Introduction

The evolving modern world is characterized by two opposing trends: integration and segregation. On the one hand, we witness strong forces for segregation on the basis of nationality, ethnicity, religion, and culture in the former Soviet Union, the former Czechoslovakia, the former Yugoslavia, as well as in Northern Ireland, Spain, and Canada. These forces are quite strong and, in some cases, violent. On the other hand, the European Union and NAFTA represent the tendency for integration motivated primarily by economic considerations (such as gains from trade and scale economies). In fact, these opposing trends can be explained by the concepts developed in modern club theory, local public finance, and international trade. For example, club theory explains the advantage of forming homogeneous consumption groups, while international trade theory emphasizes the gains from trade among heterogeneous economies. The outcome of such forces might be a system of overlapping "functional clubs," one in which an individual may belong simultaneously to several clubs, each fulfilling a different purpose.

It appears natural, therefore, that the growth of a body of literature dealing with the rationale driving these forces and their consequences should be observed. Indeed, in evaluating trends in the contents of the *Journal of Public Economics* for a period of 21 years, Atkinson (1993) writes that the provision of local public goods, income redistribution as a local public good, and the financing of local government are prominent examples of topics which have remained of continuing importance. He also notes that "elsewhere in the profession, there is more concern with open economies and the implications of international movement of capital." This volume is devoted to these two interrelated subjects: that is, economies of size, club theory, and local public finance; and the theory of taxation in the presence of free international movements of commodities, labor, and capital. Parts I to III are dedicated to the first topic, and Part IV to the second. Specifically, Part I is concerned with the roles of transportation costs, crowding, and preferences for a large variety of goods in shaping the main features of urban geography. Positive and normative aspects of the agglomerative forces are studied in the two contributions in this section. Part II contains four contributions dealing with fundamental issues associated with the provision of collective goods (club goods and local public goods), all of which employ a game-theoretic approach. Part III covers issues associated with the production, pricing, and consumption of congested public goods. It includes a discussion of the financing of transportation infrastructure (which is a special case of a congested public facility) in an intertemporal setup; efficiency

aspects of providing congested public good by a monopoly; positive and normative aspects of the "musical-suburbs" problem; and secession forces in federations. Finally, Part IV deals with several interesting tax issues that have arisen in a world in which economic borders are rapidly being removed.

Part I contains two contributions concerned with the role of agglomerative forces in shaping urban geography. Krugman (1991) has motivated thinking about the formation of cities as spurred by increasing returns-to-scale technology in the production of differentiated products. As in his earlier work, the model presented in this volume contains two types of commodities: homogeneous (agricultural) products produced with constant returns-to-scale technology, and differentiated products manufactured with increasing returns-to-scale technology (a composite of large numbers of symmetric differentiated products). There are two types of agents involved: immobile farmers versus workers in the differentiated products sector who can move from one city to the other. Locations are evenly spaced around a circle and transportation takes place on the circle's perimeter only. Again, Krugman assumes zero transport costs for the agricultural goods, but positive transport costs for manufactured goods. Transport costs have Samuelson's "iceberg" form, namely, if one unit of a manufactured good is shipped from one location to another part, the shipment gets lost, depending on the distance. Consumers in this economy have identical Cobb-Douglas preferences between agricultural goods and manufactured aggregate goods.

The framework employed in the current chapter takes firms to be myopic over space and time, that is, the decision to move to neighboring locations is dictated solely by whether or not real wages are higher there than in the current location. In their decision whether to move, firms ignore opportunities available in distant locations as well as strategic considerations regarding the state of the economy in the long run. Moreover, the dynamics of this system are crucially affected by the following assumption: A positive probability exists that the firm will move in the "wrong" direction due to some randomness introduced into the decision-making process. Thus, while the expected direction of motion is toward higher real income, the firm may move to the wrong location. We should point out here that, due to the assumption of zero transport cost for agricultural goods, all farmers have the same real wage.

For any given distribution of firms across locations, a dynamic general equilibrium problem arises and it is shown that, under the proper choice of parameters, the economy reaches an equilibrium where the real income of each type of firm is determined at each location. In this stochastic dynamic spatial model as in the other models used by Krugman (1991), we observe two opposing forces: centripetal forces generated by the incentive for firms to move toward suppliers of manufactured goods, and centrifugal forces generated by the "market potential," namely, the incentive to move toward large markets. None-

theless, we also observe the tendency to disperse due to the immobility of the farmers: When manufacturers are concentrated, it might be beneficial for them to disperse since competition is weaker in the rural markets. The chapter itself focuses on cases where the initial distribution of manufacturing firms is almost flat. Since a flat distribution is an unstable equilibrium, when conditions which guarantee strong incentives arise, the system evolves into a highly uneven spatial structure.

