Public Finance and Public Policy

Responsibilities and Limitations of Government

Arye L. Hillman

CAMBRIDGE

10

HEALTH, EDUCATION, AND RETIREMENT

We have considered various public policies as the response to inadequate outcomes of markets, including policies that provide the rule of law, protect the environment and resolve other externality problems, allow for financing and supply of different public goods, preempt personal time-inconsistency problems, and finance and provide the entitlements of social insurance. In this final chapter, we consider in more detail public policy toward health insurance and health care, education, and provision for retirement years when people have ceased earning incomes. In each of these cases, markets allow private individuals to make decisions without a role for government, but there is generally involvement of government through public finance and public policy.

10.1
Health Insurance and Health Care

10.1.1 Markets and government

Markets can provide health care and health insurance without government. Let us examine how the different considerations raised in past chapters affect the choice between markets and the public finance and public policies of government regarding health care and health insurance.

User prices can be charged when, because of collectively used facilities of hospitals and clinics, health care is a public good. Personal health care also has a public-good dimension through option demand: user prices can be charged for the option to use health-care facilities, through private health insurance. User prices allow markets to function.

Health care can involve externalities. Externalities are involved because some diseases are contagious and other diseases are infectious. There is consequently a broad social (or collective) incentive to ensure that other people are healthy so that we all remain healthy. Preventive medicine, through inoculation and research, provides public-health benefits by eliminating the negative externalities of contagious and infectious diseases. We benefit personally from a healthy population including the people with whom we come into repeated contact in the normal course of our daily lives, as well as the people with whom we come into contact randomly, for example, on public transportation and in classrooms. Government regulation of public safety and the safety of work conditions addresses health-related externalities.

Health concerns can underlie the prohibition of markets, and government can have a role in disseminating information about health consequences of personal decisions. Markets in various substances are prohibited for health reasons. Information about cigarette smoking, excessive alcohol consumption, unsafe sex, unhealthy diets, and so on, is a public service (public good) that involves government.

Through public finance, government can ensure an entitlement to basic health care that reliance on private spending cannot. The entitlements can provide protection against unforeseen adversity. The adversity can be the consequence of health problems from the time of birth, or unfortunate illnesses and accidents in the course of life that are debilitating and do not allow people to be self-reliant. Basic health care as an entitlement may be provided to everybody (as in Europe and elsewhere), or, as in the United States, the entitlements may be targeted to the poor (who cannot pay) and to the elderly (whose expenses are high because of physical changes as people become older).[1] Governments also enforce and often subsidize preventative inoculations for babies and small children.

[1] The entitlements protect the old who are vulnerable because of their increased demand for health care due to deterioration of health with age. The poor are vulnerable because they lack the means to provide themselves with health insurance. The elderly poor are doubly vulnerable.

Health care can also involve natural monopoly. When urgent emergency treatment is required, the closest emergency room of a hospital is a natural monopoly. Natural monopoly may be present in the form of specialized medical knowledge. The local hospital may be a natural monopoly, or a population in a town or region may require only one specialist in a particular field.

Political considerations can also affect health care. Government can subsidize medical research that is aimed at benefiting particular groups who may offer political support in return for the policies and public finance that they seek.

10.1.2 The special nature of health care

Health care is special because we may not want a person to have to make market decisions about medical treatment when ill or injured. A person who is sick or injured cannot be expected to have the state of mind to deal with health-care decisions under market conditions. We cannot expect sick or injured persons to have the time and composure, or mind set, to evaluate alternative market supply offers for treatment; the stress of circumstances of ill health or injury may not allow a reasoned consideration of alternative supply offers. People who are ill or injured simply wish to be treated to alleviate or cure their condition. It would be disconcerting if an injured or sick person had to negotiate with different doctors over the costs of treatment in an emergency room of a hospital.

Another reason why a person who requires medical care should not be obliged to make market decisions is that an ill or injured person is in general prepared to pay large sums of money for medical care. Demand for urgently required health care is in general not responsive to price. Ill or injured people may be prepared to pay their entire wealth for the prospect of preserving their lives. Because of the compulsion to be cured, a market transaction exposes a person seeking immediate medical treatment to the potential for extortion.

There is also asymmetric information regarding the quality of treatment. It may be difficult for an ill or injured person to judge the merits of alternative market offers of medical care. The health-care system diagnoses and treats people with illnesses or ailments. People decide that they need advice or treatment when they discern symptoms that suggest to them that they require medical care. At the same time, people may take their health for granted until indications appear that health care is required. When they are ill, people may not know how to identify the reason why they are ill, and hence they seek medical advice. They also may not know the most effective treatment for their medical problem, so that they must rely on the advice of the providers of medical services. The asymmetric information that is present in these circumstances introduces the possibility of opportunistic behavior, or even deception or fraud by medical practitioners. People may be offered treatment that is ineffective or detrimental rather than beneficial to their health. Because of asymmetric information and possibilities of extortion, or deception and fraud, health care is regulated by government. Regulation takes the form of certification of who is permitted to provide medical treatment, and certification of the effectiveness of drugs and medicines. There

is also self-regulation by medical practitioners themselves, through professional associations.

Regulation is made complicated by medical treatment often being an inexact science. Information may not be asymmetric with the medical practitioner knowing and the patient not knowing. Rather, the medical practitioner may also not know the reason for the patient's medical problem. Particular symptoms can be consistent with many different ailments. A sore throat is, for example, consistent with a multitude of different medical problems that call for different treatments. Mistakes can be made in diagnosis and in laboratory testing. The problem in regulation and self-regulation is to distinguish reasonable error from incompetence and negligence.

The problem of containing health costs

The special nature of health care makes cost containment difficult and can lead to cost escalation over time. Medical research produces new medicines, new machines, and new procedures that require costly investments. Over time, the new costly procedures become commonplace and more familiar to medical practitioners, and new medical equipment is introduced into hospitals and clinics. The population that benefits from the new procedures and new equipment expands, and medical costs increase correspondingly. Medical practitioners' familiarization with, and standardization of, new techniques allows new procedures to be used, for example, on elderly people and on babies, or even fetuses, who were previously regarded as too high-risk for the procedures. As the range of the population to which the new procedures can be applied increases, so do health-care costs. Attempts to contain costs by limiting the use of new procedures or by limiting access to new medicines encounter ethical objections.

There are also impediments to containing the costs of the health-administration bureaucracy. Attempts at reducing administrative expenses of providing health care can be deflected to reduced care for patients. When proposals for budget cuts for health care are made, the cost reductions can be presented as taking away life-preserving medications from children rather than reducing bureaucratic salaries.

Medical practitioners purchase insurance themselves against the financial consequences of their mistakes. Health-care costs increase because of legal claims of negligence and high insurance costs for medical practitioners.

Demographic changes in the population increase health-care costs. When people live longer and elderly people make up a larger part of the population, the share of health costs in national income increases. Economic and moral dilemmas of health care and health costs tend in particular to arise toward the end of life. A large part of lifetime health costs tends to be incurred in the last months of life. Denying the chronically and incurably ill the last months of their life could substantially reduce health-care costs. Some societies allow euthanasia when suffering has become intolerable by reasonable conditions of what a person might be expected to have to endure. There are evident ethical considerations because of the sanctity of life.

Do increased expenses indicate increased benefits?

Increased spending does not always imply increased benefits. Benefits in general increase with spending when people make personal informed expenditure decisions in markets: when in such circumstances we voluntarily spend more, we generally receive more. In the case of health care, asymmetric information can make unclear what we are buying.

Studies have investigated whether greater spending on health care, through additional medical procedures (not higher salaries or incomes of medical practitioners), increase the quality of health care. The conclusion is that increased spending does not necessarily improve the quality of health care. The following summary is by David Cutler (2000, p. 52):

> Medicare spending (publicly financed spending for elderly retired persons in the U.S.) . . . varies by a factor of two between different regions of the country (the U.S.), with the gap typically associated with differential use of very expensive procedures. But people appear no healthier in regions that spend more compared to regions that spend less. . . .
>
> International comparisons reach the same conclusion. Patients who live closer to a high-tech hospital are more likely to receive high-tech health care than are patients who live farther away from such a hospital, and yet outcomes for the two groups of patients are relatively similar. . . .
>
> [D]irect examinations comparing when treatments are provided with clinical guidelines for when they are appropriate indicate that up to one-third of the use of many common procedures is either inappropriate or of equivocal value. . . .
>
> In other circumstances, particularly outpatient use of prescription drugs, many people receive too little care.

10.1.3 The market for health insurance

In order to allow a separation between medical treatment and the immediacy of market transactions, health care usually involves the purchase of health insurance. With insurance, monetary considerations of a market are not primary when health care is required. Sick and injured people do not have to worry about whether they can afford treatment, and the health-care system that supplies medical treatment can focus on providing the necessary care rather than waiting before treatment is given to ensure that people needing attention have the means to pay. Insurance also spreads risk by providing protection against large unforeseen medical expenses.

Private insurance markets may not provide the means for individuals to protect themselves against the costs of adverse health for the reasons for failure of private insurance that we noted in Chapter 5.

Verification

Some medical ailments are difficult to verify (e.g., a backache or hallucinations). There are recorded cases of people who are hypochondriacs, and of people who compulsively have a need to undergo surgery. These people artificially increase the costs imposed on health-insurance companies. However, the verification problem

seems to be sufficiently minor not to provide a cause for concern that private markets for health insurance might collapse.

Moral hazard

Moral hazard affects health insurance, if health insurance changes personal behavior so that insured people to take more health-related risks. For example, there is a moral-hazard effect if health insurance increases the likelihood that a skier will attempt a particularly dangerous downhill run. Similarly, moral hazard is present when, because of health insurance, drivers of automobiles increase the speed at which they attempt to maneuver around sharp curves. The consequences of moral hazard for health-care costs appear to be small. Other than perhaps professional stunt men and stunt women, people do not normally increase their exposure to injury or illness because they have health insurance.

Adverse selection

The more important problem for health-insurance markets is adverse selection. Adverse selection occurs in markets for health insurance because of asymmetric information about personal health. People who know in advance that they have a higher than average likelihood of requiring medical care have a greater incentive to seek insurance. Such people systematically impose costs on others who know that they have a lower than average likelihood of requiring medical care. The people who expect to be healthier than average wish to avoid being in the same insurance group as the people who expect to be in need of medical care. The people who believe that their health will be good prefer to form an insurance pool with people in their own low-risk category, or if that is not possible they may prefer self-insurance (i.e., no health insurance).

For example, individuals with life-styles that increase the probability of becoming infected with HIV or hepatitis know that they face higher risks of future bad health than the population at large. The people whose life-styles place them at lower risk will not wish to be in the same insurance group with people who, because of their life-styles, have systematically higher probabilities of becoming ill with these diseases.

Adverse selection can be avoided by making private health insurance compulsory and by government providing health insurance as an entitlement to the entire population. Low-risk people are then unable to select themselves out of the insurance pool containing high-risk persons. Low-risk people then systematically subsidize health costs of high-risk people.

The scope for adverse selection increased when in the year 2000 a near-complete mapping of the human genetic structure was completed. Information about the human genome can allow predictions of future personal health. The purpose of insurance is to pool *risk* due to events that affect people randomly. With genetic dispositions known, randomness is eliminated for many health problems. People can have themselves tested for genetic predispositions. If the results indicate the likelihood of good health, they will make the information known to private health

insurance companies, and they will seek lower health insurance premiums because of their lower health risk. Or they will seek to form insurance groups together with people who have similar low genetically predetermined probabilities of need for particular types of health care. An insurance company can infer that people who do not make the results of their personal tests public have reason to keep the results to themselves because of revealed genetic predisposition to high future health-care costs. Private insurance companies would then not offer to insure people who do not disclose their genetic health predisposition. Availability of information about personal genetic characteristics thus limits the scope of private insurance markets.

A means of overcoming the problem of adverse selection is personal discrimination in health insurance payments. High-risk people pay more or are grouped in insurance pools with other people with similar high risk. Private health insurers can screen applicants for insurance according to life-style, prior health records, age, gender, and genetic information, and set personal insurance payments accordingly. In the case of automobile insurance, discrimination in insurance costs is legal and takes place based on age and safe driving records. Injustice in this case occurs when discrimination in costs of insurance does *not* take place so that cautious and reckless drivers pay the same for insurance. Should people with a higher likelihood of requiring health care similarly be required to pay more for health insurance?

Discrimination in health insurance sometimes takes place against women, who, independently of medical expenses associated with pregnancy and childbirth, have systematically higher lifetime health costs than men. Discrimination also sometimes takes place against the elderly, whose medical expenses in general exceed the average of the population. Reckless drivers have a choice not to be reckless, but people do not choose their genetic predispositions to become ill, for example, with a disease such as diabetes. Nor do the old choose to become old and more prone to diseases of advanced age. Yet discrimination in insurance payments among people with different risks may be the only way to prevent the collapse of a private insurance market due to adverse selection.

10.1.4 Health care as social insurance

We have been considering health care and health insurance provided through markets. An alternative to markets is the provision of publicly financed health care as an entitlement of social insurance. We observed in Chapter 2 that public finance of public goods does not imply the need for government to be responsible for supply. Private medical practitioners and private hospitals can supply health care, which can be publicly financed as an entitlement of social insurance. Health-care facilities can be privately or publicly owned. Whether supply is private or through public ownership, publicly financed free health care protects people unable to pay for adequate care in private markets.

When health care is free, access to medical treatment usually involves queuing and waiting to receive treatment. Medical treatment also tends to be uniform. Higher-income or wealthier people, who wish to avoid the queues and waiting

time, often seek market alternatives where treatment is more immediate and more personalized and of better quality than the uniform health care provided as an entitlement of social insurance. When people seek medical care through the private market, free health care is a form of income redistribution, since some people pay the taxes that finance public health care but choose to forgo the availability of free tax-financed medical care. That is, we can have an instance of the case that we considered in Chapter 5 where different preferences can lead people with the same incomes to accept or reject a free entitlement. More usually, income differences and ability to pay may underlie the decision to forgo a free entitlement.

10.1.5 Health and markets

We now leave government and return to the private market for health insurance and health care. Market alternatives can take different forms, depending on whether the insurer and the health provider are the same private entity or are different private entities.

When different private firms provide health insurance and health care separately, the providers of health care and the patient know that the insurance company is obliged to pay for costs of treatment. The effective cost to the physician or hospital and the cost to the patient of additional procedures or medicines is therefore zero. In that case, the insurance company is exposed to the risk of excessive health outlays because the true marginal cost is not zero. To avoid excessive costs, the insurance company in general issues directives about how much can be charged for different procedures and which medications can be prescribed.

In setting guidelines for physician behavior and patient treatment, the private insurance company is attempting to solve a principal-agent problem. If monitoring by the insurance company is to take place and directives are to be set to control costs, the insurance company might wish to address the principal-agent problem by being the health-care provider, employing the physician, and owning the hospital.

When the insurance company is the health-care provider, another type of incentive problem arises. To maximize profits, the combined private health-insurance and health-care company (HMO, or health management organization) has an incentive to provide minimal service. The public then relies on competition among health management organizations to provide health care that is not focused on maximal profits through cost containment. Imperfect information by the public can make personal evaluation of comparative offers of health care difficult. A patient is told only what treatments and medications are permitted and may not know about alternatives disallowed because of cost-containment measures.

The alternatives are either that the private insurance company and the private health provider are one and the same or are separate. Whichever is the case, adverse incentives are present. If the insurance provider and the health-care provider are separate commercial entities, the insurance company confronts problems of cost containment because the people making the decisions about health-care expenses are not the people paying the costs. A joint insurance health-care provider

can specify allowable treatments and has an incentive to limit allowable procedures and medications. Yet these are the alternatives: either insurance and health care are provided separately, or they are provided by one private firm.

Responses to adverse selection by private insurance providers

Private health-insurance providers take measures to attempt to counter adverse selection. To deal with the adverse selection problem, a private insurance provider seeks to keep high-risk people out of the private company's insured population. Personal risk may be known through past health records or personal behavior, or risk can be judged by broad indicators, most prominently age. Or rather than being excluded, high-risk people can be confronted with higher insurance payments. Indirect methods can also be used to counter adverse selection. Because families with children are better health risks than older populations, the health management organization can choose to have pediatricians on hand but few doctors specializing in geriatric medicine. Gatekeeper general practitioners can also be instructed to be sparing in referrals to specialist doctors. These approaches to solving the adverse selection problem contain health costs and can prevent the collapse of private health-insurance markets due to adverse selection. The private market then, however, fails to provide adequate health care for the entire population.

