Pricing principles for minor ports

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Abstract

In Victoria there exists a category of ports which differ from the “Commercial ports” of Melbourne, Geelong, Portland and Hastings. These ports are legislatively defined as local ports but in non-jurisdiction specific language are better referenced as minor ports.

Such ports are facilities providing for mixed use and a range of activities; limited commercial activities such as fishing trawlers, charter boats for tour as well as an array of private recreational boat users, jet skiers and finally public promenading.

A typical facility needs to offer both waterside and land side services to complete the service offering to the public. These services include at the very minimum access to navigable waterways and moorings and provision of ramps, berths and jetties on the land/sea interface. Victoria has 14 local ports which offer a varying mix of services.

Governments face increasing budget constraints and are compelled to prioritise capital spend. This clash with expectations of society who would like infrastructure provided to enable them to use their leisure time.in discretionary pursuits around water. Infrastructure around local ports is caught up in this funding shortfall. Therefore the need for cost recovery and pricing methodologies for local ports which may ensure unconstrained supply of infrastructure. This will ensure that enjoyment of the “sea-side experience” continues. The sea-side experience can vary from enjoying the increasingly sophisticated ambience created around cafes with water views or frontage catering to a leisurely lifestyle, to promenading, fishing or simply walking along a towpath alongside water. It encompasses busy holiday destinations like Lakes entrance and Paynesville to quieter waters like Mallacoota. Semi commercial facilities like Portland, Paynesville, Port Albert and Corner Inlet in Victoria and in NSW Eden are also examples of the dual service offering of these ports.

This paper examines possible pricing methodologies in the context of the value offering of local ports and supply constraints experienced by users. The expectations that port services are available to all users, consider broad public benefits, are subject to full cost recovery, adhere to principles of competitive neutrality and are sometimes expected to be provided as a community service obligation are analysed.

The paper examines the literature relevant to these considerations and suggests possible pricing methodologies which can meet the complex objectives Local ports are obligated to meet.

1. Introduction

The terms local port and minor port are used interchangeably and refer to the class of ports in Australia that are not commercial ports.

There is an extensive literature on the pricing of port services pertaining to the commercial port sector. (Haralimbides 2003, Bennathan and Walters 1979, Goss 1979, Meersman H, et al 2003).

The dominant theme in theoretical pricing literature is that pricing should be on the basis of marginal cost as this is the most economically efficient way of pricing in a commercial port, Meyrick (1989), Haralimbides et al (2003)

Public sector treasuries however espouse the cause of “full-cost recovery” which does not accord conceptually with marginal cost principles.

Another body of literature on how best public goods are provided and public choices made Ostrom et al (1999) has relevance and is considered here for its relevance to local ports.

Equity issues relating to the enjoyment of a scarce good capable of providing value in recreational amenity and benefit are also an element complicating the allocation of resources in this realm.

Whether or not public choice theory or marginal costing principles can be applied, albeit with modification in the local port context is analysed here.

This consideration is made in the context of the published structure of pricing in Victoria (available in the public domain) when compared with that of selected interstate locations.

1. Background

In Victoria there are fourteen local ports, see representation below, for geographic location and port management responsibility.

2.1 Applicable Legislation

Under the Port Management Act 1995, the Marine Act 1988 (Marine Safety Act 2010) and the Commonwealth’s Maritime Transport and Offshore Facilities Security Act 2003[[1]](#footnote-1), the eight local port managers, comprising a statutory authority, four Councils, two foreshore Committees of Management and a specialist Committee of Management, are responsible for ensuring the safety, efficiency and effectiveness of port operations by providing services relating to the landside, waterside and the interface of water and land. These are detailed in Table 2 below.



**Table 1: Location and management of local ports.**

| Port | Port manager | Region |
| --- | --- | --- |
| 1. Portland Bay | Glenelg Shire Council | South-west ports |
| 2. Port Fairy | Moyne Shire Council |
| 3. Warrnambool | Warrnambool City Council |
| 4. Port Campbell | Parks Victoria |
| 5. Apollo Bay | Colac Otway Shire Council |
| 6. Lorne | Great Ocean Road Committee of Management Inc |
| 7. Barwon Heads | Barwon Coast Committee of Management Inc |
| 8 Port Phillip and Queenscliff | Parks Victoria | Port Phillip and Western Port |
| 9. Western Port |
| 10. Anderson Inlet | Gippsland Ports Committee of Management Inc | Gippsland ports |
| 11. Corner Inlet and Port Albert |
| 12. Gippsland Lakes |
| 13. Snowy River |
| 14. Mallacoota |

2.2 Stakeholders

The local ports support a broad customer base which includes commercial fishing, recreational boating, and public enjoyment of shore facilities, clubs, marinas, recreational fishing, and tourism. Economic interactions occur across many industry sectors including input and output impacts to the transport & storage, communication, food, manufacturing and tourism sectors. Table 2 illustrates some of these interfaces.

