Deloitte Access Economics

The Costs and Benefits of Preventing Parallel Imports into New Zealand

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Executive Summary

Parallel imports (PIs) are goods that are produced genuinely under copyright protection in one market, and which are then imported into a second market without the authorisation of the local copyright owner. There have been a number of important changes to parallel import laws in New Zealand and Australia over the last two decades. This report examines the costs and benefits of these changes.

Parallel import restrictions tend to create both benefits and costs. The benefits typically accrue to foreign owners of copyrighted works, with some benefits to local owners of copyrighted works who would otherwise face competition from parallel imports. Thus, assuming import prices rise more than export prices, parallel import restrictions worsen a country's product terms of trade. On the other hand, the costs of higher prices and lower overall consumption are borne by consumers. Standard economic theory suggests that the benefits of allowing parallel imports outweigh the costs.

There are other possible sources of costs, including possible dynamic efficiency losses and reductions in creative effort, as well as possible losses resulting from an inability to price discriminate. However, there are also additional sources of gains to both consumers and possibly producers, such as increases in product variety (for consumers), and improvements in inventory control (for distributors and retailers). There is nothing in economic theory to suggest that these possible costs will necessarily outweigh the possible benefits.

The impact on aggregate economic welfare of changes to parallel import restrictions is difficult to measure directly, as volumes of parallel imports are not measured separately in official trade statistics. However, other indirect methods and data sources can be used to provide a reasonable indication of the impact of changes on consumers and producers.

Over the last decade or so, there have been a number of studies which have examined the impact of parallel import restrictions on the New Zealand economy. The studies have examined CD prices, books, motor vehicles, computer software, and the motion picture industry. On the whole, previous studies have suggested there are likely to be net benefits to the New Zealand economy from liberalising PIRs. In addition, the most recent Australian study on parallel imports – the Productivity Commission's report on books – found significant positive price differences between Australia and other jurisdictions, and recommended that existing PI restrictions be repealed.

This report updates some of the data examined in these earlier studies. The report finds that:

- Since 1998, when parallel import restrictions on CDs were relaxed in both Australia and New Zealand, real (inflation adjusted) CD prices have fallen considerably.
- Overall, there is little evidence that the PIR changes in 1998 have had significant negative consequences for the New Zealand and Australian music industries. Physical and digital sales of singles by New Zealand artists have increased more than eightfold between 2006 and 2010. End of year singles chart data from Australia shows that Australian artists continue to enjoy success domestically. Census data from each country suggests that the number of musicians and those in music-related occupations has remained steady or increased following the 1998 changes.
- Data from earlier studies and from this report suggests that a sizeable negative price differential for books has opened up between New Zealand and Australia over the last few years. This finding supports other recent evidence for books, which has shown that Australian consumers continue to pay a significant price premium as a result of remaining parallel import restrictions in Australia. The report estimates that

the value of this price premium is around NZ$3.06 per book, or approximately 10 per cent for the average Australian book.

- Overall, the 1998 changes in New Zealand do not appear to have had significant negative effects on domestic creative effort in the book publishing industry. The number of new NZ book titles that published annually has remained fairly steady between 2005 and 2008. Data on the number of authors shows that following the changes the share of authors in overall employment has increased in New Zealand.
- The temporary ban on parallel imports of new motion picture releases in New Zealand in 2003 does not appear to have had positive impacts on the local industry. Evidence suggests that DVD prices have fallen in real terms over the last five years. Despite the temporary ban being in place, cinema attendance per capita has fallen since 2003, and the length of the format release window – one of the major justifications for the temporary ban – has narrowed considerably.
- Previous studies have concluded that the 1998 changes to PIRs for computer software appear to have had no negative overall consequences for the domestic industry in New Zealand. Recent data examined in this report confirms that this remains the case; indeed, there is a shortage of computer programmers in New Zealand, which the Government is actively seeking to alleviate.

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1 Introduction

1.1 Background

Parallel imports (PIs) are goods that are produced genuinely under copyright protection in one market, and which are then imported into a second market without the authorisation of the local copyright owner. Prior to 1998, the *Copyright Act 1994* prohibited the parallel importation into New Zealand of all goods protected by copyright, other than those imported for domestic uses. This provision was revised in 1998 when the *Copyright (Removal of the Prohibition on Parallel Importing) Amendment Act 1998* was passed. The 1998 Act and subsequent amendments allow for the parallel importing of non-infringing copies of a work into New Zealand, subject to certain exceptions.

This report analyses the broad costs and benefits associated with preventing parallel imports into New Zealand. The report is structured as follows. Section 2 briefly outlines the current state of play regarding parallel import restrictions in New Zealand and, for comparative purposes, Australia. Section 2 also discusses the economic costs and benefits of parallel import restrictions. Section 3 briefly surveys some previous reports on the economic effects of parallel import restrictions on the New Zealand and Australian economies. Section 4 examines recent evidence on prices and creative effort in New Zealand and Australia, for industries that are subject to copyright. The analysis pays particular attention to music CDs (which are not subject to parallel import restrictions in either country) and books, where parallel import restrictions remain for Australia. Section 5 undertakes a detailed empirical investigation of online retail price differences in Australia and New Zealand for books and CDs, in order to provide some indicative estimates of the effects on prices of parallel import restrictions in Australia. Section 6 concludes.

2 The Economics of Parallel Import Restrictions (PIRs)

2.1 What are Parallel Imports?

Parallel imports (PIs) are goods that are produced genuinely under copyright protection in one market, and which are then imported into a second market without the authorisation of the local copyright owner. Importantly, parallel imports are *not* pirated goods - they are legally produced with the permission of the copyright owner.

One difficulty with directly measuring the impact of changes to PIRs is that parallel imports are not separately accounted for in international trade statistics. NERA (1999) provided estimates of the size of parallel import or "grey" market in the European Union, where there are relatively few restrictions on parallel imports between member countries. These estimates are summarised in Table 1 below, and suggest that "grey" markets are usually relatively small.

Table 1: NERA (1999) Estimates of the Size of "Grey" Markets in the European Union

Products	Estimate
Footwear and leather goods, motorcars, consumer electronics, domestic appliances, alcoholic drinks.	5 per cent or less
Musical recordings	5-10 per cent, 20 per cent on some releases
Cosmetics and perfumes	13 per cent
Clothing	5-10 per cent
Soft drinks	Between 0 and 15 per cent
Confectionary	Less than 10 per cent

Source: NERA (1999), Table 4.2

Other studies support the conclusion that the market penetration of parallel imports is likely to be relatively small - but certainly not trivial. For example, in a study of parallel imports of pharmaceuticals in Europe, Ganslandt and Maskus (2001) found that parallel imports captured 6 per cent of the market share within three years of their introduction.[1] Kanavos et al (2004), who also studied parallel imports of pharmaceuticals in Europe, found market shares of between 0.3 per cent and 2.2 per cent.[2]

[1] Ganslandt, M. and Maskus, K. (2001) "Parallel Imports of Pharmaceutical Products in the European Union," World Bank Policy Research Working Paper, No. 2630, Washington DC.
[2] Kanavos et al (2004) *The Economic Impact of Pharmaceutical Parallel Trade in European Union Member States: A Stakeholder Analysis*, Special Research Paper, LSE Health and Social Care, London School of Economics and Political Science, January.

Unfortunately, no direct estimates of market shares of parallel imports are available for New Zealand. As a result, it is generally not possible to accurately measure the extent of market penetration of parallel imports after restrictions have been removed.

However, recent research suggests that the extent of the market share enjoyed by parallel imports may not be the best indicator of the extent to which consumers benefit from relaxing restrictions. The reason is that the introduction of parallel imports tends to have both direct and indirect effects on consumer prices. When parallel import restrictions are relaxed, the new "grey" goods are sold at lower prices, and gain some market share - this is the direct effect. But the forces of competition will also tend to drive down the prices of other products in the same market. For example, Thompson's (2009) analysis of digital camera prices found that:

"not merely does the presence of an import model among the regular versions on offer depress price, variously measured, but it also lowers mean and minimum prices even after its own magnitude has been expunged from the price distribution." [3]

This indirect price effect – which occurs as a result of the threat of competition from parallel imports - is likely to be just as important – if not more important – than the direct price effect in terms of market outcomes and welfare. Since average prices of products are easier to observe than quantities, this report focuses more on prices than on volumes.

2.2 Policy Changes to PIRs in Australia and New Zealand: A Brief History

Table 2 below briefly summarises the major policy changes relating to parallel import restrictions (PIRs) in Australia and New Zealand over the last two decades, as well as the major restrictions which remain. As shown in the table, the major changes in New Zealand occurred in 1998, whilst in Australia the changes have occurred in a more staggered fashion. The key remaining PI differences are in books, where Australia still retains some restrictions, and in DVDs, where parallel imports remain illegal in Australia, but are permitted subject to some restrictions in New Zealand.

[3] Thompson, S. (2009) "Grey Power: An Empirical Investigation of the Impact of Parallel Imports on Market Prices," *Journal of Industry Competition and Trade*, 9: 219-232.

Table 2: Major Changes to Parallel Import Restrictions in Australia and New Zealand

Year	Product Category	Country	Policy Change	Remaining major restrictions
1991	Books	Australia	Parallel import restrictions partially lifted for books, but 30 day and 90 day rule remain.	**30 day release rule:** Australian publishers are required to release a book within 30 days of its release overseas, or permanently lose the right to restrict parallel imports. **90 day resupply rule:** If a publisher is unable to restore supply of an already released book within 90 days, parallel imports are permitted until supply is restored.
1998	Sound recordings	Australia	Parallel import restrictions lifted for sound recordings	
2003	Computer software	Australia	Parallel import restrictions lifted for computer software	
1998	Books, Musical works, videos, films and some software	New Zealand	Removal of general prohibition on parallel imports	
2003	Films, videos and DVDs	New Zealand	Reintroduction of some restrictions on parallel imports	**9 month rule:** Ban on parallel importation of films produced for cinematic release for nine months after a title's first release anywhere in the world (subject to a private use exemption).

2.3 Sources of Costs and Benefits

2.3.1 Consumer Losses and Producer Gains from PIRs

For New Zealand - a small open economy - the broad economic issues involved in the economic analysis of parallel import restrictions are relatively straightforward, and can be categorised as follows:

- **Costs**: PIRs tend to lead to higher consumer prices than would otherwise be the case. Higher prices tend to reduce demand and consumer welfare. This is the primary source of economic costs of PIRs.
- **Benefits**: PIRs tend to produce higher prices and greater sales revenue for domestic producers and domestic intellectual property right (IPR) holders of foreign-produced goods. This is the primary source of economic benefits of PIRs.

The overall welfare effect of PIRs is computed as the sum of the loss to consumers and the gain to producers.

Figure 1 below illustrates these basic economic issues and is similar to diagrams that have appeared in a number of previous studies on this issue. The figure illustrates a competitive market for a homogenous good that is produced domestically (such as books) but which also competes with overseas suppliers. The consumer demand curve is downward sloping and is a measure of (declining) marginal consumption benefits. Domestic producer supply is upward sloping and reflects increasing marginal production costs.

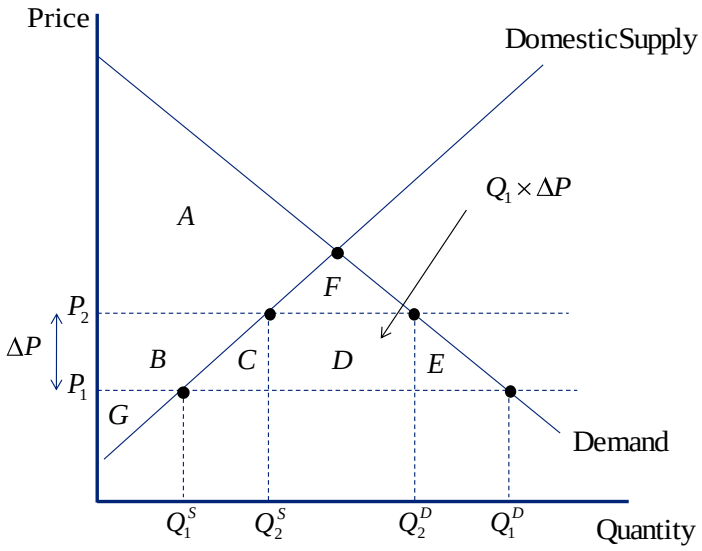
The diagram considers two situations, 1 and 2. In situation 1, there are no parallel import restrictions. Imports are obtained at the world price, which is assumed to be P_1. At this price, domestic consumers' quantity demanded is Q_1^D. Consumer welfare is given by the excess of total consumer benefits and price (the consumer surplus), which is equal to A+B+C+D+E+F.

At a price of P_1, domestic producers are willing to supply Q_1^S of the good, which is less than consumer demand at that price. The remaining demand is supplied by parallel imports. Thus, imports are equal to $Q_1^D - Q_1^S$. Domestic producer welfare is given by the difference between price and cost (the producer surplus), which is equal to G. Aggregate welfare is equal to the sum of these two measures, A+B+C+D+E+F+G.

In situation 2, parallel imports are prohibited. As a result, imports are now sourced from more expensive sources, and the world price rises to P_2. At this price, domestic consumers' quantity demanded is Q_2^D. Consumer welfare shrinks to A+F. Domestic producers are now willing to supply Q_1^S of the good. Imports shrink to $Q_2^D - Q_2^S$. Domestic producer welfare rises to B+G. Thus, aggregate welfare shrinks to A+B+F+G. The amount C+D+E is the welfare loss from restricting parallel imports, and is borne entirely by domestic consumers.[4]

[4] For sufficiently small price changes, the areas C+E are of second order, and the welfare loss can be approximated by the area D, which is the new quantity of imports, multiplied by the price change. On the other hand, if the price change is sufficiently large, then C+E should be measured and included in any welfare cost calculation.

Figure 1: The Costs and Benefits of Parallel Import Restrictions – Domestic Impacts



Whilst the impact of parallel import restrictions on foreign suppliers does not enter the domestic cost-benefit calculus, these effects are worth noting. As a result of parallel import restrictions, foreign suppliers of cheaper parallel imports experience a reduction in demand, which reduces the quantity that they sell, as well as their revenue and any economic profits they previously obtained. In Figure 1, the revenue loss is equal to $P_1 \times (Q_1^D - Q_1^S)$.

