economic policy: in the *first* place, the private net investment quota which stands for an important part of the total investment quota. The latter, in turn, is said to be an important vehicle for economic growth. Both the EU commission and recent German ministers for economic policy, such as Sigmar Gabriel and Brigitte Zypries, maintain that the investment quota is a strategic variable for the competitiveness of the EU in a globalized world. *Second*: the aggregate deficit quota (over all public entities) is under scrutiny of the EU, being at the core of the European stability and growth pact.[5] *Third*: The EU commission monitors since some time the development of the balance of the current account quota. There is a ceiling value of 6 % of GDP (calculated as an average over three years). Its intention is to "control" the balance of payments disequilibria within the Eurozone.

If we have a look at the term before the bracket on the right hand side of equations (14) and (15) respectively, we identify obviously a multiplier of profit quotas. A small exercise will illuminate its meaning: assume, the savings ratio of profit earners equals 0.3, the respective ratio for wage earners 0.05. With these numbers, the multiplier of the profit quota amounts to 4. The expression

$$-\frac{S_w\left(1-\frac{T_{dir}}{Y}\right)}{S_p - S_w} \text{ or } -\frac{S_w\left(1-\frac{T}{Y}\right)}{S_p - S_w} \tag{13}$$

stands for another multiplier of the profit quota: it asserts that the profit quota will increase, whenever the government raises the tax quota in order to spend more, at a given and constant deficit quota. Furthermore, one realizes that (14) represents Kaldor's famous formula for the profit quota with the modifications that Kaldor's result is confined to the closed economy without a government deficit and it regards the gross and not the net profits (see Blümle 1975, p.161).

$$\frac{Y_p^n}{Y} = \frac{I^{pr}/Y - S_w\left(1-\frac{T}{Y}\right)}{S_p - S_w} \text{ for Y = net national product} \tag{14}$$

[5] In the meantime, however, we had to learn that even the most impressive violations of the implied rules of the stability and growth pact did not lead to any significant sanctions for the countries in concern. See, for example the cases of Spain and Portugal in the years 2015 and 2016.

One should bear in mind, however, that most researchers (see Külp, 1994) in our field make two further assumptions, which apply to the two savings ratios here at stake[6]:

$$s_p \neq s_w;\ s_p > s_w \tag{15}$$

Combining equations (10) and (12) into a graphical presentation helps us to identify the intersection of both functions and the equilibrium values for the savings ratio and the profit quota. Both are, so to say, determined simultaneously. See **Figure 1**. It turns out that the overall savings ratio is definitely an endogenous variable, something which is familiar to us from modern or likewise "new growth theory".

Therefore, it seems to be a rather good approximation to reality when Alois Oberhauser (1988, p.349) states that it is not the ex-ante savings of households which decides on the size of the sum of private investment, government deficits and the balance of the current account. Rather, savings will adjust to changes in income and in the income distribution as the profit quota represents it. The latter, in turn, changes in response to changes in private investment, the public deficit and the balance of the current account (ibid.).

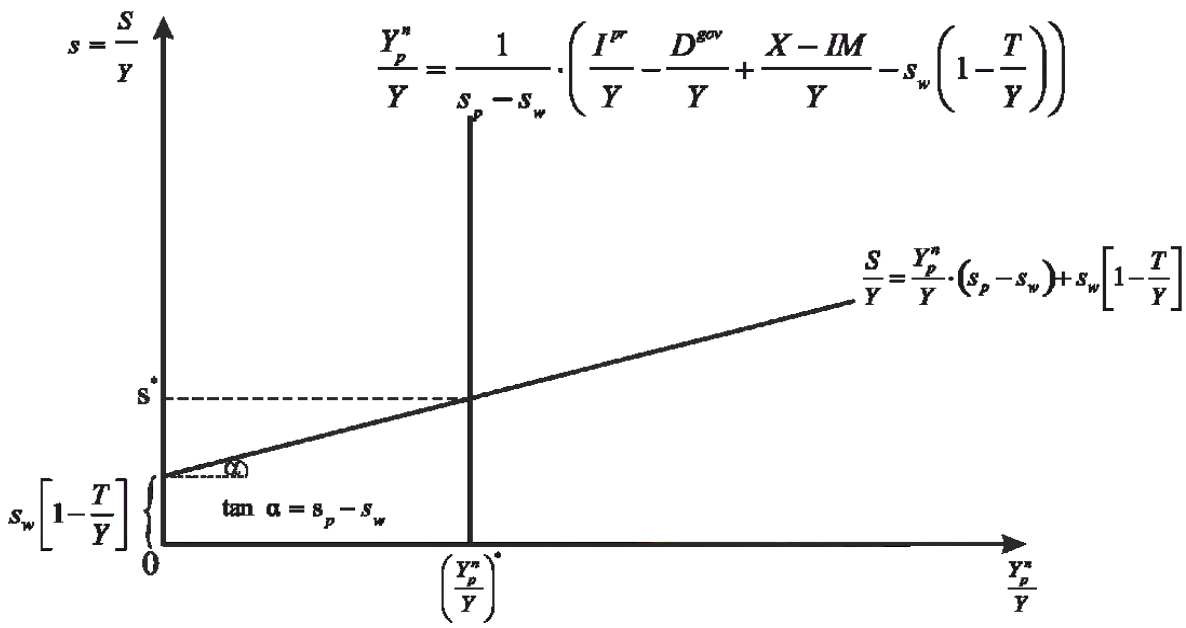

Figure 1. The equilibrium savings ratio
Source: Efforts by authors

The famous adjustment to imbalances between ex-ante savings and investment - which, in pure Keynesian terms, is organized by the occurrence of (positive or negative) unplanned savings or investment - is now modified: if ex-ante investment (savings) exceeds ex-ante savings (investment), income distribution will change in favor of profits (wages) and to the detriment of wages (profits). As a result, the new income distribution boosts (depresses) savings so that a new balance between savings and investment is achieved.