2.3 Economic characteristics of Local ports

The asset base of LP comprises of:

* Infrastructure on water (navigation aids)
* Infrastructure interfacing land and water(breakwaters, jetties, wharves, slipways, boat ramps and jetties)
* Infrastructure on land (see below)

# Infrastructure interfacing with the water is in economic terms a sunk cost and has no bearing on future decisions. Local ports face decisions on investing, de-commissioning or rehabilitating the same infrastructure.

Infrastructure interfacing with the land is varied; car parks, access roads, toilet blocks administrative buildings, amenities like electricity, water and sewage disposal, equipment depots and sheds as well as navigation aid markers and lighthouses.

Government accounting conventions require that these asset costs be shown at “replacement cost” as well as incorporating an accounting fiction called Capital assets charge(CAC) which is a notional book entry reflecting the cost of capital to government. Economists do not follow such conventions, valuing investments at historical cost.

It should be noted that waterways and channel have navigation aids and attract dredging costs because of the need to ensure the waterways are safe and useable.

**Table 2: Functions provided and stakeholders served**

|  |  |  |
| --- | --- | --- |
| **Waterside Functions** | **Interface Functions Water and land**  | **Landside Functions** |
| * Vessel operations (control of vessel movements, safe navigation, anchoring and mooring, maritime safety information)
* benefits all stakeholders
* Waterway management (dredging, patrols, inspection and maintenance of aids to navigation, safety of navigation, hydrographic survey) (statutory obligation)
* benefits all stakeholders
* Safety, environmental and emergency management (statutory obligation)
* benefits all stakeholders but commercial users more.
* Maritime security (statutory obligation) [[2]](#footnote-2)
* solely benefits commercial users
* Recreational boating activities
* benefits public
 | * Berthing and mooring (statutory obligation)
* benefits all stakeholders
* Loading/ unloading facilities
* benefits all stakeholders but commercial users more.
* Provision of safe refuelling, waste disposal and utilities
* benefits all stakeholders but commercial users more.
 | * Infrastructure
* Landside Infrastructure development and maintenance (statutory obligation)
* benefits all stakeholders but mainly shore side public
* Slipways and boatyards
* benefits small vessel operators more.
* Promenading and other recreational activities (statutory obligation)
* benefits public
* Management of public open space and leased facilities for commercial use
* benefits public
 |

The definition of a port following Haralimbides (2003) is one of interface between sea and land. Also the quotation from this work is of particular relevance “*A port could be from a small sheltered patch of sea that protects fishermen from the roughness of the sea, allowing them to moor their boats and trade their wares in safety somewhere in the South Pacific to huge industrial complex …..”* UNCTAD, who made a major contribution targeting developing countries where ports varied from those described by Haralimbides to the large transhipment ports like Colombo, define a port as, “*a collection of physical facilities and services designed to serve as an interchange point between land and sea transport”* UNCTAD (1975). It is seen that by this definition both small local facilities as well as complex commercial ports are both covered.

2.3 Differences between port types

In a commercial port the main interests of cargo, vessel operator, stevedoring and supply chain determine, who are the effective consumers of services, enables discussion and policy making as well as analysis of the welfare implications of pricing. Pricing in commercial ports is undertaken as strategic pricing, Haralimbides (op cit p782), Meersman et al (2004). This is because commercial ports exist in an industry where there is oligopolistic interdependence and strategies (sometimes contradictory) like profit maximisation, market dominance, economic development are pursued. All of these assumptions do not apply to local ports that possess different economic characteristics.

The effective consumers of local port services represent different interests; tourism, local residents seeking amenity (living by the seaside) recreational boaters and commercial fishing. Supply of the oil and gas industry in the Bass Strait occurs from two locations in Victoria. So a recreational user and a commercial fisherman may both use a berth or wharf facility, access road, and car parks which they may share with a commercial supply vessel. The recreational user may be a boater or a pedestrian promenading. On the waterways, commercial fishing craft, larger ocean going supply vessels as well as jet-skis, yachts may all rely on navigational aids and to a lesser extent dredged channels and safety and emergency services. The effect of all of this is that there is joint consumption of production facilities as well as common costs of provision.

2.4 Pricing evidence in local ports

The supply of recreational services and access to the waterways is not the sole provision of the LP operators. Alternate sources of supply from councils as well as private marinas exist though not always in geographic proximity and never at the same price point (See Appendix 1).

The pricing structure of ports (2012/13) is in Appendix 2 where a comparison is made with selected locations interstate. Comparison on a like for like basis is not easy as some interstate facilities include water, electricity, sewage disposal, security as well as have proximate slipway facilities, whilst others do not. All values here are for 2012/13.

The data required manipulation to allow a standard set of craft to be compared and the dimensions of > 10 m, 10=<16 m, 16<=20m,> 20 m were chosen.

