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AN EMPIRICAL TEST BASED ON THE BHADURI-MARGLIN MODEL**

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DO PROFITS AFFECT INVESTMENT AND EMPLOYMENT? AN EMPIRICAL TEST BASED ON THE BHADURI-MARGLIN MODEL*

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Abstract

In this study, a Kaleckian-Post-Keynesian macroeconomic model, which is an extended version of the Bhaduri and Marglin (1990) model, serves as the starting point. The merit of a Kaleckian model for our purposes is that it highlights the dual function of wages as a component of aggregate demand as well as a cost item as opposed to the mainstream economics, which perceive wages merely as a cost item. Depending on the relative magnitude of these two effects, Kaleckian models distinguish between profit-led and wage-led regimes, where the latter is defined as a low rate of accumulation being caused by a high profit share. Are actual economies wage-led or profit-led? Current orthodoxy implicitly assumes that they are profit-led, and thus supports the neoliberal policy agenda. The purpose of the paper is to carry this discussion into the empirical terrain, and to test whether accumulation and employment are profit-led in two groups of countries. We do so by means of a structural vector autoregression (VAR) model. The model is estimated for USA, UK and France to represent the major developed countries, and for Turkey and Korea to represent developing countries. The latter are chosen since they represent two different export-oriented growth experiences. The results of the adjustment experiences of both countries are in striking contrast to orthodox theory, however they also present counter-examples to each other in terms of their ways of integrating into the world economy.

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Keywords

Keynesian economics, macroeconomics, capital accumulation, distribution, unemployment, structural vectorautoregression, developed and developing countries

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E1, E12, E2, E3

DO PROFITS AFFECT INVESTMENT AND EMPLOYMENT? AN EMPIRICAL TEST BASED ON THE BHADURI-MARGLIN MODEL

Özlem Onaran and Engelbert Stockhammer

1. Introduction

This paper aims at clarifying the macroeconomic effect of changes in functional income distribution empirically for a range of developed and developing countries. In doing so, our goal is to discuss the crucial policy issues related with neoliberal policies in the developing, as well as developed countries in the post-1980 era; by focusing on the effects of distributional policies we seek to contribute to the explanation of the reasons for the stagnant accumulation and employment growth rates. Both the structural adjustment agenda in the developing countries, and the debate about the European unemployment have been cases where mainstream economics has pushed for policy changes favoring a pro-capital redistribution of income, and a deregulation of the labor market. For neoclassical economics unemployment is, in the last instance, a labor market phenomenon. It is due to “too high” real wages, which in turn are a result of so-called labor market “distortions,” like labor market regulations and trade unions. In contrast, Post-Keynesians argue that unemployment is the result of demand deficiencies on the goods markets, and that the latter result particularly from a slow down in investments.

The resolution of this controversy requires the test of the dynamic interaction between distribution, accumulation, growth and employment. For this purpose, in this study, a Kaleckian-Post-Keynesian macroeconomic model, which is an extended version of the Bhaduri and Marglin (1990) model, serves as the starting point. The merit of a Kaleckian model for our purposes is that it highlights the

dual function of wages as a component of aggregate demand as well as a cost item as opposed to the mainstream economics, which perceive wages merely as a cost item. Depending on the relative magnitude of these two effects, Kaleckian models distinguish between profit-led and wage-led regimes, where the latter is defined as a low rate of accumulation being caused by a high profit share. Allowing for capacity utilisation to vary in these models gives rise to the possibility of a wage-led regime, i.e. a higher rate of accumulation as a result of an increase in wage share, if the demand effect on investment is stronger than the profit effect.

Which regime prevails in a certain economy is an empirical question. Are actual economies wage-led or profit-led? Current orthodoxy implicitly assumes that they are profit-led, and thus supports the neoliberal policy agenda. The purpose of the paper is to carry this discussion into the empirical terrain, and to test whether accumulation and employment are profit-led in two groups of countries. We do so by means of a structural vector autoregression (VAR) model. The model is estimated for USA, UK and France to represent the major developed countries, and for Turkey and Korea to represent developing countries. The latter are chosen since they represent two different export-oriented growth experiences. The results of the adjustment experiences of both countries are in striking contrast to orthodox theory, however they also present counter-examples to each other in terms of their ways of integrating into the world economy. Thereby they provide examples for comparing different economic policies among the developing countries as well.