Helpman's chapter follows Krugman's (1991) previous study and investigates the role of agglomerative and disagglomerative economic forces which, when applied in an appropriate dynamic framework, result in the formation of cities. As in Krugman's model, the agglomerative force in Helpman's model relies on the advantage of accessibility to a wide variety of goods that characterizes large urban areas. However, unlike Krugman, where the disagglomerative force is the geographically dispersed demands of the immobile farmers, Helpman takes this force to be a result of the disadvantage of crowding in cities, an outcome reflected in a decline of housing supply per capita with increasing population size. It is in this sense that Helpman shifts the emphasis from the Löcshian setup, where the shape of human settlement is based on agricultural production, to the premise of modern urban economics.

On the positive side, three types of stable equilibria emerge. With a high elasticity of substitution among varieties and/or high housing preferences, the population (in a stationary equilibrium) tends to disperse. With a small elasticity of substitution and/or low preference for housing, the outcome depends on transportation costs. In these circumstances of very high transportation costs, the population tends to concentrate in one city. Assuming an intermediate level of transportation cost, in a stable equilibrium, there results a tendency for the population to be unequally distributed in two cities, one big and one small, both of which are stable. In the last case, with an unequal population distribution, the allocation is suboptimal; hence, everyone can be better off by relocating from the small to the large city, which means the market tends to generate insufficient agglomeration. Obviously, this reflects the external effect associated with the advantage of a large selection of varieties. More precisely, when the individual moves from the small to the large city, the range of available varieties there increases and, consequently, the welfare of the population in the large city as well as in the small city increases.

Although the models used by Krugman and Helpman are motivated in different ways, the dynamics in both models, which result from two opposing forces, yield stable long-run equilibria. Their studies consequently shed light on the economic aspects of the interesting phenomenon of self-organization.

Part II deals with fundamental issues of club and local public good theories, using a game-theoretical approach. The Barham and Wooders and Conley and

Wooders chapters are complementary and cover much of the club theory literature. Both discuss issues associated with decentralization of optimal allocations. The first concentrates on nondifferentiated (anonymous) crowding while the second focuses mainly on a crowding types model, where agents are only affected by the numbers and observable crowding types of other agents. Gilles and Scotchmer discuss the effects of introducing multiple private goods (rather than only one good) into the club model. In particular, they explore the effect of multiple private goods on the optimal club system and the possibility of its decentralization. While these three chapters are focused on formation of consumption groups under first-best regime and the possibility of decentralizing this allocation, Guesnerie's chapter is mainly concerned with the formation of such groups under a second-best regime, where optimal taxation is not feasible.

Barham and Wooders address three different sorts of price systems – anonymous Tiebout equilibrium admission pricing, and Lindahl pricing with either anonymous prices (not dependent on tastes) or nonanonymous prices (dependent on tastes) under two different conditions of production: constant returns to scale within jurisdictions and concave production within jurisdictions. Their results illustrate that the more restrictive the price system, the more restrictive the conditions required on the environment to obtain core-equilibrium equivalence. It is perhaps especially interesting that the nonanonymous Lindahl equilibrium outcomes are equivalent to the admission equilibrium outcomes even when the anonymous Lindahl outcomes are only a strict subset (possibly empty) of the core.

One of Barham and Wooders' contributions is the extension of the Second Welfare Theorem for club economies by applying it not only to cases where individuals attain their type-optimal utility, but also to every equal-treatment Pareto-optimal state of the economy achieved by redistribution of endowments.

Conley and Wooders extend the scope of the analysis to include situations where consumers differentiate between other consumer types on the basis of their crowding effects. The authors show that in the crowding types model, anonymous admission prices decentralize the core. They argue that this result proves the Tiebout hypothesis that large economies with public goods and effective small groups are "market-like" – that is, the core can be supported by a price-taking equilibrium where prices depend on publicly observed information.

Conley and Wooders elaborate on three distinct equilibrium concepts: admission equilibrium, Lindahl equilibrium, and uniform Tiebout equilibrium. The authors report that the equivalence of the nonanonymous Lindhal pricing and nonanonymous admission pricing, shown in several papers in the literature on differentiated crowding, extends to the crowding types model. The anonymous Lindahl and anonymous admission price equilibria are not equivalent in the crowding types model. Thus, with anonymous pricing, there is a significant

difference between Lindahl and admission equilibrium in terms of their ability to decentralize the state of the economy in the core.

