Do the Rich Flee Wealth Taxes? Evidence from Scandinavia

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## Motivation

- How large are long run responses of K stock to K taxation?
  - Tiny literature on "intensive margin" responses (Jakobsen & al [2020])
  - But migration response potentially key, especially when low migration barriers
  - E.g. local property taxation in the US, wealth taxation in EU zone
- Looms large in public debate on wealth taxation
  - E.g. debate around Swedish abolition of wealth tax in 2007

The wealth tax rate must be so low that successful entrepreneurs are not forced to move from Sweden due to taxation. The owners of all the companies that've grown large during the post-war period - IKEA, Tetra Pak, Hennes & Mauritz have all moved abroad.

Bengt Westerberg

(Leader of the Swedish Liberal Party)

Further Quotes

• No evidence on migration responses of the very wealthy

- Literature on migration responses to taxation (Kleven et al. [2020])
- But limited work on wealth taxation
  - Moretti & Wilson [2020], Bruhlart et al. [2020], Agrawal et al. [2020]
- Limited data on wealth + migration + identifying variation in taxes
- Why care?
  - $\textcircled{0} \quad \text{Top earners} \neq \text{Top wealth holders}$
  - Anticipatory/"Brain-Drain" effects of wealth taxation
  - Operation of the second sec
    - E.g. investment, innovation, entrepreneurship, employment

- Focus on Scandinavia, i.e. Denmark & Sweden
  - Exceptional admin data on wealth and migration
  - Credible identifying variation from large tax reforms
- Ocument migration patterns at top of wealth distrib.
- Identify elasticity of migration to wealth taxation
- Investigate heterogeneity & anticipatory effects
- Oraw policy implications



## Institutional Background & Data

3 Migration: Descriptives

## 4 Identifying Migration Elasticities

- Sweden
- Denmark
- Anticipation Effects

## 5 Implications

- Tax on stock of wealth net of debt
  - Sweden (1910-2007)
  - Denmark (1903-1997)
- Third party reporting and assessments at market values
- Simple structure with 2 brackets:
  - 0% MTR below exemption threshold
  - $\bullet\,$  Top MTR (varied from 1% to 2.2%) above threshold
- Exemption threshold varies over time / across country
  - $\bullet\,$  Denmark threshold  $\approx$  P98 of wealth distrib
  - $\bullet\,$  Sweden threshold  $\approx$  P90-97 of wealth distrib



#### Figure: Evolution of Wealth Tax Threshold - Sweden



8/53

- Various exemptions for specific types of wealth:
  - $\bullet\,$  E.g. in Sweden, real estate taxed at 75% of market value, stocks at 80% of market value
- Strong exemptions for wealth from closely-held businesses
  - E.g. in Sweden, individuals owning more than 25% of firm are fully exempted from wealth tax on value of their stocks
- Tax ceiling/floor rules in both countries:
  - Total taxes cannot exceed X% of taxable income
  - $\bullet\,$  Total taxes cannot be less than wealth tax due on Y% of taxable wealth



Figure: Fraction of Total Net Wealth Subject to Wealth Tax- Sweden

- Wealth tax applicable to all tax residents
  - Foreigners moving in Sweden only liable to wealth tax after 3 years
- Non-residents only liable for wealth held in Sweden/Denmark
- In practice, weak enforcement of wealth taxes on non-residents
- Special bilateral treaties offer additional grey area
- No exit taxes

 $\Rightarrow$  Bottom-line: change in country of tax residence enables avoiding wealth tax, without further need to reallocate portfolio

- Third-party reported information on wealth
  - Rich info on taxable wealth:
    - Denmark (1980-2016)
    - Sweden (1993-2007)
  - Rich disaggregated info on total net wealth + transactions
    - Sweden (1999-2007, with rich info on real estate after 2007)
- Population registers with rich demographic & economic info
  - E.g. info on all earnings, capital income, transfers
  - E.g. detailed info on education, occupation, etc.
- Migration registers with precise info on:
  - Dates of entry/exit,
  - Country of origin/destination

• Data - Further Details



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## Denmark: Migration Rates by Wealth Level Out Migration Rates: 1989-96



