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Political motivation, tax policy and the development of tax structures

Evidence from the German case 1964-2004

- DRAFT -*

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Abstract:

What are the motives that drive tax policy? How does tax policy influence tax revenue development and tax structures? Our paper - based on a newly compiled database of more than 1.000 changes in German tax regulations 1964-2004 - reveals that there is only a very weak link in between tax reforms and tax revenue development, that normative as well as positive theories of taxation largely fail to explain tax reforms and that tax policy coordination over different taxes (to minimize political costs of taxation) are not very frequent. Our (although still preliminary) results demonstrate especially that our knowledge about tax policy is still very limited and that studies which try to conclude from revenue developments to tax policy have to be evaluated very carefully.

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I Introduction

What do we know about tax policy and taxation? How large is the influence of tax policy on the development of tax revenues and tax structures? What are the factors that determine tax policy? And how is tax policy conducted? Do we see a lot of coordination in tax reforms –aimed for example at the minimization of political costs via taxation – or are tax reforms largely independent over different tax bases?

In this paper we analyze these questions based on a newly compiled database of more than 1.000 changes in tax regulations for Germany 1964-2004.

We start by presenting basic facts on tax structure development and tax policy in Germany 1964-2004 (part II) as well as results derived earlier based on a newly compiled database of changes in tax regulations. Part III analyzes the relation in between tax reforms and tax revenue/tax structure development. In Part IV we discuss tax reforms in detail by kind of tax and in Part V we search for coordination in tax reforms over different tax bases. Part VI concludes.

Our analyses reveals that our ability to explain tax policy is still very limited, that coordination is not too frequent and that studies, which are trying to use an analysis of tax revenue development to analyze the underlying tax policy might have to be evaluated very carefully.

II Tax structure and tax reforms in Germany 1964-2004

Within the last 40 years the tax structure in Germany has been relatively stable (see figure 1). Total tax revenues have been fluctuating around 23% of GDP, the share of consumption taxes stood relatively stable around 10% of GDP while corporate profit , income taxes (including capital income and income from self-employment) and wealth taxes show a slow downward trend. Only the share of wage taxes shows a

strong upward trend till the late 70ies – at least partly caused by high inflation rates fuelling “cold progression”.

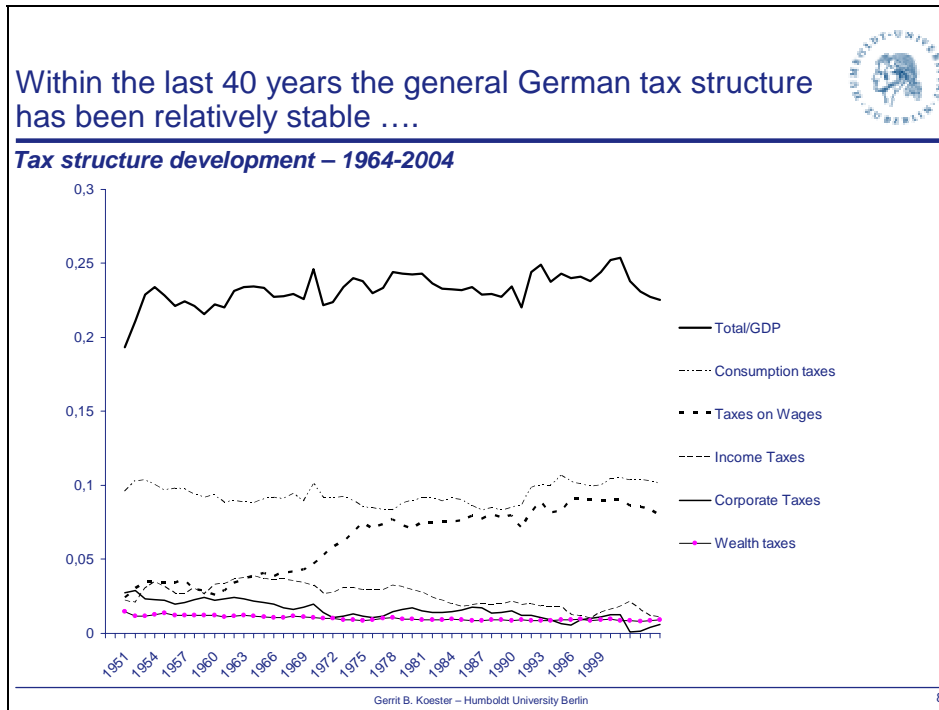


Figure 1: Tax structure development; Germany 1950-2003.

But the relative stability of the tax mix masks the strong legislative activity in tax policy and tax reform. Within the time period from 1964 to 2004 we observe more than 1.000 new regulations grouped into 217 tax reform packages. To study these tax regulations we compiled a data-set of all substantial new regulations from 1964 to 2004 and their fiscal impact. We relied on data from fiscal reports published annually by the German ministry of finance, in which the ministry forecasts the influence of reforms and new regulations on tax revenues in detail. These forecasts are often not exact if compared to the actual influence of changes in tax regulation measured retrospectively. But there is reason to believe that they reflect the political will and the expectations of government relatively unbiased. Financial planning of the budget is based on these forecasts. Therefore the incentives to overstress reductions of tax burdens and to play down tax burden increases are strongly moderated by the reverse incentives for the finance minister who aims at holding the fiscal deficit down. These incentives for the minister of finance are strengthened by the constitutional

requirement of holding the deficit lower than public investment as long as the economy is not in a situation of “macroeconomic disequilibrium”.

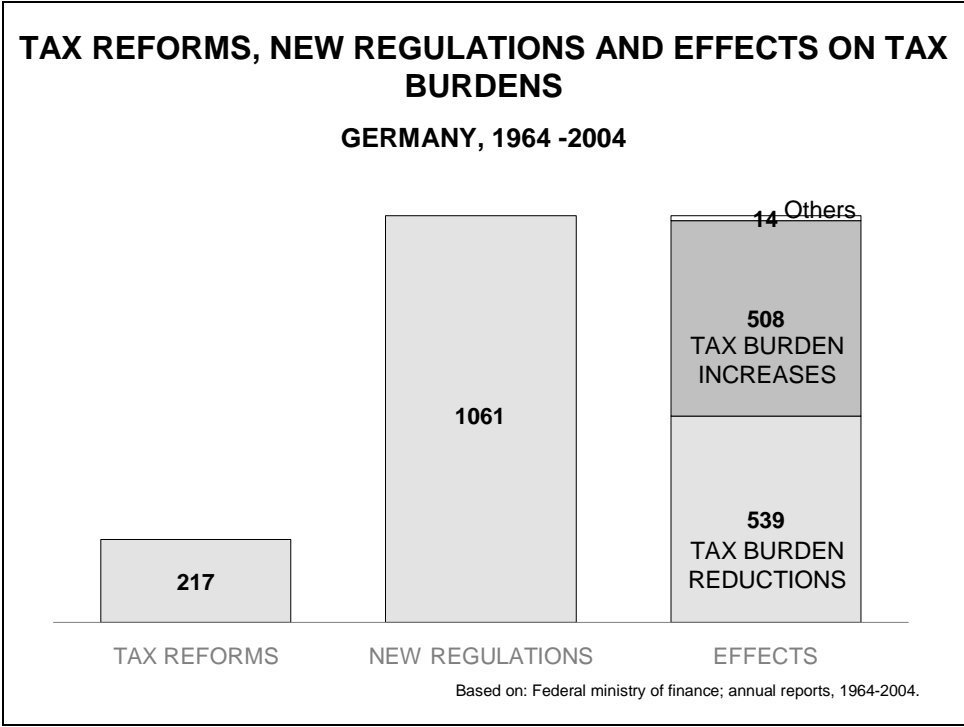


Figure 2: Tax reforms, new regulations and effects on tax burdens.

