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Competitiveness of Cool Climate Regions in Global Wine Markets

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Given that winegrape production is generally considered riskier in cool-climate regions than in warmer ones, why are more producers looking to invest in such regions? A commonly stated reason is to hedge against global warming, but there is more to it than that. This paper examines some of the other supply-side drivers, but also some drivers from the demand side of the wine market. It begins before that by defining what might be considered a cool-climate region and their risk profile; and it ends by drawing implications for the economic future of such regions in Australia vis-à-vis the rest of the world.

WHAT DEFINES A COOL-CLIMATE WINE REGION?

There is no widely agreed definition of a cool climate wine region. Obviously average temperature over the growing season is important (October-April in Southern Hemisphere, April-October in Northern), but such aspects as months of growing season, rainfall distribution, wind exposure, frost prevalence, sunlight hours and the like also might be included in some people's definition of a viable cool climate wine region. Jones and Schultz (2016) believe an average growing season temperature (GST) should be between 13ºC and 15ºC: below 13ºC means only non-vinifera (hybrid) varieties will prosper, and above 15ºC leads to significantly less acidic wines in their view. In Australia it is more common to think of the upper limit GST as 16ºC, which is 1 degree cooler than Bordeaux.

Growing winegrapes in such regions is both riskier and more costly than in warmer regions, for several reasons. If cool regions also have higher rainfall because they are near the coast, disease pressure is greater; or if they are far inland they face a higher risk of spring or fall frosts that could kill the weakest vines. The shorter growing season raises the risk that grapes won't ripen sufficiently in the coldest vintages. And yields will tend to be lower on average

(raising production costs per ton), and more variable from vintage to vintage (adding to marketing challenges) – especially when compared with those warmer regions that can use irrigation. If the prevalence to hand prune and pick is greater in cooler regions, that too would make them costlier. One of the few offsetting factors is that the longer daylight hours in the summer can contribute more to photosynthesis.

How significant are cool climate wine regions in the world's vineyard area? This again depends on which regions are classified as cool and the year chosen. One set, listed in Appendix Table 1, has been crudely compiled with the help of Peter Dry of the Australian Wine Research Institute. It may include some regions that are slightly warmer than what Jones and Schultz (2016) consider cool, but even so it suggests they account for just 13 percent of the world's winegrape bearing area in 2010. That list for Australia suggests cool regions are 15 percent of the national area in 2010 if Coonawarra, Wrattonbully and Robe are included, but just 9 percent if they are excluded.

These regions are more important economically than just those area data suggest, however. In Australia, for example, average winegrape prices in cool climate regions are twice those of warmer regions, although yields per hectare are 30 percent lower (Anderson 2015). If those same differences apply in other countries, this suggests cool climate regions account for about one-fifth of the value of winegrapes globally. Their wines may have an even larger share of the global wine market if the wine to grape price ratio is above average in this high-priced segment of the market.

Are these regions expanding? Certainly they are in Australia and New Zealand, and famously also (albeit from a very low base) in England (see Figure 1). But globally the area of the regions listed in the Appendix fell by one-sixth between 2000 and 2010, while the bearing area of warmer regions fell only one-tenth.

The varieties planted also might define whether a region is cool. There is a clear ranking of premium quality wine varieties in terms of their climate-maturity ripening potential in different climates, according to Jones (2006, Figure 1). That manifests itself in a quite different mix of varieties in cool as distinct from warmer climates: among the top ten varieties globally in those two sub-sets of regions, there are only three that are common, namely Chardonnay, Cabernet Sauvignon and Merlot (Figure 2).

WHAT DETERMINES THE COMPETITIVENESS OF COOL CLIMATE PRODUCERS?

As with most such economic questions, the answer is a mixture of supply and demand forces. Given the higher costs of producing cool climate wines, a higher price is necessary if they are to be economically viable. But how are the pertinent supply and demand forces changing over time?