## Denmark: Migration Rates by Wealth Level Out Migration Rates: 1989-96 Zooming on the top 10%



# Denmark: Migration Rates by Wealth Level In-Migration Rates: 1989-96



## Denmark: Migration Rates by Wealth Level In-Migration Rates: 1989-96 Zooming on the top 10%



## Sweden: Migration Rates by Wealth Level Out Migration Rates: 2003-2006 Zooming on the top 10%



## Selection Into Out-Migration: Sweden Marginal Effects from Probit Model of Out Migration 1999-2006



## Selection Into Out-Migration: Sweden Marginal Effects from Probit Model of Out Migration 1999-2006



#### • Duration:

 $\approx$  40% of wealthy outmigrants are back after 5 years  $\bigodot$ 

#### • Countries of Destination:

Wealthy more likely to move to countries with favorable tax regimes • Destination

#### Income & Taxes Paid:

Median Yearly Loss of Total Tax Payment from Outmigrants  $\approx$  \$20,000  $\checkmark$  Tax Payments

#### Asset Rebalancing:

Outmigrants sell real estate before moving • Real Estate

#### • Entrepreneurship:

"Entrepreneurs" shut their (small) LLCs when leaving 

Entrepreneurship

## Introduction

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- We exploit three large wealth tax reforms in Scandinavia
- Denmark:
  - 1988: Large wealth tax decrease
    - $\bullet\,$  Large but gradual decrease in MTR from 2.2% to 1%
  - 2 1996: Abolition of wealth tax
- Sweden:
  - 2007: Abolition of wealth tax
    - Sharp and large decrease in MTR from 1.5% to 0.
    - Follows surprise win of the right wing coalition at the 2006 elections

## Top Wealth MTR - Sweden



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Wealth Taxation & Migration

## Top Wealth MTR - Sweden



## Swedish Reform: Migration Effects Top 1%: Average Wealth Tax Rate



## Swedish Reform: Migration Effects Top 1%: Out Migration Rates



## Swedish Reform: Migration Effects

Top .5%: Average Wealth Tax Rate



## Swedish Reform: Migration Effects Top .5%: Out Migration Rates



## Swedish Reform: Predicting Wealth Using Past Wealth Top Wealth Holders in 1996-98: Average Wealth Tax Rate



## Swedish Reform: Predicting Wealth Using Past Wealth Top Wealth Holders in 1996-98: Out Migration Rates



## A Prediction Model of Current Wealth

- Build ensemble classification model
- $\bullet\,$  Exploit identity of budget constraint  $\to$  law of motion of wealth
- Predict current wealth group based on rich info on:
  - Past wealth,
  - Parental wealth
  - Sum of past earnings & capital income
  - Rich demographics, etc...
- Train random-forests on 10% random sample of Swedish pop.
- Classify pop in groups of predicted net wealth:
  - $\bullet\,$  E.g. top 2% of distrib., below top 10%, etc.

• Details of Prediction Model

## Swedish Reform: Using Predicted Wealth Model Top .5% of Predicted Wealth vs Below Top 10%: Out Migration Rates



## Estimating Semi-Elasticities of Migration

• Compute semi-elasticity of migration from IV using DD as instrument

$$Y_{it} = \alpha_0 + \varepsilon \ln(1-\tau)_{it}$$

$$\ln(1- au)_{it} = eta_0 + eta_1 T + eta_2 Post + eta_3 T \cdot Post$$

- $Y_{it}$ : out-, in- or net migration rate of group  $i = \{T, C\}$  in year t
- For Denmark, use 3 periods and their interaction with treated grp
   Danish DD Evidence
- Inference: collapse data at year X wealth group level
- Because  $\tau$  small,  $\varepsilon$  has simple interpretation:
  - $\tau$  increases by 1 pct point  $\Rightarrow$  migration rate increases by  $\epsilon$  pct point

## Estimating Semi-Elasticities of Migration

Estimated Semi-elasticities of Out-Migration



## Estimating Semi-Elasticities of Migration

Estimated Semi-elasticities of In-Migration


#### Anticipation Effects: Distribution of Wealth By Age Average Wealth of P50-90, P90-95, and Top 1% of Wealth Holders at Each Age



- Lifecycle wealth profile is steep
  - $\, \bullet \,$  Most people become liable to wealth tax only  $\approx$  40-50 yrs old
  - Most of the "rich" young people not tax liable
- Lifecycle wealth profile is also very predictable
  - Strong persistence in one's cohort-specific rank over time
- Old-age tax status strongly correlated to:
  - Cohort-specific rank at young age
  - Parental wealth
- $\Rightarrow$  Test for **anticipatory** migration responses to future wealth tax

