The Structure of Tariff Protection in Colonial Victoria and New South Wales
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Abstract
The role of tariff protection in the growth of nations remains ambiguous in the literature. Recent theoretical and empirical contributions have suggested that tariffs may have been welfare enhancing provided they were directed towards industries generating positive externalities. In particular, where institutions are strong, it is argued that protection would more likely have been aimed at such sectors. A strong implication is that countries with good institutions are able to avoid problems associated with rent-seeking and corruption. In this context, the natural experiment provided by Victoria and NSW in the nineteenth century deserves further investigation. While both had good quality, similar institutions, each followed a very different trade policy. In this paper, we take a first step towards examining whether tariffs in Victoria were arose due to sound industrial policy or alternatively, in response to lobbying. This is undertaken by constructing a disaggregated series on tariffs and industrial structure over the period. Our preliminary results suggest some evidence against the first of these hypotheses.

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1. Introduction

The virtues of free trade are well known and have been strongly argued by many economists. Despite this, throughout history, many countries have adopted protectionist policies. From this, a rich literature has developed which argues that these welfare-reducing deviations from the free trade ideal are likely to arise due to the lobbying activities of special interest groups (SIGs) (for example, Grossman and Helpman, 1994). However, the debates surrounding trade protection in the more distant past appear to be less straightforward than this literature might suggest. For example, there is evidence that protection may have indeed been positively associated with growth in the late 19th century (O’Rourke, 2000; Clements and Williamson, 2004). In the context of the common agency model of Grossman and Helpman (G-H) (1994), it has been shown that a government with ‘good institutions’, used as a proxy for the exogenous weight applied to aggregate welfare in the model, will be prepared to tolerate protection where offsetting externalities are sufficiently large (Nunn and Trefler (N-T), 2006). Intuitively, if externalities which enhance welfare are sufficiently large to offset the deadweight loss associated with tariff protection, such a policy will be adopted. This result suggests that the structure of tariff protection has the capacity to tell us about the susceptibility of the policy making process to rent seeking. Cross country empirical evidence using this type of model has been applied to the apparent paradox between the conventional view that trade protection is a sub-optimal product of SIG influence with the ‘Bairoch hypothesis’ that tariffs were drivers of growth. Using cross country data for 1876, Tena-Junguito (2008) has shown that tariffs and growth were only positively related for countries in the more developed “rich club” (which tended to have better institutions) and that tariffs in remaining countries tended to support low-value industries which did not foster growth.1

This paper follows this theme, but takes a slightly different approach. We exploit the natural experiment presented by the difference in approach to tariff protection that existed in colonial Victoria and NSW in the latter half of the nineteenth century. This complements the existing literature which

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1 However the former result only holds when ‘new world’ settler economies are included. This is discussed in more detail later.
has used cross-country data and hence been forced to adopt one colony as representative of Australia or take some form of weighted average (Tena-Junguito, 2008; Lehmann and O’Rourke, 2007). Here we examine the reasons behind two very different policy positions towards trade for ostensibly similar colonies. Indeed, Victoria adopted a highly protective regime, while NSW was essentially free trade. By international standards, each colony had very similar, good quality institutional structures. Each eventually formed part of the same country that is a member of the ‘rich club’ of nations. Following Nunn and Trefler (2006), it would be predicted that protection would have been tolerated in Victoria due to the generation of external benefits and that in general we should see protected sectors exhibiting these externalities. Conversely, such externalities did not exist, or at least were not envisaged in NSW. Our study begins with an examination of tariffs in Victoria over the period 1870-1880, during which tariff protection rose dramatically. Using tariff data for approximately 80 industrial categories over this time period, together with data relating to the production process, capital formation, and employment in the relative sectors, we seek to analyse the Victorian tariff experience in the context of Nunn and Trefler’s earlier study. In particular, we attempt to identify whether highly protected industries were indeed likely to have generated external benefits. Our results in terms of industrial development are then contrasted to New South Wales, which followed a path of free trade.

We also discuss some of the more wide ranging issues surrounding the Grossman and Helpman ‘Protection for Sale’ model and the extension applied by Nunn and Trefler (2006). For example, how different institutional measures might interact in the model, the importance of competition between lobby groups in explaining trade policy, and extensions which deal with competition between rival political parties.