To summarise: basic economic theory predicts that overall, there will be several important effects from restricting parallel imports:

- Local producers, including content-providers as well as exhibitors and distributors will, on the whole, tend to gain from parallel import restrictions.
- Domestic intellectual property right holders will experience an increase in revenue and profits as a result of parallel import restrictions.
- Domestic consumers will tend to be worse off as a result of parallel import restrictions, with the losses partially offset by gains to the other two groups identified above.

The qualitative features of the overall welfare analysis that is presented in Figure 1 above turn on whether import prices rise as a result of parallel import restrictions. The quantitative effects turn on the magnitude of the price rises and the size of the area C+D+E, which in turn depends on the quantity of imports that would occur in the presence of parallel import restrictions. That is, the gains accruing to local producers, as well as the losses borne by domestic consumers, depend on the price change that comes about as a result of the imposition of restrictions.

As discussed above, as a general rule, the quantities of parallel imports before and after policy changes occur are usually not observable. Hence, direct estimation of the welfare change identified in Figure 1 above is usually not possible. Broader market evidence on prices and domestic activity must be examined in order to determine the qualitative nature of the impact of changes in parallel import restrictions on consumers and domestic producers.

2.3.2 Extensions of the Basic Economic Model

The competitive model discussed above can be extended in a number of different directions. This section discusses how such extensions may alter the cost-benefit calculus of policy changes.

2.3.2.1 Non-Price Benefits - Timeliness and Search Costs

The full consumer price of a good is the sum of the money price and the non-money price. Delay and search costs, shopping times and delivery speeds are a key determinant of consumer transaction costs and non-money prices in markets. These costs may be incurred by retailers (who act as intermediaries between producers and final consumers) as well as final consumers themselves.

High non-money costs act like a tax on purchases of a good, leading to a fall in quantity demanded and ultimately reducing consumer wellbeing. The removal of parallel import restrictions may reduce these transaction costs. In particular, removing PIRs may allow overseas titles to become available in the importing country in a more timely fashion following their international release. This reduction in release delays benefits retailers and ultimately consumers.

2.3.2.2 Product Variety

In the standard competitive model examined in the previous section, goods are assumed to be homogenous. However, much of the gains to consumers from international trade arise from increases in product variety arising from the increased availability of a greater range of products as a result of the opening up of markets [see, for example, Feenstra (1994) and Feenstra and Lee (2004)]. To the extent that the standard analysis of removing parallel import restrictions neglects increases in product variety, it will underestimate the welfare gains to consumers from removing PIRs. It follows that standard measures may also underestimate the costs to consumers of imposing PIRs. In particular, it is important to note that even if prices do not change as a result of the removal of PIRs, consumers may still enjoy considerable welfare gains due to greater product variety.

2.3.2.3 Inventory Control and Gains to Producers

The availability of parallel imports may also benefit producers under certain circumstances. For example, Raff and Schmitt (2007) develop a model which shows how allowing parallel imports may, under some circumstances, actually benefit creators as well as consumers. In their approach, a monopoly manufacturer or content creator sells its products to a large number of risk neutral competitive distribution or retail firms across two different countries. These retailers are assumed to be uncertain about the size of the demand side of each of their markets, and must set their prices before this uncertainty resolves itself. Demand for the good vanishes after a certain period of time, and excess inventory becomes worthless after this.

Allowing distributors in each country to trade “grey” goods once demand is revealed provides distributors with additional flexibility from an inventory control perspective, and under certain circumstances can increase their initial overall order size from the manufacturer at any given price. This makes the monopoly manufacturer better off than if “grey” trade was prohibited.

2.3.2.4 Market Power and Price Discrimination

A producer is said to engage in third degree price discrimination when they can segment the market into groups of consumers, and charge different groups different prices based on their willingness to pay. Such a strategy can be profit enhancing for a monopolist if resale price arbitrage can be prevented.

Parallel import restrictions allow producers to prevent such resale arbitrage, and may therefore facilitate third degree price discrimination. Varian (1985) has shown that imposing uniform pricing (which would be likely to emerge if parallel imports are permitted) instead of allowing third-degree price discrimination on a monopolist has ambiguous overall welfare implications. Varian (1992) shows that if a monopolist cannot price discriminate, he may decide to sell no good in relatively small markets. Permitting price discrimination can make serving the small market profitable and, under these circumstances, actually result in a

Pareto improvement. On the other hand, Varian also shows that if aggregate output falls as a result of allowing third degree price discrimination, then aggregate welfare must fall.

2.3.2.5 Dynamic Considerations and the Economics of Intellectual Property Rights

One common argument for restricting parallel imports is that such restrictions increase incentives for investment in creative effort and innovation. Hence, it is argued, restrictions on parallel imports may be dynamically efficient in a second best sense. The argument relies on economic considerations that are similar to those explored in the "optimal patent length" literature [see, for example, Nordhaus (1969)]. The standard optimal patent length argument is that if an innovator can charge prices above marginal costs for a longer period of time, then this increases the returns to innovation, and induces the innovator to invest more in research and development. This, in turn, leads to a greater amount of innovation than would otherwise be the case.

However, there is an important tradeoff here: since the innovator enjoys higher prices and profits for a longer period of time, consumers may be worse off than they otherwise would be, since lower prices are postponed for a longer period of time. The optimal patent length balances out the gains from innovation and these losses to consumers. The lesson for parallel import policy is that even if restricting parallel imports may increase the returns to innovation and lead to greater creative effort, these benefits should always be weighed against the costs to consumers. Greater creative output at very high consumer prices is not an optimal outcome from society's point of view.

It is important to note here that New Zealand is a very small market, so the innovation incentives for foreign producers from the potentially higher prices they may enjoy under parallel import restrictions will likely be negligible. Any gains on the innovation side would need to come in the form of greater creative effort domestic producers. As we show below, the 1998 changes to PIRs in New Zealand do not appear to have had a significant negative effect on domestic creative effort.

2.4 The Economic Effects of Personal Importation Exceptions

Restrictions on parallel importing do not typically apply to purchases that are intended for an individual's private use. For example, New Zealand's nine month rule for films has a private use exception, which means that individuals are still able to privately import motion picture titles not yet theatrically released in New Zealand for viewing in their own homes.

Such personal use exceptions are likely to increase consumer welfare, relative to the case where such exceptions are not granted. However, even where personal exemptions are in place, welfare gains from completely removing parallel import restrictions (as outlined Figure 1) are still likely to exist. In other words, personal use exemptions do not fully exhaust all (or even most) of the potential welfare gains from allowing parallel imports. The reason is straightforward: even in markets where internet commerce is widespread, individual consumers who are purchasing for individual use from foreign parallel import suppliers are likely to face higher transaction costs (such as search costs, transport and delivery costs, delays and so on), than domestic retailers, who have a comparative advantage in search, transportation and delivery and arbitrage activities. In other words, even where personal use exceptions mitigate some of the adverse welfare effects of parallel import restrictions, prices would be lower still if the restrictions were removed completely.

2.5 Key findings

- There have been a number of important changes to parallel import laws in New Zealand and Australia over the last two decades.
- The impact of these changes on volumes is difficult to measure directly, since parallel imports are not identified separately in official trade statistics.
- Parallel import restrictions tend to create both benefits and costs. The benefits typically accrue to domestic producers in the form of higher prices and greater output and profits, whilst the costs of higher prices are borne by consumers. Standard economic theory suggests that the benefits of allowing parallel imports should outweigh the costs.
- There are other possible sources of costs including possible dynamic efficiency losses and reductions in creative effort. However, there are also additional sources of gains to both consumers and possibly producers, such as those on product variety (for consumers), and inventory control (for distributors/retailers). There is nothing in economic theory to suggest that these possible additional costs should outweigh the possible additional benefits.

3 Previous Studies of Parallel Imports in New Zealand

There have been a number of previous studies of the effects of parallel import restrictions on the New Zealand economy. On the whole, these studies - which are briefly summarised in this section - have focussed on the standard consumer losses and producer gains, as illustrated in the analysis of the previous section, as well as the impact on creative effort.

3.1 New Zealand Institute for Economic Research [NZIER] (1998)

The NZIER study examined the impact of parallel import restrictions in three New Zealand markets: used and new motor vehicles, books, and music compact discs (CDs). Overall, the study found that the net impact of removing parallel import restrictions would likely be positive.

For motor vehicles, NZIER found that the fall in the price of new cars in New Zealand over the period 1985 to 1996 cannot be completely explained by reductions in tariffs and tax changes over the period, and therefore attribute some of the price reduction to an increase in competition as a result of the removal of import restrictions on used cars. The NZIER also found that the number of vehicle assembly firms in New Zealand dropped over the period.

NZIER undertook a comparison of average book prices in New Zealand with those in the US, the UK and Australia, during a period in which parallel import restrictions were in place in New Zealand for books. Using a range of exchange rate assumptions, the study found that book prices in New Zealand were, on average, higher than in each of the other jurisdictions.

For music CDs, NZIER undertook an international price comparison of a small number of CD titles in New Zealand, the US, the UK, Germany and Australia. The results of this analysis were mixed, with some overseas retail CD prices higher in other countries than in New Zealand.

3.2 Chen and Png (2004)

Chen and Png (2004) conducted an econometric analysis of CD prices in ten jurisdictions which revised parallel import restrictions between 1990 and 1999. The countries examined were Australia, Canada, Hong Kong, Israel, Malaysia, Netherlands, New Zealand, Norway, Singapore, and the US. During the period investigated, some of these countries changed copyright laws in favour of parallel imports, and some changed laws which restricted parallel imports. Chen and Png found that a changed in the law to permit parallel imports was, on average, associated with a US$0.86-US$0.94 reduction in CD prices.

3.3 Network Economics Consulting Group [NECG] (2004)

The NECG report examined the costs and benefits of parallel imports to the New Zealand economy, the impacts of PI on investment in and promotion of New Zealand's creative industries, and undertook a comparative analysis with the Australian experience. The NECG study examined sound recordings, books and computer software. The study found that on the whole, there were likely to be net benefits from liberalisation of PIRs in New Zealand. NECG found no evidence of any substantial detriment to the financial performance or investment activity of the three industries following liberalisation, and found evidence of lower retail prices and greater product choice and availability in the book and music sectors. The NECG results on prices are discussed further below.

3.4 Law and Economics Consulting Group [LECG] (2007)

The LECG study examined the same three industries as the NECG study – books, computer software and music – as well as the motion picture film industry. The study was primarily conducted by means of structured interviews with content creators, publishers and producers, authorised importers and distributors, parallel importers, retailers and exhibitors, consumer organisations, and government. LECG found "no cause for concern" in relation to the impacts of parallel importing within the book and computer software industries, and whilst they did find some cause for concern in the music industry, they did not recommend any changes to existing rules. For the motion picture industry, LECG found little justification for the nine month rule, and recommended that it be reduced to six months.

3.5 Productivity Commission [PC] (2009)

The Productivity Commission published its inquiry report into Australia's remaining restrictions on the parallel importation of books in June 2009. The PC recommended that these restrictions be repealed.[5] One of the most notable features of the PC's report was its examination of book prices. The PC conducted an analysis of international price data with Australian prices, and found that "like editions" of many current list trade books were sold at a lower price in the UK and/or the US than in Australia, with average price differences of 35 per cent in 2007-08.

[5] See PC (2009), page xiv.

3.6 Key findings

- Over the last decade or so, there have been a number of studies which have examined the impact of parallel import restrictions on the New Zealand economy.
- The studies have examined CD prices, books, motor vehicles, computer software, and the motion picture industry.
- On the whole, previous studies have suggested there are likely to be net benefits to the New Zealand economy from liberalising PIRs.
- The most recent Australian study on parallel imports – the PC study on books – found significant positive price differences between Australia and other jurisdictions, and recommended that existing PI restrictions be repealed.

4 The Impact of Changes to PIRs in Australia and New Zealand: Recent Evidence

The previous section summarised some earlier studies which examined changes to parallel import restrictions in Australia and New Zealand. This section updates some of the data used in earlier studies, from both Australia and New Zealand. The analysis focuses on music CDs and books, but also discusses DVDs and computer software.

4.1 Music and Sound Recordings

4.1.1 The Growth of the Digital Format

An important trend in music sales around the world over the last decade (and particularly the last five years) has been the rising market share of digital products in overall retail sales. This trend is also evident in New Zealand data. For music singles produced by New Zealand artists, for example, the digital format now completely dominates retail sales. This is a significant change since 2006, when digital sales comprised only 26 per cent of the market (see Table 3 below).

Table 3: Digital Format Market Share - Singles by New Zealand Artists, 2006-2011

2006	2007	2008	2009	2010	2011*
26.17%	77.82%	95.79%	98.28%	99.13%	99.78%

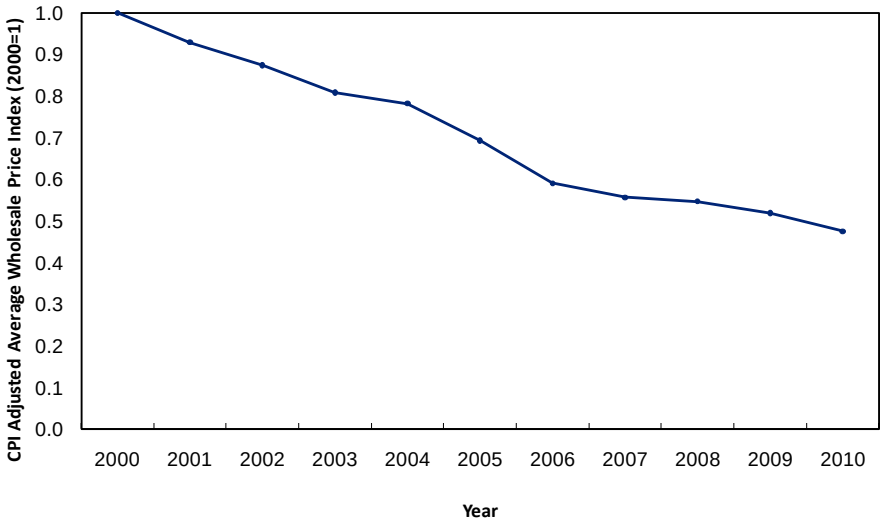
*2011 data only includes the year to September 2011.

