Dividend Taxation and Intertemporal Tax Arbitrage

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Contributions

1. General life cycle theory of the firm under dividend taxation
   - in a stochastic world
   - with imperfect capital markets

2. Analysis of the impact of dividend taxation:
   - effects of temporary dividend tax cut on investment and output likely to be adverse

3. Political economy for contestable democracies:
   - there is no such thing as permanent policies
   - this has first order implications whenever private agents' actions entail intertemporal effects

Motivation

- Fierce debate over the effects of dividend taxation
  - Traditional view: taxation distortionary
  - New view: marginal incentive to invest is unaffected

  ⇒ we develop a stochastic life-cycle model incorporating both views

- Role of capital market imperfections is largely ignored
  - Firm's payout policy affects its ability to invest

  ⇒ we analyze the implications of this for dividend taxation

- Tax policy is analyzed as if changes were permanent
  - In contestable democracy no policy is permanent
  - Rational agents anticipate this

  ⇒ we analyze this as an infinitely repeated dynamic game

Overview

1. Analysis of Firms and Effects of Dividend Taxation
   - Construct value function
   - Describe behavior under no taxation/constant taxation
   - Effects of unanticipated changes in taxation
   - Implications of anticipated changes in taxation
   - Aggregate behavior of the macroeconomy
2. Political Economy of Dividend Taxation
   - Key determinant of firm behavior: beliefs about future tax rates
   - Future tax rates in turn depend on party rule
   - Markov model with exogenously fixed tax rates
   - Markov model with endogenous tax rates

Key Considerations

- Holding cash is costly because of agency problems:
  - investors' discount factor is $\beta < \frac{1}{1+r}$, i.e. less than the risk-free discount rate (assumed exogenous)
  - $\Rightarrow$ incentive to pay out dividends D_t
- Investment opportunities arrive randomly:
  - Bernoulli variable $\tilde{\lambda}_t$ indicates whether there is an investment opportunity at time t
  - Probability for investment opportunity is p
  - If $\tilde{\lambda}_t = 1$, then investing I_t yields $G(I_t) = AI_t^\alpha - (1+r)I_t$
- Capital market imperfections:
  - prevent firms from quickly raising new cash
  - investment thus relies on internal cash holdings M_t: $I_t \leq M_t - D_t$

$\Rightarrow$ link between incentive to pay dividends, investment, and output

Key Results

1. Firms can be analyzed by looking at three distinct stages:
   - **New firms:** $M_t = 0$, need to raise cash in equity markets
   - **Young firms:** $0 < M_t < M^*$, retain all their earnings
   - **Mature firms:** $M_t \geq M^*$, distribute all their earnings

   optimal cash holdings M^* determined by the trade-off between the cost of holding cash and expected cost of capital constraints

2. Most firms in the economy are mature: $M_t \geq M^*$. For these:
   - The level of taxation is irrelevant
   - Unanticipated permanent dividend tax changes have no effect
   - Anticipated increases (decreases) in taxation allow for intertemporal tax arbitrage and temporarily lower (raise) cash holdings, investment, and output
   - Probabilistic tax changes have similar effects

Key Results (2)

1. Unanticipated *temporary* tax changes are equivalent to:
   - unanticipated change in one direction
   - expected reversal of this change in a later period

2. Effects of unanticipated *temporary* tax cut:
   - **mature firms:** no effect of temporarily lower rate
     at expiration: high dividend payout $\Rightarrow$ lower output and investment
   - **young firms:** temporarily lower rate:
     - if tax cut is short-lived: irrelevant (tax will be raised again before firm makes dividend payments)
     - if long enough: initial period in which newly established firms raise more capital, have higher equity build-up, more investment and output

     at expiration: high dividend payout $\Rightarrow$ lower output and investment
   - aggregate effect dominated by mature firms:
     $\Rightarrow$ **overall negative effect on output and investment**

