

Current State of the German and International Wine Markets

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Abstract

This article analyses the situation of global wine markets at the turn of the year 2017. The formation of the exceptionally small harvest 2017 is analysed and implications for international bulk wine prices for new and old wine origins are considered. Effects of the increase of raw material prices on retailer strategies and pricing are examined. Shifting geographical patterns in international wine trade are detailed and the relative importance of wine transports as bottled and bulk wine are discussed. For the German wine market results of a producer survey are presented that allow a reliable estimation of the relative importance of trade channels for sales of German wine.

1 International Wine Markets

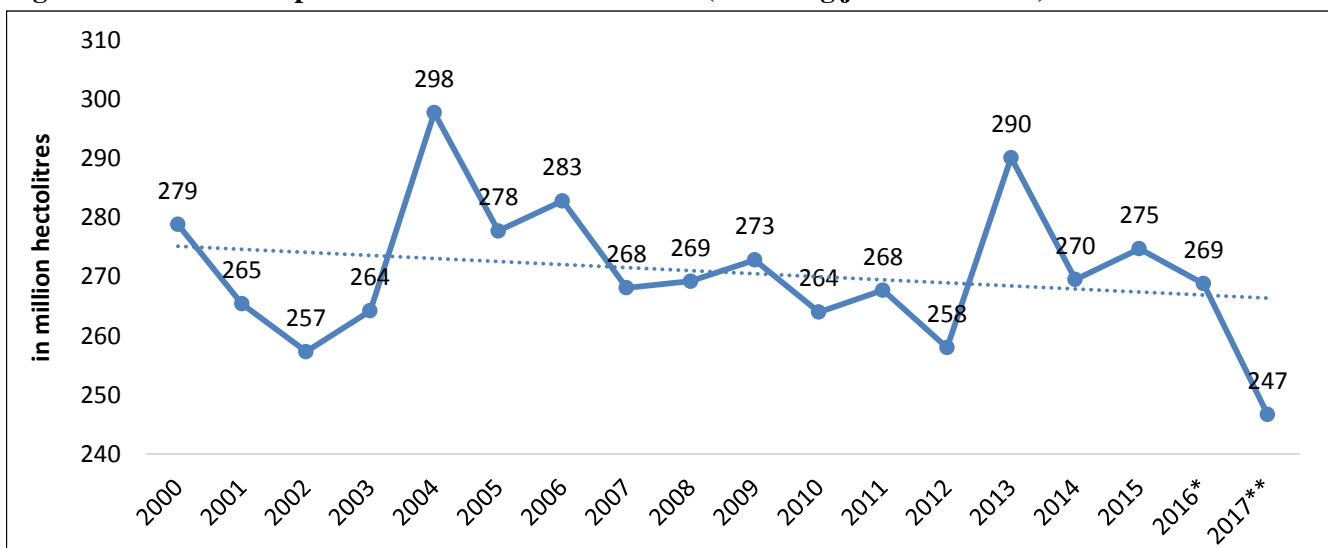
Supply Shock with Small 2017 Harvest

Overall world wine production follows a slightly decreasing trend with a long term average of 272 million hectolitres between 2000 and 2017. After an average wine harvest of 269 million hectolitres in 2016 international wine markets were balanced in supply and

demand by the end of 2016. That changed over the course of 2017 with a series of below-average harvests both in South America and Europe, resulting in the lowest global wine harvest since decades (see Figure 1).

According to OIV statistics 2017 world wine production decreased by 8.2% compared to the previous year. Since wine trade became global in the 1990s it is so far unprecedented that the majority of main wine producing countries simultaneously suffered from challenging growing conditions. Chilean harvests were shorted by floods. France, Italy and Germany were hit by several late frost nights after an early vine development in spring. Harvests in southern Europe were further decreased by unparalleled heat (anticyclone “Lucifer”) and single weather events like hail storms. The extreme heat wave in Spain is even feared to have harmed the health of vines affecting long term supply. Californian harvest was suppressed by oppressive weather conditions like bush fires. South Africa currently experiences its third year of drought and the 2017 harvest only resisted by using irrigation, often applied manually. As drought intensified and water availability decreased substantially a

Figure 1. World wine production in million hectolitres (excluding juice and musts)



* 2016 provisional data, ** 2017 forecasts
Source: OIV (2017)