2. The relationship between lobbying and tariffs

There are different approaches to analysing the relationship between lobby groups and policy outcomes.² One of the ‘workhorse’ models of endogenous trade protection is that of Grossman and Helpman (1994). This model has been widely accepted in the literature and has received substantial

² This literature is large. Several authors have adopted different approaches to explain the influence of SIGs including Stigler (1971), Hillman (1982, 1989) and Grossman Helpman (1994).
empirical support. In essence, the model considers the mechanism by which special interest groups are able to influence policy decisions by making political contributions to government. Specifically, government welfare is comprised of two components: campaign contributions and aggregate welfare, the relative importance of each determined by an exogenous weight. The former might be considered as important for future campaign battles (not explicitly modelled) or less collectively a form of bribes for personal benefit. Aggregate welfare is considered for the intuitive reason that governments need, at least to some extent, support of citizens to remain in power. The relative weight of each component of government aggregate welfare is determined exogenously. SIGs offer policy contingent contributions to government who then set policy. A key result in the model is that in the context of trade policy in a small open economy, positive tariff protection will be offered to all organised industries (those who make contributions), even though this policy will lower aggregate welfare. The distribution of surpluses and the extent to which trade policy will deviate from free trade is dependent on characteristics of each protected sector such as the elasticity of import demand and import penetration, the level of competition between rival lobby groups, and the exogenous weight ascribed by government to aggregate welfare vis-à-vis contributions from SIGs. In its pure form, Grossman and Helpman’s model thus presents a picture of deviations from free trade which arise due to lobbying.

Nunn and Trefler (2006) make a simple yet crucial extension to the protection for sale framework set down in G-H. They allow for the possibility of an externality such that the government’s objective function becomes a weighted sum of sector specific externalities, aggregate welfare, and sector specific contributions. Intuitively, the model is simply adapted to allow for the

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3 See for example, McCalman (2004), Gawande et al. (2000)
4 We are somewhat loose with terminology in the use of ‘bribery’. One argument is that any political contribution made with explicit or implicit expectation of a favour in return can be considered as a form of bribery. Indeed, in most developed economies, contributions which are in any way contingent on policy are illegal. Given that this is an implicit assumption of the G-H model, it is equally applicable to use for analysing bribery and corruption.
5 One exception is in the unlikely case where all citizens are politically organised. In such a case, political contributions simply convey the preferences of all citizens (those benefiting from protection and those who stand to lose). Hence, free trade outcomes emerge, though notably, lobby groups pay for this outcome.
possibility that the costs of protection in some sectors may be offset by positive externalities.\textsuperscript{6} Exogenous weights are ascribed to the first two of the arguments in the government’s objective function which measure the value of these items relative to contributions. These weights are argued to be proxies for ‘good institutions’. Two key results emerge. The first is that there is no definite relationship between average tariffs and institutional quality. In particular, average tariffs across industries tell us little about the efficacy of lobbying as tariff protection may indeed be optimal (in the absence of lobbying) where sector specific externalities are sufficiently large. Intuitively, two countries could have exactly the same average tariff, however in one country tariffs are directed at high-tech, high skilled sectors, while in the other low-skill industries are protected. The average would not tell us about the likelihood of lobbying, but the structure of protection would. A related second result reveals that the ratio of high skill sectors to low skill sectors should be higher when institutional quality is better. Their interpretation of these results (and from associated empirical analysis) is that countries with good institutions may still protect their industries, but not predominantly because they are capture to lobbying interests. Hence, we are able to see how much rent-seeking influences policy outcomes by examining institutional quality and the structure of trade protection.

While a simple extension of the Grossman and Helpman (1994) framework, Nunn and Trefler provide a potentially powerful framework by which to explore the observation that tariff protection in the more distant past has often been found to have enhanced growth. Their results suggest that one explanation might lie in the institutional settings in which lobbying and trade policy formation take place. Intuitively, if political institutions are weak, lobbying by special interests will be successful in obtaining policy favours at the expense of aggregate welfare. However, when institutions are strong, we may see welfare enhancing trade protection which arises though a need to subsidise genuine external benefits which arise from the production and consumption of certain goods.

