

# **Do Local Tax Limitations Work? Evidence from Danish Local Government**

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## 1. Introduction

The literature on tax and expenditure limitations – TELs – shows that limiting subcentral government's freedom to levy taxes may have considerable unexpected effects (Mullins & Wallin 2004; Kousser et al. 2008; Skidmore 1999). Entities subjected to such limitations may, as hoped for by the central government, react by cutting expenditure and revenue, but they may also strategically change their revenue structure and increase their reliance on income sources not subjected to limitations. Furthermore, the effects of limitations may vary according to individual characteristics of subcentral governments in patterns not anticipated or wished for by the central government.

However, these findings are overwhelmingly based on studies of state and local governments in the USA. The relevance for European countries is not clear. The mechanisms studied in the US setting may be general, but the empirical context is very different. US local governments are a complex mix of single and multi-purpose entities where, furthermore, citizens' initiatives play a large role. In contrast, European local governments are geographically defined multi-purpose entities that rely almost exclusively on the representative mechanism.

The relative paucity of studies of local tax limitations in Europe are probably due to the difficulty of finding a relevant empirical testing ground. Local fiscal systems vary considerably across European countries, but utilizing this variation is difficult because so many other characteristics of local government systems also vary cross-nationally. There is therefore more potential in studying within-country variation, but local fiscal systems are 'sticky' and show considerable stability over time.

However, in Denmark, traditionally a country with a high degree of decentralization, the central government imposed tax limitations on municipalities in 2009. While it was henceforth not formally impossible to raise local taxes, the central government now offset the revenue effect of local tax increases by corresponding cuts in central grants. This has effectively stopped local tax increases. In this sense the Danish tax limitation has worked. But based on the TEL literature referred to above there is reason to question the broader effects.

The purpose of this paper is to investigate the Danish situation and thus the empirical domain of the TEL literature. Are the key findings from this literature relevant in a European context, in particular for Danish municipalities? In Denmark, municipalities may have kept taxes unchanged, but have they shifted revenue reliance to other income sources? Has the tax limitation had a uniform effect among municipalities, or have effects varied with the local situation in patterns

not expected or wanted by the central government? The Danish setting makes it possible to answer these questions by comparisons across time and place of municipal reactions to the tax limitation.

The paper is structured as follows. In the next section we explain the Danish situation in more detail. We then present a review of the TEL literature and tease out the key findings. This makes for three hypotheses that can be tested on the Danish data. Before doing this we discuss some questions of research design. Endogeneity is a known problem in the TEL literature, but is less relevant in the Danish setting. Measuring the local reaction to tax limitations is also a known problem in the TEL literature. But the availability of a large number of register data on Danish municipalities makes it possible to establish quite refined measures. In the following section we present the results of pooled regression analyses of 98 municipalities from 2008-2011. The central finding is that tax limitations do indeed stop income taxes from increasing. However, the growth in expenditure is not affected and there is no trace of increased reliance on non-tax revenue.

## **2. Introducing local tax limitations in Denmark**

Denmark is a country that traditionally scores high in international comparisons of local autonomy (Page 1991: 13-42; Boadway & Shah 2009: 273-281; OECD 2009). This is partly because Danish municipalities are entrusted with core welfare functions such as schools, child care, old age care, libraries, local culture and public utilities. Partly it is because Danish municipalities finance most of their expenditure with personal income taxation. The right to set the rate of this tax source is often considered the cornerstone of Danish local self-government (Blom-Hansen & Heeager 2011).

The local taxation right has never been completely unlimited. For the past decades local tax levels have been negotiated between the central government and the municipalities' national association in a system known as the budgetary cooperation. These negotiations are conducted annually and normally end with a written agreement on limits to local taxation. This limit, however, covers all municipalities so there is flexibility built into the system. Individual municipalities can increase and lower taxation as long as the general limit is kept. The annual agreement is really a declaration of intent since the local government association cannot enter into agreements that are legally binding for its member. This system has been operative since 1980.

In 2007 a local government reform was implemented that redistributed functions across tiers and amalgamated the 271 municipalities into 98 new large entities (Lassen & Serritzlew 2011). In the years immediately prior to the reform the central government introduced tight controls of local

economic dispositions. Local tax rates were frozen, local liquid assets had to be deposited, fees were introduced on local budget overruns, and capital spending had to be approved by the central government. These initiatives were widely accepted by the old municipalities since there was a consensus that an unhealthy incentive to “spend before closing time” was to be counteracted (Blom-Hansen 2010).