The rest of the paper is organized as follows: Section 11.2 introduces the theoretical Kaleckian-Post-Keynesian model. Section 11.3 discusses briefly the estimation method and presents the hypotheses to be tested by the empirical analysis. Sections 11.4 and 11.5 summarize the estimation results for developed and developing countries respectively. Section 11.6 derives the conclusions, as

well as open questions and challenges for future research. Finally Section 11.7 discusses policy implications of the results.

2 The Model

For analyzing the dynamic effects of distribution, on growth, accumulation and employment in these two groups of countries, we utilize a post-Keynesian open economy model, which is an extension to the model of Bhaduri and Marglin (1990). We augment the goods market block of this model by a demand-driven labor market, a reserve army effect in the Marxian sense, and technological change. Table 11.1 below is a summary of this linear open economy model.

The model developed by Marglin and Bhaduri (1990) is a more general formulation of earlier neo-Kaleckian models by Rowthorn (1981), Dutt (1984), Taylor (1985) and Blecker (1989), and allows for profit-led as well as for wage led growth regimes¹. This generality borrows itself to the decomposition of the profit rate (r) into the profit share (\mathbf{p}), capacity utilization (z) and (technical) capital productivity (k).

$$r = \frac{R}{K} = \frac{R}{Y} \frac{Y}{\bar{Y}} \frac{\bar{Y}}{K} = \mathbf{p}zk \quad (1)$$

Then, for the sake of simplicity, assuming that technical capital productivity is constant, the rate of accumulation (g_t^I), which is the ratio of new investment to the stock of capital ($\frac{I}{K}$), can be formulated as a function of the past values of the profit share (\mathbf{p}), capacity utilization (z), which

¹ See Blecker (1999) for a discussion of the extension of the model to the open economy and Blecker (2002) for a review of other possible extensions to neo-Kaleckian models.

constitute the current expected rate of profit. Equation (2) in Table 11.1 presents an extended linear version of this accumulation function, where the effect of productivity growth on investment is also incorporated.

The goods market part consists of behavioral functions for accumulation, savings, and net exports.

This part is then complemented by a distribution function, a labor productivity function and an unemployment function.

Table 1: Summary of the model

(2) Accumulation	$g_t^I \equiv \frac{I_t}{K_t} = a_0 + a_1 z_{t-1} + a_2 \mathbf{p}_{t-1} + a_3 g x_{t-1}$
(3) Cambridge Savings equation	$g_t^{S_{domestic}} = b_1 z_t + b_2 \mathbf{p}_t$
(4) Net exports	$n x_t = -h_1 z_t + h_2 \mathbf{p}_t$
(5) Income distribution	$\mathbf{p}_t = d_0 + d_1 z_t + d_2 u_t + d_3 g x_t$
(6) Employment	$u_t = n - e_1 g_t - e_2 \Delta z_t - e_3 \mathbf{p}_t + e_4 u_{t-1} + e_5 g x_t$
(7) Productivity growth	$g x_t = \mathbf{t}_0 + \mathbf{t}_1 g_t + \mathbf{t}_2 z_t$

Notes: See Stockhammer and Onaran (2004) for a detailed discussion of the theoretical background.

g_t^I	accumulation (growth of capital stock),
$g_t^{S_{domestic}}$	domestic savings / capital stock,
z	capacity utilization (capital productivity),
π	profit share,
nx	net exports (normalized by capital stock),
u	unemployment rate,
gx	productivity growth,
All coefficients are positive numbers.	

Equation (3) in Table 11.1 is a simple Cambridge savings function, where the ratio of domestic savings to capital stock is a function of capacity utilization and income distribution, i.e. the profit

share. Assuming that workers have a lower marginal propensity to save than capitalists, b_2 is positive and measures the differences in savings propensity between profit incomes and wage incomes.