[6] $S_p > s_w$, however, is not a necessary condition for the equilibrium of the model. It implies that the investment quota falls behind the savings ratio of entrepreneurs. It remains a necessary stability condition for the model, though. I owe this observation to Gerold Blümle.

When assessing Kaldor's contribution in light of the changes in the production processes, of the progress in the service sector and of the technologically advanced globalized world, is his approach still valid to explain the profit quota? A recent and significant body of literature captures many of these effects. For example: Autor, *et al*. (2017) found that: "If globalization or technological changes advantage the most productive firms in each industry, product market concentration will rise as industries become increasingly dominated by superstar firms with high profits and a low share of labor in firm value-added and sales. As the importance of superstar firms increases, the aggregate labor share will tend to fall." (p.1). It is obvious that this modern approach to market imperfections is perfectly compatible with Kaldor. The main "conduit" in his model is the investment quota, and one can suspect that superstar firms are preferably capable to vary/raise the investment quota. Furthermore, market imperfections are characteristic for GIIPS countries.

5. An Empirical Investigation of Savings Functions for European Countries (1999-2014)

In the following, we want to test empirically the savings function as depicted in **Figure 1**. As we have seen above, we assumed a linear relationship between the savings ratio (dependent variable) and the profit quota (independent variable):

$$\begin{aligned} &\frac{S}{Y} = a\frac{Y_p^n}{Y} + b(1-\frac{T}{Y}) + \varepsilon;\ a, b, c \geq 0, \text{ with :} \\ &a = c - b = s_p - s_w;\ b = s_w \end{aligned} \tag{16}$$

In **Table 1**, we show, before we proceed to the empirical estimation work, the descriptive development of the savings ratios for selected European countries between 1999 and 2014:

Table 1. Savings ratios for selected European countries (1999-2014)

Year	Germany	Greece	Ireland	Italy	Netherlands	Austria	Portugal	Spain
1999	7.49%	8.62%	10.73%	7.32%	14.49%	10.83%	6.75%	9.39%
2000	6.91%	5.24%	9.43%	7.64%	13.62%	11.11%	4.64%	8.65%
2001	8.35%	5.66%	11.51%	8.54%	12.87%	8.25%	5.86%	7.92%
2002	9.13%	4.30%	12.69%	8.70%	13.17%	11.06%	4.55%	8.14%
2003	8.45%	7.10%	13.80%	9.10%	14.94%	10.98%	4.20%	8.98%
2004	11.20%	9.09%	13.28%	9.03%	15.74%	10.93%	4.32%	6.84%
2005	10.50%	4.63%	12.67%	8.26%	14.16%	11.65%	2.65%	4.57%
2006	11.24%	6.79%	10.20%	6.54%	16.23%	13.33%	0.01%	2.78%
2007	11.66%	4.21%	8.63%	5.56%	16.69%	13.73%	-0.46%	1.60%
2008	9.91%	2.15%	9.56%	4.51%	12.96%	13.87%	-3.05%	6.95%
2009	9.19%	3.94%	12.94%	4.83%	16.72%	12.26%	2.52%	13.15%
2010	11.61%	0.84%	15.32%	3.34%	17.51%	13.41%	1.99%	11.03%
2011	11.37%	-1.00%	15.11%	3.23%	18.99%	12.11%	2.91%	10.36%
2012	9.34%	-3.03%	14.64%	1.44%	18.53%	11.00%	3.51%	10.17%
2013	8.99%	-7.15%	16.64%	2.60%	16.62%	10.29%	4.47%	11.69%
2014	9.84%	-5.50%	16.65%	2.92%	14.91%	8.69%	3.54%	11.16%

Source: Own calculations from Eurostat (nasa_10_nf_tr, naida_10_gdp und bop_c6_q) (2017)

What are main findings? Since the beginning of the Eurozone crisis in 2010, the group of the "GIIPS" shows some sort of a pathological evolution of the savings ratio: either it drops significantly (Greece, Italy) or it rises to an unusual extent (Ireland, Spain) or it records an extreme volatility (Portugal). None of these "trends" are observable among "stable GNA countries" (Germany, Netherlands, Austria).

In **Table 2**, we reproduce the historical development of the profit quotas in the same selection of European countries between 1999 and 2014. What are main findings? First, one can see that the profit quota seems on average higher in the crisis (GIIPS) than in the stable countries (GNA) of the Eurozone. As opposed to the stable GNO countries, the crisis GIIPS sample records even a light upward trend in the profit quota since the beginnings of the Eurozone crisis (2010).