Table 1. Wine production 2013-2017

Rank	Country	2013	2014	2015	2016*	2017**	2016/17 difference (million hl)	2016/17 difference (%)
1	Italy	54.0	44.2	50.0	50.9	39.3	-11.6	-23
2	France	42.1	46.5	47.0	45.2	36.7	-8.5	-19
3	Spain	45.3	39.5	37.7	39.3	33.5	-5.8	-15
4	United States	24.4	23.1	21.7	23.6	23.3	-0.3	-1
5	Australia	12.3	11.9	11.9	13.1	13.9	0.8	6
6	Argentina	15.0	15.2	13.4	9.4	11.8	2.4	25
7	China	11.8	11.6	11.5	11.4	unknown		
8	South Africa	11.0	11.5	11.2	10.5	10.8	0.3	2
9	Chile	12.8	9.9	12.9	10.1	9.5	-0.7	-6
10	Germany***	8.4	9.2	8.9	9.0	7.6	-1.5	-17
OIV World Total		290.1	269.5	274.7	268.8	246.7	-22.1	-8

* 2016 provisional data; **2017 forecasts; ***corrected German estimates according DESTATIS (2018)
Source: OIV (2017)

cut of wine supply is expected for the coming harvest. As a result 2017 wine production significantly reduced in the top three wine production countries. Reductions vary between 23% for Italy and 15% for Spain (Table 1). Only Argentina's wine harvest increased between 2016 and 2017 but it still lies below the long term average and is mainly absorbed by strong domestic wine consumption.

World wine consumption is stable after the economic depression in 2009 (HOFFMANN und LOOSE, 2017) and is currently estimated at 241 million hectolitres (OIV, 2017). The small 2017 wine production is expected to cover demand for drink wine of 241 million hectolitres but wine storages from previous harvests will have to cover industrial wine demand, such as production of brandy, vinegar et cetera (LOOSE und KOHLMANN, 2017).

Importance of International Wine Trade

Almost half of global wine production (104 million hectolitres, 43% of production) is internationally traded (OIV, 2017). Accordingly around every second litre of produced wine is consumed outside of its country of origin. The progressive increase of the international wine sector is fuelled by two reinforcing main drivers. First, consumption in traditional European producer countries decreases steadily. Reducing domestic demand creates pressure to enforce export and to look for external markets. Second, there is a large number of emerging and established new wine markets such as China and South Korea that adopt wine consumption as part of Western living culture. Accordingly, the patterns of wine consumption are

further changing, moving from old Europe to North America and Asia. In 2016 the value of imported wine to Asia and North America (45%) for the first time surpassed that of the European Union (43%), see Table 2. Nevertheless because of its strong domestic production Europe is still the world's largest wine consumer representing 60% of all wine consumed globally. The momentum of this transition process is reflected by the substantial changes within one single year shown in Table 2. The long term effect becomes evident when it is considered that only in the year 2000 Europe still represented 59% and North America & Asia 31% of global wine imports. Within 16 years Europe's share of international wine trade lost 25% and North America and Asia's share gained almost 50%. Considering demographic and economic developments with fewer population in Europe and increasing, wealthier communities in Asia this change will continue further. As an example, the steady increase of Chinese mainly red wine consumption had strong effects on Australian wine exports after the negotia-

Table 2. Wine import value and share of international regions

Region	Import value (mill €)	Import share (% of total)	Change 15-16 (%)
EU	12,025	42.5	-3.5
North America	6,834	24.2	2.4
Asia	5,876	20.8	8.3
Other Europe	2,293	8.1	4
Oceania	634	2.2	1.9
Latin America	478	1.7	-0.8
Africa	128	0.5	10.1
Total	28,268		

Source: OEMV (2017)

tion of free trade agreements stepwise reducing import tariffs. Australian exports increased by 15% in 2017 and China now is by far the most valuable export destination for Australian wine producers (853 million AUD compared to 461 million AUD to the US) and export volume to China surpassed that of the former main export market UK (WINE AUSTRALIA, 2018).