The conclusions are that there is a wide spread of charges in berthing and mooring. Victorian mooring charges at $66 are low in comparison to interstate charges. In Tasmania a similar registration fee is charged $70.00 but with the important proviso that the state does not charge for moorings or berths. Berthing charges at state locations in Victoria are low in comparison to interstate charges in the state sector. Private berthing fees are relatively compatible in Victoria with interstate facilities.

There is no charge for waterway usage in Victoria nor is this ascertainable from the tariffs published for interstate locations. Anecdotal evidence suggests that the charges for berthing and mooring do not meet the cost of service provision. Moorings are charged at $66 per mooring and it is inconceivable that this reflects either the marginal or average cost of provision. At Port Campbell no charge was levied for a considerable period of time as the crane used there to position vessels was not fully functional.

In WA policy is that capital investment is provided by the state but all other costs need to be recovered via charges.

Evidence in Victoria from Budget papers indicates that substantial funding ($ 30 Mn) has been provided for keeping open the Lakes and for removal of sand build-up on the shore. Other miscellaneous driblets of funding are also evident in Budget Papers for Local ports. No targets have been set as a condition of this funding and it would appear that the availability of this funding is indicative of the State’s intention to ensure the continuation of these facilities. If this is implies recognition of the social and regional economic benefit of this sector, it raises the question as to whether local authorities (who benefit) should pay for port development.

Challenges in pricing and cost recovery are:

An exercise in Victoria (and other jurisdictions) is warranted to understand the cost structure of LP. Economic challenges identified are:

* The treatment of sunk costs, future capital investment and recovery.
* Recovery of dredging costs needed for efficient operation of facilities
* Waterway cost recovery including that specific to commercial trading vessels.
* The recovery of environmental costs
* Cross subsidy issues created by the recovery of joint costs- where tourists, commercial fishing, commercial charter operators consume resources.
* Distributional issues, e.g. allocation of scarce berths and moorings.
* Pricing issues which warrant consideration of both usage and access.
1. Literature survey of pricing and economic theories

3.1 Marginal costing pricing principle (MCP)

The concept of “user pays the marginal cost of production” was initially enunciated in a seminal article by H Hotelling (1938. The Bureau of Transport and Communication Economics (BTCE-1989) were aware and endorsed this approach. This approach leads to economic efficiency. This is the strict neo-classical view espoused by Bennathan and Walters - in their study for the World Bank(1979) and earlier, Walters(1978).

However “the user pays principle” is more commonly associated in public usage with ‘full cost recovery’ which requires the user to pay the average cost of production. With the nature of investment in most commercial ports being large and lumpy, marginal costs will be lower than average costs leading to tension in whether one or the other is correct.

3.2 Second best pricing

Unless all other sectors in the economy are pricing goods at marginal cost there is little purpose in pricing at marginal cost. Therefore a set of adjustments providing a second best set of prices which provide a second best efficient outcome has been proposed-Lipsey and Lancaster (1956).

3.3 Ramsey Pricing (RP)

Economic theory does not find full cost recovery economically efficient though policy makers require it, Victorian Cost Recovery Guidelines (2010), similar guidelines in NSW (2006). Ramsey pricing is a special branch of second best theory which lends itself to among other things, how a public enterprise may price if a given financial target return is sought Baumol, and Bradford, (1970).

If this (RP) is the strategic pricing goal then both the marginal cost of providing the product as well as the elasticity of demand for the product should be taken into account. In Liner shipping this principle is known as “what the traffic can bear” and is enunciated in, Hallock (1983), following Baumol, Panzer and Willig (1982) who discussed this in the context of US railroads. One should note the caveat that “what the traffic can bear” leads to profit maximisation. Now Ramsey Pricing does not sanction profit maximisation for public utilities but does suggest that if for some reason one had to price above marginal cost then this is a pricing strategy that can minimise welfare loss to the level most compatible with the strategic financial target. This makes it a neat compromise to MCP.

3.4 Two – part tariffs

Two part tariff strategy advocates a variable component levied per unit of consumption which can be the marginal cost and an access charge. This is an intuitively possible methodology for the pricing of port services. Bennathan and Walters (1979) in their study for the World Bank advocated this. Practically there are limitations because it needs economies of scale or declining short run average costs internal to a single customer (e.g loading bulk minerals or oil.). Where a container Terminal operator enjoys such scale benefits however the problem of how the distribution of the infra marginal costs arises. If this is done using volume discounts then this reverts to an Average cost pricing, very rarely thus can the two-part scheme deliver the allocative benefits in the purest sense of MCP.

Two-part tariffs in the local/minor port context can be in the form of a usage charge for berthing or mooring based on “what the traffic can bear” principle ,which may equitably translate to differentiation between commercial, recreational, and luxury craft ,differentiated by length or duration of stay. In addition to the usage charge a waterway access charge or in some instances a promenade access charge may be levied with differentiation possible based on considerations of equity and safety.