Equation (4) in Table 11.1 incorporates international trade focusing on the effect of distribution and growth on net exports, leaving the other crucial variable of an open economy outside the model.

Profit share is inversely related to unit labor costs. Accordingly net exports (again normalized by capital stock) are a positive function of the profit share and a negative function of capacity utilization (since imports are a positive function of the domestic demand).

The fifth equation in Table 11.1 models the distribution of income, as a positive function of capacity utilization via pro-cyclical mark-up, a positive function of unemployment rate (u), reflecting labor's bargaining position via the Marxian reserve army effect, and finally the growth of labor productivity.

The latter will positively effect the profit share, if wages are imperfectly indexed to productivity growth.

Equation (6) in Table 11.1 models the labor market. Employment is a positive function of output, thus the change of capacity utilization and the growth of capital stock. Next, if the cost of labor is important for labor demand, as the neoclassical theory would suggest, the profit share (being inversely related with the real wage, after controlling for productivity) is expected to have a negative effect on unemployment. Unemployment will also depend on past unemployment via a hysteresis effect. Finally, if technological change is not accompanied by a growth in demand, the growth of labor productivity could lead to an increase in unemployment. The constant, e_0 , captures labor supply shocks.

Finally, Equation (7) in Table 11.1 models the growth of labor productivity (x) as determined by accumulation and capacity utilization. Exogenous technical progress is captured by the constant term, t_0 .

The goods market equilibrium is determined by investment being equal to total domestic and foreign savings, i.e:

$$g^I = g^{Stotal} = g^{sdomestic} - nx \quad (8)$$

Capacity utilization implied by the goods market equilibrium can be written as

$$z_t^{IS} = \frac{1}{b_1 + h_1} [g_t + (h_2 - b_2)p_t] \quad (9)$$

The effect of an increase in the profit share on capacity utilization is indeterminate, and will depend in the medium run on the relative responsiveness of consumption and investment to profits.

Contemporaneously as well, this effect, thus the sign of $\frac{\partial z}{\partial p}$, will be indeterminate. If exports react

strongly to the profit share, whereas domestic consumption decreases only mildly, (i.e. domestic

savings increase mildly), then $\frac{\partial z}{\partial p} > 0$. Such a growth regime is called exhilarationist. Whereas if

savings differentials are large compared to the net export effect of the profit share, then $\frac{\partial z}{\partial p} < 0$, and

the regime is called 'stagnationist' (Bhaduri and Marglin, 1990). However, when the lagged effects

through investment also kick in the longer term, the overall effect of profit share will depend on the

relative magnitude of its positive direct effect on investment, the positive international demand effect, and the negative effect on domestic consumption.

Finally substituting (7) and (9) into (2), we get accumulation as a function of distribution:

$$g_t' = a_0 + a_5 t_0 + \left(\frac{a_1 + a_5 t_2}{b_1 + h_1} + a_3 t_1 \right) g_{t-1}' + \left(a_2 + a_1 (1 + a_5 t_2) \frac{h_2 - b_2}{b_1 + h_1} \right) p_{t-1} \quad (10)$$

Again here the effect of the profit share on accumulation, $\frac{dg_t'}{dp_{t-1}}$, can be decomposed to the direct

positive effect of the profit share on accumulation (the partial $\frac{\partial g_t'}{\partial p_{t-1}} = a_2$), the positive international

demand effect $\left(\frac{\partial g_t'}{\partial z_{t-1}} \frac{\partial z_{t-1}}{\partial nx_{t-1}} \frac{\partial nx_{t-1}}{\partial p_{t-1}} = \frac{a_1 (1 + a_5 t_2) h_2}{b_1 + h_1} \right)$ and the negative domestic consumption effect

$\left(\frac{\partial g_t'}{\partial z_{t-1}} \frac{\partial z_{t-1}}{\partial p_{t-1}} = \frac{-a_1 (1 + a_5 t_2) b_2}{b_1 + h_1} \right)$. Depending on the relative magnitudes of these effects, an increase

in the profit share leads either to an increase in accumulation, in which the regime of accumulation is profit-led, or to a decrease, i.e. to a wage-led regime of accumulation.

