4 Theories of the Public Sector
4.1 Introduction

- two questions
  - Why is there a public sector?
    - Would it not be possible for economic activities to function satisfactorily without government interventions?
  - Is it possible to provide a theory that explains the increase in size of the public sector and the composition of expenditure?

- justification of the public Sector
  - efficiency and equity

- alternative explanations for the growth
4.2 Justification for the Public Sector

4.2.1 The Minimal State

- entirely unregulated economic activity cannot operate in a very sophisticated way
  - an economy would not function effectively if there were no property rights (enforce prohibition against theft) or contract laws (rule of exchange)

- minimal state
  - contract laws
  - criminal laws
  - provision of defense

\[ \text{enforcement costs} \rightarrow \text{public expenditure} \text{ (distortions)} \]
4.2.2 Market versus Government

- intervention in the economy can potentially increase welfare

- two categories
  - market failure
    - inefficiency
    - improvement by gvn intervention is not always possible
      <--- limited policy instrument, restricted information
  - no market failure
    - gvn is restricted by the same features of the economy that make the market outcome inefficient
    - same imperfect information
    - gvn failure
4.2.3 Equity

- inequality of income, opportunity and wealth
- equity $\longleftrightarrow$ efficiency
- education, social security, pension schemes $\longleftrightarrow$ normative assessment of welfare
4.2.4 Efficiency and Equity

- **efficiency**
  - best use is made of economic resources

- **equity**
  - benefit of economic activity are distributed fairly

- **conflict between efficiency and equity**
  - efficient policy is often highly inequitable
  - equitable policy can introduce significant distortions and disincentives

- **single consumer or identical consumers**
4.3 Public Sector Growth
4.3.1 Development Models

- the economy experiences changes in its structure and needs as it develops
- main features
  - early stage of development:
    - the period of industrialization during which the population moves from the countryside to the urban area
    - requirement for significant infrastructural expenditure in the development of cities
middle stage:
- the infrastructural expenditure of the public sector becomes increasingly complementary with that from the private sector
- developments by the private sector are supported by investments from the public sector

developed stage:
- less need for infrastructural expenditure or for the correction of market failure
- the desire to react to issues of equity
- transfer payments (social security, health, education)
4.3.2 Wagner’s Law

- Share of public sector in GDP had been increasing over time

- Three components:
  - Growth results in an increase in complexity
    --> New laws --> continuing increase in public expenditure
  - Urbanization and externalities
  - The goods supplied by the public sector have high income elasticity of demand
  - Growth --> increase in demand --> increase in public expenditure
4.3.3 Baumol’s Law

- production technology in public sector
  - labor-intensive
  - competition in labor market makes labor costs in public sector link to those in private sector
  - in private sector it is possible to substitute capital for labor when the relative cost of labor increases
  - technological advances in the private sector lead to increases in productivity ---> wage rate rises
  - in public sector wage costs increase ---> expenditure increases
Baumol’s law

- if private/public output ratio remains the same, public sector expenditure rises as a proportion of total expenditure
- increasing proportional size of the public sector

problems

- technology-driven
- not consider aspects of D/S or political processes
- evidence of a steady decline in public sector wages
4.3.4 A Political Model

- **Conflict in public preferences**
  - wish to have higher expenditure
  - wish to limit the burden of taxes
  - how the size and composition of actual public spending reflects the preferences of the majority of the citizens

- **Political model**
  - equilibrium level of public spending can be related to the income distribution
  - the growth of gvn is related to the rise of income inequality
- economy with H consumers
  - gvn provides public good $G$ that is financed by proportional income tax $t$
  - utility of consumer $i$ with income $0 \leq y_i \leq \hat{y}$
    $$u_i(t, G) = [1 - t]y_i + b(G)$$
    $b(.)$: benefit fn, increasing and concave
    $\mu$: mean income level
  - gvn budget constraint $G = tH\mu$
    $$u_i(G) = \left[1 - \frac{G}{H\mu}\right]y_i + b(G)$$
first-order condition

\[ \frac{\partial u_i(G)}{\partial G} \equiv - \frac{y_i}{H\mu} + b'(G) = 0 \]

marginal benefit = marginal cost

the preferred public good level is decreasing as income rises <--- the rich pay a higher share of the cost of the public good than the poor

majority voting

all consumers prefer the level of public good to be as close as possible to their best point

median income = political equilibrium

\[ b'(G) = \frac{y_m}{H\mu} \]

\( y_m \): median voter income
4.3.5 Ratchet Effect

- modeling of political interaction
  - assume that preference of gvn is to spend money (economics of bureaucracy)
  - assume that the public do not want to pay taxes
  - the public gets benefit from the expenditure
  - gvn wants re-election
  - gvn takes account of the public’s preferences

- historical data on gvn expenditure
  - prior to 1914, 1920-1940, post-1945: constant
  - wartime permits gvn to raise expenditure with the consent of the taxpayers
expenditure does not fall back to original level
- taxpayers become accustomed to the higher level
- debts incurred during wartime must be paid later
- promises made by gvn to the taxpayers has to be met ---> ratchet effects
- inspection effect: gvn and taxpayers reconsider their positions and priorities
  ---> unnoticed needs ---> higher public spending
- spending remains relatively constant unless disturbed by some significant external event
- these events trigger substantial increase in expenditure
- this model is consistent with the data in chap.3
4.4 Excessive Government

