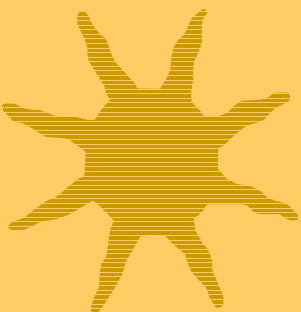
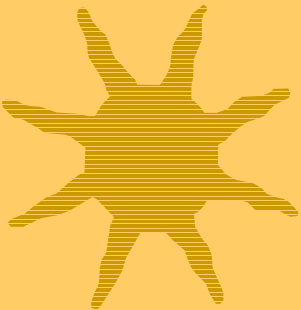
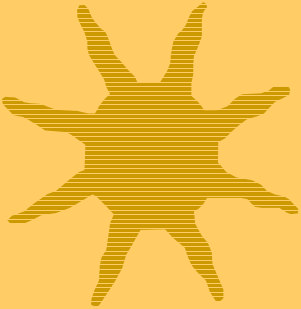


Taxes and Entrepreneurial Activity

Julie Berry Cullen and Roger Gordon



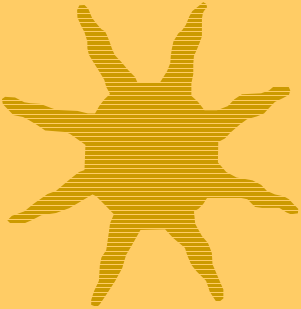
Motivation



- ★ Entrepreneurial activity potentially a major source of externalities, and important for economic growth
- ★ Tax subsidies therefore appropriate
- ★ How in practice do taxes affect the amount of entrepreneurial activity?
 - Is it in fact subsidized?
 - In any case, is behavior responsive to taxes?



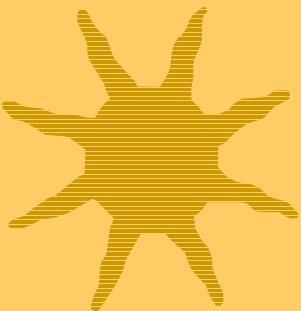
What is “*Entrepreneurial Activity*”?



- ★ To see how taxes affect entrepreneurial activity, we first need to measure “it”



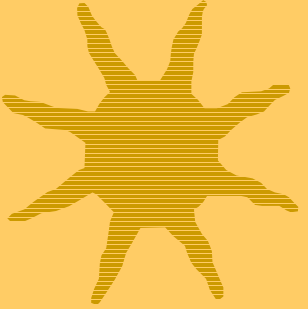
- ★ Paper focuses on “*risky projects undertaken in start-up firms*”



- ★ For reasons to be described, focus more narrowly on the probability of large losses in noncorporate firms

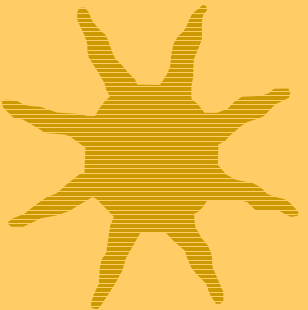


Extent of entrepreneurial activity reflects many decisions

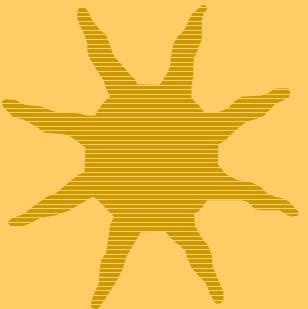


★ Extent of risk-taking in start-up firms depends on:

- Riskiness of chosen project
- Time spent by entrepreneur
- Amount of capital investment
- Number of employees

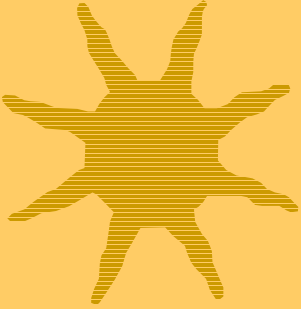


★ Consider how taxes affect each decision



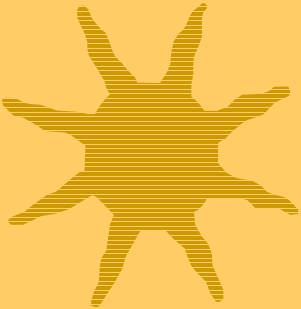


Taxes considered:

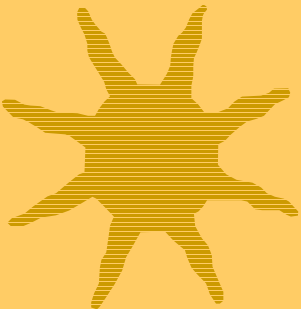


★ Personal income tax

★ Payroll tax

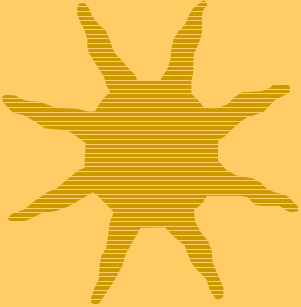


★ Corporate tax





Tax Treatment of business vs. wage income



★ Wage income taxed under personal and payroll tax: marginal rate = T



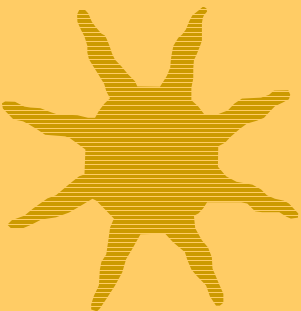
★ Business income: option to incorporate

– Taxed at more favorable of personal vs. corporate tax rate

– Possible nontax consequences of choice

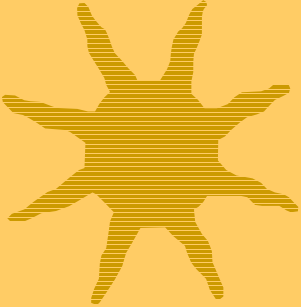
– Normally not subject to payroll tax

– Effective tax rate: $\tau \leq T$



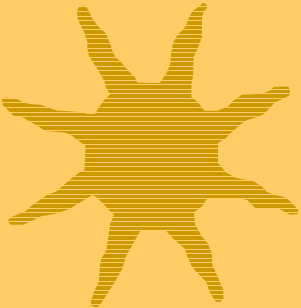


Entrepreneurial activity subsidized to extent:



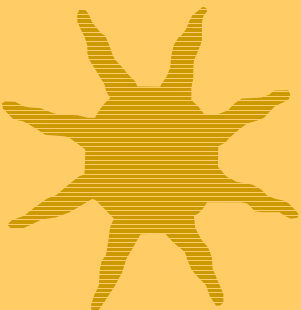
$$(T^e - \tau^e) / (1 - T^e) > 0$$

Intuition: E.A. encouraged when business income is taxed at a lower rate than wages



$$E(\varepsilon\tau) / (1 - T^e) < 0$$

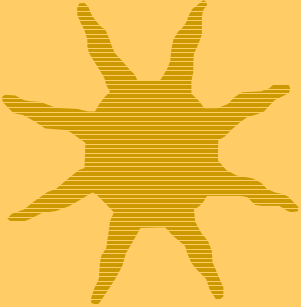
Intuition: E.A. encouraged when losses deductible subject to a higher tax rate than applies to profits



- With a progressive personal tax, this term is positive
- With the option to incorporate, it can be negative
- Even with a flat tax, no-loss-offset important

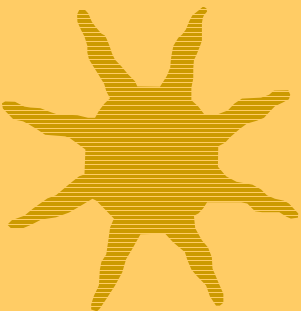


Entrepreneurial activity subsidized to extent:



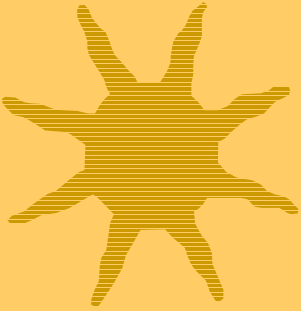
★ **Cov(net income, $\varepsilon(1-\tau)$)/(1- T) smaller**

- **Intuition:** Tax provides risk sharing with the government, encouraging entrepreneurial activity when entrepreneurs risk averse and cannot diversify their risks easily through the market





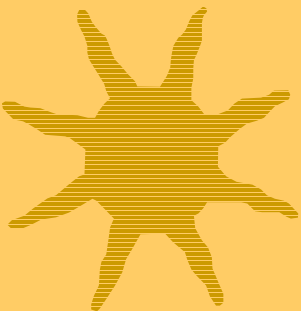
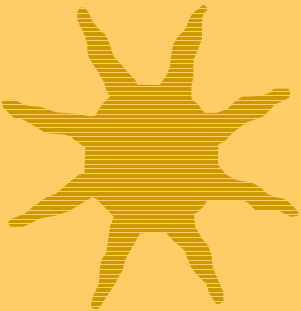
Source of data



