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A People´s Econometric Model for Venezuela

Modelo econométrico popular para Venezuela

A first Outline of a Concept for a "People´s Econometric Model" for Venezuela, illustrated by the features of a highly advanced Model for Germany LAPROSIM with amplifying short remarks on national account statistics based on monetary units and the problem of a rebasing on labour value

(Draft of my contribution to the International Conference: Los pueblos con la ciencia construyen el socialismo del siglo XXI. Segundo Encuentro Internacional del Bloque Regional de Poder Popular (BRPP), los dias 27, 28 de febrero y 1 de marzo en la ciudad de Barquisimeto, estado de Lara (Venezuela).

1. The general purpose of macroeconometric modelling and possibilities for the peoples movement

The general aim of macroecometric modelling is not at all new or exotic: Giving a realistic and reliable "moving picture" of economic dynamics in the real world. Although the Dutchman Jan TINBERGEN stood at the cradle of macroeconometric modelbuilding as we understand it today, in the thirties of the last century, Karl MARX outlined, in reception of the works of Francois QUESNAY, very early not only the concept of a national account statistic, but also, in his reproduction schemes, a model of macroeconomic dynamics. Lack of available data and lack of computational power in the nineteenth century obviously hindered MARX and his contemporaries from filling that concept empirically.

On the base of a well specified macroeconometric model, tracking with sufficient reliability the "future history" of economic development in the estimation period, forecasts can be done. But supporting business cycles prognosis is not the main purpose of macroeconometric modelling, as already Jan TINBERGEN figured out. The main purpose is the ex ante

assessment of different policy options, based on the understanding of the complex dynamics of the economy, captured in the structure of a good model.

This “general purpose” will in practice certainly not be pursued independent of the specific social resp. class interests: It is known that the policy options preferred by the rich generally are totally different and commonly antagonistic to the policy options preferred by the poor.

The typical macroeconomic model till today reflects “the rich man´s view”. It does not do so by describing all economic processes in a wrong manner, but puts an interest-led bias in the model structure mainly by:

- omitting important variables; f. ex. neglecting the economic impact of public infrastructure investment in order to keep the importance of the state small and
- by inappropriate aggregation ; f. ex. handling “disposable income” as the central determinant of private consumption as a whole and not disaggregated by functional and/or personal income categories for blurring the effects of distribution on aggregate demand.
- focussing the structural design of the model mainly on class specific knowledge interests, as it happened for example in the IMF-type models applied on Latin America. “Focussing” means in this context: Which parts of the modell, are modelled very accurate and disaggregated, ´which submodells are modelled in a more basic way? The IMF-type models were structured mainly focussing on the question of how to generate high net exports for financing debt payments to the rich OECD-countries. Many models in use, as the English multi-country model NIGEM, focus mainly on monetary and financial market variables, and less on variables concerning production, distribution, use and employment in the “real economy”.

What is the main cause for this situation?

- Up to the eighties of the last century, even the computation of, from a retroperspective viewpoint, small and medium sized models could only be solved on mainframe computers. Both the computers, the software and the edited databases were extreme expensive and completely out of the reach of average earners or smaller organisations (The author made his first steps on a Siemens/Fuijutsu – Mainframe Middle of the eighties, using the “Troll”-software). TINBERGEN solved his, seen from today, small and simple pioneering macroeconometric models with the assistance of a lot of specialized manpower and simplifications. In general, from the

resources needed alone, macroeconometric modelbuilding was an extremely expensive task, only feasible for very wealthy organisations, in tendency affiliated in one or another way to bourgeois class interest.

- The formal education needed for the setup of such models **and,** at the same time, the resources for applying the fruits of this education practically were, also due to the high amount of resources needed for computers and software alone for a long time monopolised at a small group of elitist Universities with big spenders, as for example Yale and the MIT in the USA. For that reason, mainly the children of the upper classes got in contact with these advanced methods of modelling and forecasting economic processes, transporting *in general* their class specific interest in the way they use the new instrument (I don´t forget ENGELS).

So, not long ago, only materially resourceful people, with, in general, the political interest of materially resourceful people had access to the practical implementation of a concept of dynamic modelling of the economic process, of which, surprisingly enough, Karl MARX was the most important forbearer. It was much more interesting for upper class offsprings doing research on policies, that lead to higher gains from financial markets than on policies improving the life conditions of the working class. Also career chances in general for economists improved by focussing especially on financial market issues, as banks and other financial institutions and their research departments are both important demanders and suppliers of macroeconometric output.

Today, the situation concerning the cost of resources has changed fundamentally: concerning the hardware and software resources needed, a 500 $ laptop, in combination with a 500 $ software, as, f. ex., the wide spread “EVIEWS” (they do not pay me for this), will do it, compared with several hundred thousand or even million dollars thirty years ago. Today, most fundamental macroeconomic databases, also for Venezuela, are available on the internet for free. Even small organisations and also many individuals can afford the hard- and software resources needed for macroeconometric modelling or the use of macroeconometric models.

Meanwhile formal education in macroeconometric model building, combined with the resources to do “hands-on” training is, not at least due to the massive decrease of hard- and software costs, more wide spread also on “normal” universities than in the seventies or eighties, but very much less than it could be.

The reason for that is mainly ideological: Surely most of the models build, up to the beginning of the eighties, where not focussing on modelling all the issues in the specific interest of labour, but they stood, as dynamic "circulation models", in the Keynesian tradition of system immanent economics. This direction of bourgeois economics, states ---concerning the output and employment target--- especially in economic crisis, a supremacy of macroeconomic politics on the level of the economy over a mere "invisible hand" approach, assuming "efficient markets" and the highest output resulting from the most deregulated markets (Neoliberal approach). As we know, the last approach got dominant in the politics of the most advanced capitalist countries, starting with Mrs. Thatcher in 1977 and followed by many others, including most of those parties under the label "social democrats" or "socialists". Models showing, that macrodynamic "behaviour" on the level of national economies does not simply reflect aggregate behaviour of microeconomic entities, especially enterprises individual firm, did not meet "the spirit of time" anymore. This was supported by academic neo-liberals, spearheaded by the "chicago-boy" and Nobel laureate Robert LUCAS, lending all his authority to a "fundamental" critique on macroeconometric models and stated them in general as useless for policy advising. In the aftermath, a lot of academic teachers jumped upon the neo-liberal bandwagon: in the case of Germany, macroeconometric model building nearly disappeared as an academic discipline of economics taught and practised at universities, with very few exemptions. For that reason, working on that "obsolete" subject was no way for fostering an academic career. Because macroeconometric model building is very work-time demanding on one hand and gave not much benefits for an academic career on the other hand, the "dumb force of circumstances" prevented a lot of bright heads of doing this work and left the subject to some professional forecasters in big banks and international institutions and a few "maniacs" fascinated by the matter and its possibilities.

Meanwhile, and especially since October 2008, things have changed dramatically: the neoliberal paradigm as a ruling ideology in the main capitalist countries has lost its "Battle of Leipzig" and is now obviously marching to its "Waterloo". The obstacles piled up by neoliberal ideology against the potential use of macroeconometric models as useful tools for the task of making the effects of policy alternatives transparent for and by the people, will be moved aside with the total collapse of the credibility of this ideology.

That makes way for the use of this instrument in a process of democratization of the economic debate by getting more forward-looking transparency concerning the consequences of alternative policy options.

Well specified models, focussed on labour interest, connected with model building capacities for adapting such models to special questions of interest, allows the evaluation of concepts developed by the social movements themselves; but in principle also the evaluation of every policy program of the political adversary found in the political debate. Both policy options developed by the peoples organisations and that of their adversaries can be evaluated and asked for their consequences on the living conditions of the working class, both in the active age , the children or retired. As already mentioned, affiliated with and applied in democratic social movements, using the specialized scientists/economists related to this movements as "operators", this models may contribute to a more democratic and participative debate on the theoretical and practical outlines of macroeconomic policy conduct and the true intentions of proposed politics. For example especially upperclass-based parties all over the world regulary try to sell their special interests as the true interest of "all the people", as being in the interest of "freedom" and "human rights". They never state: "We want to rob you". Putting such programs on the test in simulating the proposed policy on an appropriate model can demonstrate, who really benefits an who looses in case af the realisation of a specific political concept. By this, democratic movements may take a qualified "look behind the curtain".

2. An Example of the features of a high developed "labour-focussed" models: Assessing typical "left wing" and "right wing" policy concepts for Germany with the macroeconometric model LAPROSIM ver.21.09

At this time, a highly disaggregated and "labour-focussed" model for Venezuela is not at hand. To build, test and document one, a team of able people and about a year of intensive work would be needed. My possible contribution to the development of such a model is named "Project Marguerita" and is in the early stadium of collecting databanks in preparation of further processing. Thus, in order to illustrate the features of a model of this type, at this time I have to fall back upon the German model. That means, that probably not the specific numbers are of interest to You, but the outline of model behaviour: Since this model

behaviour would be in general also replicated in a Venezuelan model, taking note in an extensive way of the specifics of the Venezuelan economy.

A brief Survey on the Macroeconometric Policy Simulation Model for Germany LAPROSIM Version 21.09

The „LAPROSIM"– model family was born in 1990 at the IKSF (German acronym for Institute for Studies on business cycles and economic Structure) of the University of Bremen during my Master Studies there. "LAPROSIM" stands for the german term "LAngfristPROgnose- und SIMulationsmodell", translated Longterm Forecast and Simulation Modell
It was used in different scientific and policy advising contexts, including Trade Unions, Leftist Parties and also Federal and State Ministries in Germany since then and is one of the very few "living" (what means constantly fostered, used and underlying further development) macroeconometric models in Germany. So nearly 20 years of work have materialized in the actual version.
The Model is optimized for the simulation of complex economic policy strategies, containing in the core model alone now 927 equations, thereof 187 behavioural equations and further 158 technical relations. There are several hundred additional equation linkable with LAPROSIM for special tasks, as for example regional econometric analysis. It is based mainly on national account and central bank data, completed by data of international organisations, mainly the OECD and the UNCTAD. For practical purposes, it is mainly estimated by simple OLS. For most behavourial Equations, the estimation period includes data from the first quarter 1970 to the fourth quarter 2007; some equations base on an even longer estimation period, starting 1960, so that you retrieve reliable long term relationships.

The model consists of complete, national account based interdependent sub-models for economic supply and demand, labour markets and distribution that reflects economic development in a highly endogenous way:

- Formation of the capital stock
- Formation of educational "capital"
- Production of Value Added (main sectors of the economy)
- Distribution of income, both functional (primary and secondary) and personal
- Use of GDP (Consumption, Investment, external trade, all disaggregated)

- Employment, disaggregated for “secure” jobs and mini-jobs
- Prices
- Money, credit, shares and government bonds (basics)
- Public Sector / State (differentiated for different levels of regional administrative bodies and the branches of the social security system

The reliability of the model as a whole is regularly tested by “Dynamic Ex-Post Simulations” in the estimation period, testing how the model tracks economic development in the past by only using the start values of the endogenous and the set of exogenous variables as predetermined values.

