Tax buyouts

Preliminary and incomplete

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Motivation

- Many countries have high distortionary taxes
- Can governments collect revenues more efficiently?
- Lump-sum taxation? Is it politically viable?

Tax buyouts

- Government offers a *private* contract to each citizen
- Upfront payment from the latter against a reduction of *her* future tax rates (tax buyout)
- Pricing the reduction trades off participation (distortion reduction) v/s revenue
- Since participation is voluntary it is Pareto improving (abstracting from GE effects).

Tax buyouts v/s lumpsum

- With perfect information pricing can be person specific
  - tax buyouts equivalent to lump-sum taxation
- With private information lump-sum taxation in general not Pareto improving, tax buyouts are!

Outline

- Theory
  - Tax buyouts with perfect information
  - Tax buyouts with private information
- Quantitative results
  - How expensive are them?
  - Who's buying them? and how much?
  - What are their macro consequences?
- Further Research

Perfect information economy

- Small open economy: agents freely borrow/lend at fixed real rate r, no individual nor aggregate uncertainty
- Continuum of consumers characterized by ability A and initial wealth W
  - A consumer of ability A supplies Al units of labor by putting effort l
  - $F(A, W)$ is the distribution over abilities and wealth
  - Period utility identical across consumers $u(c, l)$
  - CRS technology for transforming labor into output

Stationary equilibria

- Government has constant expenditures g, levies linear earnings taxes τAl and debt b.
- Labor supply

$$l = L(rW, A, \tau)$$

- Consumption

$$c = rW + (1 - \tau)Al$$

- Government budget constraint

$$g + rb = \int \tau L(rW, A, \tau) dF(A)$$

Tax buyout contract

- Government offers each individual to buy $\delta \leq \bar{\delta} \leq \tau$ in permanent reduction in earnings tax rate by paying a fixed amount $d(A, W, \delta)$
- Given $d(A, W, \delta)$, each agent chooses the δ that maximizes utility: FOC

$$\frac{\partial u}{\partial \delta} = \left(-r \frac{\partial d(A, W, \delta)}{\partial \delta} + Al \right) \frac{\partial u}{\partial c} = 0$$

- Implicitly defines a $\delta(A, W, d)$

- Government chooses pricing schedule to satisfy, for every A, W, δ.

$$rd(A, W, \delta) =$$

$$\underbrace{\tau AL(rW, A, \tau)}_{\text{Tax revenues before contract}} - \underbrace{(\tau - \delta)AL(r(W - d), A, \tau - \delta)}_{\text{Tax revenues after contract}}$$

- In doing so, it takes into account the agents' choices $\delta(A, W, d)$, $L(rW, A, \tau)$

Basic results

If labor supply is non-decreasing in A and non-increasing in W:

- Revenue neutrality uniquely defines a $d(A, W, \delta)$ schedule
- $d(A, W, \delta)$ is increasing in A and δ, decreasing in W
- Each agent will buy the maximum reduction in tax rates, i.e. $\delta = \overline{\delta}$. (Intuition)

Basic results

- The contract yields an allocation that strictly Pareto dominates the initial stationary equilibrium
- The contract reduces the debt by an amount $\int d(A, W, \overline{\delta}) dF(A, W)$

Private information

- Results so far equivalent to lump-sumize a fraction of distortionary taxes.
- If abilities not perfectly observable, lump-sum taxation not Pareto improving: the govt. doesn't know agents future tax liabilities.
- A fixed price contract allows, *through self-selection*, (partial) lump-sumization *and* Pareto improvement.
- Problem of adverse selection: Bill Gates will buy the contract. Potentially disruptive for public finances

Private information, II

- The govt. knows wealth/ability distribution and offers a function $d(\delta)$
- Given $d(\delta)$ an agent of ability A chooses $\delta(A, W, \delta)$ as before.
- The balanced budget requirement is now

$$\int rd(\delta(A, W, \delta)dF(A, W) =$$

$$\int \tau Al(A, W, \tau) - (\tau - \delta(A))Al(A, W - d, \tau - \delta)dF(A, W)$$

