Research Report

Open Source and the IT Trade Deficit

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Abstract

In this report we look at the current consistently poor performance of Australia in the ICT industry, as identified by analysis from the Centre for Strategic Economic Studies and note the correlation between these poor results and the historical reliance on the incumbent, closed source, model for the commercialisation of software. We identify one instance in which failure to move to a functionally equivalent open source product has significant costs for Australia and, in that example, quantify those costs at $430 million per year. This paper identifies an alternative model for ICT commercialisation and discusses some potential impacts.

1. Summary

1.1 Key points:

(a) Failure to adopt an open source operating system costs Australia on the order of $430 million per year, even assuming licence costs substantially below RRP and after allowances for contributions to the local economy.

(b) If the cost of other applications were included this figure would be substantially greater.

(c) Open source can convert Australia's current software rental trap into a capital investment, boosting jobs and the information economy.

(d) Open source has the ability to make considerable favourable adjustments to the balance of trade and to do so in the short term.

(e) Significant reductions in expenditure on software imports can be viably achieved by open source substitution – ie without foregoing the use of functionality as business inputs.

(f) Open source is also relevant to preserving market access for equipment manufacturers through software embedded in equipment.

2. About Australia's IT Trade Deficit

2.1 Each year the ACS funds the production of a review of Australia's IT trade deficit. The most recent, released in October 2003 (Australian ICT Trade Update 2003, http://www.cfses.com/ict2003_trade.htm) indicates that Australia ran a $14 billion deficit in IT trade in the most recent year (2003) and that, under the incumbent, closed source, licensing model for software, this deficit has grown at an average rate of 7.4% per annum.

2.2 There is a an even closer correlation between the recent, dramatic, decline in Australian IT performance in the five years following the announcement, in April 1998, by the Government that it would extend the scope of copyright monopolies (through what was later to be called the Digital Agenda Act) to be brought into line with US practice[1].

3. Open source on the import side

3.1 IT imports are input factors in Australian production and therefore an IT trade deficit should not necessarily be considered to be a negative. That said, if equivalent products can be acquired at a lower cost, Australia can have access to the same input factors without exporting so much money from Australia. In many cases, open source provides the same products cheaper and can reduce the cost of software importation.

3.2 Under closed source regimes Australia has no option but to export money (that is, a component of licence fees and maintenance fees will be returned to an ultimate vendor, typically foreign). Conversely, under open source licences Australia is free to spend the money where it chooses - it can acquire software developed overseas but keep all of its expenditure local.

3.3 For example, let us assume that spending on such inputs generates substantial side benefits for the economy. Take, for example, the, admittedly highly unlikely, scenario where every $1 spent on specific products generates a different amount, such as $8, in the local economy. Reworded, these figures can be read as implying that for every $9 spent in Australia, $1 (11%) is exported (because of repatriation of profits). Under an open source licence there is no *requirement* to send money overseas as there is no vendor who can *force* the repatriation of profits. This is not to say Australians can't choose to acquire services from foreign vendors, only that they are not required to. Rather than spending nine out of every ten dollars in Australia, under an open source regime Australians can choose to spend ten out of every ten dollars in Australia and that this choice is independent of the software product which is chosen.

3.4 In other words, even in the worst case scenario, the move to an open source regime provides a potential boost of 10% to the local IT economy compared to the old, closed source, model. We believe that the old, incumbent, model causes a number of secondary adverse effects on the IT industry within Australia. Among those effects are:

1 "More disturbingly, locally produced ICT equipment exports grew 12% per annum over the 5 years to 1997-1998, but *declined* 9.5% per annum over the 5 years to 2002-2003" [emphasis in original], Houghton, J., Australian ICT Trade Update 2003, Executive Summary at page II.

(a) technology lock out – the express provisions of licensing terms have the effect of quarantining local producers from high technology, requiring them to compete for lower skilled and lower margin niches;

(b) training lock out – lack of access to technology results in a training deficit in the local economy;

(c) competition effects – the history of the software industry over the last twenty years has been one of continually reducing diversification within product categories. Many product categories are completely dominated by a small number of producers, or, in some cases, a single producer. This has substantial adverse impacts on both innovation and pricing to consumers.

3.5 It seems clear that the continued reliance on the old, incumbent model of closed source development has resulted in substantial suppression of productive capacity within the IT sector of the Australian economy. This is evidenced nowhere more clearly than in the compounding and increasing IT deficit being run by Australia as reported in the ICT Trade Update 2003 and the lack of competition evident in many important software and equipment markets.

3.6 Given the established failures of the incumbent, closed source model, open source appears to provide the only viable strategy for allowing the ICT sector within Australia to reach its full potential.

4. Example – Operating System Costs

4.1 Resource NSW estimates that[2]:

(a) there are roughly 9 million PCs in Australia; and

(b) about 2.1 million new PCs are acquired in Australia each year (Gartner 2003 Q3 figures are 700K[3], which extrapolates to 2.8 million annually).

4.2 Estimating licence fees for the operating system at $150/unit (that is, roughly the listed OEM price for the most basic version of Windows – retail price and typical business licences are both substantially more) this gives $315 million. Discounting these figures by 20% for the costs of supporting a local distribution chain means that there are opportunities to save roughly $250 million per year.

4.3 Every 2 years or so part of this installed base (let's say 33% - 3 million[4]) is also subject to upgrade to a new operating system (win 98-> win98SE -> win ME -> Win XP etc), at (say)

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2 *"There are about 9.2 million computers in use in Australia, which is rated among the top ten countries in the world for per capita computer use. A further 2.1 million computers are estimated to have entered the market in 2002..."* Resource NSW, SECTOR PROFILE: Computer Manufacturers/ Importers http://www.resource.nsw.gov.au/data/Sector_profiles/Computer%20Sector%20amend%2011%20Dec.pdf

3 See also Gartner Figures: 731,220 for 3rd Quarter 2003 http://www3.gartner.com/5_about/press_releases/pr6nov2003a.jsp

4 Resourc
e NSW estimates that roughly 3 million PCs are disposed of each year, so the 9 million installed base is more or less static, or slowly declining.

