

ZONING AND PROPERTY RIGHTS

A Hong Kong Case Study

Second Edition

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Chapter One

Introduction

The Pigovian arguments for planning

Zoning is well-known as a key instrument in planning regulation which is environmental regulation in its broadest sense. Even planning systems without explicit zoning regulations have implicit elements of zoning¹ which is understood broadly in this book as government delineation and/or restrictions of rights over land within certain spatial confines.

Planning in terms of economic theorization is normally justified by the Pigovian welfare economics theses of market failure (Pigou 1932), notably 'externalities' (Samuelson 1958) and by extension, 'public goods' (Samuelson 1955). This Pigovian pro-intervention tradition is well received by planning practitioners and by Commonwealth academics² involved in the education of planners.

An externality arises where the costs suffered by a party due to the activities (production or consumption) of another are uncompensated or, conversely, where the benefits produced by the activities of one party are captured by another free of charge. The former is called a negative externality and the latter, a positive externality. Such uncompensated costs and benefits arise, and thus the market 'fails' to attain Paretian efficiency, because the profit mechanism only works according to private costs and benefits. Such uncompensated costs and benefits become therefore social costs borne or social benefits reaped by third parties. Figure 1.1 depicts graphically the externalities produced by the production activities for a product X. The demand curve D represents the social marginal valuation of the consumers for X. The supply curve S_m reflects the private marginal cost incurred in producing X. The unregulated market equilibrium is E_m with the corresponding output being Q_m and market price being P_m . S_m , however, does not take account of the social cost or social benefit

which should be added on or deduced (vertically) from the S_m curve to reflect the net social marginal cost, which is represented by S_n in the case of a pure negative externality with X having no social benefit (i.e. S_p is irrelevant) or S_p in the case of a pure positive externality with X having no social cost (i.e. S_n is irrelevant). Respectively, the socially efficient equilibria are E_n and E_p , which the unregulated market would not attain. Comparing with E_n and E_p , E_m incurs inefficiency respectively for producing too much by the amount $Q_p - Q_n$ at too low a price by $P_n - P_m$ and too little by the amount $Q_m - Q_p$ at too high a price by $P_m - P_p$. The standard Pigovian solution would be a tax which brings S_m up to S_n for a pure negative externality or a subsidy (a negative tax) which brings S_m down to S_p for a pure positive externality so that the socially efficient equilibrium E_n or E_p can be attained. Alternatively, a maximum quota of Q_n and a minimum quota of Q_p would be set for the negative and positive externalities. The Pigovian tradition typically interprets 'pollution' as a kind of negative externality.

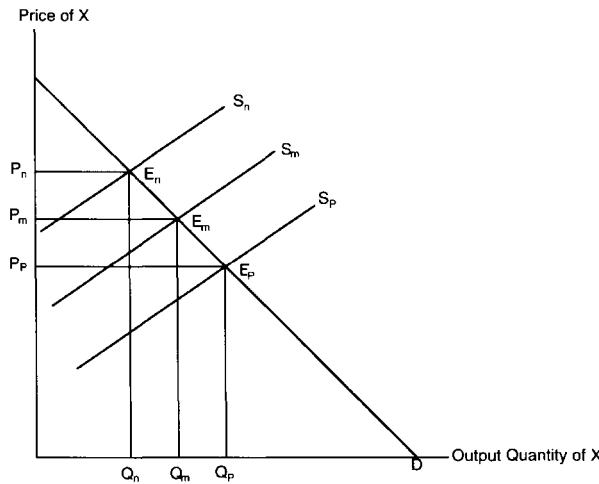


Fig. 1.1 Positive and Negative Externalities

Although the Pigovian policy solutions involve the imposition of extra constraints for market operation, they do not directly interfere with the spatial and internal aspects of production. While the planner may tend to acknowledge the existence of externalities and accept the need to tackle them, he or she is seldom given the authority to impose a pollution tax, grant an incentive subsidy or set a production quota. The planner, however, does possess a host of land use intervention tools which regulate the location, dimension, intensity, time, duration and process of the production or reception of externalities. Examples include land use restrictions, planning conditions, building codes, environmental standards, etc. Often such regulations are adopted and enforced by a zoning plan.

Public goods are those goods or services which the free market is believed to be inherently disinterested in providing an adequate amount, if any at all. The reason is that for certain types of goods, consumption is 'joint' and not exclusive. For instance, consumption of a movie is joint among viewers. The marginal cost of showing a movie to one more person is zero (up to the point of full seating). In such a situation, efficient resource allocation requires zero pricing and this deters the private sector. Besides, consumers would pretend that they have no demand for the goods in the hope that they could 'free ride' on the payment by other consumers. In the case of exclusive consumption, however, consumers will not conceal their real preferences as they would be unable to obtain the goods. The classic economic example of the free ride problem is national defence. While all citizens in a polity require collective security services, individual citizens when asked to pay for military expenditure on a voluntary basis may well deny their needs in the expectation that someone else would pay for the service. Hence there is a need for government as a coercive monopoly of violence to compel payment through the tax system and allocate resources to national defence. The same argument could be applied to many community services like education and open space.

Technically, public goods are jointly consumed, i.e. the aggregate demand curve for a public good is the vertical summation of individual demand curves (Figure 1.2). This implies joint consumption. However, the aggregate demand curve for a private good is obtained by horizontal summation, implying exclusive consumption (Figure 1.3). In many instances of planning intervention, goods which are private in nature — consumption of which is exclusive — are nevertheless treated by policy as if they are public goods. That is to say, payment for them is not directly, overtly or fully borne by the consumer through the private market but by government which in turn compels payment largely from the tax paying public through a fiscal regime. The typical examples in planning are: public housing; public open space and roads in general (largely borne by the tax paying public who pay the difference between the opportunity costs of road space and expenses, such as licence fees, registration fees, etc. recovered from vehicle users). These goods are either purely private or at least they become private above a certain technical limit of utilization when 'congestion' arises. Again zoning is a principal means to organize the spatial allocation of public goods.

■ Theoretical origins of planning as an interventionist endeavour

From the historical perspective, the post-World War II rise of planning as a profession dealing with the techniques, activities, procedures and management of government interventions in spatial and socio-economic affairs in

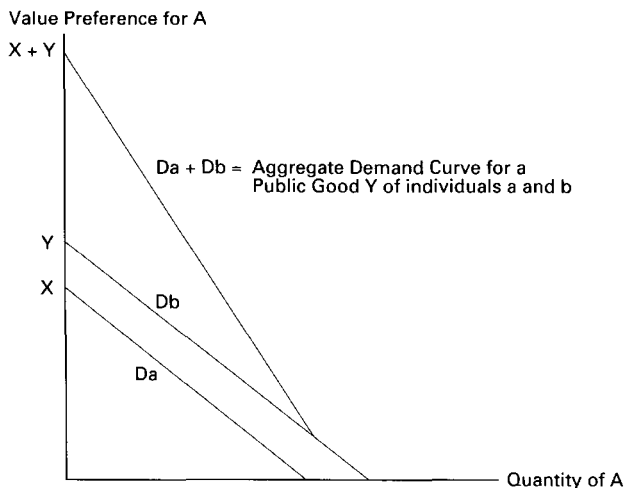


Fig. 1.2 Aggregate Demand Curve for a Public Good



Fig. 1.3 Aggregate Demand Curve for a Private Good

terms of the issues of externalities and public goods was heavily influenced by European pre-war economic thought and political experience. It is noteworthy, for example, that when Leninist-Stalinist central economic planning and Nazi totalitarian 'National Socialism' were being pursued at all costs in the 1920s and 1930s, the Cambridge Professors of Economics, A.C. Pigou and J.M. Keynes were writing their famous interventionist treatises that revolutionized the libertarian neo-classical tradition. Pigou's *The Economics of Welfare* (1932) provides justifications for government intervention on resource

allocation efficiency grounds, whereas Keynes's *The General Theory* (1936) offers 'short-run' solutions to macro-economic problems of unemployment and stagnation. Political sentiments leading to the Dawes plan providing loans to the Weimer Republic and the New Deal in the USA were surely conducive to the intellectual acceptance of such free world versions of market reformation as an alternative to the Marxist market displacement model.