Table 2. Profit quotas for selected European countries (1999-2014)

Year	Germany	Greece	Ireland	Italy	Netherlands	Austria	Portugal	Spain
1999	27.02%	53.42%	50.46%	40.88%	28.12%	26.58%	30.28%	33.12%
2000	25.77%	50.90%	51.87%	41.85%	27.76%	27.56%	29.95%	32.89%
2001	26.74%	50.26%	53.50%	42.23%	28.15%	27.92%	29.92%	33.64%
2002	27.16%	47.66%	55.73%	41.52%	27.38%	27.91%	29.28%	33.81%
2003	26.89%	49.11%	52.36%	41.41%	26.53%	27.85%	28.32%	33.11%
2004	27.93%	50.03%	50.40%	41.22%	27.47%	29.19%	29.52%	32.58%
2005	28.67%	48.67%	48.70%	39.87%	29.20%	30.07%	28.27%	31.99%
2006	29.93%	49.12%	46.14%	38.73%	30.17%	30.71%	29.37%	31.73%
2007	30.55%	49.06%	47.06%	38.99%	30.57%	31.46%	30.69%	32.15%
2008	29.45%	48.11%	43.38%	39.07%	31.29%	29.77%	30.09%	31.90%
2009	25.33%	46.60%	45.39%	37.12%	27.77%	27.31%	30.34%	31.53%
2010	27.26%	43.94%	50.11%	36.68%	28.70%	27.64%	30.29%	29.86%
2011	27.16%	44.50%	54.17%	36.64%	28.60%	28.17%	29.57%	30.44%
2012	25.86%	42.79%	54.99%	34.79%	27.94%	27.02%	31.46%	30.64%
2013	25.82%	44.75%	53.11%	35.49%	27.98%	25.94%	31.55%	30.54%
2014	25.66%	42.94%	53.30%	35.84%	28.34%	26.13%	31.57%	30.11%

Sources: Own calculations from Eurostat (nasa_10_nf_tr, naida_10_gdp und bop_c6_q) (2017)

In **Table 3**, we come up with a surprising finding: tax quotas in about all of the investigated countries seemed to stay almost constant in a time period of (here considered) 15 years. The last row in **Table 3** reproduces the registered variance, which is, in all cases, quite low. Therefore, we decided to take the tax quota as a constant in the following econometric estimations of the savings function.

Table 3. Tax quotas for selected European countries (1999-2014)

Year	Germany	Greece	Ireland	Italy	Netherlands	Austria	Portugal	Spain
1999	28.14%	26.60%	36.23%	34.21%	26.85%	34.84%	27.41%	25.45%
2000	28.43%	27.26%	35.85%	33.47%	26.45%	34.27%	27.94%	25.57%
2001	26.39%	25.33%	33.78%	33.41%	27.52%	36.43%	27.46%	25.12%
2002	25.97%	25.63%	33.49%	33.00%	27.39%	34.90%	27.91%	25.69%
2003	26.09%	24.05%	33.52%	33.15%	26.16%	34.56%	27.68%	25.49%
2004	24.97%	23.40%	35.06%	32.21%	25.89%	34.03%	26.78%	26.73%
2005	25.25%	25.07%	35.99%	31.93%	27.52%	33.11%	27.54%	28.28%
2006	25.80%	24.80%	37.68%	33.60%	27.05%	32.23%	28.85%	29.43%
2007	26.86%	25.40%	36.84%	34.46%	27.35%	32.75%	29.34%	30.23%
2008	27.52%	25.69%	33.78%	34.34%	27.85%	33.39%	29.43%	25.35%
2009	27.06%	25.13%	33.18%	34.46%	27.15%	33.03%	26.98%	22.61%
2010	25.81%	25.98%	32.94%	34.55%	27.41%	32.66%	27.46%	24.53%
2011	26.28%	28.89%	33.23%	34.81%	25.94%	32.99%	29.21%	24.71%
2012	27.03%	30.20%	35.06%	37.27%	24.98%	33.82%	29.08%	25.91%
2013	27.55%	30.72%	34.26%	37.29%	25.54%	34.37%	31.05%	26.88%
2014	27.54%	31.24%	34.71%	37.26%	27.25%	35.15%	31.06%	27.31%
Mean	26.67%	26.59%	34.73%	34.34%	26.77%	33.91%	28.45%	26.21%
Variance	0.01%	0.06%	0.02%	0.03%	0.01%	0.01%	0.02%	0.04%

Sources: Own calculations from Eurostat (nasa_10_nf_tr, naida_10_gdp und bop_c6_q) (2017).

The following **Figures 2** through **9** are meant to both visualize and validate empirically the theoretical model from above explaining the savings ratio. We reproduce separately results for Germany, the Netherlands, Austria, Greece, Ireland, Italy, Portugal and Spain in as far as the linear regression between the profit quota and the savings quota is concerned.

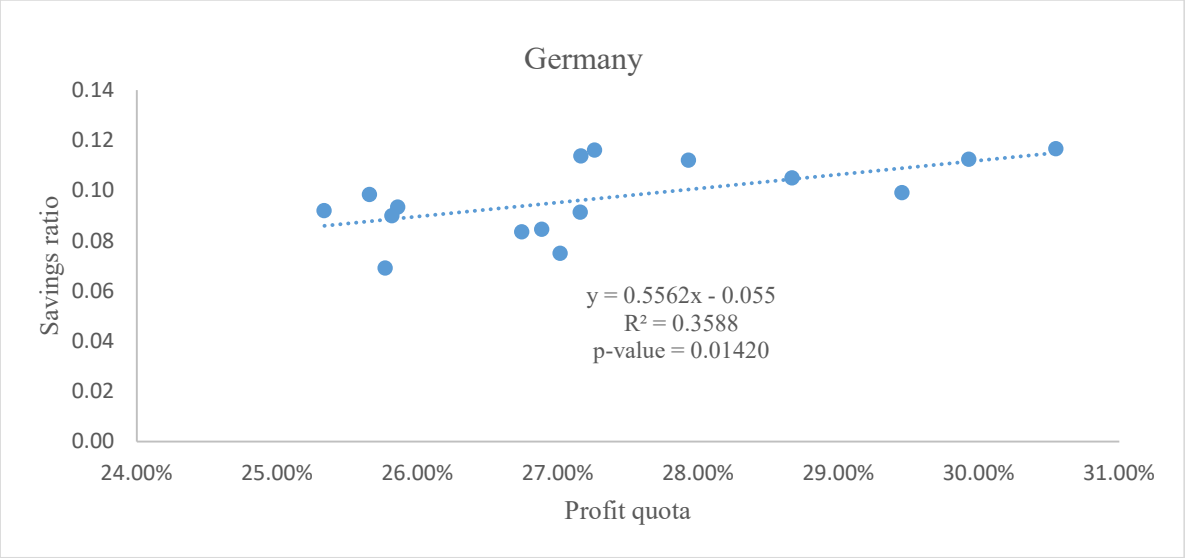

Figure 2. Linear estimation of the savings ratio *vs* the profit quota for Germany (1999-2014)
Source: Own calculation based on Eurostat data (nasa_10_nf_tr, naida_10_gdp und bop_c6_q) (2017)

