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THE BREWING INDUSTRIES IN ENGLAND AND HOLLAND, 1650-1800

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A number of studies of brewing in Britain and in the Low Countries exist. Exploration of comparisons or connections between the industry in the two has been rare. In the fourteenth century there was trade in beer across the North Sea. In the fifteenth migration of brewers brought the new technology of using hops in making beer from the Low Countries to England.[1] In order to follow what happened on the two sides of the North Sea in the era of the greatest success of the Dutch and the rise of England to a major power in Europe and the world, that is through the seventeenth and eighteenth centuries, the most effective approach is to concentrate on the most populous and prosperous parts of the two. For Britain that is England, along with Wales, and for the Low Countries, the province of Holland.

Holland long dominated the economy and the politics of the confederation of seven provinces that formed the United Netherlands just as England dominated the other countries that formed the United Kingdom. Data from Holland indicate the general fate of brewing throughout the country since levels of production and consumption in the other six provinces were so small that it would have little effect on any calculation for the Dutch Republic as a whole.

Excise tax returns form the principal source for estimating trends and tracking developments in the brewing industry in both England and Holland in the seventeenth and eighteenth centuries.

The data for the Dutch Republic or the United Netherlands are only figures for the province of Holland. For England the data for tax collection include Wales for the entire period. From 1707 and the Acts of Union they include Scotland as well. While the creation of the United Kingdom, gradually drawing together the different kingdoms in Britain, did have an impact on the figures, the relatively small scale of the Scottish economy and of beer production there did not create a sizeable disjuncture in the tax data reported. In 1707 total excise tax collection in Scotland was less than 4% of that collected in England.[2]

To make a comparison the first step is to outline the levels and trends in the production of beer in the two jurisdictions and then do the same for consumption in them. The brewing industries in those places faced challenges, many the same and some strikingly different. The second step then is to examine those threats as explanations for the performance of the industry. Brewers were not passive in the face of challenges and so the final stage in the comparison is looking at what strategies brewers in Holland and England deployed to deal with the threats to their livelihoods and to assess their success or failure.

Production levels and trends

In the fifteenth century the northern Low Countries were already enjoying remarkable economic expansion at rates considerably higher than those achieved in contemporary England. Relatively rapid growth continued through the sixteenth century when the annualized increase in gross domestic product (GDP) was 0.5%, that is up to 1580 and the destruction during the Revolt against Habsburg rule which started in the 1560s. In the first half of the seventeenth century the annual average pace in Holland was about 1.2%, truly remarkable for a pre-modern economy.[3] Brewing in Holland contributed to and was a beneficiary of the general improvement. Total beer consumption rose dramatically as population increased and the economy expanded. Though there are no reliable figures for levels of beer consumption before the years around 1500, when records do emerge in the sixteenth century the quantities of beer downed per person were among the highest known since then. Subsequent reports of output of the brewing industry point to the prominent place the drink and the trade had in most aspects of Dutch social and economic life.

* This article has undergone peer review.