Post-war economic recovery in the West and the associated suburbanization process provided fertile ground for putting into practice the interventionist thoughts of Pigou and Keynes. In the developing world, there was also a similar drive towards intervention. Some countries, like the People's Republic of China, imported the Soviet planning model en bloc. Others, leaning towards the West, did almost the same under the guise of Pigovian and Keynesian economic management. In the 1950s and 1960s, the planning paradigm was determinedly interventionist. Against this intellectual ethos, Frederick Von Hayek's polemic and libertarian attack in *The Road to Serfdom* (1946) and *The Constitution of Liberty* (1960) was an odd and lonely voice. Similarly, Ronald Coase's *The Problem of Social Cost* (1960) that disputed the Pigovian approach had little audience among planners in the British Commonwealth planning regimes.

The rise of 'property rights economics' in America, ensuing from Ronald H. Coase's seminal papers on transaction costs, particularly 'The Nature of the Firm' (1937) and 'The Problem of Social Cost' (1960), has led to the growth of anti-interventionist libertarian thinking in the field of economics in North America and Western Europe. As opposed to the Pigovian 'market failure' concept, notions like 'public failure' (Wolf 1987), 'non-market failure' and 'staatsversagen' (the German idea of state failure) (Janicke 1990) have emerged. In the field of environmental planning in particular, the concept of 'market environmentalism' (Kwong 1990) predicated on 'liberalization', 'de-regulation', 'privatization', and 'user charges', has created a new intellectual tradition competing with the Pigovian school. The demise of planned economies with the collapse of the Soviet Union and other communist regimes in Eastern Europe and success of the 'Chicago School' in capturing Nobel Prizes in economics have also produced a political and academic environment which fosters further development in this direction.

Objectives

Within the Coasian paradigm of transaction costs and Steven N.S. Cheung's interpretation of this concept (1990) that social institutions (including the government) are outcomes of public choice to reduce transaction costs, this book attempts to contribute to the existing intellectual discourse on zoning. This agenda is to be achieved by establishing a holistic property rights framework.

Within this framework, the economic literature on zoning could be critically reviewed and the dual character of zoning could be tested, on the basis of the following hypotheses:

- (a) zoning as a government means to assign exclusive property rights can constrain rent dissipation, which would occur under a system of common property rights under competition, and at the same time facilitate market transactions, and hence maximize property value;
- (b) zoning as a government planning intervention instrument would attenuate³ private property rights over the best possible (most valuable) social uses of land in the following senses:
 - (i) removal and/or subtraction of assigned rights over land entitlement and/or uses (whether such uses are specified or left unspecified initially) by the government act of downzoning, and other development rights (like requirements for joint development, restrictions on subdivision — with/without taking, eminent domain, compulsory resumption/acquisition; etc.) made under the so-called process of ‘forward planning’; and
 - (ii) supersedure of private decision about the transfer, change or resolution of conflict of rights over land entitlement and/or uses (whether such uses are specified or left unspecified initially) by government decision made under the so-called process of ‘development control’, in other words, private formation of contracts are superseded by government edicts.

This book is an interdisciplinary endeavour, drawing intellectual insights from the fields of economics, planning and law. Coasian transaction costs-based property rights analysis provides the synthesis of various concepts of zoning from various disciplines. A glossary of terms is given in Appendix 1.

Organization and methodology

Establishing a coherent property rights framework

This book seeks to achieve the objectives mentioned above by establishing a coherent framework of zoning using conventional property rights paradigms in Chapter 2. This framework provides the context against which the literature on economics of zoning is reviewed in Chapter 3. The framework presented in Chapter 2 should be able to provide a more meaningful interpretation and evaluation of the zoning or using concept of Coasian ideas. However, it avoids an extreme interpretation of the Coasian paradigm as an apology against all government regulations, there being some key differences in ideas between Coase and the Coasians, which are revealed in Chapter 3. In addition,

it also closes some gaps in the Coase theorization, notably the neglect of 'extension' as an ontological attribute of land.

Although the Coasian approach is positivist, some followers of Coase have formulated normative ideas which favour deregulation. In the economic discourse on zoning, while the Pigovian scholars like Baumol (1972), Crone (1983), and Fisher and Peterson (1987) continue to return analytical and empirical support for their theoretical constructs, Coasian researchers like Crecine (1967), Siegan (1970, 1972), Maser, Riker and Rosett (1977), Fischel (1978, 1979, 1980), Mark and Golberg (1981), Anderson (1982), and Benson (1984) provide directly opposite views with empirical evidence. These views are well received⁴ by some real estate researchers like Harris and Douglas Moore (1984). Zoning is considered to be either undesirable or useless in improving efficiency. By implication, its abolition, or 'dezoning' or 'non-zoning' (Siegan 1970) would bring greater efficiency.

The propensity to condemn zoning categorically raises a number of fundamental questions. To begin with, why does society choose this institution?⁵ Besides, how does this institution relate to Coase's presupposition of the existence of the market or, more generally, a private property rights system in his analysis of the trade of pollution rights? What is the position of this approach towards the 'non-zoning' in Houston (Siegan 1970), and the British planning system, which is said to be without zoning other than the British 'enterprise zones'⁶ or the Chinese 'special economic zones'?⁷ These questions are addressed in Chapter 2 which seeks to clarify the property rights nature of zoning. As mentioned above, the focus of property rights analysis is placed upon transaction costs. The conceptual framework presented here uses the most important version of the Coase Theorem to explain the dual character of zoning in terms of (a) the transformation of a state of extreme common property rights or anarchy to a state of exclusive property rights by assigning certain rights and (b) the attenuation of pre-existing rights over land. These concepts explain the institutional persistence of zoning. A series of conceptual drawings⁸ are used to help explain the evolution of the concept of zoning from anarchy to a situation with government planning. The historical transition of the land pattern of Junction Road area, Kowloon, is demonstrated by a series of government 'demarcation district' plans, survey plans and town plans.

A broad definition of zoning is adopted to turn zoning into a government activity or process amenable to the empirical tests within the property rights framework. Zoning is understood broadly as government delineation and/or restriction of exclusive property rights over land within certain spatial confines. This concept has three advantages. Firstly, it covers 'extension',⁹ an ontological attribute of land apparently overlooked by Coase himself when he discusses land matters or zoning regulation. Secondly, it covers both forward planning and development control. The existing economic analysis of zoning, only deals mainly with the latter aspect of planning. Thirdly, alternative modes of

government spatial regulation of land are understood as different forms of zoning. Thus, the ordinary meaning of zoning as a government planning and regulatory measure becomes a special case. The broad concept of transaction costs proposed by Demsetz is applied in order to encompass different modes of property rights.

There is an argument claiming that initial assignment of exclusive property rights over land by zoning is superior to the situation of common property rights, provided always that the transaction costs involved are not prohibitive. This argument is subject to analytical and empirical scrutiny here. The theoretical focus is that exclusive property rights can constrain rent dissipation.

The economic rationale of subsequent attenuation is conceivable within the Coasian concept of the nature of the firm as an institution that supersedes the market (Coase 1937). Whereas a private firm is always efficient due to competition,¹⁰ government as a special kind of firm or a 'super-firm'¹¹ may have 'inefficient' zoning policies due to political constraints.