10.1.6 Universal health coverage through markets

A private market for health insurance can leave people without health coverage. In the United States, for example, at the beginning of the twenty-first century, one in six people in the population did not have health insurance. What is to be done about the uninsured, and the uninsurable?

We can look at an attempt in the United States to introduce nationwide universal health insurance through private provision of health care by the Clinton administration in the 1990s. The attempt failed. Universal compulsory health insurance would have involved government in the provision of health care in specifying payments to health-care providers. Physicians and other medical practitioners would have lost income from the regulation by government. Medical practitioners made past personal investments in education based on the anticipation of earning market-determined incomes, and they could claim that government regulation of their incomes was equivalent to retroactive taxation. There was no offer to provide compensation for the retroactive taxation. The government would also need to become involved in the pharmaceutical market. Containing health-care costs requires designating permissible medicines and setting maximum prices at which pharmaceutical companies are permitted to sell their products. A consequence however is that pharmaceutical companies face reduced incentives to develop new medications. At the same time, the regulation of the pharmaceutical industry imposes financial losses on people who owned stock in pharmaceutical companies because lower profits (or the expectation of lower profits) depress stock prices. Owners of stock in pharmaceutical companies would not be compensated for these

losses. The owners of stock in pharmaceutical companies are not necessarily the wealthier people in society who can "afford the loss." People own stock in pharmaceutical companies directly, or indirectly through ownership of mutual funds or through personal retirement savings programs.

Compulsory universal health coverage redistributes income to people who cannot afford private health insurance or who do not have health coverage provided by their employer (see Supplement 10A). Universal and compulsory health insurance requires a source of finance. If some people cannot pay for their coverage, others pay for them.

Mandatory universal health coverage also introduces personal loss through the restricted choice of quality of health care. The reduced choice of quality falls on those people who lack the financial means to seek health care outside of the allowable procedures and treatments covered by the universal mandatory insurance.

A broad coalition can thus be expected to oppose government-mandated universal compulsory health insurance. The people who benefit from universal compulsory health coverage are those who are too poor to afford health insurance in a private market and would be provided with free or highly subsidized medical services under universal coverage.[2] The consent of a majority of voters, or of representatives of the voters, is required to introduce a mandatory universal program of health care. In the Unites States in the 1990s, the majority was not to be found, despite the support of the prestige and political patronage of the office of the president.

Private competition with universal compulsory coverage

Let us suppose that universal mandatory health insurance is nonetheless introduced into a private market for health care. The government then determines a list of health-care services and medications that are the entitlement of each citizen, sets allowable prices and treatments, and allows market competition among private providers in offering the designated health-care services. The health-care providers cannot refuse insurance to people with chronic illnesses, old people, or people with life-styles that have higher than average expected health costs; if they did, there would not be the designated universal coverage. Elements of a market have now become minimal. Insurance companies do not decide on the services that are covered by insurance and do not decide who their clients are because they are obliged to accept everybody who applies. Health-care providers do not decide on the price for coverage because insurance payments are regulated. For the population, participation is compulsory, and payment is through the compulsory regulated health-insurance payments.

[2] Self-interest may not the sole consideration in determining a person's position on the desirability of government-mandated universal health coverage. People may support a basic entitlement to health care through universal coverage as a matter of principle. People without health insurance are joined in their support for universal health coverage by others whose support derives not from self-interest but from conceptions of basic entitlements and social justice.

Even where participation in health insurance is compulsory and coverage is in principle universal, there is nonetheless no assurance that everyone will take advantage of their entitlements. Evidence shows that, with universal free-access health care available, lower-income people can be less aware of their health needs and be less inclined to seek medical advice.[3]

When health insurance is compulsory, health-insurance companies and health-care providers can make a case that, because they are compelled to accept all applicants for health care, government has a responsibility to finance any losses that might arise. The government is then assigned the role of financer of last resort. In these circumstances, health-insurance companies and health-care providers confront a soft-budget constraint (see Section 1.3). That is, they know in advance that any losses will be covered, which reduces incentives to contain costs. Incentives are present for opportunistic cost enhancement to take place through increased spending on administrative salaries. If government attempts to enforce cost containment by refusing to finance the deficits of the providers, the providers can initiate a health-care crisis by not providing treatment. The objective of government in containing medical expenses and not subsidizing health providers is then undermined. As long as the circumstances continue, the inefficiency of the soft budget can be expected to continue as well.

10.1.7 Socialized medicine

When government socializes health insurance and health care, people receive tax-financed free treatment directly from the government. With the health-care system run by government, medical-care providers become government employees. The government is financer of last resort, now directly through the government budget. Again there is a soft budget constraint, in the face of a social value of saving life and returning people to good health. The soft budget becomes a particularly difficult problem if health care becomes politicized because of the direct responsibility of government to provide health care. All failures of the health-care system become directly attributable to government, and politicians become directly involved in health care. The administration of health-care spending becomes part of the government bureaucracy; spending on health care consequently becomes subject to the incentives of government bureaucracy. The soft budget of health-care spending is compounded by the soft budget of government bureaucracy.

Attempts to contain costs of socialized medicine in general result in either low-quality health care or long waiting times for treatment that may be beneficial if the treatment is received in time. The objective of socialized medicine is to provide equal health care for everybody, and in principle an accompanying private market should be unnecessary. Long waiting times for consultations and treatment, and impersonal medical attention, can, however, lead people to forgo free publicly financed socialized medicine in favor of the private market. There are then two levels of medical care: an inferior level of care for those who use government

[3] See Katz and Hofer (1994).

health care and a superior level of care for those people who can afford to or are willing to pay for private treatment.

Socialized medicine has adverse incentives if the medical practitioners who are employed in the government system also have private practices. In that case, low quality and long waiting times for free treatment within the socialized system of health care can be an opportunistic response of the medical practitioners, who gain from the demand that is created for the better quality and more immediate attention provided through their own parallel private practices. If patients do not seek treatment in parallel private practices, there are incentives for corruption in the bureaucracy that administers the socialized government health system, to provide queue-jumping possibilities when waiting for treatment. Personal contacts in the administering bureaucracy can also help in reducing waiting times.

10.1.8 Conclusions

In this section we have described roles of markets and governments in providing health care and health insurance. Expense is not the primary concern when a person is trying to regain good health. Yet health care involves resources and money. A contradiction thus arises between the principle of doing everything possible to save a life or return people to good health and the limitations of available resources.

A case against personal supply of health care through markets is based on the principle that all people have a basic entitlement to health care. The private market also has limitations in providing health coverage because of adverse selection, and because of exclusion of some people who cannot afford health insurance. The private market has adverse incentives that differ depending on whether the insurance company and the health-care provider are one and the same entity.

Attempting to enforce universal private insurance coverage introduces redistributional and incentive problems, including adverse selection and also soft budgets because government (or rather the taxpayer) becomes financer of last resort.

Cost-containment problems are intrinsically present in health-care provision because of the value placed on saving and sustaining life. Costs are also affected by problems of asymmetric information, with patients relying on the recommendations of medical practitioners. The additional disincentive for cost containment through government as financer of last resort to ensure universal health insurance coverage adds to these problems.

In some countries, health care is socialized and provided directly by government-paid medical practitioners and administrative staff as a free tax-financed entitlement. The government bureaucracy that administers health care spending adds a further dimension to the soft budget of spending on health care. Attempts to contain costs in socialized medicine can result in low-quality health care or in extended waiting times for treatment. The long waiting times can be opportunistically manipulated through offers of immediate private medical attention. Opportunities for corruption also arise through benefits to patients from avoiding the long waiting times that tend to be characteristic of socialized medicine.

Yet reliance on private markets alone leaves some people without health insurance. Private insurance companies attempt to solve adverse selection problems by denying health insurance to people with high expected health costs. The noninsured may in particular be those people who will tend to need health care the most. Government can attempt to target the vulnerable groups through selective publicly financed health insurance. Nonetheless people fall though the government's intended safety net.

Identifying socially desirable health-care provision therefore presents dilemmas. The failures of private market provision, particularly exclusion of parts of the population, point in the direction of forgoing markets and turning to government to take responsibility for ensuring universal health-care coverage. The introduction of government into health insurance and health care leads to soft-budget problems because of the compounded difficulty of containing health-care costs when the public finance of government is the source of finance of last resort.

Societies make different decisions about how to provide health care. Some societies choose to rely principally on the voluntary decisions of the market, while others choose considerable involvement of government. Where health care is provided through government, the criticisms are about inefficiencies, waiting times and quality of treatment, and insufficient allowance for individual choice; low salaries when health care is part of government bureaucracy also provide incentives for medical practitioners to emigrate. Where health care is through private markets, the criticisms are about social injustices because of exclusion from health insurance and sometimes unnecessary procedures that increase costs but do not benefit patients. The dilemmas of the choice between market and government are perhaps nowhere so revealed as in health insurance and health care.

References and related literature

On health-care systems in different locations, see Roemer (1991) and Hsiao (1992). On uncertainty and health care, see Arrow (1963) and Cutler and Reber (1998). On the demand for health, see Grossman (1972). On public and private provision of health services, see Culyer and Jönsson (1988). On managed health care and competition, see van de Ven (1995), Newhouse (1996), and Encinosa and Sappington (1997). On old age and publicly financed medical care, see Feldstein (1999). On mental health, see Machnes (1996). On spending and the quality of health care, see Weisbrod (1991), Cutler (2000), and Skinner and Wennberg (2000). On limitations that prevent effective universal coverage, see Katz and Hofer (1994). On the relation between government-administered health care and markets, see Olivella (2002). Many colleges and universities offer courses or complete programs on the economics of health care. The *Journal of Health Economics*, *Health Affairs*, *Health Care Financing Review*, and other journals provide specialized investigations of health care issues.

Arrow, K. J., 1963. Uncertainty and the welfare economics of medical care. *American Economic Review* 53, 941–69.

Culyer, A. J. and B. Jönsson, 1988. *Public and Private Health Services: Complementarities and Conflicts*. Blackwell, Oxford.

Cutler, D. M., 2000. Walking the tightrope of medicare reform. *Journal of Economic Perspectives* 14, 45–56.

Cutler, D. M. and S. Reber, 1998. Paying for health insurance: The trade-off between competition and adverse selection. *Quarterly Journal of Economics* 113, 433–66.

Encinosa, W. E. and D. E. M. Sappington, 1997. Competition among health maintenance organizations. *Journal of Economics and Management Strategy* 6, 129–50.

Feldstein, M., 1999. Prefunding Medicare. *American Economic Review* 89, 222–7.

Grossman, M., 1972. On the concept of health capital and the demand for health. *Journal of Political Economy* 80, 223–55.

Hsiao, W. C., 1992. Comparing health care systems: What nations can learn from one another. *Journal of Health Politics, Policy, and Law* 17, 613–36.

Katz, S. and T. Hofer, 1994. Socio-economic disparities in preventive care persist despite universal coverage. *Journal of the American Medical Association* 27, 530–4.

Machnes, Y., 1996. Incentives and production of mental health services. *European Journal of Political Economy* 12, 459–66.

Newhouse, J. P., 1996. Reimbursing health plans and health providers: Efficiency in production versus selection. *Journal of Economic Literature,* 34, 1236–63.

Olivella, P., 2002. Shifting public-health-sector waiting lists to the private sector. *European Journal of Political Economy* 19, 103–132.

Roemer, M. I., 1991. *National Health Systems of the World, volume 1, The Countries*. Oxford University Press, New York.

Skinner, J. and J. Wennberg, 2000. How much is enough? Efficiency and Medicare spending in the last six months of life. In D. Cutler (ed.), *The Changing Hospital Industry*. University of Chicago Press, Chicago, 169–93.

van de Ven, M., 1995. Regulated competition in health care: With or without a global budget. *European Economic Review* 39, 786–94.

Weisbrod, B. A., 1991. The health care quadrilemma: An essay on technological change, quality of care, and cost containment. *Journal of Economic Literature* 29, 523–52.

Questions for discussion

1. Health insurance and health care involve considerations regarding public goods, externalities, prohibition of markets, social justice and entitlements, user prices, and natural monopoly raised in previous chapters. Briefly list how the considerations are involved.
2. What are the special characteristics of personal demand for health care? How do these characteristics influence markets for health care (as contrasted with markets for health insurance)? How do the special characteristics of health care make cost containment difficult?
3. Evidence shows that increased spending on health care does not ensure improved health care. Why do you believe that this is so?
4. How do the reasons for problems with private insurance markets (adverse selection, moral hazard, inability to verify the circumstances against which insurance is sought) affect the private market for health insurance?
5. How does the mapping of the human genome affect health insurance?
6. Because women have higher health costs on average than men, health insurance payments are sometimes higher for women. Do you believe this is justified?
7. What are the advantages and disadvantages of "health management organizations" compared to health-care providers and health-insurance companies as separate providers?

8. In Chapter 2, we concluded that the legal obligation to pay a tax does not imply actual payment, and that actual payments are determined by the conditions of supply and demand in a market. How does this conclusion affect the outcome of a legal requirement that employers pay for the health insurance of employees? (See also Supplement 10A.)
9. In the place where you live or study, does the government provide special health insurance assistance for people for who cannot afford health insurance and for elderly people? What are the eligibility characteristics for entitlement to government benefits? Are the benefits justified for the elderly?
10. A proposal for containing health costs of people who are provided with publicly financed health insurance can be to allow market competition. Government can pay the health insurance costs, and individuals can choose their private health provider. Why might such a proposal not be successful? (See Supplement 10B.)
11. Why might you expect people who do not have health insurance to be either very poor or very rich? Would you make participation in health insurance compulsory for the poor as well as the rich? What happens if the poor cannot pay? Should the government (i.e., taxpayers) pay for them?
12. Would you except opposition to a compulsory universal insurance scheme based on private insurance and private health care? If such a scheme were introduced, would you expect the scheme to solve problems of cost escalation?
13. Some countries have socialized medicine where equal access for everybody is directly provided through employees of government to publicly financed medical care. Are you in favor of this solution for ensuring that everybody receives medical care? Explain
14. In a country that provides socialized medical care, the government is the primary employer of medical practitioners and nursing staff, and salaries are in general lower than when health care is provided through private markets. The costs of medical school in a country with socialized medicine also tend to be lower, to match the lower salaries available locally after graduation. What do you expect to be the consequences when emigration can freely take place? (See Supplement 10C.)
15. Trade-offs are required between different objectives when choosing a system of health insurance and health care. Given that the trade-offs are necessary, what do you believe is the ideal means of providing health insurance and health care?
16. On the scale between complete reliance on private markets and complete government control, how are personal health care and health insurance provided where you live or study? Do you believe that there should be more government involvement or less?
17. What proportion of national income is spent on health in the location where you live or study? How has this proportion changed over time?
18. Compare the proportion of national income spent on health care in your location with other countries that have different systems of health insurance and health care. What do you believe are the reasons for the differences?

10.2 Education

As is the case with health care, education can be privately provided. In this section we consider the roles of public finance and public policy in education.

10.2.1 From private education to government schools

Historically, education of children was a privately financed luxury of wealthier families or nobility. In societies without a middle class population, people are either quite rich or extremely poor. The rich can afford to pay for education as a private good, while reliance on private finance often leaves children of the poor without educational opportunities.[1]

At levels of higher education, education was not privately and individually provided within the family but was a collective or public good. Early universities in Europe catered to students who had the necessary background (literacy in Latin), which required the prior privileged benefit of private education by home tutors.

Demand for literacy and education became more widespread with the end of feudal society, and education was offered outside of the home. The term "public school" in England refers to these original external schools. The schools were "public" in providing education outside of the home, but they were (and remain) private schools. Only wealthy families could afford to send their children to the public schools. The public schools were also "boarding schools" where children lived as well as learned. The boarding schools shaped preferences and values through childhood and adolescence, and beyond.

In a next step, government involvement made education a publicly financed *entitlement* for children, independently of the willingness or ability of parents to pay. Schooling became compulsory up to designated ages. Correspondingly, child labor was made illegal. Government provided schools and teachers and determined the subject matter of studies.