But the understanding was that controls were to be loosened once the reform was implemented. In 2007 the central government lived up to this understanding. Controls were given up and the central government restarted the annual economic negotiations with the municipalities’ association. In 2008, the first year without individual local tax controls, local taxation increased dramatically, much more than expected by the central government. In reaction an individual local tax limitation was introduced. This was a law introducing sanctions for increasing local income and property tax rates.

The sanctions combine individual and collective elements. In the first year 75 per cent of the revenue generated by the tax increase is offset by a corresponding cut in the individual municipality’s grant from the central government. The remaining 25 per cent of the increased revenue is neutralized by a cut in the general grant to local governments, the so-called block grant. This is the collective sanction. Together the individual and collective sanctions fully neutralize the revenue effect of increased local taxation. The individual sanction is gradually phased out, with a corresponding increase in the collective element, cf. Table 1. As is also evident from this table, the central government strengthened the individual sanction in 2010 making it even more unattractive to increase local taxes as seen from the perspective of the individual municipality.

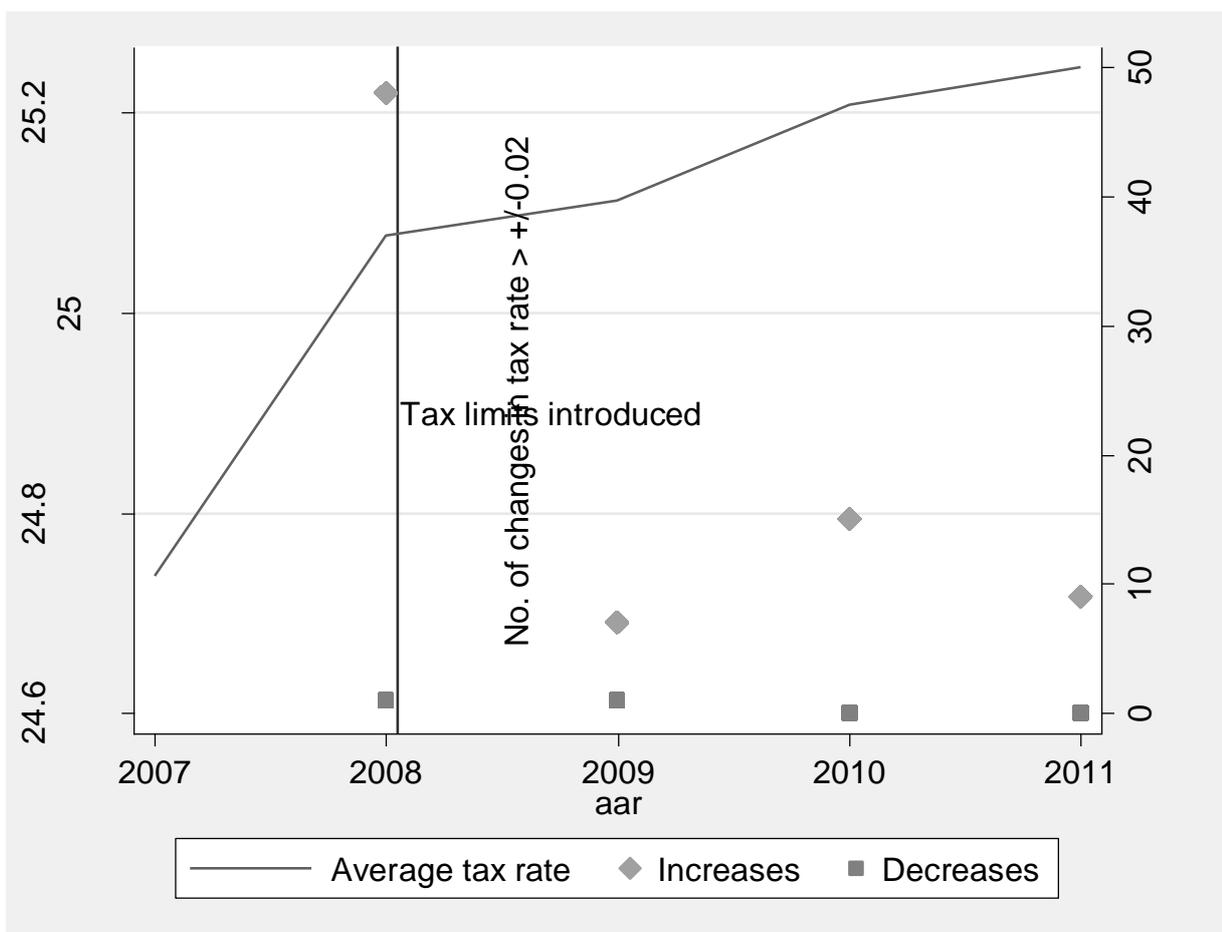
**Table 1. Local tax limitations in Denmark**