Whether zoning as a means used by government planners to attenuate private property rights over the most valuable use of land is efficient and hence 'desirable' in terms of maximization of social wealth, subject to the constraint of transaction costs, is a question that has no *a priori* answer. It is contingent upon whether the increase in transaction costs for private landusers due to forward planning and development control are sufficiently offset by (a) the savings in the transaction costs of private solution over the transfer, change or conflict of rights over land entitlements and/or uses, and (b) the enlargement of the land market. In other words, it is more of an empirical, cost-benefit question rather than an *a priori* one. Where planning could reduce transaction costs, government as a kind of firm justifiably supersedes the market in dealing with changes of land entitlements and uses. Two groups of empirical hypotheses are derived for testing each character of zoning.

Chapter 2 also presents a succinct account of a market failure interventionist justification for zoning which is juxtaposed with the property rights explanation. It also gives the configuration of the zoning regime of Hong Kong in terms of the property rights framework to provide the context for the literature review in Chapter 3, and the empirical tests in Chapters 4 and 5. Historical details of the zoning system of Hong Kong are kept to a minimum because they have been competently documented by Bristow (1984) and Wong (1986). An institutional economics analysis of planning procedures is found in Staley (1994).

Literature review

The literature review (Lai 1994)¹² is a discourse about a host of analytical and empirical journal articles, monographs and books. Following the standard academic practice in the review of economic literature, an 'anachronic'

(structural) (Leslie 1970) and 'modernist' approach is adopted to inquire into the ideas of two leading economic paradigms (Kuhn 1962) of zoning. The methodological issues of this approach¹³ and a brief introduction to the two 'paradigms' or 'schools' of thought about zoning is given below. The name 'school' or 'tradition' properly applies to both groups of scholars adopting Pigovian and Coasian paradigms by virtue of their methodology and systematic treatment of the subject.

The Pigovian paradigm refers to the articulation of the concept of 'external effects' ('neighbourhood effects' or 'externalities'). As mentioned above, an externality is a kind of market failure. To reiterate, it arises where the costs suffered by a party due to the activities of another is uncompensated or, conversely, where the benefits produced by one party are captured by another without compensation. The former is called a negative externality and the latter a positive one. The Pigovian tradition typically describes pollution as a kind of negative externality. Such uncompensated costs and benefits would create economic inefficiency. The reason held by Pigovian economists is that as the market only responds to private costs and benefits, the market would fail to equate marginal value and marginal social costs, which is required as a condition for Paretian economic efficiency. They therefore argue that the state or government should intervene in the market so as to correct the inefficiency. While Pigou proposes the use of a tax (and hence the 'Pigovian tax') in the case of pollution, Buchanan and Tullock (1975) in their review of the Pigovian pollution tax scheme suggest that physical controls like quota are more suitable in some situations. The Pigovians' theorization on zoning follows this opinion. Zoning is interpreted as a kind of physical control which corrects market failure of externality. In fact, another welfare economic concept of market failure, viz public good (Samuelson 1955), can also be applied to justify land use planning. However, this has rarely been rigorously attempted.¹⁴

The Coasian paradigm¹⁵ begins with Coase's attack on the concept of social cost in his 1960 paper. He illustrates that 'harmful effects' in land use are actually reciprocal¹⁶ in terms of the parties' rights to use land. Furthermore, they can trade their rights until they reach a solution which entails joint and individual wealth maximization. In other words, the parties involved can attain the most efficient level of resource allocation where pollution, now interpreted as a factor of production¹⁷, is also optimal. Coase's analysis is expressly stated as one in which 'the operation of a pricing system is without cost'.¹⁸ This expression is termed as 'the cost of using the market mechanism'¹⁹ in 'The Nature of the Firm' (1937) and later described as 'transaction costs' in the field of economics.

Coase's 1960 paper and his earlier works (Coase 1937, 1959) have stimulated in microeconomics the growth of property rights analysis with a focus on the implications of positive transaction costs on the choice of institutional arrangements: families, firms, government and the like and resource allocation.

Harold Demsetz (1967) has extended the concept of transaction costs and refers it to all costs other than those in a Robinson Crusoe (one-person) world.²⁰

Zoning as a means to constrain rent dissipation

To test the social contribution of zoning as a means to assign exclusive property rights, the case of Hong Kong's Marine Fish Culture Zone (MFCZ) Ordinance, which establishes and assigns certain exclusive property rights over ocean fish, normally over-exploited as a common property, is investigated in Chapter 4 (Lai 1992, 1993a, 1993b).²¹ The empirical hypotheses are as follows:

- (i) the fall in rent (fish output) as a result of deteriorating (water) quality in MFCZ is less than that in common property areas (in-shore fishing grounds) due to dissipation in the latter;
- (ii) the capital kept (fish reared) in more polluted zones (MFCZ) are lower in return (prices) than those in less polluted zones (MFCZ) or those kept (captured) in common property areas (off-shore fishing grounds);
- (iii) the rent (queues for licences) for the more polluted zones (MFCZ) are smaller (shorter) than those for less polluted zones (MFCZ); and
- (iv) more pollution-resistant capital (fish) are kept in the more polluted zones (MFCZ) than in the less polluted ones.

Economics as a science of human choice has a high level generalization: what is applicable to apples²² and oranges, wheat and cattle,²³ bees²⁴ and fish is also applicable to all other scarce goods. Maximization behaviour is viewed not only as applicable to human beings, but also for animals (Hirshleifer 1977). Rules of competition for them may, however, vary. In the case of land resources, zoning is a means to constrain competition.

Marine zoning is investigated because in the real world, there are seldom cases of extreme common property rights over land property. The classic common property rights analysis commences with the subject of ocean fish. They are, however, analytical and conjectural (Gordon 1954; Scott 1955; Turvey 1964; Fullenbaum et al. 1972; Gould 1972; Smith 1972; Lawson 1984). Subsequent empirical analysis uses oysters (Angello and Donnelley 1975) as the test object. It should be pointed out that marine fish culture of Hong Kong has been neglected by property rights experts who advocate property rights assignment over common property.²⁵

To evaluate zoning in terms of property rights delineation in land is consistent with the more general public choice thesis which claims that government is the ultimate protector of the property rights of its subjects (Lai 1987).²⁶ Property rights over land is one of the most important property rights. Zoning cannot be discussed meaningfully in economic terms without reference to its relationship to property rights over land.

Zoning as a means to attenuate private property rights

To test the impacts of zoning as a means to attenuate private property rights, some aspects of Hong Kong's zoning practice are investigated in Chapter 5. The testable hypotheses are as follows:

- (i) comprehensive development areas (CDA)²⁷ (and/or areas with Master Layout Plans) have less (i.e. smaller percentages of) environmental complaints than areas outside CDA (testing impact on externalities);
- (ii) CDA have smaller rent variances than areas outside CDA (testing impact on externalities);
- (iii) CDA development under unitary ownership is more efficient than under multiple ownership.
- (iv) downzoning (reduction in plot ratio) has created a significant rise in the expected value of residential development (G.F.A.) (testing impact on externalities);
- (v) planning areas with more (greater percentages of) building plans (numbers/G.F.A.) vetted under the development control (statutory planning application) process tend to have less (smaller percentages of) environmental complaints than districts with less (testing impact on externalities);
- (vi) the urban-rural rent gradients have become more elastic (less steep) with the inception of statutory planning in the New Territories (testing impact on market enlargement); and
- (vii) in the New Territories, the volume of land transactions have significantly increased with the inception of statutory planning (testing impact on market enlargement).