The growth in the market share of the digital format has been accompanied by – and has been a key driver of – continuing reductions in retail music prices over the same period.

4.1.2 CD Prices in Australia

As outlined by NECG (2004), a September 2002 report Australian Competition and Consumer Commission notes that the average retail price of a "top 40" CD in Australia was $26.41, compared to a price of $30 before the 1998 PIR changes. Recent data suggests that the downward trend in prices has continued. As Figure 2 below shows, ARIA data suggests that average wholesale prices of CD albums have fallen by over 45 per cent in real terms since 2000.

Figure 2: Inflation-Adjusted Wholesale Unit Prices of CD Albums, Australia, 2000-2010



Source: ARIA, ABS Cat. 6401.0.

Additional evidence gathered for this report suggests that retail CD prices have also continued to fall in Australia since 2002. We collected a sample of 100 price observations for CD Albums from the online retailer Sanity. Table 4 below shows that the average price for CDs in our sample is around 26 per cent lower (in real terms) than the average computed for the sample collected by the ACCC in 2002.

Table 4: Average Nominal and Real Prices for CD Albums in Australia, 2002 and 2011

ACCC Average (September 2002)	Sanity.com Average (August 2011)	Nominal Price Change	Real (CPI Adjusted) Price Change
$26.41	$24.30	-8 per cent	-26 per cent

Source: ACCC (2002), NECG (2004); Sanity.com; own calculations

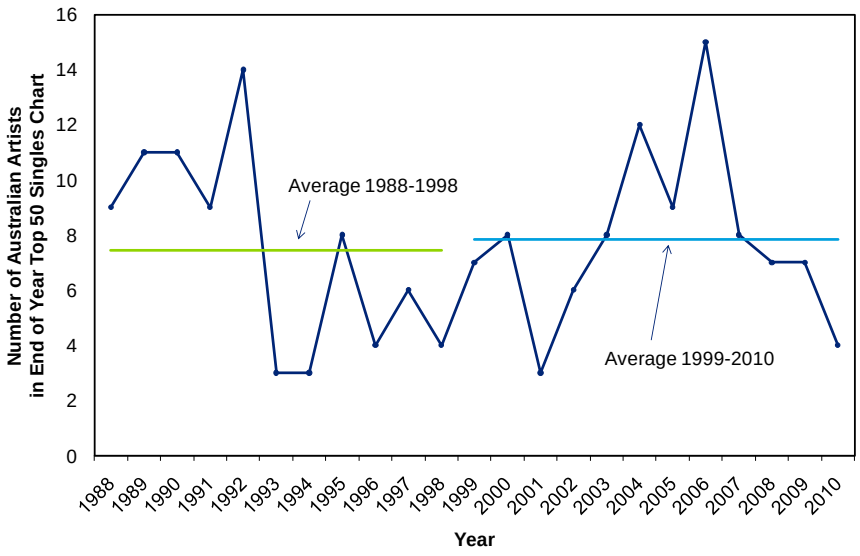
4.1.3 An Overview of the Recent Economic Performance of the Australian Music Recording Industry

As discussed in section 3 above, a major concern with the removal of parallel import restrictions is the impact on domestic creative effort. In order to assess these possible costs, this section analyses several indicators of recent performance of the music industry in Australia.

Whilst CD prices have continued to fall, there is little recent evidence to suggest that the 1998 changes to parallel import restrictions in Australia had a significant negative impact on the Australian music recording industry. For example, NECG (2004, page 27) noted that local acts in Australia continued to be successful after the 1998 change, with seven local acts holding the number one chart position between June and December 2004.

Figure 3 below updates and extends the NECG analysis, compiling data on Australian artists from the end of year ARIA singles charts between 1988 and 2010. There is nothing in this data to suggest that the 1998 PIR changes had a negative impact on successful Australian recording artists. Indeed, the data suggests that the average number of successful local acts may have increased slightly after 1998.

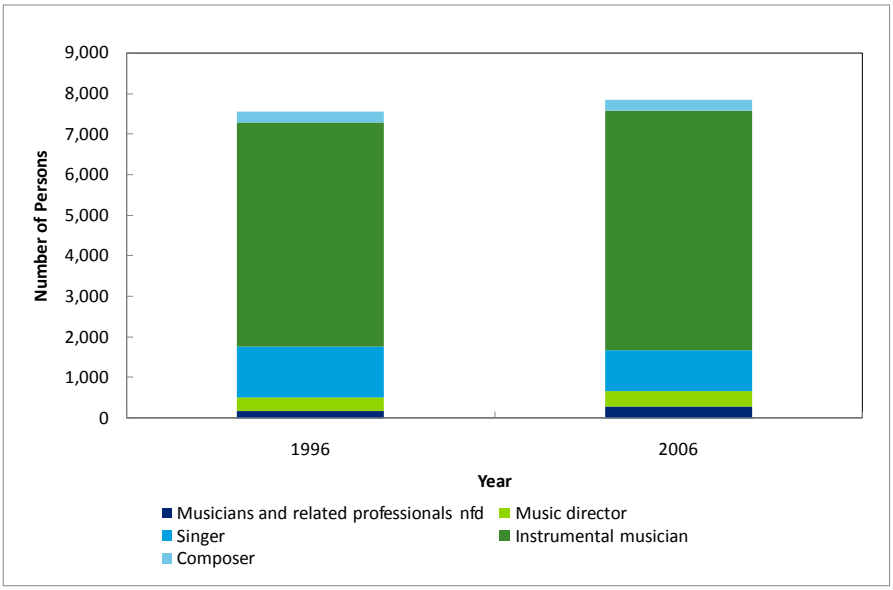
Figure 3: Number of Australian Artists in ARIA End of Year Top 50 Singles Charts, 1988 to 2010



Source: ARIA.

Employment data also suggests that there has been little or no impact on jobs in the local music industry as a result of the changes. One of the most reliable measures of changes in employment and occupational choice is the Australian Census. Figure 4 below plots occupational data from the 1996 and 2006 censuses for music-related occupations. The data shows that between 1996 and 2006, the number of Australians identifying themselves as musicians or as working in occupations that are directly related to music increased slightly.

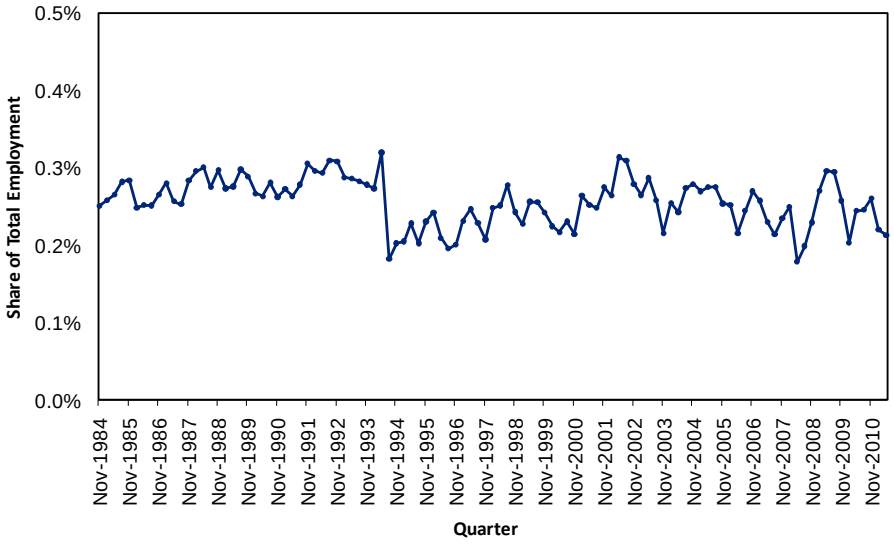
Figure 4: Number of Musicians and Individuals in Related Occupations, Australia, Before and After Parallel Import Restrictions - 1996 and 2006



Source: ABS Cat. No. 6273.0 - Employment in Culture, Australia, 2006.

The Australian Bureau of Statistics gathers quarterly employment data for the local motion picture and sound recording industries in its Labour Force survey. The data, which is shown in Figure 5 below for the period 1984 to 2011, also suggests little or no significant long run impact of the PIR changes on local employment in these industries.

Figure 5: Employment in Motion Picture and Sound Recording Industries, Share of Total Employment, 1984 to 2011

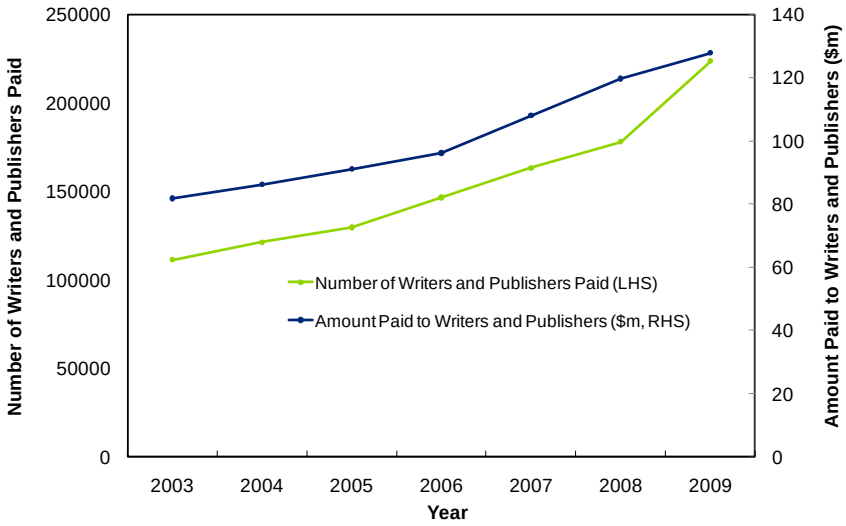


Source: ABS Cat. No. 6291.0.55.003 Labour Force, Australia, Detailed, Quarterly.

Finally, data on royalty payments to Australian music creators from the Australian Performing Right Association and the Australian Mechanical Copyright Owners' Society Limited [APRA/AMCOS] suggests that there have been few significant negative consequences of

changes to PIRs for domestic creative effort in the Australian music industry. Indeed, the number of individual royalty recipients and amounts paid has continued to rise over the last few years, as shown in Figure 6 below.

Figure 6: APRA/AMCOS Royalty Recipients and Payments, 2003 to 2009

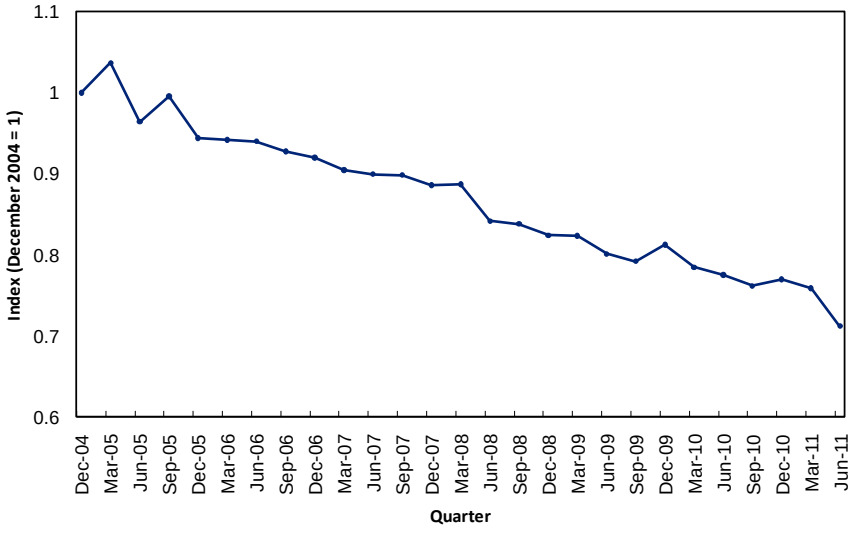


Source: APRA/AMCOS

4.1.4 CD Prices in New Zealand

Data from New Zealand also suggests that retail CD prices have continued to fall following the liberalisation of parallel import restrictions in 1998. Statistics New Zealand publishes data on the weighted average price of a "Top-10" CD album as part of its quarterly Consumer Price Index (CPI) release. Time series data is available for the period 2004-2011. After adjusting for overall inflation, the data (plotted in Figure 7 below) shows that average retail CD prices in New Zealand have fallen by around 30 per cent in real terms since 2004.

Figure 7: Inflation Adjusted Top-10 CD Album Prices (Weighted Average), New Zealand, 2004-2011



Source: Statistics New Zealand

The NECG (2004) study, as well as additional evidence gathered for this report, tends to support the trend identified in Figure 7. We collected a sample of 100 price observations for CD Albums from the online retailer fishpond.co.nz. Table 5 below shows that the average retail price for New Zealand CDs in our sample (with prices adjusted for changes in the GST over the period) is over 20 per cent lower (in real terms) than the average computed for the sample collected by NECG in 2004.