There is an aspect of the Barham and Wooders and Conley and Wooders chapters that might fruitfully be further investigated. Whether anonymous or nonanonymous pricing is used, Lindahl equilibrium is more information-efficient than admission equilibrium since Lindahl equilibrium only requires a finite number of prices. Therefore, it would be interesting to have an existence result for the Lindahl equilibrium which is less restrictive than in Barham and Wooders for the nondifferentiated crowding model. Another open issue is whether it is possible to define groups with different crowding types but with the same demands for public goods. Such a definition may be possible under restrictive conditions only, since the demand depends on the crowding profile, not only on the preferences (e.g., the crowding profile determines the income when individuals are complementary in production, and the demand depends not only on the preferences but also on income).

Gilles and Scotchmer show that extending the club model to include more than one private good matters, whenever the MRS between some pair of the private goods is affected by the characteristics of the club. In particular, optimal equal-utility allocation implies that more than one type of club should prevail. A similar observation has already been demonstrated by Wilson (1987) for a local public good model with land, where, in the case of multiple private goods, homogeneous jurisdictions structure cannot be optimal. However, the discussion of Gilles and Scotchmer provides different reasoning which is relevant to club models without production as well.

In fact, the superiority of the heterogeneous structure stems from the interplay of similar forces in both Wilson's local public good and Gilles and Scotchmer's club models: the tradeoff between the *gains from trade* on the one hand, and the *loss from inefficient group size* (a jurisdiction's or club's size), on the other. The difference between Gilles and Scotchmer's club and Wilson's local public good specifications, however, is that in the latter, the gains from trade always exceed the losses from inefficient group size, while in the former they may not.

Gilles and Scotchmer show that achieving gains from trade requires a club composition that allows markets to clear. This condition implies that the emphasis when proving decentralization of the optimal allocation should be shifted from the concept of optimal club size to that of an "optimal economy," within which the optimal gains from trade can be achieved with market clearing. This condition, however, aggravates the integer problem (emptiness of the core): Not only should the optimal club membership size be an integer number, but the population of the economy as a whole should be an integer replication of the "optimal economy." This observation is relevant, of course, to Wilson's case as well.

Guesnerie's framework is similar to that of Jehiel and Scotchmer (1994) in that the fragmentation of the population into groups (jurisdictions) is motivated by an inefficient tax system ("disagglomeration forces"). The collective good is pure; therefore, the efficient group size is the total population ("the grand coalition"). Since the relevant information (regarding the individual type) is not available, a Lindahl equilibrium cannot be established and, instead, a distortive tax system is applied (an identical head tax in the case of Jehiel and Scotchmer and a commodity tax in the case of Guesnerie). Guesnerie shows that even in nonpathological cases, the efficient "grand coalition," comprised of the whole population, may not be achievable because an inefficient fragmentation of the population into smaller groups may be stable. Stability, however, is not guaranteed unless some restrictive conditions are imposed on the individual's preferences.

On the basis of his simple model, Guesnerie touches upon fundamental informational issues associated with the formation of blocking coalitions. The second-best tax structure is explained by lack of information (otherwise a Lindahl tax system could have been imposed with a Pareto improving Lindahl tax system). Guesnerie then raises the following question: If information is not available so as to create the grand coalition (to establish a Lindahl equilibrium), how can blocking coalitions having some internal distributional patterns be formed? Referring to his work with Demange, Guesnerie defines two concepts of a core, one based on full information and the other on only partial information. He then discusses the implication of each concept of the core on the stability of the allocations. As in many other models with private information, the following issue is raised: Can we apply the information revealed by the creation of such stable groups for a taxation pattern that will result in the formation of the grand coalition?

Part III is devoted to issues related to the production, pricing, and consumption of congested public goods. Arnott and Kraus elaborate on the financing of transportation infrastructure – which is a special case of a congested public facility – in an intertemporal framework; Oakland discusses the efficiency of monopoly provision of a congested public good; Wilson deals with the nonexistence of equilibrium and efficiency issues associated with interjurisdictional migration and induced by the failure to implement marginal-cost pricing (the "musical-suburbs" problem); and Berkowitz analyzes secession trends in federations.

Arnott and Kraus extend the self-financing of transportation infrastructure result (when the long-run average cost function reflects constant returns to scale) in static models to a variety of intertemporal environments, using the present value criterion. The self-financing result is obtained when the user-cost function exhibits zero homogeneity in volume of traffic and the capacity-cost function exhibits linear homogeneity. (In fact, by inversion, these assumptions are

equivalent to assuming that the volume of traffic is a linear homogeneous function of the infrastructure (fixed input) and the total user-cost (variable input), which is a standard result in microeconomics). With appropriate interpretation, Arnott and Kraus show that this result applies equally to a dynamic setup. However, in any time interval, the self-financing result does not hold on a cash basis: The toll revenue need not equal the cash outlay for maintaining and investing in infrastructure. Rather, the present value of the toll revenue equals the present value of the stream of outlays for maintenance and investment. During any time interval, current toll revenue plus capital gains equals the interest cost on capital plus depreciation and maintenance.