If we take a closer look at the tax reforms we find that the more than 1061 new regulations can be divided relatively equal into 508 regulations that increased the tax burden and 539 regulations that reduced the tax burden on citizens and corporations (see figure 2).

Per year we observe on average a bit more than 5 reform packages (see figure 3). While there is no pattern directly observable in tax reforms, the number of regulations and there especially the number of tax burden increasing regulations is substantially higher in the years following German reunification in 1990. Throughout the time period analyzed we observe simultaneity of tax revenue increasing and tax revenue reducing new regulations – often grouped together in the same reform package. The number of reductions is substantially higher than the number of increases before German reunification while the picture is reversed for the time thereafter.

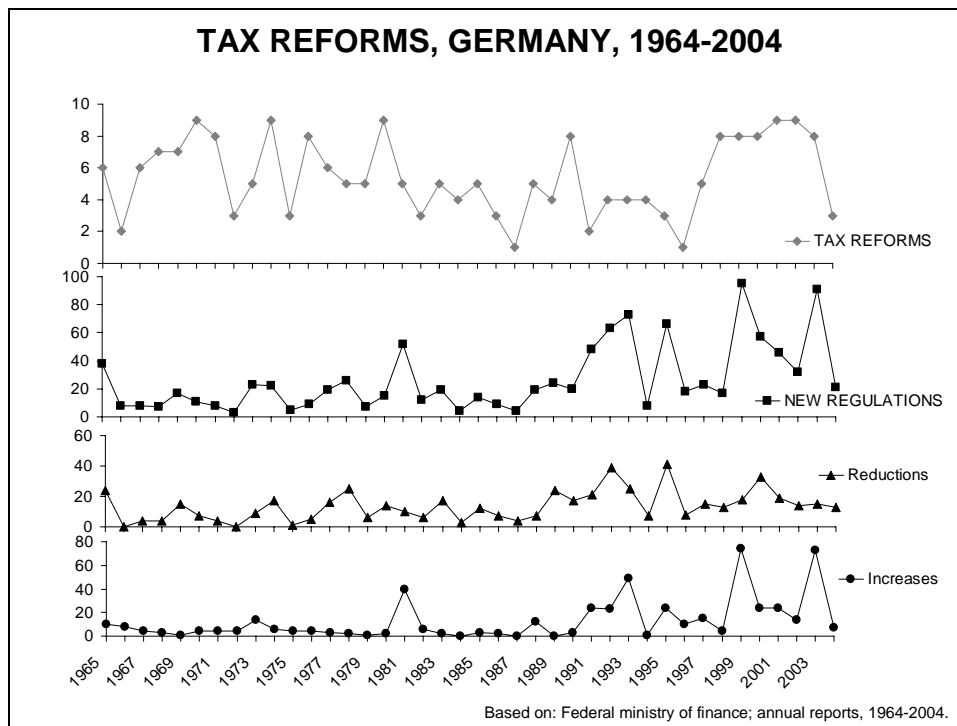


Figure 3: Overview of new regulations and their direction.

To calculate the influence of different new regulations quantitatively we relied on the estimates of the federal ministry of finance projecting the fiscal effects of new regulations for the first 12 months of being effective. Unfortunately no reliable data is available on the longer-term influence of the regulations. This has a distorting effect on the data but given that German tax policy is very volatile the drawbacks are limited.

Looking at the fiscal effects of the tax reforms under consideration one observes that the influence of tax reforms has – especially before German reunification been relatively limited and been moderated by the simultaneity of increases and reductions of comparable extent. After the reunification the picture changes and a larger variance is observable

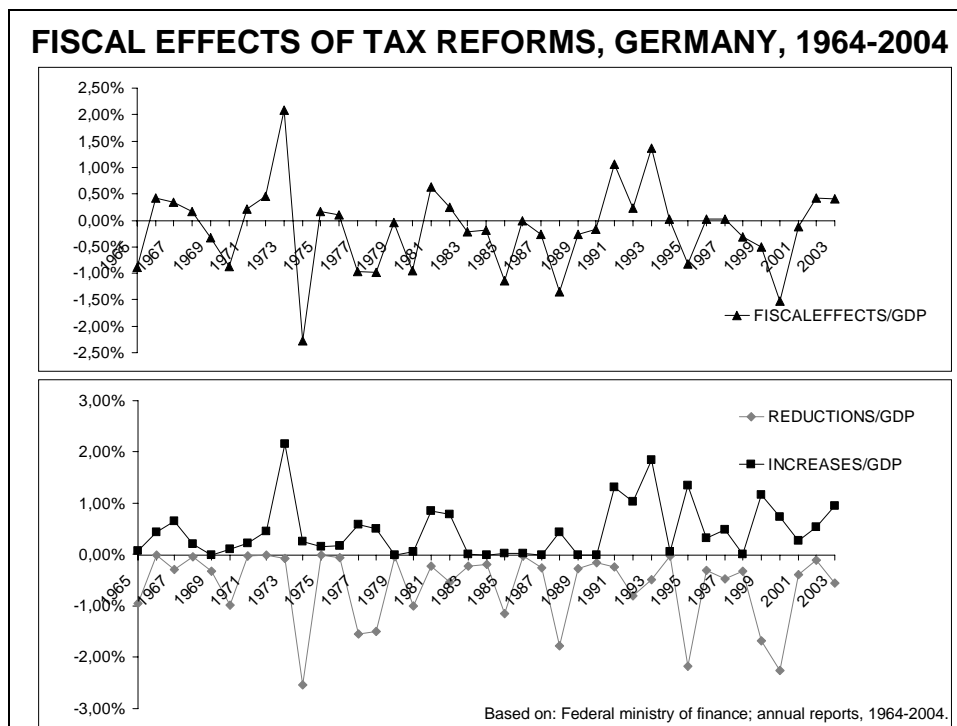


Figure 4: Fiscal effects of tax reforms (first 12 months after becoming effective).

It is interesting to note that the net fiscal effects of tax reforms have on average been negative and accounted for -0,14% of GDP per year within the last 40 years. Of course this result is to be interpreted only cautiously as our data base does not discriminate sufficiently in between transitory and permanent changes and focuses only on the fiscal effects of reforms for the first 12 months of being effective. But such a cautious interpretation can be that the reductions of tax burden by tax reforms largely compensated the revenue increasing effects of “cold progression” triggered by inflation and led to a relatively stable tax revenue/GDP ratio within the last 40 years (see figure 1).

The extensive activities of the German government in tax policy and tax reform call for an explanation. What were the decisive factors triggering and shaping tax reform within the last 40 years? What can established theories contribute to our understanding of tax policy and tax reform? And vice versa: what can we learn about the applicability and validity of different theories using the data compiled here?

In an earlier paper we started analyzing these questions . We found (see slides 1-6 in the appendix) that:

- There is some (small) indication in the data of partisan motivated tax policy: right-wing governments are less active in tax policy than left-wing governments.
- The data shows that opportunistic government behavior is observable especially with respect to tax increases: Within the 12 months before an election the average tax increases are lower as governments postpone tax increases to after the elections.
- Surprising is the finding that tax increases are smaller in case of unrestricted governments (with a majority in the second chamber). We conclude that governments abstain from using their political power for tax increases as they fear to be blamed exclusively by the voters (while an agreement with the opposition in the second chamber leads to a sharing of political responsibility).