Firms' Maximization Problem

Optimization problem of growing or mature firms under constant dividend tax rate τ:

$$V(M_0) = \max_{\{D_t, I_t, M_{t+1}\}_{t=0}^{\infty}} E\left\{\sum_{t=0}^{\infty} \beta^t (1-\tau) D_t\right\}$$

$$\text{s.t. } M_{t+1} = (1+r)[M_t - D_t] + \tilde{\lambda}_t G(I_t)$$

$$M_t \geq I_t + D_t$$

$$D_t \geq 0$$

$$\text{with } M_0 > 0 \text{ given.}$$

or, in recursive notation:

$$V(M_t) = \max_{D_t, I_t} (1-\tau) D_t + \beta E V\left\{(1+r)[M_t - D_t] + \tilde{\lambda}_t G(I_t)\right\}$$

Firms' Value Function $V(M_t)$

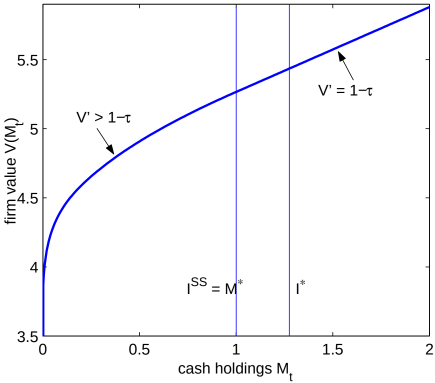


Figure: The value function $V(M_t)$ can be determined iteratively from firms' maximization problem. Parameter values used: $\alpha = 1/2$, $\beta = 0.93$, $r = 0.01$, $p = 1/2$, $\tau = 38.6\%$, A calibrated so that $I^{SS} = 1$.

Firms in Steady State

Proposition (Steady state investment)

The amount of money I^{SS} that a firm in steady state sets aside for investment is defined by a marginal product of

$$\beta[pF'(I^{SS}) + (1-p)(1+r)] = 1$$

Intuition:

- Both sides of this equation can be multiplied by $(1-\tau)$
- Resulting equation: discounted expected benefit of holding cash = cost of paying out dividends

Note: without capital constraints, optimum investment is

$$F'(I^*) = 1 + r$$

The two solutions coincide if $\beta = \frac{1}{1+r}$, otherwise $I^{SS} < I^*$

Dividend Payout Policy

For the remainder of our analysis: assume $\beta < \frac{1}{1+r}$

Proposition (Optimal payout policy)

Firms' optimal dividend policy is to pay out any excess of cash above I^{SS} but accumulate cash below this threshold, i.e.

$$D_t = \max\{0, M_t - I^{SS}\}$$

The threshold $I^{SS} = M^*$ for cash holdings separates mature firms from young firms.

Raising Equity

Proposition (Issuing equity)

When a new firm is started, it can raise an amount $N^*(\tau)$ *in equity, which is defined by*

$$V'(N^*(\tau); \tau) = 1 + \kappa$$

where $\kappa \geq 0$ *is the cost of raising equity.*

Intuition:

- Simple arbitrage argument if $N \neq N^*(\tau)$
- $N^*(\tau)$ is decreasing in dividend tax τ and in the cost of raising equity κ

New Equity Issues

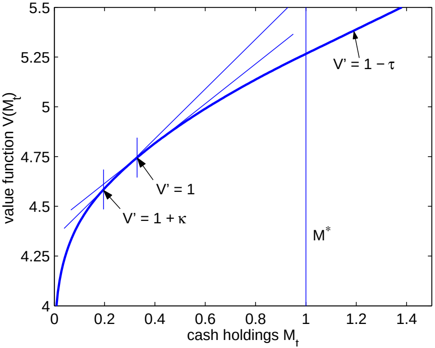


Figure: New equity issues: For a new firm, it is optimal to raise equity N^* up to the point where $V'(N^*(\tau);\tau) = 1 + \kappa$, or 1 if there are no costs to issuing equity. Parameter values used: $\kappa = 25\%$, $\tau = 36.8\%$.

Firms' Life Cycle

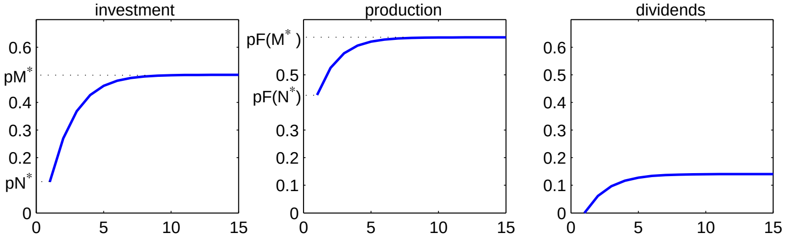


Figure: The figure shows average investment, production, and dividend payments for a new firm evolve over the first 15 periods. In the first period, the firm raises $N^*(\tau)$, invests on average pN^* and produces $pF(N^*)$. In the 15th period, expected investment and production are almost at the optimal values pM^* and $pF(M^*)$.