The first hypothesis, being more general, is tested by case studies whereas the other more specific hypotheses are tested by more formal analyses. While categorical judgements can be made for the tests in the preceding chapter, it is not argued that the test results in Chapter 5 are in the same sense conclusive of the general nature of zoning interpreted as a means to attenuate private property rights. As it is argued in Chapter 2 and reiterated in Chapter 3, this position is inevitable as questions on this aspect of zoning are case-specific. What is more fundamental is that these hypotheses raise meaningful questions for the policy makers about the zoning system of Hong Kong.

Conclusion

Chapter 6 discusses main methodological issues and makes recommendations for policy development and further research for Hong Kong. The discussion will be based on the implications of the results from empirical tests of rights

assignment and attenuation in the preceding chapters. There is also an epilogue about the Coasian view of zoning.

The methodology adopted in carrying out the empirical tests in Chapters 4 and 5 is one of the Popperian falsification approach. This approach would only expect that the hypothesis asserted is either 'falsified' or 'not falsified' but would never claim that the hypothesis is 'confirmed'. If a hypothesis is falsified, then there are *prima facie* grounds to reject it. If it is not falsified, then there are *prima facie* grounds to accept it. In either case, there is no claim that alternative explanation is not possible. However, the fact that there could be competing explanations does not alter the interpretation of the factual results within the asserted hypothesis. It is up to the proponents of the competing explanation to prove their case or to show that their case is 'not falsifiable' by facts. An example serves to illustrate this point. If the hypothesis is that 'Peter will not come if it rains tomorrow', then this hypothesis 'is falsified' when Peter does come when it really rains. This result does not preclude the explanation that Peter comes only because he can find an umbrella.

Notes

1. The apparent lack of zoning in the United Kingdom is dealt with in Chapter 2.
2. See various articles in *Town Planning Review* 56, No. 4, 1985.
3. Unless otherwise specified, this term is used throughout the book in a positive sense without passing normative judgements regarding its desirability.
4. For a general and critical review of the American zoning system, see Dickson, A. 'A Critical Review on American Zoning System.' *Land Economics* 62, No. 4 (November 1986): 201–230.
5. Fischel asks a similar question, but he presupposes that zoning is inherently inefficient and asks the question 'if zoning is so inefficient, why does it persist'. See Fischel, William A. 'A Property Rights Approach to Municipal Zoning.' *Land Economics* 54 (February 1978), p. 65. It is considered that Fischel's answer in attempting to free ride on other people's property is too restrictive.
6. These zones are designated under s.32, para. 1 of the United Kingdom *Local Government Planning and Land Act* 1980.
7. These zones are established under the Guangdong Province Special Economic Zones Regulations, August, 1980 of the People's Republic of China.
8. For the use of conceptual drawing in economic literature, see Coase R.H. 'The Nature of the Firm.' *Economica* n.s. 4 (November 1937): 348 (reprint in *Readings in Price Theory*, published for the American Economic Association, R.D. Irwin, 1952), and Yang, Xiaobai et al. 'A Microeconomic Mechanism for Economic Growth.' *Journal of Political Economy* 99 (1991): 470. Diagrammatic illustrations of economic analysis of land use zoning are best summarized in Heikkila, Eric 'Using Simple Diagrams to Illustrate the Economics of Land Use Zoning.' *Journal of Planning Education and Research* 8 (No. 3, 1989): 209–214. See Misczynski,

- Dean J. 'Land-Use Controls and Property Values.' in Hagman, Donald G. and Misczynski, Dean J. ed. *Windfalls for Wipeouts: land value capture and compensation*. Chapter 5 (pp. 75–109) Washington: Planners Press, 1978; and Fischel, William A. 'A Property Rights Approach to Municipal Zoning.' *Land Economics* 54 (February 1978): 64–81, and 'Equity and Efficiency Aspects of Zoning Reform.' *Public Policy* 27 (No. 3, 1979): 301–331.
9. See Note 30, Chapter 3.
 10. Coase argues that in a competitive system, there would be 'an optimum of planning'. See Coase, Ronald H., 'The Institutional Structure of Production.' Sweden: Royal Swedish Academy of Science, 1991, p. 7.
 11. See Coase, R.H. 1960, op. cit., p. 17, also in Coase, R.H. 1988 op. cit., p. 117.
 12. Lai, Lawrence W.C. 'The Economics of Land Use Zoning: A Literature Review and Analysis of the Work of Coase.' *Town Planning Review* 65 (No. 1, 1994): 77–98. The published version includes all the contents of Chapter 2 and the Pigovian model described in Chapter 1.
 13. There are three common approaches in reviewing more than one piece of literature. The first method is to investigate texts one after another, an arrangement commonly used in encyclopaedias such as the *International Encyclopaedia of the Social Sciences* (1969). The second method is a chronological review of each author's contribution. The third and the approach adopted here is an anachronic (structural) study of various 'lines of thought', 'schools of thought' or 'traditions'. Unlike the previous two methods, this approach does not stress individual texts or authors, but their significance in a body of knowledge that merits a holistic treatment as a discipline on its own.
 14. For an synoptic account, see Lai, L.W.C., 'The Role of Land Use Planning — An Economic Exposition.' *The Hong Kong Surveyor* 3 (No. 2, Fall, 1987) p. 6 and 'Some Fallacies of Incompatible Land Uses — A Libertarian Economic Exposition of the Issues of Land Use Zoning.' *The Hong Kong Surveyor* 6 (No. 2, Fall, 1990) p. 18. For informal justifications of planning in general, see Stewart, M. 'Markets, Choice and Urban Planning.' *Town Planning Review* 44 (1973): 203–220, Oxley, M.J. 'Economic theory and Urban Planning.' *Environment and Planning* A7 (1975): 497–508, Moore, T. 'Why Allow Planners To Do What They Do? A justification from economic theory.' *American Institute of Planners Journal* 44 (1978): 387–398, Klosterman, R.E. 'Arguments For and Against Planning.' *Town Planning Review* 56 (1985): 5–20 and Sager, Tore. 'Why Plan? A Multi-Rationality Foundation For Planning.' *Scandinavian Housing and Planning Research* 9, No. 2 (August 1992): 129–147. Alexander, Ernest R. *Approaches to Planning*, 2nd ed., 2nd printing. USA: Gordon and Breach Science Publishers, 1993, especially pp. 121–124. It is unfortunate that Alexander's reference to Hardin's 'tragedy of the commons' does not lead to any serious thoughts about situations where interventionist planning could reduce private property to conditions akin or close to the 'tragedy of the commons'. None of these articles or books, however, addresses the economic critique of the approach or the nature of zoning. For a recent attempt to justify the economic contribution of planning in terms of property rights, see Lai, Lawrence W.C. 'The Property Rights Justifications for Planning

and a Theory of Zoning,' *Progress in Planning: Recent Research in Urban and Regional Planning*, Pergamon Press, UK, 48 (No. 3, 1997b): 161–246.