Some supply-side investment drivers

Global warming is typically thought of as a major driver of new investment in cool climate wine regions, including from producers in warmer areas seeking to supplement supplies that can help them maintain their current styles of wines as well as add new ones (Ashenfelter and Storchmann 2016). An opposite development took place between 1200 and 1600: the average temperature in Southern England fell about 1.3^{o}C over those four centuries, and the gradual disappearance of England's vineyards after 1200 is often attributed to that cooling (Lamb 1982, Grove 1988) – although the British takeover of the Bordeaux region of France may have been the main reason for their demise.

Over time with global warming, the warmest of cool regions would no longer be capable of producing cool climate wine styles. However, that would be more or less offset by new plantings in areas at higher altitudes or latitudes that were previously too cold to grow winegrapes profitably. Evidence to support this expectation is provided by Ashenfelter and Storchmann (2010a,b). They examine economic data from the Mosel region of Germany and find that a 1^{o}C rise in GST increases gross earnings from Riesling by 30 percent.

Data compiled for Australia by Webb (2006), by contrast, suggest that in our hot winegrape regions greater warming leads to lower prices and profits. This would add to a strengthening of the competitive edge of cool climate regions over hot ones.

Research and development can of course affect competitiveness. If cool climate regions have different R&D needs from warmer regions, it is a question of how R&D funding is allocated. Traditionally Australia has paid relatively little attention to cool climate viticultural research, in contrast to Germany and northern France (from whose research institutes more-

northern European regions can borrow). Australia's cool climate regions may therefore need to develop strategies to boost pertinent R&D investments, perhaps in collaboration with New Zealand?

One other influence on cool climate competitiveness is trade costs. Shipping small quantities of premium wine half way around the world was infeasible historically, which is a key reason why cool climate regions in the southern hemisphere had little presence in the main markets for fine wine – which have always been in the northern hemisphere. Technological changes in ocean transportation of wine have helped to lower trade costs substantially over the past three decades, and not only for commercial premium wines that are increasingly being shipped in bulk. That is reducing the competitive disadvantage that southern hemisphere producers of fine wine, including from cool regions, have had to suffer until recently. Falling information and communication costs also have helped, in speeding the pace of technology transfer from the established centres of cool climate grape and wine research in Europe to the antipodes.

Demand-side investment drivers

As already mentioned, it is relatively expensive to produce cool climate wines, so they need to be able to command relatively high prices. The demand for them therefore depends on a rise in incomes of those wine consumers with a preference for that style of wine, or a preference shift toward that style. If both things happen simultaneously, prices of cool climate wines would rise even more than otherwise would have been the case. Regional marketing by cool climate producers may be able to reinforce such a preference switch, provided it is not countered by generic promotion by other regions.

Fine wines from cool regions have been produced since at least the 19th century, but only the elite could afford them. Unprecedented rises in per capita incomes since the 1980s, however, have boosted the demand for all luxury products, including wines. More specifically, higher incomes are raising the demand for higher-quality wines at the expense of low-quality wines, and for more styles and novel varieties. Also accompanying higher incomes is a greater tolerance – even a desire – for vintage variation in still wines of the sort that is more common in cool climates. So even though there has been a halving in global consumption of wine per capita since

the 1950s, the demand for finessed wines from cool regions can still grow. The challenge will be to be able to attract high-income customers in the wake of efforts by warmer regions to emulate the styles of cool-region wines, both still and sparkling.

IMPLICATIONS FOR AUSTRALIA'S COOL-CLIMATE REGIONS

In addition to the above forces altering the competitiveness of cool climate wine regions in general, producers in Australia's cool regions face the challenge of being relatively small both individually and collectively in each region. Smallness matters because it means the costs of focused R&D and of brand or regional promotion are subject to diseconomies of scale. Tasmania in addition has exceptional transport costs. But as New Zealand has shown, these handicaps need not be insuperable. On the contrary, as producers in the relatively new cool regions gradually discover the varieties, clones and styles they can produce most profitably, so investments in their region could expand. That is especially so in Tasmania, where vines account for just 1 percent of the total crop are on the island (only twice the mainland's average), compared with 3 percent in Austria, 4 percent in France and 6 percent in New Zealand.