Aggregate Investment and Output

- Mass of firms z_t in the economy grows at rate γ
- Every period $\Delta z_t = \gamma z_{t-1}$ new firms in the economy
- In steady state, the fraction of firms of age a is thus

$$\frac{\gamma}{(1+\gamma)^{a+1}}$$

- Define aggregate investment as

$$AI_t = \int_0^{z_t} pI_{t,z} dz$$

and similarly for aggregate output AY_t and dividends AD_t

Unanticipated Tax Changes

Proposition (Unanticipated tax change)

A change in dividend taxes from τ_1 to τ_2 has no impact on the behavior of growing firms with $M_t \geq N^*(\tau_2)$ and mature firms.

Intuition: The maximization problem of firms that don't issue equity can be written as:

$$V(M_0) = \underset{\{D_t, I_t, M_{t+1}\}}{\arg\max} (1-\tau) E \left\{ \sum_{t=0}^{\infty} \beta^t D_t \right\}$$

Clearly, firms' optimal investment and dividend payments are unaffected by τ.

Note: Even though firms' behavior is unaffected, their value function is linear in $(1-\tau)$. Changes in dividend taxation thus shift firms' value function by a factor $\frac{1-\tau_2}{1-\tau_1}$.

Unanticipated Tax Changes (2)

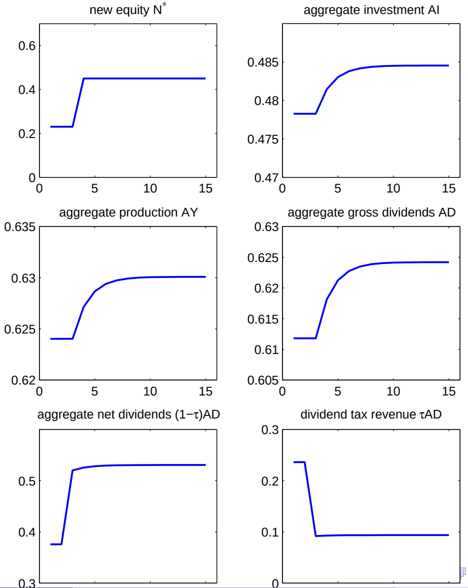
Proposition

A change in dividend taxes from τ_1 to τ_2 changes the amount of new equity $N^*(\tau)$ that new firms issue. If the change is a decrease, existing firms with $M_t < N^*(\tau_2)$ access equity markets to raise the difference $N^*(\tau_2) - M_t$.

Intuition:

This result follows directly from the definition of $N^*(\tau)$ above.

Example: Unanticipated Dividend Tax Cut



Anticipated Dividend Tax Increase

Notation: $M_s^*(\tau_L, \tau_H)$ and $V_s(M_t; \tau_L, \tau_H)$ are the optimal cash holdings and the value function of firms if a dividend tax increase from τ_L to τ_H is expected to happen in s periods.

Proposition (Anticipated tax increase)

In the period before a tax increase, firms reduce their cash holdings to $M_1^*(\tau_L, \tau_H)$ as defined by

$$V'(M_1^*(\tau_L, \tau_H); \tau_H) = 1 - \tau_L$$

- Naturally, firms shift some of their dividends into the period with a lower tax rate.
- This makes firms more capital constrained and therefore limits investment and output next period.

Anticipated Dividend Tax Increase, 1 Period Ahead

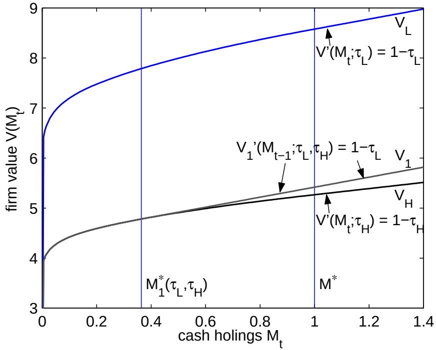


Figure: Anticipated Dividend Tax Increase, 1 Period Ahead: Firms pay out all their cash holdings above $M_1^*(\tau_L, \tau_H) < M^*$ in a special dividend. Their value function $V_1(M_t; \tau_L, \tau_H)$ lies below the old function $V_L(\cdot)$ and coincides with the after-tax value function $V_H(\cdot)$ up to M_1^*.