Composition of International Wine Trade

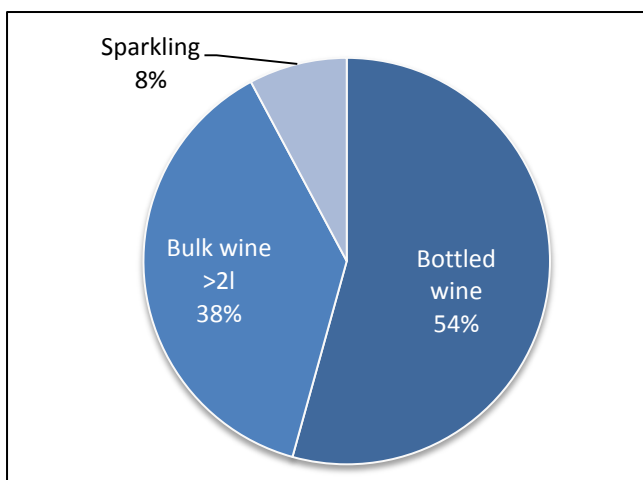
How is wine transported internationally and how does this affect the degree of international wine competition? Wine is either exported filled and labelled in glass bottles or as bulk wine in large containers such as flexi tanks that allow transportation of up to 24,000 litres filled in a kind of large plastic bladder within a standard 20ft sea freight container. In 2016 bulk wine transports represented 38% of global wine trade although traditional bottled wine still makes up the majority (Figure 2). Because transportation costs of wine reduce by about 50% when shipping it as bulk compared to bottles (COTRONE, 2017), a further increase of global bulk wine exports is expected. The rise of bulk wine imports strongly increased the competitiveness of new world wine countries compared to the old world European wine producer countries. Shipping bulk wine from South Africa or Chile to the bottling winery in Germany costs about 0.08 €/litre while transport costs from Spain to Germany are around 0.12 €/litre (COTRONE, 2017). Because of its

lower distance to Germany only Italian wine can be transported in truck liquid containers at lower costs to Germany, amounting to about 0.06 €/litre. Comparable bulk wine shipping rates from California and Australia are slightly higher at around 0.16 to 0.18 €/litre because of longer distance (California) or incurring duties caused by the lack of a free trade agreement with Australia (COTRONE, 2017). As a result of comparable transportation costs, suppliers for large food retail chains can flexibly interchange countries of origins when they have to bottle wines of international standard grape varieties such as Chardonnay, Merlot or Sauvignon blanc. The value of global wine trade slightly increased in 2016 to an average of 2.78 €/litre (OEMV, 2017). Thereby bulk wine exports are valued significantly lower than bottled wine exports.

Development of Bulk Wine Prices

Because of the importance of bulk wine in international wine trade its price development is a highly suitable indicator for market conditions. International bulk wine markets are reported on a monthly base by the global wine broker Ciatti. The development of prices for international grape varieties from new world and European producer countries over the last two years are shown in Figure 3. The left and right side of Figure 3 demonstrate a remarkable difference. Prices for left new world wine producing countries follow a steady upward trend, reflecting both shorter supply and higher demand. Particularly prices for Chilean wines increased strongly in price within the last two years (+130% Cabernet Sauvignon and Shiraz, +119% Merlot, +76% Sauvignon blanc). Because of substitution effects but also drought conditions these price increases also affected the price leader South Africa that usually offers lowest bulk wine prices. As a consequence by the end of 2017 prices of South African wines almost reached those of the competitor Australia. Particularly white grape varieties Chardonnay and Sauvignon blanc attained price parity between both origins. Facing short supply in Europe and South America many bottlers signed pre-contracts with Australian wine suppliers as early as in November, four months ahead of the 2018 harvest. Californian wines are highest priced in international wine competition and their prices mainly reflect domestic demand. Particularly prices for Californian red varieties were not affected by the global supply shock.

Figure 2. Export volume share by product type in 2016



Source: OIV (2017), total export volume 101.1 million hectolitres

Figure 3. Development of bulk wine prices for international grape varieties of different origins



Source: CIATTI (2016, 2017)

Contrary to the new world, price developments for European bulk wine remained flat or were slightly decreasing for French wine until summer 2017 when the negative effects of adverse weather conditions on harvest volumes were foreseeable. Buyers started to secure still available 2016 volumes already in summer 2017 and prices further increased after the small harvest confirmed negative expectations. Effects are strongest for Spanish wine that builds the back bone of many retailer owned brands which are filled mainly based on cost considerations. Compared to December 2016 prices for Spanish wine rose by 91% for Shiraz, 81% for Sauvignon blanc, 74% for Cabernet Sauvignon and 64% for Chardonnay. Prices for Italian wine increased to a lesser extend (Merlot 45%, Chardonnay 36%, Cabernet Sauvignon 34%), partially because domestic grape varieties (e.g. Primitivo) and origins (e.g. Chianti) also play a strong role in wine exports. While Spanish (Italian) wines traded in average 40% (20%) below French counterparts, the end of 2017 saw the unprecedented state of price parity between the largest European wine producer countries. France benefited from the supply shortage and price decreases in 2016 were offset by the end of 2017.