$150 in today's dollars. Divide this figure in 2 to get an annual cost of upgrading and discount by 20% makes this figure about $180 million each year.

4.4 In other words licensing fees for the operating system alone export roughly $430 million per year from Australia. If all application software is included, the figure increases dramatically (typically the operating system has been used as a means of establishing and maintaining market share, so the operating system cost is priced comparatively cheaply). Further, *there is no capital component to any of these payments* – they are entirely rent. If Australia took that money and used it to develop its own operating system it would be finished in a couple of years and rental payments would stop. Australia gets nothing other than temporary use from this anti-investment, Australia is in a rental trap.

4.5 If Australia was investing in open source development all of the money spent would be of a capital nature due to the licensing scheme (whether or not the developers are resident in Australia). Australians would be investing in their own future rather than in anyone else's.

5. Export side

5.1 The only area where Australia has proven export performance is in services. This is the perfect area for open source to play a pivotal role.

5.2 The key difference between open source licensing and the incumbent model is that the market assumptions of the former are that there should be competition in the software market based on services, whereas the incumbent model assumes that participation must take place as manufacturing. In order to achieve this manufacturing model it is necessary to artificially create product level monopolies and scarcity through legislation (as necessary components of that model).

5.3 By adopting open source Australia would shift the majority of its software acquisitions out of a product based market into a services based market. Open source therefore plays to Australia's strengths and promotes competition, while neutralising its weaknesses.

5.4 It is difficult to put a price on the benefits to Australia. However, adopting open source would permit Australia to have access to markets for software service and maintenance that it is currently locked out of (by virtue of lock in vendors establishing distribution chains).

6. Sales Channels

6.1 One of the purposes of closed source licences is to create distribution monopolies. Open source permits these distribution monopolies to be overturned. For example, many software companies based in the US only offer software support from their US offices (and during US office hours). If the software was under an open source licence Australian customers would be free to engage local developers for support. As we discuss below, the new monopolies added to the *Copyright Act* greatly reduce contestability in aftermarkets.

6.2 The old, closed source model for software assumes that software distribution takes place on

a push model, with revenue linked directly to distribution. This sets the underlying structure for distribution channels based on push and makes channels expensive to maintain. As a consequence access to those channels effectively comes at a percentage of the product's price.

6.3 Open source may operate in the push model, but it can also operate successfully under a pull model, with end users acquiring the software directly from a distribution point. Under open source models distribution can be carried out very cheaply (ie cost of hosting and carriage with little or no premium). There are, for example, no licensing fees, so there are no costs of establishing a payment infrastructure, no costs of fraud, no verification costs, no costs of maintaining a sales process (eg to accept refunds or returns, or to reverse incorrect orders), credit company charges etc. The only costs involved are advertising costs and these often come more cheaply as the product can speak for itself.

6.4 Open source may not completely resolve Australia's problems with access to sales channels, however it can alleviate some of our difficulties by providing viable alternatives. These alternatives are fundamentally superior (in that they have been gaining significant market share over the past 5 years in competition with the old, incumbent, model) and are likely to become mainstream in the mid term.

7. Manufacturing

7.1 While this discussion has focussed primarily on software, open source will become increasingly relevant to the manufacturing sector in the mid to long term. Manufacturers are actively investigating means of utilising *Copyright Act* provisions to anti-competitive effect. As mentioned above, there is a clear correlation between the proposal (in 1998) to extend monopolies under the *Copyright Act* and the dramatic and sustained downturn in Australia's IT balance of trade in the five years following that announcement.

7.2 While not their original intent, the monopoly provisions in the *Copyright Act* give manufacturers effective powers to control after markets which are unheard of in other industries. For example, it is a relatively trivial thing these days to include microprocessors on most consumables (eg printer cartridges). This allows a manufacturer to have their machines query the cartridge and reject third party and after market consumables. It is not that difficult to shield the action of those microprocessors behind a technological protection measure, and, once they have done so, any circumvention becomes a per se infringement of copyright. In other words, the incumbent model permits egregious anti-competitive conduct.

7.3 As such, the old model permits decades of competition theory to be overturned by sanctioning vendor's ability to control aftermarkets in relation to their products, leading to substantially increased prices to consumers for most goods.

7.4 If open source is used in embedded devices it will force manufacturers to remain honest. Conversely a failure to adopt open source will further entrench the position of foreign manufacturers and lock out Australian competitors. Open source prevents the market abuses

permitted by the incumbent model.

8. Conclusion

8.1 The clear lack of competition in key product markets and consistently and increasingly poor ICT deficit results on an ongoing basis is evidence that Australia's historical commitment to the old, incumbent, closed source model has resulted in a stunted ICT industry, the outputs of which fall substantially below their real potential.

8.2 As one example, despite the availability of functionally equivalent operating systems at greatly reduced price, the Australian economy continues to rely heavily on incumbent products. The failure to adopt an open source operating system costs Australia roughly $430 million per year.

8.3 The broader failure to adopt open source products has an even greater impact on the Australian economy, through direct costs, such as licensing fees, and through indirect effects including reduced competition, lack of access to sales channels and being forced to compete in areas of weakness (ie IT-as-product models) rather than areas of strength (IT-as-service models). The overall losses from these secondary effects is particularly difficult to quantify, but is likely to mean that the true extent of the loss to Australia is several times that of the component which is directly calculable.