★ ~2 million usable individual tax returns

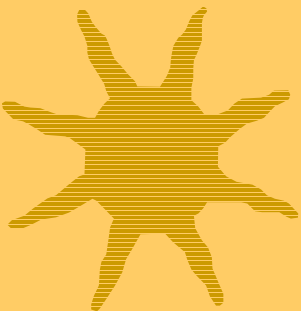
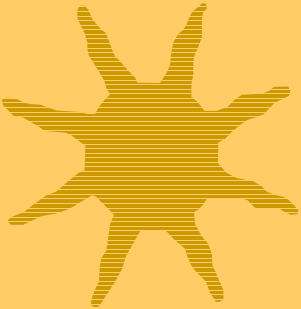
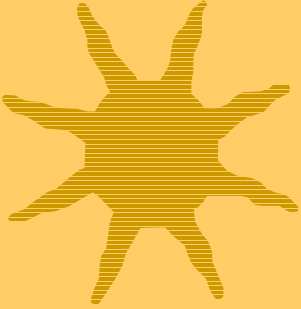
★ Strengths

- Span 22 years between 1964 and 1993
- Period of several major tax changes
- Accurate data on tax incentives





Source of data

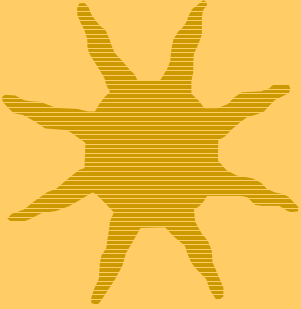


★ Weaknesses

- For self-employed, can only identify income if noncorporate
 - Profitable firms should quickly incorporate
 - Firms with losses should remain noncorporate
 - So focus only on firms with losses
- Noncorporate losses also from tax shelters
 - Focus on losses $> 10\%$ of wages and salaries
 - Ignore losses from real estate and farming

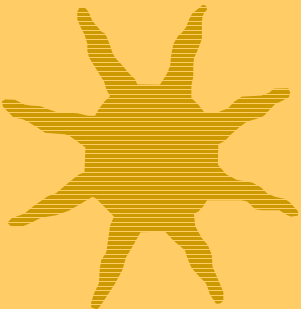
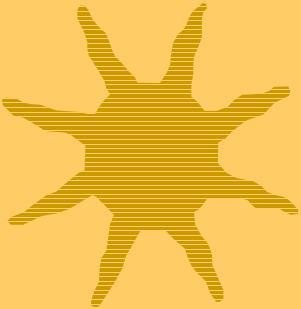


Source of data



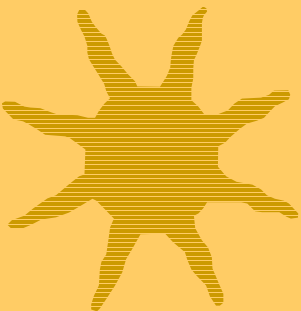
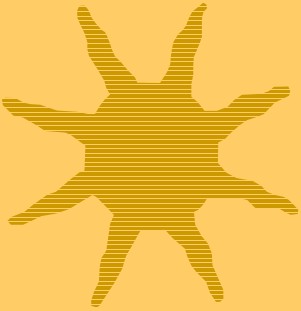
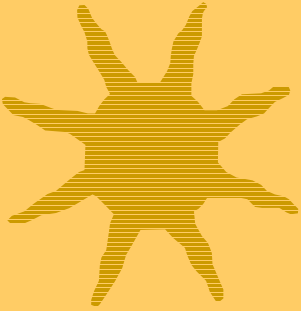
★ Weaknesses

- Want to control for earnings ability, yet not observed for self-employed
 - Forecast earnings ability based on other information from tax return
- For couples, don't know individual outcomes
 - Drop joint returns from study





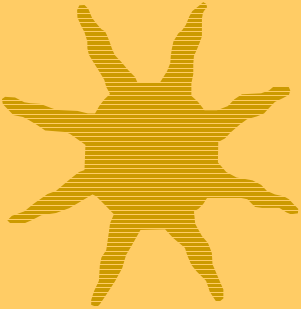
Estimation strategy



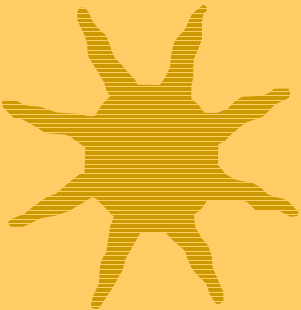
- ★ Group data into 6 quantiles each year based on forecasted earnings ability
 - Necessary given required computer time
 - Can now observe probability of large business losses, P_{it}
- ★ Forecast $\log(P_{it} / (1 - P_{it}))$ as function of:
 - Three tax variables
 - Time dummies and quantile dummies