Considering the increased prices of global wine supply there are various options how retailers and consumers will react. Consumers in price sensitive markets such as UK, Germany and the Netherlands are known to strongly reduce purchases when wines are offered above psychologically important price barriers such as 1.99€ or 2.99€ in Germany. Retailers are therefore shy in increasing prices because of the negative volume and turnover effects. Considering the

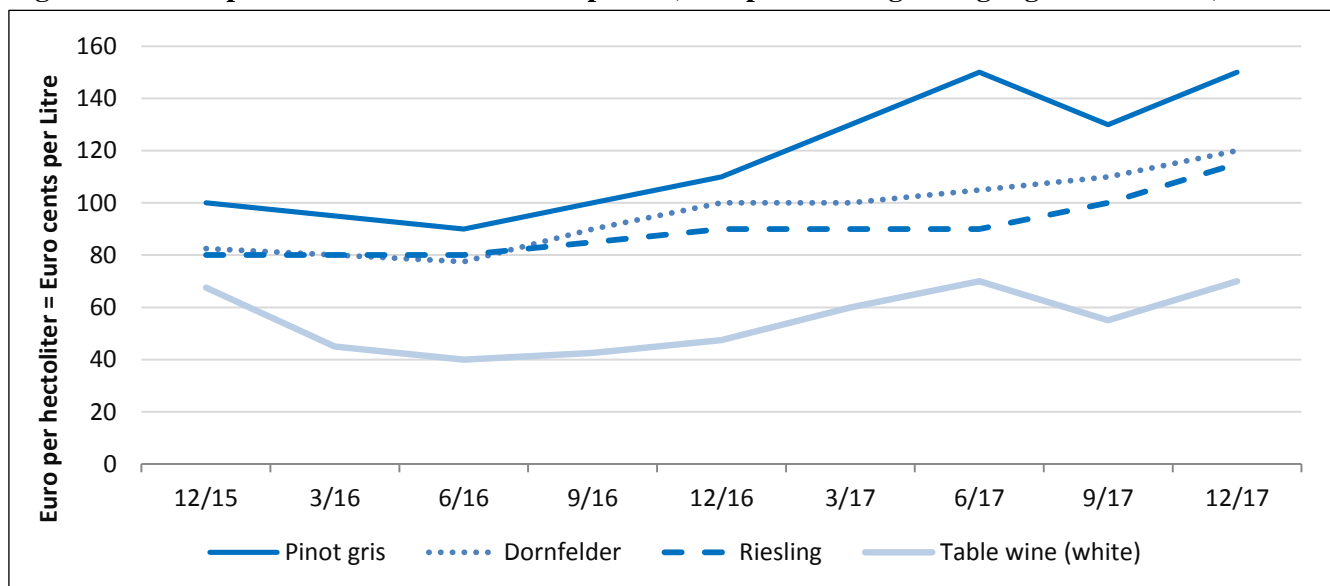
tight oligopoly in the German food retailer market most await the market leader Aldi's price setting for entry price wines in early 2018 (HERTEL, 2017). It is expected that Aldi will rather forgo some of its previous margins or compensate margins between different products to keep important price corner points steady. Most retailers are expected to follow Aldi's price policy in the entry level that makes up about half of the wine volume sold in Germany. It is similarly reported that some large cooperative producers in Italy do not pass on price increases to their retail customers to avoid the risk of having their products listed out from the shelf. They compensate the price increase to invest in the long-term relationship with retailers. To bridge the low vintage producers of retailer-own brands consider to blend sold out international grape varieties (see Figure 3) with less sought after varieties such as Bobal, Monastrell and Tempranillo into dual-variety wines such as Tempranillo-Merlot. Overall it is expected that consumer market prices for wine will increase, most likely not to the full extent of the supply shock.