Government thus used its authority to make schooling compulsory in publicly financed schools and government determined the subject matter or curriculum of children's education. The extensive involvement of government in education is related to the reasons we have considered for responsibilities of government.

Collective benefits

Because efficient class size is more than one student in a class, education is a public good with the characteristics of collective benefit and shared costs. When increases in class size begin to decrease educational effectiveness, education becomes a congestible public good. Education as public good can be publicly financed with free access, or it can be provided through a market with private financing and user prices. As we have observed, the first schools were private and provided education under the user-pays principle.

User prices can, however, exclude children from education because of inability or unwillingness of parents to pay. That is, a case against the user prices is, as we saw in Chapter 8, inefficient exclusion from collective benefits.

[1] In many cases, poorer families also have educated their children, in particular when tradition and social norms placed education of children at the forefront of family obligations.

Still, when public goods are congestible and facilities can be readily replicated, private provision and user prices can approximate efficiency. For example, just as movie theatres are privately owned and operated on a user-pays basis, so schools can be private and financed through user payments. This is after all historically how public schools began.

Because schooling can be privately provided through exclusion and the private financing of user prices, the public good nature of education does not appear to be the reason why education is publicly financed and provided in government schools. When supply is private, children from poorer families can be given access to education by government providing parents with vouchers that allow public finance for private school fees.[2]

Natural and enforced monopoly

In looking for reasons for government involvement in children's schooling, we can consider whether schools are natural monopolies.[3] Education is a local natural monopoly when the objective is that children attend the school closest to their house. Neighborhood schools can be positioned to satisfy requirements that children live in close proximity to school rather than travel extended distances to and from school every day. If schooling is a natural monopoly because of a least-distance requirement, government can solve the natural-monopoly problem by providing publicly financed free-access education for each child in a government school in proximity to a child's home.

An alternative to a government-owned natural monopoly is a private provider determined through a process of competitive bidding. The government could own the school and could pay the private provider, who has successfully bid to provide education in the school facility.[4]

To ensure that educational standards are satisfied, government can regulate a private natural-monopoly supplier of children's schooling. However, there are various problems in regulating educational quality.

Grade inflation can be a problem. The private operator could give inflated grades to students in an attempt to give the impression of high educational achievement. To address problems of grade inflation, examinations could be externally set in common for all schools.

Moral hazard is another problem. If the effort of the private educational provider is not observable, poor student performance can be the consequence of inadequate teaching or inadequacies of pupils. Moral hazard through unobservable teaching effort introduces a principal-agent problem between government and the natural-monopoly private provider of education. Parents might tend to blame the government for poor educational results from the private-education

[2] We considered educational vouchers that allow public finance to be combined with competitive private supply in Chapter 5.

[3] Recall that natural monopoly arises when least-cost supply is by a single provider. See Chapter 8.

[4] We considered such competitive bidding procedures for supply under conditions of natural monopoly in Chapter 8.

contractor. In an attempt to overcome the moral hazard that underlies the principal-agent problem, government might itself wish to be the provider of education. Government then monitors the behavior of its own employees (administrators, teachers, janitors) in its schools.

Also, government administrators do not have an incentive to skimp in providing resources, as might a private contractor who administers a natural-monopoly school for private profit. On the contrary, we have seen that a government bureaucracy has an incentive to overspend. There is consequently also a principal-agent problem when government owns the school and directly pays the administrators and teachers. The school bureaucracy and teachers' organizations can "capture" education policy. A bureaucracy that administers a school system might also resist change that would increase competition by allowing students access to schools outside of its control. Competition would have adverse effects on administering bureaucracy's rents.[5] The school system's bureaucracy may favor the idea that schools should be natural monopolies, and that children ought to have no choice but to attend the designated natural-monopoly school to which they are assigned.

In small towns, the school is indeed often a natural monopoly. However, in larger towns and cities, populations of children are often sufficiently large to allow choice among alternative schools within reasonable bounds of travel time. Schools preassigned without choice when choice is feasible are not natural monopolies, but rather are administratively enforced monopolies. The enforcement of monopoly takes place through the denial of choice through insistence by government (or the administration of the school district) that children are obliged to attend the school to which they have been preassigned.

Externalities and education

When we introduced the idea of externalities in Chapter 4, we used education as an example of a beneficial "externality." We observed that social benefits arise from more educated fellow citizens when we interact in our professional and social lives with people who are more knowledgeable and educated. Knowledge and education are also foundations for economic growth through externalities over time; better teachers make better students, who make better teachers, and so on, which expands the knowledge base of society.

These social benefits are the basis of a justification for government subsidies to education or for providing free publicly financed education. At the same time, there are circumstances where education has negative externalities (i.e., where the private benefits from education exceed the social benefits). Negative externalities are present when education screens people for employment but provides no benefits through enhanced understanding or personal productiveness. That is, negative externalities arise when people study only to obtain the certification that

[5] The rents are the surplus benefit that would not be available if the bureaucracy were to confront competition in administering and providing education.

they have studied. Education is then a form of rent seeking.[6] The rents are available from the privileged employment obtained by graduates of good schools, but the process of study itself is socially unproductive with no long-lasting benefits. The social return from education is then low, but the private returns are high, and resources are used in socially unproductive schooling.

Government paternalism

Public policy with regard to schooling is paternalistic because preferences of parents who do wish to educate their children are overridden by the requirement of compulsory schooling. Parents may be unwilling or unable to make investments in the education of their children. They may not have the financial means to send their children to school, or they may prefer to send children to work to add to family income. A public policy of compulsory schooling paternalistically takes over the education decision from the child's parents.

A paternalistic case for compulsory education differs from the case for compulsory education based on social benefits of a more educated society. The paternalistic case for compulsory education is that every child has an entitlement to an education because of the personal and private benefits to the children. The compulsory education is free, to enable children to benefit from their entitlement. Parents have no choice but to comply with the legal obligation of sending their children to school and thereby to allow the children to benefit from the entitlement to education.

Some children may find school boring and onerous and may attempt to convince parents that school is a waste of time. Compulsory education places the decision of the child to go to school outside the domain of argument with the parent. Schooling becomes a legal obligation subject to truancy laws.

Moral hazard and social insurance

Paternalistic provision of education as a private entitlement also solves a moral-hazard problem associated with social insurance. By providing education as an entitlement, society hopes to make people self-supporting from their own productive activities and employment, and not dependent on future government income transfers for existence. If education were a private decision, moral hazard would arise when some children and teenagers chose not to study (or their parents might make this decision for them) with the awareness that the social insurance contract of the society will provide future protection from low incomes.

Why government schools?

Collective benefits, natural monopoly, externalities, paternalism, entitlements, and social insurance all enter into an answer to the question why there are government schools. In particular, with an educational entitlement part of the implicit social

[6] See Chapter 6.

insurance contract, direct control over education through government schools is a way of guaranteeing children's entitlements. The case for natural monopoly through government schools is then not based on proximity of children to schools, but principally on paternalistic and regulatory concerns. For example, there might be a concern that parents could pay private owners of schools to record their children as present in school when the children are being sent to work. Or there might be a fear that private owners of schools will abuse children. Parents might be viewed as inadequately informed about school quality, or as simply incapable of making competent education decisions for their children from among choices available in private markets. Or there might be a fear that unscrupulous and undocumented advertising about educational achievements will influence parents' decisions about their children's schooling.

10.2.2 Determinants of the quality of education

Different schools provide different qualities of education. Resources and class size can be expected to affect the quality of education. Also, however, interaction with fellow students is based on established norms of behavior, including attitudes about study and the merits of academic success. In some school peer groups, personal achievements may be judged not in terms of learning, but in terms of popularity, personal appearance, and originality and flare in choice of clothing. In extreme cases, children in a neighborhood school may not know anybody who has achieved success in life as a result of studying.

The home environment and attitudes of parents also influence children's attitudes about study. Children from homes where education is valued and encouraged set the norms for good schools. Children in good schools then have an advantage over children in schools where the student population is disproportionately from homes where parents do not encourage success in life through study.

Social norms about how conflicts or disagreements are resolved can also differ among schools. Conflicts and disagreements among students can be resolved through compromise and flexibility, or through violence accompanied by unforgiving memories.

Good schools have better administrators and better-qualified and motivated teachers. Teachers in good schools in general enjoy teaching more because they teach better-motivated students. The teachers are less prone to the fatigue and indifference that can arise from the repetition over the years of more or less the same basic material.[7]

In good schools, teachers also benefit from interaction with more concerned parents. When teachers in good schools wish to discuss students' performance or behavior, parents are interested in their children's scholastic performance and behavior at school.

[7] The enthusiasm of good students to learn and understand overcomes the tendencies for fatigue and indifference of teachers.

Good schools can be government schools. Often, however, good schools are private schools. Because a child's friends and fellow students are important in determining motivation for educational achievement, parents may prefer to send their children to private schools where, for extra payment, the children can be with other children whose parents are also willing to pay money for a better education.[8]

Good schooling, and perhaps a reputation for educational achievement, is what a private school is selling. The reputation of a private school can have value in itself, through superior prospects for job placement after graduation. The reputation of the private school is more valuable when a student is a relatively poor academic performer. More significant than the grades on the student transcript may be the identification on the transcript indicating where the student studied. Attendance at the private school can provide personal connections that can be used for future professional advancement or for political careers.

Does additional spending necessarily improve quality of education?

Private schools may have more resources per child than government schools, but not necessarily. Additional resources do not necessarily improve the quality of education. Objective measures of inputs into education include the size of the education budget, the number of computers per child, the class size, and the formal qualifications of the teachers. While we expect the relation between educational quality and these variables to be positive, there are adverse influences on the quality of education that money alone cannot rectify. Increased salaries for an overstaffed school district administration or for inadequate and indifferent teachers increase spending, but do not improve the quality of schooling.[9] If students do not develop habits of study and learning, more money spent on schools may do little to improve student achievement.

While teachers can become apathetic and indifferent if they feel that society rewards them inadequately, more money may not overcome the problems of inadequate motivation of teachers. The motivation to teach may be overwhelmed by student norms of immediate gratification and little regard for longer-term benefits of study. Because of satisfaction from teaching in classrooms where norms encourage learning and respect for the teacher, good schools can often attract and keep good teachers while paying lower salaries than in government schools.

More money spent on education, therefore, does not necessarily result in increased quality of schooling. Rather, the relation between spending and quality of schooling can be negative, in particular because of the need to compensate teachers for teaching in bad schools.

[8] In the United States, teachers in government schools have disproportionately sent their children to private schools. In the late twentieth century, 10 percent of children in the United States attended private schools, but 22 percent of children of teachers attended private schools (D. Eric Schansberg, 1996, p. 82).

[9] In New York City, for example, the government schools at the end of the twentieth century had 10 times more employees per student and more than 60 times the number of administrators per student than Catholic schools (D. Eric Schansberg, 1996, p. 85).

10.2.3 Locational choice and education

The quality of schooling can be chosen by location. We expect competition through locational choice to improve the quality of schooling offered in government schools.

Locational choice is, however, limited by income. Good government schools are capitalized into the price of housing in a school district, as are bad government schools. People living in a district with bad schools may not be able to sell their homes and move to a district with good schools because of the difference between the price they receive for their house and the price they must pay for a house in the district with good schools. Similarly, differences in apartment or housing rentals (which reflect different prices of housing) are obstacles to locational choice. Additionally, people may have the option of moving, but they may not be prepared to accept the more expensive but inferior quality housing that they can afford in the district with the better schools. Because of zoning laws in the districts with good government schools, there may be no modest housing that lower-income people can afford. Locational choice is therefore not an automatic escape from bad-quality schools. When locational choice is the means of access to schools, education can be expected to be unequal. At the same time, locational decisions among school districts will have been made against the background of the unequal educational standards.

Changes in locational rules for school assignment

A response to locational inequality can be to change locational rules for school assignment. Children can be re-sorted within a school district, or school districts can be merged.

Re-sorting children among government schools through changes in locational rules redistributes income or wealth among homeowners. Because of the capitalization of the quality of schools into housing values, a cost is imposed on owners of houses where government schools were good, and a benefit is provided to homeowners where schools were inferior. A wealth transfer therefore takes place.

In response to the wealth transfer, we can expect counter-claims of social justice. Parents in school districts where schools were good can make the case that "I worked hard and paid a lot of money to buy a house in a neighborhood where government schools are good. Because of the change in locational criteria for school assignment, my child is no longer permitted to attend the local school, and the value of my house has fallen." Parents in a neighborhood or school district where schools were bad can make the case that "all children should receive equal educational opportunities, and our children deserve the same opportunities as children elsewhere."

Because homeowners in districts that had inferior schools gain and homeowners in districts that had good schools lose, re-sorting by changes in locational rules for assignment to schools is not justifiable by the criterion of Pareto efficiency. If

gainers have gained more than losers have lost, the gainers could in principle compensate the losers and still be better off.

However, the gainers may not be able to compensate the losers in practice. The benefits to the gainers will come in the future, through the higher incomes of children who were given improved educational opportunities.

We cannot expect the parents of the children whose educational opportunities have improved to be able to borrow against future increased incomes of their children to compensate voluntarily the parents of the children who have lost. Moral hazard problems keep the parents from receiving loans. Moreover, parents may not wish to take such loans because they also confront a moral hazard problem if they envisage their children repaying them.

Taxes could be imposed on the gainers to compensate the losers. The taxes would have to be imposed on lower-income people living in the areas that had bad schools, for transfer to higher income persons living in the areas that had good schools.

With neither voluntary compensation nor compensation through taxation feasible, a redistribution of wealth takes place. In Chapter 1 when we introduced Pareto efficiency as a justification for a change in public policy, we observed that efficiency can be interpreted as total benefits exceeding total losses without requiring actual compensation to ensure that no one loses.

Social justice based on social insurance can justify policies that equalize educational opportunities. In Chapter 5, we viewed educational opportunities as part of the entitlements of social insurance. Social insurance applies to a society. Determining eligibility for entitlements under social insurance requires defining the limits of the society. If the society extends beyond school districts, equalized educational opportunities through changes in locational criteria for school assignment have a social-insurance justification. The social contract that underlies social insurance includes insurance against the risk of having parents who could only provide inferior education if the ability or willingness to pay of parents were to determine children's educational opportunities.

As is the case when wealth transfers take place through capitalization, changes in wealth through housing prices affect only the people owning houses at the time of the announcement of change in public policy that merges school districts or makes choice of schools independent of the location of housing. After the change in policy, housing prices are de-linked from schools, and people who buy houses pay the new more-equal housing prices (because unequal educational opportunities are no longer capitalized in housing prices). The owners of houses in previous good-school areas lose when they sell, and the sellers of houses in previous bad-school areas realize their gains.

Changes in the quality of the schools

Attitudes toward study, the use of violence to settle disputes, the criteria for student popularity, attitudes toward teenage pregnancy, the topics of general conversation, the inclination to do homework, and students' extracurricular activities

are included in social norms. Because the social norms of the school environment can determine prospects for future success in life, parents who care about their children's futures may be sensitive to the norms in the schools that their children attend.

Parents can also be sensitive to the behavior of other parents in the schools that their children attend. Parents who contribute time to monitoring and improving school activities provide a public-good benefit to all children. Because the contribution of parents is a case of private provision of a public good, there can be a free-riding problem. The behavior of different parents determines the scope of the free-riding problem.

When children attend schools without regard for location of parents' housing, a question arises about what has happened to the quality of schools. Schools might have the average quality of the previous locationally sorted schools. However, changes in social norms can result in school quality that is not the average of previous qualities. Social norms affect behavior because of a feeling of being ill at ease by not following the norms. The social norm may be to study and do well academically, but the social norm may also be to ostracize and socially exclude those children who emphasize scholastic achievement. Therefore, social norms introduce dynamics that affect personal behavior, through the incentive not to deviate too much from what others are doing and how they behave.

When government schools provide a quality of education that some parents and children regard as inadequate, decisions may be made to leave government schools for private schools. Families switching to private schools in that case lose twice from the change in the rule for attending government schools. They lose when the values of their houses declined, and they lose again because they now pay for private education.[10]

10.2.4 Private schools and adverse selection

The presence of private schools introduces adverse selection into schooling. Adverse selection takes place when exit from government schools to private schools reduces the average quality of input of parents and adversely affects social norms of children who remain in government schools. Successive exit to private schools then continually reduces quality of government schools and induces additional exit. A classic adverse-selection response is taking place. Only children whose parents cannot afford to pay for private schools, or children whose parents are satisfied with inferior-quality education, in the end remain in government schools. The objective of equalizing educational opportunities by changing the rule for school attendance has then not been achieved because of adverse selection. Social integration that may have been the objective of public policy has also not been achieved.