Simulating two antagonistic ecomonic policy concepts for Germany: the trade unionist concept of the “MEMORANDUM-Group” and the market-radical “IFO-concept” (Prof. Sinn)

2.2.1 The Scenarios “MEMO” and “IFO”

For the purpose of illustrating the features of a “labour-focussed” model of the LAPROSIM-type, two scenarios for two antagonistic policy concepts discussed in Germany have been set up in a stylized, simplified way:

Scenario MEMO includes main economic elements of the politics regularly proposed by the “MEMORANDUM-Group”, a german federation of leftist and trade-unionist economists. MEMO-Group publishes an anti-mainstream-“MEMO” every year short before “Labour Day” since 1975. The key elements of *MEMO-scenario* are:

- A tripling of public investment, mainly for repairing the infrastructural shortcomings of the past decades
- Shortening negotiated working hours by three hours a week, what leads in mean to a week with 35 hours of working time for the usual full-time-worker.
- Increasing welfare benefits in case of disability or unemployment by 20 percent, thereby adapting welfare benefits to the minimum for a life in dignity.

- Lower the tax burden accurately for lower and middle incomes

The antagonist concept, the *IFO-Scenario* captures main political targets of the German neo-liberals, whose main academic proponent is the head of the German economic "think-tank" IFO Institute, Prof. Sinn:

- Increasing regular Working hours by 7 hours, what results in 45 working hours a week for full-time workers
- Cut down public spending on infrastructure and encouraging privatization of infrastructural tasks: Reducing public investment by 50 percent.
- Halving benefits for the unemployed and otherwise needy persons.
- Nearly Halving public employment and related public spending
- Cutting trade unions Rights to undermine their Bargaining Power even more , with the result of lower wage increases.

The Scenarios were solved for the time period 2009 to 2020. Afterwards, the results were compared with the *"baseline-Scenario"*, solved for the same period and containing a "status-quo of 2008" or "no change" assumption, concerning economic politics.

2.2.2 The main Results

In the *MEMO-case,* total domestic demand and especially its main component, private consumption, increases clearly. On the other hand, due to the high increase of domestic demand, imports also increase, with the effect of a substantial lowering of net exports (Figure 1).

The increase of domestic demand results mainly

- from the direct and indirect demand effects of the strong expansion of public investment. The direct demand effects foster a substantial growth of employment, the last increases private consumption. This "second round effect" strengthens the direct demand and employment effects.
- Increasing welfare benefits improves the income situation of the poorest, mostly marked by consumption quotas of 100 Percent and close to that. Therefore, nearly every additional Euro will be spend for consumption and thereby increase domestic demand.
- Decreasing taxes for low and middle incomes also strengthens private consumption, because mainly wage earners with a high consumption quota are benefited.

- Employment growth relative to baseline (figure 3) and at the same time an improvement of the mean quality of jobs (less low pay jobs, more jobs with regular social protection; figures 4 and 5) is supported by a shortening of labour time. Increasing employment reflects in diminishing unemployment, therefore the bargaining power of trade unions improves an higher wages can be negotiated, giving additional support to the development of private consumption, but also housing investment.
- Increasing government spending and spending on consumption and housing raises also the capacity utilisation of private enterprise capital. This effect on private non-housing investment is stronger than the effect of a slightly lower gross profit rate. In addition, the strong improvement of infrastructure fosters also the profitability of private investment. Therefore a remarkable raise of private investment takes place in the long term.

The distribution of income, both functional and personal, changes as follows:

- While in the baseline solution (figure 7) a steady decrease of the net wage share and a similar steady increase of the net profit share in total disposable household income can be observed, the “MEMO”-politics stabilize functional income distribution and gives a halt to the anti-labour development of distribution of the last 30 years in Germany (figure 9). Because this policy does not touch profits in a fundamental way, it is surely a quite reformistic policy, but at that time the most influential anti-mainstream position in economics Germany has to offer.
- Taking a look at the changes in personal income distribution, it can be observed that the lowest income quintile gains the most and also the second lowest and the mean quintile raise its income shares substantially. The gains of the lowest three quintiles reflect mainly in the losses of the highest quintile (figure 12). Against the background of a generally increased household income, the outcome is more income equality for the people on a higher average income level. But as the absolute quintile distribution of the baseline solution shows (figure 10), the changes documented in figure 12 are relatively small and do not touch the fundamentally unequal income distribution in a fundamental way.

Although government spends a lot more of money than in the baseline case in this scenario, the net government household balance remains, seen over the whole simulation period, nearly unchanged (figure 13). The reason for this is mainly the strong employment increase, and the even stronger raise of the number of "good jobs" (figures 3 and 5). This development leads to substantially higher direct and social tax revenues, flanked by higher value added tax receipt from significantly higher domestic demand. Because on one hand much more employed persons pay social security taxes and on the other hand less unemployed persons need unemployment benefits, the government is even capable of reducing the social security tax rate (figure 14) as a result of MEMO politics.

In the *IFO-case*, on the long run real GDP nearly remains unchanged (figure 2). Total domestic demand shrinks slightly while net export volume increases substantially. The strong reduction of public demand respective employment, accompanied by massively decreased social benefits leads and a high increase of normal individual working time leads to a deflationary situation with massive personal reduction respectively increase in unemployment (figure 4). But not only diminishes employment, also the quality of the reduced employment deteriorates: while the number of "Mc Jobs", with earnings not sufficient for the reproduction of labour force, is strongly increasing, the number of "good jobs" within the public social security system is falling dramatically (figures 4 and 5).
Due to weakened trade unions and high unemployment, both wages and social benefits indexed with wage development (f. ex. pensions for the retired) decrease. Lower production costs following clearly lower wages foster substantially higher export volumes, both absolute and net, widening given external trade imbalances to the disadvantage of the "trade-partners".

The distribution of income, both functional and personal, worsens dramatically for the working class:

- The profit share increases strongly. At the end of the simulation period, nearly 60 percent of total disposable income is profit income (figure 8). Although overall growth of the MEMO-Scenario is stronger, the earners of profit income are better off, because the effect of strong structural change to profits exceeds the effect of the somewhat lower growth in real terms. The net wage share nearly halves itself. Although social benefits are halved for the needy individuals, the mass of additional unemployed persons stabilizes the share of social transfer payments, it only slightly decreases and gets finally bigger than the wage share in a passive manner.

- It takes no wonder that the income share of the highest quintile rises strongly, while especially the income share of the poorest quintile looses most. Also the second and the mean quintile take some losses (figure 11).

Although in the IFO scenario government spending has been cut down very rigorously, the net government household balance has even worsened in comparison with the expansive fiscal policy of the MEMO-type (figure 13). The main causes are

- the much higher number of unemployed and the also massively increased number of still employed persons on Mc Jobs (figure 4) in need for additional social benefits, because their wages do not allow for the individual reproduction of labour force.
- The much lower number of employed persons able to pay taxes. Therefore direct and social tax revenues decrease strongly. Anyway, lower domestic demand leads to diminished value added tax receipts. Although individual welfare bebefits are much lower than in the MEMO-case, both in real and nominal terms, virtual IFO-government has to rise the social security tax rate significantly (figure 14), because on one hand much less employed persons pay social security taxes and on the other hand much more unemployed and underpaid persons need unemployment benefits respective additional welfare assistance.

3. Resume

So the assessment of the two politics made clear, that from a working class point of view the MEMO-option is of some use for the improvement of the income situation of at least the people in the lowest three income quintiles, while the alternative IFO-policy only benefits the upper classes and worsens the situation of the working class concerning income, employment opportunities and quality of employment.

Figure 1:

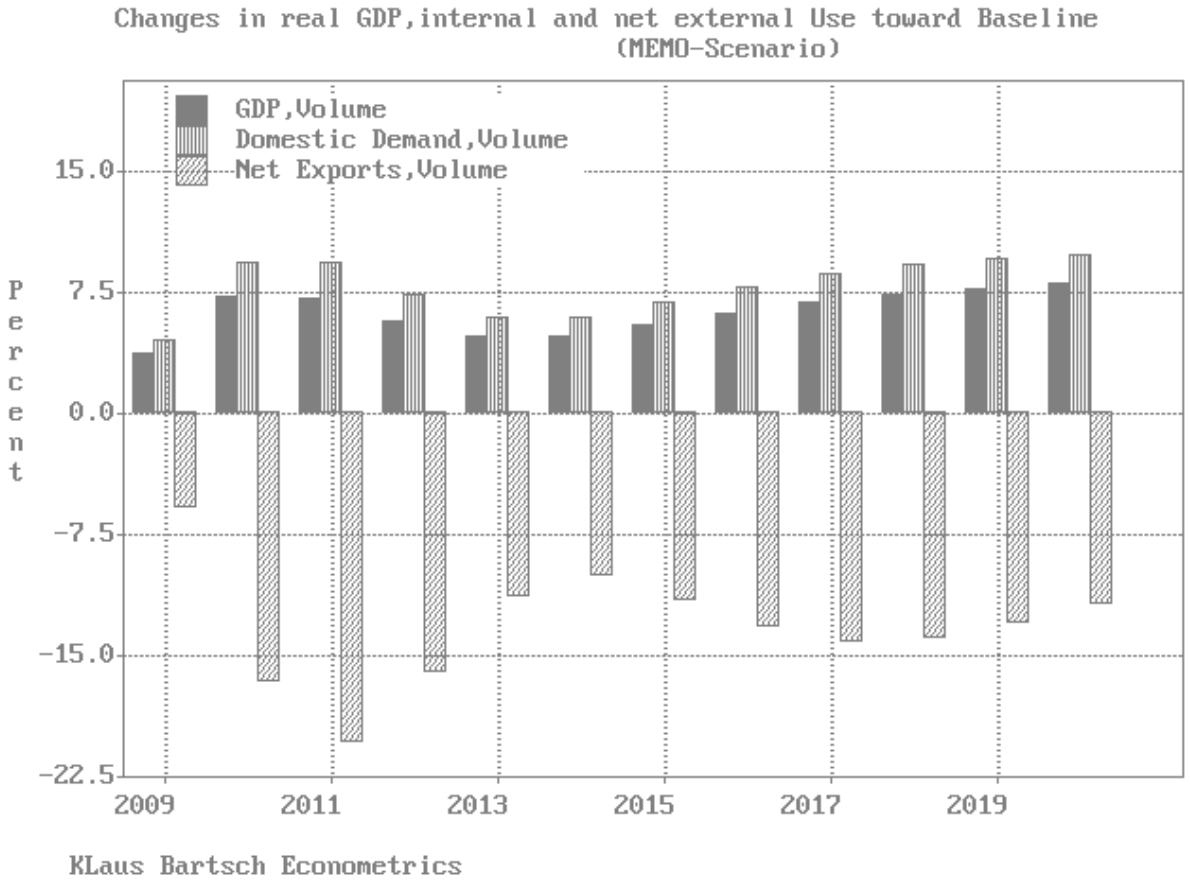
Changes in real GDP,internal and net external Use toward Baseline
(MEMO-Scenario)
GDP,Volume
Domestic Demand,Volume
Net Exports,Volume
15.0
7.5
0.0
-7.5
-15.0
-22.5
Percent
2009
2011
2013
2015
2017
2019
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Figure 2:

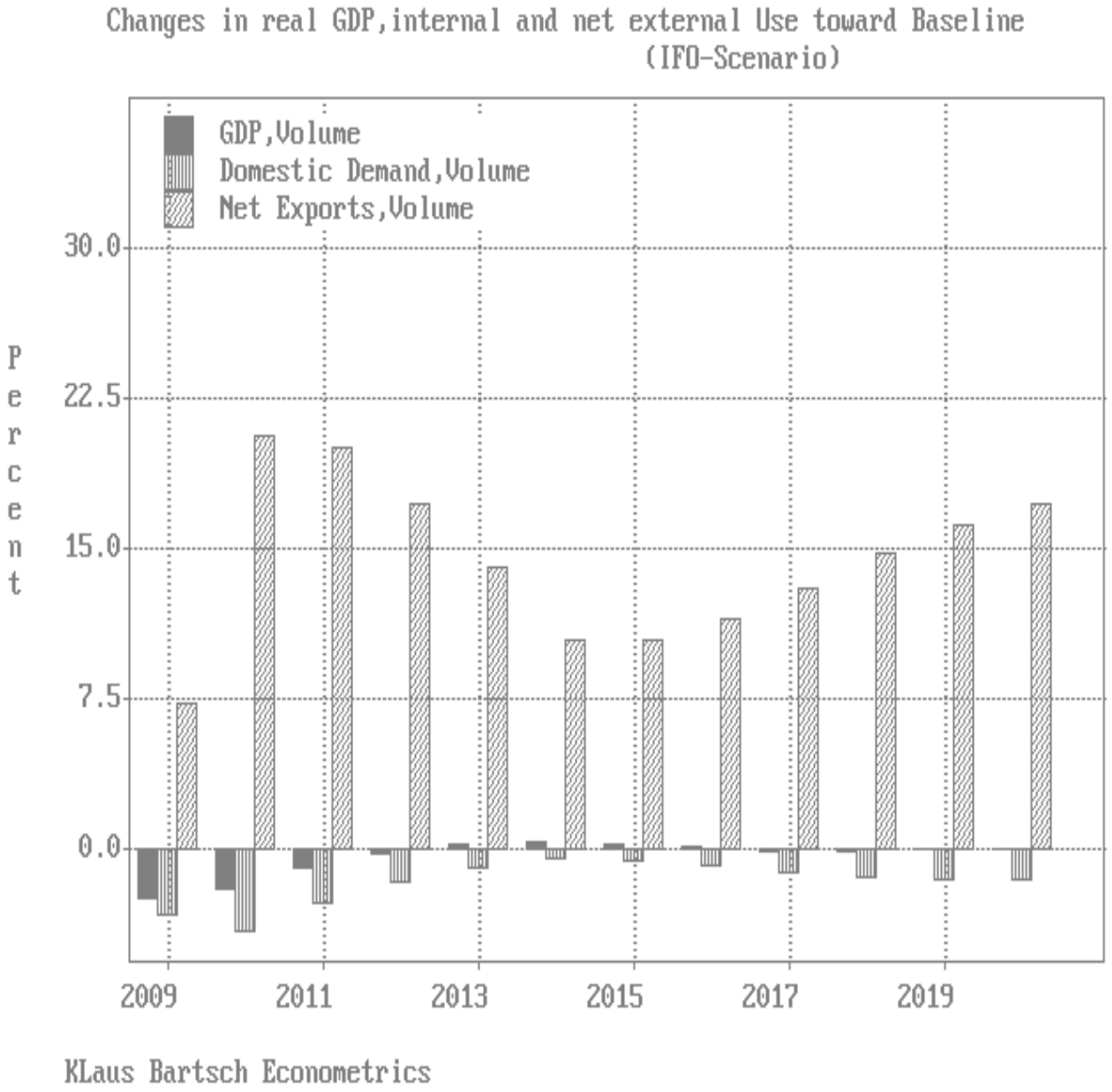
Changes in real GDP,internal and net external Use toward Baseline
(IFO-Scenario)
GDP,Volume
Domestic Demand,Volume
Net Exports,Volume
30.0
22.5
15.0
7.5
0.0
Percent
2009
2011
2013
2015
2017
2019
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Figure 3 :

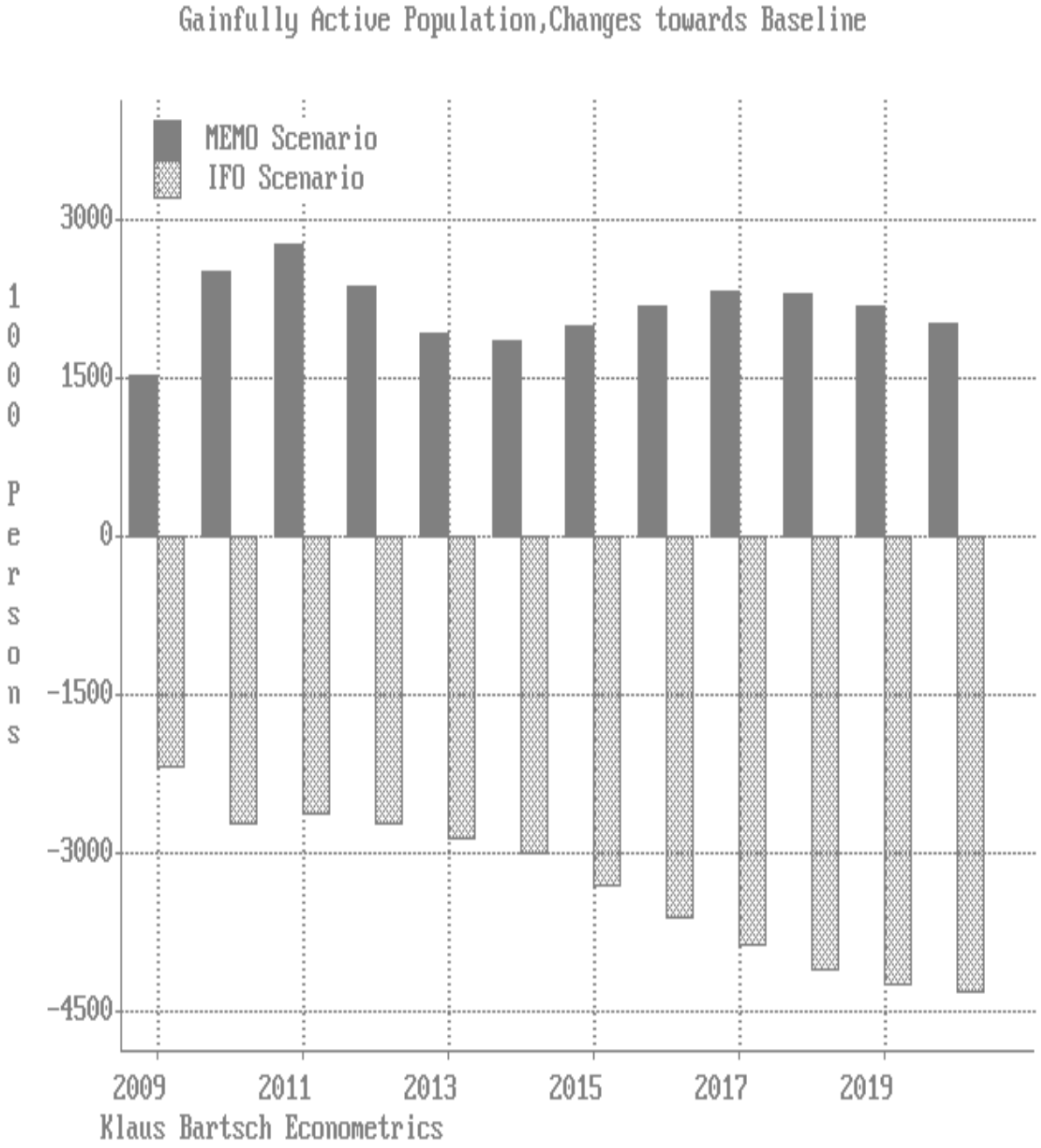
Gainfully Active Population,Changes towards Baseline
MEMO Scenario
IFO Scenario
3000
1500
0
-1500
-3000
-4500
1000 Persons
2009
2011
2013
2015
2017
2019
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Figure 4

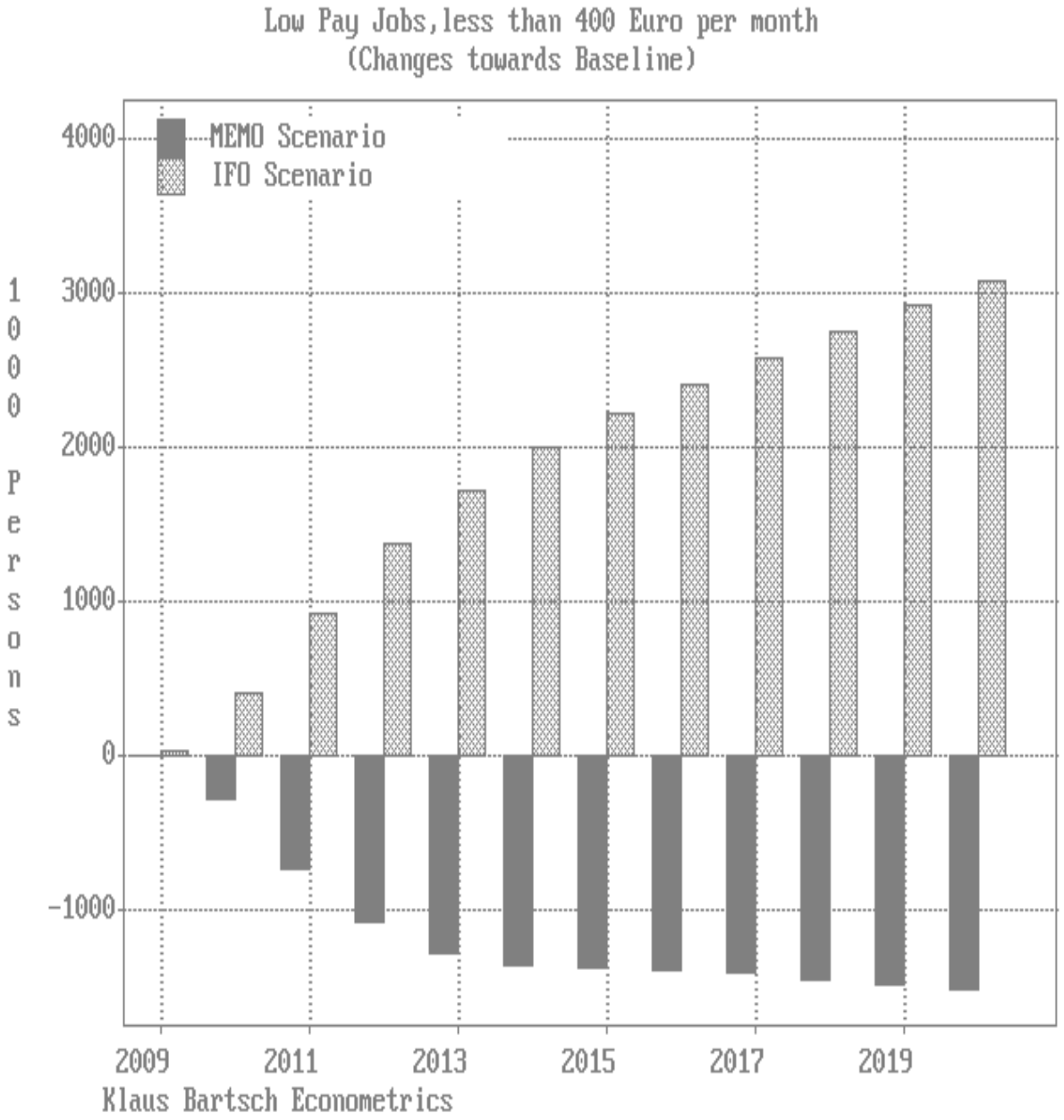
Low Pay Jobs,less than 400 Euro per month
(Changes towards Baseline)
MEMO Scenario
IFO Scenario
4000
3000
2000
1000
0
-1000
1 0 0 0 Persons
2009
2011
2013
2015
2017
2019
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Figure 5