#### Using Parental Wealth as Predictor of Future Tax Status Evolution of Lifecycle Wealth by Paternal Wealth Level



#### Using Parental Wealth as Predictor of Future Tax Status Evolution of Outmigration of Non-Taxable 20-40 yrs old by Paternal Wealth Level



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### 5 Implications

# Interpreting the Magnitude: Stock Elasticity

• Elasticity of steady state population size N w.r.t  $1 - \tau$ :

• With elasticity of flow net migration rate  $\varepsilon^k$  same  $\forall k$ 

$$\varepsilon_{N,1-\tau} \approx -\hat{\varepsilon} \cdot \frac{T+1}{2}$$

Methodology

Intuition

• Average number of years spent in top 1%: T=24 yrs

$$\Rightarrow \varepsilon_{N,1-\tau} \approx 2.16$$

• **Conservative upper-bound** with anticipation effects (*T*=50 yrs):

$$\Rightarrow \varepsilon_{N,1-\tau} \approx 4.32$$

# Comparison to Migration Elasticities in the Literature

- Comparison with migration elasticities in the income tax literature?
- Transform estimate into elasticity w.r.t 1 t
  - Where  $t \approx \frac{\tau}{r}$ : avg tax on K income
  - Over period of interest, we find: r=.042, and aupprox .006  $\Rightarrow$  t=14.3%

$$\varepsilon_{N,1-t} = \varepsilon_{N,1-\tau} \cdot \frac{d\ln(1-\tau)}{d\ln(1-t)} \approx .078 \quad (.013)$$

• Conservative upper-bound with anticipation effects:

$$\varepsilon_{N,1-t} = .156$$
 (.026)

• Small magnitude similar to migration elasticity of top incomes! • Char

# Comparison to Migration Elasticities in the Literature



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- Migration: central argument for abolition of wealth taxes in Europe
- Clear migration responses to Scandinavian tax reforms / abolitions
- Presence of anticipatory migration responses to future wealth taxation
- Even with anticipatory effects, migration response is small
  - $\bullet\,$  Elasticity of top 1% wealth holder pop. w.r.t net of average wealth tax rate  $\approx 2$
  - Similar to elast. to income taxation
- Scandinavian tax rates were clearly not past Laffer Rate based on migration response alone.
  - Similar to results of Moretti & Wilson [2020]
- Wealth taxation is possible at national level even absent coordination

# APPENDIX SLIDES



#### Figure: Institutional Details on Swedish Wealth Tax

| Year | Tax revenue<br>percent | Tax payers<br>percent | Threshold, singles<br>(SEK/USD) | Threshold, couples<br>(SEK/USD) |
|------|------------------------|-----------------------|---------------------------------|---------------------------------|
| 2000 | 1.0                    | 7.7                   | 900/129                         | 900/129                         |
| 2001 | 0.8                    | 5.3                   | 1,000/143                       | 1,500/214                       |
| 2002 | 0.5                    | 2.3                   | 1,500/214                       | 2,000/286                       |
| 2003 | 0.7                    | 3.5                   | 1,500/214                       | 2,000/286                       |
| 2004 | 0.7                    | 3.6                   | 1,500/214                       | 2,000/286                       |
| 2005 | 0.6                    | 2.5                   | 1,500/214                       | 3,000/429                       |
| 2006 | 0.7                    | 3.0                   | 1,500/214                       | 3,000/429                       |

TABLE 1-THE SWEDISH WEALTH TAX, 2000-2006

Notes: The table shows aggregate statistics of the wealth tax for the period studied. Tax revenue is presented as a percentage of total tax revenue. Monetary values are presented in 1,000 SEK and 1,000 USD.

Source: Statistics Sweden and the Swedish National Financial Management Authority

#### Figure: Countries of Destination: Top 2% of Wealth Holders in Sweden





#### Figure: Countries of Destination: Top 20% to 10% of Wealth Holders in Sweden





Figure: Probability to Spend > 185 Days in Sweden From Migration Register







#### Figure: Probability Selling Real Estate









#### Figure: Average Number of Employees



Figure: Total Wage Bill



Start with law of motion of wealth: Wealth = W, Return = r, Capital Income = rW, consumption=C, Earnings=E, Inheritance=I

$$W_t = (1 + r_t) W_{t-1} + E_t + I_t - C_t$$

Interesting point = for individuals observed after end of wealth tax, we can use rich information about their observed past wealth to predict wealth forward this means we have one model to predict wealth in t+5 or t+10 say, based on wealth in t

By iteration we get, for instance after X iterations

$$W_t = W_{t-X} \prod_{j=t-X}^t (1+r_j) + \sum_{k=t-X}^t (E_k + I_k - C_k) \prod_{j=k+1}^t (1+r_j)$$

Above decomposition shows that difference and capital income stem from:

- Past wealth (which we observe!)
- Past earnings/consumption (or past savings behaviour) (life-cycle wealth)
- Differences in net of returns  $r_t$
- Inheritance received (inherited wealth)

But good thing is, law of motion is an identity, and we observe a lot of elements of this identity!