In this paper we explore the relationship of taxation and tax reforms deeper and in more detail by:

- Exploring the link in between our data on tax reforms and revenue development (is tax policy reflected in revenue development (overall and with respect to different taxes)?). What does that tell us about attempts to conclude from tax revenue development to tax policy
- Analyzing how positive and normative theories perform with respect to the analysis of reforms in different kinds of taxes?
- Searching for coordination of tax policies over different tax bases (Do we see coordination (as some theories would predict) or is tax policy with respect to different tax bases largely detached?)

III Tax reform and tax revenue/tax structure development

III.1 *Tax reform and tax revenue/tax structure development: overall analysis*

As tax revenues are affected by tax policy as well as by economic developments

economist usually analyze tax revenue data by trying to split up the effects of policy and of economic developments (Examples are Cameron, 1978; Garrett, 1998; Boix, 1998).

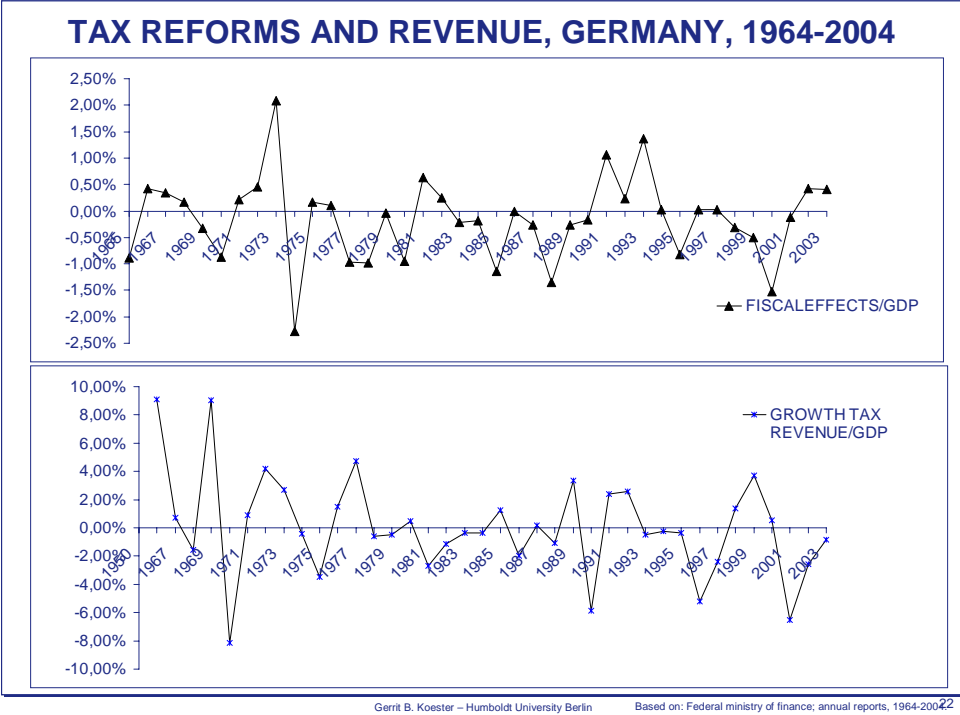


Figure 5: Tax reforms and tax revenue development

The combination of our data about expected fiscal effects of reforms and revenue (tax structure) developments allows us to analyze the influence of politics on tax from a new perspective (see figure 5 for the data). Especially we can test whether revenue developments reflect tax policy – if we account additionally for business cycle effects.

Tax Revenue development and the influence of tax reforms in Germany 1964-2004		
Dependant Variables:	Total Tax revenues/GDP (Growth rate)	Total Tax revenues/GDP (Growth rate)
Explanatory Variables:		
Constant	-0,014*** (-1,99)	-0,015*** (-1,99)
Real GDP growth rate _t	0,73*** (3,11)	-0,83*** (-3,46)
Inflation rate _t	-0,003 (-1,63)	-0,003 (-1,47)
Fiscal effects tax reform (total) _{t-1}		0,079 (0,125)
R ² (adjusted)	0,54	0,56
DW	2,5	2,5
Observations	39	39
<small>Notes: t-statistics of the estimated parameters in parantheses. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level</small>		
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Figure 6: The influence of tax reforms on tax revenue development

Figure 6 presents the results of an analysis of the influence of the business cycle (measured by real GDP growth and inflation) and of tax reforms (measured by their expected fiscal effects) on the growth rate of tax revenues/GDP .

We can sum up the following findings:

- Generally the macroeconomic variables real GDP-growth and inflation have only a limited ability to explain tax revenue developments (the results change only marginally if unemployment or time lags in the independant variables are introduced).
- An analysis of the influence of tax reforms on overall tax revenue growth shows us that the inclusion of data on tax reforms (via their expected fiscal effects) does improve our ability to explain changes in tax structure only very marginally.
- The effect of expected fiscal effects of tax reform on tax revenues is not even significant on an overall level.

As we have no reason to believe that the expected fiscal effects of tax reforms are completely „off-track“, we have to conclude that we have not yet specified the

relevant independent variables yet, which would allow for a more accurate explanation of tax revenue developments.

Do these results change if we analyze the relationship in between the development of tax revenue and tax reforms for different taxes separately? This more detailed analysis by kind of tax will be performed next.

III.2 Tax reform and tax revenue/tax structure development: detailed analysis by kind of tax

III.2.1 Stylized facts of detailed reform patterns and revenue developments

What do we see if we look at tax policy in more detail? Figures 7-9 present the tax reforms with respect to taxes on wealth and real estate, taxes on corporate and personal income and taxes of consumption. In all these categories we observe very different patterns.

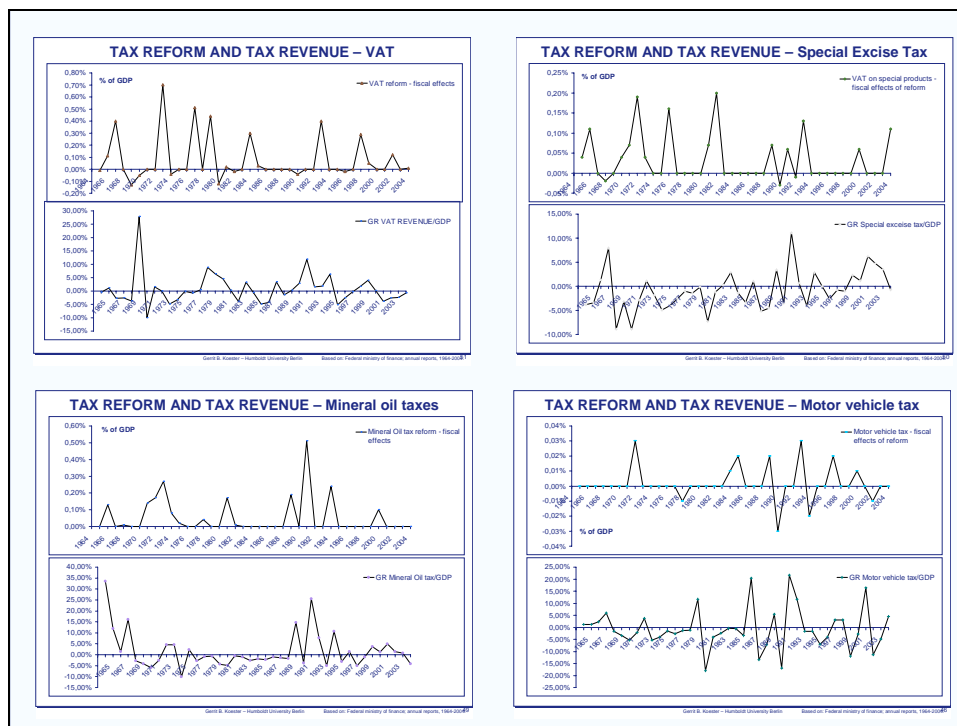


Figure 7: Consumption taxes - fiscal effects of tax reforms and changes in revenue development

Figure 7 shows the development of the most important consumption taxes in the federal republic of Germany within the last 40 years. Here fiscal effects of tax reforms are presented in the upper halves of the graphs, while the changes in revenue are shown in the lower halves. In consumption taxes we see very frequent change with large fiscal effects. We see that almost all tax reforms (with some exception in the motor vehicle tax) have led to increases in tax revenues – which might make us expect that tax increases in consumption taxes are mostly used to reduce deficits (which will be tested later).