Table 5: Average Nominal Prices for CD Albums in New Zealand (excluding GST), 2004 and 2011

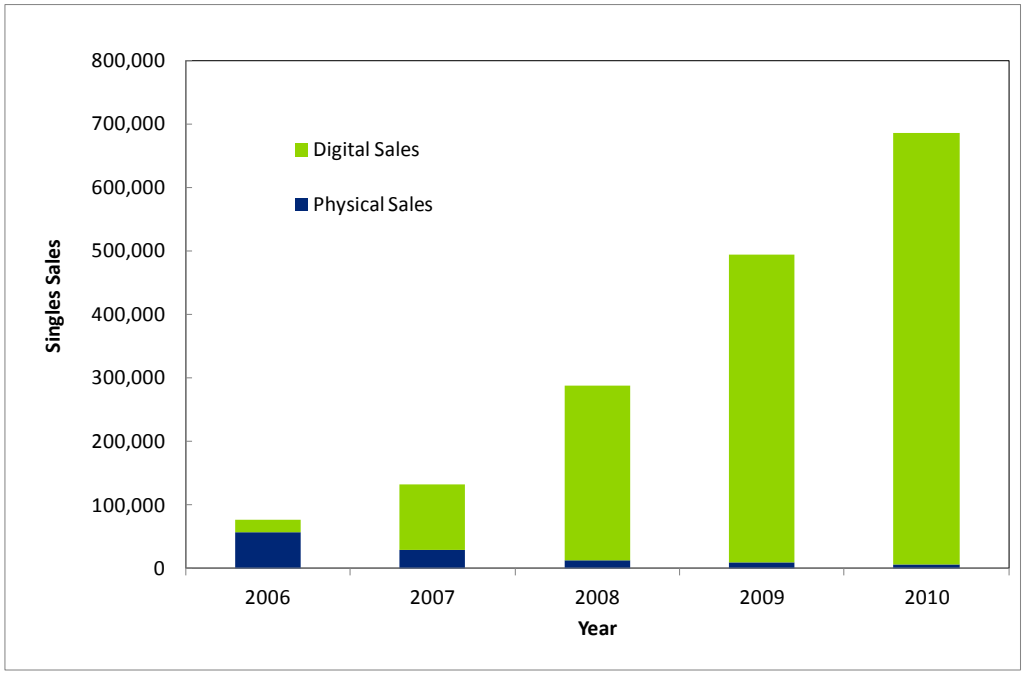
NECG Average (July 2004)	fishpond.com Average (August 2011)	Nominal Price Change	Real (CPI Adjusted) Price Change
$23.31	$22.96	-1.5 per cent	-20.4 per cent

Source: NECG (2004); fishpond.com; own calculations.

4.1.5 Impact on the New Zealand Music Recording Industry

There is little evidence that the 1998 changes to parallel import restrictions in New Zealand had a significant negative impact on the New Zealand music recording industry. For example, physical and digital retail sales volumes of singles by New Zealand artists rose by over 800 per cent between 2006 and 2010 (Figure 8).

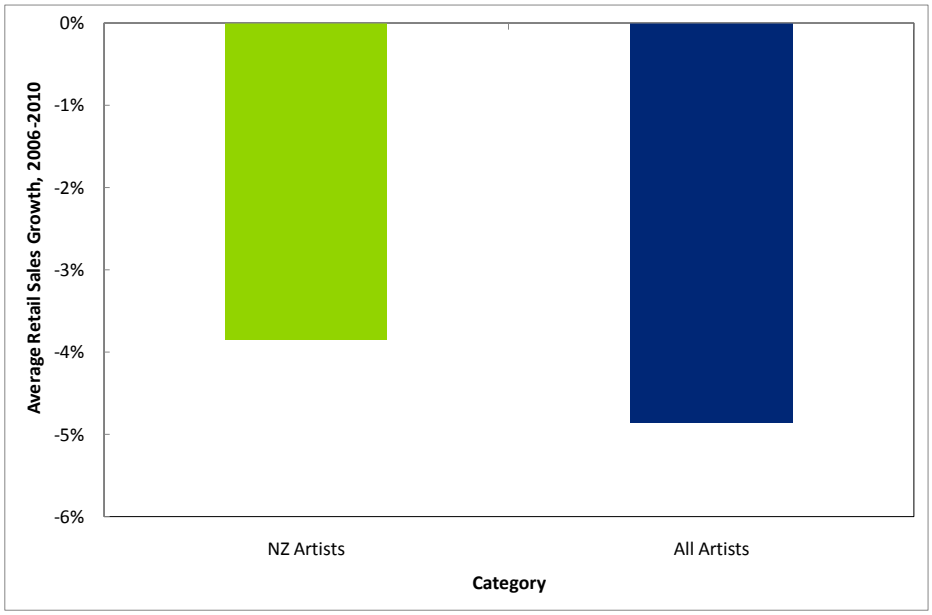
Figure 8: Retail Sales of Singles by New Zealand Artists, Physical and Digital, 2006-2010



Source: NZ Music Commission

Although retail sales of albums by New Zealand artists declined by an average of around 4 per cent per year over the same period, this decline was lower than the overall fall in album sales for all artists. In other words, the fall in demand faced by local album producers was less than the overall trend in the industry as a whole.

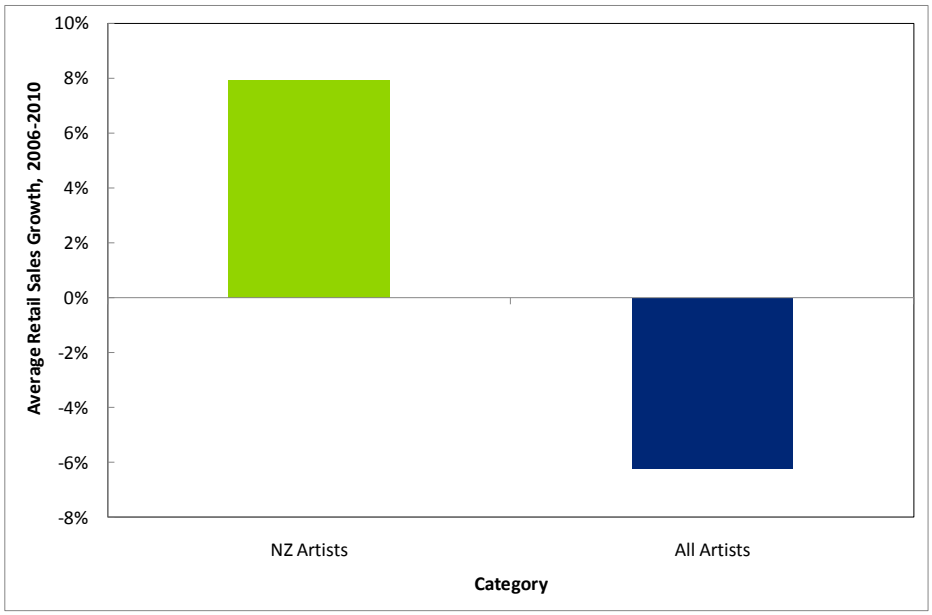
Figure 9: Average Growth in Album Retail Sales, NZ Artists Versus All Artists, 2006-2010



Source: New Zealand Music Commission

Moreover, sales of compilation albums by New Zealand artists increased by an average of 8 per cent over the period, in contrast to an average fall of 5 per cent for all artists (Figure 10).

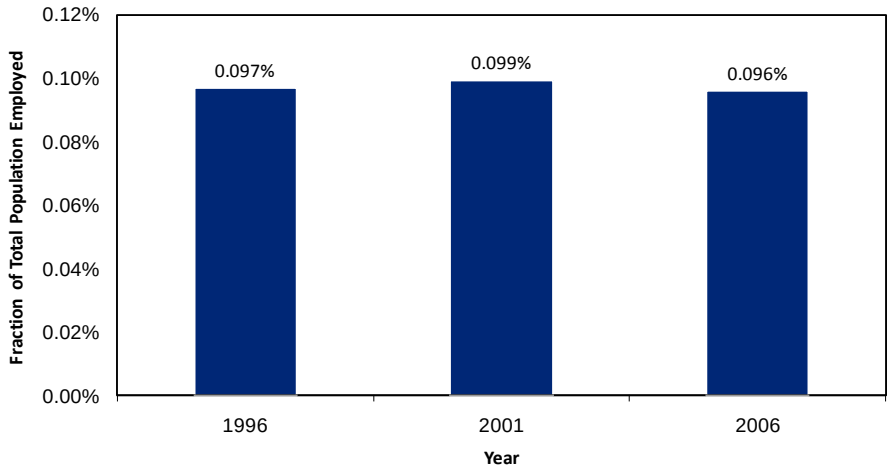
Figure 10: Average Growth in Compilation Retail Sales, NZ Artists Versus All Artists, 2006-2010.



Source: New Zealand Music Commission

Finally, the share of New Zealanders employed directly in music-related occupations (singers, instrumentalists, composers, and arrangers and/or conductors and sound recording equipment controllers), which is shown in Figure 11 below has remained fairly steady between1996 (before PI restrictions were removed), and 2006 (after they were removed). In other words, the removal of PI restrictions seems to have had few negative consequences for the both the absolute and relative number of New Zealanders employed in these occupations. Overall, the removal of parallel import restrictions does not seem to have harmed the creative effort of local music creators.

Figure 11: Singers, Instrumentalists, Composers, Arrangers and/or Conductors, and Sound Recording Equipment Controllers as a Fraction of Total New Zealand Employed Population, 1996-2006



Source: Statistics NZ

4.2 Books

As with music, the book publishing industry has experienced considerable change in the past ten years, as more products are increasingly being sold in digital formats ("e-books") and are being delivered over a wide range of digital platforms. The growing popularity of digital formats presents significant opportunities and challenges for authors, publishers, and digital asset management and distribution companies.

The growth of digital publishing will likely reduce transaction costs and increase the intensity of competition and reduce prices in the publishing industry. To the extent that parallel import restrictions prevent New Zealand e-book retailers (and consumers) from taking advantage of these lower prices, this will increase the costs of PIRs. On the other hand, with personal use exemptions in place and transaction costs falling, consumers may be able to circumvent PIRs to a greater extent than would otherwise be the case. Hence, the change in the overall welfare costs of PIRs in a world of digital publishing is, in theory, ambiguous.

4.2.1 Book Prices in Australia and New Zealand

The law of one price (see Box 1 below) suggests that in the absence of transport costs and impediments to trade, book prices should be equalised when expressed in terms of a common currency. NZIER (1998) found that before parallel import restrictions were removed, Australian book prices were about 10 to 12 per cent lower than in New Zealand. NECG (2004) conducted a similar survey of book prices after PIRs were removed, and found that price differentials between the two countries were minor. In other words, the combined evidence across the NZIER and NECG studies seemed to suggest that over the period 1998

to 2004, the removal of PIRs resulted in retail prices of books becoming relatively cheaper in New Zealand.

Evidence gathered for this report suggests that this apparent trend has continued. We collected a sample of 100 price observations for books from the online retailers Fishpond (in New Zealand), and Dymocks (in Australia). It is reasonable to expect that in online book retailing, competition would be at its most fierce, relative to "bricks and mortar" bookstores. In addition, evidence from a range of economic studies suggests that online consumers have a high degree of price sensitivity.[6] These two factors mean that price differentials in online retailing would be unlikely to emerge unless they are the result of a significant transport cost differentials or trade distortions.

The data suggests that significant price differentials between Australia and New Zealand have begun to emerge in online book retailing. Table 6 below shows that the average retail price for books in our sample (with prices adjusted for GST differences) is over $8 lower in New Zealand, compared with Australia. This price differential could be due to a range of factors, including exchange rate effects. In section 5 below we attempt to control for these other possible effects, in order to estimate the effect on book prices of Australia's remaining parallel import restrictions.

Box 1: An Example of the Law of One Price and Its Implications

Suppose that a book retails AU$20 in Australia, and that the exchange rate is AU$ 1 = NZ$1.27. Then according to the law of one price, in the absence of transport costs and impediments to trade, the same book should retail for NZ$25.40 in New Zealand. If this was not the case, arbitrage possibilities would exist. For example, suppose that the book actually retailed for only NZ$20 in New Zealand. Then an individual could purchase the book in New Zealand at a cost of NZ$20, sell it in Australia for AU$20, and effectively receive NZ$25.40.

Table 6: Average Nominal Price Differences for Books Sold Online in New Zealand and Australia across three studies - NZIER (1997), NECG (2004) and Deloitte (2011)

NZIER Average (September 1997)	NECG Average (September 2004)	Deloitte Average (August 2011)
$2.63 to $3.02	$1.10	-$8.32

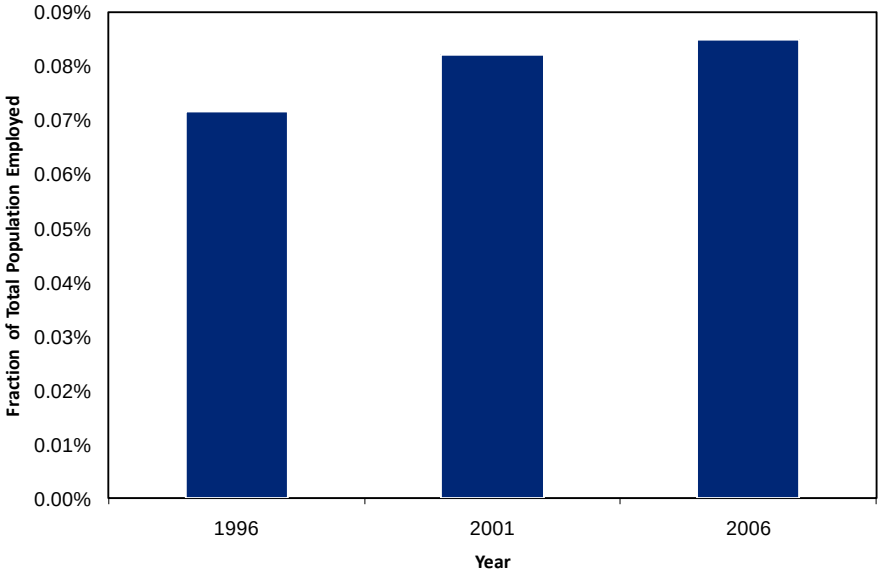
Note: Price differences are expressed in NZ dollars. Numbers in the table are difference between average book prices in New Zealand and average book prices in Australia, expressed in the same currency. Book samples are the same within each study but vary across studies. A positive (negative) number indicates that books are more (less) expensive in New Zealand than in Australia when measured in the same currency. Source: NECG (2004); fishpond.co.nz; dymocks.com.au; own calculations.

4.2.2 The New Zealand Book Industry

Whilst the price impact of the removal of PIRs on books in 1998 appears to have been significant, Census data from New Zealand suggests that the change has had little impact on overall creative effort in the New Zealand book industry. Figure 12 below, for example, shows that between 1996 (before the restrictions , were removed) and 2006 (after the restrictions were removed), the number of New Zealanders employed directly as authors or critics has increased in both absolute terms, and as a share of total NZ employment.

[6] See, for example, Goolsbee (2001) and Ellison and Ellison (2009).