Results

- Solution in general not unique.
- If the pricing function $d(\delta)$ is allowed to be non linear then the contract can implement a large class of tax schedules (All the Mirleesian tax schedules who yield allocations which Pareto dominates the current)

A special case

- Assume constant W
- Linear contract: $d = p\delta$
- The first order condition w.r.t δ becomes

$$\frac{\partial u}{\partial \delta} = \left[-rp + Al(A, W - p\delta, \tau - \delta)\right] \frac{\partial u}{\partial c}$$

- Simple solution: either $\delta = 0$ (Low ability agents), or $\delta = \overline{\delta}$ (High ability agents)
- Fix $\overline{\delta}$; for each p, there is a cutoff value $\tilde{A}(p)$ of ability above which participation is optimal

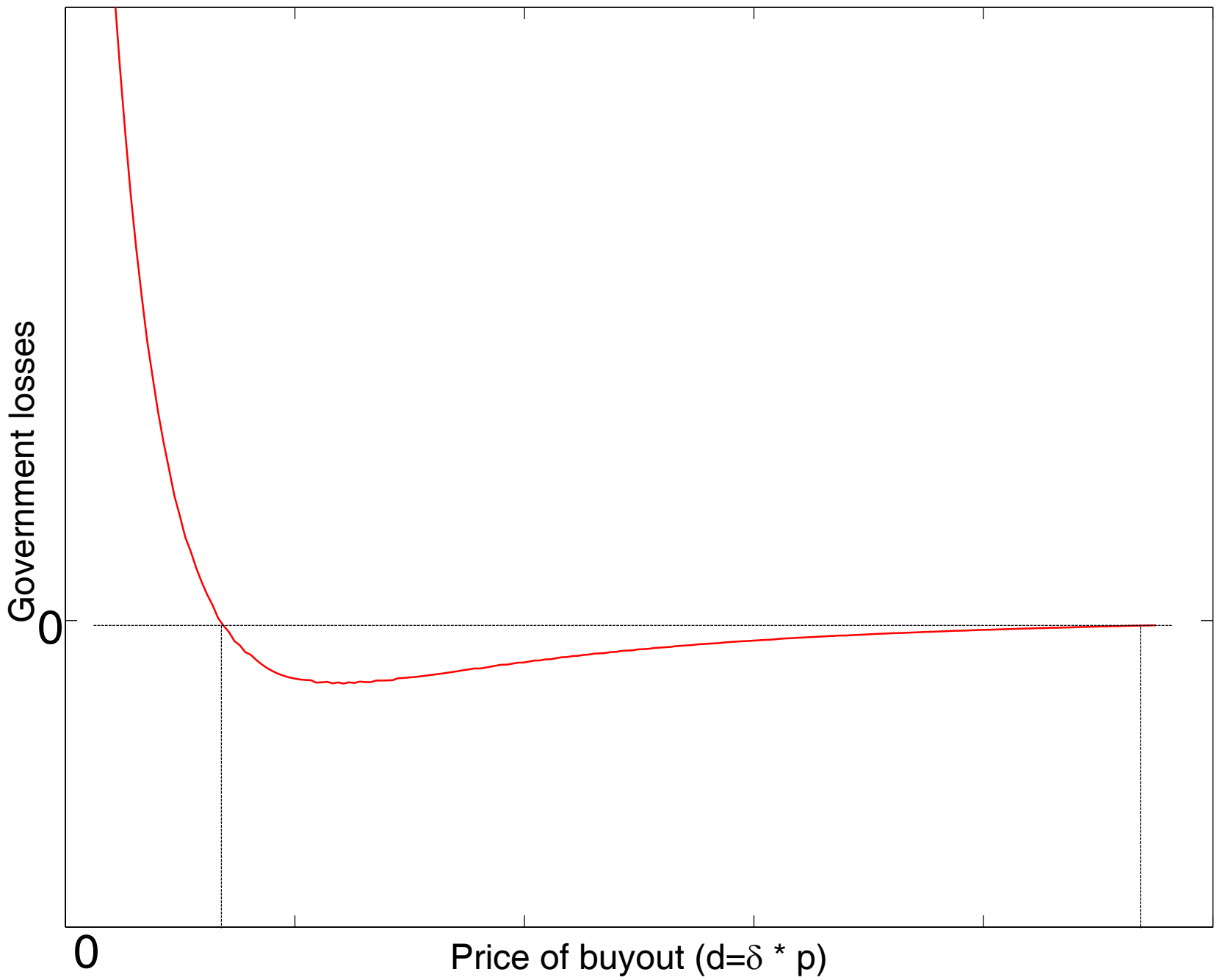
Choosing p

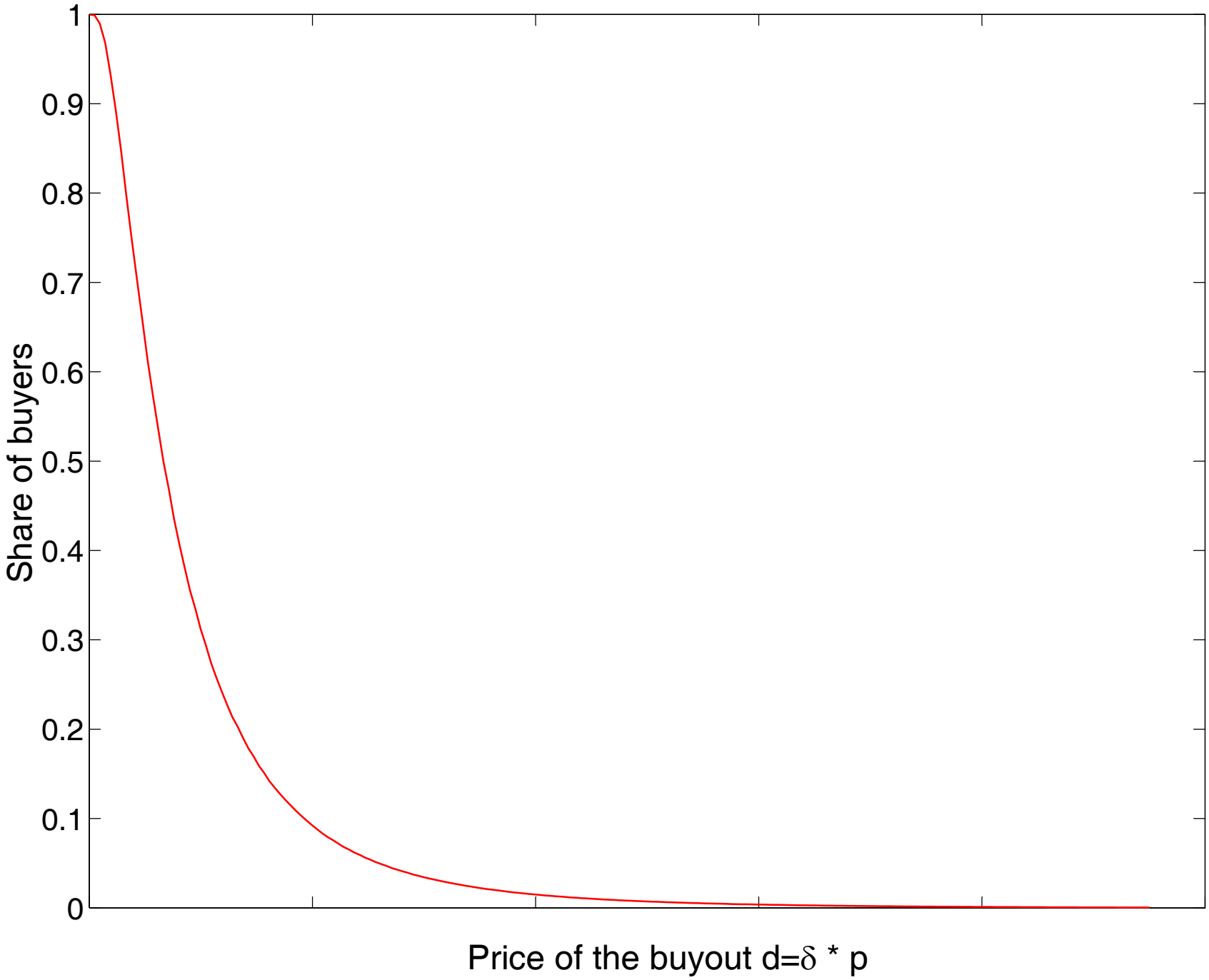
- Government problem: Given $\bar{\delta}$, minimize p (maximize participation) subject to the revenue neutrality constraint*:*