In income, payroll and profit taxes – reflected in figure 8 – we see a different pattern. Tax policy in income and payroll taxes has most of the time – with only some exceptions – led to a decrease in the income- and payroll tax burden. If we look at the tax revenue development then we see that especially in the 70ies there seems to be a correlation in between rising revenues and a response in form of tax reductions. Partly this might have been motivated to compensate for the „cold progression“ triggered especially by high inflation rates in the 70ies. While there have always been relatively lively reform activities in income and payroll taxation, we observe barely any

changes in profit taxation – via the corporate profit tax and the local trade tax – until the 80ies. For the whole period covered we observe that almost all reforms in corporate profit and local trade taxation reduced the tax burden of businesses.

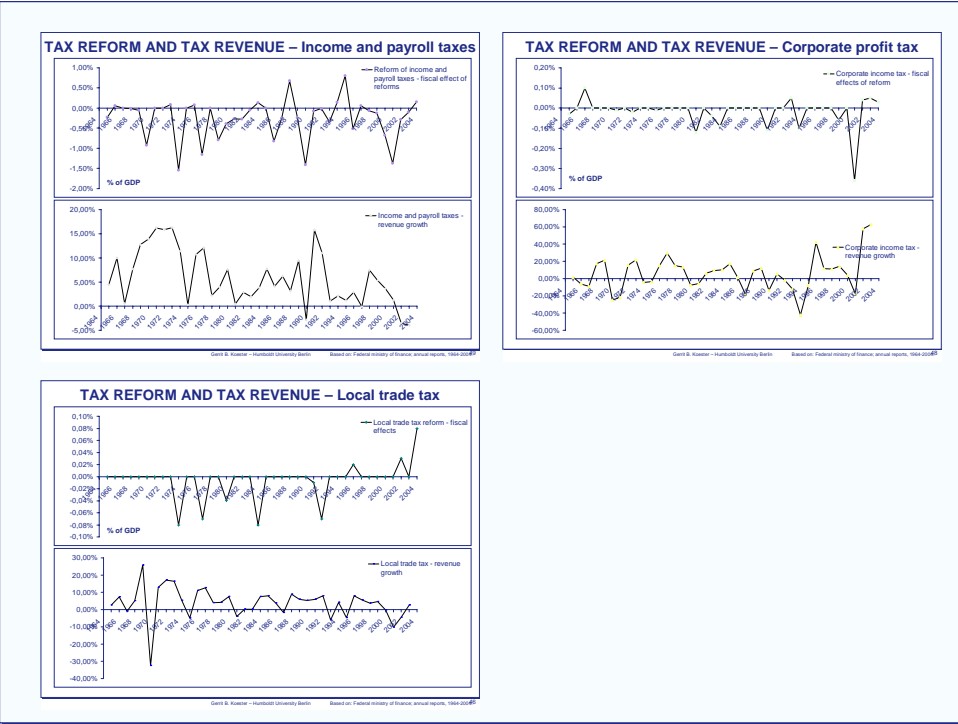


Figure 8: Income, payroll and profit taxes - fiscal effects of tax reforms and changes in revenue development

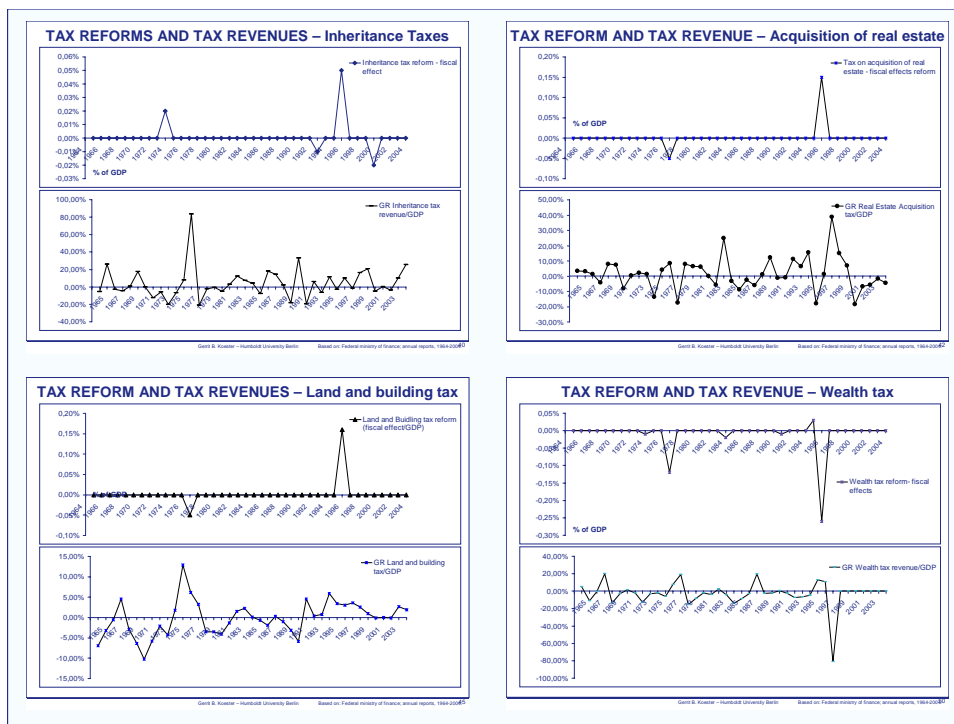


Figure 9: Wealth and real estate taxes - fiscal effects of tax reforms and changes in revenue development

Figure 9 reflects the development in taxes on wealth and real estate. We see from the upper half of each graph – which reflects tax policy changes while the lower half reflects revenue development – that we see barely any changes within the last 40 years. Altogether we observe less than 30 reforms with fiscal effects in these taxes and even these reforms have usually been minor in extent. The only real important changes in this category were observed in 1997. However these changes are just a political reaction to the constitutional court which ruled that the wealth taxed had to be reformed fundamentally (which has not happened yet) and was therefore not raised from 1997 on any more. The abolishment was partly compensated by changes in the inheritance taxes and the acquisition of real estate tax. Wealth and real estate taxation has largely been characterized by inertia in Germany.

III.2.2 Tax reform and tax revenue/tax structure development: detailed analysis by kind of tax

- With respect to most other taxes we could not detect any direct influence of tax reforms on revenue development and have additionally an only very limited ability to explain the development of tax revenues based on the commonly used macroeconomic variables like especially inflation and GDP growth.

In our view these – although still preliminary results – indicate that that studies, which are trying to use an analysis of tax revenue development to analyze the underlying tax policy might have to be evaluated very carefully. If we cannot establish a clear link in between policy and its expected effects and tax revenue development taking business cycles into effects we cannot conclude from revenue developments on policy.

IV Analyzing tax reform by kind of tax

The analysis of the overall fiscal effects indicated that normative theories – predicting an increase in taxes to finance deficits (allocative function of the state), or a stimulation of the economy by tax reductions in economic downturns (stabilization function) or a minimization of changes in taxation (tax smoothing)¹ – were not able to contribute to an explanation of the overall pattern of the fiscal effects of tax reforms, while positive theories performed only slightly better.²

Do these results change if we look at the fiscal effects of the reforms in more detail? Figure 11 shows the results of empirical tests of the normative as well as the positive hypotheses with respect to the fiscal effects of tax reforms separately by kind of tax. We tested for the influence of macroeconomic variables (like real GDP growth, inflation and unemployment), of the deficit of the states (which receive for example large parts of the wealth and real estate taxes) and the overall deficit and for the influence of political variables like partisan orientation of government, effects of (federal) election years or a majority in the second chamber (which is needed for reforms of the shared taxes like income and payroll or VAT taxes).