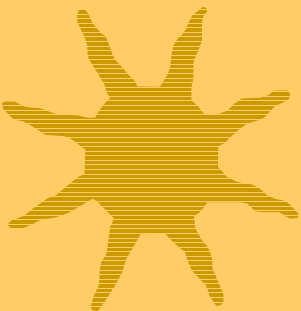
Assumptions used in measuring tax incentives:



★ Consider incentives if initially self-employed 20% of time



★ Self-employment income risky, with standard deviation twice the mean

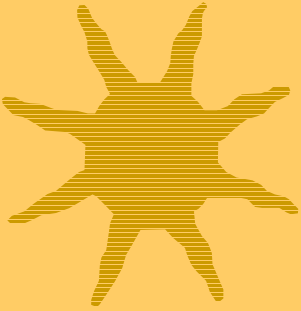


★ Corporate income taxed at minimum rate, due to splitting businesses into multiple units

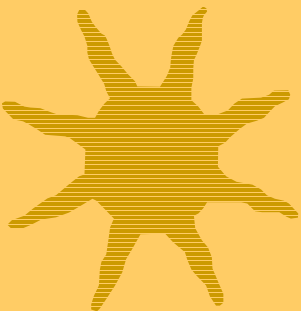
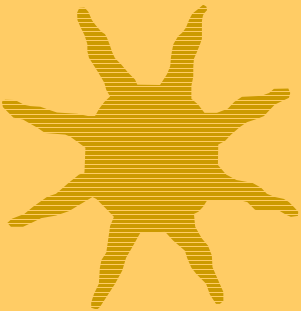
★ Effective capital gains rate = $.25gT$



Initial assumptions: Model 1

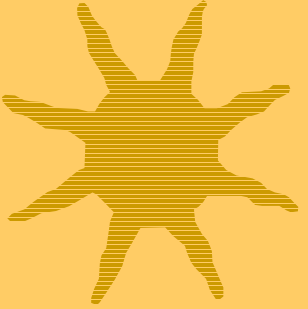


- ★ No nontax benefits/costs of incorporating
- ★ Risk neutrality

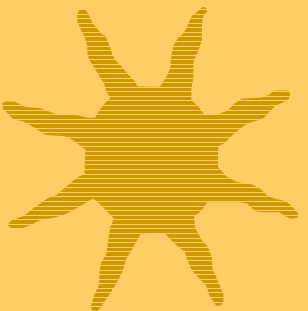




Coefficient estimates: Model 1

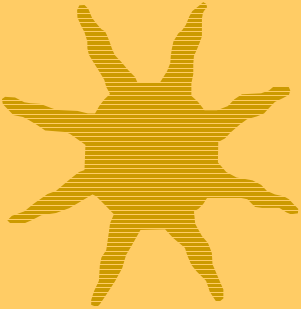


$(T^e - \tau^e)/(1 - T^e)$	$E(\varepsilon\tau)/(1 - T^e)$	SSR
3.1	-16.6	.057
(3.3)	(4.4)	

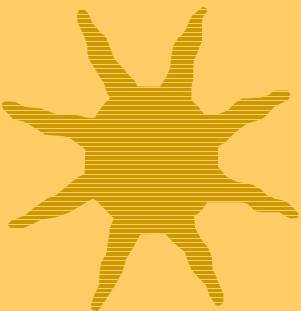
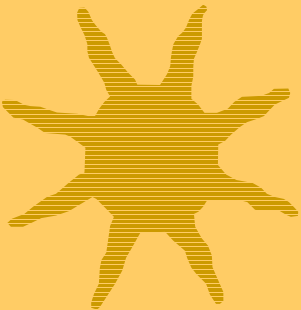




Ignore risk



$(T^e - \tau^e)/(1 - T^e)$	$E(\varepsilon\tau)/(1 - T^e)$	SSR	
7.4	3.1	.066	.057
(1.6)	(3.3)		