[10] We investigated the response of forgoing the government entitlement of free-access education in Chapter 5.

Voting and political decisions on public spending

When children exit government schools through adverse selection, fewer voters benefit from government schools. If government schools no longer serve middle-income parents because these parents have moved their children to private schools, the median voter may not favor more than minimal spending on government schools. Voting and political decisions on public spending can then result in reduced public spending on government schools. Voting is another path of adverse selection. As more children exit government schools, public spending falls, and, to the extent that spending does affect quality, there is a further decline in quality. More children are then taken out of government schools, and public spending and quality decline further.

Neglect of government schools by the median voter or middle-income voters can be short sighted. We have previously observed that a motive for providing educational entitlements is to avoid future claims on social insurance by people who have had an inadequate education. Decreased present public spending on government schools can then result in the need for increased future taxation to finance income transfers to people who in their youth received an indequate education in public schools.

10.2.5 Education and income distribution

In Chapter 6, we noted that abilities are generally normally distributed among a population, but that the distribution of income and wealth are skewed. From behind a veil of ignorance, a person is more likely to emerge as high-ability and low-income than high-ability and high-income. When high-ability low-income children are denied equal access to educational opportunities with high-ability high-income persons, family income disparities are perpetuated, and social mobility does not take place.

Educational vouchers de-link quality of education from parents' ability or willingness to pay for private schools, or from the location of housing.[11] Sorting children among schools is then determined by a school's willingness to accept a child, and not by ability of parents to pay. With some schools better than others, there will be competition to attend the better schools. If admission to schools is according to academic merit, vouchers tend to result in sorting of students into better and inferior achievers. Vouchers then result in a meritocracy independent of family income. The meritocracy is based on personal educational achievement and replaces sorting among schools based on parents' abilities to afford payment for private schools or location in school districts with good or bad government schools based on household income or wealth.

[11] Access to equal educational opportunities requires that vouchers cover full or substantial parts of the fees at any school. At least in the short run, market competition facilitated by vouchers will result in excess demand for good schools and vacancies in bad schools. Under the market conditions, good schools might ask for school fees above the entitlement offered through the government vouchers. If the value of a voucher reflects a minimal entitlement, then the voucher system does not guarantee educational equality because not all parents may be able to afford additional payments.

If family background affects achievement, the sorting by scholastic achievement that takes place through vouchers may deny children from families where education is not valued the opportunity to learn at school from high-ability or high-motivation peers. Social segmentation then still occurs, and there is social immobility if children's scholastic achievements are correlated with those of their parents and if low-income parents have had low scholastic achievements. However, access to education no longer depends on parents' willingness or ability to pay. Through educational vouchers, good students from low-income households are provided with the benefits of an education that is consistent with their motivation and abilities.

Diversity in preferences

Some parents may have distinct preferences about the type of education they wish their children to receive. Government schools may not provide the education that these parents seek, and the parents may choose private education. Such parents need not be particularly wealthy. They might claim that it is an infringement on their liberties when they must pay taxes to finance government schools from which they do not benefit. Vouchers solve the problem of double-payment for children's schooling for these parents by combining market choice of nongovernment schools with publicly financed education.

While educational vouchers introduce free choice and competition into schooling, questions nonetheless arise about allowable educational preferences. What if, for example, some parents want their children to be taught that the earth is flat or that the sun revolves around the earth. Some parents could also wish their children to be taught that terror can be justified or that some people are superior by virtue of birth or belief? Publicly financed vouchers for private schools were validated by the United States Supreme Court in summer 2002 (in the case of *Zelman v. Simmons-Harris*, the Court ruled that the vouchers do not contradict the First Amendment to the U.S. Constitution). However, schools that participate in the voucher program cannot discriminate in accepting students based on ethnicity or religion and cannot teach hatred or demean the qualities or rights of anybody in society.

Property values and vouchers

A change in public policy that introduces educational vouchers to replace locational assignment to government schools has similar effects on property values as a public policy that integrates school districts. In both cases, after the change in public policy, the location of housing no longer determines the quality of schooling. Opposition to educational vouchers can be expected from administrators of government schools who oppose the competition introduced by school vouchers. At the same time, people (not just parents) who own houses that are valuable because of capitalized values of good schools have reason to oppose the introduction of school vouchers.

10.2.6 Private managers for government schools

A government school system can be administered by private managers. Private management of government schools is a means of implementing the bidding solution for natural monopolies that we considered in Chapter 8. Private managers can be asked to bid on costs and indicators of educational achievement, or private management companies can bid for contracts to manage school districts based on reputation in achieving cost reductions and quality improvement.

Private management of government schools facilitates change to vouchers and provides incentives consistent with competition when vouchers finance education. Vouchers expose government schools to competition with private schools in attracting students. In private schools, successful managers and owners of private schools are personally rewarded through the voucher system by additional payments from additional students. When salaries in an administrating bureaucracy are fixed by terms of government employment, the same personal financial rewards from attracting more students are not available in government schools. However, the administrating bureaucracy of government schools faces the risk that the government school system will contract due to competition with private schools, diminishing employment and perhaps incomes in the school bureaucracy as a result.[12] Therefore, the administering bureaucracy has an incentive to preempt the competition that vouchers introduce, in particular by playing on the uncertainties confronting parents when changes to vouchers are proposed. When private managers who can be readily hired and fired administer government schools, the opposition to change by an entrenched bureaucracy is not present.

10.2.7 Initial inequality and equal opportunity

Affirmative action is a public policy intended to compensate for inequalities due to family background. Problems of initial inequality also arise when children have different abilities.

Affirmative action

Affirmative action provides preferential access to limited places in colleges and universities with the intention of compensating for initial inequalities or educational disadvantages. Affirmative action could also be applied under a voucher system. Good schools at all levels could be required to make compensating adjustments for differences in children's initial conditions.

Affirmative action is controversial. The case for affirmative action is that historically disadvantaged peoples should be compensated for past injustices by preferential access to education. The case for affirmative action may also be that admission standards discriminate by being based on the knowledge and understanding that comes from particular types of home environments.

[12] The government monopoly of publicly financed schooling can be a source of rents for the administering bureaucracy. The rents are threatened by competition.

Initial conditions can be difficult to apply based on need, if affirmative action is not to be based on detailed evaluations of individuals' family circumstances but rather on broad criteria such as ethnicity and family name.

Students from the preferentially targeted groups who satisfy standard criteria for admission to a college or university on their own merit can feel that affirmative action is disparaging because of the presumption that they have benefited from discriminatory privilege when their successes are the result of their own efforts and achievements.

People from outside the groups targeted for affirmative action can feel that there has been injustice when they discover that they have been denied admission to a college or university while others with inferior academic records have been admitted in their place.

Affirmative action is a complex issue because advocates for and against claim to have justice on their side. Advocates against point out that, inside a college or university, personal evaluations are based on personal achievement and personal merit; therefore, it would seem that admissions should be based on the same criteria. Advocates in favor point out that not making allowance for initial inequality due to family background contradicts the principle of equal opportunity through education.

Differences in childrens' abilities

Children differ in abilities. Faster-learning and slower-learning children both benefit from specialized attention. Should children who have learning disabilities receive special attention, but not children who are fast learners and who become bored with the normal progress of class learning? If children or students are not "equal" in aptitudes and abilities, does equality in educational opportunity imply the same educational means and pace of teaching for everybody? To address individual differences in ability, some school systems screen children at young ages and place higher-ability children in special classes that advance at a faster pace than regular classes. In other school systems, students are kept together independently of abilities, on the grounds that separating better students into special classes disadvantages the students who remain behind in regular classes by lowering classroom standards. Children who are slow learners or have learning disabilities are also sometimes removed from mainstream classes, to allow these children to be taught by special methods that are suitable for their learning problems, and to allow the rest of the class to advance. Policy responses to different abilities therefore differ.

10.2.8 Financing higher education

Public policy toward education also confronts the question: if the intention of policy is to provide educational opportunity, where does the responsibility of government end? Should education be free and compulsory to the end of high school, or should free education extend to college and university? Should anyone

who wishes to keep studying after high school be permitted to do so at public expense? Or should only good students be permitted to attend college or university at public expense? What of graduate school, or professional education in law, business administration and finance, and medicine? That is, does the principle of publicly financed equal opportunity in education continue to higher education, or should the market and private payment take over? If children prefer not to finish high school but leave their studies to obtain qualifications as electricians, plumbers, secretaries, or hairdressers, should government also finance these types of studies? These questions are answered through the public policy chosen toward higher education.

Student loans as means of providing equal opportunities

The alternative to free access to publicly financed education is private payment. Students may, however, lack the means to pay for their education and may wish to borrow to finance their education costs. Private lenders may be unwilling to lend. The impediment to lending is asymmetric information that results in moral hazard. The asymmetric information is that students know their own effort input and motivation, but lenders can observe neither effort put into studying nor the motivation to study. Repayment of loans is based on the expectation of future earnings, and the risk of default facing the lender depends on the unobserved effort of the student in studying and preparing for exams. A moral-hazard problem arises because the nonobservable behavior of the student determines whether education will provide an income that will allow the loan to be repaid.[13]

Moral hazard introduces government involvement into student loans. Government can provide loans directly through a government agency or security to the private lender by guaranteeing repayment of loans. As noted in Chapter 5, government does not, however, have an advantage over private markets in solving problems of moral hazard.

There are other types of problems. If a person withdraws from the labor force after completing studies, should the loan be forgiven? Or should the loan become an obligation of family members? If a woman withdraws from the labor force to raise a family, should the husband be responsible for repaying his wife's student loans? What happens to the responsibility to repay the loan if the couple subsequently separates? Should students who repay their own loans also be held responsible for repaying loans of others who have defaulted? If the interest rate on student loans includes the risk of default, students who repay their loans are subsidizing those who do not.

Free or subsidized higher education

When education is free or sufficiently subsidized, student loans are not required. Free and subsidized higher education benefits people who can afford to take

[13] In a slave state, the lender could stake claim to the person of the borrower in default.

advantage of the "free" opportunities.[14] Some poorer people may be unable to take advantage of free educational opportunities because they are obliged to work full-time. Income differences are reinforced when students from middle (and upper) class households systematically receive the benefits of free education.

Scholarships

Public policies of guaranteeing student loans and providing free or subsidized education apply to all students. Scholarships target good students and are a reward for superior scholastic achievement. However, judgments often must be made with respect to a balance between academic performance and lower family income and other adverse initial personal circumstances in determining criteria for scholarships.[15]

10.2.9 Summary

As with health care, which we considered in Section 10.1, public goods, externalities, paternalism, issues of social justice and entitlements, choice between user pricing and public finance, and natural monopoly are present when we consider education. Education can be privately provided through payment of user prices and began that way. The public-good aspects enter through collective benefit in classrooms (although this cannot be any more of a reason for government schools than it could be a reason for government movie theaters). Externalities are present through social benefits from a more-educated population.[16] Paternalism is present through the legal requirement that schooling is compulsory. Attributes of social justice or social insurance are present through the entitlement to educational opportunity independent of parents' income or inclination to educate their children. Natural monopoly is present if children are obliged to attend the closest neighborhood school. The choice between tax-financing and user prices is present, through alternatives offered by government and private schools. The principal-agent problem between taxpayers and government can be present to affect choice of public policy: educational vouchers allow a market for publicly financed education, but administrators of government schools lose from market competition. Homeowners gain or lose because of changes in housing prices when school assignment is no longer determined by location. Because of the redistribution of wealth, changes in

[14] Recall from Chapter 6 that publicly financed public-good spending tends to benefit middle-income people (or the median voter).

[15] Often scholarships are not financed by government, but by the college or university. The criteria for scholarships can then involve nonscholastic aptitudes including athletic ability. Good sports teams can be a major part of the prestige of a college or university. University and college administrators may feel that success in sports enhances student pride and also increases demand for admissions. Successful sports teams are also sources of profit through payments for attendance at games and through fees from television and radio coverage.

[16] If education provides no lasting benefits and does no more than signal achievement, private benefits exceed social benefits, and externalities are negative. We have noted that education is then a form of rent seeking.

public policies can be resisted when housing prices change because the locational eligibility to attend government schools has been redefined.

We have noted that increased spending does not necessarily increase the quality of education. Social norms, parents' attitudes, teacher motivation, and personal objectives within the administrative bureaucracy of the school district also affect the quality of education.

We have also noted that adverse-selection problems arise when superior private and inferior government schools coexist. The adverse-selection problem becomes more severe when, with more voters' children in private schools, less public finance is provided for government schools.

Vouchers eliminate adverse selection based on parents' willingness or ability to pay, allowing sorting of children to take place according to aptitude and scholastic merit, and also the educational preferences of parents. Vouchers sustain segmentation between children from lower- and higher-income families, if school admission is based on academic merit, and if children's educational achievements are influenced by incomes or backgrounds of their parents.

We have also noted the benefits of private management of government schools, and in particular that private management is consistent with the incentives of a voucher system.

With or without educational vouchers, differing initial conditions complicate a definition of equal opportunity through education. A case can be made for and against affirmative action intended to compensate for differing initial conditions. Problems of defining equal educational opportunity also arise because of differences in abilities and scholastic aptitudes.

We have also considered financing of higher education. Students may be admitted to schools on academic merit, but they may not have the means to pay school fees. Moral-hazard problems limit the willingness of private lenders to lend for costs of education. While government can assist in providing guarantees for student loans, moral-hazard problems remain, to confront governments as guarantors of the loans.

In the end, if entitlements to education are to be the basis for social mobility, the responsibility of government is to find a way to avoid the adverse-selection problems that leave children and students segmented into groups with different educational benefits and opportunities. A public policy of educational vouchers for compulsory schooling avoids the adverse-selection problem by eliminating locational and financial impediments and opening opportunities for everybody in educational choice.

A solution to the adverse-selection problem is also to have good government schools. Good government schools may be inconsistent with enforced monopoly of government schools for publicly financed education. Also, because government policies are determined by voting and political processes, there may be insufficient political will to improve the quality of government schools after sufficient numbers of children and students leave government schools for private schools.

References and related literature

On determinants of the quality of education, see Card and Krueger (1992), Peltzman (1993, 1996), Borjas (1995), Toma (1996), Cutler and Glaeser (1997), and Angrist and Lavi (1999). For evidence on the effects of locational competition on government schools, see Hoxby (2000). On government schools as a source of uniformity, see Lott (1990). On vouchers and public and private education, see Epple and Romano (1998). On adverse selection through voting, see Glomm and Ravikumar (1998). On child labor, see Horrell and Humphries (1995). On financing of education, see Nerlove (1975), Inman (1978), and Fernández and Rogerson (1998). On the effectiveness and consequences of affirmative action, see Coate and Loury (1993). On incentives facing colleges and universities in admission policies, see Danziger (1990).

Angrist, J. and V. Lavi, 1999. Using Maimonides rule to estimate the effect of class size on scholastic achievement. *Quarterly Journal of Economics* 114, 533–75.

Borjas, G., 1995. Ethnicity, neighborhoods, and human capital externalities. *American Economic Review* 85, 365–90.

Card, D. M. and A. B. Krueger, 1992. Does school quality matter? Returns to education and the characteristics of public schools in the United States. *Journal of Political Economy* 100, 1–40.

Coate, S. and G. L. Loury, 1993. Will affirmative action policies eliminate negative stereotypes. *American Economic Review* 83, 1220–40.

Cutler, D. M. and E. L. Glaeser, 1997. Are ghettos good or bad? *Quarterly Journal of Economics* 112, 827–72.

Danziger, L., 1990. A model of university admission and tuition policy. *Scandinavian Journal of Economics* 92, 415–36.

Epple, D. and R. E. Romano, 1998. Competition between private and public schools, vouchers, and peer group pressures. *American Economic Review* 88, 33–63.

Fernández, R. and R. Rogerson, 1998. Public education and income distribution: A dynamic quantitative evaluation of education-finance reform. *American Economic Review* 88, 813–33.

Glomm, G. and B. Ravikumar, 1998. Opting out of publicly provided services: A majority voting result. *Social Choice and Welfare* 15, 187–99.