In order to test their hypothesis, Nunn and Trefler examine 17 sectors in 59 countries over the period 1972-2000. To capture the notion of an externality generating sector, they use a measure of

\textsuperscript{6} The model is actually more general and negative externalities are also permitted. Hence, one could more broadly state this as the costs of protection being offset by positive externalities or that these costs are exacerbated where negative externalities occur.
skilled labour, using level of education as a proxy. Hence, certain sectors can be identified as having a disproportionately high level of skilled workers. Their results, which control for institutional quality, indicate that the skill bias of tariffs is positively associated with economic growth. The implication is that only when applied to high skill sectors are tariffs shown to have a positive effect on growth. Using a series of robustness tests, the authors conclude that the most feasible explanation for this is that countries with good institutions are able to overcome problems associated with lobbying and protect the ‘right’ industries, or alternatively, that those with poor institutions protect low value, non-growth enhancing industries, as a response to lobbying.

A similar analysis has been conducted by Tena-Junguito (2008) in an historical perspective. Unlike the previous study, he does not have cross-country information as to the average level of education of labourers in each sector and so uses wage rates as a proxy. Using data for 32 countries across 25 industrial products for the year 1876, his results reveal that protection was welfare enhancing for the ‘rich club’ where institutional quality was generally better, but that these results were not robust to exclusion of settler economies, which he argues used tariffs as a means of collecting revenue rather than for protective purposes. More specifically, the results suggest that institutions were important, but not in general as a direct cause, but rather through their indirect effect on the tariff structure, which is consistent with the conclusions of N-T (2006).

3. Victorian Tariff: Background

Setting tariffs is always a messy affair – and colonial Victoria was no different. Calls for tariff protection were heard in the early 1850s, and by the late ‘50s the Victorian Association for the Protection of Native Industry and the Tariff League of Victoria had been formed. In the early 1860s a Select Committee on the Tariff heard from a wide range of small manufacturers who complained about the ‘undue competition’ from imported goods. Local producers suffered under a number of disadvantages primarily that of producing goods of higher price and lower quality than their imported competitors.

7 The history of tariff protection in Victoria and New South Wales is well documented. For additional sources see, Coghlan (1918), Allin (1918); Patterson (1968). This section leans heavily on Linge (1979) and Coghlan (1918).
It is generally held that through the 1850s and early 1860’s the main motivations for government customs duties had been for revenue raising purposes, and changes made in 1862 apparently paid little heed to public petitions and manufacturers’ lobbying. By the mid 1860’s however, the Select Committee upon Manufacturers began to note the association between differential duties (especially in tobacco and spirits) and variations in capital investment, employment and consumer prices. Unfortunately the evidence was not as clear cut as the lobbyists arguments suggested. After some farcical legislative behaviour in the mid 1860s (where a dispute between the lower and upper houses saw tariff rates substantially revised, the legislation passed twice and then declared illegal twice—and collected revenue returned to businesses) a new tariff regime was established in April 1866. Given the legislation also widened the range of commodities subject to duty, some commentators argue that at this point, tariffs became established as a principle of protection, even though the rates themselves were not particularly high.

By 1867 still more new duties meant almost all imports except raw materials were subject to tariffs, and net government revenue from this source increased from 6.2 per cent in 1866 to 18.7 per cent in 1869. Changes in 1871 kept the government’s from duties revenue at roughly this proportion of total revenues, but by now it was suggested that the lower rates of 10 percent were levied on goods subject to further value adding while rates of 20 percent were on finished goods. Coghlan (1969, p1152) notes this Bill as marking the definite acceptance of protection as a motive for tariff duties (as opposed to just revenue raising). Minor ‘shuffling’ of rates occurred several times in the 1870s until ‘harsh’ increases were introduced in 1879 when most items previously subject to 10 percent tariffs went to 20 percent, and those on 20 to 25 percent. By 1886-87 over a quarter of government revenues were derived from tariffs.