The self-financing result (with several extensions) remains robust if the production technologies exhibit constant returns to scale. For example, introducing an adjustment cost exhibiting homogeneity of degree one in the infrastructure and its rate of change modifies the self-financing result only slightly by including profits from investment, evaluated at shadow prices, on the revenue side. The only exception is the case of fixed increment to capacity, such as runways. Although the chapter directly refers to transportation capacity, the analysis applies equally to any congestible public facility characterized by constant returns to scale.

Oakland studies the provision of a local public good by a monopoly. Starting from Knight's (1952) claim that the monopoly provision is likely to be as efficient as in the free entry case, Oakland demonstrates that, under quite general assumptions, it is actually inefficient. Moreover, it is not impossible to fully characterize the nonoptimality of the price or the capacity of a public facility in this case. However, using a weakly separable utility function (between the private good and the characteristics of the public good), he shows that when "demand compensation" (i.e., the price reduction required to compensate for an increase in congestion) is uncorrelated across types of consumers, the nondiscriminating monopolist's price will be "too low," which may look counterintuitive, and the capacity will fall below the socially efficient level. On the other hand, if the public facility monopolist chooses the efficient capacity, it sets the price above the efficient level, as in the standard case of monopoly-supplying of a private or pure public good. As Oakland shows in his work, the monopolist can exploit any imperfect substitutability between a congested good and other goods. The absence of a contending firm capable of offering consumers some combination of price and congestion that would increase their utilities, without incurring a loss, is the major reason for the inefficiency.

Turning to Wilson's contribution, it is well known in the literature on local public goods that matching residents' tax payments with their marginal congestion costs is, in many cases, infeasible and, in the event of free migration, may result in the nonexistence of a competitive equilibrium. Those with high congestion/tax ratios tend to join communities with low congestion/tax ratios.

The latter, then, tend to secede and form another community just to realize that they are being joined again. For example, if the tax base equals property values, those with low demand for housing tend to join communities exhibiting high demand for housing. Wilson begins the analysis of this "musical-suburb" problem and its solution by assuming that there are two types of individuals, differing from each other by the congestion costs they generate. These costs, however, are unobservable for taxation purposes. He shows that with perfect foresight, an inefficient equilibrium exists where communities with low cost/tax ratios deviate from the Samuelson criterion for supplying public goods in order to exclude the individuals with high cost/tax ratios. Thus, in contrast to the earlier literature, Wilson shows that an equilibrium exists with homogeneous communities, each accommodating unique types of cost/tax ratios. However, in excluding the potential free riders, the allocation is distorted. Wilson then demonstrates that, with some qualifications, appropriate head transfers from individuals in the low cost/tax to the high cost/tax communities can induce a Pareto improvement. The reason this works is that such transfers make the communities with high cost/tax ratios more attractive and, hence, a smaller deviation from the Samuelson criterion is required to keep individuals with high cost/tax ratios from entering. This diminished distortion may more than offset the loss from the transfer. Wilson extends the analysis by introducing a case where monitoring congestion is possible but costly, as well as a case where the "musical-suburb" problem is created by a property tax.

The chapter by Daniel Berkowitz presents a study of the viability of a fiscal federation. He distinguishes between the economic (non-nationalistic) and noneconomic (nationalistic) considerations of policy makers. Suppose that a fiscal federation of certain regions is a Pareto improving institution, that is, all the regions belonging to the federation gain from membership. Obviously, if all regional governments are motivated solely by economic (non-nationalistic) considerations, the federation prevails. However, when there is some risk that the nationalistic forces will gain power in some regions of this economically viable federation, then non-nationalistic governments in other regions, those motivated only by economic gains and losses, may nevertheless choose to secede. This results from their concern regarding the loss of part of the resources they contributed, either voluntarily or through taxes, to the dissolving federation. Hence, *non-nationalistic* regional government may secede from an *economically viable* federation.