Horrell, S. and J. Humphries, 1995. The exploitation of little children: Child labor and the family economy in the industrial revolution. *Explorations in Economic History* 32, 485–516.

Hoxby, C. M., 2000. Does competition among public schools benefit students and taxpayers? *American Economic Review* 90, 1209–38.

Inman, R. P., 1978. Optimal fiscal reform of metropolitan schools. *American Economic Review* 68, 107–22.

Lott, J., 1990. An explanation for public provision of schooling: The importance of indoctrination. *Journal of Law and Economics* 33, 199–231.

Nerlove, M., 1975. Some problems in the use of income-contingent loans for the finance of higher education. *Journal of Political Economy* 83, 157–83.

Peltzman, S., 1993. The political economy of the decline of American public education. *Journal of Law and Economics* 36, 331–70.

Peltzman, S., 1996. Political economy of public education: Non-college bound students. *Journal of Law and Economics* 39, 73–120.

Schansberg, D. E., 1996. *Poor Policy: How Government Harms the Poor*. Westview Press, Boulder, Colorado.

Toma, E. F., 1996. Public funding and private schooling across countries. *Journal of Law and Economics* 39, 121–48.

Questions for discussion

1. In the place where you live or study, when was schooling made compulsory for children? Was education made compulsory at the same time for both boys and girls? Until what age was it at first compulsory for children to attend school? When education of children was made compulsory, was it already the accepted custom to send children to school?
2. Education is, up to certain limits of class size, a public good. However, education historically began as a privately supplied private good. Why did education become a publicly supplied public good? That is, why do you believe that compulsory education was introduced through government schools, rather than making education compulsory through private schools?
3. If free-access education is a basic entitlement through a social insurance contract that makes access to education independent of parental wishes and independent of parental income, up to which age or level of studies, and for what types of studies, do you believe that the entitlement should apply? Explain.
4. When education is provided through locational choice, what are the effects on the distribution of wealth and income of a public policy that changes the locational criteria for determining the government schools that children can attend? Do you believe that anyone should be compensated for changes in property values that result from the change in public policy? Explain.
5. When government and private schools coexist, how can problems of adverse selection arise?
6. Does more spending on schools necessarily result in better-quality schools? Explain. What do you believe are the main differences between "good" and "bad" elementary schools? What do you believe are the main differences between "good" and "bad" high schools? How can public policy close the gap between good and bad schools?
7. Compare user prices and Lindahl prices as means for financing a private school.
8. If there are no educational vouchers, should parents who pay taxes and also pay private-school fees obtain a tax credit for fees paid to the private schools? Do you believe that it is "fair" that parents who send their children to private schools pay twice? Explain.
9. If vouchers allow public finance to be used to provide a wider range of choice, why should anyone object to using vouchers to finance compulsory education? Where does the opposition to vouchers come from?
10. When a government school is a monopoly for publicly financed education (there are no vouchers), what effects would you expect private management of government goods to have? Why is private management of government schools beneficial when vouchers are proposed and introduced?
11. How do school vouchers affect "sorting" of children among schools, compared to locational sorting of children into schools based on school districts and associated sorting through some children attending private schools?
12. Do you believe that access to education should be based on personal academic merit alone? Or should affirmative action programs allow students from groups in the population defined as disadvantaged to be admitted to college or university in place of students with higher grades who are from other groups in the population? Explain. Do you believe that all children from immigrant families should benefit from preferential admissions, on the grounds that they may speak a foreign language at home, which limits their skills of expression?
13. Should public policy provide additional resources for scholastically superior children? Should public policy make additional resources available to children with learning problems? Explain.
14. Why do private markets not provide loans for education without government guarantees of repayment? Do government guarantees solve moral hazard problems? Explain.
15. Should government guarantee student loans for everybody, or provide scholarships for needy deserving students, or both? Explain.
16. "Government schools are justified because government has an important responsibility in controlling the content of education." Explain why you agree or disagree.

10.3 Providing for Retirement

In the usual course of events, people reach a stage of their lives where they retire and cease the activities that earned them their incomes over the course of their lives. Sometimes retirement is compulsory, and sometimes it is a matter of personal choice. When people do eventually retire, they require a source of income to finance consumption during their nonworking lives. Governments are usually involved in providing this post-retirement consumption. We shall now consider reasons for the government's involvement in providing for consumption during retirement. We shall also ask why the involvement of the government is necessary, since people can predict that they will eventually reach a stage in their lives when they will no longer be earning incomes, and they can privately save in anticipation of these circumstances. We shall see also that the problems that arise in financing retirement consumption affect not only retired people but also young people.

10.3.1 An intergenerational social contract

We begin with circumstances where private saving and investment are not available as a means of personally providing for old-age consumption. This occurs in a society where food cannot be stored, and where there are no financial or real assets that can be owned and sold in the future to finance consumption during years of retirement. These are the conditions of a primitive hunter-gatherer society, where food is obtained by hunting animals and by gathering fruit and vegetables that grow in the wild. In these circumstances, the old can survive only if the young give them food.[1]

[1] There is no money in this primitive society. If there were money, people could store money and use the money to finance consumption during old age.

The young might be willing to provide the old with food only if the old provide something in return. The old have, however, nothing with which they can pay the young because the old no longer work and have been unable to store food or assets during their productive years.

Now let us introduce money, or certificates of entitlement to consumption, which the old can trade for food with the young. The young generation will be happy to accept the certificates of entitlement in exchange for food, if the certificates can later be exchanged for food when the young have themselves become old and have themselves retired from productive activity.

The transferable certificates of entitlement to old-age consumption allow a social contract whereby the productive generation always provides food for the retired generation. Under the social contract, no two generations engage in bilateral exchange with one another. The transfers of consumption are always unilateral, between productive young persons at any point in time to the retired generation.

The social contract involves generations as yet born unborn, who, in the future, accept certificates of entitlement from old people, provide the old people with food, and receive food when they themselves are old. The unborn generations are, of course, not present when the conditions of the social contract are set out.

The social contract may specify the amount of food that is to be provided to the old. Generations as yet unborn would be obliged under the contract to make the designated future transfers of food, even though they did not participate in the decision to establish the social contract.

Everyone in each generation gains from the social contract. Because of the social contract, all people are cared for in their old age.

If a generation of productive people were to renege on the social contract by refusing to provide food for the old, the reneging generation would have more to consume during its productive years. In a hunter-gatherer society, the reneging generation cannot, however, keep food for its retirement years because food cannot be stored. The reneging generation, when old, would have to rely on the next generation of young to feed them. They would have to hope that the next generation of young workers did not copy their own behavior in refusing to feed the old. If the social contract whereby the young provide for the old cannot be reestablished, the society is in an unfortunate situation. The old starve, and, because everybody eventually becomes old, everyone's life span is shortened.

It is clearly not in the self-interest of any productive generation to break the chain of intergenerational transfers because the continuation of the precedent of intergenerational transfers is the source of the working generation's own future survival. Abrogating the contract would make each and every generation worse off. That is, annulling the social contract of intergenerational transfers violates Pareto efficiency.

There have been societies without a social contract of intergenerational transfers. In these societies, by not providing for the old, the younger productive generations set the precedent for their own early demise.

Demonstration effects

The intergenerational contract is based on a continued precedent of caring for and feeding the old. Can the precedent be based on a demonstration effect? Under a demonstration effect, a productive generation provides for the old with the intention of setting an example to be followed that will be the basis for their own survival in old age. That is, a generation provides for the old, as an example to be copied by the younger generation in future years when the present generation providing for the old is itself old.

If a demonstration effect were the reason for the transfers, the intergenerational transfers would break down. Members of a young productive generation would reason: "We do not need to provide for the old in order that our children will provide for us when we are old. Our children will provide for us in any event. Our children will want to provide for us because, by providing for us, they demonstrate the act of making the transfers to their young, so that their young will provide for them in the future."

If each productive generation thinks this way, no intergenerational transfers take place. Therefore, a demonstration effect does not provide a rational basis for intergenerational transfers from young to the old.

Intergenerational transmission of ethical norms

An alternative to a demonstration effect as the basis for ongoing transfers from the young to the old is the intergenerational transmission of ethical norms to support the old.[2] The ethical norm ensures continuation of the efficient contract that ensures the young will be cared for when they are themselves old. That is, ethical behavior of providing for the old is efficient.

The social contract and pay-as-you-go transfers

Honoring one's parents places the ethical norm of support for the old within the family. A government can collectivize the intergenerational transfers by levying taxes on young people and transferring the tax revenue to retired people. Such publicly financed intergenerational transfers are known as pay-as-you-go schemes for providing for old-age consumption. Under a pay-as-you-go scheme, taxes paid by working generations are not used to accumulate assets to provide for that generation's future consumption. That is, there is no accumulated fund that finances old-age consumption. Rather, the tax payments of the working generation are directly transferred to the retired generation to finance the retired generation's consumption.

Taxation as the solution to a free-riding problem

Pay-as-you-go intergenerational transfers from working to retired persons are a case of collective supply of private goods. The collective supply is the income

[2] Such an ethical norm is expressed in the injunction: "Honor your father and mother so that your days on earth may be long."

provided to the old through the taxes paid by the young working generation. The income is shared among the old retired generation.

The collective nature of the transfer from the productive population to retired persons introduces free-riding incentives whereby a young person may want to leave the financing of transfers to the old to other young people. Without taxation, some members of the young working population might choose to consume all their output rather than make transfers to the old, while relying on a "social safety net" of tax-financed consumption to provide for them when they are old and have retired. Compulsory taxes paid during productive years preempt such free-rider behavior.

10.3.2 Demographics of intergenerational transfers

Pay-as-you-go schemes of intergenerational transfers are sensitive to demographic changes. The schemes can become unsustainable if the number of people working declines compared to the number of people receiving income transfers.

The number of people working can decline and the number of retired people receiving income transfers can increase because pension and social security payments encourage people to take earlier retirement. The payment obligations on the young are also increased when improvements in health standards result in people living longer after retirement. Imbalance between the number of people working and retired people is also created by declines in birth rates.

We shall now look more closely at demographic problems of pay-as-you-go intergenerational transfer schemes. In considering demographic problems, we stay in the framework of a hunter-gatherer society where old people can only survive if the young provide them with food.

Pay-as-you-go schemes can specify the contributions that people make when working, or the benefits that people receive when retired, or both contributions and benefits. We begin with demographic effects where the contributions of the working population are specified but the benefit received when retired is not.

Designated contributions

For simplicity we shall consider a situation where all members of the same generation earn the same income. Suppose that a rate of tax t is levied on the lifetime income y of each member of a productive generation. The purpose of this tax is exclusively to finance transfers to retired persons. Therefore, each working person has an income during his or her working life of $y(1-t)$ after paying the tax.

Consider a young working generation B with n_b people. The total value of the taxes collected from generation B is $n_b ty$. This sum is transferred to a retired generation C. The value of the post-retirement transfer received by an individual in retired generation C is

$$\tau_{bc} = \frac{n_b t y}{n_c}, \tag{10.1}$$

where n_c is the number of people in the retired generation C.

In expression (10.1), the value of the transfer received by a retired person depends on the size of the working population relative to the size of the retired population, that is, on the ratio n_b/n_c. The retired population is better off, the fewer people in its generation and the greater the number of people in the generation that is working.

Let us now denote the rate of population increase between generations by g. That is,

$$n_b = n_c(1+g). \tag{10.2}$$

By substituting the expression (10.2) into (10.1), we obtain the transfer received by an individual in retired generation C in the alternative form

$$\tau_{bc} = (1+g)ty. \tag{10.3}$$

An individual in generation C will have paid $t \cdot y$ in taxes when working and receives, when retired, the amount given by expression (10.3).

The rate of population growth of g is the rate of return from the intergenerational pay-as-you-go transfer scheme. If population size does not change between generations, so that $g = 0$, the rate of return from the intergenerational transfer scheme is zero. Or, if g is negative, the return from the pay-as-you-go scheme is negative.

Even with g zero or negative, the intergenerational transfer scheme is beneficial. The transfers allow consumption to be transferred from the productive period of a person's life to the period when the person is not working. Without the scheme of intergenerational transfers, retired people would starve.

If population is growing, so that $g > 0$, the pay-as-you-go scheme of intergenerational transfers yields a positive rate of return. Each retired generation then receives a bonus. Retired persons not only are provided with old-age consumption but also receive back more than they originally contributed.

We have been looking at pay-as-you-go schemes of intergenerational transfers with designated payments by the young working population. The designated payment has been set by the rate of income taxation t. In practice, the taxes are given other names, such as social security taxes.

Designated benefits for retired persons

Rather than designated payments by the young working population, pay-as-you-go intergenerational transfers can be based on designated benefits to retired people. For example, suppose that all retired people are entitled to a specified post-retirement income or pension P. The total pension payments to a retired population of size n_c are $P \cdot n_c$.

The total tax payment per member of the working population (with n_b people working) required to finance the designated benefit P for retired persons is

$$T = \frac{P n_c}{n_b}. \tag{10.4}$$

The value of the tax payment T depends on the relative size of the two generations, or on demographics.

For example, suppose $n_c = 100$ and $n_b = 800$. For each retired person, there are then eight people working who share and finance the cost of one retired person's pension or social security payment P.

The tax burden of the pension scheme on the working population remains unchanged if the population remains constant over time (so that there remain, for example, eight people working and financing the pension scheme for each retired person).

If the population is increasing, more people are working per retired person in successive generations, and the effect of demographic change is to decrease the tax burden on the working population over time. However, the burden on each consecutive working generation increases overtime, if population declines from one generation to the next.

High designated benefits for retired persons benefit initial participants in a pay-as-you-go intergenerational transfer scheme. The first beneficiaries will have paid nothing (the scheme did not exist when they were working) and benefited from the contributions made by the working generation.

Pay-as-you-go social security and pension schemes that provide high designated benefits to retired persons can be like a Ponzi scheme.[3] Initial participants gain, while later participants lose. There is a fundamental difference between a Ponzi scheme and pay-as-you-go intergenerational transfers. Participation in a Ponzi scheme is voluntary. Participation in tax-financed intergenerational transfer scheme of social security is compulsory.

When earlier retirement, increased longevity of retired people, and low birth rates increase the tax burden of financing benefits for retired people, the tax-paying working population might propose a downward revision of retirement benefits. The retired population, and persons close to retirement, might be expected to object to a proposal to reduce retirement benefits. Such a proposal might be viewed as an unfair violation of the intergenerational social contract. The retired population financed retirement benefits at a specified level of benefits at the time when it was working and paying taxes. When retired and no longer working, the older population expects to receive the same benefits that it provided when financing retirement benefits for others.

[3] In a Ponzi scheme (named for Charles Ponzi, the first well-known perpetrator of chain letters), high returns to initial investors are financed by borrowing at high interest rates from other investors. The scheme breaks down when no more investors can be found to finance the high interest rates for previous investors. In the chain letter version, people receive a letter or e-mail with a list of people to whom they are asked to send money. The new participants in the scheme are invited to add their names to the list of future recipients of money and to forward the letter to other people who are invited to join by sending money to the new participant in the scheme and to the others on the original list. No investment takes place by the initial investors in a Ponzi scheme. Unidirectional transfers take place as in pay-as-you-go intergenerational transfer schemes. Initial investors receive high returns, while later investors lose their money when the Ponzi scheme ultimately breaks down (as it must because the population of participants is finite).

To decrease their tax burden, members of the young working population might propose an increase in the age at which retirement benefits become available. People nearing retirement might object to this proposal.

Another approach to reducing the tax burden for financing pay-as-you-go retirement benefits is to attempt to increase the productivity (or productiveness) of the working population. Productivity growth increases the pre-tax per capita income y of the working population. Even if population is declining, sufficient growth in productivity can provide a positive return from an intergenerational transfer scheme. Therefore, fewer young people may be providing for more old people, but, if the young are more productive than the working persons in the generation before them, the increased productivity of the young can more than compensate for decline in the number of taxpayers whose tax payments finance the benefits of retired people.[4] Demographic problems can therefore be solved or moderated by increased investment in education that increases a working generation's productivity. A working generation that will benefit in the future when retired has an incentive to increase spending on education of the young.