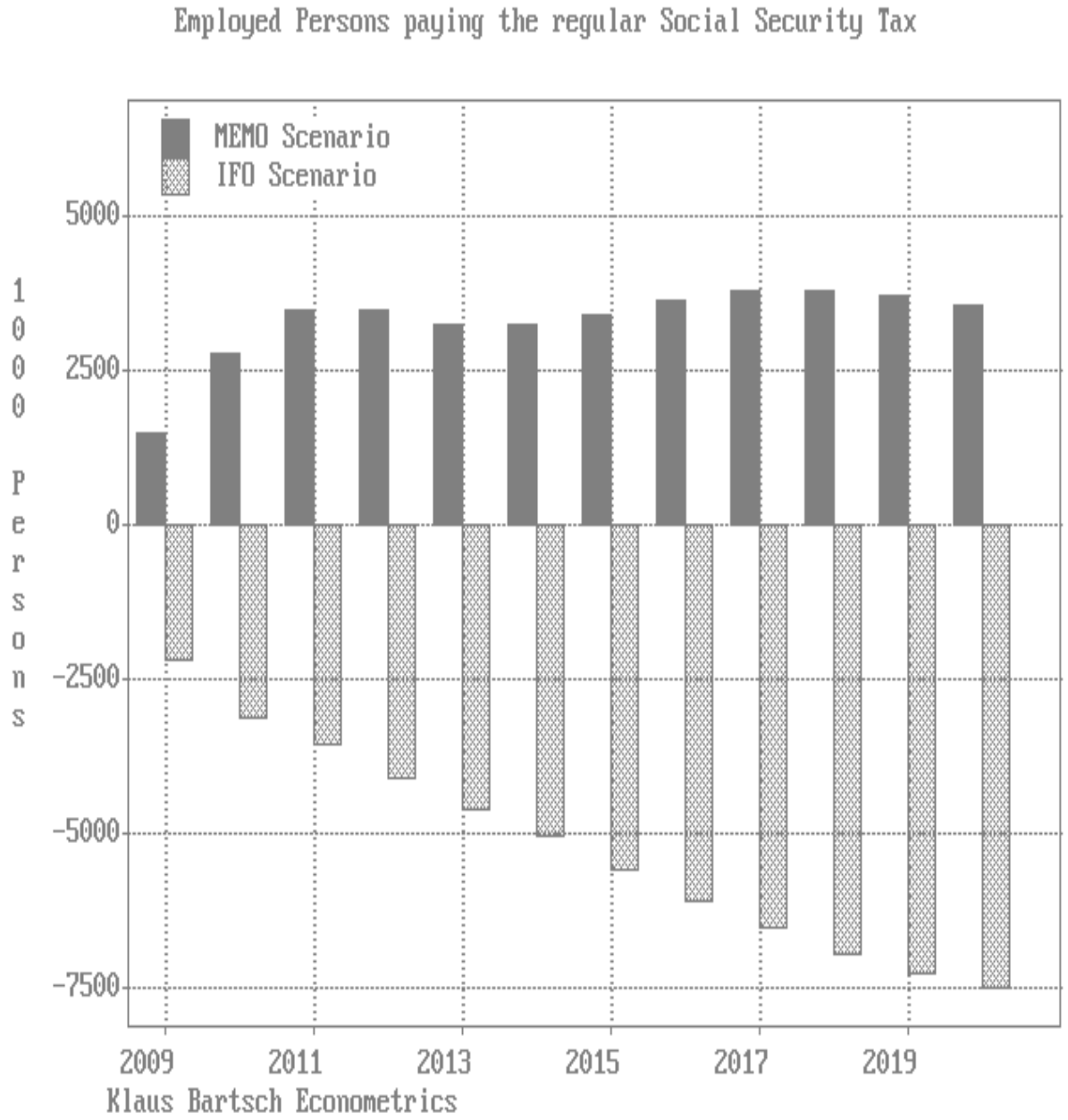

Figure 6

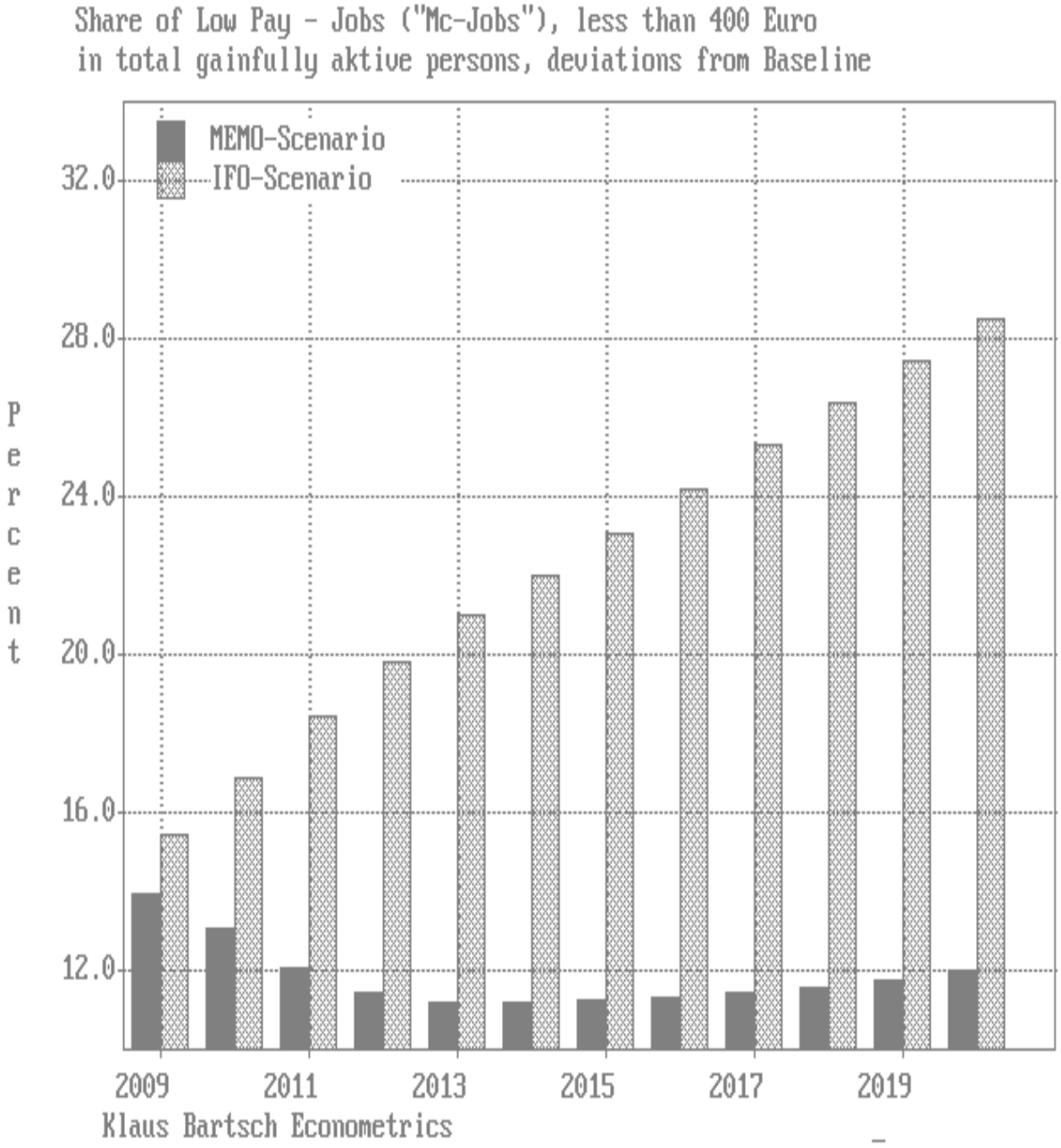
Share of Low Pay - Jobs ("Mc-Jobs"), less than 400 Euro
in total gainfully aktive persons, deviations from Baseline
MEMO-Scenario
IFO-Scenario
32.0
28.0
24.0
20.0
16.0
12.0
Percent
2009
2011
2013
2015
2017
2019
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Figure 7

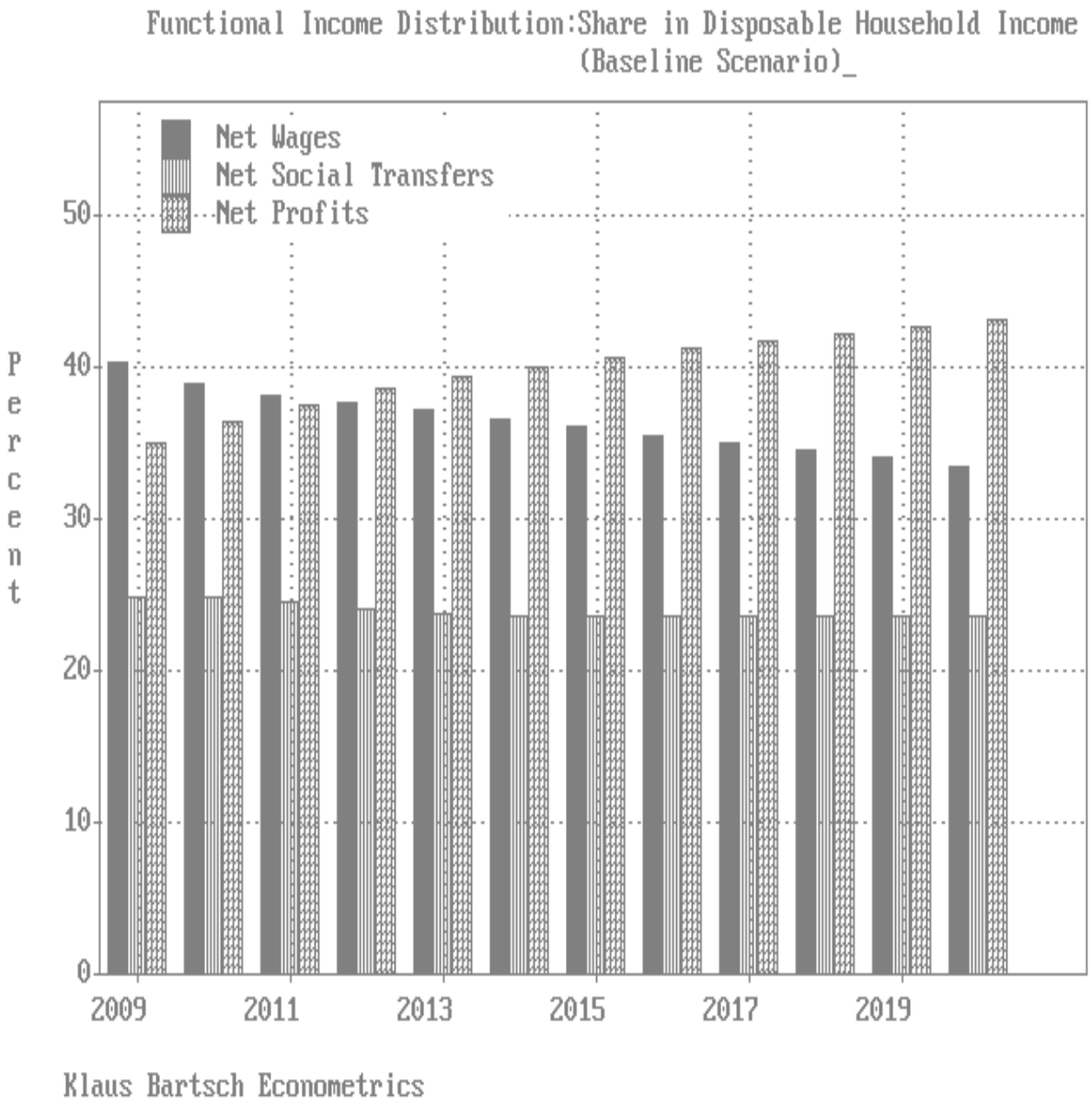
Functional Income Distribution:Share in Disposable Household Income
(Baseline Scenario)_
Net Wages
Net Social Transfers
Net Profits
Percent
50
40
30
20
10
0
2009
2011
2013
2015
2017
2019
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Figure 8