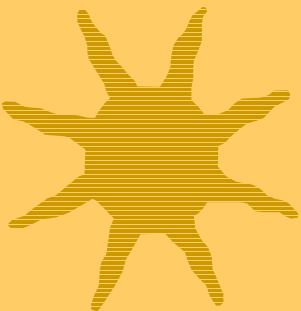
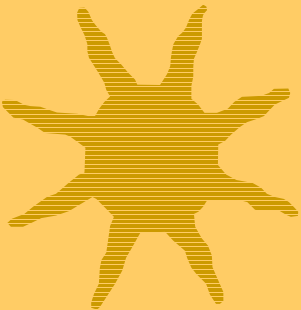




Full corporate tax schedule

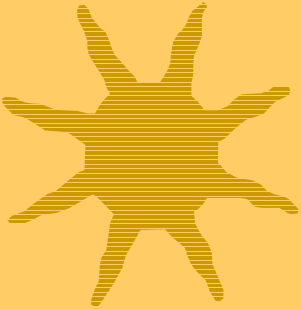


$(T^e - \tau^e)/(1 - T^e)$		$E(\varepsilon\tau)/(1 - T^e)$		SSR	
5.9	3.1	-11.9	-16.6	.060	.057
(3.1)	(3.3)	(3.9)	(4.4)		

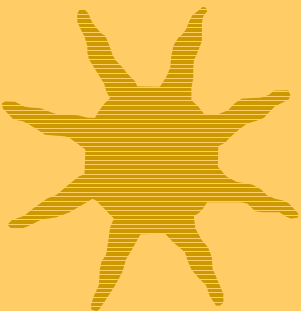
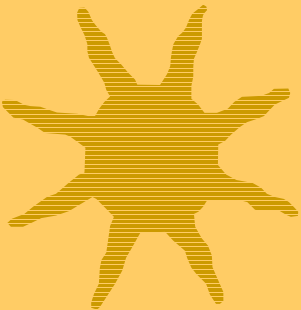




Losses only for sole proprietorships



$(T^e - \tau^e)/(1 - T^e)$		$E(\varepsilon\tau)/(1 - T^e)$		SSR	
-1.4	3.1	-15.7	-16.6	.072	.057
(3.4)	(3.3)	(4.9)	(4.4)		

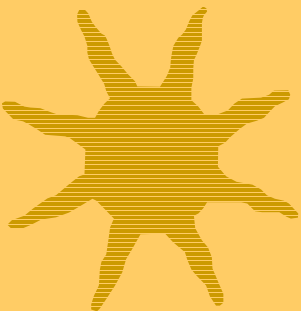
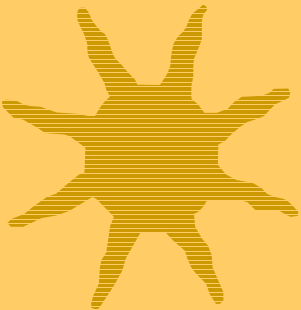




Model 2: Add nontax gains from incorporating: infinite loss

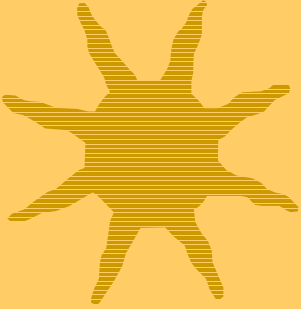


$(T^e - \tau^e)/(1 - T^e)$	$E(\varepsilon\tau)/(1 - T^e)$	SSR			
8.5	3.1	4.4	-16.6	.073	.057
(11.9)	(3.3)	(1.3)	(4.4)		

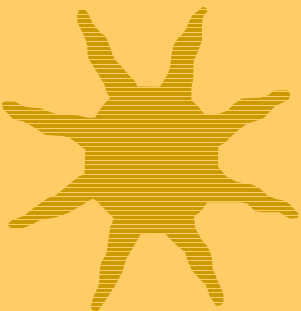
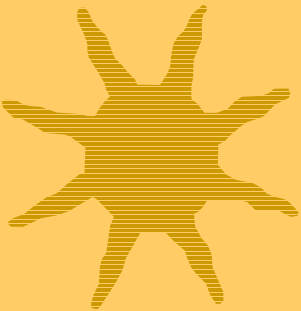