3 Empirical Methodology and Hypotheses

The main methodological motivation behind this study is to model the dynamic relationship between distribution, accumulation, capacity utilization and employment considering both lagged and contemporaneous interactions within a systems approach, that goes beyond the limited framework of comparative statics. The existing empirical contributions in the literature about the effect of

distribution on accumulation, growth, and employment do not address the issue of simultaneity (for developed countries Bowles and Boyer, 1995; Gordon, 1995a and 1995b; Hein and Krämer, 1997; Bhaskar and Glyn, 1995; Stockhammer, 2004a and 2004b; Hein and Ochs, 2003; for developing countries Yentürk, 1998, Onaran and Yentürk, 2001; Seguino, 1999; Sarkar, 1992). To overcome this shortcoming, we employ a structural vector autoregression (SVAR) analysis, which incorporates the contemporaneous interaction, as well as the lagged relationship. SVAR form helps to capture the complex simultaneous interaction between distribution, accumulation, growth and employment, and the system aspect that is crucial to the theoretical model.

The VAR model allows past values of all variables to influence present values of any variable. Thus, results that are not in accordance with the structural model outlined above are possible due to lagged effects. The structural model provides the motivation and shapes the interaction of the contemporaneous effects only. Thus it will be useful to summarize the hypotheses to be explored empirically. The first five hypotheses summarized in Table 11.2 follow directly from the model presented above. Hypotheses six and seven are standard theses of the neoclassical theory about the labor market. Hypotheses eight-ten are related to the typical policy recommendations of the neoliberal structural adjustment programs particularly in developing countries.

All the effects discussed above (except H2) are partial effects. The VAR framework used does not distinguish between partial and total effects, but gives the effects at different points in time. Only the estimated contemporaneous effects are clearly partial effects. We will interpret the effects in the first two or three periods as partial effects in the short run, but also discuss the longer term effects, wherever significant.

Table 2: Hypotheses

H1 demand-led labor market	$\frac{\partial u}{\partial g} < 0; \frac{\partial u}{\partial z} < 0$	Goods market determines labor market.
H2 the effect of distribution on growth	$\frac{dg}{d\mathbf{p}} \text{ ?}$	Is accumulation wage-led or profit-led?
H3 reserve army effect	$\frac{\partial \mathbf{p}}{\partial u} > 0$	Unemployment lowers wages
H4 imperfect wage indexation	$\frac{\partial \mathbf{p}}{\partial gx} > 0$	Productivity increases do not lead to equivalent wage increases.
H5 technological unemployment	$\frac{\partial u}{\partial gx} > 0$	Productivity increases cause unemployment.
H6 neoclassical labor market	$\frac{\partial u}{\partial \mathbf{p}} < 0$	Wage decrease increases employment.
H7 substitution	$\frac{\partial gx}{\partial \mathbf{p}} < 0$	Increase in wages leads to substitution of labor with capital, which in turn increases productivity.
H8 export-led accumulation	$\frac{\partial g}{\partial nx} > 0$	An increase in net exports leads to an increase in accumulation
H9 profit-led exports	$\frac{\partial nx}{\partial \mathbf{p}} > 0$	Lower unit labor costs, i.e. a higher profit share, increase international competitiveness
H10 Export-led employment	$\frac{\partial u}{\partial nx} < 0$	Exports increase the labor demand.

4. Summary of the Results for Developed Countries

The advantages of VAR models, unfortunately come with a disadvantage: Given the lagged structure that incorporates the dynamic effects to the estimation, it requires long enough time series. For a given length of time series data, the implication is a limit on number the variables that can be included into the system. This limit leads to differences in the specifications for developing and developed countries.