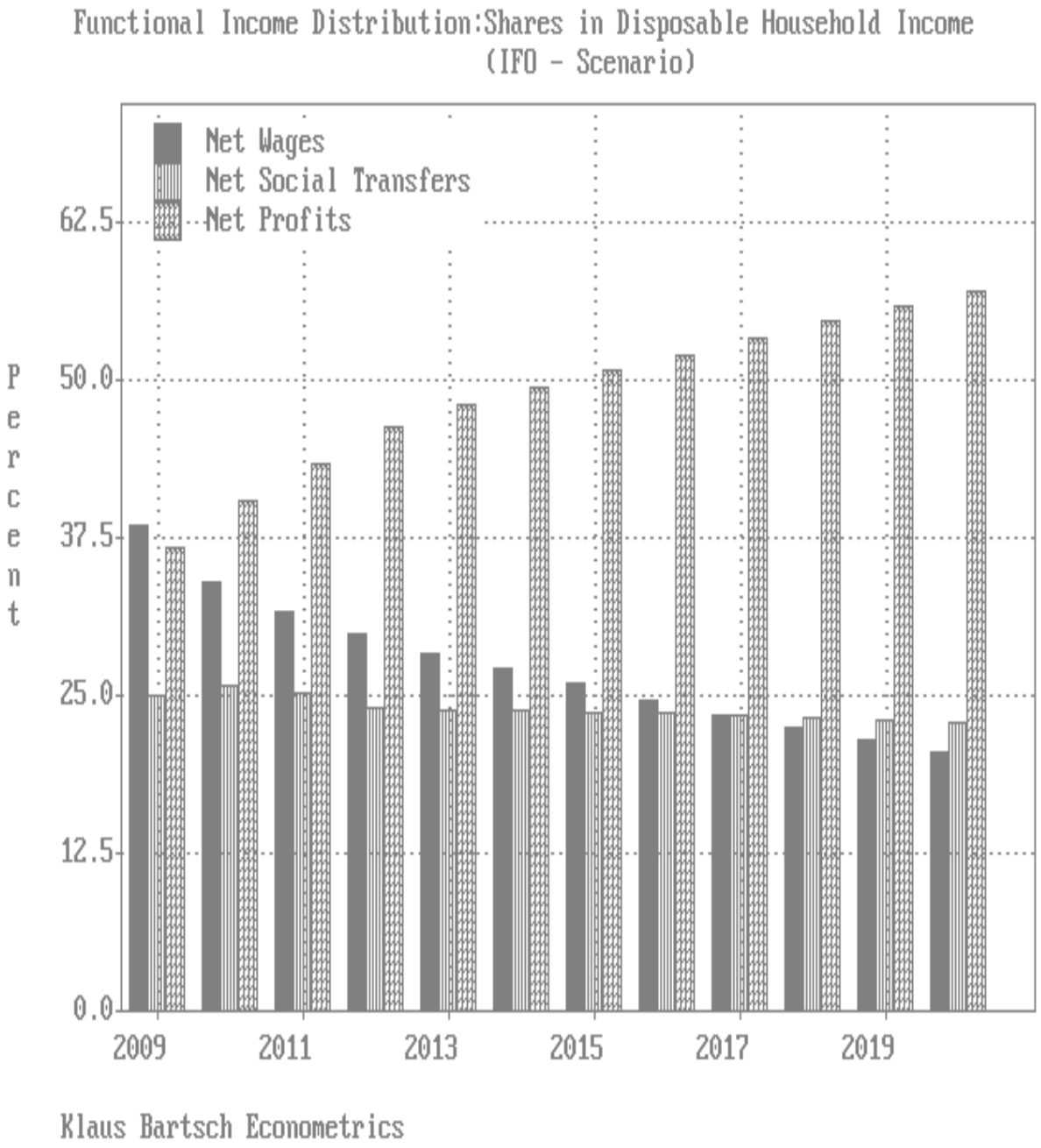
Functional Income Distribution:Shares in Disposable Household Income
(IFO - Scenario)
Net Wages
Net Social Transfers
Net Profits
62.5
50.0
37.5
25.0
12.5
0.0
Percent
2009
2011
2013
2015
2017
2019
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Figure 9