Anticipated Dividend Tax Increase (2)

Proposition

$s > 1$ periods before a dividend tax increase firms optimal cash holdings are M^*. Their value functions $V_s(\cdot)$ and their optimal amounts of new equity N_s^* slowly approach the new high-tax value function and $N^*(\tau_H)$.

Intuition:

- Firms know that they can pay out an arbitrarily large amount in the period right before the tax increase. Their cash holdings before then are undistorted.
- However, since investors anticipate the tax hike, they will provide less and less equity to new firms.

Anticipated Dividend Tax Increase (3)

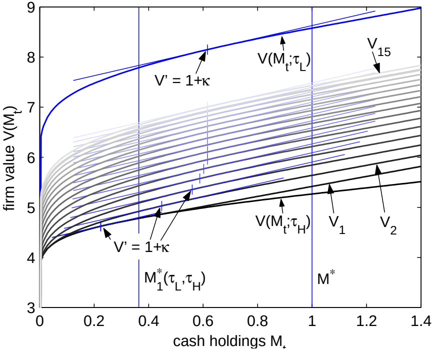
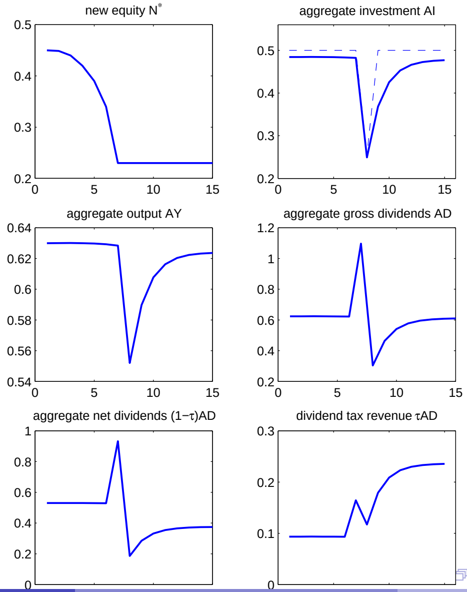


Figure: Firms' value functions $\{V_1, ..., V_{15}\}$ in the 15 periods prior to an anticipated dividend tax increase from $\tau_L = 0\%$ to $\tau_H = 38.6\%$. When the future tax increase is announced, the value function falls immediately from $V(M_t; \tau_L)$ to V_{15}.

Example: Anticipated Dividend Tax Increase



Anticipated Dividend Tax Cut

Intuition: An anticipated tax cut gives firms an incentive to accumulate more funds than M^* in order to save on dividend taxes.

Proposition (Anticipated tax cut)

For the k periods prior to a tax cut for which $1 - \tau_H < (1 - \tau_L)[\beta(1 + r)]^k$, firms accumulate all their cash balances, i.e. $M_s^* = \infty$ for $s \leq k$. In earlier periods, firm behavior is unaffected. However, the amount of new equity N_s^* rises as the tax cut approaches.

Anticipated Dividend Tax Cut (2)

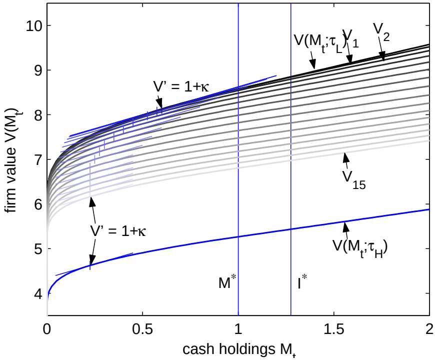
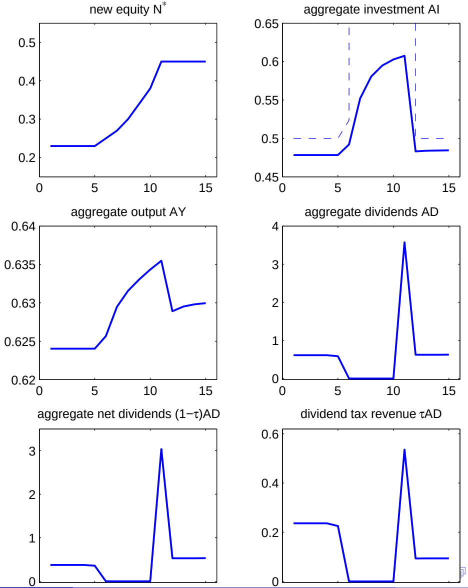