In the case of the developed countries, the focus is on the interaction between the labor market and the goods market. However, in return, the foreign trade is not modeled explicitly. Nevertheless, the estimated coefficients and impulse responses of the profit share on capacity utilization (and of course other variables) will include indirect effects via export demand. Moreover, shocks to capacity utilization do include shocks coming from fiscal policy, monetary policy and the foreign sector; in fact they include all shocks to effective demand other than investment.

The SVAR system estimated consists of accumulation (of the business sector), capacity utilization (output gap), the profit share (of the business sector), growth rate of labor productivity and unemployment rate². The model is estimated for the periods 1970:1-1997:2, 1966:1-1997:2, and 1972:1-1997:1 for UK, USA and France respectively, based on semi-annual data. The different periods are due to data availability. The VAR is estimated with four lags.

² A series of tests were performed to ensure the robustness of the results. First, it was checked whether the results were sensitive to variable specification. The profit share of the total economy was used instead of the profit share of the business sector. The employment share (employment divided by working age population) was

The results of the response by various variables as a result to shocks to the relevant variable in the hypothesis to be tested (impulse response analysis) are summarized in Table 11.3. A more detailed technical discussion can be found in Stockhammer and Onaran (2004).

Table 3. Summary of impulse responses for UK, USA and France

	UK	USA	France
H1 demand-led market $\frac{\partial u}{\partial a} < 0$ and $\frac{\partial u}{\partial z} < 0$	yes g and z, both sig or close to sig	yes g and z	yes g and z
H2 distribution-led regimes	no effect insig	insig (g profit-led) (z exhilarationist)	insig (g profit-led) (z stagnationist)
H3 reserve army effect $\frac{\partial p}{\partial u} > 0$	yes insig	no no effect	no no effect
H4 imperfect wage indexation $\frac{\partial p}{\partial gx} > 0$	no	yes sig for three periods contemporary effect sig.	yes contemporary effect sig
H5 technological unemployment $\frac{\partial u}{\partial gx} > 0$	yes long contemporary effect sig.	yes sig to 6 lags contemporary effect sig.	yes sig to 4 lags
H6 neoclassical labor market $\frac{\partial u}{\partial p} < 0$	no no effect	yes but sig only after 7 periods	no insig
H7 substitution $\frac{\partial x}{\partial p} < 0$	no insig / no effect	no insig	no insig

Note. sig = statistically significant

Source: Stockhammer and Onaran (2004)

The Keynesian-Kaleckian model performed fairly good, and in line with the theoretical model.

Strong support is found for the demand-led labor market hypothesis. The goods market variables play a strong role in determining unemployment. Shocks to accumulation as well as capacity utilization have statistically significant negative effects on the rate of unemployment. How long these effects last differs across countries.

used instead of the unemployment rate. Instead of the output gap, detrended capital productivity and GDP

Distribution seems to play little role in determining goods market outcomes. None of the effects in the impulse responses were statistically significant. The result may be due to offsetting effects of profitability and demand, which would be consistent with the theoretical framework. However, this also might be suggesting a theoretical challenge about the role of profit share in investment models. We will discuss more on this issue in the next section.

We found no evidence for the reserve army effect. A shock to unemployment has little or no effect on the profit share. Only in the UK was there a positive effect, but not statistically significant. This finding is not consistent with the literature, and may be due to the generous lags of the dependent variable.

A shock to productivity growth has a statistically significant positive effect on the profit share in the USA and France. So wages are not perfectly indexed. An innovation to labor productivity growth also has a significant and upward impact on unemployment in all countries, and, in fact, rather persistently so. Thus technological development is not automatically generate demand, and can lead to technological unemployment.

Weak or no evidence was found for both of the neoclassical labor market hypotheses. In France and UK, a shock to the profit share had basically no significant effect on unemployment. Only in the USA, and only after seven periods a shock to the profit share led to decline in the unemployment rate. Again, the profit share had no significant negative effect on productivity. Thus the substitution hypothesis was also rejected.

growth were used. In neither case were there major changes in the results.