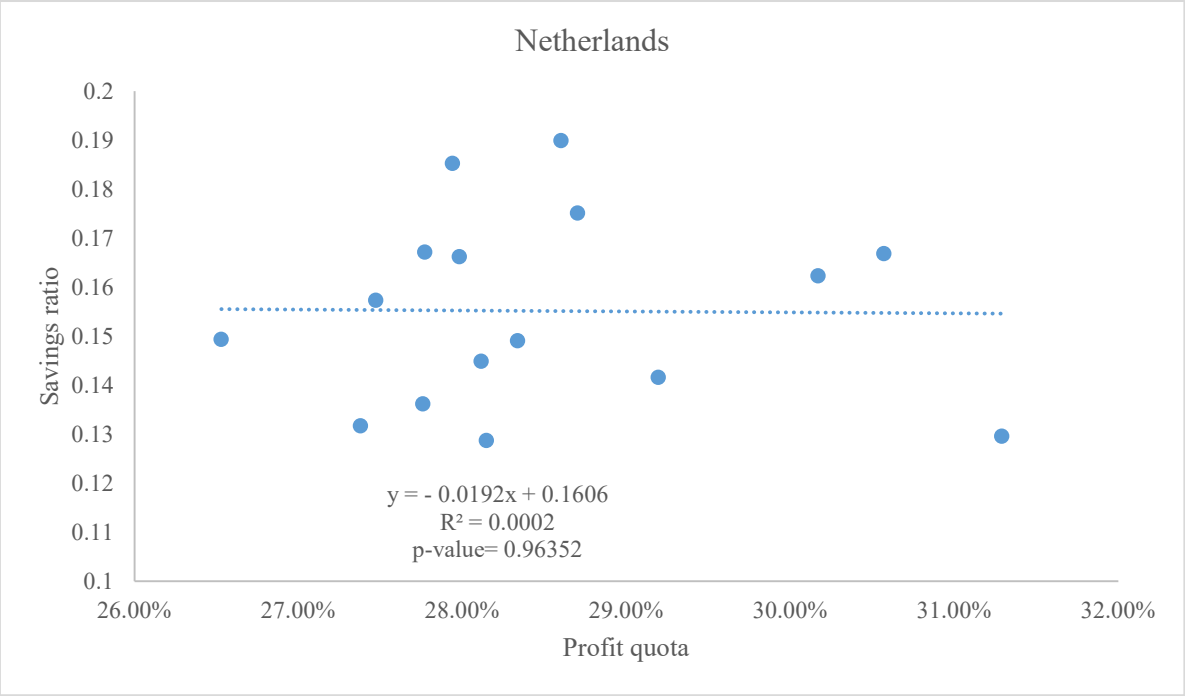

Figure 3. Linear estimation of the savings ratio *vs* the profit quota for the Netherlands (1999-2014)

Source: Own calculation based on Eurostat data (nasa_10_nf_tr, naida_10_gdp und bop_c6_q) (2017)