Another solution to the problem of an increasing tax burden on the young working population is to expand the tax base for intergenerational transfers through immigration of a working aged population.[5] Large numbers of immigrants may be required to sustain the defined benefits of an intergenerational transfer scheme. In that case, immigration as a solution to the problem of intergenerational demographic imbalance requires willingness of the local population to be receptive to the large numbers of immigrants.

Eventually the immigrants themselves will retire and become eligible for intergenerational transfers. Increasing immigration may be required over time to sustain the benefits to which the old have become accustomed.

While immigration can be part of the solution, emigration can be part of the problem. Faced with high taxes because of demographic imbalance, young productive people can choose to emigrate to tax jurisdictions where taxes to finance intergenerational transfers are lower. Such emigration deteriorates the demographic imbalance further.

There is a problem of adverse selection for the society from which the productive young are emigrating. As more young productive people leave, the tax burden on those productive people remaining behind increases, and they too might be inclined to emigrate – and their emigration further increases the tax burden on those who have so far remained. The opportunities offered by location in different government tax jurisdictions can unravel the population of young productive people who support the old.

[4] For example, if people are twice as productive, in expression (10.4) the tax burden per taxpayer is halved because it is as if twice as many taxpayers were financing the designated benefits to the retired population.

[5] Immigration is possible as a solution when incomes in a country are higher than in foreign locations so that immigrants can be attracted to leave their homes.

The demographic prisoners' dilemma

Suppose, only hypothetically, that children provide no intrinsic personal benefit to parents and that the cost of having and raising children falls exclusively on parents. However, children, when grown, pay taxes that finance income transfers to all members of the older population. The conditions of a prisoners' dilemma are then present. Each person will wish personally to have no children and will wish to impose the burden of having children on others. The dominant strategy is to attempt to free ride for support in old age on the children of others, and there will be no children in the Nash equilibrium of the prisoners' dilemma.[6] This society will eventually die out because of absence of reproduction, and in particular the old will starve.

An escape from the demographic prisoners' dilemma can take place if the pay-as-you-go scheme under which all people's children are collective resources for financing intergenerational transfers is cancelled. Children then become a personal, and not a collective, means of providing intergenerational transfers. Each family internalizes the intergenerational transfer, and grown working children take care only of their own aged parents. People who do not have children then condemn themselves to an early death because they do not have children who will provide them with food in their old age.

In the less-developed regions of the world, social security has been based on the extended family. Governments have not provided social security, and children have been a form of personal insurance within the extended family. The output of the extended family is shared among all family members.[7]

When the extended family is the means of providing social security, some children might not provide for their parents and so leave their parents destitute in old age. Some people may simply not have children.[8] Because some people may have uncaring children or may not have children for no fault of their own, strict reliance on one's own children for survival during advanced years can be, of course, capricious and unjust. A government can provide insurance against not having had children through a collective scheme of intergenerational transfers that pools all children's contributions to provide old-age consumption. That is, the government provides social insurance against the risk that people find themselves without children. Then, however, the society can confront the demographic prisoners' dilemma because of the collectivization of benefits from having had children. A government providing old-age social insurance cannot precisely identify reasons why people have not had children. Therefore, the free riding of people who have chosen not to have children is part of a government-sponsored pay-as-go scheme of intergenerational transfers.

[6] Each person makes the calculation: if others have children, my best response is not to have children, and if others do not have children, again my best response is not to have children.

[7] The older retired generation often contributes by caring for the young children when the parents who are the productive generation are at work.

[8] They may not have been able, or the opportunities for having children may not have presented themselves.

Privatized social security through the family is a response to the demographic prisoners' dilemma, but, as we see, is not a satisfactory response because of people who cannot rely on a family for old-age support. People who do not have children could, however, compensate those who do. We observe tax deductions and direct transfer payments based on the number of children. Transfers also take place in the form of subsidized schooling and child health services. Childless people contribute to the cost of other people's children through taxes that finance education and health care for children.

Through pay-as-you-go social security, the benefits of having children are shared with other people. If people without children locate in areas where they are not required to finance schools, but they receive retirement benefits through a national or federal level of government, childless people are free riding for old-age provision on people who have children.

When locational sorting between people with children and childless people does not take place, so that both people with children and childless people are in the same tax jurisdiction, free riding is nonetheless present if many of the costs of having and rearing children are private and fall upon the parents.[9]

Generational accounting

Changes in the attractiveness of having children and the free-riding problem of the prisoners' dilemma, as well as increased longevity and early retirement, can cause intergenerational accounting imbalances. The imbalances reflect intergenerational income redistribution. In particular, the first generation of beneficiaries of a pay-as-you-go scheme necessarily gains from the scheme because this generation made no payments and only receives benefits, whereas the last working generation before a scheme becomes bankrupt necessarily loses since this generation pays into the scheme but receives no payout.

Table 10.1 shows gains and losses from the U.S. social security system for different generations or age groups, for males and females. The numbers indicate the present value in the year 1998 of investments made through U.S. social security payments, computed for tax payments and retirement benefits. The investment is that individuals lend the government money when they work through payment of social security taxes, and the government repays the money when people retire according to the rate of return from the system.

Positive values in Table 10.1 indicate losses through net tax payments. Negative values indicate gains from the excess of social security payments over taxes. We see the following.

(1) Women aged 60 and over in the year 1998 gain, as do men aged 70 and over. Everybody else loses.

[9] Personal costs arise when people feel that children limit entertainment and life-style opportunities. People may feel that changing diapers is unpleasant, as is waking in the night to feed babies. A child increases the cost of switching partners and can interfere with personal career advancement. People who enjoy having children willingly or happily bear these costs.

TABLE 10.1. INTERGENERATIONAL GAINS AND LOSSES FROM U.S. SOCIAL SECURITY (PRESENT VALUE IN THOUSANDS OF 1998 U.S. DOLLARS)

	Net tax payment	
Age in 1998	Males	Females
0	122.1	61.1
10	169.4	82.0
20	238.2	109.4
30	268.1	111.4
40	236.9	77.8
50	152.8	10.5
60	10.8	−95.6
70	−92.4	−135.9
80	−83.6	−112.3
90	−61.5	−74.3
Born after 1999	142.5	71.3

Note: Discount rate 6%, growth of labor productivity 2.2%.
Source: Gokhale et al. (2000).

(2) For men aged 60 and under, compulsory participation in social security is a net tax. The tax is substantial for men aged 50 and below.
(3) Participation for women aged 50 and under was also not worthwhile. Women however lost less because they contributed less on average.
(4) The clear beneficiaries were people in the older generations, or earlier entrants into the system of pay-as-you-go intergenerational transfers.

The viability of a pay-as-you-go intergenerational transfer scheme can be examined as an exercise in generational accounting. Viability requires that the present value of the government's tax receipts be greater than or equal to the present value of the government's payment obligations in the future. If the present value of a government's future commitments to pay exceeds the present value of tax receipts, the pay-as-you-go scheme of intergenerational transfers is technically bankrupt. Restoring viability requires increased tax payments, reduced benefits, or a combination of both.

In Table 10.1, the returns to tax-paying generations are already negative. Increasing taxes further increases losses for working generations. Reducing benefits meets with resistance from retired generations. Yet balance inevitably must be achieved between money paid in and money paid out.

Table 10.2 shows generational accounts for a number of countries. Column (1) shows the difference between the present value of contributions and expenditures

TABLE 10.2. INTERNATIONAL COMPARISON OF PENSION SCHEMES

		Public pension payments as percentage of GDP		Increase in tax/GDP ratio required to keep net debt constant	
Country	Imbalance as percentage of GDP (1)	1995 (2)	2030 (3)	2005 (4)	2030 (5)
Denmark	−234.5	6.8	10.9	−1.9	3.8
New Zealand	−212.8	5.9	8.3	–	–
Belgium	−152.6	10.4	13.9	−2.0	5.9
Sweden	−132.3	11.8	15.0	−0.6	4.0
Norway	−124.1	5.2	10.9	−2.7	3.8
Portugal	−109.2	7.1	13.0	0.5	8.2
Spain	−108.6	10.0	14.1	0.9	7.4
France	−102.1	10.6	13.5	0.8	7.1
Canada	−100.7	5.2	9.0	−3.2	3.6
Australia	−96.7	2.6	3.8	−1.3	2.4
Austria	−92.5	8.8	14.4	3.8	15.4
Japan	−70.0	6.6	13.4	3.5	9.6
Germany	−61.6	11.1	16.5	2.8	9.7
Italy	−59.7	13.3	20.3	1.8	11.4
United Kingdom	−23.8	4.5	5.5	1.7	3.5
United States	−23.0	4.1	6.6	−0.3	5.3
Ireland	−17.8	3.6	2.8	−0.3	1.8

Source: Kotlikoff and Ferguson (2000).

for retirement consumption as a percentage of a country's gross domestic product.[10] All the numbers are negative. Therefore, retirement schemes of all countries in Table 10.2 are actuarially bankrupt.

Higher productivity growth and a lower discount rate reduce the imbalances between the present value of payment obligations and receipts. The age of mandatory retirement and the level of benefits that were set when the retirement schemes were initiated also affect the degree of imbalance. We see from column (1) in Table 10.2 that the imbalances of the United States, the United Kingdom, and Ireland are relatively favorable when compared with other countries.

Column (2) shows public pension payments as a percentage of GDP in the year 1995. Column (3) shows the projected share of public pension payments in GDP in the year 2030. In all countries with the exception of Ireland, the share of public pensions in GDP increases.

Columns (4) and (5) show the tax adjustments required to balance the generational accounts and to finance the pay-as-you-go intergenerational transfers

[10] The values are computed up to the year 2070, using 1994 as the base year for the value of gross domestic product, with productivity in each country set as growing by 1.5 percent per year. The discount rate used in computing present value is 5 percent.

without increasing government debt. If taxes are not increased, governments must borrow to finance their social-security or public-pension obligations. If neither taxes nor borrowing increase, balance of revenues against payment obligations as a last resort can be achieved by inflationary financing, or simply printing money (which we saw in Chapter 7 is also a tax).

Column (4) shows the increase in taxes relative to GDP required in the year 2005, and sustained thereafter, to keep the debt/GDP ratio constant as of the year 1995. Column (5) shows the same number if the tax increase is deferred until the year 2030. We see substantial differences in the required magnitudes of tax increases between confronting the problem of imbalance in 2005 and deferring the problem until the year 2030.

The adjustment in 2005 places the burden of tax increases on a different generation than if adjustment is deferred until 2030. Tax increases are politically unpopular. Politicians who seek political support in 2005 are in general not the same politicians who will confront the problem of imbalance in the year 2030.

10.3.3 Personal voluntary provision for retirement

The intergenerational pay-as-you-go transfers that we have been considering are the only means of providing for the old in a hunter-gather society where there are no financial or real assets that can be personally accumulated for old-age consumption. Where financial and real assets exist, there is an alternative to pay-as-you-go intergenerational transfers for providing for old-age consumption. People can make their own personal voluntary provision for retirement through financial markets.

Let us first take one step beyond a hunter-gatherer society, to consider a society where money or gold or silver provides a store of value over time. There is also a market in food and shelter. During their working years, people can voluntarily save for their old age; when they are old, they can use their savings to buy food and shelter. Markets thereby allow intertemporal transfer of consumption from working to retired years.

In a further step, we can introduce financial assets, such as government bonds.[11] People can buy the bonds during the working period of their lives and sell the bonds during their retirement years to finance their old-age consumption. The bonds might be sold back to the government; that is, the government might redeem the bonds. The bonds can also be sold to people who are working and who wish to provide for their own old age. Therefore, transactions in the bond market allow deferral of consumption from working to retired years.[12]

Bonds perform the same function as a pay-as-you-go intergenerational transfer scheme. Intertemporal transfers from young to old are, however, now voluntary through markets. The old sell their bonds for money in the bond market and use

[11] In Chapter 2, we described the use of bond financing by government for public projects.

[12] Supplement 10E shows that intertemporal competitive markets are efficient. Intertemporal markets are no different in principle from markets in which there are buyers and sellers at a point in time. The price in an intertemporal market is the interest rate.

the money to buy food. Later the bonds will be sold again to finance old-age consumption by the working generation that bought the bonds.

Intertemporal transfers through the voluntary transactions of a bond market are subject to the demographic problems that we have noted affect a pay-as-you-go intergenerational transfer scheme. The young still produce for both themselves and the old. If there are fewer young people relative to old people at any point in time, less is available for consumption per person in the society.

Negative interest rates

In a society where population is declining, consider people who are 50 years old and who wish to finance consumption in 20 years time at age 70. If they buy a bond for $100 that can be redeemed for $100 in 20 years time, the interest rate on the bond is zero. The purpose of the bond is to enable consumption to be transferred over time, and the persons wishing to defer consumption to the future accept the zero interest rate on the bond.

Suppose that bread costs $1 a loaf when the bond is purchased, but costs $2 per loaf in 20 years time when the bond is sold to finance consumption. The increase in price has not occurred because of inflation but because of demographic changes. Because population is declining, there will be fewer young productive people in the future whose output feeds the entire population of working and retired people.

The real rate of interest over the period of the bond is therefore minus 50 percent. Suppose that the negative real rate of interest is known in advance. Nonetheless, people will still wish to buy the bond when 50 years old and sell the bond when 70 years old because the only way that they can assure their survival at age 70 (when they will not be working and earning income) is to use the bond market to transfer consumption over time.

We saw that, with declining population, pay-as-you-go tax-financed intergenerational transfer schemes yield negative rates of return. Demographic problems are not exclusive to compulsory pay-as-you-go intergenerational transfer schemes. The returns to voluntary intertemporal transfers through bond markets can also be negative for the same demographic reasons that compulsory pay-as-you-go schemes can yield negative returns. In both cases, people are provided with future consumption, and how much will be available for consumption in both cases, depends on how many people are working relative to how many people are consuming, when only the young work and both the young and the old consume.

Durable productive assets

Let us now introduce private ownership of durable productive assets. Remember that until now we have been looking at a hunter-gatherer society. Although we introduced financial assets, our picture of the society has not included privately owned durable productive assets. Privately owned durable productive assets allow the old to release themselves from dependence for old-age consumption on the young because the old can receive income from ownership of the productive assets.

The first change from a hunter-gatherer society is in general to an agrarian society. With private ownership of agricultural land, the old can pay the young to work the land and can live from the surplus returns from the land. In modern society, housing and stock markets similarly permit old-age consumption through asset ownership.

When durable productive assets exist, the rate of interest is in general positive. The rate of interest is equal to the marginal benefit provided by capital over time (or the value of the marginal product of capital), which is positive.

Still, suppose that population is in decline, so that there are fewer and fewer people of working age over time. The decrease in available labor relative to capital or productive land increases the real income of labor and reduces the real incomes of people (the elderly and retired) who live from interest income. The demographic problems are still present. Fewer people are working to sustain the total population of young and old, and market returns to durable productive assets change to redistribute income from the old to the young.

Compulsory or voluntary savings?

Financial markets and private asset ownership allow private voluntary savings for old age but do not ensure that everyone will have adequate means of support during retirement years. Some people may have been unable to save in the course of their working lives because they did not earn enough income.

Also, some people may have made a decision not to save for retirement. The reason for not saving may be failure to recognize the need to provide for post-retirement consumption. People at age 20 may fail to envisage their needs at age 30 or 40, let alone at age 60 or 65. People do not like to think of themselves as being old one day. The future may seem so far off, and the enjoyment of present life may be so compelling, that all income is used for present consumption. People may, therefore, live their lives according to the principle, "I want it all, and I want it now." Even as time passes, old age and retirement may remain too far off to provide a motive for saving for old age. By the time the recognition of the need to provide for old-age consumption takes hold, it may be too late to accumulate adequate savings to allow a reasonable living standard during retirement years.

Moral hazard can also be present. People may decide not to save, but rather to rely on the conscience of society to save them from destitution when old.

People who fail voluntarily to provide for old age will have to be provided with food and shelter when they are old, either through private charity or through the public finance of government. Public finance will require taxation. The taxpayers will be the working generation and other retired persons who were prudent and saved for their old age.

To preempt the need for such tax-financed payments to people who did not make provision for their old age, a society can decide that personal saving for old age should be compulsory. That is, people can be legally required to invest in pension funds that will provide them with income after retirement.

Compulsory saving and investment in pension funds do not solve the problem of people who lack the means to save for their old age. Such people will in all likelihood have received income transfers from government during their younger years and will continue to receive tax-financed income transfers in their later years.