5 Summary of the Results for Developing Countries

In the case of the developing countries, i.e. Korea and Turkey, the effect of international trade on growth and employment on the one hand, and the source of international competitiveness on the other hand are important points of focus for policy analysis. Therefore, we not only explicitly model international demand, but also decompose the effect of exports and imports, in order to be able to test widely accepted mainstream policy assumptions regarding export orientation. It is particularly important to highlight the opposite effects of different export-oriented growth strategies on distribution and employment: decreasing wage share, low growth, low investment, low employment in Turkey and increasing wage share, high growth, high investment, high employment in South Korea.

The inclusion of the international trade block came at the cost of excluding the explicit modeling of the productivity change. The effects of changes in productivity can only be interpreted as exogenous shocks.

Moreover, due to data limitations, several proxies had to be used instead of the variables in the theoretic model. Second, since the agricultural sector follows a completely different pattern, particularly in terms of labor demand, where unpaid family work and self-employment is important, and can lead to significant rates of disguised unemployment, we estimate the model as a whole for the non-agricultural economy. However, then it is very hard to measure the non-agricultural unemployment or employment rate due to problems in anticipating the sector specific labor supply. As a result we simply use the employment level in logarithms to model the labor market block. Accordingly, the SVAR system estimated consists of investment/GDP instead of accumulation, growth instead of the capacity utilization, the profit share, and the logarithm of employment (all

variables for the non-agricultural sector). The model is estimated for the periods 1972-2000 for Korea, and 1965-97 for Turkey, based on available annual data. The VAR is estimated with two lags.

The results of the response by various variables as a result to shocks to the relevant variable in the hypothesis to be tested (impulse response analysis) are summarized in Table 11.4. A more detailed technical discussion can be found in Onaran and Stockhammer (2005).

Table 4. Summary of impulse responses for South Korea and Turkey

	South Korea	Turkey
H1 demand-led market $\frac{\partial u}{\partial a} < 0$ and $\frac{\partial u}{\partial z} < 0$	yes g and z both sig	yes g and z both sig
H2 distribution-led regimes	g wage-led z significantly stagnationist	insig (g slightly wage-led in the second period) (z in the first two periods significantly stagnationist)
H3 reserve army effect $\frac{\partial p}{\partial u} > 0$	yes sig even in long run	yes sig for six periods
H6 neoclassical labor market $\frac{\partial u}{\partial p} < 0$	no contrarily positive effect	no contrarily positive effect for 4 periods
H8 export-led accumulation	yes Sig, strong persistent	no Slightly significant only after 6 periods
H9 profit-led exports	no positive but insig	Yes Sig., Persistent and strong positive effect
H10 Export-led employment	Yes sig., persistent and strong positive effect	No Sig., persistent and strong negative effect

Note. sig = statistically significant

The results also show that demand is the main driving force behind employment, and accumulation is an important component to enhance the job creation capacity of the economy.

Moreover, employment regime is not profit-led, and quite on the contrary to the arguments of neoclassical economics, it decreases with a decrease in the wage share. In South Korea the wage-led employment pattern is more evident, whereas in Turkey the cumulative negative effect dies away five periods later.

This can be explained by the effect of profit share on demand. In Turkey an innovation to the profit share creates a negative response of investment rate in the next period, and the shock continues for another period, and then dies without leading to any significant improvement in investment. In South Korea an increase in the profit share creates a strong and persistent negative effect on accumulation. Regarding the effects on capacity utilization, an increase in the profit share is immediately transformed into a decline in growth, indicating a stagnationist regime in both countries in the short-run. The recovery of the growth rate is due to the improvements in exports. However, in Turkey it takes rather long –three periods- for the positive effect of increased exports to lead to a recovery, and in South Korea the recovery does not take place at all.