Figure: Firms' value functions $\{V_1, ..., V_{15}\}$ in the 15 periods prior to an anticipated dividend tax cut move closer and closer to the value function $V(M_t; \tau_L)$ prevailing under the new dividend tax rate.

Example: Anticipated Dividend Tax Cut



Probabilistic Dividend Tax Increase

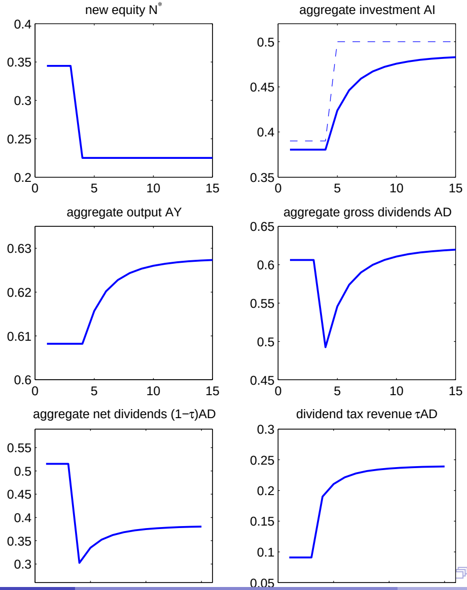
Proposition (Probabilistic tax increase)

If firms expect a dividend tax increase from τ_L to τ_H with a constant probability of arrival π, they reduce their cash holdings to $M_\pi^* < M^*$ until the tax increase has materialized.

Their optimal level of cash holdings M_π^* makes them indifferent between receiving dividends now at the low tax rate and carrying cash into the next period:

$$1 - \tau_L = \pi V'(M_\pi^*; \tau_H) + (1-\pi)\beta[pF'(M_\pi^*) + (1-p)(1+r)]$$

Example: Risk of a Dividend Tax Increase



Probabilistic Dividend Tax Cut

Proposition (Probabilistic tax cut)

If firms expect a dividend tax cut from τ_H to τ_L with a constant probability of arrival π, they hold higher cash balances $M_\pi^* > M^*$ until the tax cut has materialized.

- If expectations of a tax cut are sufficiently large that $1 - \tau_H \leq \beta(1 + r)(1 - E\tau_{t+1})$, then $M_\pi^* = \infty$.
- Otherwise, M_π^* is determined such that investors are indifferent between receiving dividends now and carrying cash into the next period:

$$1 - \tau_H = \beta(1 - E\tau_{t+1})[pF'(M_\pi^*) + (1 - p)(1 + r)]$$

Temporary Dividend Tax Changes

- Temporary tax changes are equivalent to:
  1. a tax change in one direction at the beginning of the temporary change
  2. a reversal of this change at the expiration of the temporary change
- For unanticipated temporary dividend tax changes:
  1. the effects of the first change are minuscule
  2. the effects of the (anticipated) reversal of the policy can induce significant distortions

Proposition (Bush's 2003 Dividend Tax Cut)

An unanticipated temporary dividend tax cut has only negligible positive effects on investment and output at the beginning, but significant negative effects on investment and output after its expiration.

Policy Implications

1. Unanticipated changes in dividend taxes have negligible macroeconomic effects
2. If policymakers want to increase dividend taxes *or* if firms expect an increase in the future, better enact it immediately
3. If policymakers want to reduce dividend taxes *or* if firms expect a reduction in the future, back-load the tax cut and keep firms waiting.
4. Unanticipated temporary dividend tax cuts have an overall negative effect on investment and output.
5. Conversely, unanticipated temporary dividend tax increases have an overall positive effect on investment and output.