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Figure 1: Vine bearing area in a selection of cool climate regions,[a] 1986 to 2015 (hectares)

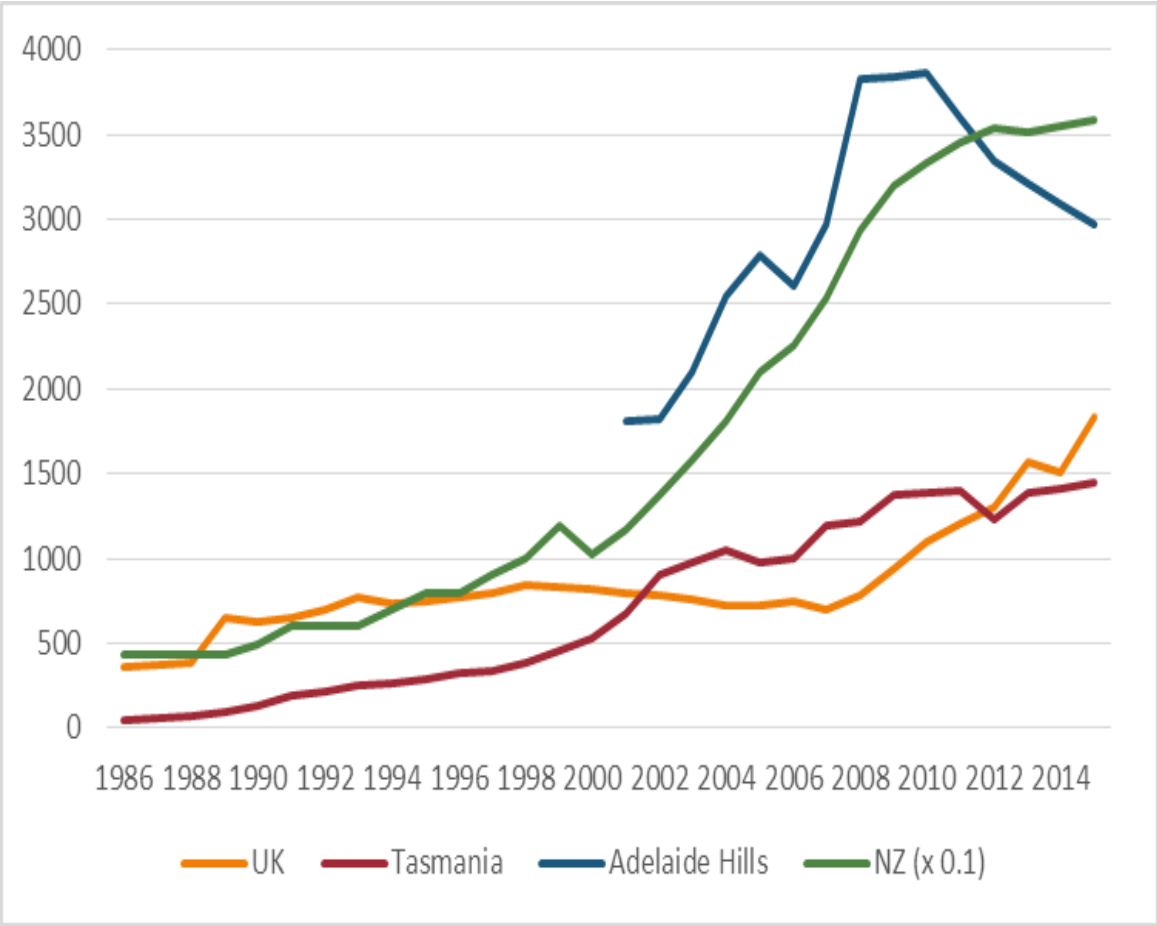
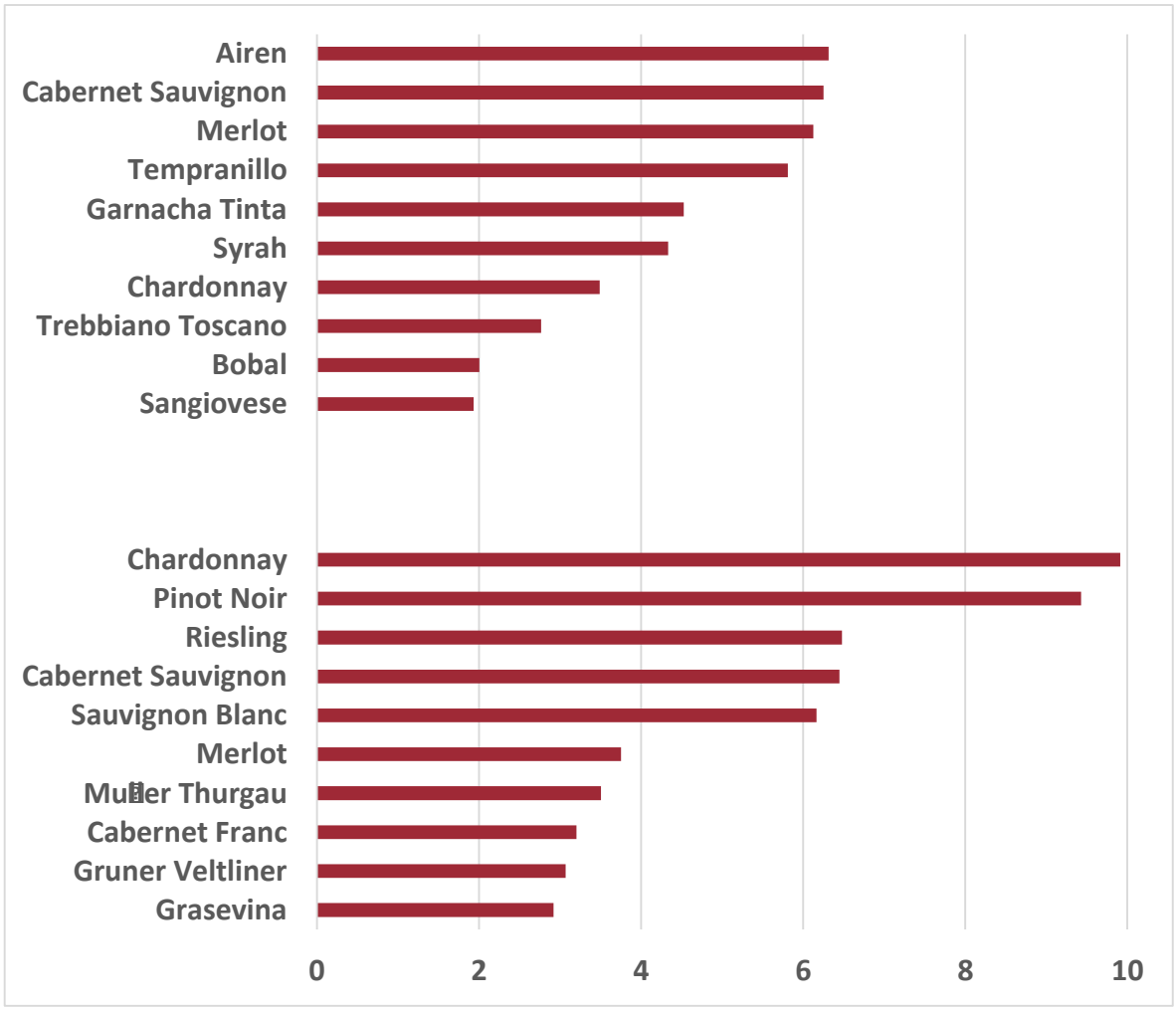


Figure 2: Shares of the top ten varieties in the bearing area of the world's cool and warmer regions, 2010

(percent; bars for cool regions are shown below the set for warmer regions)



Source: Derived from Anderson (2013) using the regional classification in the Appendix.