3.5 Pricing theory as specifically discussed for ports

Large ports are characterised by channels, breakwaters, berth provision as well as landside infrastructure provision undertaken in large units such that indivisibility is common. Scale economies are common. It is thus not surprising that marginal cost pricing has attracted attention –Walters (1978). Walters along with Bennathan 1979 op cit argue that MCP is the appropriate basis for supplying port services. They indicate a preference for Short run Marginal cost, indicate the existence of scale economies but also admit to the possibility of there being excess capacity. Optimal pricing with marginal cost lower than average cost will thus require a subsidy.

Jansson and Schneerson (1982) acknowledge that there is difficulty in optimal pricing and full cost recovery leading them to coming closest to the major “bureaucratic” contributions by the UNCTAD and World Bank. These contributions try to resolve, unsuccessfully, the conflict between objectives which are incommensurate, namely of running a port efficiently and running a port equitably. UNCTAD (1975) in its report on Port Pricing surveyed port practice and advocated financial targets be set “independent” of a pricing policy. Port Pricing is given a role of re-allocating user benefits but does not say how this will be done but it should be noted pricing per se seems to sit well behind financial and distributional factors. The World Bank (1984) – also considers the usefulness of MCP but dismisses on practical grounds that accounting systems in ports and the market place will not be incentivised to support this.

In practice, in the case of commercial ports pricing is a function of history and tradition Hallock op cit and Goss (1979). The evidence of Victorian local ports based on anecdotal interviews suggests likewise.

3.6 Public goods and open spaces, amenity approaches

The economic characteristics of local port services may also be explained by Public choice theory. What this branch of theory does is to apply economic reasoning to non market decision making. The nature of the goods and services are critical to this analysis so, the extent to which a good possesses characteristics of joint consumption or exclusivity in consumption can be used to define the good or service. A public good is not subject to exclusion and is open to joint consumption or use. The diagram below depicts the application of this concept in the context of provision of local port services.

Waterways are considered either public goods or quasi public goods because they are characterised by non rivalrous consumption and under most conditions in Victoria are non-exclusive. This is where consumption by one does not diminish availability for others so joint use is possible. The caveat here is that under certain conditions congestion or queues may occur. This is particularly noted at boat ramps. There is no system of prioritisation.

Congestion is an important element as it introduces an opportunity cost of waiting for consumers who have finite “holiday hours” available. This reduces amenity which is currently internalised and has not entered into the determination of costs when considering investment in this sector. A rational consumer who places an implicit value on leisure time can be expected to engage in avoidance behaviours by visiting alternate launching sites or as officials have pointed out, some consumers engage in time minimising risky behaviours by launching(where possible) from the beach.

Non-exclusive consumption occurs when one cannot exclude non-payers from enjoying the good/service. Services will not be supplied unless the state allocates resources and supplies e.g. lighthouses, buoys on waterways where anyone can enjoy use. The private sector will not supply services as it cannot collect the cost of providing services form users.

Possession of these characteristics –non exclusion and joint consumption can lead to the problem of what and how markets can meet individual demands for goods. On the one hand this may give rise to state intervention and possibly market failure because the state cannot supply services efficiently (allocative inefficiencies) Victorian Guide to regulation (2013); on the other hand how consumption can be organised collectively to resolve the problem but also with an attendant risk of market failure arising from exclusion of some who want to participate (distributional inefficiency).

Coase, (1974) argued that in some cases the light house was provided by the private sector citing examples from England and Wales. Private entrepreneurs who built lighthouses had to get permission from the Crown thus implying a received authority to force shippers to pay lighthouse dues. Van Zandt, David E. (1993), found that lighthouses who relied on voluntary dues failed, so the coercive power of the state was needed.

**Table 3: Public goods and other types of goods**

|  |  |  |
| --- | --- | --- |
|  | RIVAL | NON-RIVAL |
| EXCLUSIVE | PrivateCongested tolls roads, boat ramps and berthsMC900441775[2]Ice cream, pizza | Natural monopolies Uncongested tolls roads, Cable TVShared waterways  |
| Common resourcesCongested non toll roadsCostly or impossible for a private supplier (market) to limit access to deep-sea tuna, marlin,dglxasset[2] | PublicUncongested non toll roads and waterwaysDefence Open spaces |

 This analogy is important because waterway access in local port channels is free although there are costs attached to provision and maintenance of a safe and useable waterway which adds to the cost of providing port services. Recovery of costs and collection of dues via an appropriate pricing strategy raises the question for both the state under the current model or the private sector under alternate models

Do local ports have characteristics of a common resource with the potential to lead to over-exploitation sometimes alluded to as the tragedy of the commons Gordon (1954), Hardin, (1968) It may be argued that potential congestion, misuse of the waterways and inelastic (fixed in the short to medium term) supply of berthing and mooring which deprives potential users from enjoying this local port facilities may be evidence of this externality.