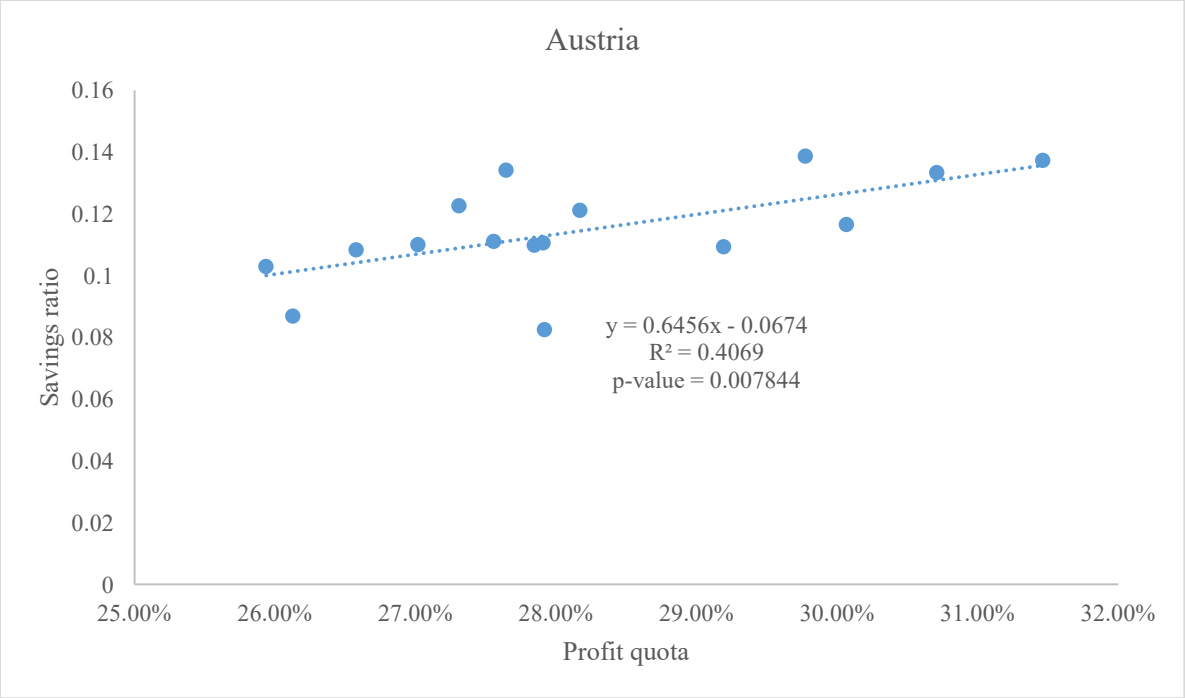

Figure 4. Linear estimation of the savings ratio vs the profit quota for Austria (1999-2014)

Source: Own calculation based on Eurostat data (nasa_10_nf_tr, naida_10_gdp und bop_c6_q) (2017)

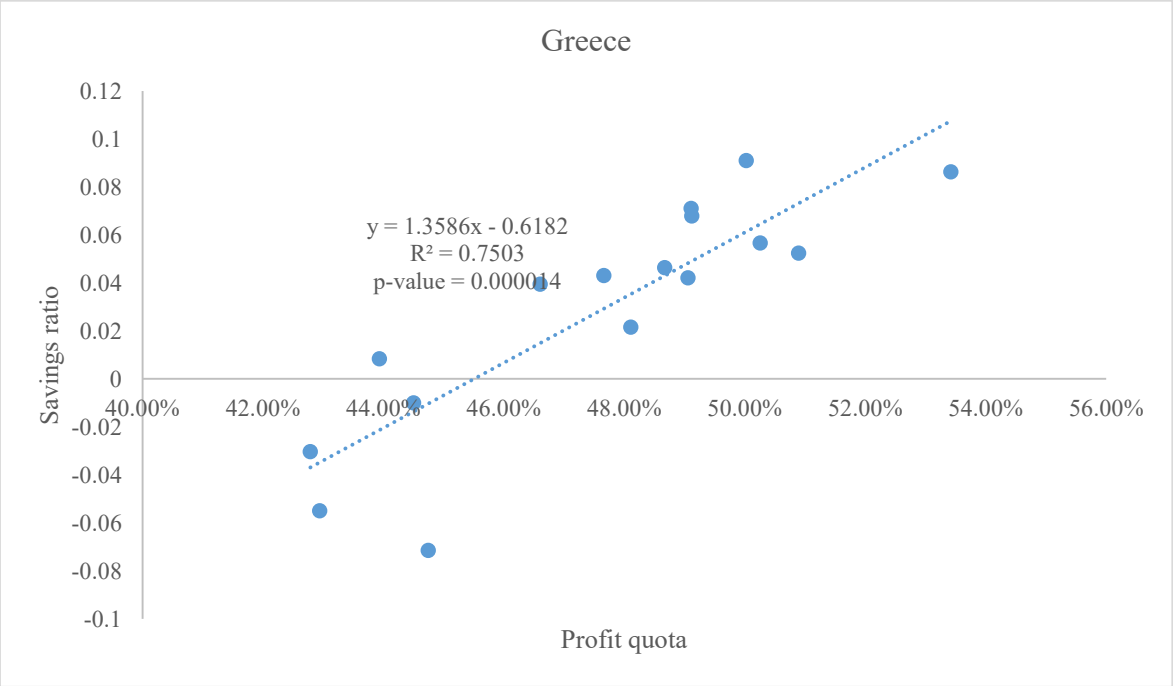

Figure 5. Linear estimation of the savings ratio vs the profit quota for Greece (1999-2014)

Source: Own calculation based on Eurostat data (nasa_10_nf_tr, naida_10_gdp und bop_c6_q) (2017)

Figure 6. Linear estimation of the savings ratio vs the profit quota for Ireland (1999-2014)

Source: Own calculation based on Eurostat data (nasa_10_nf_tr, naida_10_gdp und bop_c6_q) (2017)