Reflecting the crucial differences in the design of export-oriented growth strategy in the two countries, in South Korea the response of investment rate to international competition is very strong and persistent, whereas in Turkey the response hardly shows up with a lag of three years and is never too strong. Also in Turkey exports increase when unit labor costs decline (i.e. a positive response of exports to profit share), and thus when domestic demand contracts. However in South Korea, a shock to profit share has no significant effect on exports. Turkey's export growth based on low wages and increased use of existing capacity rather than new investments proves to be unable to stimulate investments, whereas in South Korea export competitiveness is the primary stimulus behind investment decisions of firms. In Turkey, investments are stimulated by domestic demand, whereas in

South Korea exports are even more important than domestic demand. In South Korea, exports are a systematic target of industrial policy, and competitiveness is based on improvements in productivity. The consequence of this striking difference in the export-oriented growth strategies shows up also in the labor demand. The response of employment to an increase in exports is persistently negative in Turkey, whereas it is strongly and persistently positive in South Korea. This result points at a very important policy implication indicating that the increase in competitiveness, which is maintained by low wages, does not transform into higher employment. Another important implication of the results for Turkey is that they provide counter-evidence to the expectations about an increase in labor intensity of production following an increase in export orientation.

Finally, although distribution does not immediately adjust to changes in labor market conditions in the model, the lagged effects are significant and in the expected direction according to the theory of reserve army.

6 Conclusions and Challenges for Future Research

The results indicate that the Kaleckian model overall performs well; estimations are mostly according to the predictions of the model, although within large confidence intervals. The Keynesian and Kaleckian hypothesis about the labor market are confirmed: Accumulation and capacity utilization/growth have a strong impact on employment. Goods market variables have a strong impact on unemployment and the economy is driven by investment expenditures; accumulation also impacts strongly upon capacity utilization. The neoclassical hypotheses of the labor market are not validated. There is little evidence of employment reacting to wages (profit share), and no evidence for substitution. The ineffectiveness of labor costs on employment does not differ much between developed vs developing countries; the only difference is that in the latter there is even a negative

response of employment to a decline in the wage share. The findings also suggest that productivity growth does play an important role. It is not distributionally neutral and causes unemployment.

However, the results also points at some challenges for the model. No statistically significant effect of the ‘profit share’ was found on investment and growth in developed countries, as well as in one of the developing country cases, Turkey (apart from the slightly significant but very small effect in the second period). There is basically no result in terms of the Kaleckian distinction of wage-led vs. profit-led regimes for a wide range of different countries, and it also is not easy to generalize that developing countries tend to be more wage-led just based on the Korean case. Are the international demand, and profitability effects on the one hand, and the domestic demand effect on the other hand exactly offsetting each other in all the other countries that we studied? Although that is theoretically possible, it is not likely in the VAR setting, particularly because there would be some inter-period differences in the way the lagged effects operate through different channels, and it is unlikely that there is no period where there is a significant effect. It is also interesting that this is the case for many different countries.

The next question is whether the “profit share” is an appropriate measure for income distribution. At the conceptual level it is useful, because it serves the dual task in the model as a proxy for wages in the distribution and savings functions, and a proxy for profits in the investment function. However, there may be measurement problems. First there is the issue of taxes. The savings differential through which profit share is expected to effect consumption, works from net income, i.e. post-tax income, whereas profit share measures pre-tax income distribution. The same is true for the profit share in labor demand. If there are significant changes in the tax wedge between post-tax wages and gross compensation, the profit share may be a bad proxy. However, since tax structures change slowly, it

would be surprising, if this problem dominated the VAR estimations. Second, the profit share is value added minus labor compensation. Thus it includes the income of self-employed as profits, whereas wage payments to management are counted as wages. Although these are important concerns, clearly the profit share is statistically negatively (and significantly) correlated with real wage. Thus the profit share variable is certainly not dominated by noise due to measurement errors.

Finally, the results bring up the question whether the model is looking at the right variables. Are other factors effecting investment, such as expectations, financial structure, state policies, and institutions more important? Although the wage-led accumulation regime scenario and the effect of demand on accumulation explain part of this story, there certainly are more to that in explaining the striking difference in investment rates between these countries. Within the institutional and class structures of these economies, there are many factors that determine accumulation other than demand and distribution.