The tragedy of the commons as presented in the academic literature is an example of an externality problem. If this is so it may be argued that the literature on management of community resources may provide insights to resource allocation and welfare considerations around local ports. Ostrom et al (1999), Pretty (2003) Goss (1987) –argue that the formation of a club of port users may be one way of resolving the problem or managing them but membership may have to be compulsory. Compulsory membership to protect interests has historically resulted in cartel like arrangements like the Hanseatic League and employer organisations or Unions operating closed shops or decasualisation schemes.

In the local port context it could well result in a local yacht club or marina operator running the “whole show” but as Goss1985 (op cit) points out, equitable considerations like free access to the waterside and waterways as well as berths or moorings may not be possible unless one belonged to the “club”. Whilst this may solve the problem of berth access it does not solve the waterway usage problem.

Tourism is a major output of the local port sector but can create negative externalities. Certain externalities like congestion, noise, seasonal loss of amenity are both a by-product of tourism and an input to tourism (Dwyer and Forsyth 1993). The question which then arises is whether or not the pricing of local ports reflects these social, economic and environmental costs.

Much of the literature on tourism and externalities has focussed on the taxing of tourism to avoid the so called “Dutch disease” impacts Corden (1984), Gooroochurn and Sinclair (2003).Whilst crowding out, the original adverse symptom of the Dutch disease is not the issue because no crowding out of resources has occurred as in the case of a typical Dutch disease scenario, the need to address the negative externality of congestion, seasonal loss of amenity exists. The solution of taxation to internalise the tourism externality is one possible solution. Chang et. al (2011) How this is implemented in the LP space may be by the stratagem of levying an impost on facilities hitherto enjoyed at no cost to the user. The means of doing so is only possible at the local level. Since councils have also become stakeholders of economic benefit of port usage it would be reasonable for them to contribute to mitigation of these externalities using appropriate mechanisms (I am indebted to an anonymous reviewer for this comment).

Zhou and Rana (2012) present a case whereby the social benefits of “urban green space” can be measured. They suggest that valuation of urban green space has been recognized as a useful technique to quantify different types of benefits provided by green space in explicit monetary terms. Accessibility is a key measure of the availability of green space. Further the numerous benefits of urban green space have not always been accounted for in prior studies. To fill up this gap, this paper develops a new integrated model which includes both consumers’ and providers’ perspectives in evaluating social benefits of urban green space. The model explains the social benefits of urban green space, and may be used to guide future urban sustainable planning

3.7 Government guidelines for pricing

***3.7.1 Full cost recovery***

In Victoria cost recovery guidelines (2013), issued by the Department of Treasury and Finance (DTF) specify that pricing of services should endeavour as far as possible to fully recover costs. In NSW, similar government guidelines (2001) specify avoidable costs as the starting point. On interpretation this can be shown to be marginal cost.

Additionally the Vertigan report [Independent Review of State Finances (IRSF interim report 2011)] also references how pricing and cost recovery may be approached, moving into the realm of financial management see Appendix 4 for summary.

Full cost recovery is recommended both in the National Guidelines on Transport System Management (NGTSM) as well.

The recovery of “full costs” creates a problem as to how the cost of congestion or more properly waiting time is treated. The methodology which can be applied in this instance is that the cost of “waiting” or “congestion” may be derived from the value of leisure time an externality, which is currently not factored in to the economic cost of service provision.

Interviews with former local port personnel indicated that less than 25% of costs of service provision are recovered.

4 Economic Issues

There are many economic challenges in cost recovery and pricing which are discussed below.

4.1 Opportunity costs - treatment of sunk costs, future capital investment and cost recovery principles

In economic theory sunk costs are ignored because they have no opportunity cost. Hotelling (1939) argues that fixed costs should be ignored for pricing purposes. A breakwater or seawall, has no alternate use, so it has a zero opportunity cost. This means society does not have to make a choice to forego obtaining anything in making a decision to retain them .With a zero opportunity cost should they be valued at zero. Therefore it may be argued that there is no case for attributing a cost based charge on the same. Such structures may have a cost to maintain them in a state “fit for purpose”; however such costs are discretionary and can be avoided.

A better approach is to focus on the cost of the decision to purchase/improve an asset rather than the historical cost of the asset – a subtle distinction. In making a future capital investment decision one foregoes some other benefit. These costs can be handled by standard cost benefit analysis techniques that prescribe rigour in cost estimation NGTSM (2006) as well as the investment evaluation guidelines followed by state treasuries.