Predictably, the constant alternations to rates were accompanied by different enquiries, the most important being the 1881-83 Royal Commission on the Tariff. Linge speculates that

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8 Linge (1979) p195.
9 Coglan (1918), Chpt VIII vol II. See also Linge (1979) p 245. An additional complication, however, is the observation that government revenue from land sales, rents and fees were declining, and custom duties were more easily increased than income from railways, water post and telegraphic services.
10 Linge (1979) p 246
11 Linge (1979) p247
recommendations aimed at lessening the difficulties for some secondary industries lay behind the otherwise confusing changes to the tariff rates which occurred later in 1888-9. The Board of Inquiry into the Fiscal System held in 1895 concluded:

A large number of the duties are partly fiscal and partly protective. Some duties levied for purely fiscal purposes have fostered home manufacture, and so become protective; whilst others levied for protective purposes have failed in their object and become purely fiscal. The difficulties of classification are enhanced by the fact that the principles that guided the Legislature in making the Tariff are now somewhat obscured.\textsuperscript{12}

4. The Victorian Tariff: a Closer Look

Several reasons have been posited for Victoria’s relatively protectionist approach. There appears to be a consensus that labour (relatively abundant and pro-protection in Victoria) and land (relatively scarcer than in NSW and hence less of a revenue source for the government) are the two key explanators.\textsuperscript{13} Assessing the effect of tariffs on Victoria’s manufacturing relative to that of New South Wales has been subject to less scrutiny.\textsuperscript{14}

Complications with the range, variation and classification of colonial tariffs has led some experts to eschew analysis of the pre-federation period altogether.\textsuperscript{15} Nonetheless the literature suggests some important basic points are settled.\textsuperscript{16}

Manufacturing did expand considerably in NSW under free growth regime between 1870 and the onset of the depression in 1890 and the industries that grew were also those receiving most protection in Victoria, especially after 1880. Victorian tariffs did not become particularly ‘protectionist’ until the late 1860s and early 1870s. The 1870s may well have been the period when the tariffs gave most stimulus to employment growth and industry in Victoria, but by the 1880s low productivity in

\textsuperscript{12} Board of Inquiry into the Fiscal System (Second Report p xiii) 1895 quoted in Linge (1979 p 248).
\textsuperscript{13} Sinclair (1971); Coghlan (1918). Fitzpatrick also suggests Victoria’s lesser reliance on overseas capital.
\textsuperscript{14} One exception, Sinclair (1971) attempts a counter-factual approach and asks what the development of Victoria’s manufacturing might have been with free trade. He concludes that the tariffs may have had some positive impact on manufacturing growth, but that these varied over time and that differences in age profiles masked their effect in some decades. Butlin (1964) apparently considered the differential impact of tariffs between NSW and Victoria of little effect.
\textsuperscript{15} Lloyd 2008
\textsuperscript{16} This section leans heavily on Sinclair (1971).
Victorian manufacturing meant any gains from tariff protection were mostly located in the railway sector.

It is as well to realise too, that the period viewed here was a period of economic development in all factors in NSW and Victoria. While economic cycles cannot be ignored, the state of economic development from 1860 to 1890 across Australia was one of increase. Population numbers, public infrastructure, railways, roads, and businesses expanded at a significant rate. Where Australian GDP in 1861 was £46 per head, by 1891 it was £66. In 1861 there were 84,000 adults in Melbourne; by 1891 the figure was over 330,000. For the same dates, the numbers in Sydney increased from 61,200 to 252,000. While manufacturing was not confined to the urban area alone, the thirty years to 1890 also witnessed a rapid increase in urbanisation, with over two thirds of the population living in capital cities. Urban construction, and particularly housing construction were thus also crucial elements in the overall balance of the economy.