$$rp\bar{\delta}(1 - F(\tilde{A}(p))) =$$

$$\int_{A \geq \tilde{A}(p)} \tau A l(A, W, \tau) - (\tau - \bar{\delta}) A l(A, W - d, \tau - \bar{\delta}) dF(A)$$

- This "optimal" price exists and a positive mass of agents will take the contract


Government losses and the price of tax buyouts
Government losses
0
0
Price of buyout (d=δ * p)


Price and Participation in the Buyout
Share of buyers
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Price of the buyout d=δ * p

Simple quantitative analysis

- Benchmark case: assume a lognormal distribution for constant abilities and preferences

$$\begin{aligned} u(c,l) &= \log(c) + \phi\frac{1}{1-\gamma}l^{1-\gamma} \\ &\text{`} \\ &= \log\left(c - \frac{\phi}{v}l^{\nu}\right) \end{aligned}$$

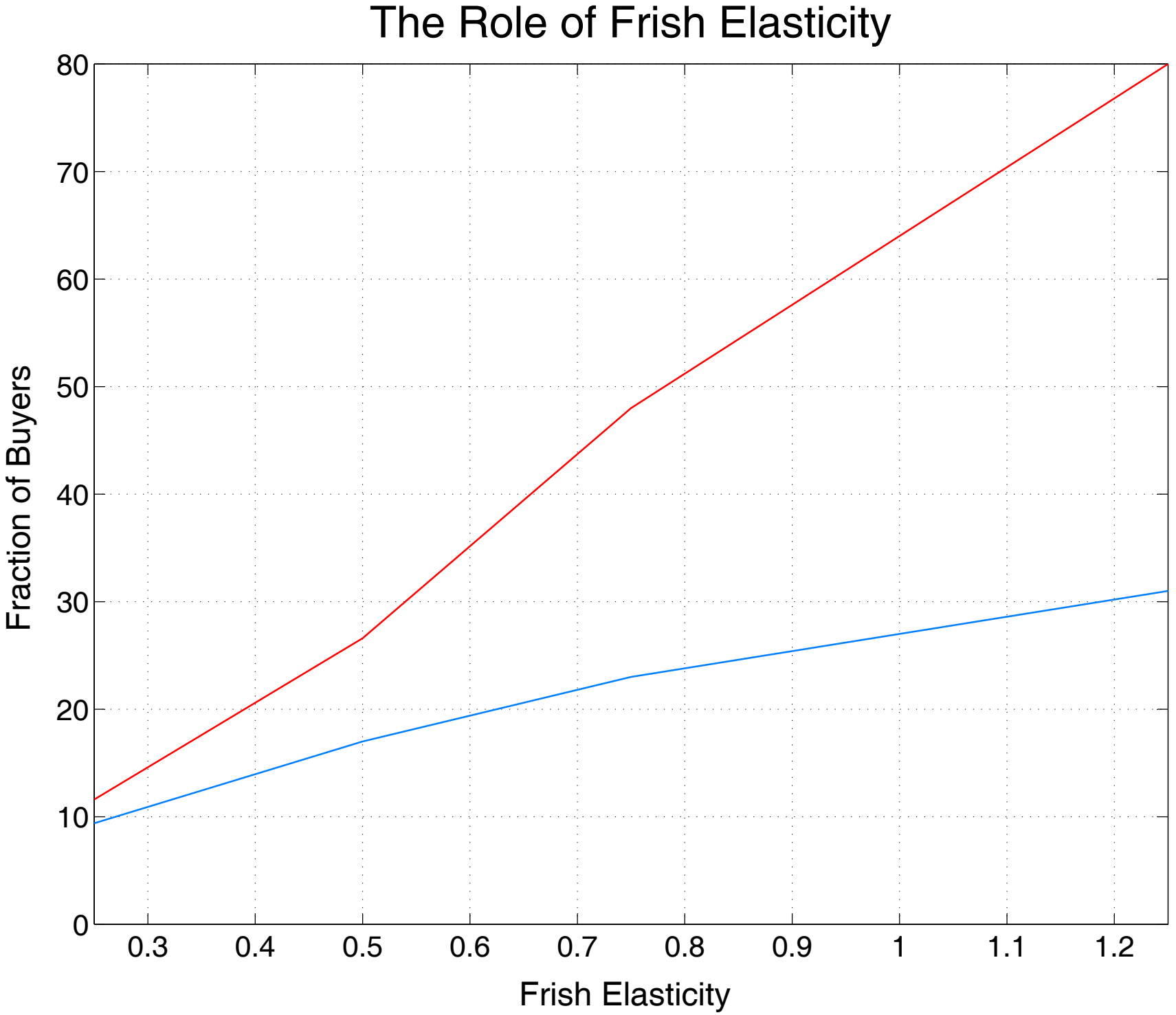
Issues

- The fact that speaks to this simple set-up is the cross-sectional distribution of PI and Labor supply, which is found to be around 0
- Standard preferences consistent but, in this static setting, very little response to tax changes (regardless of elasticity)
- QL preferences, not consistent but imply stronger response to tax changes (cheap substitute for stochastic income)
- Chose γ, v to match a Frisch Elasticity of 0.75
- Choose the variance of the lognormal to match an earnings variance of 0.4,ϕ to match time at work is .3, $\tau = .4$, $r = .04$

Benchmark results

Standard Preferences

Tax red.	% buyers	$\Delta b/y$	$\mathrm{d/y}_M$	$\%\Delta l$	$\%\Delta y$	$\%\Delta c$	$\%\Delta w_B$
5%	23	43	1.6	0.7	1.0	2.0	1.6
10%	18	75	3.6	1.1	1.8	3.1	2.8