2 German Wine Market

German Wine Production

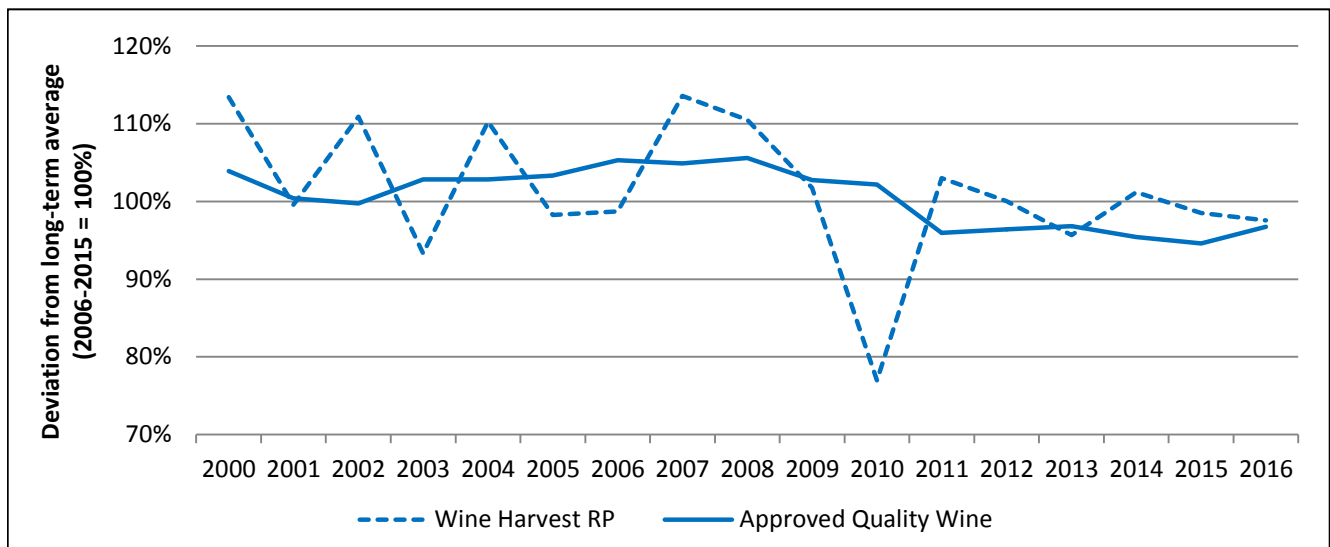
Also Germany's total wine production was significantly below average in 2017, 17% smaller than in 2016 (see Table 1). It was the second smallest harvest recorded for a long time after the devastating 2010 vintage (see Figure 5). Several late frost nights in late April had severe negative effects after an early and warm spring period in March. Particularly wine grow-

Figure 4. Development of German bulk wine prices (example of wine growing region Palatinate)



Source: WEINWIRTSCHAFT (2016-2017)

Figure 5. Loss of retail shelf listings after record low harvest in 2010: Deviation of wine harvest and quality approved wine (traded wine) from long term average (2006-2015 =100%) for the German federal state of Rhineland-Palatinate (RP)



Source: WEIHL (2017)

ing regions in Wuerttemberg, Rheinhessen and Mosel recorded harvest losses of more than 25% compared to 2016. Even steep slope vineyards in the Mosel valley were damaged by frost, usually limited to lower lying areas. Besides large scale frost damage various sites were affected by hail storms over summer. Prices for German bulk wine rose immediately in June 2017 when the extent of damages became obvious (see Figure 4). By the end of 2017 prices for all major grape varieties rose by 40-50% compared to the end of 2015. Prices for white table wines stabilised after a long-time low in mid-2016.

The Effect of Supply Shocks on the Demand for Germany Quality Wine

The market demand for German quality wine is relatively constant at about 7.5 million hectolitres (DWI, 2017). Quality wine represents the quantity of wine that is bottled and sold to consumers via various trade channels. Only about 3-6% of German wine production is marketed and bottled as table wine. The remainder of a harvest not marketed as quality or table wine is either used for the production of sparkling wine, of seccos, or of wine based aromatised beverages (e.g. Hugo), is merged into European table wine cuvees or is used for food production (LOOSE und KOHLMANN, 20017). Figure 5 shows a relatively stable demand for quality wine for Germany's largest wine growing federal state of Rhineland-Palatinate that represents two thirds of German wine acreage. Until the low harvest of 2010 harvest fluctuated around a

relatively stable quality wine supply. Storages from previous year were used in small harvests and surplus wine was declassified into table or processing wine in large harvests. The harvest line "breathes" around quality wine demand.