Our results do not differ largely from the ones derived on the overall level.

¹ See slide 2 -3 in the appendix.

² See slide 4,5 and 6 in the appendix.

		DEPENDANT VARIABLES											
		Income Taxes			Consumption Taxes				Taxes on Capital				
		Income and payroll taxes	Local trade tax	Corporate profit tax	Motor vehicle tax	Mineral oil taxes	Special Excise taxes	VAT	Real estate acquisition tax	Land and building tax	Wealth tax	Inheritance taxes	
INDEPENDANT VARIABLES	Macro Variables	Growth rate GDP _{t-1}	/	/	/	/	/	/	/	/	/	/	/
		Inflation rate _{t-1}	/	/	/	/	/	/	/	/	/	/	/
		Growth rate unemployment	/	/	/	/	/	/	/	/	/	/	/
	Revenue needs	Overall Deficit _{t-1}	●	/	/	/	/	●	/	/	/	/	/
		State Deficit _{t-1}	/	/	/	/	/	/	/	/	/	/	/
	Polit-economic variables	Election year (Dummy)	/	/	/	/	/	/	/	/	/	/	/
		„Right“ government	/	/	/	/	/	/	/	/	/	/	/
		„Left“ government	/	/	/	/	/	/	/	/	/	/	/
		Majority second chamber	/	/	/	/	/	/	/	/	/	/	/

Figure 11: Searching for coordination of reforms over different taxes

Only the overall deficit (lagged by one period) had a significant influence on tax reforms in income and payroll taxes and special excise taxes. This indicates that the government tries to compensate deficits by tax increases in these two taxes. However the overall influence is small. The R^2 of an OLS-Regression in between the fiscal effects of tax reforms in income and payroll taxes (independant variable) and the lagged deficit is only 8% and that of special excise taxes is only 5% (see slide 10 in the appendix for the results).

V Searching for coordination of tax policies over different tax bases

The third question we wanted to analyze in this paper is what can we learn about the conduct of tax policy based on our dataset? Especially: Do we see frequent

coordination of tax reforms over different tax bases (e.g. to secure by tax reform that the marginal political costs over all taxes are equalized) or not?

This might be important as polit-economic theories of taxation based on probabilistic voting models predicts that marginal political revenue and marginal political costs should be equalized for all taxes. As overall tax revenue in Germany is relatively stable (see figure 1), very frequent coordination of tax reforms over different tax bases would speak in favour of this approach (see e.g. Hettich and Winer 1984 and 1988). Changes with respect to one tax base – which are caused by exogenous shocks not analyzed here - should trigger adjustments with respect to at least one other tax base as well to minimize overall political costs

To analyze these questions we first take a quick look at the pairwise correlation coefficients and then perform OLS regressions to search for correlation in tax reforms based on their fiscal effects/GDP.

**Descriptive Statistics – Pairwise Correlation
Fiscal effects of tax reforms/GDP**

FISCAL EFFECTS OF REFORMS /GDP	Inheritance Tax	Fire Protection Tax	Real estate acquisition tax	Local trade tax	Land and building tax	Motor vehicle tax	Corporate profit tax	Income and payroll taxes	Mineral oil taxes	Special excise taxes	VAT	Wealth tax
Inheritance Tax	1,00	-0,02	0,81	-0,06	0,82	-0,15	-0,01	-0,25	-0,06	-0,17	-0,11	-0,77
Fire Protection Tax	-0,02	1,00	-0,02	0,03	-0,02	-0,02	0,00	-0,21	-0,08	-0,09	0,27	0,03
Real estate acquisition tax	0,81	-0,02	1,00	0,24	1,00	-0,05	0,00	0,01	-0,05	-0,07	-0,18	-0,73
Local trade tax	-0,06	0,03	0,24	1,00	0,24	-0,04	0,07	0,35	0,01	0,27	-0,12	0,06
Land and building tax	0,82	-0,02	1,00	0,24	1,00	-0,05	0,00	0,01	-0,05	-0,07	-0,17	-0,73
Motor vehicle tax	-0,15	-0,02	-0,05	-0,04	-0,05	1,00	0,09	0,03	0,02	0,42	0,09	0,06
Corporate profit tax	-0,01	0,00	0,00	0,07	0,00	0,09	1,00	0,09	-0,09	-0,02	0,01	0,01
Income and payroll taxes	-0,25	-0,21	0,01	0,35	0,01	0,03	0,09	1,00	0,26	0,17	0,12	0,30
Mineral oil taxes	-0,06	-0,08	-0,05	0,01	-0,05	0,02	-0,09	0,26	1,00	0,27	0,13	0,09
Special excise taxes	-0,17	-0,09	-0,07	0,27	-0,07	0,42	-0,02	0,17	0,27	1,00	0,00	0,13
VAT	-0,11	0,27	-0,18	-0,12	-0,17	0,09	0,01	0,12	0,13	0,00	1,00	-0,08
Wealth tax	-0,77	0,03	-0,73	0,06	-0,73	0,06	0,01	0,30	0,09	0,13	-0,08	1,00

Figure 12: Pairwise correlation of reforms in different kinds of taxes

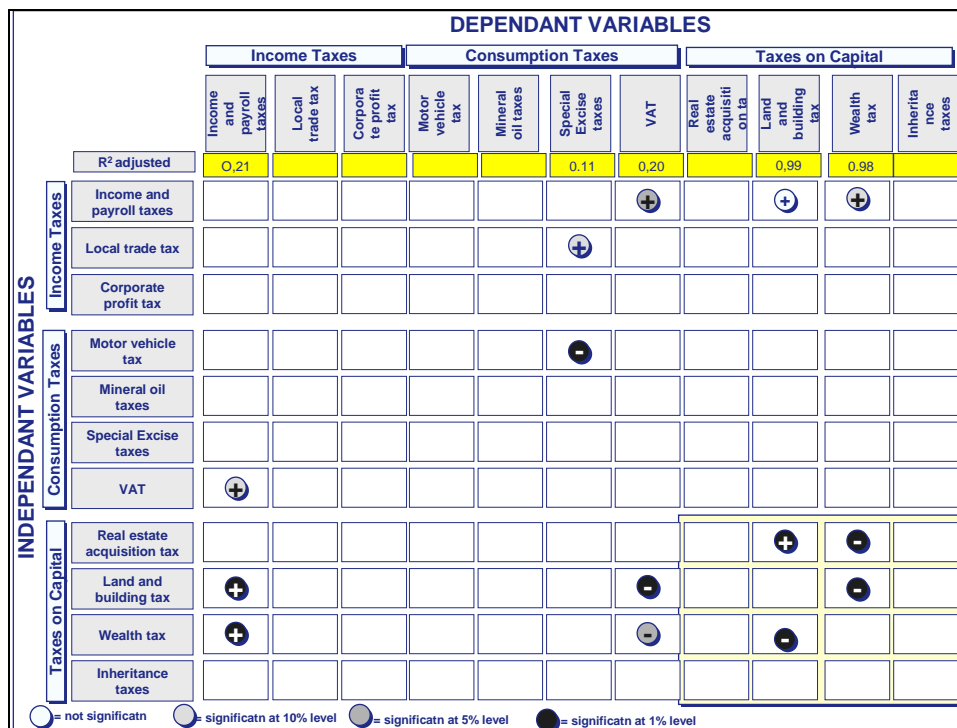


Figure 13: Searching for coordination in between tax reforms over different kinds of tax

As figure 12 and figure 13 demonstrate we find only very limited indication of tax reform coordination via different kinds of tax (see slides 11-13 in the appendix for more detailed results):

- We observe coordination of tax reforms especially in the taxation of capital and wealth. Reductions in the wealth tax are highly correlated with increasing real estate acquisition and land and building taxes and vice versa. However we have to bear in mind that reforms in these taxes are very rare and the result is heavily influenced by the changes that resulted from the „forced“ abandonment of the wealth tax in 1997 and are therefore not too meaningful .
- With respect to the more important taxes our most important finding here seems to be that VAT reforms are positively correlated with income tax reforms and were partly used to finance reductions in wealth and land and building taxes.
- Overall that data indicates that coordination seems not to be too frequent and not to be too important in tax reforms.