The opportunity cost of land adjacent to water however is not zero. The next best use of such land on which berths, wharves and boardwalks are constructed could vary. The valuation of this component of the port’s infrastructure will need to take into account the value in its next best use which could be to private enterprise. Valuing the next best use of public land is a contentious issue. The first question is whether the current stewardship (in state hands) of port environs is efficiently providing the supply of services sought by the public. The next question is whether there is a policy objective regarding provision of a community service obligation (universal service) for the state to provide access to some facilities. A discussion which follows on market failure in the provision of local port services, deals with some of these issues.

As argued earlier local ports are the recipients of state funding because the state seems to recognise the social benefits including regional development. Haralimbides (2003 op.cit. p 789) is of the view that such infrastructure investment occurring for the public benefit may be justified using Social Cost benefit analysis. If so, such costs may not need to be recovered from users representing investment in social infrastructure. Any other costs of infrastructure(e.g. maintenance)can be related to the usage component of a tariff. Anecdotal evidence suggests that approximately 40% of all costs relate to historical infrastructure and are sunk costs.

4.2 Recovery of dredging costs needed for efficient operation of facilities

The marginal cost of dredging can be established as it has a direct linkage with usage as well as the specific users who may require the extra depth (marginal users). Pre dredged usage activity levels and post dredged levels can be established, together with the cost of dredging. Unless there is some strong reason, socially or politically to not pass on this cost to all the users, there is no economic reason not to do so. In economic terms it then becomes necessary to identify the users or beneficiaries of the intervention and dependent on the cost of implementation consider the form of cost recovery. A common issue here is whether or not the costs should be shared amongst all users or only the marginal user beneficiaries. It is known that some recreational vessels have less draft and do not need much depth of clearance. In comparison large vessels need deeper channels and therefore more dredging. In some locations yachts (recreational) may require significantly greater clearance under keel that commercial fishing craft. The issue then is whether large commercial vessels or others requiring greater clearances need to bear a different cost of dredging than recreational vessels.

This type of cost would normally be recovered in the usage component or the access component of a port tariff.

***4.2.1 The recovery of waterway costs***

Waterways exist for both commercial and recreational purposes but rarely for reasons of commuting. They have also been considered public goods incapable of being charged for. The reasoning for this has been because they are non-exclusive and non-rival. Where a waterway has exclusive rights attaching to it then the exercise of property rights will enable a price to be set for access (canals and locks are examples in some countries).

There are two possible methods by which the cost of waterway usage can be recovered. Both require a collection mechanism. Firstly the formation of clubs or co-operatives, be they yacht clubs or otherwise could manage part of the value chain including the cost of maintenance and the activity of collection of dues to offset this. The distributional socio-economic effects become difficult to manage e.g. the criteria for not collecting fees/dues from a certain class of users if such exemptions were sought. The other method would be for the state to collect a flat fee from all craft, subject to some exceptions, to achieve the same purpose. The latter stratagem may be argued to be a tax. Such a strategy also lends itself to being the access component of a two part tariff.

4.3 Cross subsidy issues created by the recovery of common costs-

Cross subsidies do occur in commercial port pricing and in all tariffs that have evolved as a matter of history. Tariffs based “on what the traffic can bear” are also based on price discrimination, which in itself implies cross-subsidy.

Joint consumption of resources occurs with tourists, commercial fishers, charter operators and cargo vessels sharing some local port resources. The economic concept of willingness to pay underlies the socially efficient price discrimination which may occur. A tourist or local resident seeking to enjoy the view of sea side amenity and to promenade would view the local port environs as a public good and have NO willingness to pay for the privilege. On the other hand, someone engaging a tour charter to sight-see will be willing pay for convenience of boarding access from alongside a berth or pier. The willingness to pay for the right to call the port and berth “home” for a commercial trawler is similarly different. The same length of pier/berth (and thus the cost of that asset) can serve separate submarkets permitting price differentiation based on some determinant of usage. If this principle is accepted the central issue is the manner in which that common cost is “apportioned” on different users.

Statistics on the usage of ports (ref Appendix 3 Table 3) illustrates the large number of tourist visits to a port. Anecdotal evidence and a sample count undertaken by the author suggests that commercial vessels may number no more that 15 per location. Similarly boat registrations for recreational purposes are approximately 150,000 in Victoria providing a reasonable indication of the possible incidence of usage for recreation.

Pricing based on usage will then face a problem as it is unlikely and impractical to recover costs from land based domestic tourists who merely want to take in the fresh sea air! Some form of cross subsidy is then warranted to cover the costs of public enjoyment. If the state provides this subsidy then it could be argued that it is providing social benefits to the population. Anecdotal evidence suggests that 15% of port costs may be apportioned into the category of supporting public enjoyment of the facility.

4.4 Distributional issues, relating to the allocation of. scarce waterside resources like berths and moorings.

The pricing mechanism would normally allocate scarce resources based on a willingness to pay. Competitive forces such as the availability of substitutes like boat ramps, or the beach for launching and private clubs for moorings and berths will determine what this price is –ceteris paribus. Evidence seems to indicate that there are waiting lists for berths and moorings in Port Phillip Bay but there appears to be no opportunity for non-berth/mooring holders to contest allocation.