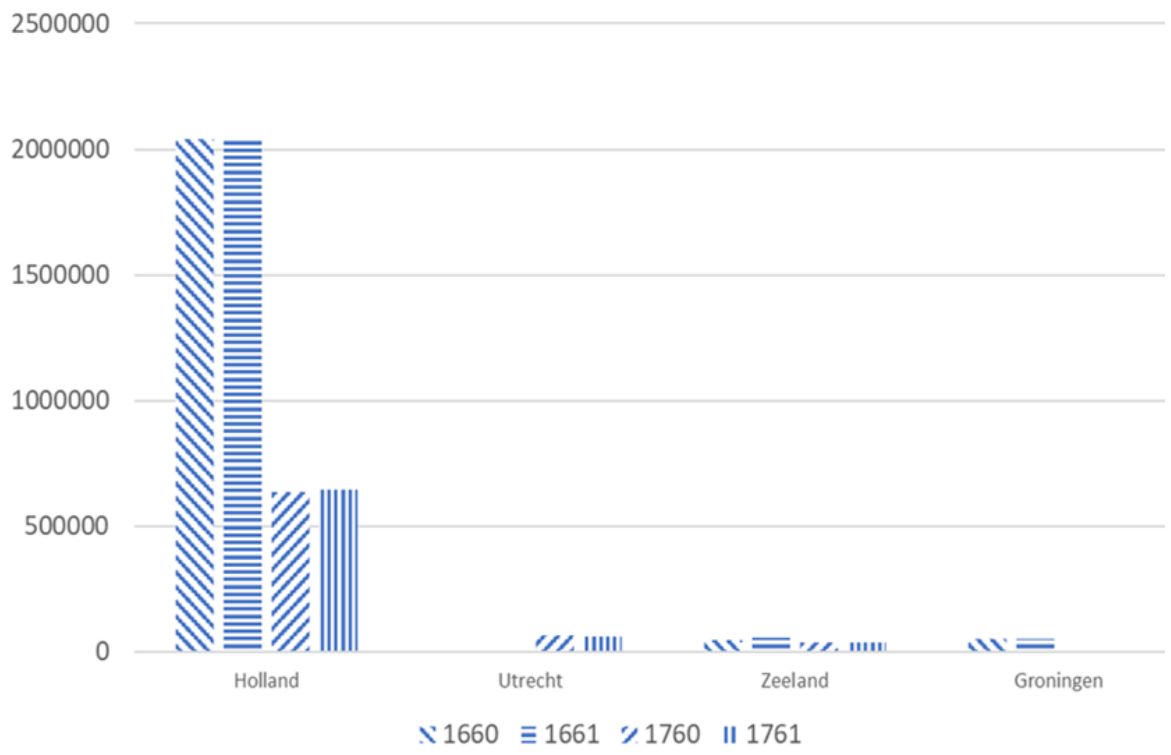

Figure 1. Comparsion of Beer Tax Income in Four United Netherlands Provinces (Guilders). Source: Liesker, R. & and Fritschy, W. (2004) *Gewestelijke financiën ten tijde van de Republiek der Verenigde Nederlanden, Deel IV Holland (1572-1795)* The Hague: Instituut voor Nederlandse Geschiedenis, RGP Kleine Serie 100, pp.246-251. Figures for Utrecht are for the town only.

In the Netherlands output of beer held up well and even expanded in some towns in the first half of the seventeenth century. After around 1650, for various reasons, growth in the population and the economy slackened. Dutch brewers were left with shrinking markets. Beer production went down. The number of brewers and breweries fell consistently and dramatically in Holland towns from 1650 until well into the nineteenth century. The fall was even more dramatic in Haarlem and Delft, not incidentally towns that had specialized in exporting beer.

Records of excise tax revenue from the levy on beer become available in 1650. They show a continuing decline with downward movement starting in 1655 and continuing to the end of the eighteenth century. The trend was both dramatic and relentless.

The contrast with England is marked. The figures for the numbers of breweries are not exactly comparable. Data for England are for the entire country and for its largest city with a large brewing industry while for Holland the numbers are for selected towns. Even with those difference they still give a strong indication of the differential performance of Dutch and English brewing. In Holland the steep decline in Haarlem and Delft, two of the most important centres of the industry in the sixteenth and early seventeenth century, are a strong indicator of the overall trend. In England the number of common brewers rose by almost 50% between the 1680s and the 1780s. That was despite a shrinking in the total in London in the last 30 years of the eighteenth century as the industry consolidated there. In 1800 there were only some three-quarters as many breweries there than in 1700. The more chronologically limited English tax records show that the number of barrels of beer taxed annually was largely stable in the eighteenth century. England taxed beer production at the brewery and used different rates for different types of beer. The form of rating did not settle down until after the change in government in 1688 and, even then, it took some time before the level of tax stabilized, that in 1710.[4] The system was changed again in 1794 which ex-