The exceptional low harvest in 2010 brought a structural downward shift to quality wine demand. Wine stock could not compensate the record low wine harvest in 2010 when bulk wine prices soared. These price increases were not or only partially accepted by German food retailers which mainly substituted to lower cost wine of South European origin. As an example, until 2010 export wine brand "Black Tower" was constituted mainly of the German Mueller-Thurgau grape variety. During the extreme shortage in 2010 brand owners could not source sufficient German wine at prices accepted by UK retail and were forced to look for similar tasting alternatives they found in Northern Spain. The product was subsequently not returned to contain German wine after supply normalised in 2011. The supply shock structurally affected the demand for German quality wine that for many years did not rebound to original levels prior 2010. The small harvest that risked German producers' ability to deliver induced bottlers and retailers to look for lower priced and more stable supply. It cannot be foreseen if the low 2017 harvest will have similar negative long term effects on German wine demand. The fact that all major wine producing countries are affected by low supply is likely to make substitution more difficult than in 2010.

**Table 3. Share of quality wine by company type of marketer
 (average values 2014-2016, base 7.5 million hectolitres)**

Company type	Role	Share	Million hectolitres
Wine estates	Grow and self-market wine	27%	2.04
Cooperatives	Members grow grapes, cooperative produces and markets wine	28%	2.08
Producer associations	Members grow grapes, wine is jointly produced in large facilities, often sold to bottling wineries	3%	0.21
Bottling wineries	Buy grapes or bulk wine from wine growers (spot-market or long-term contract), bottle and market wine to food retailers	42%	3.17
		100%	7.5

Source: own calculation and estimation based on information provided by Quality Wine Examination Offices (Qualitätsweinprüfstellen) in Germany in June 2017.

German Wine Production and Marketing Structure

German wine production undergoes structural change and concentration. Between 2003 and 2016 the number of registered businesses with more than 0.5 hectares of grapes reduced by almost 50% from 29,200 to 16,900 (DESTATIS, 2017). There are several thousand non-registered small wine growers with less than 0.5 hectares of vine, who are mostly members of cooperatives and jointly only account for about 3% of German wine acreage. Average vine acreage per business increased by 74% from 3.4 ha to 5.9 ha during that time.

Wine producers can be classified into one of four categories (see Table 3). It was often disputed which company type markets what relative share of German quality wine production. Data was collected at all quality wine examination offices between 2014 and 2016 and results are shown in Table 3. Accordingly German wine producers who sell grapes or bulk wine to producer associations or large bottling wineries (“Kellereien”) represent about 45% of the volume. Bottling wineries over the last fifteen years invested in large crushing and fermenting capacities allowing them to buy and process grapes. This step of backward vertical integration in the supply chain was necessary to meet wine quality requirements set by German retail. To a smaller extend bottlers also buy bulk wine from cooperatives and independent wine estates those cannot market through their sales channels. Similarly also selected independent wine estates increasingly buy grapes or bulk wine to increase the scale of their reputed wine production. Compared to previous estimates the share of bottling wineries and producer associations increased from approximately 33% in the mid-2000s to 45% as an average over 2014-16. This growth can largely be attributed to the rise of wine sales in German food retail that require large volumes of constant quality. The remaining