15. Victor P. Goldberg reminds economists that Coase's idea of the reciprocal nature of costs 'bear a striking similarity' to that of John R. Commons and John M. Clark's a century ago. See Goldberg Victor P. 'Toward an Expanded Economic Theory of Contract.' *Journal of Economic Issues* (March 1976): 45–61; and 'Commons, Clark, and the Emerging Post-Coasian Law and Economics.' *Journal of Economic Issues* (December 1976): 877–893.
16. See Coase, R.H. 'The Problem of Social Cost' *The Journal of Law and Economics* (October 1960): 35, also in *The Firm, the Market and the Law*. Chicago: University of Chicago Press, 1988, p. 120. Externalities are effects involuntarily imposed/conferred on a third party to a contract. They are hence also known as 'third party effects'. A discussion of externalities or social cost therefore involve at least three parties. The example of the conflict of interest between the cattle keeper and wheat farmer (say respectively party A and party B) in Coase's 1960 paper in fact involves four parties instead of just two. The four parties create a situation where externalities are bilateral. We can imagine that party A has a contract(s) with party C, the consumer of beef or dairy products, whereas B have a contract (s) with party D, the consumer of flour. Party A is a third party to the contract between party B and party D. Party B is a third party to the contract between party A and Party C. If the property rights are so assigned that party B can exclude party A's animals from grazing on party B's land, as in the law of trespassing, it can be argued that the contract between parties B and D causes a negative externality affecting A. If the property rights are so defined that party B cannot exclude party A's animals, as in the case of some societies where cattle are regarded as sacred, party B suffers from the contract between parties A and C. Coase discusses a situation where party A and party B in such a bilateral situation are free to negotiate or re-negotiate their rights and liabilities by an additional contract. This additional contract 'internalises' the externalities imposed on the original third parties. See Lai (1997a), *ibid*, note 14 above.
17. See Coase, R.H. 1960, *op. cit.*, p. 44, also in Coase, R.H. 1988 *op. cit.*, p. 155.
18. See Coase, R.H. 1960, *op. cit.*, p. 2, also in Coase, R.H. 1988 *op. cit.*, p. 97.
19. See Coase, R.H. 'The Nature of the Firm' *Economica*, n.s. 4 (November 1937): 39, also in Coase, R.H. 1988, *op. cit.*, p. 6.
20. This broad concept is adopted in this book. See Demsetz, Harold 'Towards a Theory of Property Rights.' *American Economic Review* (May 1967): 347.
21. This Chapter has been published in two journals and is forthcoming in a third one. See Lai, Lawrence W.C. 'Marine Fish Culture and Pollution — An Initial Hong Kong Empirical Study.' *EKISTICS* Vol. 59 No. 356/357 (September/October–November/December 1992): 349–356; *Asian Economic Journal* Vol. VII (No. 3, 1993), pp. 333–351, and in *Planning and Development*, Vol. 9, No. 1, 1993, pp. 11–20.
22. See Cheung, Steven N.S., 'The Fable of the Bees: An Economic Investigation.' *The Journal of Law and Economics* 16 (April 1973): 11–33.
23. See Coase, R.H. 1960, *op. cit.*

24. See Cheung, Steven N.S. 1973, op. cit.
25. In Kwong, Jo Ann's *Market Environmentalism: Lessons for Hong Kong*, Hong Kong: Chinese University Press, 1990, for instance, marine fish culture is surprisingly omitted.
26. Lai, Lawrence W.C. 'Democracy and Political Protection of Property Rights'. Unpublished M.Soc.Sc. (Economics) dissertation, Department of Economics, University of Hong Kong, 1987.
27. The term 'comprehensive development area' (CDA) used in this book is not restricted to those lands statutorily zoned as such in 'Outline Zoning Plans' but also refers to those 'estate' type housing development whether or not they are governed by master layout plans.



Chapter Six



Conclusion

Research directions, key arguments and findings

Research directions

In tackling the stated research objectives, the present study described in the previous chapters has sought to adopt different approaches of theoretical and professional interest. Firstly, zoning as a key planning tool is interpreted in a property rights framework. Unlike conventional economic analysis of zoning, which is restricted to the property rights attenuation aspects of zoning, the theoretical framework adopted here also incorporates the property rights delineation and establishment aspects of zoning. The framework should introduce academics and practitioners in the Commonwealth planning regimes to research focus and vocabulary for the socio-economic analysis of zoning they have hitherto ignored. In the context of Hong Kong, the framework proposed should be particularly important for two reasons. To begin with, it represents a systematic inception of Coasian property rights ideas into a practical and growing professional realm. In addition to that, Hong Kong will soon be subject to a critical constitutional experiment for a 'One Country — Two Systems' mode of economic-political governance. This system involves the co-existence of capitalist and socialist modes of economic orders. As a planning system operates within a broader socio-political context, there is an imminent need for local planning researchers and practitioners to be able to articulate in terms of concepts that are fundamental to debates about the economic nature of their practice. This is desirable as a way to keep abreast of and influence social developments. The property rights paradigm, by now a well received branch of economics should be able to offer a powerful set of analytical and operational concepts.

Secondly, the present study deals with some research limitations in respect of zoning. As discussed in Chapter 3, it is argued that (a) the property rights delineation of planning intervention cannot be ignored and (b) whether a zoning policy is justifiable is an empirical cost-benefit question rather than an *a priori* one. The rights delineation aspect of zoning is empirically evaluated in Chapter 4 with reference to marine zoning in Hong Kong. The test itself is an original contribution to property rights research on fisheries as an aspect of natural resources economics. It is also an attempt to test empirically the Knight-Gordon-Cheung analytical model. The results are consistent with standard property rights predictions. The cost-benefit view of zoning, asserted to be the proper interpretation of Coase's thinking, is applied in Chapter 5 to examine several aspects of zoning regulations in Hong Kong. Theoretically, the hypotheses present alternatives to the hedonic pricing and land values regression models. Practically, they should provide local researchers new directions for empirical district planning research. While at the strategic, sub-regional and sectoral levels, socio-economic planning studies and research in Hong Kong have attained a high level of sophistication, research on district issues like impact of zoning regulations, has hitherto been rare. The hypotheses set out here should be of both theoretical and practical interest to local researchers who are keen on the economic consequences of zoning. The issues raised in the present study about Comprehensive Development Areas, for instance, are crucial because they pertain to comprehensive urban renewal which would be the major vehicle for achieving a number of strategic and sub-regional planning objectives, such as thinning out urban population and restructuring obsolete urban areas.

Key arguments and findings

Chapter 2 presents a property rights view of the evolution of zoning and its nature. Three main arguments emerge from the discussion:

- (1) Zoning in its broadest sense can be regarded as a means to establish exclusive property rights by the state so as to constrain the costs of competition over land in a state of anarchy.
- (2) Zoning in the technical sense can be regarded as a means to provide an initial delineation of rights (and obligations). This could be provided by civil contract, as in the English freehold system and the leasehold system of Hong Kong, or by government design via forward planning, as normally understood by planners.
- (3) Zoning in its technical sense is also commonly regarded as a form of land use regulation to attenuate any initial assignment of rights via the government forward planning or development control process.

Generally, Coase holds that market transactions can internalize social costs, thereby providing an alternative to regulation. However, it is shown in Chapter 3 that the Coasian-Pigovian debate cannot establish whether or not *zoning* as a land use regulation specifically is definitely effective in terms of internalizing externalities. The proper construction of Coase's view is that it really depends on the concrete policies involved and no *a priori* judgement can be made.

Although Coase does not pay much attention to the implicit significance of boundary delineation in exclusive rights assignment, three main arguments emerge from Coase's transaction costs analysis, which are consistent with the framework presented in Chapter 2:

- (1) Zoning can be interpreted as the substitute for voluntary transactions of rights and liabilities in the unregulated land market due to its huge transaction costs.
- (2) Whether such attenuation is justifiable is an empirical cost-benefit analysis rather than an *a priori* question.
- (3) Zoning can also be regarded as a pure forward planning instrument assigning initial rights, thereby constraining rent dissipation in a state of common property.

The first argument provides a *prima facie* property rights economic justification for planning, which is further investigated in the study. The second argument, the archetypal Coasian view, is adopted in Chapter 5 to examine empirically some aspects of zoning in Hong Kong. The third argument, often ignored even by Coasian economists, is empirically tested in Chapter 4 with reference to marine fish culture zoning in Hong Kong. This incidentally provides an opportunity to test the most general Pigovian thesis that the price mechanism fails to reflect social costs.

