Macroeconomic effects of bank secrecy when tax evasion is endogenous

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The debate on bank secrecy

■ International Institutions and Organizations

OECD, IMF, EU commission

■ The discussion within the European Union

Austria, Belgium, Luxembourg

Jersey, Dutch Antilles, Madeira, ...

■ EU – Switzerland

bilateral negotiations

■ Non-government organizations

Bank secrecy and developing countries

■ Academic work

Boadway and Keen (1998). *International Economic Review*.

The scope of positions taken

The goal is to secure the integrity of tax systems by addressing the issues raised by practices with respect to mobile activities that unfairly erode the tax bases of other countries and distort the location of capital and services. Such practices can also cause undesired shifts of part of the tax burden to less mobile tax bases, such as labor, property, and consumption, ... [OECD (2000), p.5].

Our results „may point, .., to a useful social purpose for tax havens“. [Boadway and Keen (1998), p. 473]

Initial questions

■ Which type of model appears promising?

Representative Agents, Overlapping Generations, RBC models, ...

■ In which macroeconomic context do we analyze the issues?

Small open economy, large open economy, 2-country model, n-country model; perfect competition?

■ Exogenous and endogenous variables

Tax payers' honesty (degree of tax evasion), government preferences, international tax cooperation

■ How to make tax rates endogenous

Public spending in the utility function, public spending as a factor of production, income distribution in the utility function

An n -country OLG model with 2 types of countries

■ Firms

operate under perfect competition

$$y = k^\alpha$$

$$r = \alpha k^{\alpha-1} - \delta$$

$$w = (1 - \alpha) k^\alpha$$

■ Households

maximize 2-period, lifetime utility

$$U = \log c_y + \beta \log c'_o + \psi_i(1 + \beta) \log g$$

with $i \in \{eu, ch\}$

■ Government

maximizes 2-period utility, may possess preferences different from households'

$$U = \log c_y + \beta \log c'_o + \psi_i(1 + \beta) \log g$$

with $i \in \{eu, ch\}$

Effects of bank secrecy

■ Analytically

possible for some variables, for example:

$$\begin{aligned}\frac{d \log c_{y,eu}}{dt_{eu}} &= -\frac{1}{1-t_{eu}} \\ \frac{d \log c_{o,eu}}{dt_{eu}} &= -\frac{(1-f)r}{\bar{t}r+1} + \frac{df}{dt_{eu}} \frac{t_{eu}-t_f}{\bar{t}r+1} - \frac{1}{1-t_{eu}} \\ \frac{d \log g_{eu}}{dt_{eu}} &= \frac{1}{t_{ch}} - \frac{1}{1-t_{ch}} \frac{T_{ch}^a}{g_{ch}} - \frac{df}{dt} \frac{1}{1-f} \frac{T_{eu}^a}{g_{eu}}\end{aligned}$$

$$\begin{aligned}\frac{d \log c_{y,ch}}{dt_{ch}} &= -\frac{1}{1-t_{ch}} \\ \frac{d \log c_{o,ch}}{dt_{ch}} &= -\frac{1}{1-t_{ch}} - \frac{r}{(1-t_{ch})r+1} \\ \frac{d \log g_{ch}}{dt_{ch}} &= \frac{1}{t_{ch}} \left(1 - \frac{T_{ch}^f}{g_{ch}} \right) - \frac{1}{1-t_{ch}} \frac{T_{ch}^a}{g_{ch}}\end{aligned}$$

■ Numerically

after calibration and simulation

Results with exogenous tax evasion

Changes from white to coloured bars indicate the impacts of the introduction of bank secrecy laws

Initial situation without bank secrecy

	<i>ch</i> countries			<i>eu</i> countries		
	(a)	(b)	(c)	(a)	(b)	(c)
t	24.78	11.20	-54.82	53.66	54.51	1.59
a	4,303	5,060	17.60	2,651	2,592	-2.23
c	17,347	21,790	25.61	9,249	9,148	-1.09
c_y	18,231	21,439	17.60	11,232	10,981	-2.23
c_o	16,463	22,140	34.49	7,266	7,314	0.66
g	5,715	7,673	34.26	10,710	10,550	-1.49
w_{net}	22,534	26,499	17.60	13,882	13,573	-2.23
r_{net} (annualized)	3.41	3.76	10.19	2.55	2.63	2.93
GDP	385	384	-0.39	12,839	12,788	-0.39
GNP	454	487	7.35	12,770	12,685	-0.67
Labor income	270	269	-0.39	8,987	8,952	-0.39
Capital income	184	219	18.69	3,783	3,733	-1.32
U			21.96			-1.57

Effect on the global economy

**without
bank secrecy**

**with
bank secrecy**

**change
in percent**

	Global economy		
	(a)	(b)	(c)
k	2699	2663	-1.31
w	29958	29839	-0.39
r	3.98	4.00	0.60
GDP, GNP	13224	13172	-0.39