Markov Switching Between Two Tax Regimes

- Assume two political parties:
  conservatives C and social democrats S
- Party rule follows a Markov process with transition probabilities
  $$T_\pi = \begin{pmatrix} 1-\pi & \pi \\ \pi & 1-\pi \end{pmatrix}$$
- Party C and party S implement the given tax rates $\tau_L < \tau_H$ whenever they are in power
- Firms rationally anticipate changes in party rule and therefore changes in dividend taxation:
  - Under conservative rule firms expect a tax increase and therefore they lower their cash holdings
  - Under social democratic rule firms expect a tax decrease and hence they increase their cash holdings
  - If expected tax cut is sufficiently large/likely, firms accumulate all their earnings, i.e. $M_H^* = \infty$

Markov Switching Between Two Tax Regimes (2)

Proposition (Markov switching)

Under the high tax regime, mature firms' optimal cash holdings M_H^*, investment I_H^* and output Y_H^* are higher than the corresponding values under the low tax regime. However, new firms issue more equity N_L^* under the low tax regime than under the high tax regime.

- Through their commitment to lower taxes, the conservatives **help** the social democrats
  $\Rightarrow$ conservatives exert positive externality on social democrats
- Through their commitment to higher taxes, the social democrats **hurt** the conservatives
  $\Rightarrow$ social democrats exert negative externality on conservatives

In short, $M_L^* < M^* < M_H^*$ and $N_L^* > N_H^*$

Value Functions Under Markov Switching

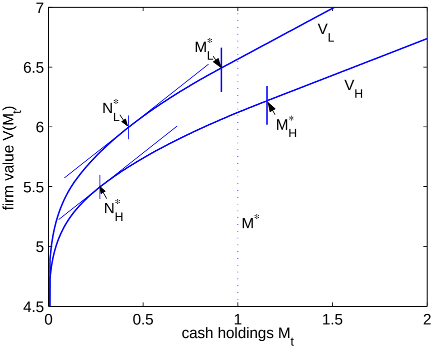


Figure: Value Function of Firms Under Conservative and Social Democratic Governments

Aggregate Economic Performance Under Markov Switching

- Aggregate investment is on average higher under Markov switching than under constant tax rates because of concavity of $V(\cdot)$
- Depending on elasticities, aggregate output might also be higher

Example: switching between 15% and 38.6% tax rate with 10% probability raises expected output

$\Rightarrow$ case where random taxation can increase welfare (cp. Stiglitz, 1983)

Parties' Optimal Tax Rates

Parties' tax rates are not exogenous, but are a matter of choice

Strategic considerations:

- The higher social democrats set their taxes, the larger the expected tax cut when conservatives come to power, the larger cash holdings, investment and output under social democratic rule $\Rightarrow$ they benefit from the conservatives' policy
- The higher conservatives' taxes, the smaller the expected tax cut when social democrats come to power, the smaller cash holdings, investment and output under conservative rule

$\Rightarrow$ Externalities lead to bias towards excessive taxation for both parties

- If each party internalizes its effects on the *relative* performance of the economy, this bias is further exacerbated:
  by raising taxes, each party can reduce economic performance under its rival's regime

Parties' Preferences

At the most general level, we define parties' utility function:

$$U^i = U^i \left(\{X_t, 1_t^i\}_{t=1}^{\infty} \right)$$

where

- X_t is a vector of macroeconomic variables at time t, such as output, profits, tax revenues
- 1_t^i is an indicator function for whether party i is in power
- parties might value X_t differently depending on whether they are in power

The party i in power maximizes

$$\max E \left[U^i \left(\{X_t, 1_t^i\}_{t=1}^{\infty} \right) \right]$$

given its beliefs on the other party's future actions

Firm Behavior

X_t is determined by firms' aggregate behavior, which in turn depends on the vector of their cash holdings $\{M_{t,z}\}$, the current dividend tax rate τ_t, and their beliefs about the distribution of future dividend tax rates $\Gamma_t(\tau_{t+1}, \tau_{t+2}, ...)$:

$$X_t = X\left(\{M_{i,t}\}, \tau_t, \Gamma_t(\tau_{t+1}, \tau_{t+2}, ...)\right)$$