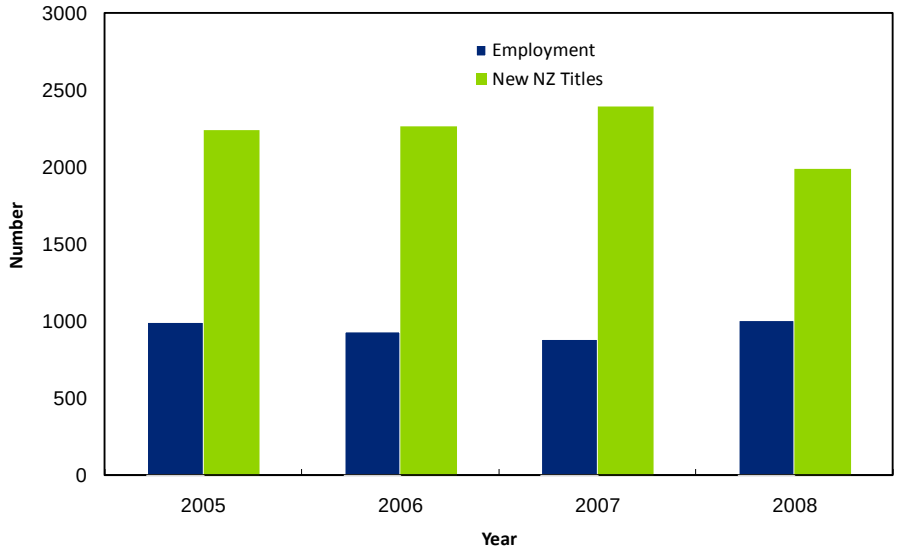
Figure 12: Authors and Critics, Fraction of Total New Zealand Employed Population, 1996-2006



Source: Statistics New Zealand

In addition, data from the most recently available (2008) survey of book publishers in New Zealand suggests that employment in the local industry, as well as the number of new local titles released, has remained fairly steady between 2005 and 2008.

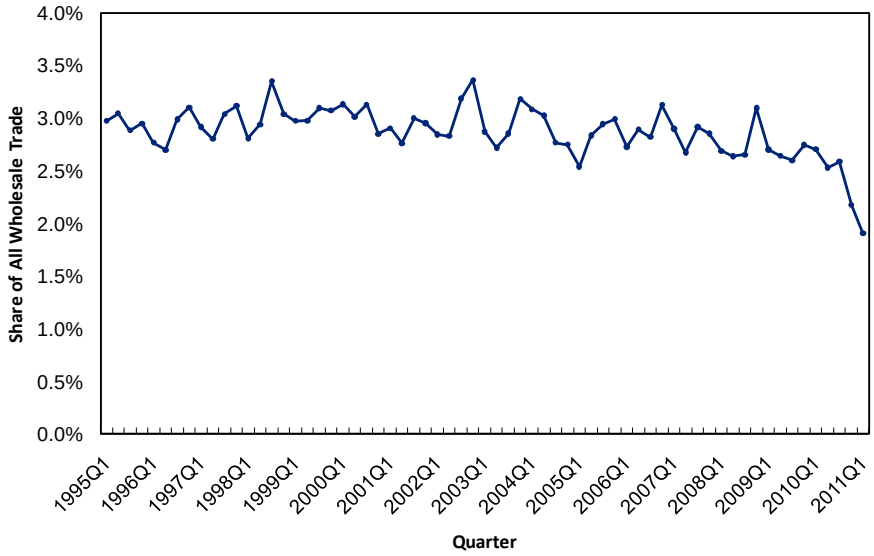
Figure 13: Employment and New NZ Titles Released, New Zealand Book Publishing, 2005 to 2008



Source: Colmar Brunton, *Survey of Book Publishing in New Zealand*, various editions

Data on wholesale sales of books and paper products also suggests that the 1998 changes had little impact on the local book industry, with sales for the industry remaining fairly steady as a share of overall wholesale sales before and after the change (see Figure 14 below).

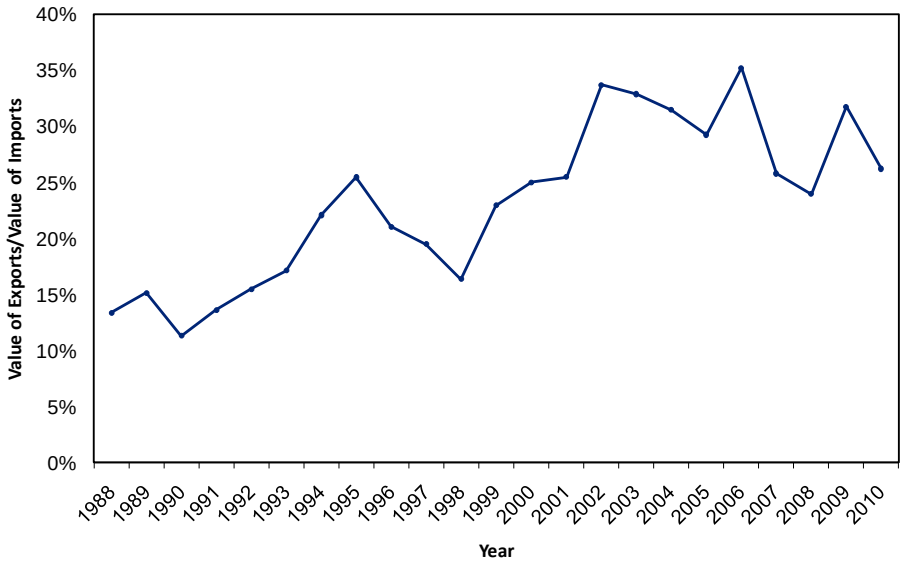
Figure 14: Wholesale Sales of Books and Paper Products, New Zealand, 1995-2011



Source: Statistics New Zealand

Finally, data on the relative value of exports and re-exports compared with imports shows that the 1998 changes had very few negative consequences for the local industry, with the value of exports increasing much more rapidly than the value of imports since the changes.

Figure 15: Value of Exports and Re-Exports of Books as a Fraction of the Value of Imports of Books, New Zealand, 1988 to 2010



Source: Statistics New Zealand

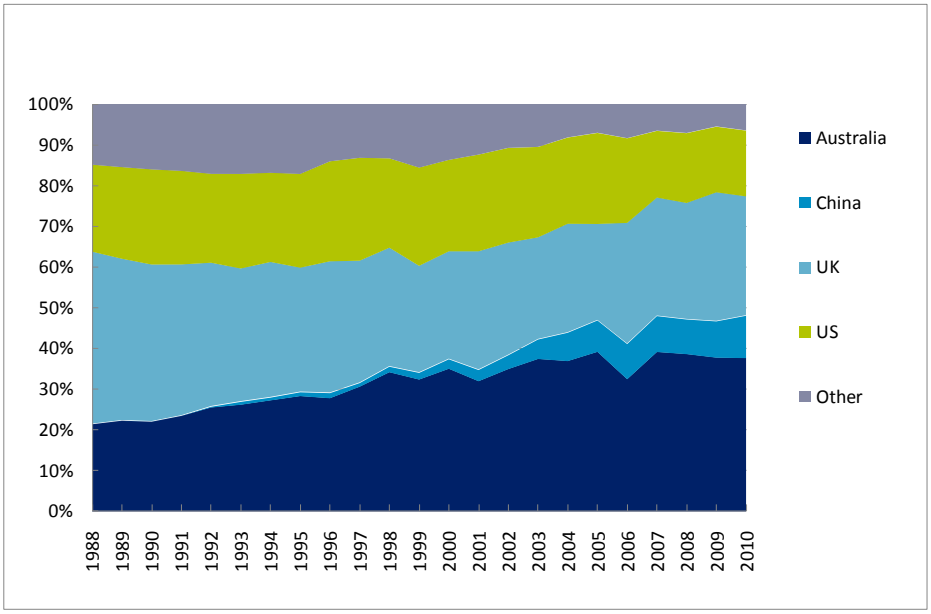
4.2.2.1 Book Imports in New Zealand: Recent Developments

The aggregate data in the previous discussion suggests that overall, the removal of parallel import restrictions appears to have had little or no significant negative consequences for the New Zealand book industry. The major source countries of book imports into New Zealand

are Australia, the UK and the US (Figure 16 below).[7] The data indicates that there have been two major changes in the structure of book imports into New Zealand since the 1998 changes.

- First, the share of imports from Australia has continued to grow steadily; and
- Second, whilst there has been a rapid increase in book imports from China following the 1998 changes, these imports remain a relatively small portion of the overall New Zealand market.

Figure 16: Market Shares of Imports of Books, by Value, New Zealand, 1988 to 2008



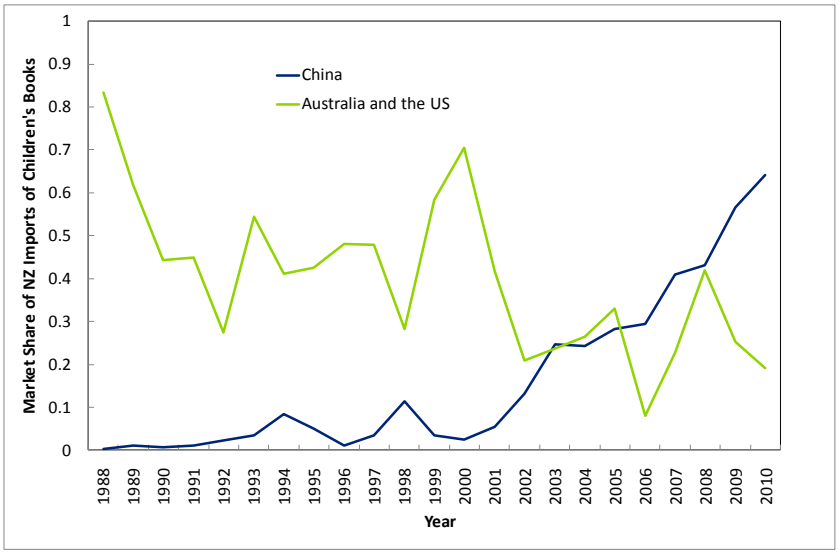
Source: Statistics New Zealand

LECG (2007) noted concerns within the New Zealand book industry of the impact of parallel imports on publishers of children's books.

As Figure 17 below shows, China is now the largest source of imports of children's books into New Zealand, largely replacing Australia and the US as the source of imports, as a greater number of children's books are now printed in China. It is not possible to determine from this aggregate trade data whether these books are parallel imported.

[7] The following product categories are included in Figure 16: school textbooks, books and booklets not elsewhere classified, children's picture, drawing or colouring books, and dictionaries, encyclopaedias and serial instalments thereof.

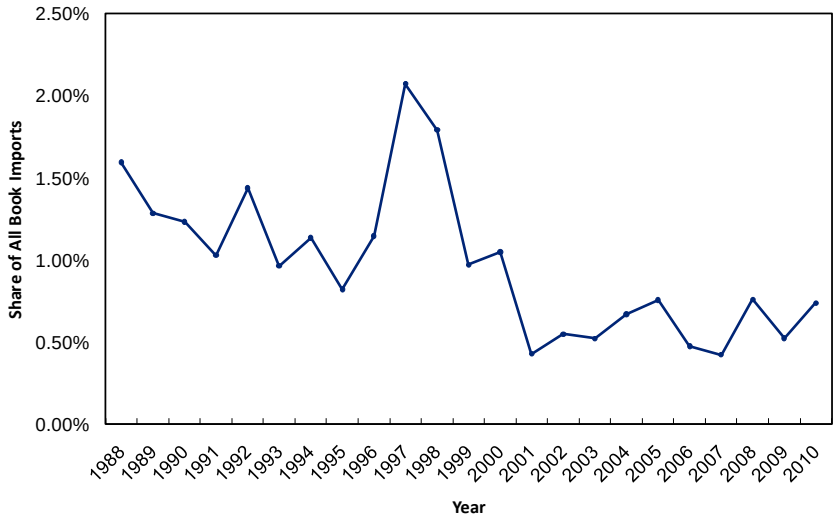
Figure 17: Imports of Children's Books into New Zealand, by Major Source Country, 1988-2010



Source: Statistics New Zealand

The same data also shows that imports of children's books have, in value terms, become *less* important over time, relative to imports of other books. Unfortunately quantity data is not available, so it is not possible to ascertain whether this trend is due to lower prices, lower quantities, or some combination of both. In any case, as Figure 18 below shows, the data suggests that this decline is the continuation of a longer term trend which, apart from the years 1996 to 1999, had begun much earlier than 1988. Moreover, it appears that the trend stabilised in 2001. It is therefore difficult to attribute the relative decline in value of imported children's books to the 1998 PIR changes.

Figure 18: Imports of Children's Books Into New Zealand, Share of Total Value of Book Imports, 1988 to 2010

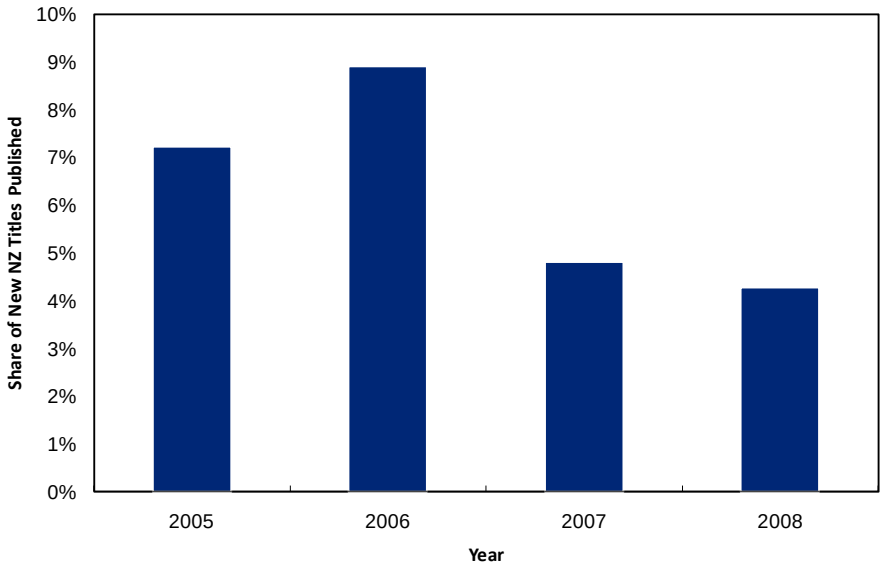


Source: Statistics New Zealand

On the other hand, there is some evidence (Figure 19 below) to suggest that the number of new NZ children's books titles has declined (relative to overall numbers of new NZ titles)

over the last few years. The role that PIR changes played in this decline, however, is not obvious and may warrant further investigation.