Effects on the *ch*-type economy

	<i>ch</i> countries		
	(a)	(b)	(c)
t	24.78	11.20	-54.82
a	4,303	5,060	17.60
c	17,347	21,790	25.61
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GDP	385	384	-0.39
GNP	454	487	7.35
Labor income	270	269	-0.39
Capital income	184	219	18.69
U			21.96

Effects on the *eu*-type economy

	<i>eu</i> countries		
	(a)	(b)	(c)
t	53.66	54.51	1.59
a	2,651	2,592	-2.23
c	9,249	9,148	-1.09
c_y	11,232	10,981	-2.23
c_o	7,266	7,314	0.66
g	10,710	10,550	-1.49
w_{net}	13,882	13,573	-2.23
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Endogenous tax evasion: mechanical approach

Let tax evasion of eu-citizen depend positively on the tax differential:

$$f = a + b(t_{eu} - t_f)$$

The tax elasticity ε_t^f of tax evasion f is defined as

$$\varepsilon_t^f = \frac{df}{f} \frac{t_{eu} - t_f}{dt_{eu}} = - \frac{df}{f} \frac{t_{eu} - t_f}{dt_f}$$

Presumption:

If f is unelastic to the tax rate, the government will raise the tax rate to recapture some of the lost revenues caused by tax evasion.

As ε_t^f , increases, raising tax rates become less attractive because higher tax revenues on declared income will be increasingly offset by even more tax evasion.

→ impact of bank secrecy laws depends on ε_t^f

Mechanical approach: Results (1)

f against ε_t^f

k (%Δ) against ε_t^f

GDP (%Δ) against ε_t^f

r, w (%Δ) against ε_t^f

Mechanical approach: Results (2)

— eu countries
- - - ch countries
— world

Mechanical approach: Results (3)

Endogenous Tax Evasion: Optimizing Approach (1)

Household **benefit** of tax evasion:

$$B = r(t_{eu} - t_f)f$$

Household **cost** of tax evasion:

(i):

$$C = \begin{cases} C_0 & \text{if } 0 < f \leq f_1 \\ C_0 + C_1(f_1 - f) & \text{if } f_1 < f \leq f_2 \\ C_2 & \text{if } f_2 < f \end{cases}$$

(ii):

$$C = \begin{cases} C_0 & \text{if } 0 < f \leq f_1 \\ C_0 + C_1(f_1 - f)^2 & \text{if } f_1 < f \leq f_2 \\ C_2 & \text{if } f_2 < f \end{cases}$$

Endogenous Tax Evasion: Optimizing Approach (1i)

Case (i):

→ Costs that are linear in f imply a stepwise tax evasion function. This suggests inelastic f with respect to tax differential and thus yields same results as when f is exogenous.

Endogenous Tax Evasion: Optimizing Approach (1ii)

Case (ii):

→ Costs that are quadratic in f imply a linear tax evasion function. This suggests results to be similar to the case when tax evasion was endogenized in a mechanical fashion.

Endogenous Tax Evasion: Optimizing Approach (2)

General specification of marginal cost function:

$$MC = \xi \left(1 - (1 - f^\eta)^\theta \right)$$

Endogenous Tax Evasion: Optimizing Approach (2)

General specification of marginal cost function:

$$MC = \xi \left(1 - \left(1 - f^\eta \right)^\theta \right)$$

Implies following choice of fraction of wealth f^* held abroad:

$$f^* = \left\{ 1 - \left[1 - \frac{(t_{eu} - t_f)r}{\xi} \right]^\theta \right\}$$

→ Different parameterizations of marginal cost function generate different tax evasion functions with different tax elasticity ε_t^f at targeted point of intersection.

Endogenous Tax Evasion: Optimizing Approach (2)

General specification:

$$MC = \xi \left(1 - (1 - f^\eta)^\theta \right)$$

Fraction of wealth f^* held abroad:

$$f^* = \left\{ 1 - \left[1 - \frac{(t_{eu} - t_f)r}{\xi} \right]^\theta \right\}^\eta$$

Model is calibrated so that all f lines intersect at $f = 0.1$. All MC functions yield the same share of assets held abroad, but different tax elasticities.

Endogenous Tax Evasion: Optimizing Approach (2a)

White bars show outcomes with bank secrecy laws

Colored bars show outcomes with bank secrecy laws

Main Results

- When the tax evasion is exogenous or inelastic with respect to tax differentials, the introduction of bank secrecy laws has the following consequences:
 - *ch*-type countries benefit from lower tax rates, more public goods, as well as higher income, wealth and consumption.
 - *eu*-type countries pay for this through tax rates, a lower level of public goods, as well as lower income, wealth and consumption of the young.
- The effect of banking secrecy on *eu*-type countries changes, however, when tax evasion exceeds a critical threshold:
 - then tax rates fall, income consumption and wealth increase, but public goods provision deteriorates.
 - However: Utility in *eu*-type countries still drops!
- Independent of ε_t^f , *eu*-type countries' welfare always suffers because
 - lower tax rates mean that public spending now falls short of desired level.
 - part of paid taxes go to foreign governments, which widens this gap.
 - part of the cost of tax evasion is dead-weight loss, not generating utility.