	England	London	Amsterdam		Haarlem		Rotterdam		Delft	
	Common brewers									
Year	No.	No.	Year	No.	Year	No.	Year	No.	Year	No.
1690	782		1620	15	1600	20	1609	15	1600	82
1700	746	174	1621	18	1620	52	1621	30	1643	27
1710	725	150	1685	23	1623	54	1623	30	1667	15
1720	765	158	1734	19	1629	54	1637	28	1679	17
1730	858	166	1749	17	1634	50	1648	28	1708-17	16
1740	935	178	1765	13	1640	49	c.1750	12	1722-31	15
1750	996	165	1786	12	1645	53	1772	9	1737-46	13
1760	1,116	174	1802	13	1650	55	1786	9	1750	11
1770	1,090	159	1811	7	1655	55	1792	7	1753-58	10
1780	1,152	166			1660	47			1762-68	8
1790		153			1663	37			1772	6
1800		127			1665	35			1786	2
					1668	34				
					1670	32				
					1680	27				
					1685	26				
					1689	21				
					1692	20				
					1699	15				
					1700	14				
					1740	8				
					1752	7				
					1786	3				
					1800	1				

Table 1 Number of Breweries in England, London and Selected Towns in Holland. Sources: Unger, R. W. (2001) *A History of Brewing in Holland, 900-1900: economy, technology, and the state*. Leiden; Boston: Brill, pp.223-224. Coffman, D. 'Excise Revenues in England, 1683-1825, Brewing Industry – Organization' (National Archives, CUST 145/4 -CUST 45/13) https://www.esfdb.org/table.aspx?resourceid=12083 Accessed 29 March 2021. Mathias, P. (1959) *The Brewing Industry in England, 1700-1830*, Cambridge: Cambridge University Press, pp.544-545.

plains the truncated evidence for tax paid and, therefore, the number of beer barrels subject to excise from the end of the century.

For England the data show the number of barrels paying excise for strong and small, that is weak, beer and whether produced by common brewers or victuallers. The former included all of the larger commercial brewers. The latter, which included inns and brew pubs, decreased in number and importance over time. The summary figures adding all those barrels together indicate the state of production but not the quality of what beer drinkers consumed or the profitability of the industry. The data show a significant rise and then a sudden fall in output after 1688, that despite sharp increases in rates of taxation. The swings in revenue are so large as to suggest problems of administration. The change