Part IV deals with several practical issues of taxation in open economies. The chapter by Roger Gordon and Jeffrey MacKie-Mason reexamines the question of why countries levy corporate taxes in small open economies. Existing theories suggest, following the Diamond-Mirrlees aggregate production efficiency theorem, that it is optimal for a small open economy to equate its domestic marginal product of capital to the world's real rate of interest. There-

fore, it should levy the same tax rate on the capital income of its residents whether they invest at home or abroad. When enforcement of a tax on foreign-source income is problematic, one would expect small open economies to exempt corporate and other capital income from taxation or, at least, levy a relatively low tax rate. This conclusion is reinforced by the ability of multinationals to shift their accounting profits from high-tax countries to low-tax countries via appropriate transfer pricing schemes.

Yet, Gordon and MacKie-Mason point out, not only are corporate tax rates nonzero, but in recent years they tend to be roughly comparable with the top personal tax rate in each country. Must the inevitable conclusion be that countries are following suboptimal policies?

Gordon and MacKie-Mason offer some other explanations. A possible rationale for the corporate tax is to protect the personal income tax base. The absence of a corporate tax creates a strong incentive for individuals to conduct their trade or even provide their labor services through closely held corporations; retain earnings rather than pay them out as wages; and sell some of their shares or distribute dividends, making their earnings subject to effectively low capital gains or dividend tax rates rather than labor income tax rates. Other issues, such as credits versus deductions for taxes paid abroad, postponement of taxes on foreign-source profits until they are repatriated, etc., are also examined.

The chapters by A. Lans Bovenberg and by Bernd Genser deal with several issues associated with the relationship between destination-based and origin- (or source-) based indirect taxation. The main instrument of this type of taxation nowadays is the value-added tax (VAT), so attention is focused upon it. Two principles, or some mixture of them, govern the application of the VAT in the international arena: the destination principle and the origin (or source) principle. According to the first principle, a country levies the tax on all goods and services destined for final consumption in that country, regardless of the source (origin) of production. Specifically, imports are taxed and exports are exempted (or, more accurately, zero-rated). According to the second principle, a country levies the tax on all goods and services produced in that country, irrespective of their final destination.

When two countries adopt the destination principle for their VAT, the *producer* (pretax) prices of the consumer goods are equal in the two countries. If they adopt the origin principle, then the *consumer* (post-tax) prices of the consumer goods are equal in the two countries. Suppose there is a factor of production which is mobile between the two countries, so that its price is the same in the two countries. Now, if the VAT rates differ in the two countries, then equal producer prices in the two countries imply unequal consumer prices; and equal consumer prices in the two countries imply unequal producer prices. Therefore the two taxation principles are not equivalent. The destination prin-

ciple yields equal producer prices and production efficiency, but unequal consumer prices and consumption inefficiency; whereas the origin principle yields equal consumer prices and consumption efficiency, but unequal producer prices and production inefficiency. However, when factors of production are *internationally immobile*, their domestic prices will adjust to absorb the aforementioned difference in consumer prices (with the destination principle) or the aforementioned difference in producer prices (with the origin principle). Therefore, in this case, the destination principle and the origin principle become equivalent to each other.

The chapter by Bernd Genser follows this line of thought to establish some equivalences between certain mixtures of the two aforementioned (pure) principles. These equivalences have practical relevance in light of the ongoing debate on international tax coordination. Specifically, Genser shows that a mixed VAT system, which follows the origin principle within the European Union, and the destination principle between the European Union and the rest of the world, is equivalent to a pure destination regime. The chapter by Bovenberg extends the analysis of the two taxation principles to a dynamic framework. The non-equivalence between these two principles in the presence of international factor mobility now holds not only with respect to the *international* distribution of resources, but also with respect to the *intergenerational* distribution of resources.

David Wildasin's contribution may be viewed as an open economy version of the branch of the literature, originating in the work of Domar and Musgrave, concerned with the role as well as the scope of income taxation as a means of social insurance. Redistributive taxation in a closed economy with technological risk can be very useful in sharing that risk among the various factors of production (or their owners). But such taxation cannot reduce the economy-wide level of risk: When total output is uncertain, total consumption is equally uncertain; taxation can only help in pooling the risk among the many agents in the economy. However, in an open economy, the existence of mobile factors can reduce the level of risk for the economy as a whole by out-migration in the case of a low realization of output, and in-migration in the case of a high realization of output. By doing so, the mean return to the immobile factor may also rise. Redistributive taxation may interfere with the insurance role of migration in such a case, thereby becoming inefficient. Finally, the fiscal implications of factor market integration for developed and developing countries are discussed.

The contributions in this volume not only present developments in important areas in urban, public, and international economics, they also provide new directions to be pursued in future research. For example, the subject of economic geography is still in its childhood. Much more work is needed to fully understand the forces that shape human settlement over space. The study of the size distribution of cities presented here would benefit by accompanying research