In Chapter 4, marine zoning, as a means to establish initial property rights is examined. It is shown that in spite of deterioration in water quality, the productivity of fish in the marine fish culture zones of Hong Kong increased. This falsifies the environmentalist assertion that the fall in fish harvest in public water is due to pollution and establishes the property rights hypothesis that over-fishing is an explanation to the fall in fish harvest. By contrasting the opposing trends in productivity of private marine fish culture zones and public water bodies, the theoretical contribution of exclusive property rights delineation in constraining rent dissipation is verified in terms of a modified Knight-Gordon-Cheung model.

It is also shown that the fish farmers do attempt to enhance productivity by selecting the appropriate species and size of fry in the production cycle instead of growing them at random. This investment behaviour is not expected in a common property situation.

Above all, it is discovered that prices of the potentially more polluted cultured fish are at a statistically significant discount of ocean fish. This rejects

the assertion that the price mechanism fails to reflect pollution and hence, by extension, lends support to the Coasian theory that market transactions can internalize externalities.

In Chapter 5, several forms of statutory zoning regulation which override property rights assigned initially by contract (lease) are examined. It is established that generally the impacts of such regulations are not necessarily beneficial, as Pigovians might think, nor adverse, as suggested by the Coasians. Different forms of regulations have different results.

The alleged positive aspects of zoning attenuating private property rights through requirement of joint development within the CDA concept are empirically not rejected. It is discovered that the extent of CDA zoning has a significant negative correlation with the environmental complaints. However, as far as land values are concerned, the effects of these regulations are dubious. The alleged benefits of zoning in the form of, (a) Pigovian tax through downzoning, (b) supersedure of freedom of land use for the highest possible private use by the planning application system or through supersedure of agricultural leases, are rejected. These findings are supported by correlation analysis which produce statistically significant results.

The above apparently inconsistent results are of course subject to data limitation and interpretation problems. However, a number of general property rights conclusions are discernable.

Firstly, the constraints of transaction costs are decisive. The positive gains of CDA zoning are obtainable only because one pre-condition tested in this study is satisfied : the issue of land assembly is avoided due to unitary ownership. This lends support to the Coasian emphasis of transaction costs. Where such costs are too high, government resumption may be necessary. As argued in Chapter 2, the existing LDC resumption practice is not immune to criticism. The rights of landowners of not joining a redevelopment scheme are derived from the terms of their leases which are based on reciprocal promises between the government and citizens. Thus the attenuation of such rights before the expiry of the lease by urban renewal legislation merits due compensation to uphold the spirit of freedom and privity of contract. Respect for contracts has been regarded as one of the key factors behind the economic success of Hong Kong. To keep a blind eye to the issue of compensation and its implications could bring about econ-political costs and repercussions which exceed the financial and environmental benefits of individual urban renewal projects.

Secondly, regulatory zoning, albeit attenuating private property rights, does not always 'fail'. They could enhance land value, as in the case of CDA development, although it appears to have failed in relation to downzoning. A pollution tax in cash payable to residents in Tsuen Wan (or alternatively, rebates in rates) may be more effective in internalizing the costs of pollution. Planning application involves an institutional arrangement conducive to rent-

seeking activities, which could be constrained by clearer delineation of rights. Reforms of the planning application system by constraining 'as a matter of principle' decisions or the 'planning intention' argument against Column 2 applications have already been mentioned in Chapter 2. It is not unusual that one of the reasons given for Town Planning Board's decisions against a Column 2 planning application is that it is categorically inconsistent with the planning intention for a specific area. This is illogical. If this should be the case, the use would not be considered as acceptable in the first place. The argument, as mentioned,¹ is that the discretion of the Board should be restricted to the scale, intensity and design of the specific development and that it should not question the use generally. More detailed guidelines on these aspects should be made public.

Thirdly, the negative results about rural zoning which supersedes agricultural leases can be explained by the absence of clear assignment of rights. The reasoning here is analogous to that for the 'non-zoning' in the United Kingdom, which allows for a wide scope of rent dissipation. What remains to be seen is whether the maturity of the rural zoning system would significantly alter the relationship between planning application and nuisance for the New Territories. At present, the rural leases are overridden by statutory DPA plans. Such plans impose on vast areas the need for planning application for virtually all forms of development and changes in use. Thus, uncertainty in land use rights is great and the scope for rent-seeking is extensive. The new system will introduce Columns 1 and 2 uses, thereby reducing the costs of rent-seeking.

Methodological issues

General

The property rights model, which is presented in Chapter 2 and applied in Chapters 4 and 5, is built upon received property rights concepts favoured by the so-called Chicago School economists. Such concepts are claimed to have a high degree of generality. What is said about wheat farming and cattle raising (as in Coase's 1960 article) in an imaginary world of zero transaction costs can be extended to analyze what actually happens in the case of Hong Kong, with industrial-residential land use incompatibility. What is said about lighthouses (as in Coase's 1974 paper) and apples and bees (as in Cheung's 1973 paper) can similarly be said about fish. What is said about fish within marine zoning can be generalized to deal with land property value under zoning regulation. Many economists support such claims of generalization by insisting that theories must be subject to real life observation and empirical tests. The test methodology is one of Popperian 'falsification'. This approach is broadly adopted in the tests discussed in Chapters 4 and 5. Some basic features of the falsifica-

tion approach need reiteration. There is no attempt to confirm a hypothesis. Instead, the attempt is to reject it. If it is falsified, it will then be rejected as a *prima facie* correct theory. Where a hypothesis is not falsified by facts, it is not regarded as being verified as a true or exclusive theory. It is simply considered to be *prima facie* acceptable. In either case, there is no claim that alternative explanation is not possible. Thus, for instance, one may assert that the price differentials found between cultured and captured fish are due to 'taste' differences but not pollution, and that the apparent insensitivity of residential property value to reduction in industrial plot ratio in Tsuen Wan may be due to time lag or lack of public knowledge.

Issues of the theoretical framework

The present study adopts a very broad definition of zoning, i.e. boundary delineation, which implies an almost universal presence of zoning for all political entities. This broad concept of zoning is adopted to focus on the significance of property rights delineation and attenuation. It also helps derive empirical hypotheses, as applied respectively to marine zoning and CDA concept of Hong Kong. This broad concept is potentially highly controversial. One possible objection is that this will stretch the concept of zoning far too much. However, a broad definition could be meaningful and operational in developing new ideas. The broad concept of transaction costs adopted by the property rights theorists is a case in point. In this study, the broad definition of zoning facilitates theorization and evaluation of different *forms* of zoning, thus avoiding the Pigovian and Coasian concept of zoning as necessarily a rights attenuation instrument. Apart from the example of marine fish culture zones, the distinction between 'zoning by contract' of the Hong Kong leasehold system and 'obligatory zoning', the conventional meaning of zoning as understood by planner and economists would not be amenable to property rights interpretation, had the broad definition been discarded.

The property rights model established in Chapter 2 is predicated on received property rights concepts. The model presents an idealized account of the transition of society from anarchy to a polity with government planning. Model construction as such has been adopted by scholars of different persuasions: Karl Marx on economic history, Max Weber on sociology and H.L. Hart on the evolution of law. There is no claim that the zoning modes of all societies would undergo the same process of evolution. What is intended instead is that different forms of zoning involve different transaction cost implications. The phases in the model show an ideal gradation of transaction cost minimization arrangement. Anarchy involves the greatest transaction costs of competition whereas the developed government zoning system stands for the attempted minimization of the transaction costs of using the unregulated market.

