Appendix

POPULATION GROWTH AND THE SCARCITY MULTIPLIER IN TASMANIA

The description of the scarcity multiplier in Chapter 5 argues that—without other influences—an abundance (per capita) of useful natural capital in a region makes its population grow more rapidly than populations of other regions that are less well endowed, which then accelerates the decline of that abundance in that region. It was further suggested that in modern economies, the influence of natural capital on the growth of the population operates largely by affecting migration. This migration response is illustrated below with the history of the growth of the Tasmanian population since colonial times. The reaction of the state’s democratic government to that growth has been, and continues to be, strongly influenced by a private goods bias. The result is a persistent scarcity multiplier. If this is to be halted, then Tasmania’s political system must be altered to give it the capacity to recognize and eliminate its private goods bias.

The British started to colonize Tasmania in 1803 and, as we shall see, within a few decades the limitations of its stocks of natural capital started to restrict the speed at which the ‘More development’ of Figure 5.1 (in §5.3.1) could proceed. The operation of the scarcity multiplier in Tasmania has therefore been somewhat restricted for most of its two centuries of industrial development. One limitation of Tasmania’s natural capital that causes this restriction is that, compared with the nearby Australian mainland, Tasmania has a small area of land and therefore
relatively limited prospects for agriculture, mining, forestry and the other industries that depend on that area. This limitation is exacerbated by another natural feature that is not a ‘stock’ in the conventional sense and therefore perhaps not strictly ‘natural capital’ (as defined in §2.2.3.2, Distraction by advertising). This natural feature is Tasmania's geographic inaccessibility. More than two hundred kilometres of sea (Bass Strait) separate the main Tasmanian island from the rest of Australia, which means that it cannot have land-based road and rail connections that would help the main Australian market trade with Tasmania and also to trade with foreign countries via Tasmanian ports. As the Australian economy developed, this lack of geographic accessibility became an overarching limitation that further restricted the economic value of Tasmania's relatively limited natural capital. These two types of limits to natural capital have resulted in Tasmania's population growing to less than a tenth, the size of that of neighbouring Victoria, which by mid-2010 had more than 5.5 million residents, whereas Tasmania had only half a million. This difference is not due to earlier colonization in Victoria, as both states had their first European settlement at the same time, in 1803. However, in the early 1850s a very large difference was created by the Victorian gold rush, which brought hundreds of thousands of people to that state. As this is written, the evidence that Tasmania’s geographic isolation continues to be an economic penalty is that although Victoria has 3.3 times Tasmania’s land area, its rate of growth in population is presently about 30 times that of Tasmania. Expressing this disparity in terms of percentage rates for the year ended 30/9/2011, Tasmania’s population grew by 0.5%, Victoria’s by 1.5% and Australia’s by 1.4%.

Tasmania’s lack of geographic accessibility thus appears to have been a major driving force of its historical trend in migration, in which migration out of the state tends to exceed migration into it. Because of this, Tasmania’s population has basically grown only through its natural increase (the ratio of births to deaths), whereas Australia as a whole has had strong net immigration in addition to natural increase. Figure A1 shows these
APPENDIX

Fig. A1. An historical overview of Tasmania's natural increase and net migration (http://www.taspop.tasbis.com/webapps/i/588/1396/195797).

Fig. A2. Components of Tasmanian migration for the past 40 years (http://www.taspop.tasbis.com/webapps/i/588/1396/195820).
components in Tasmania’s population change since 1901 with out-migration (below the horizontal line) generally exceeding immigration (above that line). Other data for Tasmania from the same source extends from 1901 back to 1860, showing a similar preponderance of out-migration over immigration for that period. Figure A2 shows that, at least since 1971, Tasmania’s out-migration has been to the mainland states, with no net out-migration to foreign countries. Figure A3 shows the result: a slow increase in the state’s population.