VI Conclusion

Public Choice analyses often try to explain tax policies based on economic variables (like growth) or political variables (like partisan orientation of government or electoral motives). Furthermore tax revenue developments are analyzed trying to derive findings about the tax policy of different governments. The dataset used in this paper offers the chance to study tax policy more direct via tax policy changes and their estimated fiscal effects. Hereby we can largely increase our knowledge about the process of tax policy and test different competing theoretical approaches in a new way.

In this paper our main aims were to explore the link in between our data on tax reforms and revenue development (is tax policy reflected in revenue development (overall and with respect to different taxes)), to analyze how positive and normative theories of taxation perform with respect to the analysis of reforms in different kinds of taxes and to search for coordination of tax policies over different tax bases.

The results are – however – so far not very impressive.

Surprisingly we find that we have serious trouble not only to explain tax reform by political and economic variables but also that there is only a very limited connection in between tax reforms (and their expected fiscal effects) and tax revenue developments. Our analysis of the influence of tax reforms on overall tax revenue growth shows us that the inclusion of data on tax reforms (via their expected fiscal effects) does improve our ability to explain changes in tax structure only very marginally and that the effect of expected fiscal effects of tax reform on tax revenues is not even significant on an overall level. A more detailed analyses by kinds of tax shows similar results. Only in mineral oil taxation, real estate acquisition and wealth taxation (out of 11 main kinds of tax) we find a significant influence of tax reforms on tax revenue development (with expected rises in revenues triggering these increases). With respect to most other taxes we could not detect any direct influence of tax reforms on revenue development and have additionally an only very limited ability to explain the development of tax revenues based on the commonly used macroeconomic variables like especially inflation and GDP growth.

Our analysis of the contribution of positive and normative theories to tax reform in different kinds of taxes finds that only the overall deficit (lagged by one period) had a significant (but still small) influence on tax reforms in income and payroll taxes and special excise taxes (and we are largely unable to reveal triggers for tax reforms in the other 9 kinds of taxes).

For the coordination of tax reform over different taxes (which we would expect based especially on probabilistic voting models) we find only very limited indication. With respect to the more important taxes our most important finding here seems to be that VAT reforms are positively correlated with income tax reforms and were partly used to finance reductions in wealth and land and building taxes. Overall our data indicates that coordination seems not to be too frequent and not to be too important in tax reforms.

In our view these – although still preliminary results – indicate that our knowledge of taxation and tax policy is still very limited and – even worse - that studies, which are trying to use an analysis of tax revenue development to analyze the underlying tax policy, might have to be evaluated very carefully. If we cannot establish a clear link in between tax policy and its expected effects and tax revenue development (taking business cycles into account) we cannot conclude from revenue developments to tax policy.

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VIII APPENDIX




Currently co-existing theories of the political economy of taxation are hard to test empirically

Overview - theories

	Social planner/ optimal Taxation	Leviathan	Median Voter	Partisan	Opportunistic	Probabilistic voting (Hettich/Winer)
Mechanism	<ul style="list-style-type: none"> • Tax rates and structure to maximize social welfare 	<ul style="list-style-type: none"> • Maximization of government revenue (under incentive constraint) 	<ul style="list-style-type: none"> • Only median voter preferences are decisive 	<ul style="list-style-type: none"> • Ideologically motivated taxation (redistributive) 	<ul style="list-style-type: none"> • Manipulation of election results 	<ul style="list-style-type: none"> • Equalize marginal political costs and marginal political benefits in taxation
Predictions	<ul style="list-style-type: none"> • Minimize excess burden • Income tax rate (marginal= 0 for highest income) • Variations: <ul style="list-style-type: none"> • Allocative/stabilizing function • Tax smoothing 	<ul style="list-style-type: none"> • Especially high taxation where Laffer-curves are inelastic 	<ul style="list-style-type: none"> • Redistribution towards the middle class (the median voter) 	<ul style="list-style-type: none"> • Right wing: low and regressive taxation • Left-wing: high and progressive taxation 	<ul style="list-style-type: none"> • Tax reductions before and tax increases after elections 	<ul style="list-style-type: none"> • Diversified tax system • Frequent change induced esp. by changes in political, administrative and collection costs
Testability	<ul style="list-style-type: none"> • Problematic; only partial analysis possible 	<ul style="list-style-type: none"> • Only partial analysis; • Measurability of Laffer curves is problematic 	<ul style="list-style-type: none"> • Problematic identification of the median voter • Limited by problems of incidence 	<ul style="list-style-type: none"> • Comparatively good • Limited by problems of incidence 	<ul style="list-style-type: none"> • Comparatively good • Limited by problems of incidence 	<ul style="list-style-type: none"> • Independent variables (as collection, political and administrative costs) are hard to measure

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Slide 1



Our database allows for testing of three hypotheses on the fiscal impact of tax reforms by a „social planner“

Normative theories - hypotheses

Normative theories of taxation and tax reform		
Hypothesis 1	Hypothesis 2	Hypothesis 3
Allocative function of public finance: taxation as a mean to finance public good provision	„Stabilization function of public finance: Moderate the business cycle“	Tax smoothing
„Financing function of taxation“	„Steering function of taxation“	„Minimize excess burden“
<ul style="list-style-type: none"> • Increase in tax burden if fiscal deficits increase • Decrease in tax burden in case of fiscal surpluses 	<ul style="list-style-type: none"> • Stimulating the economy by tax burden reductions in case of economic downturns • Tax burden increases occur only in economic upturns 	<ul style="list-style-type: none"> • Taxation is largely independent from transitory deficits and the business cycle • Changes in tax rates and tax bases occur relatively rarely
e.g. Musgrave 1973	e.g. Musgrave 1973	Barro (1979,86)

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Slide 2

Testing normative theories of tax reforms in Germany 1964-2004												
Dependant Variables:	Net fiscal effects tax reforms/ GDP			Tax increases federal level / GDP			Tax increases/ GDP			Tax reductions/ GDP		
	i.	ii.	iii.	i.	ii.	iii.	i.	ii.	iii.	i.	ii.	iii.
Explanatory Variables:												
Constant	-0.007 (-1.52)	-0.005* (-1.92)	-0.0007 (-0.35)	-0.002 (-1.07)	-0.002 (-1.26)	0.001 (0.916)	0.006** (2.11)	0.003* (1.81)	0.006*** (4.71)	-0.01** (-3.37)	-0.009** (-3.54)	-0.006*** (-3.87)
Deficit/GDP_t	-0.17 (-1.51)	-0.15 (-1.55)		-0.11* (-1.65)	-0.09* (-1.76)		0.008 (0.10)	-0.05 (0.73)		-0.18* (-1.81)	-0.099 (-1.18)	
REAL GDP GROWTH_t	0.03 (0.42)		-0.03 (-0.51)	0.016 (0.38)		-0.023 (0.66)	-0.063 (-1.25)		-0.06 (-1.47)	0.10 (1.45)		0.03 (0.50)
R² (adjusted)	0.02	0.04	-0.02	0.03	0.05	-0.02	0.003	0.01	0.03	0.04	0.01	-0.02
Observations	2.06	2.09	2.14	2.00	2.01	2.08	1.9	1.82	1.9	2.2	2.23	2.25
DW	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39