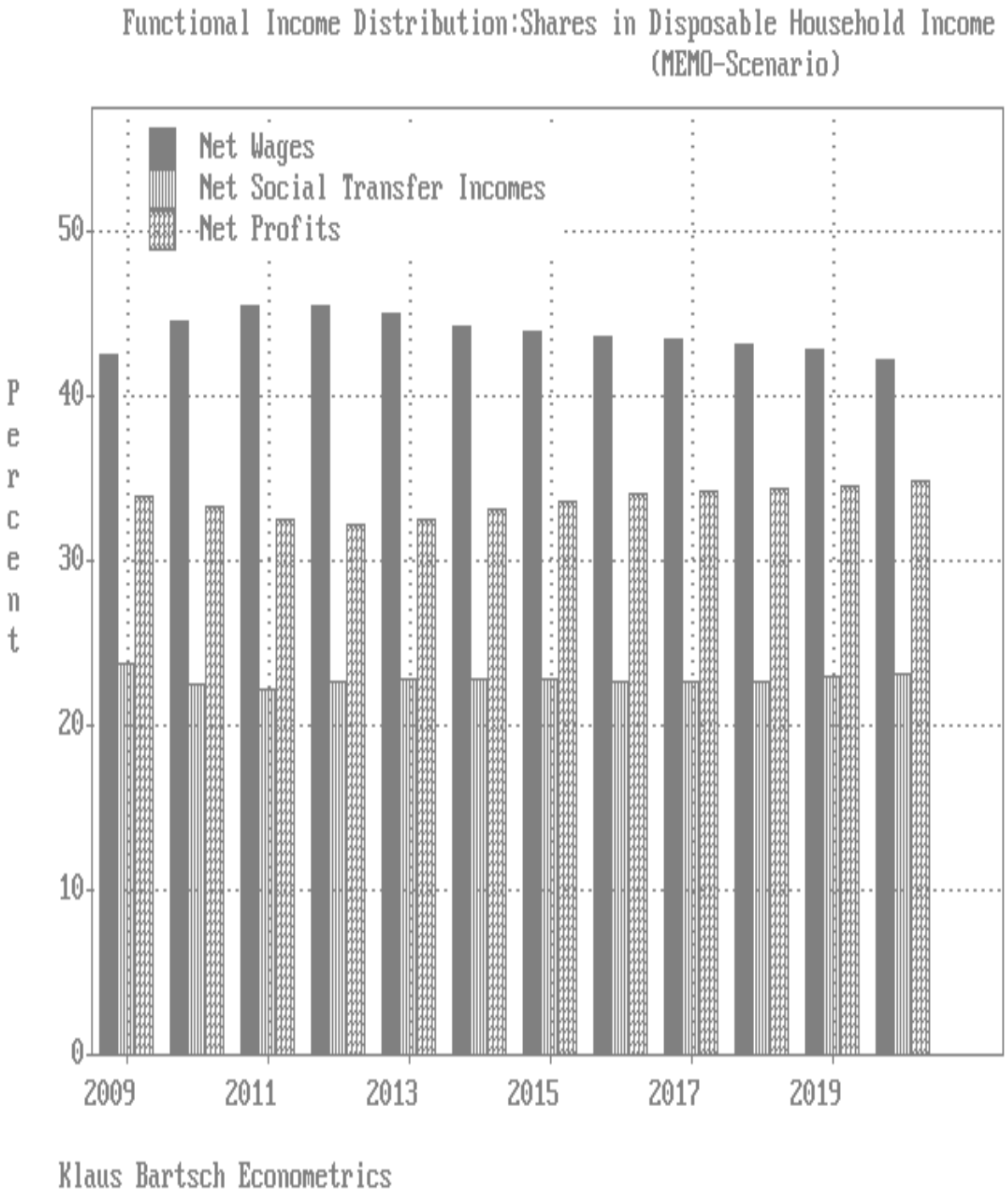

Figure 10

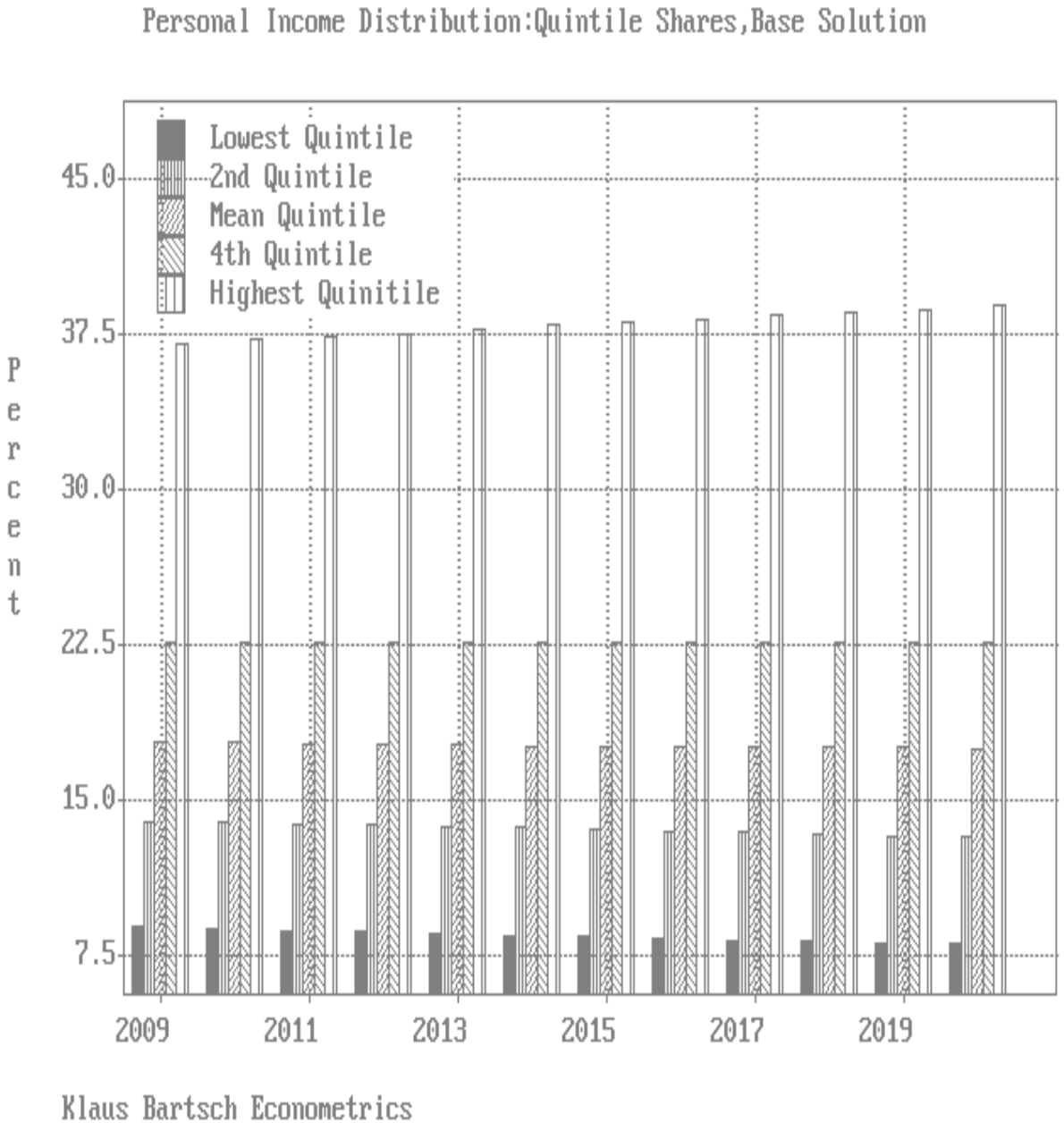
Personal Income Distribution:Quintile Shares,Base Solution
Lowest Quintile
2nd Quintile
Mean Quintile
4th Quintile
Highest Quinitile
45.0
37.5
30.0
22.5
15.0
7.5
Percent
2009
2011
2013
2015
2017
2019
Klaus Bartsch Econometrics

Figure 11

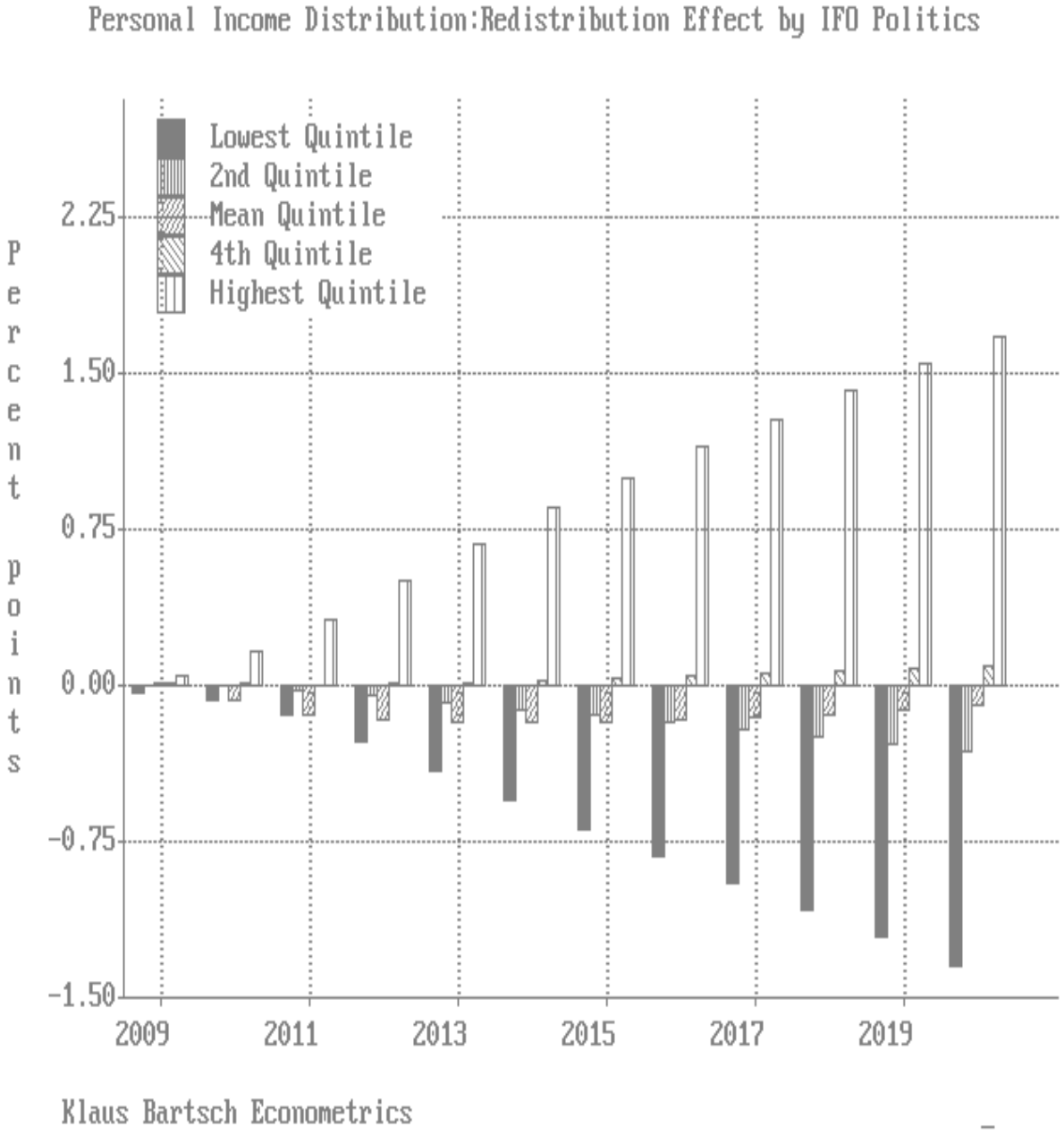
Personal Income Distribution:Redistribution Effect by IFO Politics
Lowest Quintile
2nd Quintile
Mean Quintile
4th Quintile
Highest Quintile
Percent points
2.25
1.50
0.75
0.00
-0.75
-1.50
2009
2011
2013
2015
2017
2019
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Figure 12

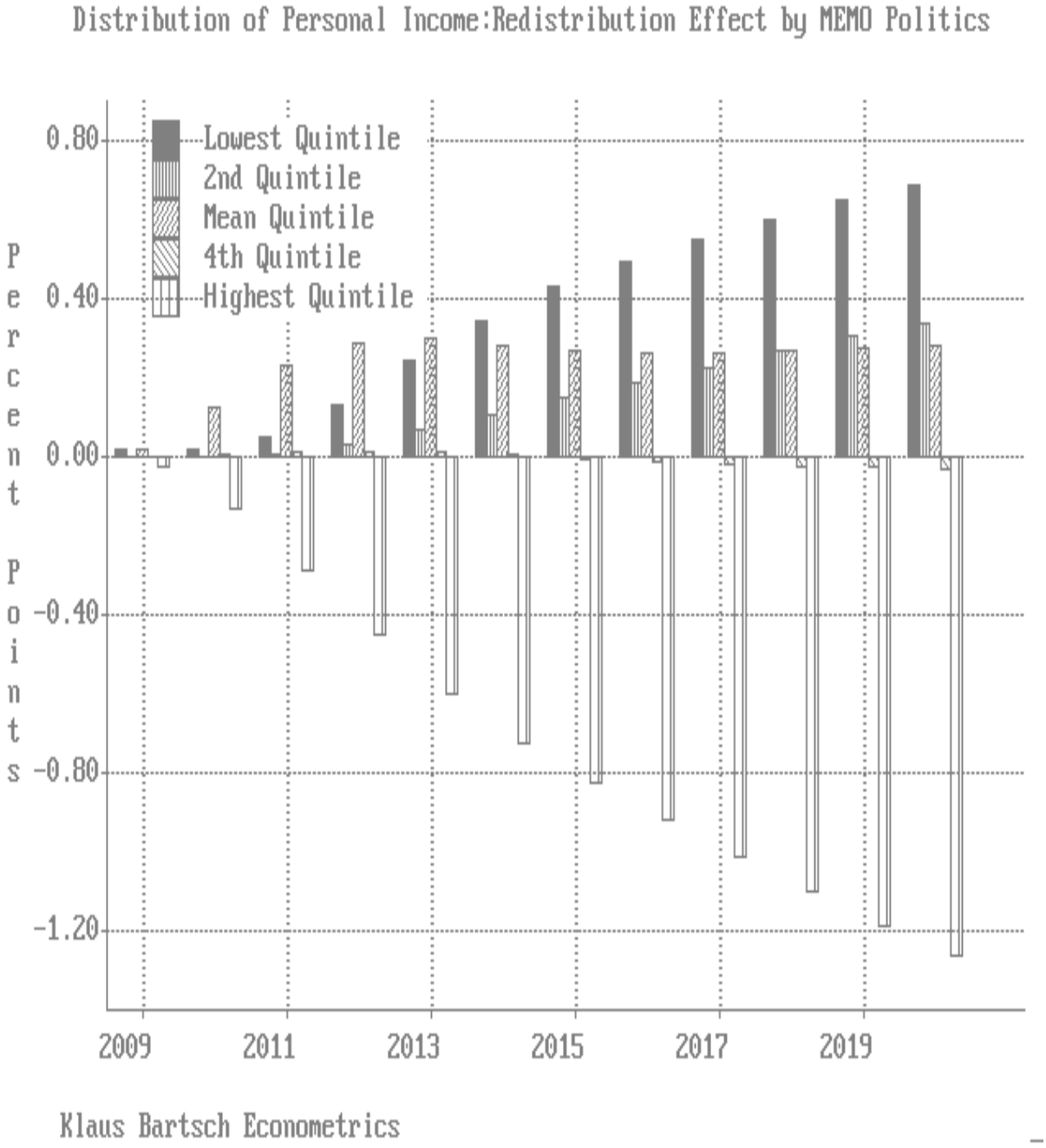
Distribution of Personal Income:Redistribution Effect by MEMO Politics
Lowest Quintile
2nd Quintile
Mean Quintile
4th Quintile
Highest Quintile
Percent Points
0.80
0.40
0.00
-0.40
-0.80
-1.20
2009
2011
2013
2015
2017
2019
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Figure 13