Two centuries of this modest growth means that Tasmanians now retain more natural capital per person than they would have if their population had grown more quickly. This is because a larger population would have two major effects: It would divide the total quantity of natural capital into a lower per capita quantity; and it would consume and destroy more natural capital, thereby diminishing its total quantity, leaving even less per capita. In addition to Tasmania’s slow growth of population resulting in a per capita abundance of natural capital in the state that is higher than it would have been with faster growth of population, its slow growth may also mean that Tasmania’s per capita abundance of natural capital is now greater in some im-
portant respects than that of mainland Australia. Although the land area of the mainland is 112 times that of Tasmania, most of it is inhospitably dry or hot, or both, so its much higher rate of growth of population may have, over more than two centuries, now reduced its per capita abundance of much of the natural capital that is useful to people to levels below those that remain in Tasmania. An obvious exception is the geological natural capital of the mainland that recently produced a mining boom in iron ore and natural gas in Western Australia, in uranium, copper and gold in South Australia and coal and coal seam gas in Queensland. This natural capital is, of course, nonrenewable, and the boom now appears to be producing a bust before it is exhausted due to market contraction in China (Cleary 2011). Arguably, that boom has produced a nation-wide scarcity multiplier that will exacerbate the bust by boosting the numbers of Australians that the country must support after this part of its natural capital is exhausted. A further cost of this boom is the large contribution to global warming by the fossil fuels it produces.

Research is needed to see whether Tasmania really does have a higher per capita abundance of useful natural capital than mainland Australia and, if this is so, to get a good understanding of specifically what it is that is more abundant on a per capita basis. Such investigation would compare mainland and Tasmanian availabilities or prices of land, flows of fresh water, natural recreational assets and other sustainable inputs from natural capital to quality of life. Preliminary research into the per capita availability of natural capital for Australia as a whole has been done by economist Doug Cocks (1996, 90–103). A few others, such as economist Hans-Jürgen Engelbrecht (2009), have investigated the effect on subjective well-being of the per capita abundance of natural capital in a number of developed and developing countries.

Even without the knowledge that such research might produce, it seems obvious to many Tasmanians and visitors to the state that it does have a per capita abundance of some useful types of natural capital that is greater than in the rest of the na-
tion. Tasmania’s geographic inaccessibility has developed this favourable situation by helping to keep its per capita income lower and rate of unemployment higher than in the rest of the nation. Those conditions make Tasmania’s population grow much more slowly than that of the mainland and therefore its per capita abundance of natural capital diminishes more slowly. Rates of unemployment for Australia and Tasmania are shown in Figure A4 from late 1978 to late 2008. At the end of this period national unemployment is shown here as starting to exceed that of Tasmania, but later data show that, true to form, this reversal only lasted for eighteen months, and by late 2012 Australia’s rate of unemployment was around 5% while Tasmania’s was over 7%. This indicates that residing in Tasmania is often a lifestyle choice, one that is made to enjoy an abundance of natural capital, rather than the industrial, medical and cultural advantages afforded by high concentrations of population. Tasmanians may continue to enjoy that abundance only as long as their numbers do not grow significantly. That would erode the abundance by physically destroying more natural capital to produce more income to support the larger population and by intensifying crowding effects in the use of the natural capital that remains.

This picture of residency in Tasmania, as a lifestyle choice and/or a lack of ability to relocate interstate, appears to be sup-

**Fig. A4. Unemployment rates in Tasmania and Australia. Source: Labour Force, Australia, Spreadsheets, October 2008 (Cat. No. 6202.0.55.001), cited in ABS 1307.6 — Tasmanian State and Regional Indicators, Dec 2008.**
ported by economist Saul Eslake (2012, 15–16) as he observes that

in the 2010–11 financial year, Tasmania’s per capita gross state income was more than 23% below the mainland average — the widest margin in the 20 years for which figures are available. In 2006–07 (the year before the [global] financial crisis began) the gap was ‘only’ 17.5%, having narrowed by more than 3.5 percentage points since the beginning of the decade …

Tasmanian households are to a significant extent shielded from the consequence of the state’s poor economic performance by the operation of the national fiscal system. They pay 21% less per head in income tax to the national government than mainland Australia. And they receive 27% more per head by way of social security benefits than those living on the other side of Bass Strait. As a result, Tasmanian household disposable income is less than 7% below the corresponding figure for mainland Australia — less than one-third of the difference in per capita gross state income between Tasmania and the rest of Australia.