Of key interest in this paper is the structure of protection in the colony of Victoria. Our starting point for the analysis begins with Nunn and Trefler’s result suggesting countries with good institutions were more likely to protect externality generating industries. We do this by taking the unusual step of examining two Australian colonies which ostensibly had identical institutional structures but very different trade policies. Hence, holding institutions constant, the difference would be possibly due to the existence of externalities in protected sectors in Victoria, but not present in NSW. Our approach also yields the advantage of not taking an average tariff for Australia where there were clearly large discrepancies in trade policy between the relatively independent colonies. In addition, we are able to track industries, and the changes in technology used over time and match these to tariff changes. Indeed, while skilled labour has been accepted as a proxy for externalities, one possibility is that tariffs merely diverted skilled labour from one sector to another. In short, technological progress may have been important, especially through increases in the marginal product of workers, and it is likely that such changes took some time to be achieved. Our empirical strategy

18 Linge (1979) Tables 6.2 and 10.1.
is thus to consider alternative measures, such as the average energy intensity of different sectors and the type of power used.

5. Data

Manufacturing data for the colony of Victoria is available from the *Victorian Statistical Register*. For this paper, we obtained data for three periods, 1875, 1880 and 1890. In all years, the data are disaggregated to approximately 80 sectors, with information being available as to the number of establishments, the number using a particular type of power (steam, water, horse, gas, or manual labour), horse power employed, the level of capital in the form of machinery and plant, value of land, and total number of male and female workers. In 1880, information is available on the value of materials used in production, total output and hence value added.

Import data was also taken from the same source. These tariff data, which we wish to match against the manufacturing data for each of the years above, are collated on the basis of the good entering and provide either a specific or *ad valorem* rate, the value and quantity of the good entering for home consumption, and the total duties collected on each good. For example, under the manufacturing category ‘arms and ammunition’ several goods would need to be recorded, for example, guns, shot, powder, etc. The rates of duties for these goods differed and hence a weighted average was created for each manufacturing category.\(^{20}\) For each good, total duties were divided by the amount entered for home consumption to arrive at the tariff duty.\(^{21}\) The final list of tariffs encompasses 68 industries (from 143 goods) in 1872-5 and 73 industries (from 175 goods) in 1880.

Comparison of tariff rates between the two periods is somewhat problematic. In particular, some industries were not able to be collated in one of the years due to unavailability of data. Moreover, in 1880, there were generally more goods on which to base the average calculation.

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\(^{20}\) In addition to differences within each category, some goods themselves had differential tariffs. For example hats of different sizes were taxed at differing rates, and some items (for example silk garments) had some exemptions which entered duty free while the remainder did not. There is no explanation in the *Statistical Register* to explain the reasons for these exemptions.

\(^{21}\) This enabled specific tariffs to be ‘converted’ using duty collected and the value of imports. Some items also had value and quantity imported recorded, but only quantity was adjusted for re-exporting and warehousing. In such cases a simple ratio between the quantity entering for home consumption and the total imported was used to adjust the value. For goods with published *ad valorem* results, this procedure yielded the published rate, indicating that it was a suitable way to proceed.
Nonetheless, average tariffs during the period rose by approximately 16.5%, from 18% to 21%. The number of items with a tariff rate over 20% also increased by 28% during the period.

As noted earlier, our focus in this paper is not to directly assess the impact of these tariffs, though some comparisons have been made to NSW which in conjunction with more detailed literature suggest it to be questionable. Instead, consistent with Nunn and Trefler (2006), we seek to identify which types of industry were most likely to be protected. In particular, theory suggests that highly protected industries should have been those which were likely to generate externalities. A result which shows that this was not the case could be suggestive of other influences such as lobbying. Previous authors have tended to focus on measures of the labour market which might capture the essence of these high value industries. Nunn and Trefler use levels of education, while Junguito…, faced with unavailability of such data in the nineteenth century uses wages. This latter measure should be particularly useful, assuming that labour markets accurately reflect this input’s marginal product, and is conducive to cross country analysis. For our study, we do not have sufficiently disaggregated wage data to enable us to construct a measure such as this and use some alternative measures.

There have been several authors who document the effects of various types of capital on labour productivity. In our data, we were able to obtain details on the proportion of factories using steam, labour, horse, and water over the two periods. In particular, the use of steam has been shown to have a positive effect on labour productivity (Atack et al., 2006) and hence we would expect to have seen tariffs directed towards industries which use this particular type of capital. Obviously linked to the technology used and scale of enterprises was the horsepower employed per establishment. Again, we hypothesise that industries which would have been more likely to generate externalities and hence warrant protection would have been those with higher per firm levels of horsepower. To further measure capital intensity, we use values for the amount of machinery, plant and buildings. Similarly, we use the value of land aggregated by establishments within an industry to measure land intensity of the activity.