Pooled or personal savings

When saving to provide for old age is compulsory, we confront the further question whether the compulsory savings should be pooled or personal. Pooled and personal retirement funds provide insurance against different types of risks.

A personal payment scheme protects against *biometric risk*. Biometric risk is the risk that an individual, or dependent family members, will live long enough to reach an age where income is no longer earned. This is a personal risk.

A pooled system protects against an unstable family life, against lack of investment in education, and against unemployment or illness during working years. Therefore, the pooled or collective scheme provides social insurance.

With a pooled scheme, we return to the moral-hazard and adverse-selection problems of social insurance. In pooled scheme, income redistribution takes place through insurance and through moral hazard. Income redistribution also takes place when people die and leave a dependent spouse and children who are cared for through social security. People who die after marrying a number of times can have multiple past spouses with dependent children to be cared for.

All people pay into the pooled fund when they earn income, but all people do not survive to reach the age when payouts begin. Therefore, income redistribution takes place from people who have shorter lives to people who live longer. If richer people tend to live longer than poorer people, the income redistribution is from poor to rich because the poor are less likely to reach retirement age to obtain the benefits.

A means test

Under a pooled scheme, benefits to retired people can be subject to a means test, which determines payments for retired persons according to "need." The need is defined by other income that retired people have available to them and by their wealth. There is an incentive to avoid a means test by relinquishing ownership of property and other assets, which can be passed to children and other beneficiaries while alive. When assets are not relinquished, a means test in combination of progressive taxation has the consequence that, the more money people pay in taxes during their life times, the less they receive back in return. Individuals or families that have been financially successful may have paid considerable parts of income as taxation and, because of a means test, may receive little or no benefit when reaching the age of retirement. An individual or family that has not been financially successful will have paid in little, and, not having much, when retired can receive a considerable return from the pension or social-security scheme.

Effects on savings and growth

When intergenerational transfers take place through a pay-as-you-go scheme, people may think that their taxes have been "invested" to create a fund that will be the source of the payouts when they retire. Their future retirement payments are, however, based on an "unfunded" scheme of transfers because their taxes have directly financed income transfers to the old. Because of the future intergenerational transfers that will provide for them in their old age, people may quite rationally feel that they do not need to save and accumulate personal assets to finance old-age consumption. That is, under a pay-as-you-go scheme, people may perceive themselves as saving for old age through their social-security or tax contributions. Their savings are, however, transformed into consumption for the old and are not true investment. On the other hand, when assets are accumulated to finance old-age consumption, savings are invested to create productive assets that provide for future consumption. Growth is therefore higher when personal savings are transformed to productive assets than when pay-as-you-go intergenerational transfers are used to provide for old-age consumption.

Risk spreading

There is a risk that personal savings may be lost in unwise investment decisions or because of bad fortune. Such risk can generally be avoided by spreading private risk through diversified personal investments. Mutual funds and private pension schemes allow people to diversify as well as delegate investment decisions to professionals. Or people can buy assets linked to broad stock indexes. In the long run, a diversified portfolio of stocks tends to provide a return that reflects the fundamentals of the growth of the economy.

Political decisions

Personal savings for old age or payments into a social security fund are personal property accumulated through personal contributions. Political decisions cannot be readily made to appropriate or redistribute this private property. Public pensions payments funded through taxation are not based on personal contributions. A government-funded collective pension scheme is more susceptible to change through political decisions than a scheme that identifies and records personal contributions.

10.3.4 Transition from intergenerational dependence

A pay-as-you-go intergenerational transfer scheme is an investment. An individual will prefer to "invest" in a pay-as-you-go intergenerational transfer scheme rather than in financial or productive assets if the rate of population growth, which we have denoted g, exceeds the market rate of return on investments in assets. We can denote the return from investment in assets by r. The intergenerational scheme is therefore a preferred investment if

$$g > r. \tag{10.5}$$

When people are having children and the rate of growth of population g is high, the intergenerational transfer scheme is attractive. When the demographic problems that we considered are present and r comes to exceed g, the preferred investment for a young person is in financial or asset markets. In particular, the market rate of return r can be positive when the return g from intergenerational transfers can be negative. In these circumstances, younger people have an incentive to switch from the social contract of intergenerational transfers to funded investments based on personal asset accumulation that yield market rates of return.

To invest in assets that yield a market rate of return, the young might attempt to reduce pay-as-you-go transfers to the old. The young and the retired generation are then in distributional conflict.

Both the young working generation and the retired generation can appeal to social justice. The case for social justice made by the people in the retired generation is that they honored the intergenerational contract when they were working and earning income. The social justice of the case of the young generation is that they too want a reasonable standard of living in the future when they retire, and that continuation of the pay-as-you-go system will not provide such reasonable living standards. The young generation can also claim that they did not participate in the decisions about benefits to the retired generation and may feel no obligation to honor an arrangement to which they did not agree, especially if defined benefits for retired people seem inordinately high.

The young can also claim that the retired generation deserved its predicament because, when young, the retired generation failed to have enough children to provide a future working-age generation that could adequately support them through intergenerational transfers. Moreover, knowing that their generation did not have enough children, the retired persons should have supplemented their social-security taxes with private savings. The means of private savings should have been available because members of the retired generation did not have the high personal expenses required to rear children.

Terminating the pay-as-you-go intergenerational contract would violate Pareto efficiency. The young generation would be made better off and the retired generation would be made worse off. The working generation could not (and would not) compensate the retired generation for its losses.

With a low or negative rate of population growth g, the change from intergenerational transfers to a funded scheme with accumulated assets would benefit all future generations who would receive the rate of return r from their personal investments rather than the low or negative return g that is determined by the rate of population growth.

The excess burden of taxation

There are efficiency losses due to the excess burden of taxation when taxes redistribute income between different generations.[13] The efficiency losses can be

[13] Recall from Chapter 5, that efficiency losses are incurred when taxes finance income redistribution. In Chapter 5, we looked at redistribution of income among members of one generation.

eliminated by changing from pay-as-you-go transfers that require payment of social security taxes to voluntary saving for old age, which does not require taxation.

The beneficiaries of the efficiency gains from elimination of the excess burden of taxation are the young, who are the taxpayers. The young not only benefit from replacing the intergenerational transfers by voluntary savings and so not having to pay taxes but also benefit by avoiding the excess burden of the taxes. The old lose in the change from a pay-as-you-go to a funded scheme because they no longer receive the pay-as-you-go transfers.

The young gain more than the old lose, but the young cannot compensate the old.[14] For example, suppose that under a pay-as-you-go scheme, the young are paying taxes of 1,000, which is transferred to the old, and that the excess burden of the taxation on the young is 300. Ending the pay-as-you-go intergenerational transfers provides the young with a benefit of 1,300, and the old lose their previous transfers of 1,000. Compensating the old requires giving them 1,000, which requires taxes on the young of 1,000 and which again incurs the 300 excess burden.

That is, compensating the old would require a return to the status quo of intergenerational transfers, and therefore a return to the previous inefficiency of the excess burden of taxation. We are back with the excess burden that we set out to eliminate.

Although the young cannot compensate the old for ending the pay-as-you-go transfers, the change from tax-financed intergenerational transfers to a voluntary saving scheme is efficient for society in aggregate because of the elimination of the excess burden of taxation. The young, however, obtain the entire benefits from the change, and all losses fall on the old.[15]

Bond financing to spread the cost of the change

The cost of ending pay-as-you-go intergenerational transfers can be spread more evenly if bond financing is used to maintain the consumption of the old. Future taxpayers then share the costs of change, in the same way as bond financing spreads the cost of a durable public good over future generations. A government can issue bonds and use the revenue from the sale of the bonds to finance consumption of the retired generation. The bonds are bought by the working generation, which will redeem the bonds when it retires, at which time a new working generation can be taxed to provide the revenue for the bond redemption.

Voting for change

The decision whether to end pay-as-you-go transfers could be put to a vote. Retired persons would vote to retain the pay-as-you-go scheme. People beginning their

[14] In Chapter 1, we considered compensation as an accompaniment of the criterion of Pareto efficiency. We noted that a change was Pareto efficient, if the gainers could compensate the losers and still be better off.

[15] In our example, the young gain 1,300 and the old lose 1,000. The total benefits from the change exceed the total costs, but the old cannot be compensated for their loss.

working careers would vote to end the pay-as-you-go transfers. What of people in between?

Because past personal contributions to the pay-as-you-go transfer system have been consumed by the retired generation and cannot be restored, a middle-aged person has nothing to show for past personal social-security taxes that have been paid (other than an obligation to be repaid in the future through the pay-as-you-go scheme).

For example, with the market rate of return for investment exceeding the rate of population growth, let us consider a person who begins to work at the age of 24. This person would vote to end the pay-as-you-go scheme because of the higher market rate of return from investment in assets.

A person aged 44 is some time from retirement but might vote to continue the pay-as-you-go intergenerational transfers. At age 44, the present value of future retirement payments through future pay-as-you-go transfer entitlements might exceed the benefits from switching to private asset accumulation to obtain the market return because only the future matters. All past "investments" through payment of pay-as-you-go social security taxes have been lost.

Therefore, among the working population, there can be majority support to retain the pay-as-you-go transfer scheme, even though the return from asset market investments exceeds the return from the pay-as-you-go transfers.

Outcomes of voting decisions are also affected by demographic trends that determine the number of voters in different age groups. With population declining and older people living longer, the older population has a political advantage in determining outcomes by majority voting.[16]

Pay-as-you-go transfer schemes can therefore continue to have majority support, even though the schemes provide returns that are inferior to the returns from investments in real and financial assets.

10.3.5 Intergenerational risk sharing

An entire generation can suffer from an adverse shock to its income. Such an adverse shock occurred, for example, during the Great Depression of the 1930s, when a large part of the population reached old age without means of support. The U.S. pay-as-you-go social security scheme was introduced during this time, and retired persons received free retirement benefits financed by the pay-as-you-go taxes of people earning income.

A society can also confront an adverse shock from a natural disaster such as an earthquake that wipes out the value of the population's accumulated assets. Pay-as-you-go transfers allow for intergenerational risk sharing in face of the possibility of such disasters. The living standards (or lives) of the population whose assets were wiped out are sustained when these people reach retirement age.

[16] The retired and near-retired population can also have an advantage in acting as an interest group to influence public-policy decisions because of the focus on one policy issue. See Chapter 6.

Suppose that generation A has been subject to the adverse shock that has wiped out its assets. When generation A retires, a younger generation B that is working would, through a pay-as-you-go scheme, transfer goods for consumption to the retired generation A. There is however no gain through risk-sharing to members of generation B from transferring consumption to the retired generation A. The younger working generation has already witnessed the adverse outcome for the older retired generation and loses from being in an insurance pool with a generation that is already known to need the insurance with certainty (which is then not insurance).

There is a problem of adverse selection. Members of generation B would maximize their personal lifetime incomes by not making the consumption transfers to generation A. Without government to enforce compulsory income transfers through taxation, social insurance, as insurance against idiosyncratic intergenerational shock, break downs – unless the younger generation acts as if it adheres to an intergenerational social contract.

10.3.6 Conclusions

Insurance protects against risk. In this section, we have noted the presence of a number of different types of risks that are related to provision for old age. There is risk associated with how long a person will live, or biometric risk. This form of risk differs from other risks because the uncertain event against which people seek insurance is beneficial rather than disadvantageous. More usually, insurance is sought in the face of adverse outcomes, such as bad health or loss due to theft or damage. Biometric risk involves the risk that an individual achieves the outcome of living a long life.

Another form of risk is associated with personal lifetime circumstances. A nonsupportive family background or a life history of bad health and unemployment can leave a person with inadequate personal means of support in old age. Social security covers people against the risk of reaching old age with such inadequate means of personal support.

There is also capital-market risk. People may save and make investments that are intended to provide for post-retirement consumption, but the investments may turn out to be unsuccessful.

We have seen that pay-as-you-go intergenerational transfers are subject to demographic risk. The demographic risk gives rise to a political risk: people who contributed to a pay-as-you-go intergenerational transfer scheme during their working lives confront the risk that the pay-as-you-go transfers will be discontinued because better returns are available from investments in asset markets.

In societies with pay-as-you-go intergenerational transfers, viability of the intergenerational social contract can be compromised not only by demographic change but also by early retirement and high benefits offered on retirement. Problems due to demographic change can be alleviated by changing to an asset-backed system for financing post-retirement consumption. The accumulated assets provide a means of financing consumption during retirement, so ending reliance on transfers

from the younger working generation for old-age survival. We have seen that issues arise regarding whether the asset-backed scheme should be compulsory or voluntary, and whether the scheme should be personal or pooled.

A change from a pay-as-you-go transfer system to an asset-backed system has distributional affects. With the asset-backed or funded system having a greater rate of return, a majority of voters may nonetheless favor retaining the pay-as-you-go system, including older voters in the working population. Nonetheless the pay-as-you-go scheme may not be viable in the long term.

Whether pay-as-you-go transfer schemes are viable is revealed through generational accounting. When generational accounting reveals pay-as-you-go intergenerational transfer schemes to be technically bankrupt in having a present value of payout obligations that exceed the present value of tax revenues, political decision makers might prefer to leave changes for the next generation of politicians.

We can conclude with a parable that reflects the political incentives. A king once offered to pay a large reward to anybody who would teach his dog to talk within ten years. The penalty for failure after accepting the obligation and the reward was, however, severe (death). For a long time, no one dared to accept the challenge of teaching the king's dog to talk. Then, finally, one person (a politician) came forward and declared to the king that he would teach the dog to talk. The king gave the politician his reward for accepting the challenge, and the politician took the dog and left the palace. Outside the palace, a crowd of people that had gathered asked the politician: how could you agree to such an impossible assignment? The politician replied: be patient. In the course of ten years, the dog might die, the king could die, or I might die. Or the dog might learn to talk. Teaching the dog to talk is the challenge of sustaining the social contract of pay-as-you-go intergenerational transfers in the face of imbalance in generational accounts. The death of the dog, or of the king, is spontaneous resolution of the problem from a source not explained (or is wishful thinking). The immediate reward for the politician is in the next election, by declaring the feasibility of the prospect that the dog can be taught to talk. If the king lives, and if the dog lives and does not learn to talk, there will be a problem. The obligation to teach the dog to talk will, however, have been passed on to future politicians or a future government.

References and related literature

On the history of social security, see Verbon (1988). On approaches to providing for old age in different societies, see Gruber and Wise (1999). On the theory of intergenerational transfers, see Samuelson (1958), Aaron (1966), Diamond (1977), Kotlikoff and Spivak (1981), Veall (1986), Hubbard and Judd (1987), Hansson and Stuart (1989), and Cigno (1993). On demographics, see Bental (1989), Disney (1996), Kolmar (1997), and de Nardi, İmroharoğlu, and Sargent (1999); for an optimistic view of U.S. social security, see Bohn (1999). On education and growth as a solution to demographic problems, see Zhang (1995),

Marchand, Michel, and Pestieau (1996), and Kaganovich and Zilcha (1999). On migration as a solution, see Hillman (2000) and Storesletten (2000). On the problem of emigration to a response to demographic problems, see von Hagen and Waltz (1995). On generational accounting, see Kotlikoff (1992), Auerbach, Kotlikoff, and Liebfritz (1999), and Kotlikoff and Rafelhuschen (1999). On political decisions and social security, see Browning (1975), Boadway and Wildasin (1989), Breyer (1994), Cooley and Soares (1999), and Casamatta, Cremer, and Pestieau (2000); for a survey of political economy models of social security, see Galasso and Profeta (2002). On change from pay-as-you-go transfers, see Brunner (1996), Feldstein (1998), Diamond (1999), Disney (2000), and Sinn (2000). On intergenerational risk sharing, see Gordon and Varian (1988). On intertemporal markets and intertemporal transfers, see Eckstein, Eichenbaum, and Peled (1985).

Aaron, H. J., 1966. The social insurance paradox. *Canadian Journal of Economics* 32, 371–4.

Auerbach, A., L. J. Kotlikoff and W. Liebfritz, 1999. *Generational Accounting around the World*. University of Chicago Press, Chicago.

Bental, B., 1989. The old age security hypothesis and optimal population growth. *Journal of Population Economics* 1, 285–301.