But this 7% difference in per capita income is significant, and it adds to the incentive for emigration from Tasmania that is produced by its usual relative scarcity of employment opportunities. So we can conclude that if the national government did not compensate Tasmanians for their economic handicaps, the incentive for emigration would be much larger and this would slow the state’s scarcity multiplier. With its fiscal assistance, the federal government is boosting this multiplier.

The population feedback of the multiplier analysis of Figure 5.1 (§5.3.1) indicates that further increases in per capita income might be achieved in Tasmania while minimizing erosion of the availability of natural capital if economic development is coupled with measures that prevent it from encouraging the population to grow, such as restrictions on migration into Tasmania. This is not permitted by the Australian Constitution, but, as we have seen, such restriction has been partially effected during
Tasmania’s two centuries of development by its relatively inaccessible location making it less affluent than the rest of Australia. Apparently most (perhaps all) Tasmanians do not recognize that restriction of their economic growth has preserved relatively high per capita availabilities of natural capital, for they generally do not see their state’s lack of accessibility as a benefit. Instead, they focus on their isolation as limiting their incomes and their opportunities for employment, and strongly support any measure that would make Tasmania more accessible. Three that have been implemented are the Tasmanian Freight Equalization Scheme, the Bass Strait Passenger Vehicle Equalization Scheme and Basslink. The first two of these subsidize transport costs to and from Tasmania (at the expense of mainland Australians) to make them more comparable to transport costs between the mainland states. In 2014 these subsidies were worth approximately $95 million and $38 million respectively to Tasmania (Clark 2014). Basslink is a high-voltage direct current cable across Bass Strait that shunts extra peak load capacity to the mainland from the flexible supply of Tasmania’s hydro-electric system and takes — into Tasmania — some of the excess base load capacity of mainland coal-fired generators. This creates economic savings and arguably reduces pollution, as it lessens Tasmania’s need to invest in base load generation, supplies Tasmania with power in times of drought and enables it to sell peak load power that makes mainland coal-fired power generation more efficient. Another measure that might be implemented to increase Tasmania’s accessibility is a faster, larger and cheaper vehicular ferry system for Bass Strait. A cross-Strait highway of bridges, tunnels and links via several Bass Strait islands is the ultimate dream of this type, but would be quite uneconomic with current technology and the limited market. For comparison, the 50 kilometre English Channel tunnel is half the length of any Bass Strait tunnel system and serves a far larger market.

As the scarcity multiplier indicates, economic assistance such as increasing Tasmania’s accessibility and payoffs from the national fiscal system encourage its population to grow, thereby reducing its per capita abundance of natural capital while fuel-
ling its desire for yet more development, which then leads to further reduction of that abundance and repetition of the process. Such erosion of abundance does not arouse concern in most politicians and the business lobby. They do not want to recognize it because it argues against the lobby’s mission of increasing their profits by expanding the supply of labour and enlarging the domestic market, both of which depend on expanding the population. Moreover, business people are in nirvana when the population is enlarged because that helps the scarcity multiplier to drive more development, which then drives more of it. Citizens are unconcerned by the resultant multiplication of scarcity as their thinking is usually too short-term to see it. Most of this multiplication is further off in the future than the direct effects of currently proposed developments, which are usually more employment, more income and the immediate environmental impacts. While such ‘stage one’ thinking (as discussed in §5.4) gives many citizens some awareness of the initial benefits and costs of currently proposed developments, their usual failure to think ‘beyond stage one’ prevents them from seeing the consequences of those initial benefits, of which a major one is the exacerbation of their own wants as described by the population and affluenza feedbacks of the scarcity multiplier. This consequence tends to be too far off in the future to be of personal concern and to exercise one’s social conscience.