Limitations of empirical tests

While the results of the empirical tests in Chapter 4 are in general consistent with the predictions of the framework presented in Chapter 2 and, in particular, the results of the test of correlation between captured and cultured fish prices are 'statistically significant', one must only take the findings as being tentative to the extent that (a) the time series for data in Table 4.3 (relating output of captured and cultured fish) obtained are restricted to 6 years from 1979 to 1984; and (b) the prices of each species of cultured fish by zone are not readily available. It would have been useful if a fall in fish yield, unrelated to the level of pollution, were shown in comparing the two fish harvest areas with different water quality (albeit under common property). This would establish that, *prima facie*, overfishing would be the explanation. Furthermore, whether the price differentials between cultured and captured fish reflect 'taste difference' or actual pollution is worth further inquiry. To this end, there is a need to compare the actual level or extent of intoxication of various species of the captured and cultured fish examined in Chapter 4.

The tests in Chapter 5 are constrained not only by data availability but also problems of interpretation. While the former may be overcome in time, the latter is inevitable in empiricism² in social sciences. While the results of the correlation test between the extent of CDA development and environmental complaints is statistically significant, the test results regarding the impact of CDA zoning *vis-à-vis* land value and industrial downzoning upon land values in Chapter 5 are rather disappointing from the planning point of view. The hypotheses about the price variances of CDA units could be better tested if price and rental data of specific piecemeal building development could be obtained to replace the coarse district averages used in the tests. The prerequisite of this approach is that Rating and Valuation Department would release their data on a building-by-building basis. As far as the impact of industrial downzoning is concerned, an opinion survey on perceived effects of downzoning can be carried out among residents of the three selected estates. By comparing various environmental complaints arising from the residents before and after the downzoning can also provide direct information about externalities. As argued in Chapter 3, land values are only indirect measures of externalities. Such efforts require institutional support. For instance, address codification of complaints in EPD's district environmental complaint registry is essential. Therefore, the hypotheses and their analysis cannot be considered as conclusive of all respects of zoning in Hong Kong. They should, however, provide meaningful insights into some crucial aspects of Hong Kong's planning system within the property rights framework established in Chapter 2.

To reiterate, the objective of the tests are to show whether there are *prima facie* economic grounds to justify zoning regulations and whether they

are beneficial or not. Negative results do not entail that they serve no useful purpose or are necessarily counter-productive.

The question of methodology for multi-disciplinary research

A problem was revealed in the course of preparing this book, which is the lack of a commonly accepted methodological stance for cross-disciplinary research. The standard 'Popperian falsification' approach may not be welcome by all researchers, especially those who are fond of dynamic model testing, and would be considered as being far too restrictive by planners. Planning research normally involves not only inductive causal reasoning but also a host of normative considerations, *a priori* principles, assertions and teleological arguments. The hypotheses in Chapter 5, for instance, would not be regarded as being decisive or sufficient for a planning policy review even if their methodological issues were ironed out and data limitations fully overcome. Conversely, planning explanations would be rejected by economists as empiricists for being ad hoc and value-laden. This book adopts the empiricist position in order to tackle the Coase-Pigou economics debate and to demonstrate the observable economic consequences of right delineation and attenuation aspects of zoning within the transaction cost paradigm. A shortcoming of this approach is that the usual planning propositions and arguments for and against various forms of zoning cannot be utilized. Another significant methodological issue is that the nature of the tests presented in Chapter 5 are not only simplistic but also purely 'micro' or district planning related. Zoning in the planning hierarchy of Hong Kong is only one of the implementation tools at the lowest tier of a strategic-regional-district planning hierarchy. District planning is officially represented as the arena where 'the plan' and 'the market' interface, via the planning application mechanism. However, the author feels that the real economic 'transmission mechanism' of planning works like this: strategic and regional planning provides strong investment guides and constraints for developers, who then reveal their preferences through the district planning system. District planning is therefore largely the result of market-driven forces rather than rigid constraints for the market. However, modelling the economic consequences and property rights implications of strategic and regional planning is not as easy as for individual zoning policies; especially because the relevant objectives and constraints are markedly different.

CDA zoning backed by compulsory resumption, for instance, is a district planning tool violating private property rights as much as a strategic solution for urban restructuring under constraints of the transaction costs of land assembly and negotiation. The question that needs to be addressed is how should economic benefits and costs at different levels of planning be compared and articulated. Attempts to deal with this question, however, could lead to a

costly digression from the objectives of the present study, which is to clarify the economic nature of zoning as a district planning tool. It is not to say that the attempts made towards this objective would lead to a clarification of the economic nature of zoning as a strategic urban policy tool. Nor is there any pretence that the empiricist methodology adopted is adequate in evaluating the effectiveness or appropriateness of planning intervention. Sound professional judgement backed by consultation for specific incidents sometimes are more cost-effective, if not being the only feasible recourse, than running statistical tests which demand gathering an enormous amount of data over a long period of time. However, the author believes that it is beneficial for the planning profession to balance their sense of self-righteousness in their quest for more discretionary power, so as to intervene with refutable factual evidence and not mere good intention.

Policy and research implications

Policy implications

From the above analysis, the most important policy implications are:

- (1) zoning as a means to assign exclusive property rights can effectively constrain rent dissipation, as illustrated by the study on marine fish culture. However, if the rights assigned by zoning are unclearly delineated, the land market may be retarded. In the light that rural areas are subject to pressures for urbanization or sub-urbanization and that the uses in DPA plans are unclearly specified, it is proposed that more resources should be devoted to prepare rural OZPs as quickly as possible to constrain rent dissipation and enlarge the land market. In the rural OZPs, the unspecified use areas in DPA Plans would be delineated into specific land use zones, hence reducing uncertainty for both the market and public sector.
- (2) The fact that zoning overrides Crown leases and infringes on private property rights allocated by contract must be acknowledged in policy formulation and every possible precaution taken to constrain rent dissipation. In particular, (i) Column 2 uses should always be permitted and discretion should apply only to their intensity and design and (ii) the Pointe Gourde rule should be abandoned for LDC profit-seeking schemes and replaced by a development gain sharing method of compensation or the concept of trust in favour of the landowners for profits reaped from redevelopment.
- (3) As the number of planning applications does not appear to correlate with the incidence of nuisance, the externality issue is *prima facie* suspect as a justification for planning regulation. However, as the test is inconclusive and subject to a number of limitations, it is worthwhile to establish an

internal monitoring system within the government which correlates planning applications, planning conditions, building applications and value and nuisance generation. Thus direct assessment of the performance of the planning system can be implemented continuously.

- (4) Marine fish culture appears to be the only viable primary production for a number of reasons. To begin with, commercial agriculture in Hong Kong has experienced an apparently irreversible structural decline due to keen overseas competition. Rising opportunity costs of land and labour in the absence of government subsidy, and demise of poultry and pig farming have also helped foster the marine fish culture industry. Marine fish culture, however, has been criticized by scientists as a source of water pollution. It is revealed in Chapter 4 that although the fish culture industry is likely to be the victim of pollution, (as the existence of price differentials between cultured and captured fish suggest), it can effectively conserve fish species which could be dissipated by over-fishing. Apart from introducing urban fringe parks as advocated by the planners, properly regulated mariculture could well become an area of major policy innovations for the Agriculture and Fisheries Department (AFD), which appears to have been rather passive or ignored in the past decade.
- (5) The Environmental Protection Department (EPD) may wish to adopt, in addition to purely physical environmental indicators, economic proxies of pollution to supplement their environmental auditing apparatus which also receives public complaints. The price differentials between cultured and captured fish may be used as proxies for water pollution. Liaison between AFD and EPD in this respect may produce fruitful results. Finally, one should not forget that billions of dollars has been paid as compensation to coastal fishermen who have allegedly been affected by marine dredging of sand and dumping of sludge for reclamation projects.