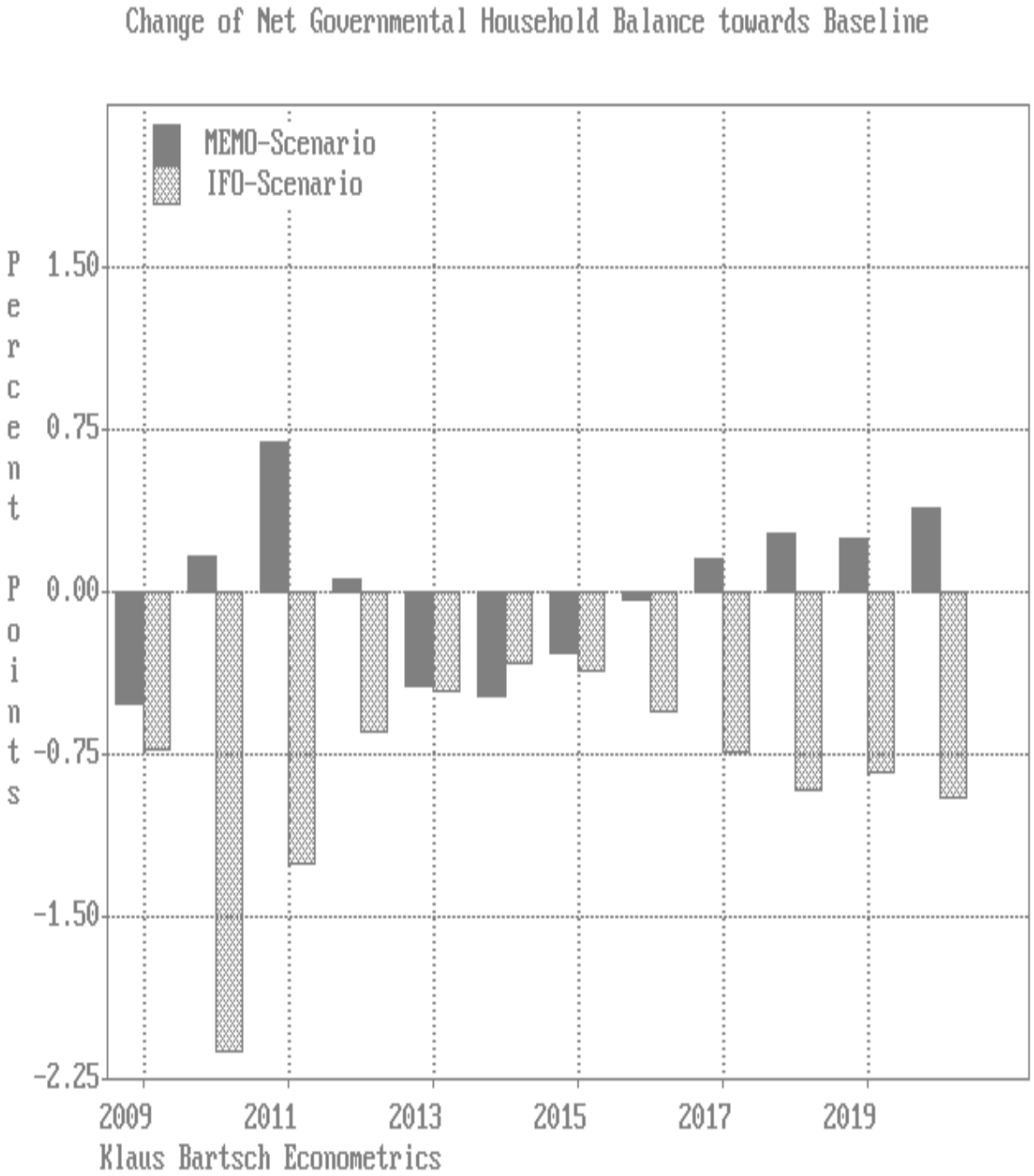
Change of Net Governmental Household Balance towards Baseline
MEMO-Scenario
IFO-Scenario
Percent Points
1.50
0.75
0.00
-0.75
-1.50
-2.25
2009
2011
2013
2015
2017
2019
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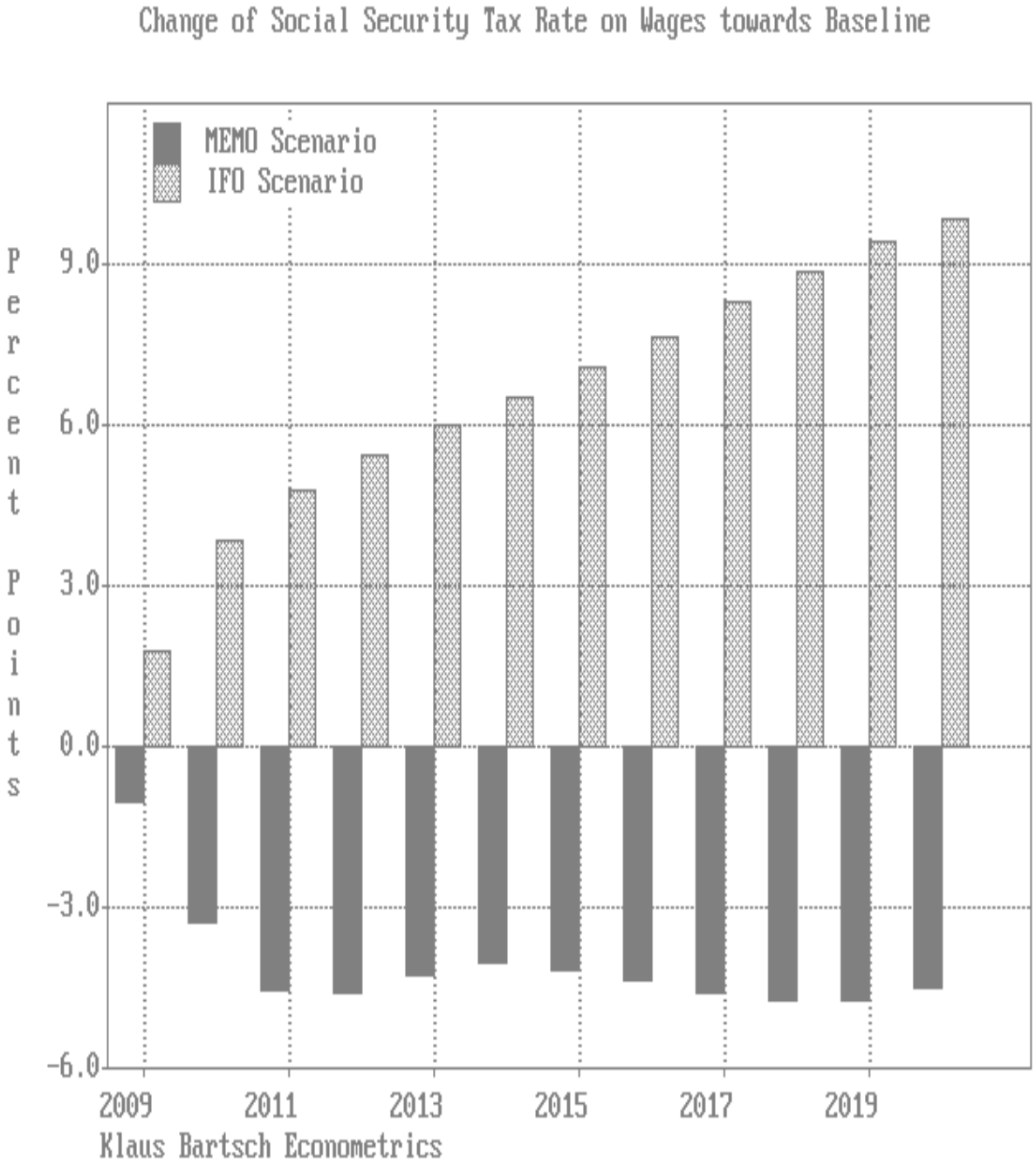
Figure 14



Annex: Some first and short remarks on the problem of transforming

national account statistics based on prices to labour value based national account statistics

Figure 15 shows the development of overall and sectoral labour hour productivity in Germany for the time span 2000 – 2007, at constant prices of 1995. We may wonder, that the average social working hour (ASWH) in agriculture, industry or construction is so much lower valuated in terms of constant money from 1995 than the average working hour in the banking an insurance sector, since the average working hour concept is affiliated with a certain occupation of social use, and the production of every good or service should have its specific ASWH. But as we see, the average social working time in the banking and insurance sector is much more valued than that in agriculture or the industrial sector. Differences in the mean education of the employed persons in the different sectors can not explain this fact: especially the state employs a high share of academics. Also the German agricultural sector is today marked by the employment of well educated specialists, using absolute high tech equipment; you will hardly find unskilled land labourers.
The main reason is quite sure the existence of power differences and economic dominance: especially the financial sector was able to dominate the other sectors (the “financialization” of global capitalism) and grab a growing income share from the other sectors. Measurement of productivity in the service sector is a much harder task as in certain industries, where cars and computers per employee may be counted. In services, often the earned total income (wages and profits) per employee in a base year is the measure of productivity. So the specific marked power exercised by a dominating sector, materializing in higher “tributes” respective rents from the other sectors can drive away sectoral productivity measured by constant currency units from average social productivity, for which social overall productivity , may be a usable Proxy. So the choice of a base year leads to an implicit reflection of the intersectoral power relations in that year. The structure of the economy reflected by such a valuation of output is strongly biased from a labour value concept of a MARXIAN type.

In Figure 16, the structural development of gross value added on the base of constant monetary value data of the federal statistical office is reproduced: A share of the sector Banking, Insurance and Business Services of more than 30 Percent can be observed.

In preparation of Figure 17, the sectoral constant money productivities were set as the denominator and average productivity as the numerator for gaining structural adjustment time series:

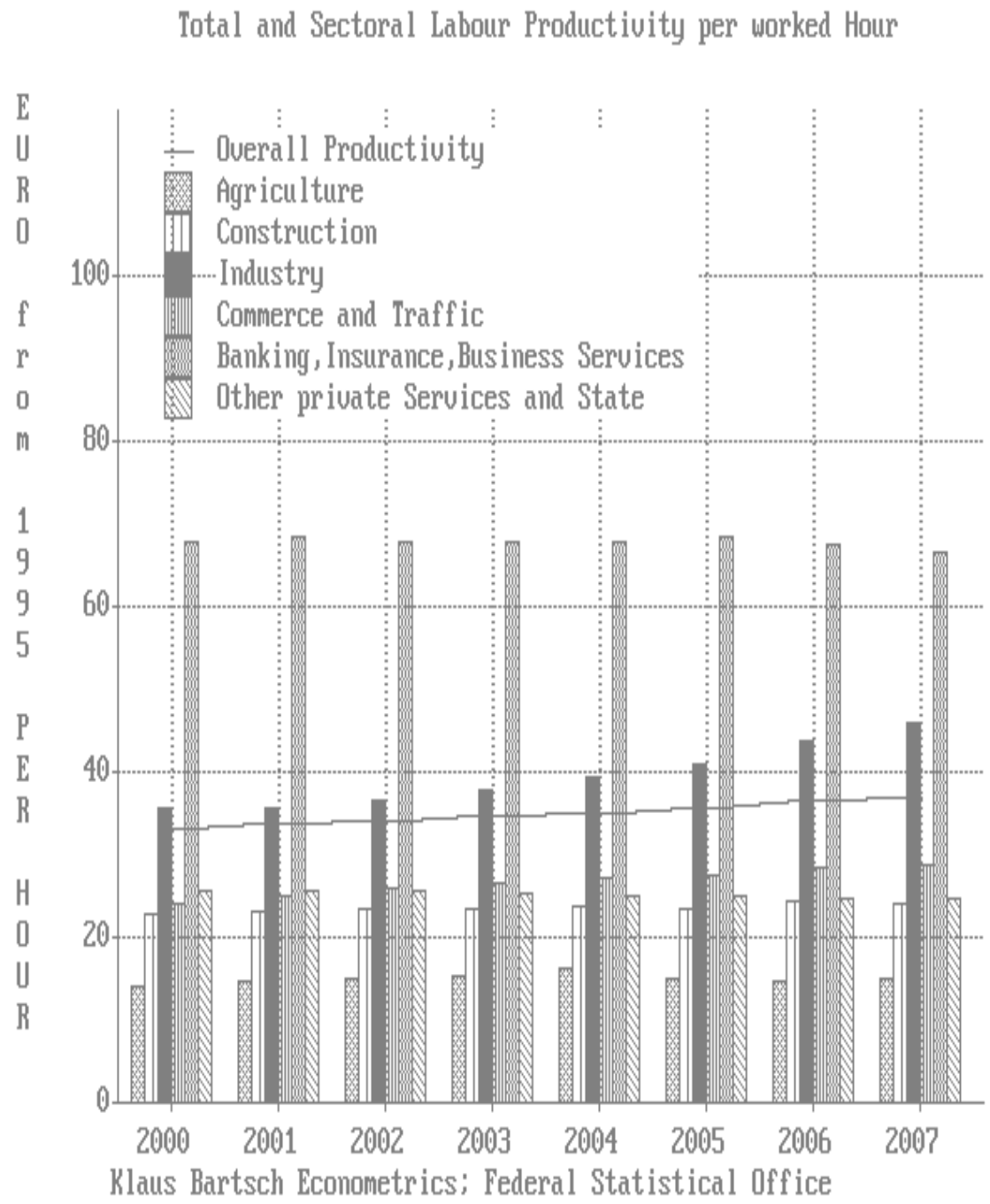
$$\textbf{ADJUSTMENT}\ (\text{Year i, Sector j}) = \frac{\text{AVERAGE PRODUCTIVITY PER LABOUR HOUR (Year i)}}{\text{AVERAGE PRODUCTIVITY PER LABOUR HOUR (Year i, Sector j)}}$$