4.4.1 Bureaucracy

- **assumption**
  - bureaucrats are motivated by max of their utilities
  - they cannot exploit the market to raise income
  - factors such as patronage, power, reputation influence utilities --- related to the size of bureau
  - they aim to max the size of their bureau in order to obtain the nonpecuniary benefits
  
  --- the size of gvn becomes excessive
model

- output of bureau observed by gvn : \( y \)
- gvn gives the bureau the budget of size \( B(y) \)
  \[ B'(y) > 0, \quad B''(y) < 0 \]
- cost function \( C(y) \), \[ C'(y) > 0, \quad C''(y) > 0 \]
- assume that gvn does not know this cost structure

decision problem of the bureaucrat

- = choose output to max the budget s.t. the budget is sufficient to cover costs
- Lagrangian
  \[ L = B(y) + \lambda [B(y) - C(y)] \]
solution $y^b$

$$B'(y^b) = \frac{\lambda}{\lambda + 1} C'(y^b) \Rightarrow B' < C'$$

comparison of outcomes: $y^b$ and $y^*$

- gvn has full information ---> efficiency $y^*$
  - cost-benefit calculation $B'(y^*) = C'(y^*)$

- budget max ---> inefficiency
  $$B(y^b) = C(y^b) \Rightarrow a = b$$

- excessive size

- assumption: bureaucrats have freedom to set the size of the bureau ---> restrictive
marginal budget and marginal cost
4.4.2 Budget-Setting

- excessive bureaucracy <--- budget setting
  - gvn is headed by a politician who obtains satisfaction from the size of the budget
  - budgets for departments are determined annually by a meeting of cabinet

- model of departments’ budgets
  - \( B_t \): budget for year \( t \)
    \[
    B_{t+1}^c = [1+\alpha]B_t, \quad \alpha > 0
    \]
  - mechanical method of updating the budget claim
    \[
    B_{t+1} = [1-\gamma]B_{t+1}^c = [1-\gamma][1+\alpha]B_t, \quad 0 < \gamma < 1
    \]
- $\gamma<\alpha$: budget will grow over time
development bears little relationship to needs
  ---&gt; become excessive
- $\gamma>\alpha$: budget will fall over time
4.4.3 Monopoly Power

- two reasons for inefficiency
  - monopoly in the supply
    - tendency for too little given not the converse
    - exploit monopoly position to oversupply its output
  - market capture
    - goods supplied by the public sector are complex
    - education, health care
    - demand is not determined by the consumers
    - delegated to specialists such as teachers and doctors
    - specialists set level of output to meet their objectives
    - they benefit from a expansion of their profession
      --> supply in excess of the efficient level
4.4.4 Corruption

- not as a moral aberration but as a general consequence of gvn officials
  - rent-seeking
  - enormous efficiency costs

- predatory regulation
  - entrepreneurs have to pay bribes
  - several gvn officials create distinct obstacles
    ---> large damage
  - underground economy
4.4.5 Government Agency

- lack of information available to voters
  - gvn grows larger by increasing tax burdens
  - how to set incentives that encourage gvn to work better and to cost less

- cost to gvn of supplying public good can vary
  - unit cost: low at $c_l$, or high at $c_h$
  - gross benefit $b(G)$: increasing and concave
  - net benefit $b(G)−t$: $t$ is tax paid to gvn
  - benefit of gvn: $t_i−c_iG_i$
  - when gvn breaks even, net benefit $b(G_i)−c_iG_i$
  - demand level is given: $b′(G_i)=c_i$, $t_i=c_iG_i$, $i=l,h$
Benefit and cost

$G_h[c_h - c_l]$
assumption

- public cannot observe whether gvn has $c_h$ or $c_l$
- gvn can benefit by misrepresenting the cost
- when the cost is low, gvn is better off pretending
  the cost is high to get tax $t_h$ for $G_h$
  
  $\Rightarrow$ benefit $G_h[c_h-c_l]$

- to eliminate this temptation

- taxpayer must pay extra amount $r>0$ to gvn
  
  $\Rightarrow$ informational rent

- gvn report: high $\Rightarrow$ pay $t_h=c_hG_h$
- low $\Rightarrow$ pay $t_l=c_l+r$, where $b'(G_l)=c_l$ and $r=[c_h-c_l]G_h$
- $r>0$ to induce truthful revelation of the cost
possibility to reduce the excess payment
- demand the high-cost gvn supply less
- assume cost is low with prob $p_l$ and high with $p_h$
- max expected benefit s.t. gvn telling the truth
- revelation can be obtained at the least cost

$$b'(G_h) = c_h + \frac{p_l}{1 - p_l}[c_h - c_l]$$

- quantity is lower than that with full information
- distortion $<---$ simple cost-benefit argument
- trades off the benefit of reducing the rent (proportional to $c_h - c_l$) and the prob $p_l$ against the cost of distortion of the quantity on the high-cost gvn
4.4.6 Cost Diffusion

- common resource problem
  - spending authorities: dispersed
    --> their own priorities
  - treasury has the responsibility to collect revenue
  - excess pressure on the common resource

- public services
  - gvn does not charge the direct users the full marginal cost but subsidizes from tax revenues
  - concentration of benefits to a small group of users
  - diffusion of costs to the large group of taxpayers