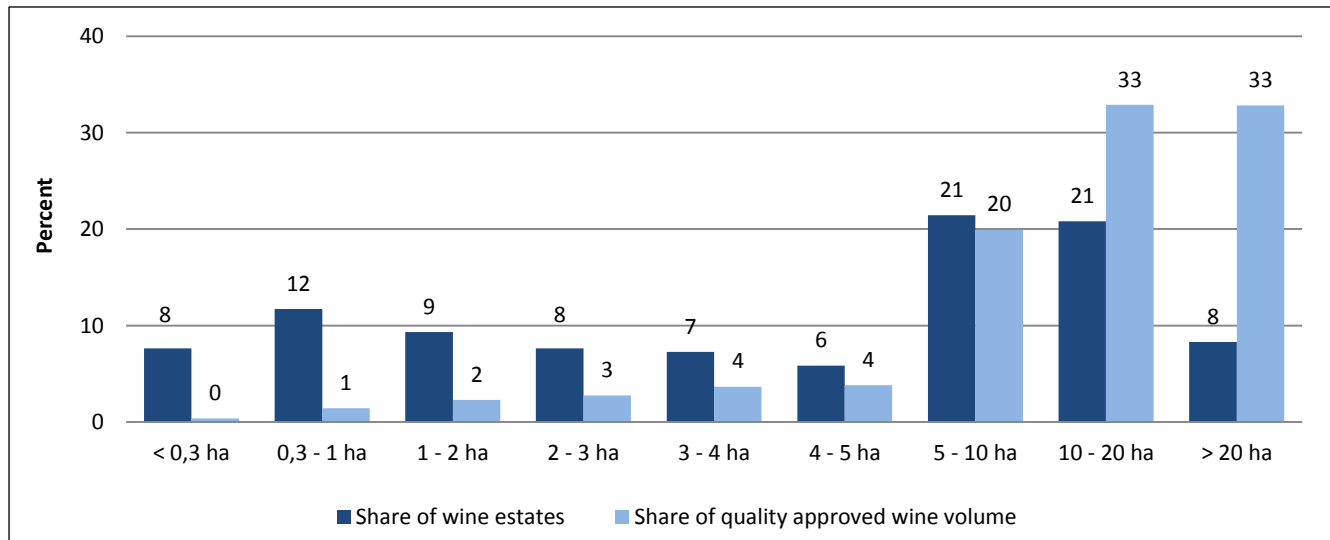
volume is almost evenly split up between independent wine estates and cooperatives that both lost relative market share.

Supported by the German wine institute, the German wine growers association and the Raiffeisen Association of German cooperatives, the Institute of Wine and Beverage Business Research of Geisenheim University in 2016 launched a panel survey of German self-marketing wine producers (“Geisenheimer Weinmarktanalyse”) to analyse and better understand their production and marketing structure. To qualify wine producers have to participate in quality wine examination, hence pure bulk wine producers are outside the focus of this survey. As one of the first steps the population of existing independent wineries was established by analysing data from quality wine examination offices. In 2015 there existed 7,283 independent self-marketing wine estates for which composition by size is detailed in Figure 6. As expected self-marketing independent wine producers are slightly more concentrated compared to all German wine producers (DESTATIS 2017). Exactly 50% of independent German wine estates have less than 5 hectares vine acreage but only represent 14% of produced quality wine. Business structures vary strongly between German wine growing regions that depend on history and the existence of steep slopes (STRUB und LOOSE, 2016).

Importance of Sales Channels for German Wine

Participants of the producer panel survey were asked about the relative volume share they market across the various sales channels. Between April 2016 and June 2017 1,041 independent wine estates representing 16,002 hectares, and all 75 cooperatives with own wine production facilities representing 25,439 hectares, and 44 of the estimated 100 existing bottling wineries participated in the survey. Larger wine estates above 4 ha are overrepresented in the sample. There-

Figure 6. Distribution of self-marketing wine estates and share of wine volume in Germany by acreage size



Source: own calculations based on data from German Quality Wine Examination Offices for year 2015, representing 93% of German wine growing regions except for Frankonia, Saxonia and Saale-Unstrut.

Table 4. Share of average wine sales volume to market channels by size of wine estate in percent

Business size wine estates	Direct sales to consumers	Specialty wine retail	Gastronomy	Food retail	Export	Online sales
<0.3 ha	98.3	0.0	1.4	0.0	0.0	0.0
0.3 - 1 ha	96.1	0.1	3.8	0.0	0.0	0.0
1 - 2 ha	91.5	0.3	7.4	0.1	0.1	0.1
2 - 3 ha	89.9	0.9	8.0	0.1	0.3	0.2
3 - 4 ha	86.7	3.3	7.3	0.2	0.6	0.8
4 - 5 ha	82.4	4.7	9.1	0.7	0.8	0.9
5 - 10 ha	70.3	8.8	12.1	2.9	3.1	1.4
10 - 20 ha	59.3	13.8	14.9	4.4	4.3	2.3
>20 ha	48.4	20.0	13.0	7.3	8.7	2.4
Total*	62.5	13.2	13.0	4.1	4.4	1.9

n=1,041 respondents of Geisenheim producer panel, total as weighted sum of size groups by population data in Figure 6, shares for small company sizes partially based on estimates and personal interviews. *Volume base: 2.04 million hectolitres quality wine marketed by wine estates.

fore, sales share estimates for each size group are weighted by their according volume share (Figure 6) to represent the underlying population and its marketed quality wine volume. There is a clear relationship between sales channels usage and business size (Table 4). Smaller wineries almost exclusively directly market to consumers but this share decreases with business size. With growing business size gastronomy and specialty wine retail increase in importance. Food retail and export only become significant sales channels for wine estates above the size of 5 hectares. In total slightly less than two thirds of wine estates' quality wine is marketed directly to consumers, followed by similar shares of specialty wine retail and gastronomy.