Boadway, R. and D. Wildasin, 1989. A median voter model of social security. *International Economic Review* 30, 307–28.

Bohn, H., 1999. Will social security and Medicare remain viable as the U.S. population is aging? *Carnegie Rochester Series on Public Policy* 50, 1–53.

Breyer, F., 1994. The political economy of intergenerational redistribution. *European Journal of Political Economy* 10, 61–84.

Browning, E. K., 1975. Why the social insurance budget is too large in a democracy. *Economic Inquiry* 13, 373–88.

Brunner, J. K., 1996. Transition from a pay-as-you-go to a fully funded pension system: The case of differing individuals and intergenerational fairness. *Journal of Public Economics* 60, 131–46.

Casamatta, G., H. Cremer and P. Pestieau, 2000. Political sustainability and the design of social insurance. *Journal of Public Economics* 75, 341–64.

Cigno, A., 1993. Intergenerational transfers without altruism. *European Journal of Political Economy* 9, 505–18.

Cooley, T. and J. Soares, 1999. A positive theory of social security based on reputation. *Journal of Political Economy* 107, 135–65.

de Nardi, M., S. İmroharoğlu, and T. Sargent, 1999. Projected U.S. demographics and social security. *Review of Economic Dynamics* 2, 575–615.

Diamond, P. A., 1977. A framework for social security analysis. *Journal of Public Economics* 8, 275–98.

Diamond. P. (ed.), 1999. *Issues in Privatizing Social Security: Report of an Expert Panel of the National Academy of Social Insurance*. MIT Press, Cambridge, Massachusetts.

Disney, R., 1996. *Can We Afford to Grow Older: A Perspective on Aging*. MIT Press, Cambridge, Massachusetts.

Disney, R., 2000. Crises in public pension programmes in OECD: What are the reform options? *Economic Journal* 110, F1–23.

Eckstein, Z., M. Eichenbaum and D. Peled, 1985. Uncertain lifetimes and the welfare-enhancing properties of annuity markets and social security. *Journal of Public Economics* 26, 303–26.

Feldstein, M. (ed.), 1998. *Privatizing Social Security*. Chicago University Press, Chicago.

Galasso, V. and P. Profeta, 2002. Political economy models of social security: A survey. *European Journal of Political Economy* 18, 1–29.

Gokhale, J., B. Page, J. Potter and J. Sturrock, 2000. Generational accounts for the United States: An update. *American Economic Review Papers and Proceedings* 90, 293–6.

Gordon, R. and H. R., Varian 1988. Intergenerational risk sharing. *Journal of Public Economics* 37, 185–202.

Gruber, J. and D. Wise (eds.), 1999. *Social Security and Retirement around the World*. University of Chicago Press, Chicago.

Hansson, I. and C. Stuart,1989. Social security as trade among living generations. *American Economic Review* 79, 1182–95.

Hillman, A. L., 2002. Immigration and intergenerational transfers. In *Economic Policy for Aging Societies*, H. Siebert (ed.). Springer, Berlin, 213–26.

Hubbard, R. G. and K. Judd, 1987. Social security and individual welfare. *American Economic Review* 77, 630–46.

Kaganovich, M. and I. Zilcha, 1999. Education, social security, and growth. *Journal of Public Economics* 40, 37–56.

Kolmar, M., 1997. Intergenerational redistribution in a small open economy with endogenous fertility. *Journal of Population Economics* 10, 335–56.

Kotlikoff, L. J., 1992. *Generational Accounting*. Free Press, New York.

Kotlikoff, L. J. and N. Ferguson, 2000. The degeneration of EMU. *Foreign Affairs* 79, 110–21.

Kotlikoff, L. J. and B. Rafelhuschen, 1999. Generational accounting around the globe. *American Economic Review* 90, 161–6.

Kotlikoff, L. J. and A. Spivak, 1981. The family as an incomplete annuities market. *Journal of Political Economy* 89, 320–91.

Marchand, M., P. Michel and P. Pestieau, 1996. Optimal intergenerational transfers in an endogenous growth model with fertility changes. *European Journal of Political Economy* 12, 33–48.

Samuelson, P. A., 1958. An exact consumption-loan model of interest with and without the social contrivance of money. *Journal of Political Economy* 66, 467–82.

Sinn, H-W., 2000. Why a funded pension system is useful and why it is not. *International Tax and Finance Journal* 7, 389–410.

Storesletten, K., 2000. Sustaining fiscal policy through immigration. *Journal of Political Economy* 108, 300–23.

Veall, M. R., 1986. Public pensions as socially optimal contracts. *Journal of Public Economics* 31, 237–51.

Verbon, H. A. A., 1988. *The Evolution of Public Pension Systems*. Springer-Verlag, Berlin.

von Hagen, J. and U. Waltz, 1995. Social security and migration in an aging Europe. In *Politics and Institutions in an Integrated Europe*, B. Eichengreen, J. Frieden, and J. von Hagen (eds.). Springer, Heidelberg, 177–92.

Zhang, J., 1995. Social security and endogenous growth. *Journal of Public Economics* 58, 185–213.

Questions for discussion

1. In a hunter-gatherer society, the old who can no longer fend for themselves can only stay alive through food and shelter provided by the young who gather food and hunt. A social contract allows intergenerational transfers so that the old in every generation can continue living. Why is a demonstration effect not a rational basis for the intergenerational transfers from the young to the old? What is a basis for behavior that sustains the intergenerational transfers? Why are the intergenerational transfers in this society precisely like a pay-as-you-go (unfunded) social security or pension scheme?

2. Why would you expect the social contract of intergenerational transfers to be successfully sustained in the family without enforcement, whereas the enforcement by government is required when the contract covers a large number of anonymous people?
3. How does demographic change affect the returns from pay-as-you-go intergenerational transfers when the transfers are based on (i) designated contributions or (ii) designated benefits for retired persons?
4. How do externalities affect pay-as-you-go intergenerational transfers through decisions regarding the number of children a person has? How do externalities arise through decisions to educate children?
5. What is a Ponzi scheme? Why have intergenerational transfers where initial generations define high retirement entitlements for themselves been likened to a Ponzi scheme?
6. When demographic trends threaten the viability of a pay-as-you-go intergenerational transfer scheme, what are the public-policy responses that a government can adopt? What are the political impediments to the public policies? What do you expect to happen eventually if there is no public-policy response when intergenerational transfer schemes are not viable?
7. What is generational accounting? How does generational accounting reveal whether a pay-as-you-go intergenerational transfer scheme is viable in the long run? How does generational accounting reveal the costs of deferring solutions to balance generational accounts? Why is there an incentive for political decision makers to shift a solution to the future?
8. Does the government oversee a pay-as-you-go intergenerational transfer scheme in the place where you live or study? What are the characteristics of the scheme (is the scheme based on defined contributions, defined benefits, or a combination of both)? How does the pay-as-you-go scheme fare in terms of generational accounting (have doubts been voiced about the future viability of the scheme)?
9. How do pay-as-you-go schemes redistribute income between high- and low-income people, or between married and unmarried people? Are the redistributions consistent with social justice?
10. Suppose that we leave a hunter-gatherer society and allow for personal savings, which allows individuals to prepare themselves personally for a time when they will no longer be earning income. How would you expect the presence of a pay-as-you-go transfer scheme to affect personal savings decisions? Is a government pay-as-you-go scheme a form of "saving for old age"?
11. Rather than receive transfers through a pay-as-you-go intergenerational scheme, people could save for their old age by buying government bonds. How does a bond market differ from a pay-as-you-go intergenerational transfer scheme? Does a bond market solve demographic problems?
12. How could the interest rate on bonds be negative?
13. When a retirement scheme is funded (the money people save is used to invest in financial or real assets that provide interest payments or can be sold in the future), people can make their own personal voluntary decisions about investments to provide for their old age. The government can also make the investments compulsory and compel people to pool their savings through mandatory mutual funds. Should government make savings for old age compulsory? Should the government insist on pooling? Explain.
14. When taxes are used to finance intergenerational income transfers, there is an excess burden of taxation, just as when taxes finance income redistribution within a generation. Elimination of the excess burden of taxation is the source of an efficiency gain when a change is made from a pay-as-you-go scheme to an asset-backed scheme. Does this efficiency gain allow compensation that makes both the working and retired generations better off from the change in the means of financing retirement consumption? Explain.
15. How can bond financing alleviate problems when a decision is made to change from an unfunded (not-asset-backed) pay-as-you-go scheme to a funded (asset-backed) scheme?
16. What should be the response of government when young generations complain that continued compulsory participation in compulsory pay-as-you-go social security yields inferior returns to investment in bonds or the stock market? Suppose that the question whether to change from a pay-as-you-go scheme to a funded scheme is put before voters and that the decision is made by majority voting. What do you expect the decision of the median voter to be? Explain. How is the position of the median voter influenced by demographic trends?
17. What are the different types of risks involved when people wish to provide for their old age? How can pay-as-you-go intergenerational transfer schemes be interpreted as intergenerational risk sharing?
18. Before pay-as-you-go intergenerational schemes based on taxation were first introduced, how did people survive during their old age?
19. It is sometimes proposed that social security or pension schemes should consist of both unfunded and funded components (see, for example, Hans-Werner Sinn, 2000). The argument is that if people did not have enough children to allow the viability of an unfunded pay-as-you-go scheme, they should realize that they need to accumulate assets to make up the shortfall resulting from the smaller number of people in the younger generation contributing to the pay-as-you-go transfers to the old generations. These people should have the means of personally saving for their old age through a funded scheme because they did not spend their money on children. What implications follow from the fact that some people have more children than others, or that some people have children when others have none? Do you believe that the existence of a government-implemented pay-as-you-go scheme of intergenerational transfers is itself a reason why people have chosen to have fewer children, so making the scheme nonviable because of demographic problems? Explain.
20. In summary, what do you believe should be the responsibility of government regarding providing for old age?

POSTSCRIPT: WHY VIEWS CAN DIFFER

excess burdens of taxation are small, and governments can therefore set high taxes to redistribute income without significant efficiency losses. A view from the left may also be that, when all is said and done, people have more or less the same preferences about public spending because people are more or less alike. Because inefficient or unjust outcomes of majority voting require diversity of preferences, a belief that preferences should be uniform (which is normative) or the claim that preferences are in fact uniform (which is positive) is beneficial for collective decision making through government.

A view from the left may tend to favor centralized over multiple government. Centralized government allows income to be redistributed through centralized taxation. Centralized government also moderates the impediment to taxing income from capital and other mobile factors by preempting tax competition, and provides more limited opportunities for individuals to escape high taxes. A view from the left emphasizes the need for social justice and sees tax competition among governments as restricting the scope of social insurance programs because of the locational adverse selection problem. Tax competition may thus be viewed as causing social harm rather than providing a basis for competitive choice among governments.

A belief that people do not differ much in personal preferences for public spending diminishes the scope for benefit from locational choice as a means of matching public spending with personal preferences. A view from the left might also see little scope for benefit to voters from observations on comparative political performance, again because of the belief that the political principal-agent problem is not significant. Competitive discipline on governments is, of course, not required if there is no political principal-agent problem so that government acts in the interest of taxpayers and citizens.

Most basically, the view from the left gives priority to social justice and equality over efficiency. Income redistribution is regarded as the primary justification for public finance and public policy.

Because of the greater perceived benefits from government, the view from the left may de-emphasize the limitations on assigning responsibilities to government. A view from the right stresses these limitations. Therefore, a view from the right stresses the problems of asymmetric information, in particular the moral-hazard problem when government provides social insurance. A view from the right also stresses the inefficiencies, as well as the social injustices, that can accompany majority voting because of diversities in voters' preferences. A view from right stresses the information problems that governments face in making efficient public-spending decisions and in designing efficient corrections for externality problems.

A view from the right points out that government is made up of *people* who, like people everywhere, have self-interests and personal objectives and can be expected to wish to increase their incomes and status. There may be reluctance in the view from the right to believe in the effectiveness of the Thomas-à-Beckett effect. Greater emphasis is placed on the consequences for public policies of the need by

politicians for special-interest money and the personal benefits to government bureaucracy from public spending. With government having a legal monopoly to tax and to choose and administer public policies, a view from the right expresses concern about whether the political and bureaucratic principal-agent problems are impediments to voters and taxpayers being able to achieve normatively desirable objectives through public finance and public policy. The excess burden of taxation and rent-seeking behavior also suggest caution about proposals to increase taxation and public spending.

Because of the priority given to personal freedom and incentives expressed through markets, a view from the right stresses the importance of the rule of law to protect private property. A classic view from the left, on the other hand, sees private property as reflecting and preserving past inequalities. A more contemporary view from the left may regard private property and rights of personal possession as subordinate to extensive redistribution justified by social insurance and social justice.

A view from the right sees multiple government as beneficial. The personal ability to choose among governments and tax competition among governments are restraints on the legal monopoly of governments to tax and to decide who benefits from public spending. The presence of multiple government is also seen as advantageous because of the information on comparative political performance that allows voters to judge the competence and honesty of their political representatives. Because of the limitations of government, there is greater receptiveness to the idea of constitutional restraint that specifies how the authority of government can be exercised over citizens. A view from the right also places more emphasis on possible private resolution of problems of efficiency and social justice without government. There may be greater patience for exploring possibilities of private voluntary finance for public goods through user prices, private resolution of externality problems by specifying legal rights, and private voluntary giving to help people in need.

The role of ethics or trust might be emphasized in a view from the right. Ethical or caring behavior and reciprocated trust diminish the need for the authority of government. There would be competitive market prices if no one ever took advantage of monopoly power (in natural as well as ordinary monopoly). If all people were to respect the natural property rights and freedom of others, the rule of law through government would not be required. If all people were to reveal their true benefits from public goods and were voluntarily to pay efficient Lindahl prices, taxation would not be required to pay for public goods. Public policy and public finance would not be required to resolve externality problems, if people were considerate in taking into account how their decisions affect others. The responsibility of government to provide social insurance would be unnecessary, if private charity were adequately to provide for the poor and disadvantaged; there would no accompanying moral-hazard problem, if people did not change their behavior to take advantage of the presence of social insurance. There would be no political principal-agent problem and no ambivalence about relying on politicians

and government bureaucracies, if people in government never made personally self-interested decisions that compromise the public interest.

However, the behavior that is here being sought contradicts the principle of personal decisions made for self-benefit that led Adam Smith to find virtue in the market. Hoping for personal behavior not based on personal self-interest returns us to the observations made by Friedrich von Hayek about the unlikely prospects for success of attempts to re-engineer human beings to contribute according to ability rather than personal reward. Yet if we view people as only acting in their self-interest, we make the error of dismissing the possibility of altruistic motives and of ignoring the genuine desire of people to help others in adverse circumstances. Personal self-interest is nonetheless the underlying behavioral principle of economic analysis. We have seen in this book that efficiency and social justice in general require more than voluntary decisions based on personal self-interest. The responsibilities that are consequently required to be assigned to government through public finance and public policy lead us to encounter the different views from the left and the right on the limitations of government and on the priority that should be given to efficiency or to social justice when one objective is only attainable at the expense of the other.

Somewhere between left and right, we must as citizens and voters make our own choices. This book has been about making the choices.

SUPPLEMENTS

1A: The efficiency of a competitive market
1B: The efficiency of a competitive economy
1C: Why choose collective property?
1D: A labor-managed firm

2A: Efficiency with public and private goods
2B: Group size and voluntary collective action
2C: Income distribution and voluntary collective action
2D: Sequential voluntary financing of public goods
2E: Income effects and the excess burden of taxation
2F: Empirical measurement of the excess burden of taxation

3A: Political competition with many candidates

4A: The tragedy of the commons
4B: An impediment to replicating missing markets
4C: Protection of dolphins

5A: An impossibility theorem for social aggregation
5B: Measurement of income inequality
5C: Social status and private charity

6A: Probabilistic voting
6B: A case of extreme corruption
6C: Theoretical models of rent seeking
6D: Rents and protectionist international trade policies

7A: Measuring the size of the shadow economy
7B: Tax evasion and the value-added tax
7C: Tax evasion through expense accounts

8A: Public finance and private supply
8B: User pricing and prisons
8C: Supplemental user pricing
8D: Privatization

10A: Employer-provided health insurance
10B: Markets and publicly financed health care for the elderly
10C: Costs of medical education and training
10D: Administrative expenses of providing for old age
10E: Intertemporal markets