	Individual sanction (%)	Collective sanction (%)
Act 477/2008 (effective from 2009)	Year 1: 75 Year 2: 50 Year 3-: 0	Year 1: 25 Year 2: 50 Year 3-: 100
L 709/2010 (effective from 2011)	Year 1: 75 Year 2: 50 Year 3: 50 Year 4: 25 Year 5-: 0	Year 1: 25 Year 2: 50 Year 3: 50 Year 4: 75 Year 5-: 100

The tax limitations were introduced over the explicit objections of the municipalities. Their association found that they were unwarranted, would effectively prohibit municipalities from raising their taxes and abolish a central condition for Danish local self-government (KL 2008). When the tax limitation was strengthened in 2010, the association protested again and stated that the sanctions are not conducive for trust in central-local government relation. According to the municipal association, the sanctions effectively abolish the local taxation right and lock local tax rates at artificial levels (KL 2010).

In sum, the income and property taxation rights of Danish municipalities have been severely curtailed since 2009. Individual sanctions for tax increases dramatically reduce the incentive to increase taxation. As shown in Figure 1, local income tax rates have only changed little since 2009 which might suggest that the sanctions are effective. However, based on the findings in the literature on tax limitations in the USA, this conclusion is far from self-evident.

**Figure 1. Local income tax rates from 2007 to 2011**



### **3. Lessons from tax and expenditure limitations (TEs) in the USA**

Imposing restrictions on the taxing powers of municipalities is an example of the broader phenomenon of controlling the size of the public sector by institutions. Fiscal rules such as budgetary balance requirements, debt restrictions, expenditure or revenue limitations, and referenda approval of budget decisions are often introduced to curb the development of public budgets (Boadway & Shah 2009: 477-481, 495-497). However, as noted by von Hagen (2002: 264) in a broad research review, “the key insight then is that the effectiveness of fiscal rules is limited at best, because politicians are likely to find ways to circumvent them.”

This insight seems particularly relevant for the type of fiscal rule imposed on Danish municipalities in 2009. It is a local tax limitation, which is a phenomenon well-known from the USA where the tax revolt in the 1970s led to numerous instances of tax and expenditure limitations (TEs). Although not the first, the most spectacular TEL is probably California’s Proposition 13 which in 1978 imposed restrictions on property taxation by local authorities (Citrin 1979; Danziger 1980). The California tax revolt spread rapidly across the USA, and within two years 43 states had implemented some kind of local property tax limitation. But the revolt was not kept to budgets at the local level. State governments also became the focus of TEs. At the turn of the millennium there were 53 state TEs in place in 31 states, while before 1970 only two states had TEs (Mullins & Wallin 2004; Joyce & Mullins 1991).

A large literature has examined the effects of these TEs. Three core findings are relevant for an investigation of the Danish local tax limitation. The first is that TEs have had limited success in reducing spending and revenue growth. Bails (1990) investigated TEs in 19 states in 1976-1985 and concluded that they had only a small impact on the growth or size of state budgets. Kousser et al. (2008) investigated state and local spending in 49 states in 1969-2000 and found TEs to have very limited effects. Cox and Lowery (1990), updated in King-Meadows & Lowery (1996), compared three TEL states (Michigan, South Carolina, Tennessee) with three comparable non-TEL-states (Ohio, North Carolina, Kentucky) over the years since 1965. They found no evidence in their 1990 analysis and only very weak evidence in their 1996 update that TEs had an impact on the size of government. Elder (1992) analyzed the impact of TEs on state revenue in the period 1950-1985 and found some impact of expenditure limits, but no impact of revenue limits. Mullins & Joyce (1996) investigated 48 states across the years 1970-1990 and found that TEs had only little effect on the overall size of the state and local public sector.