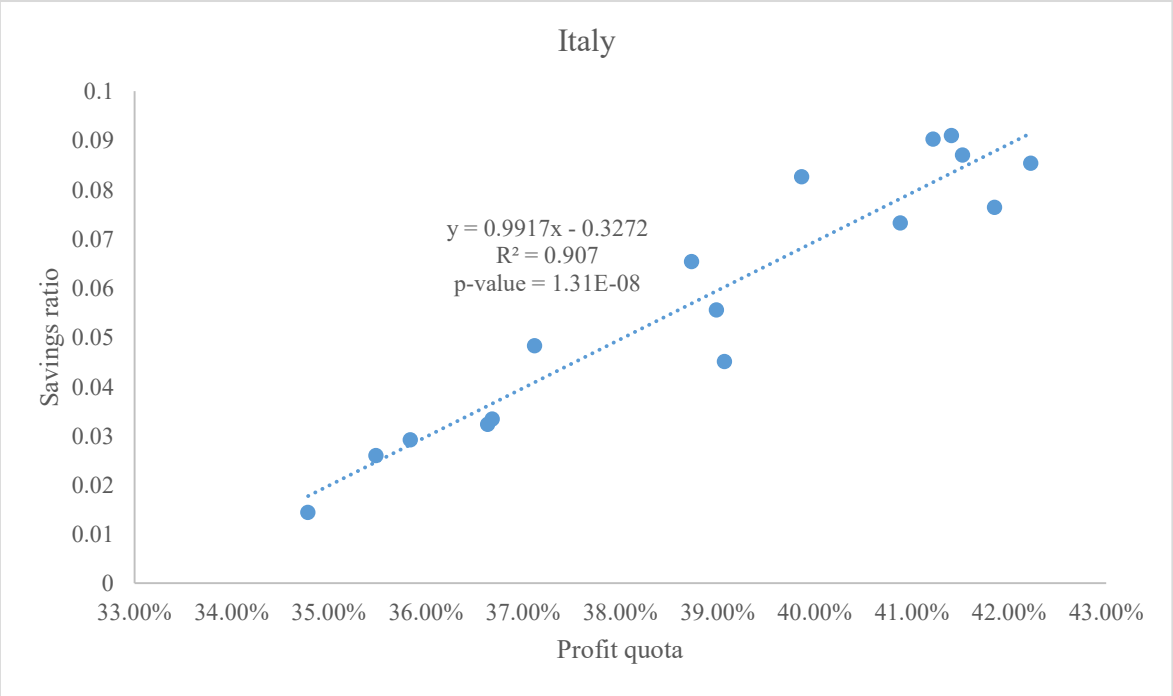

Figure 7. Linear estimation of the savings ratio vs the profit quota for Italy (1999-2014)

Source: Own calculation based on Eurostat data (nasa_10_nf_tr, naida_10_gdp und bop_c6_q) (2017)

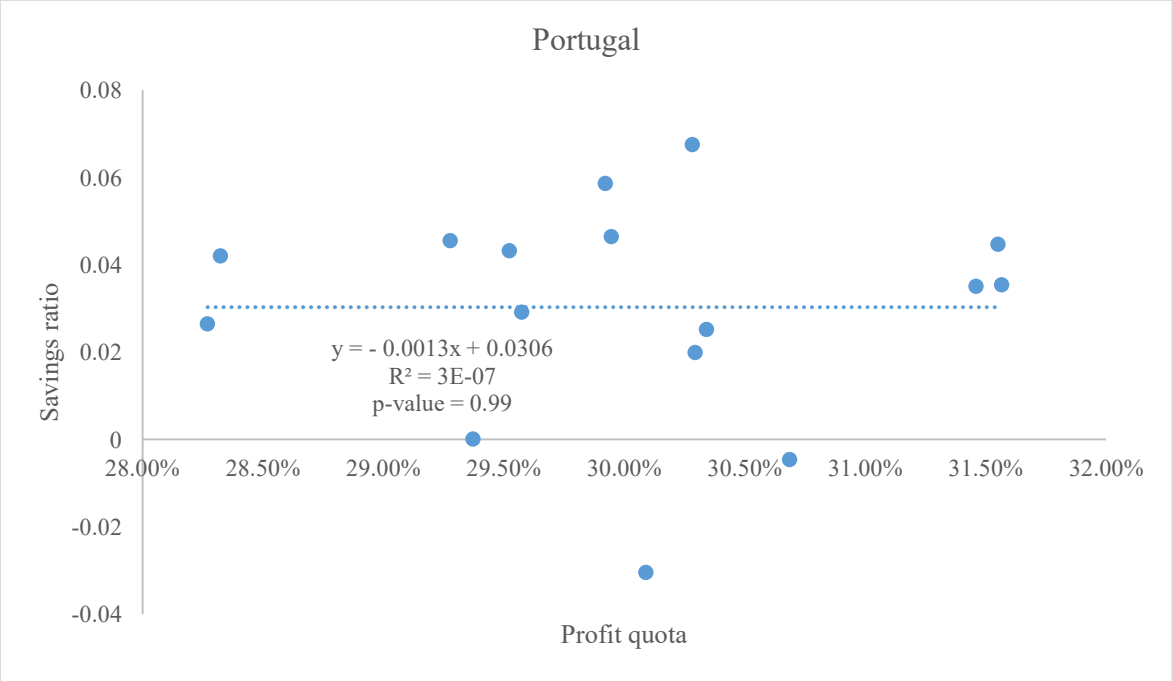

Figure 8. Linear estimation of the savings ratio vs the profit quota for Portugal (1999-2014)

Source: Own calculation based on Eurostat data (nasa_10_nf_tr, naida_10_gdp und bop_c6_q) (2017)