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22 This increase is robust to the exclusion outliers such as alcohol, tobacco and chicory, which were heavily taxed items.
As noted, we did not have available to us a satisfactory disaggregated data set relating to wages. Nonetheless, we can see the value of such a measure. In an attempt to capture some aspects of this, we collected information as to the ratio of female to male workers. In general, female manufacturing workers were paid less and due to differences in the availability of education and training available, were also less likely to be skilled. As such, industries which were less likely to generate production externalities by way of increased labour productivity may have had higher female-male employment ratios.

Finally, we control for growth in each sector and in size by including a measure of the number of establishments. There are several reasons as to why this might be important. First, from a lobbying perspective, it could be argued that industries with few firms might be more likely to overcome issues surrounding free-riding and successfully form lobby groups. Hence, it could be that industries with fewer firms may have been more able to successfully lobby. Ideally, this would need to be tempered by output; a particular candidate for successful industry level lobbying would be a large industry (in terms of production) with few players. Unfortunately, we do not have output data for 1875. A second reason to include the measure might be related to the governments own objectives for protecting an industry. In particular, it is possible that industries deemed as ‘high growth’ might have been targeted for protection. Of course, such growth might have also been an effect. Overall, this makes the interpretation of this variable difficult and given potential multi-collinearity with some other measure, poses econometric issues. However, for this initial analysis it was retained.

6. Results
We present results in Table 1 using fixed effects estimation. Our strategy is to present a more ‘complete’ model and one parsimonious specification. The full sample results do not perform overly well, with a relatively low R squared, and all coefficients other than the proportion of enterprises using horse as the predominant power source and per firm levels of capital not significant. Interestingly, the sign on the latter is positive, indicating that capital intensive industries may have been targeted for protection.

23 See Olson (1965).
The split of industries into subsets of ‘low’ and ‘high’ protection reveal some interesting results. For the ‘low’ tariff group, the results suggest that protection is positively associated with fewer firms, lower horsepower, greater land intensity, lower propensity to use steam and water power (as opposed to labour), and in the case of the parsimonious specification, lower levels of capital intensity. Regression results from the relatively ‘high’ group suggest that capital intensity was weakly positively associated with tariff protection. The fits of these models also differ markedly, with an $R^2$ squared in the ‘low’ tariff group of around 0.83-0.88 compared with a weaker fit in the high tariff group (0.1-0.27).

The results from the ‘low’ tariff group provide some evidence that the colony was not pursuing trade policy consistent with that predicted by Nunn and Trefler (assuming good institutions). In particular, sectors which has low levels of horsepower employed and were labour intensive were more likely to be protected. As noted, technology such as steam has been associated with increases in labour productivity. However, in this sub-sample at least, it appears that the tariff was more about the generation of employment. Such an argument has been made by others, but questions remain as to whether employment in itself could be considered an externality in itself. In our preliminary analysis, we noted that many protected industries seemed to be in the textile sector, which tended to be low skill (see Tena-Junguitto) and also had high female-male worker ratios. Nonetheless, our one measure of labour market skill available to us is not significant in any specification of our models, perhaps due to the concentration of female workers in the textile industry.

One interesting result is the negative relationship between the number of firms in any given sector and tariff protection. One possibility might have been that industries with large operations (and hence fewer firms) were more likely to be protected. Such sectors would have also been more likely to represent the development of modern mass-production establishments. However, these industries may have also been able to overcome free-riding issues more effectively and hence lobby for

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24 This split, which generates reasonably even samples was made on somewhat arbitrary grounds. Several other cut-off points were considered and the results quite robust.
25 Female employment was dominant in the textile industry and in paper manufacturing. Most other sectors had relatively low levels of female participation.
protection. This latter hypothesis seems to gain some credibility in the absence of other results consistent with the development of mass production (for example, capital intensity, use of steam, etc).