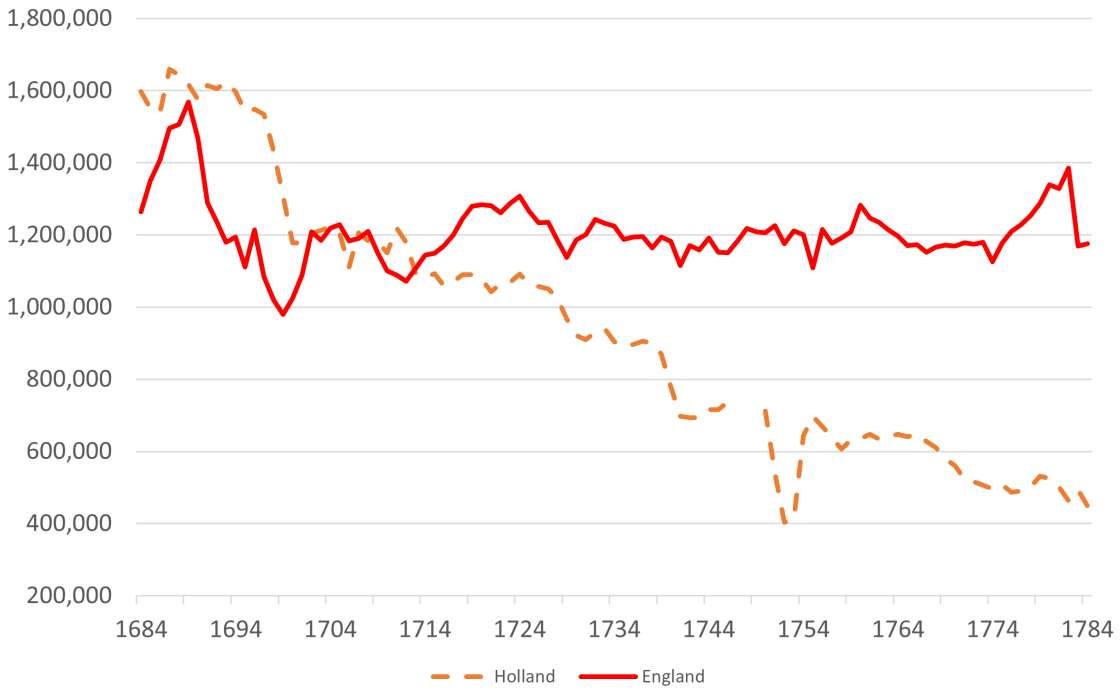

Figure 2. England: Barrels of Beer Paying Excise (X 10) & Holland: Beer Excise Tax Revenue (Guilders). Sources: Liesker, R., & Fritschy, W. (2004) *Gewestelijke financiën ten tijde van de Republiek der Verenigde Nederlanden, Deel IV Holland (1572-1795)* The Hague: Instituut voor Nederlandse Geschiedenis, RGP Kleine Serie 100, pp. 246-251. Coffman, D. 'Excise Revenues in England, 1683-1825, Excisable Liquors - Beer and Ale (National Archives, CUST 145/4-CUST 45/13)', https://www.esfdb.org/table.aspx?resourceid=12079. Accessed 25 November 2020.

in government with the accession of William III and Mary II led to changes in personnel among the senior officials of the excise office followed by a churning in the leadership. There were problems with finding competent and honest tax collectors as well. A gradual process of professionalization of the personnel among excise officers led, by the second decade of the eighteenth century, to more consistent and reliable collection of the tax and so to more reliable figures for total production.[5] After 1703 and until 1777 total barrels taxed remained almost constant. The sharp rise and fall from 1778 to 1784 suggests another reconsideration of how to tax what. While the two series related to taxes from the two jurisdictions are not strictly comparable the obvious trends in the data indicate how the brewing industries diverged through the late seventeenth and eighteenth centuries.

There was another divergence. In the course of the fifteenth and sixteenth century women all but disappeared from the records of London brewing. In the Middle Ages women dominated the rural industry. As urban commercial brewing grew in scale by the sixteenth century women found themselves excluded from management in the trade. In the Netherlands that was not the case. Women, often as widows of brewers, continued to own and operate their own firms. In both Holland and England in the countryside women were often still the ones making beer. In Holland, in towns women were also valued to do the work at certain stages of the brewing process since it was thought their gender gave them special skills for certain tasks. While men were more often owners and operators of breweries in Holland they did not dominate the industry to the extent men did in English towns and especially in London. Increasing government regulation of the trade and the general growth in limitations on women's participation in various roles in the economy, the organization of brewing in England all worked to their disadvantage. In Holland delivery of beer from the brewery to homes and pubs was the job of sworn porters, men who worked for the tax collectors. Taxes there fell heavily on consumption while in England it was production which was the principal target of tax collectors. The delivery system in Holland was to eliminate tax evasion. In England there was no need for sworn porters so breweries hired their own crew of burly

men to handle the often-heavy barrels. English breweries then typically had a larger and more male workforce of which a portion was made up of people who might well be hard to manage. Any problems of dealing with the work-force only increased as the scale of breweries and especially those in London grew.[6]