# What predictors?

- From IOT: use past wealth construct average taxable wealth X years back using FBESK variable we have this info from 1993 to 2007 take X=7 for instance, this should enable us to predict wealth from 2000 to 2017
- Past earnings: LISA: 1990-2017 cumulate past earnings taxes and transfers over the last X years (use HH disposable income variables to account for all potential sources of income)
- What about consumption: In LISA: 1990-2017 could use age, family structure, number of children, place of residence, etc, which are proxies for consumption dynamics also what about using car registers for the years we have it?
- Capturing returns? use cumulated capital income over past X yrs, from LISA 1990-2017 one issue: only realized Kgains (but cumulated over time, reduces variance in realized Kgains, and better captures overall returns, although clearly unrealized Kgains still an issue...could also use structure of wealth / portfolio What about using additional info from wealth register, KURU, Real estate transaction registers
- Capturing inheritances: use parental wealth X years ago (and maybe also today)...and age of parents this predicts how much you are likely to have received in inheritances over the past X years... If parents are dead already we have missing values but this should be turned into 0 (it means you can no longer receive additional I from them) Could also use inheritance registry data, etc for the 2 years we have it?

## Assessing Quality of Prediction Model

Figure: Prediction Model - Fit



# Statutory Wealth MTR - Denmark



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# Top Wealth ATR - Denmark



### Danish Reforms: Migration Effects Top 1%: Out Migration Rates



#### Danish Reforms: Migration Effects Top 1%: In Migration Rates



#### Danish Reforms: Migration Effects Top 1%: Net Migration Rates



### Danish Reforms: Migration Effects Top .05%: Out Migration Rates



#### Danish Reforms: Migration Effects Top .05%: In Migration Rates



### Danish Reforms: Migration Effects Top .05%: Net Migration Rates



• Population size at time t = sum of pop. of all ages k at t

$$N_t = \sum_k N_t^k$$



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- Well identified estimate of the effects on migration flows
- Translate into effect on pop. size (stock) using simple OLG model
- Population size at time t = sum of pop. of all ages k at t

$$N_t = \sum_k N_t^k$$

• At each age k = 1, ..., T population size at time t is

$$\begin{array}{lll} \mathcal{N}_t^1 &=& \mathcal{B}_t \\ \mathcal{N}_t^2 &=& (1-\alpha_t^1)\mathcal{N}_{t-1}^1 = (1-\alpha_t^1)\mathcal{B}_{t-1} \\ \mathcal{N}_t^3 &=& (1-\alpha_t^2)\mathcal{N}_{t-1}^2 = (1-\alpha_t^2)(1-\alpha_{t-1}^1)\mathcal{B}_{t-2}, \textit{Etc.} \end{array}$$

- B<sub>t</sub>: number of "births"
- $\alpha_t^k$ : net migration rate of population of age k at time t

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## Interpreting the Magnitude: Stock Elasticity

• At steady state: 
$$B_t = B_{t-1}$$
,  $\forall t$  and  $\alpha_t^k = \alpha_{t-1}^k$ ,  $\forall t, k$ 

$$N_t = B_t \sum_{k=0}^T \prod_{j=0}^k (1 - \alpha^{k-j})$$

• Elasticity of steady state population size w.r.t  $1 - \tau$ :

• Assume (for simplicity) marginal effect of reform on  $\alpha^k$  same  $\forall k$ 

$$\varepsilon_{N,1-\tau} \approx -\frac{d\overline{\alpha}}{d\ln(1-\tau)} \cdot \frac{T+1}{2}$$

• Average number of years spent in top 1%: T=24 yrs

$$\Rightarrow \varepsilon_{N,1-\tau} \approx 2.16$$

• **Conservative upper-bound** with anticipation effects (*T*=50 yrs):

$$\Rightarrow \varepsilon_{N,1-\tau} \approx 4.32$$