The second key finding is that limitations on property taxes make local governments shift their revenue reliance to other revenue sources. Shadbegian (1999) investigated the level and structure of local government revenue in 1962-1987 and found that TELs in 29 states shifted the revenue structure of local government away from property taxes toward ‘miscellaneous revenue’. Skidmore (1999) examined 49 states in 1976-1990 and found similar results. Kousser et al. (2008; see also McCubbins & Moule 2010), studying 23 states in 1969-2000, found that 15 of 23 states increased charges and fees following the introduction of TELs. Mullins & Joyce (1996) examined 48 states across the years 1970-1990 and found that TELs reduced local taxes, but that these reductions were offset by increases in user charges and ‘miscellaneous revenue’. Finally, Preston & Ichniowski (1991), based on data from 1,400 different municipalities covering all US states, show that revenue or expenditure limits reduce property tax revenue, but increase ‘other revenue’.

The third finding is that the effects of TELs are not uniform across localities, but depend on the local situation. Brown (2000) investigated the impacts of TELs imposed on local governments in Colorado and found that they depend on jurisdiction size. Effects are more constraining for small local governments. Mullins (2004) studied local governments in 787 metropolitan counties in 48 states in 1972-1997 and found that the effects of TELs are more constraining in poor and fiscally constrained communities.

On the basis of these findings of TELs in the US context we investigate the following three hypotheses in the Danish case:

H1: The Danish tax limitation does not limit local expenditure

H2: The Danish tax limitation leads to reduced taxation, but increased reliance on non-tax revenue

H3: The Danish tax limitation has more constraining effects in municipalities under fiscal pressure

#### **4. Methods and data**

In the literature, most of the studied TELs are introduced by state legislatures or by voter initiatives (Kousser et al. 2008: 335; Skidmore 1999: 89; Shadbegian 1999: 226, 229-230; Dye, McGuire & McMillen 2005: 216, 221ff). As readily acknowledged in the literature, this creates a problem of endogeneity. Legislatures and voters are not likely to introduce TELs by chance. They are created to solve specific problems. For example, one cannot rule out that TELs are more likely to be introduced in places where taxes have proven hard to control. If this is the case, the correlation

between TELs and tax rates may be biased. Since the Danish TEL was imposed by central government over the explicit objections of the municipalities, cf. section 2 above, they have not been introduced specifically in municipalities according to any local criteria, including problems with controlling the tax rate. Analytically, they constitute an external shock.

Our dataset include all 98 Danish municipalities over five years, 2007-2011, which yields 490 observations. To deal with problems of temporal autocorrelation we analyse annual changes in our dependent variables, rather than levels.<sup>1</sup> To deal with problems of spatial autocorrelation we use cluster corrected standard errors.

To study the effect of the tax limitation introduced in 2009 on tax and expenditure decisions (H1 and H2) we compare the effect of year dummies on these economic dispositions. Our expectation is that the year dummies for 2009, 2010 and 2011 have no effect on expenditure changes, a negative effect on changes in taxation, and a positive effect on changes in non-tax revenue.

To study whether the tax limitation has more constraining effects in municipalities under fiscal pressure (H3) we construct interaction terms of year dummies and indicators of fiscal pressure. Our expectation is that the combination of a tax limitation and fiscal pressure will force municipalities to rely more on non-tax revenue and/or expenditure reductions.

Since income and expenditure patterns in Danish municipalities are known to be influenced by many factors, we control for a number of potential alternative explanations identified by prior research (Houlberg et al. 2011; Blom-Hansen 2010; Serritzlew 2005; Mouritzen 1991): Changes to the tax base, changes in expenditure needs, municipal amalgamations, partisan ideology, population size, and population density. To ensure the right direction of causality we analyse the impact of these factors with a one-year lag.

We refer the reader to the appendix for the exact definition and specification of variables.

## **5. Empirical analysis**

We now present the results of (still preliminary) analyses of local expenditure, tax revenue and non-tax revenue in Danish municipalities from 2007-2010. We first investigate H1 by analyzing how

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<sup>1</sup> In two instances we use levels rather than changes. This is in our analyses of capital income and net loans in Table 4. The reason is that these income sources – in contrast to e.g. personal income taxes and current income – have no stable level from year to year. Temporal autocorrelation is thus a minor concern.

local expenditure is affected by the tax limitations introduced in 2009. We then turn to H2 and H3 by analyzing, first, whether the tax limitations reduce tax increases and, second, whether tax limitations induce municipalities to increase income from non-tax sources.