7. Conclusion

There is a robust debate surrounding the role of tariffs in economic development. While modern economists generally accept the virtues of free trade, there is evidence from the past that tariff protection may well have helped some of today’s most successful nations develop their economies. One possibility might lie in the motivation behind protection. If modern governments are more likely to be ‘captured’ by special interest lobbying, then tariff protection is likely to be harmful.

Grossman and Helpman (1994) provide a model by which such sub-optimal policy making might occur in the presence of lobbying. This model predicts deviations from free trade based solely on lobbying activities. Faced with empirical work which suggests that trade may have helped development, Nunn and Trefler (2006) have developed Grossman and Helpman’s model to allow for the presence of externalities. This leads to a result where in the absence of systematic institutional problems (such as low levels of democracy), lobbying influence will manifest itself in protection only in industries which do not generate external benefits. Hence, an empirical strategy is to attempt to uncover the structure of trade protection. Cross country analysis has been undertaken, most notably by Nunn and Trefler (2006) and for the nineteenth century Tena-Junguito (2008). Their results suggest that for countries with good institutions, protection was associated with externality generating sectors.

In this paper, we have taken a similar approach, but focus on a single region. The colony of Victoria was heavily protected during the latter half of the nineteenth century and data in the archival records allow construction of a detailed list of tariffs which can be compared to measures relating to the characteristics of each industry in terms of the technology used, size and labour market characteristics. One aim is to improve upon single measures such as the level of education of employees, or wage rates. Moreover, the results can be compared to NSW, which while having similar institutions, followed a free trade stance.
The results suggest that there is little evidence that Victoria followed a path consistent with the protection of externality generating sectors. While this project is still a work in progress and hence data are still being collated, a limited sample suggests that industries using the leading technology of the time (steam) and with high capital and energy intensity were less likely to be protected. Such a result obviously brings into question the nature of how we measure externalities. Our view is that in the long-run, the most likely gains from any production process would be the productivity increases which are derived from the use of new capital. Again, we see little evidence of this in our results.

These results are previously to be taken cautiously. As noted, this is part of an ongoing project and more data are needed to provide robustness to the results. Crude comparisons with the free trade colony of New South Wales suggest that our measures of industrial sophistication compare favourably with Victoria, however these need to be investigated in a rigorous econometric manner before conclusions can be drawn.

Finally, other considerations which may shed light on lobbying must also be teased out from the data. One standard result from Grossman and Helpman (1994) is that competition between rival lobby groups may lead to policy outcomes closer to the welfare maximising ideal. Hence, if free trade is optimal, intense rivalry between those who desire protection and those who benefit from free trade may offset each other. This implies that an understanding of the distributional effects, and the ability of different groups to undertake collective action needs to be investigated to yield satisfactory explanations regarding the structure of trade protection. This again is ongoing research.
References:


Nunn N. and D. Trefler, 2006 *Putting the Lid on Lobbying: Tariff Structure and Long-Term Growth When Protection Is For Sale*. NBER Working Paper #12164, April,


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<td>0.023</td>
<td>0.146***</td>
</tr>
<tr>
<td></td>
<td>(0.089)</td>
<td>(0.086)</td>
<td>(0.049)</td>
</tr>
<tr>
<td>n</td>
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</tr>
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<tr>
<td>Groups</td>
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<td>38</td>
<td>38</td>
</tr>
<tr>
<td>R squared</td>
<td>0.41</td>
<td>0.05</td>
<td>0.88</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.83</td>
</tr>
<tr>
<td>F statistic</td>
<td>12.7***</td>
<td>1.03</td>
<td>60.6***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28.9***</td>
</tr>
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<td>5.15***</td>
</tr>
</tbody>
</table>

- Fixed effects estimation with robust standard errors (cluster on sector)
- SEs in parentheses, Significance: * p<.1, ** p<.05, *** p<.01
- All independent variables in natural logarithms other than FM. Dependent variable is the natural log of tariff.
- Years covered 1875 and 1880 (1990 forthcoming)
- The following sectors, with tariffs greater than 50% were considered most likely to be linked with revenue generation and hence were omitted: Confectionary (51-68%), Chicory (117-145%), distilleries (79-193%), biscuit manufacturing (55%), tobacco (111%).