Given rational expectations Γ_t about parties' dividend tax policies and its current cash holdings $M_{t,z}$ each firm $z \in \{0, z_t\}$ chooses its optimal investment $I_{t,z}$ and dividend payments $D_{t,z}$ by maximizing

$$V(M_{t,z}) = \max_{D_{t,z}, I_{t,z}} (1 - \tau_t) D_{t,z} + \beta E V\left\{\tilde{M}_{t+1}\right\}$$

subject to the standard cash-flow and dividend non-negativity constraints

Equilibrium

Definition: An equilibrium in this game is

- a series of tax rates $\{\tau_t\}_{t=1}^{\infty}$ which satisfy in every period the optimization problem of the party *i* in power, given party *i*'s beliefs regarding the behavior of firms and of its rival
- a series of vectors of firms' dividends $\{D_{t,z}\}$, investment decisions $\{I_{t,z}\}$ and money balances $\{M_{t,z}\}$ which satisfy firms' optimization problem, given firms' beliefs about the future dividend policy
- in which parties' beliefs about their rival's behavior and firm behavior are consistent with their rival's and firms' maximization problem, and the Markov chain
- and firms' beliefs are consistent with both parties' optimization problem and the Markov chain that determines the probabilities of regime change.

Simplifying assumptions

- Conservatives and socialists set constant tax rates τ_C and τ_S whenever they are in power
  $\Rightarrow$ denote their utility functions as $U^C(\tau_C, \tau_S)$ and $U^S(\tau_S, \tau_C)$
- Assume $U^i_{11} < 0$, so that optimal tax rate is unique, given τ_j
- For $\tau_S > \tau_C$, $U^C_{12} > 0$, i.e. the marginal benefit for conservatives of increasing their tax rate rises in social democrats' tax rate (conservatives have an incentive to reduce the gap between both parties' tax rates)
- For $\tau_S > \tau_C$, $U^S_{12} < 0$, i.e. for social democrats the marginal benefit of higher tax rates falls as conservatives' tax rate approaches their optimal rate

Define a party's optimal tax rate as the tax rate it would set if it was permanently in power:

$$\tau_i^* = \arg\max_{\tau_i} U^i(\tau_i, \tau_i)$$

Suppose that preferences are such that $\tau_C^* < \tau_S^*$

Best Response Functions

We can define conservatives' best response function as

$$\hat{\tau}_C(\tau_S) = \arg\max_{\tau_C} U^C(\tau_C, \tau_S)$$

and similarly for social democrats.

This allows us to arrive at the following two results:

$$\begin{aligned} \hat{\tau}_C(\tau_S) > & \tau_C^* \quad \text{for } \tau_S > \tau_C^* \\ \hat{\tau}_S(\tau_C) > & \tau_S^* \quad \text{for } \tau_C < \tau_S^* \end{aligned}$$

Both parties have a bias towards excessive dividend taxation, i.e. they choose a higher tax rate than they would if they had to permanently set a fixed tax rate.

Nash Equilibrium

The Nash equilibrium $\mathcal{N}^*$ is the pair of tax rates (τ_C^N, τ_S^N) such that

$$\hat{\tau}_C(\tau_S^N) = \tau_C^N \quad \text{and} \quad \hat{\tau}_S(\tau_C^N) = \tau_S^N$$

or, combining the two equations,

$$\hat{\tau}_C(\hat{\tau}_S(\tau_C^N)) = \tau_C^N$$

Proposition (Inefficiency of Nash equilibrium)

The Nash equilibrium is characterized by $\tau_C^N > \tau_C^*$ *and* $\tau_S^N > \tau_S^*$

Nash Equilibrium

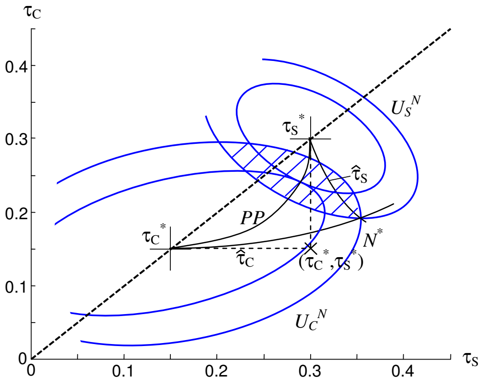


Figure: The graph depicts conservatives' and social democrats' optimal tax rates τ_i^* and best response functions $\hat{\tau}_i(\tau_j)$. It also indicates the Nash equilibrium $\mathcal{N}^*$, the set of Pareto-better points (shaded) and the line $\mathcal{PP}$ of Pareto-optimal agreements between both parties.