			QL Preferences				
5%	48	54	1.07	4	5.1	7.9	3.1
10%	40	104	2.64	6.8	8.5	14	6.1


The Role of Frish Elasticity
Fraction of Buyers
Frish Elasticity
0
10
20
30
40
50
60
70
80
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2

How about the bottom of the distribution?

- Enlarge the information set of the gov.allowing to change price by broad percentile:

	Standard Prefs						QL Prefs					
Govt. Info	% buyers			$\%\Delta w_B$			% buyers			$\%\Delta w_B$		
No Info	23			1.6			48			3.1		
2 Med.	27	24		1.7	1.7		40	40		3.7	3.6	
3 Quant.	21	28	22	1.8	1.6	1.8	30	33	24	4.1	4.1	3.7

- Much wider acceptance (even with standard prefs) and thus less distributional consequences

Why not make it a permanent option?

In French public finance this has been proposed (abonnement)

Two problems.

- If the pricing of the contract depends on something that can be affected then it loses its non distortionary flavor
- Even if it is not the case there is a time inconsistency from the governemt side. Making financing spending easier might increase spending

Might be very useful in particular situations (Medicare crisis)

To be Explored

- Introducing stochastic income
  - With financial frictions tax buyouts bring more risk (less appealing)
  - More role for changing labor supply over time (more appealing expecially with standard prefs)
- Impact of wealth and age heterogeity
- Capital taxation

Conclusion

- In theory tax buyouts is a simple way of reducing distortions.
- Initial work indicates it might be quantitatively effective