Appendix Table 1: Cool climate winegrape area by region and share of national winegrape area, 2010

Region	Bearing area (hectares)	National share (%)
Argentina		
Neuquen	1653	0.82
Rio Negro	1643	0.82
Total	**3295**	**1.64**
Australia		
Adelaide Hills	3861	2.54
Alpine Valleys	705	0.46
Australian Capital Territory	4	0.00
Beechworth	57	0.04
Bendigo	771	0.51
Canberra District (ACT)	105	0.07
Canberra District (NSW)	378	0.25
Coonawarra	5985	3.94
Grampians	506	0.33
Heathcote	1245	0.82
Henty	183	0.12
Macedon Ranges	224	0.15
Mornington Peninsula	752	0.50
Mount Benson	233	0.15
Mount Lofty Ranges - other	468	0.31
Port Phillip - other	68	0.04
Robe	644	0.42
Southern Highlands	202	0.13
Tasmania	1251	0.82
Tumbarumba	254	0.17
Wrattonbully	2818	1.86
Yarra Valley	2440	1.61
Total	**23153**	**15.25**
Austria		
Burgenland	13842	30.40
Niederosterreich	27184	59.70
Steiermark	3867	8.49
Wien and other Bundeslander	640	1.40

Total	**45533**	**100.00**
Canada		
British Colombia	3995	39.56
Ontario	6102	60.44
Total	**10096**	**100.00**
Chile		
Del Bio Bio	3420	3.07
Valparaiso	8522	7.64
Total	**11942**	**10.71**
China		
Ningxia	11152	37.74
Total	**11152**	**37.74**
Croatia		
Dalmatinska Zagora	602	2.90
Hrvatsko Primorje	210	1.01
Istra	3083	14.85
Moslavina	228	1.10
Plesivica	452	2.18
Podunavlje	3206	15.45
Pokuplje	41	0.20
Prigorje - Bilogora	791	3.81
Sjeverna Dalmacija	2333	11.24
Slavonija	3307	15.94
Srednja Juzna Dalm.	2972	14.32
Zagorje-Medimurje	1266	6.10
Other HR	2263	10.90
Total	**20754**	**100.00**
Czech Republic		
Cechy	785	4.83
Morava	15457	95.17
Total	**16242**	**100.00**
France		
Bas Rhin	6965	0.82
Cher	4027	0.48
Cote d'Or	9665	1.14
Haut Rhin	9190	1.09
Indre	424	0.05
Indre et Loire	10443	1.23
Nievre	1611	0.19

Saone et Loire	13486	1.59
Savoie	1323	0.16
Vendee	1318	0.16
Vienne	1091	0.13
Yonne	7131	0.84
Total	**66675**	**7.87**
Germany		
Ahr	550	0.54
Baden	15830	15.51
Franken	6100	5.98
Hessische Bergstra E	420	0.41
Mittelrhein	450	0.44
Mosel-Saar-Ruwer	8970	8.79
Nahe	4160	4.08
Rheingau	3060	3.00
Rheinhessen	26470	25.94
Rhein-Pfalz	23460	22.99
Saale-Unstrut	700	0.69
Sachsen	460	0.45
Wurttemberg	11430	11.20
Total	**102060**	**100.00**
Hungary		
Badacsony	1618	2.32
Balatonboglar	3305	4.74
Balatonfelvidek	1025	1.47
Balatonfured-Csopak	2180	3.13
Bukk	1055	1.51
Csongrad	1513	2.17
Eger	5509	7.90
Etyek-Budai	1717	2.46
Hajos-Bajai	1982	2.84
Kunsag	22263	31.93
Matra	6294	9.03
Mor	730	1.05
Nagy-Somlo	598	0.86
Neszmely	1587	2.28
Pannonhalma	615	0.88
Pecs	777	1.11
Sopron	1919	2.75
Szekszard	2333	3.35
Tokaj	5994	8.60