Cooperative Equilibria

Participation Constraint: set $\mathcal{C}^*$ of all pairs of dividend tax rates $(\tau_C^{CO}, \tau_S^{CO})$ for which:

$$U_C(\tau_C^{CO}, \tau_S^{CO}) \geq U_C(\tau_C^N, \tau_S^N) \quad \text{and} \quad U_S(\tau_S^{CO}, \tau_C^{CO}) \geq U_S(\tau_S^N, \tau_C^N)$$

Proposition (Folk theorem)

For any pair of taxes $(\tau_C^{CO}, \tau_S^{CO}) \in \mathcal{C}^*$ and for sufficiently low discount rates, the following strategy constitutes a cooperative equilibrium:
(1) Play τ_i^{CO} as long as the rival does not deviate from τ_j^{CO}.
(2) Play τ_i^N forever if the rival ever deviates from τ_j^{CO}.

Pareto-Optimal Agreements

Locus of Pareto-optimal tax rates: set $\mathcal{PP}$ of all pairs of tax rates (τ_C, τ_S) such that

$$\frac{\partial U_C(\tau_C, \tau_S)}{\partial \tau_C} \cdot \frac{\partial U_S(\tau_S, \tau_C)}{\partial \tau_S} = 1$$

(condition that parties' indifference curves are tangents)

Define $(\tau_C(q), \tau_S(q))$ as the tax pairs as we move along the $\mathcal{PP}$ locus from conservatives' optimum $\tau_C^* = \tau_C(0) = \tau_S(0)$ to socialists' optimum $\tau_S^* = \tau_C(1) = \tau_S(1)$.

Parties' bargaining game over a Pareto-optimal pair of tax rates can then be described as the choice of q.

Nash Bargaining Equilibrium

Following Rubinstein (1982), party i's reservation value q_i can be denoted as:

$$U^i(q_i) = \delta\left[(1-\pi)U^i(q_i) + \pi U^i(q_j)\right] \text{ for } i \in \{C, S\}$$

This pair of equations can be solved for (q_C, q_S).

Proposition (Nash bargaining equilibrium)

In equilibrium, the party i in power offers party j's reservation value q_j and party j accepts the offer. The two parties then play a cooperative game with the pair of tax rates $(\tau_C(q), \tau_S(q))$.

Renegotiation

When party rule changes and party *j* comes to power:

- bargaining power shifts to *j*
- optimal for party *j* to re-negotiate the agreement
- party *i* finds it optimal to accept this request

$\Rightarrow$ all the cooperative equilibria break down
$\Rightarrow$ Nash equilibrium $\mathcal{N}^*$ is the only equilibrium that is renegotiation-proof.

Alternative mechanisms to enforce a cooperative agreement:

- Constitutional clause that constrains choice of tax rates
- Penalty for violating a given agreement

Generalizations

Elements of the described political game:

1. Governments are contestable: political rule and therefore policies changes over time
2. Changes in policies induce private agents to shift policy-relevant actions across time
3. These policy-relevant actions in turn affect parties' utility

Strategic considerations among parties are more important

- the higher private agents' ability (or the lower the cost) of shifting actions across time
- the larger the effect of these shifts on parties' utility

Other examples

Other examples, for which the considerations of our described political economy game apply, are:

- income taxes and reallocations in labor supply, compensation, payments into/withdrawals from tax-deferred IRAs, after-tax IRAs
- capital gains taxes and stock sales
- sales/VAT-taxes and purchases of durable consumer goods
- corporate profit taxes corporate investment, repatriations of foreign profits, executive compensation, etc.
- public infrastructure and complementary private investment
- environmental taxes/regulations and investment in green technologies

It can be shown that the introduction of certain devices to shift tax load across periods, such as e.g. IRAs, benefits one party at the expense of the other party.

Conclusions

- Changes in dividend taxation have only negligible effects
- Expectations about changes can cause large distortions
- In contestable democracies, all policies can be reversed when party rule changes
- Rational agents anticipate this
- Political parties are thus engaged in a repeated game with their rivals
- Evaluation of a given policy can change significantly