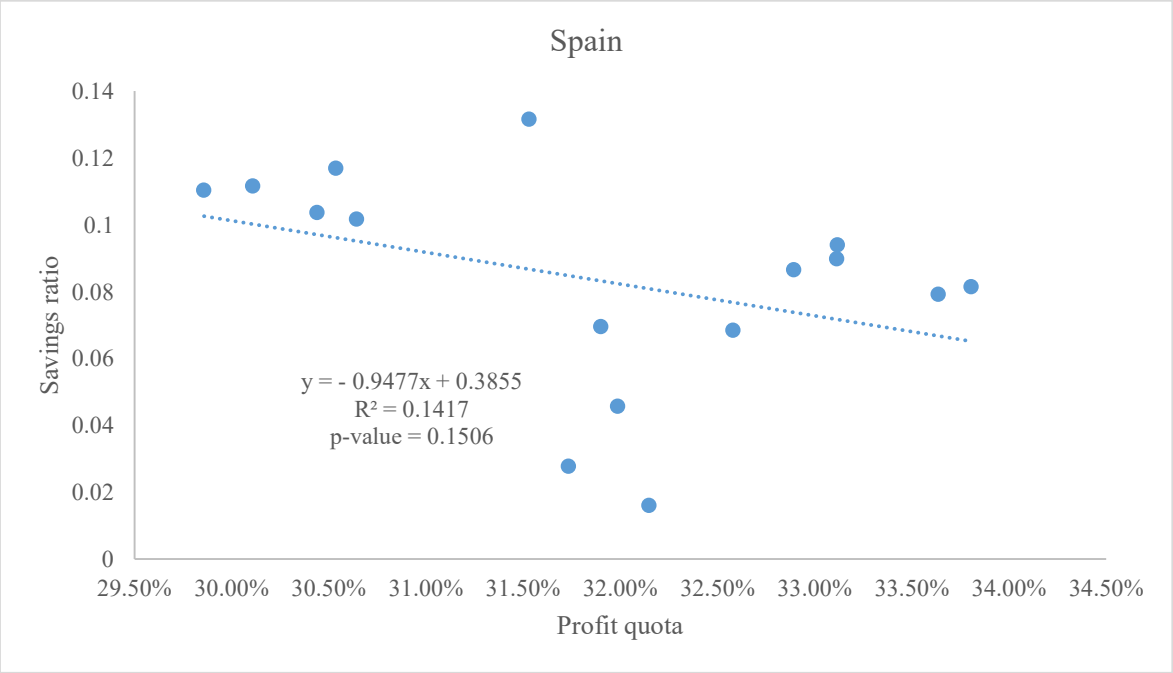

Figure 9. Linear estimation of the savings ratio vs the profit quota for Spain (1999-2014)

Source: Own calculation based on Eurostat data (nasa_10_nf_tr, naida_10_gdp und bop_c6_q) (2017)

What are the main results of our regression analysis? In the case of the GNO countries, the impact factor of profits (profit quota) on savings (savings quota) ranges between 0.55 and 0.70. There is much more variety among the GIIPS countries: here, there exists a span between -0.05 (Spain) and 1.08 (Portugal), a result, which clearly points at a greater heterogeneity within the GIIPS group than within the GAN group. **Table 4** provides information about the estimated coefficients and of their corresponding p-values.

Table 4. Estimation results for equation (11)

Coefficients	Germany	Greece	Ireland	Italy	Netherlands	Austria	Portugal	Spain
$s_a(1-\frac{T}{Y})$	-0.0550 (0.329)	-0.6182*** (0.000)	-0.0692 (0.395)	-0.3272*** (0.000)	0.1606 (0.193)	-0.0674 (0.271)	0.0306 (0.880)	0.3855* (0.073)
$s_u - s_a$	0.5562** (0.014)	1.3586*** (0.000)	0.3879** (0.025)	0.9917*** (0.000)	-0.0192 (0.964)	0.6456*** (0.008)	-0.0013 (0.998)	-0.9477 (0.151)

Source: Own calculation based on Eurostat data (nasa_10_nf_tr, naida_10_gdp und bop_c6_q) (2017)

Notes: In the parentheses are p-values of the estimated coefficients above; Asterisks *, **, and *** indicate statistical significance at the level of 10%, 5%, and 1%, respectively.

Beyond the estimation results: why is that all so relevant for GIIPS and GLNF/GANL countries? Based on the integrated Keynes-Kaldor model presented above, Sauer and Sell (2018) have shown in a simulation exercise that profits suffer the most due to a fall in government deficits. This creates a sort of dilemma for countries (like the GIIPS) applying austerity programmes to fight a debt crisis because a substantial level of profits is in need to boost private investment. In addition, similar negative effects on profits would occur if the(ir) foreign current-account deficit increases.

6. A Sketch of Relevant and Related Studies

Some contributions mentioned in the following have used somehow similar methods of study. Their outcomes/results do not deviate too much from our own findings, though the countries and the periods considered differ considerably. For instance, David Lim (1980, pp.359–364) is very close to our approach. Using the data from 64 developed and developing countries for a period of 1968 to 1973, he found support for the hypothesis that "an uneven income distribution (in favor of the richest households, the authors) is likely to produce higher saving rates than an even one" (ibid, p.361).

A decade later, Bunting (1991), using 1984 CES data, makes an observation that "the marginal propensity to consume declined as the household quintile share of income increased" (ibid, p.18).). Zegeye (1994, p.90) and further authors included the real wage rate (instead of the wage or likewise the profit quota) in the sample of explaining variables. He, using cross-section as well as time-series-section data for 47 countries between 1966 and 1986, estimated negative and significant coefficients ("total effects") with a non-linear ordering by varying the classified income group (low, middle, upper). These results (ibid, pp.101–102) do confirm in principle our findings as a high real wage rate goes along with a comparatively high wage quota whenever it accompanies comparatively low average labor productivity. Cook (1995) analyzed empirically the data from LDCs between 1970–1980 and "the results provided compelling evidence that some sort of Kaldor effect does exist in the sense that countries with greater income inequalities do tend to have higher aggregate savings rates" (ibid, p.78).

Hein and Ochsen (2003) came closest to our procedure when they estimated the impact of the propensity to save out labor income (times the wage share), the propensity to save out of rentiers' income (times their share in national income), and further variables on the savings ratio of private households. They used data from OECD countries between 1961 and 1995 and impressively demonstrated –among other interesting results – a significantly lower propensity to save out the labor income than out of renters' income (ibid, p.428). Hongyi and Zou (2004) tested empirically the relationship between the gross national saving rate and the income shares of the rich; instead of the profit quota, they used "the income share of the top 20 percent (TOP20) of the population" (ibid, p.264) as an explaining variable. The impact was positive and significant for the OECD countries and the Asian countries (period 1970–1992). Some completely different studies, in the field of health economics, such as Jappelli, Pistaferri, and Weber (2007), tested the effects of health risk and quality of healthcare on the private saving-income ratio. Their approach estimated a sort of precautionary saving, when they found that "people facing a higher risk of falling in very poor health save more" (ibid, p.342).