Although the scarcity multiplier limps along in Tasmania, hobbled by geographic isolation, it still depletes natural capital to an extent that alarms many residents and others who know the state. So Tasmanian society has been racked by fierce environmental disputes for half a century, and these continue to erupt. But the relatively slow progression of the multiplier means that the state still retains much of its natural capital in a relatively intact condition. One facet of this is that 45% of Tasmania has its natural condition protected to some degree—from nominally highly protected World Heritage Area and National Parks to less well-protected reserves on both public and private land. The qualifier of ‘nominally’ is used here because the scarcity multiplier is actually chewing away at these
‘protected’ areas in the guise of tourism developments that damage the wild character (the combination of naturalness and remoteness) that these reserves were intended to protect, at least in the minds of those who campaigned for their protection (see for example, www.keepthecapeswild.org.au). Another manifestation of the per capita abundance of natural capital in Tasmania is its very strong ‘shack culture’ (Newton 2003; Vowles 2012), in which — until a few decades ago — many Tasmanians built shacks on public land by beaches, lakes, rivers and mountains with no formal permission from (or payment to) government. These buildings were often constructed by amateurs to rough standards with second-hand materials. Their freedom to do that has now been curbed by laws requiring that all shack owners and prospective shack builders must obtain government permission to use public land and pay for lease or freehold and for any associated services such as roads and waste disposal. This recent transition largely reflects a rising scarcity of land and other types of natural capital, brought on by growth in both the size of the population and the spending power of each person.

Tasmania’s ratio of natural capital to population appears high by comparison with most other advanced economies, and this seems to make any further reduction of the ratio acutely distressing to many who are familiar with it. Tasmanians still have much to lose, so environmental protests are frequent. However, despite a widespread appreciation of this potential for loss, most residents and their political representatives (left-wing, right-wing and green) regard Tasmania as retarded unless it can be freed from impediments to economic growth, such as its relative inaccessibility. But, as we have seen, any boost to its economy energizes its scarcity multiplier, escalating both the wants of Tasmanians and the depletion of their natural capital. Obviously, that combination is a vicious one, but Tasmanians do not appear to see it. Either one or both parts are invisible to them. As noted in the scarcity multiplier analysis, this is because their short-sighted focus on immediate results prevents them from seeing the effects of those results, which are a little further off into the future. No doubt there are a few Tasmanians far-sighted
enough to see and be worried by these long-term implications, but they are thoroughly outnumbered and feel vulnerable to political ridicule. Unless Tasmanians can reform their political system with institutional changes that improve their collective capacity to look ahead, the scarcity multiplier will increasingly impoverish them, from one generation to the next.

For those Tasmanians who are concerned about the decline of their ratio of natural capital to population, a rough rule of thumb for assessing the activity of the scarcity multiplier is to look at the rate at which their population is growing. If this is trending positive (say decade by decade), then the scarcity multiplier is likely to be working and degrading their quality of life. This would suggest to concerned Tasmanians that their government should halt the multiplier, which could be done in one or more of several ways, as implied above in this Appendix and discussed in §5.3.4, the end of §5.3.5 and early in §5.4. Four of these ways may be the major options. The first is that the Tasmanian government restores the state’s economic isolation by closing freight equalization schemes and Basslink. The second is that it prohibits new development projects — especially large ones — even if they appear to be environmentally benign in their immediate impacts. The third option is for the Tasmanian government to ask the federal government to adopt a policy of zero population growth for the nation and to implement this primarily by restricting migration into Australia. The fourth option may be a last resort for Tasmania: To secede from the Commonwealth, so that the state acquires a direct power to control its intake of migrants.

However, if Tasmanians are to engage effectively enough with public policy to be able to recognize the operation of a scarcity multiplier and then deliberate their collective response to it, they must have more assistance than that afforded by their current institutions, such as the mass media, social media, elections and parliament. The People’s Forum is designed to fill this gap, but only operational-scale trials will show whether it can.