Table 2 shows the effect of tax limitations on a broad measure of local expenditure, budgeted current and capital expenditure (excl. utilities). Expenditures are measured as annual change in 1,000 DKK per capita (fixed prices). All 98 municipalities are included for four years, 2007-2010 (2011-data remain to be added). Since the tax limitations were in effect from 2009, we can estimate the effect of the limitations on expenditure by including dummy variables for years. This is done in model 1. Although the intention of implementing tax limitations is to curb local expenditure, this turns out not to happen. In 2009, the first year with tax limitations, local expenditure per capita was not significantly lower than in 2008. In 2010, the second year, local expenditure even increased.

**Table 2: Tax limitations and local expenditure changes**

	Model 1	Model 2
Tax limitations		
Year 2008 (Tax limitation not in effect)	Reference category	Reference category
Year 2009 (Tax limitation in effect)	-0.575 (-1.76)	-0.306 (-0.76)
Year 2010 (Tax limitation in effect)	2.227*** (7.60)	2.178*** (6.08)
Fiscal pressure	-	
Balance, current accounts (lag)	-	0.189* (2.13)
Financial equity capital (lag)	-	0.0325* (2.50)
Interactions	-	
Financial equity capital (lag) x Year 2009	-	0.0209 (0.83)
Financial equity capital (lag) x Year 2010	-	-0.0220 (-0.97)
Controls	-	
Annual change in tax base	-	0.0535 (1.16)
Annual change in expenditure needs	-	0.836* (2.52)
Municipality amalgamated in 2007 (1 = yes)	-	0.752** (2.70)
Party ideology (lag) (1 = socialist mayor)	-	-0.336 (-1.49)
Population size (lag)	-	-0.00202 (-0.97)
Population density (lag)	-	-0.162 (-1.00)
Constant	1.520*** (7.24)	0.161 (0.22)
<i>N</i>	294	294
adj. <i>R</i> <sup>2</sup>	0.241	0.316

Dependent variable: Annual change in budgeted gross current and capital expenditure (excl. utilities) in 1,000 DKK per cap. Fixed prices. OLS regression with cluster corrected standard errors. Please refer to appendix for definitions of variables.

*t* statistics in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

In model 2 we include a number of variables to control for economic conditions and changes, political factors and types of municipalities. These controls either have no effects or behave as one should expect. For example, in municipalities with less fiscal pressure (measured by their balance and financial equity capital), spending tends to grow more. Increases in expenditure needs (a

measures based on objective demographic and socio-economic indicators) leads, not surprisingly, to increased spending, and municipalities amalgamated in 2007 tend to spend more. The important point, however, is that the effect of the dummy variables Year 2009 and Year 2010 do not change. Furthermore, the interaction terms show that fiscal pressure does not affect the impact of tax limitations on expenditure. Fiscal pressure notwithstanding, tax limitations do not reduce expenditure. This corroborates H1: Tax limitations do not curb expenditure.

Table 3 shows the effects of the tax limitations introduced in 2009 on changes in the three taxes that are regulated by the limitation: Personal income taxation, general property taxation and taxes on business property (NB: So far the paper only includes the first two taxes). As in Table 2, model 1 shows the direct effect; model 2 also includes control variables. Turning first to personal income taxation, the constant in model 1 indicates that the income tax rate in 2008 on average increased by 0.341 percentage points. The dummy for year 2009 is negative, statistically significant, and of similar magnitude. This indicates that the tax limitations in 2009, as expected by H2, did in fact almost stop increases in income taxes. The average tax increase dropped to  $0.341 - 0.306 = 0.035$  percentage points, a negligible increase. The dummy for year 2010 is a bit smaller. Taxes in 2010 increased, compared to 2008, by  $0.341 - 0.245 = 0.096$  percentage points. Finally, in 2011 taxes increased, compared to 2008 by  $0.341 - 0.303 = 0.038$  percentage points. Hence, tax increases in 2010 and 2011 were also markedly lower than before the tax limitations were introduced. In sum, the tax limitations introduced in 2009 seem to have had a dampening effect on local taxation.