How do these findings compare with similar analyses from a different, say neoliberal or likewise neoclassical theoretical view? Two examples may suffice: The positive relationship between inequality and savings (and hence, economic growth)–starting from the well-established fact that rich people save more out of the wealth or of permanent income–is not restricted to models in the tradition of Keynes and Kaldor. As Foellmi (2010) shows, one may achieve similar results by a neoclassical growth model in the vein of Ramsey (applying inter-temporal dynamic optimization yields a consumption function as a concave function of wealth, ibid, p.3): "more unequal societies must exhibit a higher speed of convergence because they grow faster in the transition process" (ibid, p.3). "More unequal societies … have a higher savings rate and (hence, the authors) a higher rate of output growth" (ibid, p.10). Further models (see, for an overview, Jappelli and Padula, 2007) link directly the savings rate of an economy to productivity and hence to overall economic growth. It is the well-known Life-Cycle Hypothesis of Consumption, which can explain the underlying positive correlation: When (and if) "productivity growth accelerates from one generation to the other",

productivity growth will boost "positive savings of active workers in comparison to the negative savings of the elderly, thereby raising aggregate savings" (ibid, p. 2).

7. Summary, Policy Implications and Scope of Future Research

The combination of Keynes and Kaldor is still a promising endeavor: from a macro perspective, private investment, public deficit(s) and net capital exports (or likewise imports) determine the share of profits as a percentage of the net national product. This can be learned from the famous second Keynesian equation. When combined with Kaldor's group specific savings functions, one realizes that the profit quota, in turn, has a positive impact on the overall savings quota. Hence, saving is definitely an endogenous variable. Changes in income distribution in favor of profits (wages) tend to elevate (lower) the macroeconomic savings quota, ceteris paribus.

It is true that there is a strong dependence of European countries on each other through trade, mobility of capital and (not very much but still) labor. This is precisely what equation (5) from above demonstrates: net exports (or imports for the matter) which mirror net capital exports (imports) have a strong impact on the respective national profit quota. In a study on Target 2 balances, Sauer and Sell (2011) have shown that "the current account surpluses of Germany, Luxembourg, Netherlands and – with respect to the capital account imbalance – outlier Finland (GLNF), the countries with the largest Target2 claims, approximately correspond to the accumulated current account deficits of the GIPS countries" (ibid, pp. ¾).

In order to validate this theoretical finding, we ran a number of linear regressions for 8 selected European countries and the time span between 1999 and 2014: the first group of countries assembles Greece, Ireland, Italy, Portugal and Spain, better known as the "GIIPS" since the eruption of the European debt crisis back in 2010. The second group of countries, encompasses countries like Germany, Austria and the Netherlands which, contrary to the "GIIPS", were labeled as the comparatively stable "GAN" (sometimes, Luxembourg is added, so that we call them "GANL", in other publications one finds the acronym "GLNF" which stands for Germany, Luxembourg, Netherlands and Finland).

What were our empirical findings? Since the beginning of the Eurozone crisis in 2010, the group of the "GIIPS" shows some sort of a pathological evolution of the savings ratio: either it drops significantly (Greece, Italy) or it rises to an unusual extent (Ireland, Spain) or it records an extreme volatility (Portugal). None of these "trends" is observable among "stable GAN countries". One can also see in the data that the profit quota seems on an average higher in the crisis (GIIPS) than in the stable countries (GAN) of the Eurozone. As opposed to the stable GAN countries, the crisis group of GIIPS sample records even a light upward trend in the profit quota since the beginnings of the Eurozone crisis (2010). In the case of the GAN countries, the impact factor of profits (profit quota) on savings (savings quota) ranges between 0.55 and 0.7. There is much more variety among the GIIPS countries: here, there exists a span between -0.05 (Spain) and 1.08 (Portugal), a result, which clearly points at a greater heterogeneity within the GIIPS group than within the GAN group.

Notice that – despite the existing differences between the groups of countries and within the respective groups – the attempt to estimate empirically (given a limited time span) savings quota functions with the profit quota as the key explaining variable has proved to be quite successful. This is the information we get from the statistical fit and the significance of the estimated parameters in the majority of cases (see also Figures 2 through 9). Hence, the Keynesian cum Kaldorian distribution approach for factorial incomes (wages, profits) has not lost its appeal. It should be considered by policy makers, especially when it comes to design reform packages which explicitly ask for a higher savings performance. The same applies, mutatis mutandis, when successful

countries like Germany are advised to reduce their export surpluses via higher investment expenditures or lower savings ratios.

Future research should conduct an integrated, double analysis of both income quotas (wages, profits) and of Gini coefficients for selected countries (where reliable data are available) and for the same time horizon. In this enlarged research program, one could investigate for example whether an increasing concentration of personal incomes (as measured by the Gini coefficient) goes hand in hand with a rise (fall) in the profit (wage) quota or not. There can be no correlation as well and thirdly one may even find a negative correlation when an increasing profit quota is associated with a drop in the concentration of incomes. If available, one may finally look at the concentration of profit (wage incomes) incomes alone.

A second future project of research could try to connect our results with the actual stance of the so-called Feldstein-Horioka-Hypothesis. According to the latter, it is still domestic savings, which is the major determinant of domestic investment. This sheds light on the importance of the macroeconomic distribution of income between profits and wages for the explanation of investment. Hence, taking into account the second Keynesian equation and the Kaldorian savings function, there is a circular interdependence between savings, income distribution and investment.

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