Consumption levels and trends

From 1500 to 1750 skilled building workers, classic candidates for beer drinking, in England and the Low Countries had incomes twice what was needed to pay for basic food, clothing, and rent. In both regions there was discretionary income left over to buy beer.[7] England succeeded in expanding its economy and increasing its population, the latter at the rapid rate of about 0.6% per year between 1680 and 1820. In the same years the Dutch population stagnated and the economy hardly grew. England had a growing market for beer. Along with population, real incomes increased in England through the eighteenth century. It was not until the 1820s that Britain caught up with the Dutch Republic that long had the highest average incomes per person in Europe. While in the years 1650-69 average GDP per person in England was just 47% of that in Holland by 1770-89 the figure was 63%. The trend to narrow the gap was even more clear in the following 30 years.[8] The higher real incomes in the Netherlands may have favoured food over drink with consumers shifting expenditures when more and more varied options came within their reach.[9] Higher incomes could have as well led to an interest in other drinks. The Dutch would have already seen the effect of general economic growth. The average income elasticity of demand for beer, that is the percentage change year-to-year in the excise tax paid on beer divided by the percentage change in GDP in England from 1696 to 1800 was -0.8 while in Holland for the years 1652 to 1800 it was -0.5. In both cases then, the data indicate rising income led to a fall in beer consumption. One reason was populations enjoying an improvement in their standard of living. English brewers faced more of a challenge since GDP per head rose faster there than in the Netherlands. The greater decline in beer drinking as income increased in England. -0.8 against -0.5, reflects the difference. In the eighteenth century, English brewers were confronting an income effect that Dutch brewers had already faced.

The fall in beer production was per person in England. Total production went up. The number of people increased and many of them liked beer. Popular ideas about beer and its consumption, if the work of contemporary writers is any guide, were generally positive. Other drinks were seen as corrupting while beer was something for the virtuous.[10] Such ideas were common across northern Europe in the period. In England there were hints of connections of wine and other beverages containing alcohol with Roman Catholicism and with the kind of absolutist governments in countries where the sway of the Pope prevailed. Any positive propaganda was helpful for beer English brewers. For that and other reasons they proved able to fend off contraction and maintain levels of output through the second half of the seventeenth and the eighteenth century. They stood still, however, while sales of a broad range of firms in the industrial sector grew at paces rarely if ever seen before. Even if English brewers did not fully participate in the boom of the early industrial revolution, they were in a better position in many ways than brewers in Holland.

In the eighteenth century while beer consumption in England was falling per person the London brewing industry enjoyed formidable growth. Beer sales there had long been considerable. In 1585 London brewers sold, at home and abroad, 106,000,000 litres.[11] In 1699, 114 years later, output was up to some 149,000,000 litres of strong beer and ale and about 107,000,000 litres of small beer.[12] The latter was weaker and less expensive and taxed at a lower rate. Production in the English capital was then something close to double that in all the towns in Holland. In 1748 of the more than 140,000,000 litres of beer produced in London 42% came from just twelve breweries. By the 1780s total output averaged around 200,000,000 litres per year. In 1787 the big brewers had increased their share of those sales to 77%.

It is difficult to establish what total Holland beer production was in the eighteenth century. Taking high estimates for demand in the mid seventeenth century and the extent of the decline in the value of excises taxes on beer production paid generates a figure of about 35,000,000 litres for 1790. Even if the estimate is low and Dutch output was double, about 70,000,000 litres, still total English production of something like 900,000,000 litres dwarfed Dutch beer output.[13] Through the eighteenth century, while Holland brewing was declining dramatically, London output grew at a rate of about 1% per year. In Holland the revenue from the beer excise tax fell on average by about 1.6% per year.[14] The growth in London brewing was not reflected in the rest of the country. It did, however, compensate for a decline in beer drinking outside the capital. If the population of England and Wales grew by about 50% between 1700 and 1800 then per capita beer consumption fell something on the order of 33%. Population in Holland was more or less stable through the century so the fall in beer consumption per person, if it fell as much as revenue from the excise tax, was down nearly 80%. If that was true then at the end of the eighteenth century per person per year consumption in Holland was perhaps at most 70 litres and in England

around 120 litres with something like 28% of English consumption being of 'small' beer.[15]

The prosperity of London was built on the same foundation of international trade that had made Amsterdam a commercial and financial centre. The obvious difference was that the English capital was much larger. Even in the mid seventeenth century when Amsterdam had reached a population of 200,000 London was perhaps twice as large. By around 1700 London was three times as large. In 1800 the capital had a population of about 1,000,000 and so offered a market for beer about the size of all Holland and within an area considerably less than one tenth that of Holland. Since beer was more than 90% water and was shipped in heavy barrels, moving it was not only clumsy but also costly. Being close to the drinker was important to the financial success of many breweries as a number in London proved.[16]