The limits of the VAR framework is that with a generous lag structures the number of variables that can be incorporated is restricted due to a lack of degrees of freedom. However, the limits are also related to the difficulties in quantifying institutional structures. For example within a business environment created by active state policies, there was a virtuous cycle of increasing wage share, high investment, high productivity, high growth in South Korea, as opposed to the Turkish case with the vicious circle of decreasing wage share, low growth, low investment, low productivity. Unfortunately, it is difficult to model and test the complicated role of state's economic and specifically industrial policy by adding simple and measurable variables. State expenditures would be too coarse a measure, because the policy aspect lies in the details of these budgetary expenditures that even go beyond the composition between current vs. investment expenditures, such as subsidy

and incentive structures. Similarly the multi-foreign exchange system for different industries and even firms in Korea cannot simply be captured by the rate of depreciation of the official exchange rate. Such complexities make it hard to carry the institutional information into the framework of time series.

The incorporation of financial sector to the model would also improve the model. Unfortunately not only the limitations of SVAR, but also limitations regarding the data to measure these effects related with financial variables and expectations, leave these crucial aspects unexplored. Real interest rates were completely insignificant in the estimations; obviously they were unable to capture the full complexity of the structural change in the financial system and the role of the institutions for the cases we studied.

We also experimented with the specifications including inflation and the change in inflation to reflect the macroeconomic environment. Again, no major changes in the impulse responses occurred, though, unsurprisingly, confidence intervals increased.

The complicated link between the wage share and investments could to some extent be uncovered with a model that decomposes the wage share into real wages and productivity. Such an analysis could provide an insight on how wage bargaining, investments and technological change interfere.

7 Policy Implications

Important policy implications follow from the results: If we turn around the result about the ineffectiveness of distribution on accumulation and employment, we can conclude that actual economies are „not profit-led“. Thus, a pro-capital incomes policy is neither a necessary nor a sufficient condition to achieve higher accumulation and growth. On the contrary, the decline in domestic demand can have detrimental effects on long term growth potential of the economy.

Secondly, demand is the driving force behind employment. The increase in competitiveness, which is maintained via wage suppression, does not necessarily transform into higher employment. The limits in creating employment via low wages and a growth regime based on the use of existing capacity, rather than new investments point out the significance of active policies to stimulate accumulation. This alternative line of economic policy necessitates a different perspective of international competitiveness, which is based on enhancing productivity. Moreover, if distribution is neutral with respect to investment, then there is room for egalitarian redistribution policies, without harming the growth potential of the economy.

In terms of the development agenda, the responses of accumulation, growth and employment to distribution are suggestive in explaining some crucial aspects of the mechanism behind the inability of orthodox, market-based, export-oriented growth strategy relying on decreasing wage shares to stimulate accumulation and employment. The centrality of demand, and the inability of low wages as a policy tool to stimulate investment point at important policy lessons for the design of an alternative export oriented growth strategies. Clearly, institutional settings and state policies matter more than distribution in achieving a high, investment and productivity led export performance. Obviously, the

neo-liberal reader could think that state policies were at the heart of the structural problems of the Korean economy, that resulted in over-investment in sectors with falling profit rates. However, the counterfactual of this argument would still lie in the design of state policies that led to unforeseen growth rates, and the need of the Asian model was to revise its state industrial policies, and not to abolish it. Speculating more on the design of the relevant industrial policy tools is beyond the scope of this paper, however there one more policy issues that should be addressed.

Are such policies available simultaneously to all developing countries trying to compete for a limited global market? Obviously that brings in the questions about the design of a new international system targeting coordinated and expansionary macroeconomic policy, which would benefit not only the developing but also developed countries. Although the existing balance of power relations between the multi-nationals dominating the world markets and the working masses of the world, an alternative international macroeconomic policy seems quite unachievable even in the context of EU, which is claiming to be not only an economic but also a political union. The neoliberal policies representing the interests of the firms, preventing any coordinated policy, which could target demand management is hiding behind the discourse of market efficiency and anti-inflation targets. Although the global chorus of neoliberalism ranging from academics to Central Bank experts is repeating the need for tight fiscal and monetary policy, we still conclude by repeating the need for a coordinated international expansionary macroeconomic policy.

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