Tolna	2526	3.62
Villany	2582	3.70
Zala	1592	2.28
Total	**69715**	**100.00**
Japan		
Hokkaido	835	22.47
Nagano	754	20.30
Yamagata	392	10.56
Yamanashi	632	17.01
Other Japan	1102	29.66
Total	**3715**	**100.00**
Luxembourg	**1304**	**100.00**
New Zealand		
Auckland	543	1.70
Canterbury	320	1.00
Gisborne	2149	6.72
Hawkes Bay	4921	15.40
Marlborough	18401	57.57
Nelson	813	2.54
Otago	1532	4.79
Waikato	147	0.46
Waipara	1442	4.51
Wairarapa	859	2.69
Other NZ	836	2.62
Total	**31964**	**100.00**
Slovakia		
Juznoslovenska	4141	32.77
Malokarpatska	3683	29.14
Nitrianska	2652	20.98
Stredoslovenska	1155	9.14
Tokajska	453	3.59
Vychodoslovenska	553	4.38
Total	**12637**	**100.00**
Slovenia		
Bela Krajina	365	2.23
Bizeljsko Sremic	907	5.54
Dolenjska	1476	9.02
Prekmurje	564	3.45
Stajerska Slovenija	6374	38.97

Total	**9686**	**59.22**
Switzerland		
Aargau	399	2.69
Basel-Landschaft	114	0.77
Bern	242	1.63
Fribourg	117	0.79
Geneva	1292	8.72
Graub• Nden	421	2.84
Jura	14	0.09
Lucerne	41	0.28
Neuchytel	591	3.99
Schaffhausen	478	3.22
Schwyz	38	0.26
St. Gallen	215	1.45
Thurgau	263	1.78
Ticino	1069	7.21
Valais	5070	34.21
Vaud	3819	25.77
Zurich	614	4.14
Other CH	25	0.17
Total	**14820**	**100.00**
United Kingdom	**1198**	**100.00**
United States		
Marin	62	0.03
Mendocino	6555	2.88
Monterey	15600	6.84
San Luis Obispo	11484	5.04
Santa Barbara	6512	2.86
Santa Clara	609	0.27
Santa Cruz	160	0.07
Sonoma	22265	9.77
Columbia Gorge	159	0.07
Columbia Valley	3023	1.33
Horse Heaven Hills	4283	1.88
Lake Chelan	100	0.04
Puget Sound	72	0.03
Rattlesnake Hills	647	0.28
Red Mountain	515	0.23
Snipes Mountain	285	0.12
Wahluke Slope	2689	1.18
Walla Walla Valley	528	0.23

Yakima Valley	5444	2.39
Chautauqua-Erie	7561	3.32
Finger Lakes	3801	1.67
Other New York	1508	0.66
Benton Co.	155	0.07
Columbia River	610	0.27
Douglas Co.	350	0.15
Jackson Co.	536	0.24
Josephine Co.	162	0.07
Lane Co.	341	0.15
Marion Co.	660	0.29
Other W. Valley	154	0.07
Polk Co.	928	0.41
Washington Co.	670	0.29
Yamhill Co.	2273	1.00
Illinois	373	0.16
Indiana	263	0.12
Iowa	194	0.09
Michigan	1072	0.47
Minnesota	418	0.18
Ohio	436	0.19
Pennsylvania	1004	0.44
Virginia	1065	0.47
Total	**105527**	**46.29**
World in 2010	**608850**	**13.22**
World in 2000	**730344**	**14.12**

Source: Author's compilation based on consultations with Peter Dry of the Australian Wine Research Institute, using regional data assembled in Anderson (2013).