In model 2, four control variables are included. First, we control for changes in the municipal income tax base. This variable turns out not to have a statistically significant effect. Second, in 2010 and 2011 some municipalities were allowed by the Ministry of Interior to increase taxes by being allotted share of a special “tax pool”. This was a minor softening of the tax limitations introduced after negotiations with the local government association. The affected municipalities were, in other words, partly exempted from the tax limitation. We control for these exceptions by including a dummy variable indicating whether a municipality was allowed to increase taxes. As expected, these municipalities tend to increase taxes. Third, we control for party ideology, but this appears to have no effect. Fourth, we control for the “safe passage” arrangement. This is a legal entitlement to increase taxes that have been lowered. This arrangement was introduced as part of the original tax limitation in order not to discourage municipalities from lowering taxation. It may seem surprising that this arrangement has a negative (but small) effect on taxation. This is probably because tax reductions tend to occur in rich municipalities so that they to

some extent function as a proxy for economic soundness. Adding these four control variables does not essentially change the estimate of the direct effect of the tax limitation from model 1.

Turning next to general property taxation, the same picture emerges. The direct effect is estimated in model 1. Here, the constant indicates that property tax rates increased by 0.868 in 2008. The dummies for 2009, 2010 and 2011 indicate that increases then almost stopped. This result is not substantially changed by adding the control variables.<sup>2</sup>

**Table 3: Tax limitations and local tax increases**

	Change in personal income tax rate		Change in general property tax rate	
	Model 1	Model 2	Model 1	Model 2
Tax limitations				
Year 2008 (Tax limitation not in effect)	Reference category	Reference category	Reference category	Reference category
Year 2009 (Tax limitation in effect)	-0.306*** (-6.38)	-0.293*** (-5.67)	-0.611** (-3.46)	-0.561** (-2.59)
Year 2010 (Tax limitation in effect)	-0.245*** (-4.89)	-0.299*** (-6.24)	-0.529** (-2.82)	-0.871*** (-5.13)
Year 2011 (Tax limitation in effect)	-0.303*** (-6.76)	-0.342*** (-6.98)	-0.519** (-2.69)	-0.781*** (-4.27)
Annual change in tax base	-	0.00160 (0.40)	-	0.00948 (0.49)
Municipality allotted share of tax pool	-	0.321*** (6.63)	-	1.927*** (5.72)
Party ideology (1=socialist mayor)	-	-0.030 (-1.20)	-	-0.0003 (0.00)
Entitled to tax increase ("safe passage")	-	-0.028** (-2.05)	-	-0.055 (-0.88)
Constant	0.341*** (7.72)	0.355*** (7.46)	0.868*** (5.75)	0.874*** (5.38)
<i>N</i>	392	392	392	392
adj. <i>R</i> <sup>2</sup>	0.180	0.257	0.035	0.195

Dependent variable: Annual change in income/property tax rate. OLS regression with cluster corrected standard errors. Please refer to appendix for definitions of variables.

*t* statistics in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

<sup>2</sup> Since the Danish local property tax has a legal maximum of 3,4 per cent and since several municipalities are close to this limit, there is a ceiling effect in local property taxation. To deal with this problem we have run model 2 in Table 3 with the lagged level of the property tax as an extra control variable. This variable is, not surprisingly, negative and statistically significant. But it does not substantially affect the results (analysis not shown, but available upon request).

We now turn to non-tax sources of revenue that are not regulated by the tax limitation introduced in 2009. According to H2, municipalities will, when tax limitations are introduced, turn from tax revenue to non-tax revenue. The Danish municipalities have several such sources. We investigate three of the most important ones. First, municipalities may increase capital income, for example by selling land and property. Second, municipalities may increase current income, for example by increasing user charges for day care. Third, it is possible to increase borrowing. We investigate each of these sources of revenue in three separate regression analyses in Table 4 (2011 data remain to be added). We include the same set of control variables as in Table 2. Few of them have statistically significant effects on non-tax revenue sources, and none of the significant effects are systematic. The dummy variables for year 2009 and year 2010 are, according to H2, expected to be positive. However, it turns out that non-tax revenue sources are typically not used more in 2009 and 2010 than in 2008. This indicates that tax limitations do not lead the municipalities to increase their reliance on non-tax sources of revenue.