*Search over nontax gains from
incorporating: 12% gain best fit*



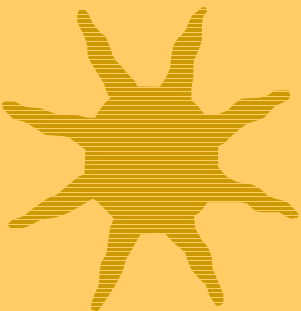
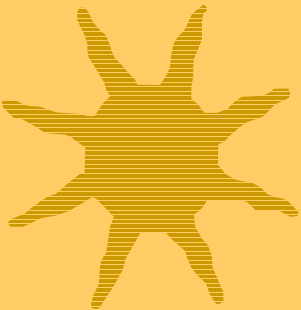
$(T^e - \tau^e)/(1 - T^e)$		$E(\varepsilon\tau)/(1 - T^e)$		SSR	
1.6	3.1	-15.5	-16.6	.054	.057
(3.3)	(3.3)	(6.1)	(4.4)		





Model 3: Add risk aversion:

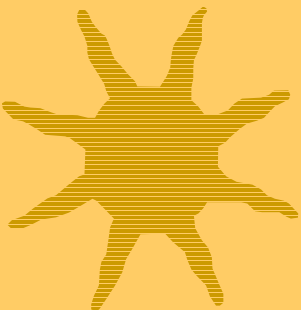
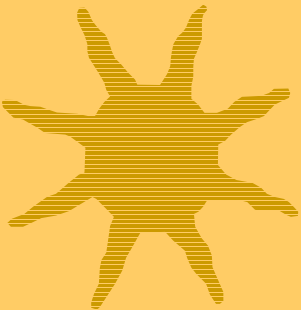
$$RRA=4$$



$(T^e - \tau^e)$	$E(\varepsilon\tau)$	$\text{cov}(I, \varepsilon(1-T))$	SSR			
23.3	1.6	-21.0	-15.5	-7.4	.049	.054
(9.8)	(3.5)	(5.6)	(6.1)	(3.9)		



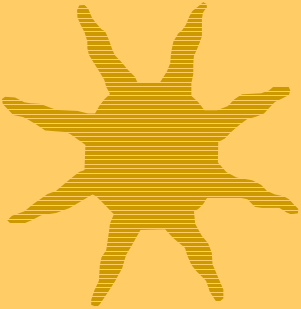
Tax reforms and entrepreneurial activity



	model 2	model 3
5% cut in personal tax rates:	-20%	vs. -22%
2001 tax reforms (phased in):	-16%	vs. -17%
Drop 0% personal bracket:	+20%	vs. +48%
20% flat tax:	+12%	vs. +296%
Minimum τ reduced to 10%:	+208%	vs. -39%
Halve the capital gains rate:	+44%	vs. +26%

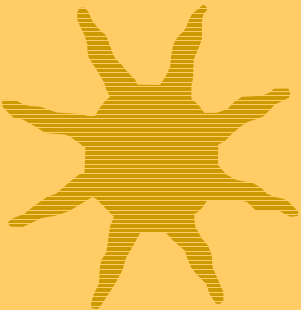


Macroeconomic effects on entrepreneurial activity

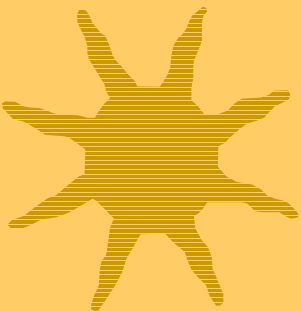


Unemployment up by 1%: -3.7%

Real interest rate up by 1%: -6.0%

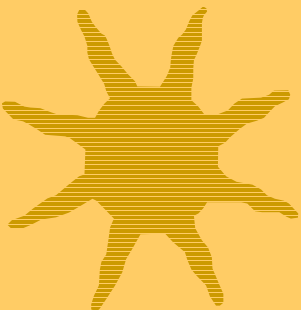
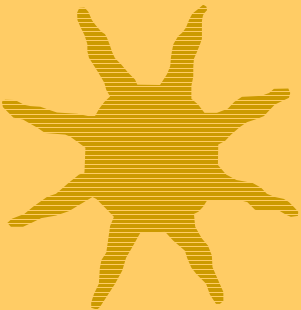
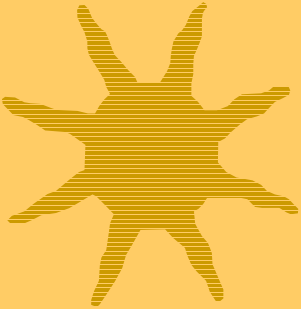


Inflation rate up by 1%: -4.7%





Conclusions



- ★ Taxes estimated to have a strong effect on entrepreneurial activity
 - High personal taxes encourage e.a.
 - Deductibility of losses important
- ★ Stable macroeconomic policies also helpful