Applied to the quality wine volume of 2.04 million hectolitres marketed by wine estates the channel shares result in absolute volumes indicated in the third column in Table 5. Similarly channel shares reported by cooperatives and bottling wineries can be translated into absolute volumes. The second to last column in Table 5 sums up volumes for each sales channel across all company types and resulting total shares are calculated accordingly. As a result about half of German quality wine is marketed through food retail followed by direct to consumer sales, export and specialty retailers. These producer based estimates can serve as a benchmark for household or scanner based panel data.

Table 5. Share and volume of German quality wine marketed through various sales channels by different company types

	Wine estates		Cooperatives		Bottling wineries ⁽³⁾		Sum of total German quality wine	
	Share in %	Volume Mio hl	Share in %	Volume Mio hl	Share ⁽⁴⁾ in %	Volume Mio hl	Volume Mio hl	Share in %
Quality wine volume		2.04 ⁽¹⁾		2.08 ⁽²⁾		3.38 ⁽⁴⁾	7.50 ⁽²⁾	
Food retail	4.1	0.08	46.5	0.97	82	2.77	3.82	50.9
Direct to consumers	62.5	1.28	18.2	0.38	0.5	0.02	1.67	22.3
Export	4.4	0.09	5.7	0.12	17	0.56	0.77	10.2
Specialty retailers	13.2	0.27	21.1	0.44	0.5	0.02	0.73	9.7
Gastronomy	13.0	0.27	7.0	0.15	0.5	0.02	0.43	5.7
Online	1.9	0.04	1.3	0.03	0.1	0.00	0.07	0.9
Other	0.9	0.02	0.2	0.00	0	0.00	0.02	0.3
Sum	100		100		100		100	

(1) Average quality wine volume assessed by all German Quality Wine Examination Offices 2014-2016.

(2) Cooperatives and producer associations are jointly reported by quality wine assessment office for Rhineland-Palatinate. Relative volume share of 90% is assumed for cooperatives and 10% producer associations, based on data for other federal states.

(3) Bottling wineries and producer associations are combined because of strong trade relationships and similar sales patterns.

(4) Shares partially based on expert opinions and estimates.

Source: percent shares wine estates n=1,041, cooperatives n=75, bottling wineries n=44 respondents in Geisenheim producer panel. Total quality wine volume (top row) based on individual reports from quality wine examination offices.

Exports and Imports

Net exports of German wine remained at a low level of about 1.02 million hectolitres by mid-2017 (DWV, 2018) and seem to have reached a turning point after its lowest level in 2016 (HOFFMANN und LOOSE, 2017). Temporary statistics at the end of 2017 indicate a slight increase of exports by approximately 5% that can be attributed to the export of German table wine. A detailed analysis by LOOSE (2017) indicates that official export statistics with high reporting limits for intra-European trade largely agree with estimates based on producer reports.

Overall wine imports marginally decreased although re-exports of imported wines grew by about 4% (DWV, 2018). Caused by the strong cost and price competition of Germany's large bottling wineries, in an international comparison costs of bottling wine from bulk wine are by far lowest in Germany (Table 6).

Table 6. Costs of bottling wine in 0.75 litre bottle in different wine producing countries (costs inclusive dry goods bottle, closure and label)

Country	Bottling costs in Euro
Australia	0.53
Chile	0.65
Germany	0.30
South Africa	0.40

Source: COTRONE (2017)

Hence, Germany is an important bottling hub in international wine trade where 2.6 million hectolitres are imported as bulk, bottled to an equivalent of 341 million 0.75 litres bottles and then re-exported mainly to neighbouring European countries such as the Netherlands, Belgium and Scandinavia. It is too early to state whether the marginal decline in the consumption of imported wine marks a turning point towards a stronger preference of German consumers for domestic wines. The small 2017 harvest is likely to lead to higher imports in the year to come.

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