Porter emerged from an evolution in London brewing practices in the first decades of the eighteenth century. The name itself only emerged later as a nickname for an already common brown beer. The type enhanced the success of London brewers and further promoted concentration of production into a smaller number of large firms. To avoid excise tax brewers produced a very strong beer, stout, and after paying the high rate of tax on that mixed it with much weaker beers subject to considerably lower levels of taxation, dropping the excise burden. From 1663 that practice was illegal and it was also inconvenient to go through the process. The doubling in the tax rates in 1690 made the need for a better solution more pressing. To make stout brewers used more hops to preserve the drink and lower quality brown malts so the beer, even watered down, had a brown colour, different from many pale beers on sale in the city. Londoners came to prefer darker beers as a result. The advantages of the mixing of different qualities of beer lessened in 1697 when the government added a tax on malt. In 1710 came a tax on hops so raw materials as well as the finished product paid which reduced the benefits of making stout since it was total inputs that was the basis for amounts paid no matter the output mix. Porter solved the problem of illegal mixing and mitigated the taxes on malt and hops. In the brew kettle brewers combined the results of several runs of the malt, generating falling strengths of the wort. The resulting porter was then aged to counteract the bitterness that hops imparted to the beer. Sitting in the vats, over time the drink lost some of its sharpness but also gained alcohol content. Aging porter made the drink more cloudy, though that was hardly noticed because the drink was dark. Brewers used poorer quality barley and dried the malt made from those grains with wood. The darkness those choices gave porter also made it easier to adulterate the beer while the lower quality grain and the drying method lowered costs. All factors together made porter cheaper than competing beers. More durable and able to last longer, porter could be made in the spring and sold in the summer, something not possible with typical types since warm days increased the incidence of spoilage. Porter benefited from aging so it made sense to keep it in larger containers for some weeks or months. There were clear economies of scale brewers could reap from having ever larger vats to ferment and cure the porter. By 1795 the largest of those vats held over 3,000,000 litres. The advantages of being bigger led to concentration of production in a smaller circle of very large firms. London brewers, because of the scale of their operations, had more capital available to them which allowed them to be early adopters of steam power for various uses in their operations.[17] That in turn allowed them to grow even larger.

Dutch brewers were slower to shift to using steam and they also did not adopt porter even though Swedish and Danish producers did imitate the London practice with some success. The poor health of the Dutch industry left brewers there without the capital to follow the English example.

Challenges for brewing: raw material supplies and competitors

The variety of problems brewers faced in England and Holland included many that were similar in character. The technology of brewing and climate were much the same in the two as was the governments' interest in taxing beer production and sales heavily, that to finance their heavy defence expenditures. Some of the threats to the prosperity of the industry, however, were different and specific to each region. The specific legislation in each could have differing impacts as could the cost and character of raw materials. Beer faced competing drinks, some old and some new, throughout Europe as neither England nor Holland was exempt from the danger that consumers would change allegiance.

While England was a beer exporter in the sixteenth century, in the eighteenth production was predominately for domestic drinkers. In the fifteenth century Holland exported beer to many parts of north western Europe, including England. Soon, though, Dutch brewers found they were facing loss of export markets. Other regions, especially the southern Low Countries and England, continued to expand their own production of beer flavoured with hops, a product in which the northern Netherlands had enjoyed an advantage into the sixteenth century. Even then English beer, in imitation of Dutch hopped beer, was making its way to ports in Holland. As foreign markets for Holland brewers declined, the towns and provinces of the Dutch Republic increased restrictions

on internal trade, effectively segmenting the domestic market.[18] The shrinking of export potential for Dutch brewers meant they were forced to rely on local and sometimes very local sales. That, however, was only one of their many problems

After 1740 grain prices in Holland rose and that cut into any profits. The increase did not offer a marked advantage to English brewers over Dutch ones. Prices in England and Holland followed similar paths. Grain costs in England rose somewhat more rapidly in the closing two decades of the eighteenth century. Amsterdam wheat prices were typically a little lower than those in southern England but the difference was invariably small and changes were always in the same direction in the two regions from 1600 through to 1790.[19] The close tracking of the wheat prices, a by-product of the trade between the two, strongly suggests that breweries in neither country enjoyed a marked advantage because of the cost of grain.