Figure 19: New NZ Children's Books Published, Share of all New NZ Titles, 2005-2008



Source: Colmar Brunton, *Survey of Book Publishing in New Zealand*, various editions

4.3 DVDs

As noted in section 2 above, the 1998 changes to parallel import restrictions on films, videos and DVDs in New Zealand were partially reversed in 2003. There is currently a 9 month rule in place, which bans the parallel importation of films produced for cinematic release for nine months after a title's first release anywhere in the world. The rule is subject to a private use exemption.

LECG (2007) concluded that there was little justification for the 9 month rule, and recommended that it be shortened to six months. There is little evidence from more recent data that the rule has assisted local industry. One of the primary justifications cited by the NZ film industry regarding the temporary ban on parallel imports of DVDs which was cited in the LECG (2007) study related to "format release windows". Specifically, LECG noted the following industry concerns:

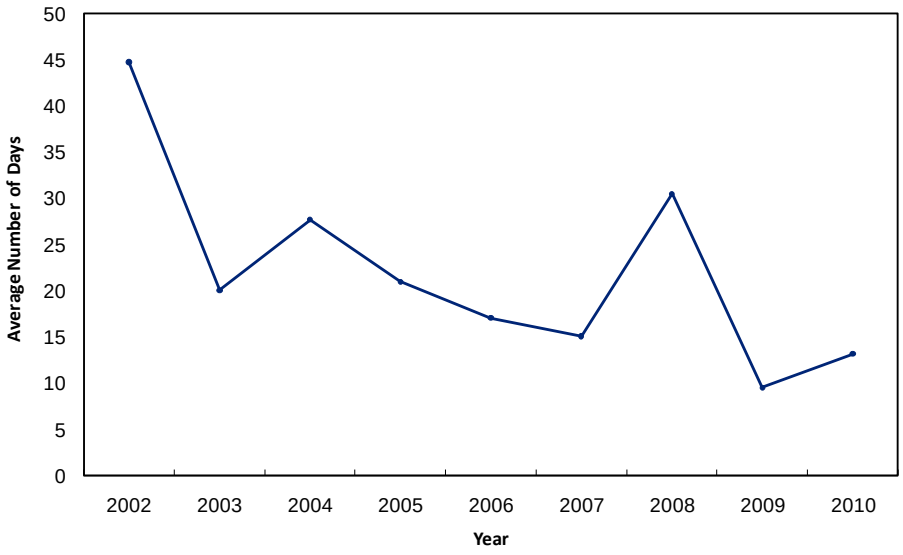
"Film distribution companies will move release dates forward in order to maintain format release windows between New Zealand cinematic release and the first release of DVD versions of the title anywhere in the world. Distribution companies state that an earlier release date for most film titles would maximise their revenue under the scenario of unrestricted parallel importing.

An earlier release date for a motion picture film title will not allow distribution companies to rent used film prints of the title (from the country of first release) to film exhibitors. Advertising for motion picture film titles would also be reduced, with flow-on effects for sales of DVDs and other merchandising."[8]

[8] LECG (2007), page 49.

However, updated data suggests that following the imposition of the temporary ban on parallel imports of motion pictures, format release windows have narrowed considerably – which weakens one of the reasons for retaining the ban. For example, Figure 20 below plots the average number of days between US and New Zealand release dates for the top twenty grossing films at the New Zealand box office for the years 2002 to 2010. The data shows that the average delay has fallen from around 45 days in 2002 to just over 13 days in 2010.

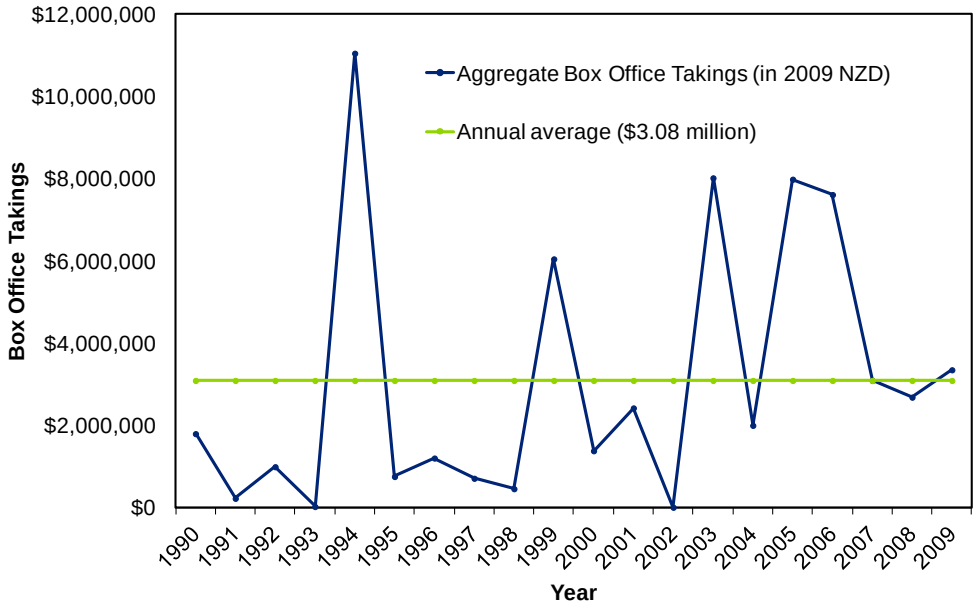
Figure 20: Average Number of Days Between US and New Zealand Release Dates, Top 20 Box-Office Grossing Films, New Zealand, 2002 to 2010



Source: Boxofficemojo.com

Box office data suggests that the change in parallel import restrictions in New Zealand between 1998 and 2003 had little effect on the returns generated by the local film production industry. Figure 21 below, for example, plots inflation adjusted New Zealand box office takings for locally produced New Zealand films over the 1990-2009 period. The annual average over this period was $3.08 million, only marginally higher than the 1998-2003 average of $3.05 million.

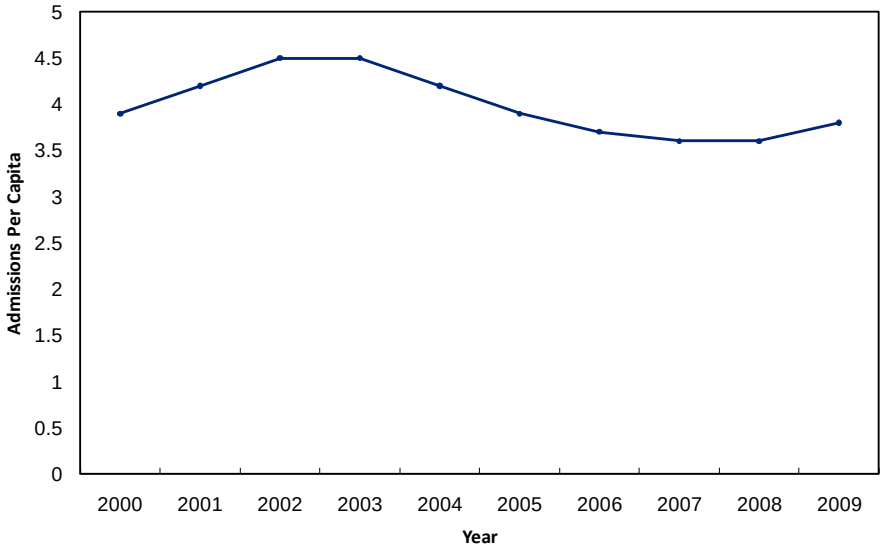
Figure 21: Inflation adjusted annual box office receipts, NZ films, 1990-2009



Source: NZ Film Commission

The LECG report also note that in 2004 and 2005, when the temporary ban was in place for new motion picture titles, cinema admissions per capita in New Zealand declined. Figure 22 below updates this data, and shows that the decline continued despite the temporary ban.

Figure 22: Cinema Admissions Per Capita, New Zealand, 2000 to 2009

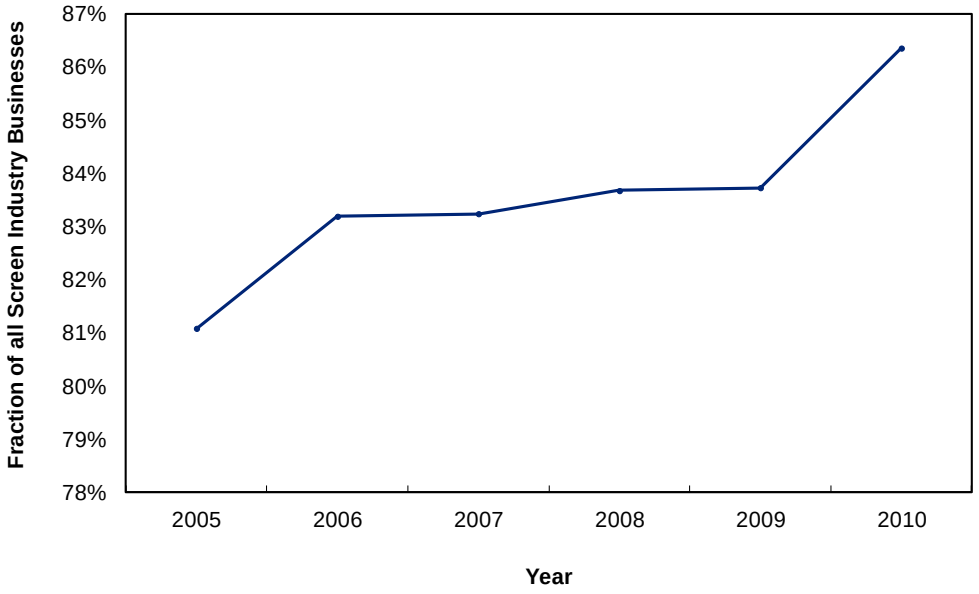


Source: Screen Australia

An additional rationale for the imposition of the temporary ban in 2003 was the effect that parallel imports would have on cinema costs and the sustainability of provincial and rural

cinemas. In overall terms, the introduction of the temporary ban on parallel imports does not seem to have altered the trend towards greater concentration of screen industry businesses in Auckland and Wellington, as Figure 23 below shows.

Figure 23: Fraction of Screen Industry Businesses Located in Auckland and Wellington, 2005-2010



Figures 24 and 25 below show that whilst the majority of NZ cinemas are located outside of Auckland and Wellington, these cinemas tend to receive far less sales revenue on average, and are likely to be less profitable than those in the major urban areas, even with the temporary ban in place.

Figure 24: Location of Film Exhibition Businesses, 2008-2010

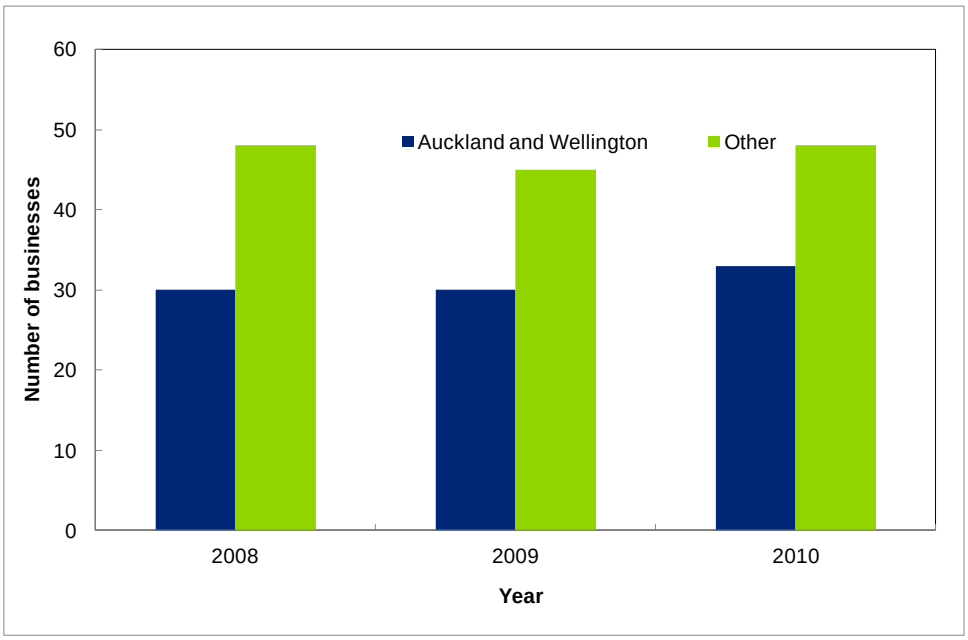
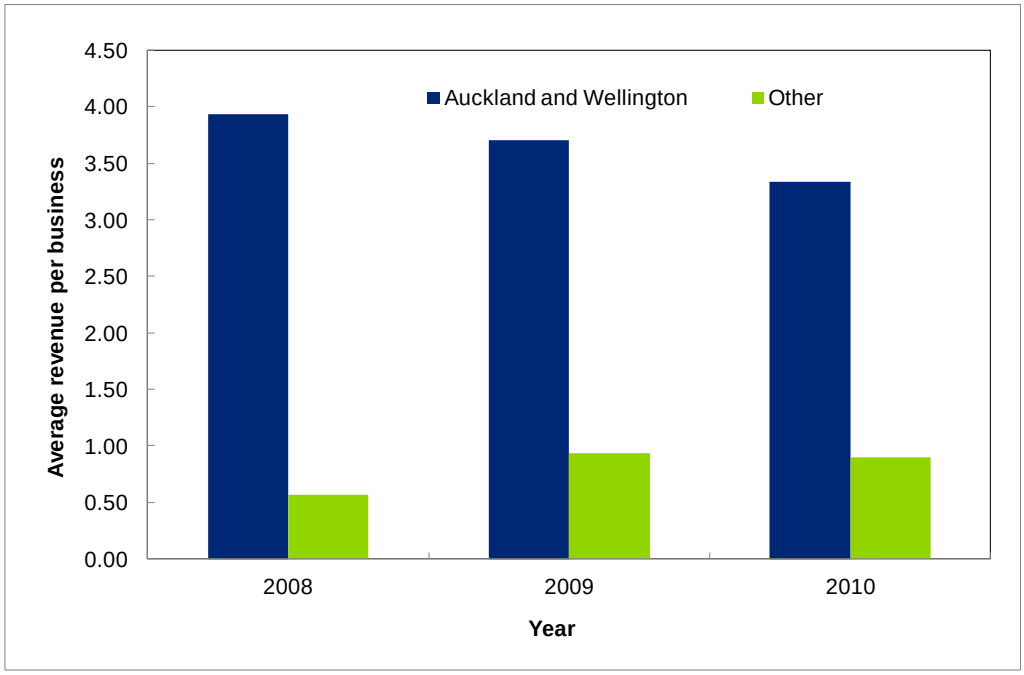
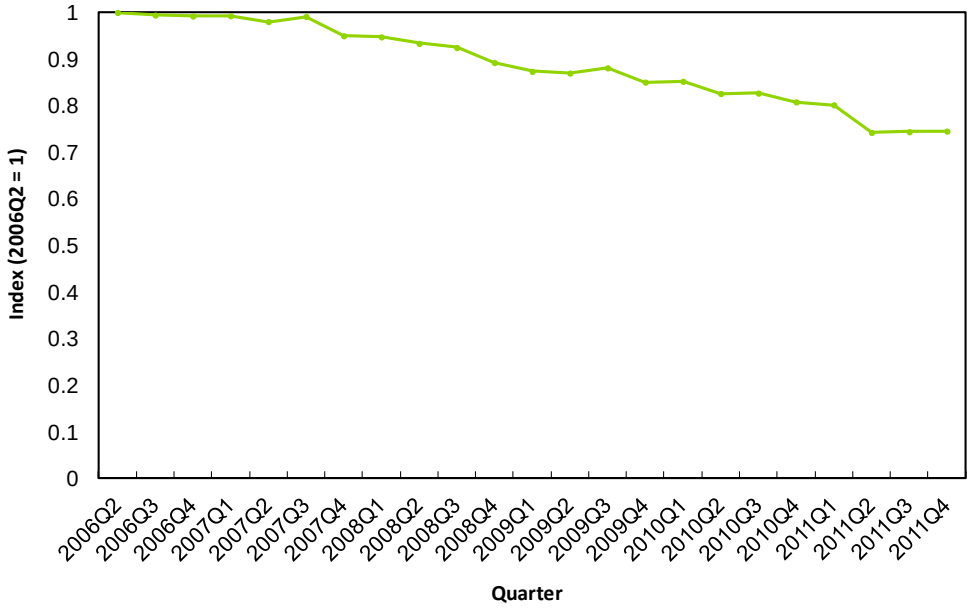