**Table 4: Tax limitations and non-tax revenue**

	Level of capital income	Change in current income	Level of net loans
<b>Tax limitations</b>			
Year 2008 (Tax limitation not in effect)	Reference category	Reference category	Reference category
Year 2009 (Tax limitation in effect)	-0.331 (-1.51)	0.0322 (0.17)	0.0346 (0.21)
Year 2010 (Tax limitation in effect)	-0.579* (-2.16)	-0.0576 (-0.37)	0.342 (1.78)
<b>Fiscal pressure</b>			
Balance, current accounts (lag)	-0.0535 (-1.30)	0.00829 (0.22)	0.0388 (0.78)
Financial equity capital (lag)	-0.0360 (-1.68)	0.00461 (0.75)	0.00281 (0.20)
<b>Interactions</b>			
Financial equity capital (lag) x Year 2009	-0.00753 (-0.38)	-0.00331 (-0.51)	0.0210 (1.47)
Financial equity capital (lag) x Year 2010	0.00977 (0.42)	-0.00595 (-0.60)	0.0117 (0.73)
<b>Controls</b>			
Annual change in tax base	-0.00279 (-0.10)	-0.0191 (-0.95)	0.0155 (0.75)
Annual change in expenditure needs	-0.155 (-0.88)	0.110 (0.96)	-0.196 (-1.26)
Municipality amalgamated in 2007 (1 = yes)	-0.405* (-2.52)	0.376** (3.12)	-0.254 (-1.15)
Party ideology (lag) (1 = socialist mayor)	0.0590 (0.41)	-0.154 (-1.34)	0.0545 (0.36)
Population size (lag)	0.00435*** (5.75)	-0.000327 (-0.55)	-0.00312** (-2.95)
Population density (lag)	-0.0821* (-2.27)	-0.0362 (-1.51)	-0.0627 (-1.40)
Constant	1.191** (2.90)	-0.0765 (-0.32)	0.859* (2.61)
<i>N</i>	294	294	294
adj. <i>R</i> <sup>2</sup>	0.170	0.012	0.037

Dependent variable: Level of capital income/change in current income/ level of net loans.. OLS regression with cluster corrected standard errors. Please refer to appendix for definitions of variables.

*t* statistics in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

According to H3, the constraining effects of tax limitations is stronger for municipalities under fiscal pressure. If this is true, non-tax sources of revenue should be used more for municipalities with low balance, and with low financial equity capital. It turns out that these variables are not related to the use of non-tax resources. Neither main terms, nor interaction terms, are statistically significant. Tax limitations do not, regardless of fiscal pressure, affect the use of non-tax revenue sources.

## 6. Conclusion and discussion

The results support H1, but not H3, and only partly H2. In other words, tax limitations do curb increases in local taxation, but they do not affect expenditure, and they do not affect non-tax revenue. This may seem strange, even paradoxical. Why do municipalities not choose to increase revenue from other sources when taxes cannot be raised? How can municipalities increase expenditure, not increase taxes, and not increase income from other sources? We speculate (and plan to pursue this further as we work on this paper) that the explanation could be found in the fact that municipalities (as most other polities) have four options when faced with tax limitations:

1. Curb spending. This does not happen, as predicted by H1, in the Danish case
2. Increase income from non-tax sources. This does not, in contrast to H2, happen in the Danish case
3. Increase taxes anyway. This does not, as predicted by H2, happen in the Danish case
4. Play the game of *Stick it out to the bitter end*

The first three options are not attractive. Curbing spending and increasing revenue from user payments and other non-tax sources will be punished by the voters. Increasing taxes will be punished by central government. The last option is to do nothing. That is, no real solutions are found to the reduction in income sources which the tax limitations represent. Municipalities keep postponing tough decisions as long as possible. This can be done in several ways. One is to use the savings. This makes the municipality much more vulnerable to economic fluctuations, but it is a way, in the short run, to finance increased expenditure without collecting revenue. If this happens, the financial equity capital and liquid assets will drop. Another is to collect less revenue for capital investment. As long as this happens, the balance of the current accounts will be low. Table 5 shows some signs that this may be what is happening. Although the annual balance on current accounts

improved in 2010, financial equity capital and liquid assets have been lowered in the years after the introduction of the tax limitation in 2009.