Therefore changes to prices, which are most likely to be increases driven by market forces or mandated because of the need for full cost recovery will have two effects. Firstly, allow participation by those currently excluded, based on willingness to pay, secondly to allow prices to stabilise at a realistic level commensurate with what the market can bear.

Intervention either through a blind auction system or state allocation of some facilities to socially disadvantaged groups may make this equitable. However anecdotal evidence suggests that an auction could cost as much as $1 M to conduct. Such an approach may be justified if the cost was readily recoverable.

Market based solutions may enable clearing of demand and supply but the market price may pose a barrier of affordability to some sectors of society. If the state accepted that the provision of leisure facilities was a right to be enjoyed by all, then it could consider subsidising access to the most disadvantaged groups. The preceding discussion relating to public goods has suggested that local yacht clubs or marina operators could run the “whole show”. The framing of a set of conditions possibly via a universal service obligation (USO) ensuring access to berthing and moorings for disadvantaged classes may be one way forward. This is at best a second best solution but avoids the inefficiency of the state providing all of the service.

Having examined the various economic challenges the final task before arriving at possible alternate methodologies is to understand the variation between pricing in interstate locations, Victorian locations and between private facilities and state run facilities. This can be explained by either:

* Cost differentials
* State policy on cost recovery
* Supply differences
* Value perceptions which differ by facility.

Cost differentials are significant between private marinas and council/state funded LP, with a commensurate impact on the value of the perception of the facility. Private marinas (Dalbora Marinas Aug 2012) offer security, club facilities, special storage, pump -outs, refuelling, accommodation and other services equivalent to a four to five star hotel, with the attendant increase in their cost base and fees.

In Tasmania state policy (Maritime and Safety Authority) caps the charges levied and in WA state policy only seeks to recover the operating component. In NSW (Maritime NSW) pricing differs according to a more economically advantaged and less advantaged location.

Price differentials exist where low priced facilities in prime locations exist side by side with premium priced locations in Victoria. A simple explanation is that the market is able to accommodate differential offerings based on relative value perceptions.

4.5 Market failure

Market failure is one possible explanation of the local port sector and entails analysing three basic questions.

The first threshold question is: do sources of market failure exist? Undoubtedly the answer is yes to more or lesser degrees. For this reason this is not the key question because the mere existence of market failures is not sufficient to justify government interventions or for that matter is caused by the presence of government intervention.

The second threshold question is: how significant are the impacts of the market failure? This is often the hardest question to answer. It requires an empirical analysis of conduct in the market and the degree to which the presence of sources of market failure are actually having a significant impact on the quantity of goods and services consumed, and by implication, utility maximisation.

The third question: Is there confidence that any change to the government’s role will actually improve outcomes?

It can be argued that there is evidence of market failure at present in the provision of local port services to the extent that supply is artificially constrained, price signals do not operate in some facilities, cost recovery is low, supply side interventions which are proven to be effective are not universally allowed and scarce resources are not optimally used for the public good.

### **5** **Pricing principles for Minor/local ports**

Market failure can be addressed if the pricing principles advocated are considered.

5.1 Establish an economically sound cost base**.**

Future investment in breakwaters, seawalls and berths as well as dredging could be treated as Social Infrastructure Investment, conferring a social benefit, and thus not recovered from users. This means that depreciation and capital assets charge (CAC) will not be factored into costs of service provision.

Sunk costs of past investment, should in any event, not be considered as they are irrelevant to future decisions. Additionally breakwaters and seawalls have zero opportunity cost as do waterways so do not warrant cost recovery.

Other relevant costs could be averaged across a range of ports, e.g. there could be one berthing or mooring charge based on length and duration across all ports in a geographic location and like NSW classification of ports into higher and lower demand areas may be justified. This would be possible because inter-port competition does not exist and may also enable the state to direct infrastructure investment in the long run to where scale economies may be enjoyed.

5.2 Tariff to reflect access and usage

A two part tariff enabling waterway charges to be collected by way of an access charge and berths/mooring by way of a usage charge is also suggested. An access charge could be levied on boat registration across all of Victoria, on the assumption that some hypothecation to managers of inland waterways occurs. Non-Victorian users could be subject to port control to ensure waterway charges are paid, if so needed.

5.3 Market driven solutions

The operation of a market driven solution to address market failure may use market incentives established by government, e.g. property rights, license conditions, price signals together with enshrined community service obligations (CSO) to ensure efficient and cost effective outcomes. Of these the most contentious is property rights because it entails adopting a view that the opportunity cost of port land may be better used for the benefit of society by allowing market forces to intervene in the development of the same. Safeguards around CSO’s may be part of such implementation.