Figure 25: Average Revenue of Film Exhibition Businesses by Location, 2008-2010



Finally, there is little direct evidence to suggest that the 9 month rule has had the effect of propping up DVD prices: Figure 26 below, for example, shows that DVD rental prices have fallen steadily in real terms over the last 5 years, by about 25 per cent overall. This fall in prices is similar to that observed for music CDs.

Figure 26: Inflation adjusted price index for DVD rental in New Zealand (overnight Friday, new release, 1 movie), 2006 to 2011



Source: Statistics New Zealand

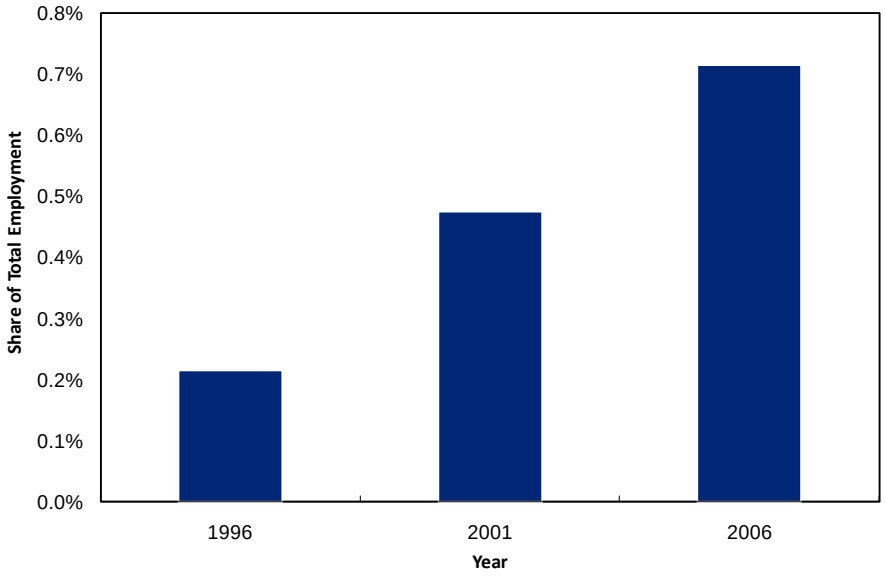
4.4 Computer Software

The computer software industry creates and distributes "off the shelf" and customised software for business, educational and gaming applications, as well as applications or "apps" for new and rapidly developing platforms such as Apple iPhones and iPads. In 2010, sales of published software in New Zealand totalled just over $1 billion. Most of this (nearly 90 per cent) revenue was generated from domestic sales of published software, rather than export sales.

There are very few businesses in New Zealand that are officially classified as software publishing firms. The 2010 ICT Survey published by Statistics New Zealand counted only 9 businesses in this category. However, the same survey indicated that computer services and software were the ICT industry sectors experiencing the most rapid growth over the two year period since the previous survey.

NECG (2004) and LECG (2007) conclude that the 1998 changes to PIRs for computer software appear to have had no negative overall consequences for the domestic industry in New Zealand. Recent data confirms that this remains the case. For example, the employment share of computer applications engineers has more than tripled between 1996 (before the changes) and 2006 (after the changes) – see Figure 27 below. This growth has continued more recently - the number of programmers grew from 7,618 in March 2008 to 8,365 in March 2011, according to NZ Department of Labour estimates.

Figure 27: Computer Application Engineers, Share of Total Employment, New Zealand, 1996 to 2006



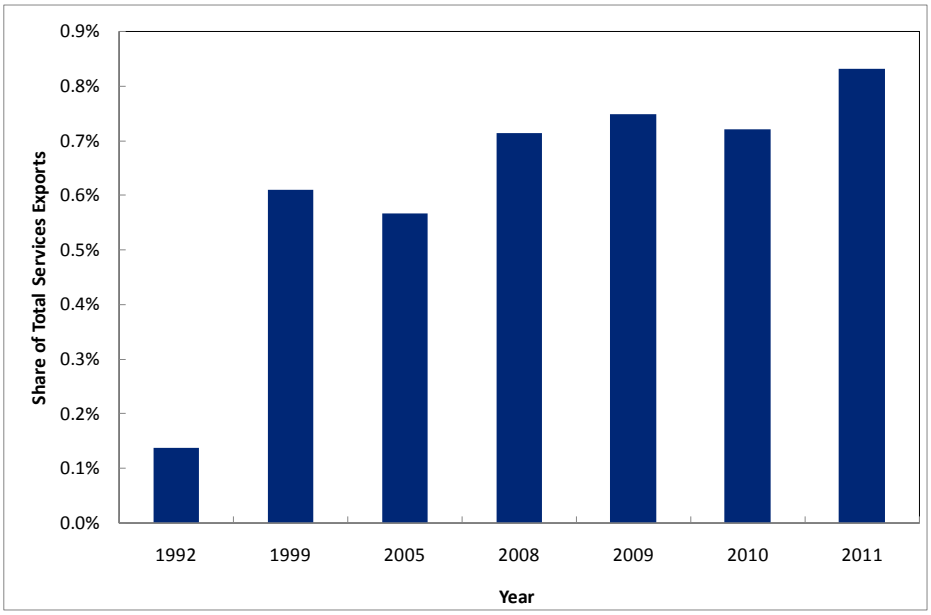
Source: Statistics NZ

Demand for programmers (whose primary role is to develop, maintain, improve and test programs, software and applications) has increased so rapidly relative to supply in New Zealand, that a shortage has reportedly emerged - the New Zealand Government is now "actively encouraging" skilled programmers from overseas to work in New Zealand for companies that are directly involved in a wide range of ICT services, including software and web development, as well as government departments, marketing and advertising firms, and telecommunications companies.[9]

In addition, export royalty earnings from computer software continue to rise in relative terms - the share of computer software royalty export earnings as a fraction of total services exports has increased by 25 per cent since the 1998 changes (Figure 28).

[9] See Careers NZ, "Programmer – Job Outlook" at www.careers.govt.nz/default.aspx?id0=61103&id1=J28440

Figure 28: Computer Software Royalty Export Earnings - Share of Total Services Exports, New Zealand, 1992-2011



As outlined in Table 2, parallel import restrictions on computer games were lifted in New Zealand in 1998, and were also lifted in Australia in 2003. Since both countries now apply similar parallel import regimes to computer software, it is reasonable to expect that software prices would be similar, adjusting for exchange rates and GST differences. To test this proposition, we collected price data for 16 best-selling computer games in Australia and New-Zealand, ranging across the three major games platforms [Playstation 3, Xbox 360, and Wii].

The price data is summarised in Figures 29 and 30 below. On average, analysis of the raw data in the sample suggests that NZ prices may be slightly lower than Australian prices. However, a formal statistical test applied to the distribution of prices was unable to reject the null hypothesis of equal means. In other words, as expected there appears to be little difference in games software prices in the two countries, once exchange rates and taxes are taken into account.

Figure 29: Box and Whisker Plots for Sample of NZ and Australian Computer Game Prices, Adjusted for Exchange Rates and GST

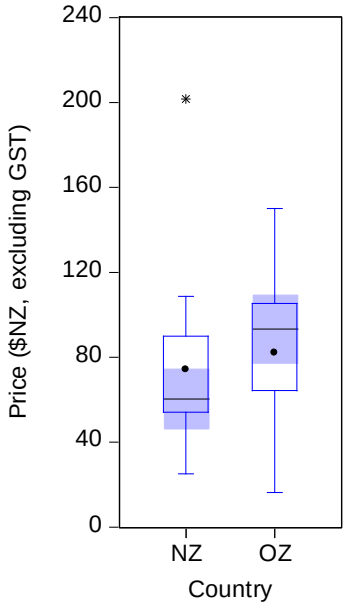
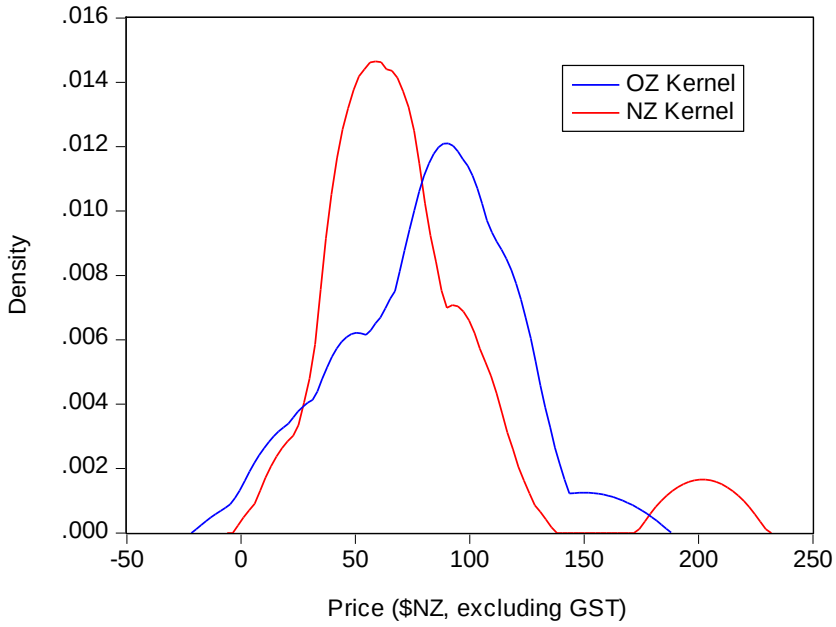


Figure 30: Kernel Density Estimates for Sample of NZ and Australian Computer Game Prices, Adjusted for Exchange Rates and GST



4.5 Key findings

- Data suggests that since 1998, real CD prices have fallen considerably in both Australia and New Zealand.
- Data from earlier studies and from this report suggests that a sizeable negative price differential for books has opened up between New Zealand and Australia over the last few years.
- Overall, there is little evidence that the PIR changes in 1998 have had significant negative consequences for the New Zealand and Australian music industries. Physical and digital sales of singles by New Zealand artists have increased more than eightfold between 2006 and 2010. And end of year chart data from Australia shows that Australian artists continue to enjoy success domestically. Census data from each country suggests that the number of musicians and those in music-related occupations has remained steady or increased following the 1998 changes.
- The 1998 changes to not appear to have had significant negative effects on domestic creative effort in the New Zealand book industry. The number of new NZ book titles that published annually has remained fairly steady between 2005 and 2008. Data on the number of authors shows that following the changes the share of authors in overall employment has increased in New Zealand.
- A major concern in previous studies was in relation to children's books. The value of imports of children's books has fallen considerably since the 1998 changes. The share of new NZ children's book titles published as a fraction of overall new NZ titles fell in 2007 and 2008, but this does not appear to be as a direct result of the 1998 PIR changes.
- The temporary ban on parallel imports of new motion picture releases in New Zealand in 2003 does not appear to have had positive impacts on the local industry. Despite the temporary ban being in place, cinema attendance per capita has fallen since 2003, and the length of the format release window – a major justification for the temporary ban – has narrowed considerably. At the same time, real DVD rental prices have continued to fall over the last 5 years.
- Previous studies have concluded that the 1998 changes to PIRs for computer software appear to have had no negative overall consequences for the domestic industry in New Zealand. Recent data examined in this report confirms that this remains the case; indeed, there is a shortage of computer programmers in New Zealand, which the Government is actively seeking to alleviate.

5 The Impact of PIRs on Retail Prices: Evidence from International price comparisons

5.1 Introduction

As discussed in section 4, it is reasonable to expect that competition would be at its most fierce in online retailing, and that online consumers have a high degree of price sensitivity. Price differentials would be unlikely to emerge in online retailing unless they are the result of a significant transport cost differentials or trade distortions.