Notes: t-statistics of the estimated parameters in parantheses. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level

Slide 3

Positive theories of taxation and tax reform						
Approach	Leviathan	Opportunistic	Partisan	Alternative Approaches		
Hypotheses with respect to tax reform	Motives	Revenue Maximization	Manipulating reelection probabilities	Favouring party clientele	Probabilistic voting on taxation (e.g. Hettich/Winer 1984, 88, 99)	
	Triggers/Frequency	Occurrence of new revenue possibilities /fall of barriers to revenue maximization	Elections	Changes in partisan orientation of government		
	Direction	Expand Revenue	Reduction before elections; Expansion after elections or in mid-term	Left: increase level and progressiveness Right: decrease level progressiveness	Political economy of reform (e.g. Rodrik 1993,96; Buchanan 1987)	
	Extent	Maximum possible	-	-		
	Timing	After limits of government power fall	Before elections	Especially after elections	Interest group models (e.g. Mueller 1990, Witte 1985)	
Basic References	Brennan/Buchanan 1980	Nordhaus 1975/Tufte 1978	Hibbs 1977			

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Descriptive Statistics – German tax reforms (1964-2003)									
Approaches	# of years	# of reforms p.a.	# of new regulations p.a.	# of reductions p.a.	# of increases p.a.	Extent of Reduction/ GDP p.a.	Extent of increases/ GDP p.a.	Fiscal effect federal level / GDP p.a.	Total fiscal effect/GDP p.a.
Leviathan Majority 2nd Chamber	13	4,5	14,8	10,3	4	-0,43%	0,14%	-0,07%	-0,28%
Opportunistic Election year	11	6,2	16,5	11,7	4	-0,31%	0,12%	-0,05%	-0,19%
Partisan									
Left	19	6,7	28,8	12,1	16	-0,73%	0,52%	-0,03%	-0,20%
Left + Majority in 2nd Chamber	1	7	17	15	1	-0,32%	0,00%	-0,17%	-0,32%
Right	18	4,1	26,3	15,7	10,6	-0,55%	0,41%	+0,04%	-0,14%
Right + Majority in 2nd Chamber	10	4,3	15,5	11	4,1	-0,52%	+0,10%	-0,15%	-0,42%
AVERAGE (All years)	40	5,4	26,5	13,3	12,7	-0,6%	0,45%	0,05%	-0,14%

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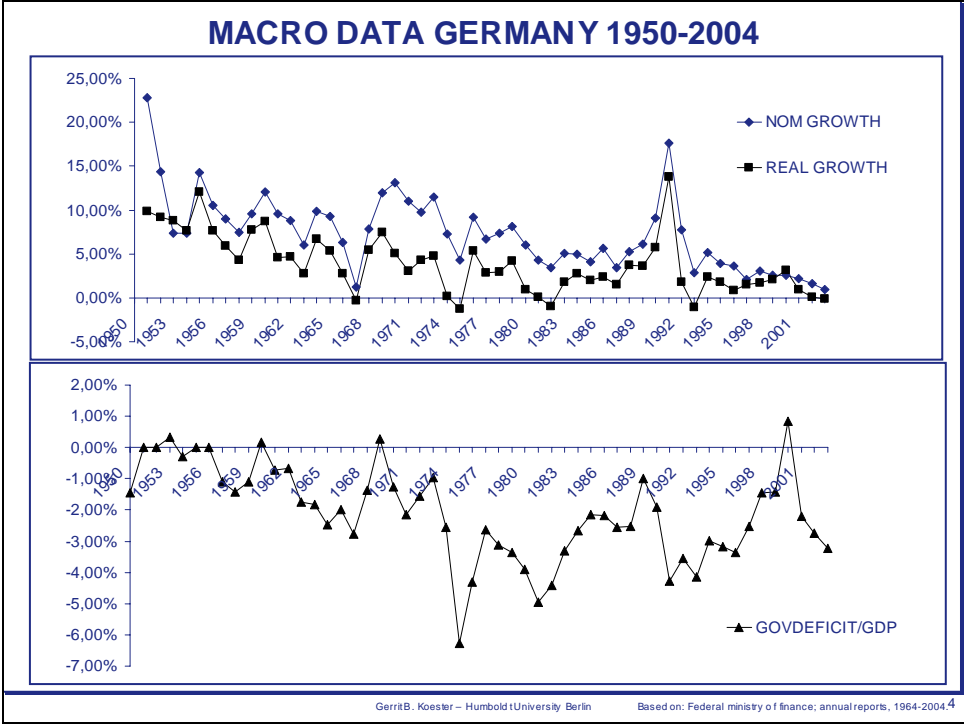
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Positive approaches – Political motives and tax reform in Germany 1964-2003																													
Equation Variables	Leviathan					Opportunistic					Partisan				Partisan/Opportunistic														
	# of reforms	Total fiscal effect	Fiscal effect federal level/ GDP	# of reforms	Extent of Reduction/ GDP	# of reforms	Total fiscal effect	Fiscal effect federal level/ GDP	# of reforms	Extent of Reduction/ GDP	# of reforms	Total fiscal effect	Fiscal effect federal level/ GDP	# of reforms	Total fiscal effect	Fiscal effect federal level/ GDP	# of reforms	Extent of Reduction/ GDP											
Explanatory Variables:																													
Constant	8,81*** (12,38)	-0,00 (0,43)	0,001 (1,24)	14,62*** (7,78)	-0,007*** (5,04)	17,38*** (5,17)	0,000*** (6,60)	5,24*** (10,95)	-0,00 (0,37)	0,001 (1,41)	15,27*** (7,26)	-0,008*** (5,04)	13,72*** (5,54)	0,007*** (7,45)	6,24*** (3,80)	0,007 (1,10)	0,006* (1,81)	11,07 (1,44)	-0,003 (0,50)	17,96 (1,29)	0,01*** (2,71)	6,54*** (4,02)	0,008 (1,16)	0,006* (1,78)	10,63 (1,36)	-0,002 (0,33)	14,87 (1,05)	0,01*** (2,54)	
Majority 2nd Chamber (Dummy)	-0,96 (-1,18)	-0,002 (0,88)	-0,001 (-1,23)	-4,69 (-1,41)	0,002 (1,03)	-13,62*** (-2,94)	-0,005*** (-2,98)	-0,96 (-1,18)	-0,002 (-0,85)	-0,001 (-1,10)	-4,48 (-1,31)	0,002 (0,78)	-12,05 (-2,09)**	-0,004*** (-2,71)	0,26 (0,31)	-0,005 (-1,51)	-0,003* (-1,92)	-7,07* (-1,88)	0,001 (0,53)	-14,46*** (-3,20)	-0,006*** (-3,29)	-0,04 (-0,06)	-0,005 (-1,52)	-0,003* (-1,78)	-6,63 (-0,43)	-0,0002 (0,072)	-11,37 (-1,57)	-0,0054* (-2,79)	
Election (Dummy)						1,16 (1,36)	-0,0001 (-0,054)	-0,001 (-0,69)	-0,001 (-0,43)	-1,52 (-1,57)	0,004* (1,57)	-10,1* (-1,69)	-0,004*** (-2,71)								1,06 (1,43)	0,0009 (0,30)	-0,00 (-0,288)	-0,00 (-0,43)	-1,51 (-1,78)	0,005 (1,78)	-10,63*** (-1,68)	-0,004* (-2,16)	
Left (Dummy)														0,48 (0,29)	0,009 (-1,37)	-0,006* (-1,83)	1,74 (0,22)	-0,004 (-0,671)	-1,11 (-0,08)	0,005 (-1,26)		-0,11 (-0,07)	-0,01 (-1,38)	-0,006 (-1,49)	2,59 (0,32)	-0,007 (-1,11)	4,85 (0,33)	-0,003 (-0,76)	
Right (Dummy)														-2,50* (-1,61)	-0,006 (-0,993)	-0,004 (-1,24)	8,61 (1,19)	-0,003 (0,006)	0,64 (0,05)	-0,003 (-0,78)		-2,95* (-1,89)	-0,006 (-1,02)	-0,004 (-1,14)	9,27 (1,23)	-0,005 (-0,95)	5,22 (0,385)	-0,001 (-0,36)	
R² (adjusted)	1,0	-0,00	0,01	0,03	0,001	0,11	0,17	0,03	-0,03	-0,001	0,003	0,04	0,15	0,27	0,30	-0,002	0,04	0,10	-0,04	0,06	0,17	0,32	-0,03	0,01	0,07	0,02	0,10	0,25	
DW	1,44	2,17	2,14	1,82	2,28	1,55	2,10	1,38	2,17	2,07	1,83	2,38	1,35	1,90	2,14	2,37	2,34	2,14	2,33	1,55	2,27	2,07	2,42	2,3	2,15	2,52	1,35	2,05	
Observations	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39