Afterwards the sectoral adjustment factors were multiplied with the shares of gross value added in constant prices:

Gross Value Added Share constant value of labour hour (Year i, Sector j) = Gross Value Added Share constant prices, (Year i, Sector j) **X** ADJUSTMENT (Year i, Sector j)

This new shares (Figure 17) reflect the assumption of equal intersectoral values of the labour hour *on the level of a national economy*. The weight of the banking sector diminish clearly, while especially the sector of "Other Private Services" , mostly social services, gain a lot of weight. The addressed problem with the traditional national account data and this very straightforward and not at all sufficient approach may illustrate, that there will be a long way to go to generate a labour value based national account statistic comparable with the level of disaggregation of the traditional national account.

Figure 15


Total and Sectoral Labour Productivity per worked Hour
EURO from 1995 PER HOUR
Overall Productivity
Agriculture
Construction
Industry
Commerce and Traffic
Banking,Insurance,Business Services
Other private Services and State
0
20
40
60
80
100
2000
2001
2002
2003
2004
2005
2006
2007
Klaus Bartsch Econometrics; Federal Statistical Office

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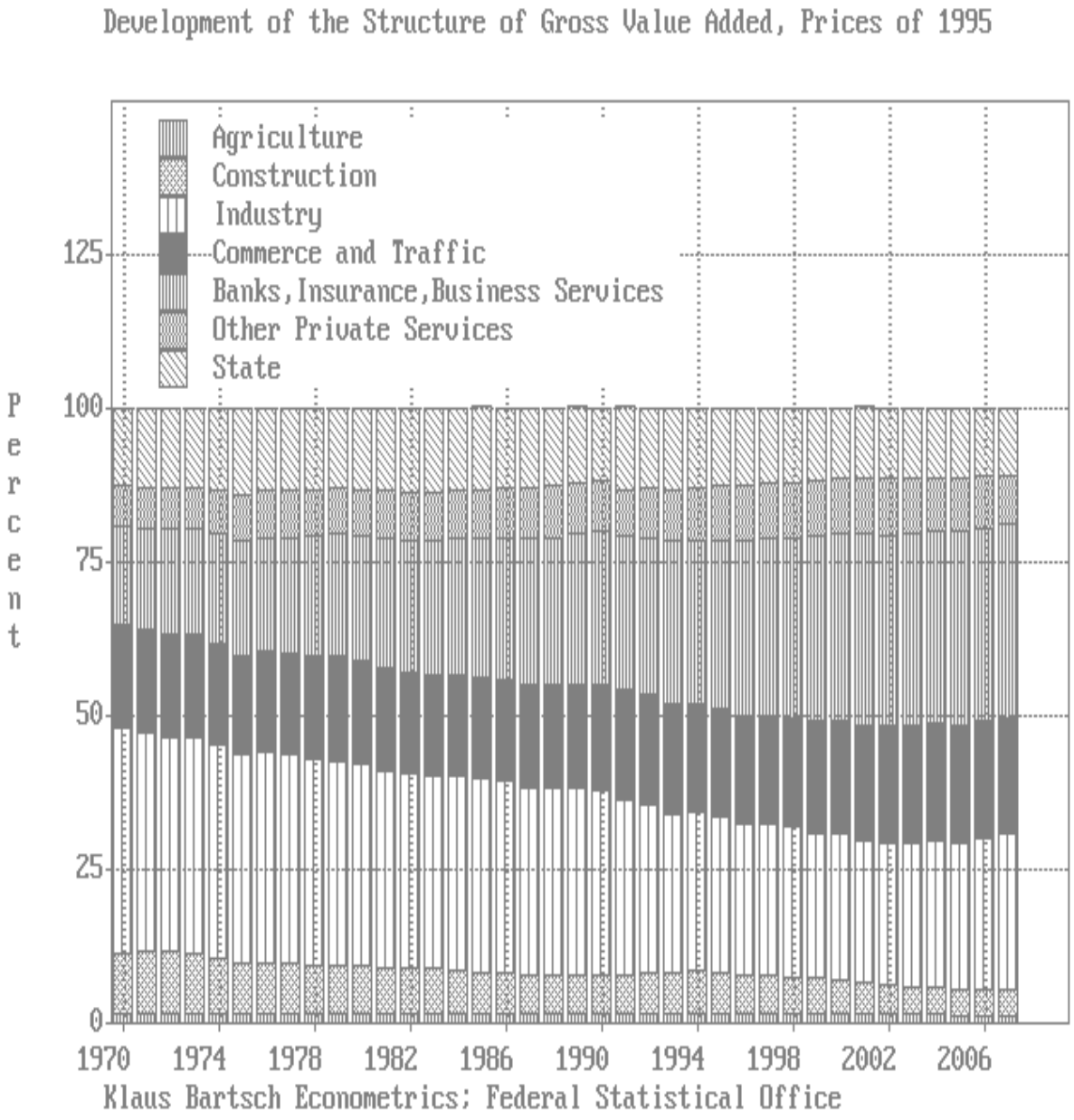
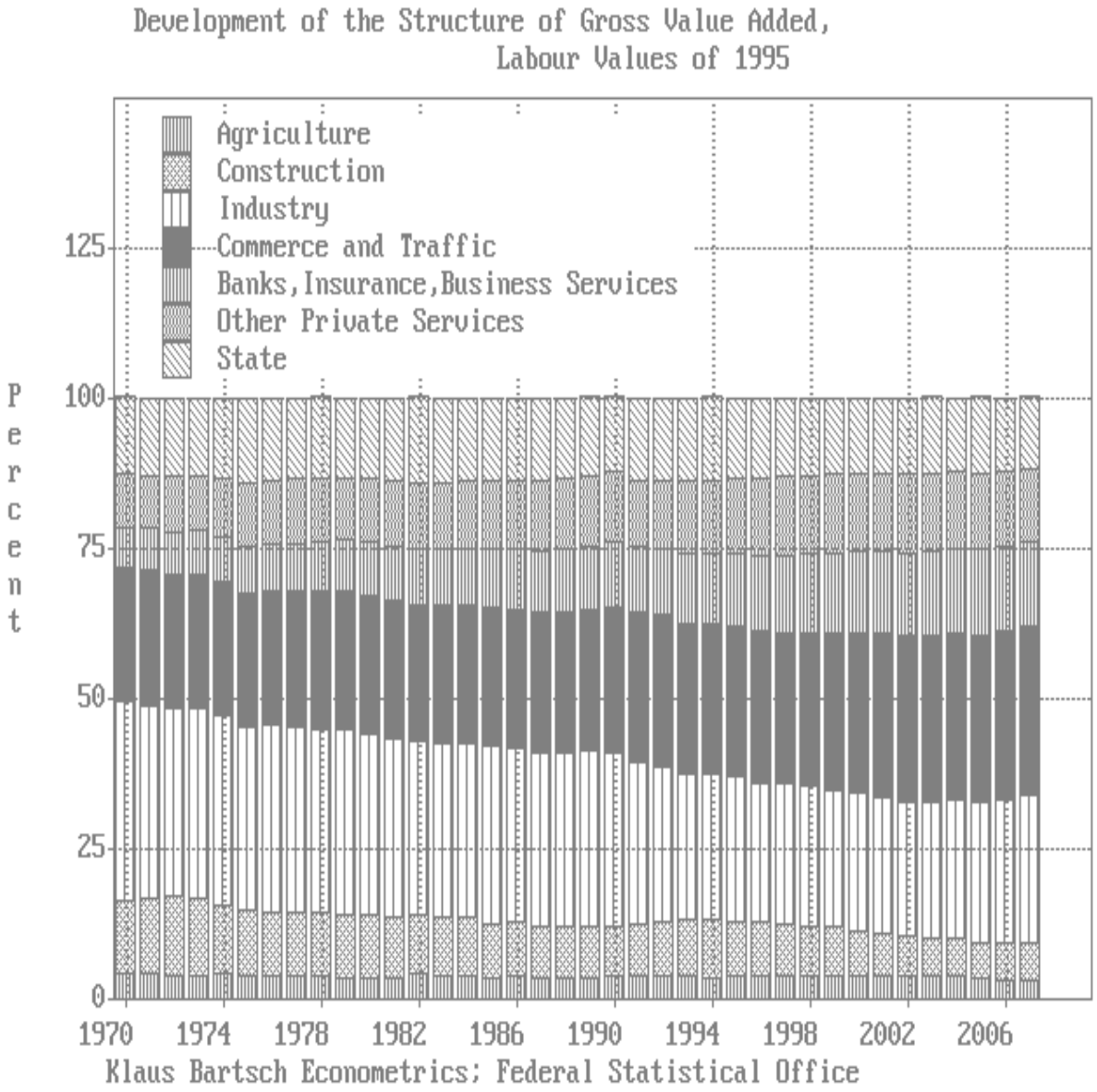

Development of the Structure of Gross Value Added, Prices of 1995
Agriculture
Construction
Industry
Commerce and Traffic
Banks,Insurance,Business Services
Other Private Services
State
Percent
125
100
75
50
25
0
1970
1974
1978
1982
1986
1990
1994
1998
2002
2006
Klaus Bartsch Econometrics; Federal Statistical Office

Figure 17


Development of the Structure of Gross Value Added,
Labour Values of 1995
Agriculture
Construction
Industry
Commerce and Traffic
Banks,Insurance,Business Services
Other Private Services
State
Percent
125
100
75
50
25
0
1970
1974
1978
1982
1986
1990
1994
1998
2002
2006
Klaus Bartsch Econometrics; Federal Statistical Office