This section conducts a comparison of international online retail prices in order to estimate the price impacts of parallel import restrictions. As outlined above, previous studies have tended to examine online prices in New Zealand, the UK and the US. The empirical strategy in this report is slightly different. We begin with the observation that Australia continues to impose parallel import restrictions for books, but not for CDs. Our empirical analysis takes advantage of these policy differences in order to provide estimates of the effects on prices of parallel import restrictions.

5.2 Empirical Analysis

The empirical analysis focuses on international price differentials for books, versus international price differentials for music CDs. Our approach can be summarised as follows. Consider a book, labelled *i*, which is sold online in both New Zealand and Australia. Whilst the book is identical in every respect in each jurisdiction (so that price discrepancies due to quality and content differences should be minimal), online retail price differences could still arise due to a range of factors, including differences in taxes, transportation costs, import restrictions, and unobserved elements such as one-off sales.

As discussed in section 4 above, the (absolute) *law of one price* (ALOOP) is the proposition absent these factors, the exchange rate adjusted price of identical goods in different countries should be the same.[10] The argument for ALOOP relies on the simple arbitrage proposition discussed in Box 1 above. The *relative* law of one price (RLOOP), on the other hand, is the proposition that *changes* in the exchange rate adjusted prices of identical goods in different countries should be the same.

To account for factors which may cause the ALOOP to fail, we first adjust for GST differences in each jurisdiction. In Australia, the GST is currently 10 per cent, whilst in New Zealand it is 15 per cent. Next, we adjust the tax-free price for different currencies, by expressing the online price in Australia in terms of New Zealand dollars. We took the average nominal exchange rate over the month of July 2011 (NZ$1 = AU1.27).

[10] See, for example, Baillie and McMahon (1989, page 66), Isard (1995, page 60), Sarno and Taylor (2002, page 52), and Macdonald (2007, page 40).

Our analysis then assumes that any remaining price differences are due to a combination of the following three factors:

- Systematic departures from ALOOP that are common across all products;
- Systematic departures from ALOOP that are due to product-specific trade barriers – that is, parallel import restrictions; and
- Idiosyncratic or random (zero-mean) differences from ALOOP that are specific to individual products within each category.

This approach allows us to decompose book price differences as follows:

$$P_i^{Book,NZ} - EP_i^{Book,Oz} = \alpha + \delta_i + \varepsilon_i \quad (1)$$

where:

$\alpha =$ a measure of the systematic departure from ALOOP, which is common to all products;

$\delta_i =$ a measure of the systematic departure from ALOOP that is specific to books – that is, parallel import restrictions; and

$\varepsilon_i =$ an idiosyncratic deviation from the law of one price that is specific to book *i*.

For music CDs, we have a similar decomposition:

$$P_j^{Music,NZ} - EP_j^{Music,Oz} = \alpha + \varepsilon_j \quad (2)$$

where we have assumed that $\delta_j = 0$ for music CDs, since there are no parallel import restrictions on music CDs in either jurisdiction. Taking the difference between (1) and (2) yields:

$$P_i^{Book,NZ} - EP_i^{Book,Oz} - (P_j^{Music,NZ} - EP_j^{Music,Oz}) = \delta_i + e_{ij} \quad (3)$$

where e_{ij} is a zero-mean residual. The difference-in-differences approach uses the control group (music CDs, which are not subject to parallel import restrictions) to remove the common driver of deviations from the absolute law of one price across all product categories, so that the only remaining difference is specific to books.

Taking expectations of both sides of (3) yields:

$$\overline{\delta} = \overline{P}^{Book,NZ} - E\overline{P}^{Book,Oz} - (\overline{P}^{Music,NZ} - E\overline{P}^{Music,Oz}). \quad (4)$$

Here, $\overline{\delta}$ is the expected price impact of parallel import restrictions. To estimate $\overline{\delta}$, we use a simple method of moments approach, replace the population moments in (4) with their sample counterparts, and test the following null hypothesis that parallel import restrictions are not associated with any price differences across the two jurisdictions:

$$H_0 : \overline{P}^{Book,NZ} - E\overline{P}^{Book,Oz} - (\overline{P}^{Music,NZ} - E\overline{P}^{Music,Oz}) = 0$$

against the alternative hypotheses, that:

$$H_1 : \overline{P}^{Book,NZ} - E\overline{P}^{Book,Oz} - (\overline{P}^{Music,NZ} - E\overline{P}^{Music,Oz}) \neq 0.$$

A failure to reject the null hypothesis would indicate that Australia's parallel import restrictions on books have no statistically significant effect on online book prices. We use the Satterthwaite-Welch t test to test this hypothesis. The relevant test statistic is:

$$t = \frac{\overline{P}^{Book,NZ} - E\overline{P}^{Book,Oz} - (\overline{P}^{Music,NZ} - E\overline{P}^{Music,Oz})}{\frac{s^2_{Book} + s^2_{Music}}{N}}$$

where s^2_{Book} and s^2_{Music} are the sample variances of the price differentials of books and music respectively, and N is the common sample size.

5.3 Data

We collected price data for books and music CDs, adjusted for differences in GST in each country and the exchange rate, and then compute price differences between New Zealand and Australia. Details of the data sources were outlined earlier in section 4. As discussed above, the analysis then employs a difference-in-differences approach to compare average price differentials across product categories, under the hypothesis that goods which are subject to parallel import restrictions in Australia will sell at a price premium over and above the same goods that are sold in the other jurisdiction.

The average price differentials and other summary measures of the data are shown in Table 6 below. To allow for possible one-off sales effects and outliers, we also examine a smaller truncated sample, which eliminates the bottom and top 25 per cent of products according to price differentials.

Table 6: Data Summary

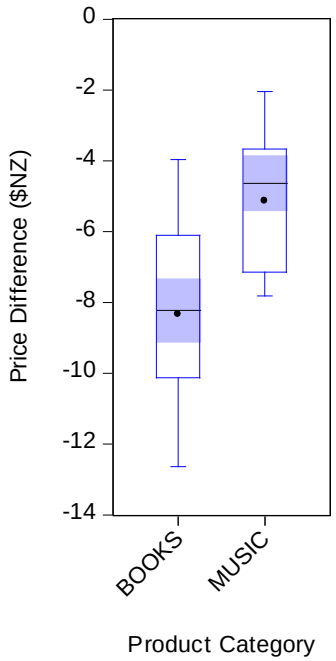
	Full Sample		Truncated Sample	
	Books	**Music**	**Books**	**Music**
Mean	-8.32	-5.26	-8.33	-5.13
Median	-8.2	-4.61	-8.2	-4.61
Maximum	8.84	13.93	-3.96	-2.04
Minimum	-33.71	-20.85	-12.63	-7.81
Std. Dev	7.13	5.63	2.60	1.92

Note: All numbers are in NZ$.

There are two useful ways to visually summarise the data. Box and whisker plots, which are shown for the truncated data in Figure 31 below, display the mean (the black dot in the centre of each box), the median (the solid horizontal line through each box), and the middle 50 per cent of the data. They also show the maximum and the minimum.

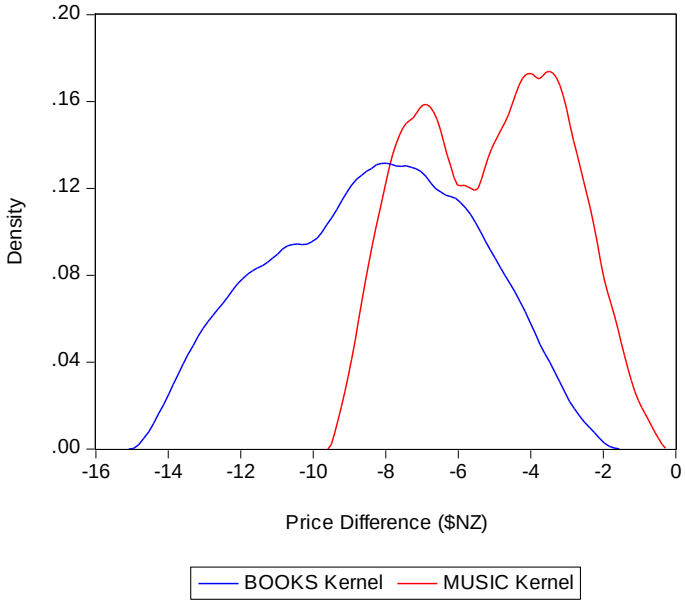
Figure 31 clearly shows that a large part of the distribution of price differentials for books lies below that of music CDs, suggesting that book prices in New Zealand are lower than in Australia, even after controlling for other possible factors which may cause the absolute law of one price to fail.

Figure 31: Box and Whisker Plots of NZ-Australia Price Differences, Books and Music



We also estimate kernel densities for the truncated price difference data. A kernel density is a non-parametric statistical technique which provides a smoothed histogram or estimate of the probability distribution of the data. Again, as with the box and whisker plots, the kernel density shows that a large part of the distribution of price differentials for books lies below that of music CDs.

Figure 32: Kernel Density Estimate of Distribution of NZ-Australia Price Differences, Books and CDs



5.4 Empirical Results

The results of the statistical test outlined in section 5.2 above are reported in Table 7 below. The test results indicate that the difference in price differentials (i.e. the estimate of the effect of parallel import restrictions) is significantly different from zero at a 1 per cent confidence level, for both the full sample, and for the smaller sample which truncates the distribution by 25 per cent on either side.

Table 7: Results of Statistical Test for Differences in Average Price Differentials

	Test Statistic for Difference in Means for Books and Music
Full Sample (n=100)	-3.36***
Truncated Sample (n=50)	-7.00***

Note: Reported number is the value of t-test for difference in means. *** Indicates that the average price differential across the product categories is significantly different from zero at the 1% confidence level.

Our point estimate of the average price differential is -$3.06 for the full sample, and -$3.20 for the truncated sample. In other words, our estimates suggest that parallel import restrictions on books are, on average, associated with a prices that are between $3.06 and $3.20 higher than they otherwise would be. This equates to around 10 per cent of the average price of an Australian book, exclusive of GST. That is, we estimate that on average, the parallel import restrictions that remain in Australia result in prices 10 per cent higher than they otherwise would be.

Table 8: Point Estimate of Average Difference in Price Differentials

	Books vs Music
Full Sample (n=100)	-3.06
Truncated Sample (n=50)	-3.20

Note: All numbers are in NZ$.

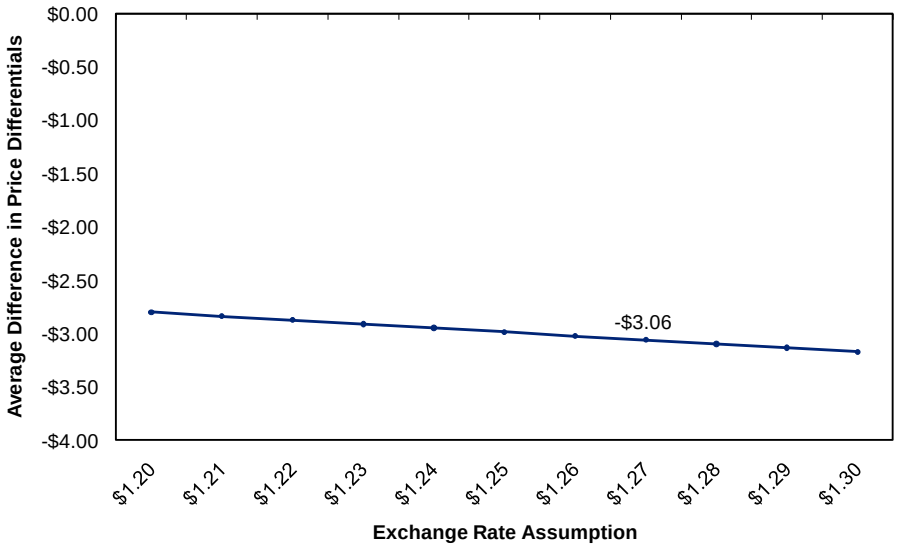
5.4.1 Sensitivity to Exchange Rate Assumptions

A common concern in price comparison studies[11] is the sensitivity of the results to assumptions regarding the exchange rate. The price differentials in this report are expressed in nominal NZ dollars using the average exchange rate for the month of July 2011 (AU$1 = NZ$1.27. For a given set of raw price data, applying a higher assumed value of the Australian dollar increases the New Zealand dollar equivalent of the Australian products, and therefore increases the magnitude of any observed negative price differential.

Figure 33 below plots the average difference in price differentials between books and music under different exchange rate assumptions. Our major qualitative result – that book price differentials exceed those for music CDs - is not particularly sensitive to the exchange rate assumption, although obviously the point estimate varies with the exchange rate used.

[11] See, for example, the Appendix D of the PC Report, page D.6.

Figure 33: Sensitivity of Results to Exchange Rate Assumption



5.5 Key Findings

- We collected samples of 100 observations of online retail price data for books and music CDs from Australia and New Zealand, and employed a simple differences-in-differences approach to estimate the impact on prices of the remaining parallel import restrictions in Australia.
- Our point estimate of the average price differential is -$3.06 for the full sample, and -$3.20 for the truncated sample. In other words, our estimates suggest that parallel import restrictions on books are, on average, associated with prices that are between $3.06 and $3.20 higher than they otherwise would be.
- This equates to around 10 per cent of the average price of an Australian book, exclusive of GST. That is, we estimate that on average, the parallel import restrictions that remain in Australia result in prices 10 per cent higher than they otherwise would be.

6 Conclusion

Changes to parallel import restrictions create costs and benefits. Economic theory suggests that the costs of restrictions are largely borne by consumers, and the benefits are enjoyed by producers. Over the last decade or so there have been several studies of the costs and benefits of the impact of parallel restrictions on the New Zealand economy, all of which have concluded that removing restrictions would provide net economic benefits.

This report has revisited these earlier studies, and updated much of the data contained in them, as well as examining a range of new data sources. Our analysis supports the conclusions of earlier studies – namely, that the available evidence suggests that removing parallel import restrictions tends to reduce consumer prices, with few negative consequences for domestic creative effort. This suggests that the benefits of removing parallel import restrictions tend to outweigh the costs.

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Contact us

Deloitte Access Economics
ACN: 49 633 116

Level 1
9 Sydney Avenue
Barton ACT 2600
PO Box 6334
Kingston ACT 2604 Australia

Tel: +61 2 6175 2000
Fax: +61 2 6175 2001

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