Notes: t-statistics of the estimated parameters in parantheses. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level

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BACK-UP

Tax reforms and tax revenue developments

Method: Least Squares				
Sample: 1965 2004				
Included observations: 40				
Dependent Variable:	Growth rate (mineral oil tax revenues/GDP)			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.010342	0.013885	-0.744890	0.4613
Real GDP growth rate	0.042882	0.460882	0.093043	0.9264
Oil price (import) inflation	0.005653	0.004293	1.316.854	0.1964
Mineral oil tax reform (fiscalt effects/GDP)	3.723.268	8.849.303	4.207.414	0.0002
Adjusted R-squared	0.55719	Durbin-Watson stat	2.048.718	
Dependent Variable:	Growth rate (real estate acquisition tax revenues/GDP)			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Real GDP growth rate	0.787704	0.823823	0.956157	0.3457
Inflation growth rate	-0.005055	0.007589	-0.666138	0.5098
Real estate acquisition tax reform (fe/GDP)	2.146.762	6.236.150	3.442.448	0.0015
C	-0.004992	0.025273	-0.197536	0.8446
Adjusted R-squared	0.214315	Durbin-Watson stat	2.375.413	

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BACK-UP

Tax reforms and tax revenue developments

Method: Least Squares				
Sample: 1965 2004				
Included observations: 40				
Dependent Variable:	Growth rate (local trade tax revenues/GDP)			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Real GDP growth rate	1.356.222	0.470064	2.885.187	0.0067
Inflation growth rate	-0.009230	0.004222	-2.186.327	0.0358
GEWSALGDPLG1	6.171.081	3.773.030	1.635.577	0.1112
C	-0.023412	0.014988	-1.562.077	0.1275
R-squared	0.384444	Durbin-Watson stat	1.850.293	
Dependent Variable:	Growth rate (wealth tax revenues/GDP)			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Wealth tax reform t-1 (fiscal effects/GDP)	2.576.846	5.693.725	4.525.764	0.0001
Inflation growth rate	-0.019213	0.012438	-1.544.645	0.1317
Real GDP growth rate	0.090354	1.344.101	0.067223	0.9468
C	-0.054053	0.041640	-1.298.105	0.2030
Adjusted R-squared	0.342936	Durbin-Watson stat	1.212.597	

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BACK-UP

Normative and positive theories by kind of tax

Method: Least Squares				
Sample: 1965 2004				
Included observations: 40				
Dependent Variable:	Special Excise Tax Reform (Fiscal Effects/GDP)			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.19E-05	0.000195	0.112161	0.9113
(Fiscal Deficit/GDP)t-1	-0.011771	0.006680	-1.762.089	0.0863
Adjusted R-square	0.052486	Durbin-Watson stat	1.829.100	
Dependent Variable:	Income Tax Reform (Fiscal Effects/GDP)			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.004734	0.001515	-3.125.434	0.0034
(Fiscal Deficit/GDP)t-1	-0.107901	0.051843	-2.081.303	0.0444
Adjusted R-square	0.080612	Durbin-Watson stat	2.293.575	

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BACK-UP

TAX REFORM COORDINATION

Method: Least Squares				
Sample: 1965 2004				
Included observations: 40				
Dependent Variable: BUILDING AND LAND TAX REFORM (FISCAL EFFECTS/GDP)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
REAL ESTATE ACQUISITIC	1024.701	0.000512	2.001969	0.0000
INCOME AND PAYROLL T	3.12E-05	2.06E-05	1.513.477	0.1389
WEALTH TAX REFORM (F	-0.009767	0.000299	-3.264.069	0.0000
C	5.74E-08	9.13E-08	0.627939	0.5340
Adjusted R-square	0.999996	Durbin-Watson stat	1919.068	2.74E-05
Dependent Variable: SPECIAL EXCISE TAX REFORM (FISCAL EFFECTS/GDP)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOCAL TRADE TAX REFO	0.587113	0.291880	2.011487	0.0516
MOTOR VEHICLE TAX RE	2.332.347	0.770412	3.027.403	0.0045
C	0.000326	8.31E-05	3.924.065	0.0004
Adjusted R-square	0.215288	Durbin-Watson stat	1641.003	

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BACK-UP

TAX REFORM COORDINATION

Method: Least Squares				
Sample: 1965 2004				
Included observations: 40				
Dependent Variable: WEALTH TAX REFORMS (FISCAL EFFECTS/GDP)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
REAL ESTATE ACQUISITIC	-1014.432	-3.148.090	-3.222.371	0.0000
BUILDING AND LAND TAX	-9.903.954	3.034.235	-3.264.069	0.0000
INCOME AND PAYROLL T	0.004093	0.002030	2.016.336	0.0513
C	5.58E-06	9.20E-06	0.605984	0.5483
Adjusted R-square	0.986559	Durbin-Watson stat	1985.178	
Dependent Variable: INCOME AND PAYROLL TAX REFORM (FISCAL EFFECTS/GDP)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
BUILDING AND LAND TAX	1097.602	3.826.394	2.868.503	0.0069
VAT REFORM (FE/GDP)	0.638869	0.327029	1.953.552	0.0586
WEALTH TAX REFORM (F	7.862.768	2.190.677	3.589.196	0.0010
C	-0.002027	0.000698	-2.905.460	0.0062
Adjusted R-square	0.214946	Durbin-Watson stat	1918.008	

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BACK-UP

TAX REFORM COORDINATION

Method: Least Squares				
Sample: 1965 2004				
Included observations: 40				
Dependent Variable:	VAT REFORM (FISCAL EFFECTS/GDP)			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
BUILDING AND LAND TAX	-5.250.338	1.859.693	-2.823.229	0.0077
INCOME AND PAYROLL T	0.450030	0.076798	1.953.552	0.0586
WEALTH TAX REFORM (F	-3.047.348	1.127.975	-2.701610	0.0105
C	0.000957	0.000340	2.845.387	0.0079
Adjusted R-squared	0.205947	Durbin-Watson stat	2.201399	