**Table 5: Buffers in the municipal economy 2007-2011**

	2007	2008	2009	2010	2011
Financial equity capital (per capita)	-7,484	-7,854	-9,106	-9,555	-
Liquid assets per capita (per capita)	4976	4742	3620	3651	3767
Balance, current accounts, tax financed area (per capita)	806	988	291	1,401	-

This approach may be politically convenient, but it postpones rather than solves the problem.

Sooner or later investments will be necessary and liquid assets will be at a minimum. However, if other municipalities reach the breaking point first, this may turn out not to be a problem. When the central government is faced with tough economic problems in the municipalities, the implementing agency of the Danish welfare state, it is hard to imagine that tax limitations can be upheld. In other words, the tax limitations are not entirely credible in the long run. In this situation, waiting may be a rational strategy. The game of stick it out to the bitter end is about waiting until problems in other municipalities have become so severe that the central government steps in and defuses the tax limitations.

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## Appendix: Explanation of variables used in regression analyses

Variable	Definition in local budgets/accounts	Source
<i>Dependent variables:</i>		
Annual change in budgeted current and capital expenditure (excl. utilities) in 1,000 DKK per cap. (D.bdau)	Expenditure on main accounts 0-6 (excl. main account 1), dranst 1 and 3	<a href="http://www.statistikbanken.dk">www.statistikbanken.dk</a>
Annual change in income tax rate in percentage points (D.upct)	-	<a href="http://www.noegletal.dk">www.noegletal.dk</a>
Budgeted capital income (excl. utilities) in 1,000 DKK per cap. (ai)	Income on main accounts 0-6 (excl. main account 1), dranst 3	<a href="http://www.statistikbanken.dk">www.statistikbanken.dk</a>
Budgeted net loans in 1,000 DKK per cap. (laan)	Net amounts on account 8.55.00, dranst 6 and 7	<a href="http://www.statistikbanken.dk">www.statistikbanken.dk</a>
Budgeted use of liquid assets in 1,000 DKK per cap. (likv)	Net amounts on account 8.22.00, dranst 5	<a href="http://www.statistikbanken.dk">www.statistikbanken.dk</a>
Budgeted current income (excl. utilities) in 1,000 DKK per cap. (D.di)	Income on main accounts 0-6 (excl. main account 1), dranst 1	<a href="http://www.statistikbanken.dk">www.statistikbanken.dk</a>
<i>Independent variables:</i>		
Aar2009; Aar 2010; Aar 2011	Year dummies	-
Allotted share of tax pool (tildeltp)	Dummy (1=allotted share in tax pool in 2010 or 2011)	Ministry of Interior
Annual change in tax base in 1,000 DKK per cap. (D.bs)	Weighted measure of budgeted personal income and property values	<a href="http://www.noegletal.dk">www.noegletal.dk</a>
Balance, current accounts, tax financed area in 1,000 DKK per cap. [skattefinansieret driftsresultat] (drres_r)	Income from taxes, grants and interest minus net expenditure on main accounts 1-6 (excl. main account 1), dranst 1 and 2	<a href="http://www.krevi.dk">www.krevi.dk</a>
Financial equity capital in 1,000 DKK [finansiel egenkapital] (ekap_r)	Short and long term financial assets (net of liabilities)	<a href="http://www.krevi.dk">www.krevi.dk</a>
Annual change in expenditure need as defined in equalization system in 1,000 DKK per cap. (D.ub)	Index of demographic and socioeconomic indicators	<a href="http://www.noegletal.dk">www.noegletal.dk</a>
Municipality amalgamated in 2007 (ny_kommu)	Dummy (1=municipality amalgamated in 2007 local government reform)	<a href="http://www.kmdvalg.dk/kv/2005/adk.htm">http://www.kmdvalg.dk/kv/2005/adk.htm</a>
Party ideology (borgmest)	Dummy (1=socialist mayor)	<a href="http://www.danskekommuner.dk/Borgmesterfakta">http://www.danskekommuner.dk/Borgmesterfakta</a>

		<a href="#">/</a>
Population size in 1,000 (bef)	No. of inhabitants	<a href="http://www.noegletal.dk">www.noegletal.dk</a>
Population density in 1,000 (befat)	Inhabitants divided by area in km <sup>2</sup>	<a href="http://www.noegletal.dk">www.noegletal.dk</a>
Entitled to tax increase ("safe passage")	Legal entitlement to increase lowered taxes (act 477/2008)	Ministry of Interior and Health