Research implications

The most significant research implications of the book are:

- (1) The property rights framework and empirical tests on marine fish culture would contribute further to theoretical development of the economic modelling of natural resources in general (for instance, similar empirical tests can be carried out on forestry), and fishery in particular. It would also lead to further research about the ability of the price mechanism in measuring pollution (as exemplified by the price discount for cultured fish) and the explanation of the specific model of land allocation practice in developing areas. As for the pricing of pollution, an attempt has been made by Lai and Yu (1992, 1995) to construct an empirical model of the demand for and supply of water pollution. As regards land allocation, a possible research

area is the American homesteading under the 1862 Homestead Act. Yoram Barzel (1989) has expressed curiosity about the non-price allocation arrangement.³ The granting to Hong Kong marine squatters of exclusive property rights may throw light on the homesteading system, which could be regarded as an initial assignment of exclusive property rights in a context where settlers occupied land in an anarchic situation.

- (2) As mentioned in the section on methodological issues above, the tests on fish culture are subject to limitations. It is however apparent that there exists a systematic pattern of price discount for cultured fish. This phenomenon should not be ignored for environmental research. If the theory presented in Chapter 4 stating that the prices of cultured fish are discounted for pollution is correct, the price gaps between cultured and captured fish should narrow with the improvement in the physical quality of coastal water. With the completion of the Territorial Sewage Strategy, which will discharge all sewage of Hong Kong to the deep South China Sea using huge submarine sewers, the pollution loadings in coastal water should significantly improve. This would provide an opportunity to test the above prediction. In addition, this would also provide an opportunity to test the conclusion that the loss in captured coastal fish is due to overfishing, not pollution. The argument is, even with clearer water, coastal captured fish yield would not increase as far as the fish remain common property.
- (3) The Planning Department announced on Christmas Eve 1993 that the plot ratios for different types of land use (residential, commercial and industrial) of Kowloon Peninsula would be further reduced for some districts like industrial and residential uses in San Po Kong, commercial use in Tsim Sha Tsui and Yau Ma Tei but relaxed for other districts such as Kwun Tong, Kowloon Bay and Cheung Sha Wan. Such zoning policies are predicated on infrastructural, environmental and strategic planning grounds. The concepts and discussions about the downzoning of industrial areas in Tsuen Wan in Chapter 5 should provide analysts with some insights. The interesting question would be whether such a comprehensive change as the plot ratio structures of Kowloon would significantly enhance the land values of the West Kowloon reclamation more than those of the Central and Wan Chai reclamation, which does not get the benefit of a similar change.
- (4) The ascendancy of the property rights paradigm in the economics arena (as reflected in awarding the Nobel Prize to economists in the past years) is expected to exert some response (positive or negative) in the planning research and education field, which has always professed itself as being multi-disciplinary. This would provide a check against reducing the activity of planning for the people as a pure physical or architectural endeavour. To be able to articulate in terms of the property rights paradigm, however,

requires not only a readiness to listen to unfamiliar ideas, but also some operational tools. Some of the operational tools adopted here are borrowed from mainstream economics (such as the Knight-Gordon-Cheung model) and the estate surveying (such as the bid-rent curves) disciplines. It appears that planning schools would get huge returns in improving the human capital they produce, i.e. planning graduates, by more closely affiliating with the economic and surveying fields which are strong respectively on rigorous theorization and practical market penetration.

■ Epilogue

The influence of Pigovian economic thinking in planning is persuasive. In the executive summary of the consultancy study final report on 'Support to Industry on Environmental Matters',⁴ the consultants make this statement of the 'costs of pollution' in support of the 'polluters pay principle' (i.e. the Pigovian taxation):

These costs were previously 'externalised' (i.e. not pay for and often underwritten by society as a whole) . . . ' (Support to Industry on Environmental Matters — Final Report, The Executive Summary para 3, p. 1)

Coase's paper 'Problem of Social Cost' (1960)⁵ addresses exactly this line of thought.

The Coasian paradigm of transaction costs and reciprocal nature of pollution should in this context provide policy makers with a powerful analytical and empirical alternative to the Pigovian approach. Unfortunately, as revealed in Chapter 3, Coase has been mistaken by many policy analysts as being a libertarian objecting to all government control. In fact, he does not dismiss government regulation *a priori* but argues that the costs and benefits of policy options, which include non-intervention or relaxation of existing regulations, must be carefully assessed before jumping straight to intervention. More unfortunately, Coase's followers in their analysis of zoning control have apparently been unduly influenced by Coase's casual criticism of zoning control.

The Coasian paradigm of zoning is too restrictive in focusing on externalities and tends to dismiss zoning too easily for being inefficient due to rights attenuation. On the basis of the Coase Theorem that 'the delimitation of rights is the prelude to market transactions', and Cheung's notion that institutions are the result of choice to reduce transaction costs, zoning is interpreted here as a means to assign exclusive property rights, thereby constraining rent dissipation, as well as an interventionist mechanism that attenuates private property rights. This dual character of zoning is in fact

implicit in Coase's reasoning although Coase himself may be responsible for the restrictive stance of the Coasians.

Apart from assuming away the notion of time, the Coase Theorem also omits the concept of extension. Extension is brought back into property right analysis of zoning in this book. Zoning as government delineation of land boundary is demonstrated to be inherent in the assignment of exclusive rights over land, the most developed one being private property rights protected by the law. Government zoning is therefore a special case by which private property rights are attenuated. Whether this attenuation reduces the transaction costs of an unregulated land market or increases the transaction costs of the land market is a case-specific, content-specific, system-specific, and a comparative rather than categorical or universal question.

Empirical tests and case studies are carried out here for evaluating these characters of zoning within a property rights framework with reference to examples in Hong Kong. It is shown that zoning as a means for the initial assignment of rights can effectively constrain rent dissipation. As regards subsequent attenuation of private property rights, the beneficial results are inconclusive. CDA zoning does enhance the environment and property value, subject to the transaction cost constraints of land assembly. Downzoning and planning application *per se* do not appear to be correlated with environmental improvement, but failure to delineate rights clearly in rural zoning appears to retard the land market.

The literature on regulation sometimes gives the impression that all regulation is stupid, corrupt or both. This conclusion should be avoided (Eggertsson 1990: 147).

The results of the empirical tests in this book surely support this view, as far as zoning regulation is concerned.⁶

Notes

1. See p. 41, ante.
2. Caldwell, Bruce. *Beyond Positivism: Economic Methodology in the Twentieth Century*. UK, USA and Australia: George Allen and Unwin, 1982.
3. Barzel, Yoram. *Economic Analysis of Property Rights*. Cambridge: Cambridge University Press, 1989.
4. Support to Industry on Environmental Matters — Final Report, Gilmore Hankey Kirke (GHK Hong Kong Limited) for Industry Department, Hong Kong Government, 1993.
5. See Coase, R.H. 'The Problem of Social Cost' *The Journal of Law and Economics* (October 1960): 35, also in *The Firm, the Market and the Law*. Chicago: University of Chicago Press, 1988, p. 120.

6. For a critical appraisal of the Hong Kong planning system in terms of property rights concepts, see Lai, Lawrence W.C., *Town Planning in Hong Kong: A Critical Review*. Hong Kong: City University of Hong Kong Press, 1997c, (Chinese translated version [香港城市規劃檢討] published by the Commercial Press, Hong Kong, October 1997d). The views in *Town Planning in Hong Kong* are consistent with those in Lai (1997b) and this work.

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