6 Conclusion

The economic principles underlying the dialogue of pricing for commercial ports are partly useful when applied to local ports. Full cost recovery as defined by treasuries requires recovery of all costs but loses sight of socially beneficial investment and sunk costs with zero opportunity cost. Such costs should not be recovered in the local port context.

Local ports perform a function related to regional development and a set of pricing principles which differ from the oligopolistic context of commercial ports is more relevant.

The pricing principles advocated for local ports are;

* Non- recovery of some infrastructure costs,
* two part tariff pricing permitting cost recovery of waterway usage
* Uniform tariffs based on geography and vessel classification
* Market based pricing with caveats for CSO protection.

An exercise to identify the extent of market failure, prevailing cost structures and comparative cost recovery in the minor port sector in Australia and New Zealand is warranted.

**P.S.** A pilot study has been undertaken by the author since this paper was originally written(2013),which validates the justification of the above principles.

**Appendix 1**

**Selected alternate sources of berthing, mooring and water access**.

|  |  |  |
| --- | --- | --- |
| **Private facility Location**  | **Local Port facility location** | **Water access**  |
| Queenscliff Harbour  | Apollo Bay or Geelong, Q’cliff Sth. Pier  | Local council boat ramps |
| Martha Cove  |  | Local council boat ramps |
| Pier 35 – VicRoyal Yacht club WilliamstownMiddle Harbour Yacht Club | Altona Pier

|  |
| --- |
| Williamstown - Workshop Pier |
| Williamstown - Ferguson St Pier  |
| Williamstown - Gem Pier |
| Williamstown - Boyd Jetty |
| Williamstown - Commissioners Pier |
| Williamstown - Slipway Jetty |
| South Channel Fort Jetty |

 | Local council boat ramps |
| St Kilda Marina - Vic |  Black Rock Jetty

|  |
| --- |
| Middle Brighton Pier |
| Mordialloc Pier  |

 | Local council boat ramps |
| Western Port Marina - Vic |

|  |
| --- |
| Brooks Jetty |
| Cowes Jetty  |
| Dromana Pier |
| Flinders Jetty  |
| Frankston Pier  |
| Rhyll Jetty  |
| Rosebud Pier  |

 | Local council boat ramps |
| Yaringa Boat Harbour –Victoria Harbour |  |  |

**Appendix 2**

Tasmanian ports where a registration fee $ 70 is charged but no other charge.

Battery Point Jetty, Bicheno Jetty ,Bicheno Landing Stage, Binalong Bay Jetty, Bird River Jetty Cape Barren Island Jetty, Dennes Point Jetty Dover Jetty - Port Esperance, Dunalley Jetty - Imlach Street, Denison Canal Landing Stage,Gordon Jetty Inspection Head Pontoon Kettering Jetty Lewisham Jetty - Clarks Bay Long Jetty - Port Cygnet Margate Jetty Nubeena Jetty Opossum Bay Jetty Pirates Bay Jetty Port Arthur Jetty Port Sorell Jetty / Pontoon Puncheon Point Landing Stage (Cape Barren Island) South Arm Jetty Southport Jetty Squeaking Point Jetty St Helens Berthing Piers and Wharf Swansea Jetty Triabunna Deepwater Jetty Woodbridge Jetty

**Table 1**

**Other locations Moorings & Berthing**



Also at Middle Harbor Yacht club Mosman- 5yr leases unto $ 74,000

http://www.mhyc.com.au/index.php?option=com\_content&view=article&id=328&Itemid=112

 **Appendix 3**

**Table 2**

**Importance of Tourism**



**Table 3**

**Visitor numbers per port location**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Location | 2006/7 | 2007/8 | 2008/9 | 2009/10 | 2010/11 | Source |
| Colac |  |  |  | 15,526  | 20,458 | http://www.colacherald.com.au/2011/09/colac-visitor-numbers-on-the-rise/ |
| Apollo Bay |  |  |  | 177,185 |  | Moyne Shire Council Annual Report |
| Port Fairy | 74,207 | 73,869 | 72,167 | 71,696 | 72,288 | Corangamite Shire Annual Report |
| Port Campbell | 58,219 | 59,294 |  |  |  |  |
| Portland |  |  | 116,095 | 116,123 |  | Glenelg shire annual reports |
| Philip Island |  |  |  | 3.5m |  |  |
| Bass Coast |  |  |  |  | 191,246 |  |
| LE & B’dale |  | 190,884 | 188,221 | 196,833 | 192,480 |  |
| E/ Gippsland  |  |  | 1,115,330 | 1,093,024 | 1,147,141 | http://www.egipps.vic.gov.au/Files/EastGippslandShireTourismSnapshot2010.pdf |

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1. Applicable to the Port of Corner Inlet and Port Albert only [↑](#footnote-ref-1)
2. Applicable to the Port of Corner Inlet and Port Albert only Incident reporting and management [↑](#footnote-ref-2)