In Holland problems of access to sweet water predated by centuries the climb in grain costs and the decline in sales. With much of Holland below sea level there was a threat of salt water polluting supplies. Brewers had to resort to special arrangements like having conduits to bring water from nearby reliable wells or building a reservoir to hold sweet water or collecting rain water in barrels or, in extreme cases, shipping in water from sites further inland. Amsterdam brewers did the last starting already in the 1490s. In the seventeenth and eighteenth centuries they subscribed to a fund for maintaining an icebreaker to keep canals open so boats could still bring needed water to the city during what were typically the rather cold winters of that era.[20] English brewers were not free from problems of access to a reliable supply of water. The greater gradients in England compared to the Netherlands often meant water could be brought from higher levels by stream or pipes. For London brewers, growth in industries in the city generated pollution of rivers and streams. Many breweries still got their water from wells. A number were also large-scale customers for complex water supply projects undertaken to bring water from some distance. Because of the volume of water beer makers needed, the growing scale of London breweries and the cost of setting up such systems, having a brewery as a customer was critical to convincing investors to support such schemes. Some brewers also used the Thames as a water source. That meant, to ensure the water was still acceptable for making beer, they had to locate intake pipes carefully and build cisterns to store good water in case at any time pollution made the river water unusable.[21]

In Holland heating fuel was peat, with prices rising in the eighteenth century, and coal, imported and so subject to export taxes in England and excise taxes in the Dutch Republic. With coal, English brewers had easy access to abundant quantities of inexpensive heating fuel. Mined in the country, it was subject to taxes different from and lower than those prevailing in Holland. The multiple and changing charges buyers faced in London and in Holland meant English brewers enjoyed a price advantage in fuel but not a consistent one. From 1640 to 1652 coal prices in Leiden, including all charges, on average were almost 70% higher than in London. In wartime the gap could widen. From 1708 to 1715 coal landed in the Netherlands cost from some 30% to 125% more than in Westminster, that before Dutch brewers paid excise tax. In the more peaceful years of 1765 and 1770, before excise, coal prices in Holland were still 60% to 70% more than those prevailing in London.[22] Coal provided more heat for each kilogram burned than wood or peat and so saved on storage, transportation and labour costs. Dutch brewers used coal though not on the same scale as English brewers. While the fuel price differential may well have been sizeable the share of total costs attributable to fuel was small so the advantage had relatively little impact on profitability.[23]

In the seventeenth and eighteenth centuries beer both in England and Holland faced new competition from tropical drinks. Coffee, tea and cocoa were medicines in the seventeenth century. As supplies of the exotic beverages increased prices for them fell and they became more and more goods of general consumption. The rise in use was great enough that Holland began to tax the new drinks consistently from 1691. Originally appealing to the well-to-do, they did not form an immediate problem for brewers, though by the second half of the eighteenth century there were signs of shifts to them across a broader segment of the population. Wine and brandy were long competitors of beer. They had the advantage of having higher alcohol content per unit volume. More luxury drinks, they do not appear to have shown a marked increase in sales after 1650 so they, even less than tropical drinks, serve as an obvious reason for drinkers to have abandoned beer. Wine and brandy had been available for some time so they did not have the appeal of novelty. The market for them was well established. They were not likely to make sudden inroads into beer sales. Dutch brewers themselves acknowledged the change in public tastes that was hurting them, though, they were more conscious of the threat from another drink.[24]

In seventeenth-century Holland a distilling industry appeared devoted to making a drink flavoured with juniper berries, genever. Genever took up less space for the same amount of alcohol, was much more stable and so easier to handle and could last much longer than beer without deteriorating. Those features appealed to drinkers and sellers alike.

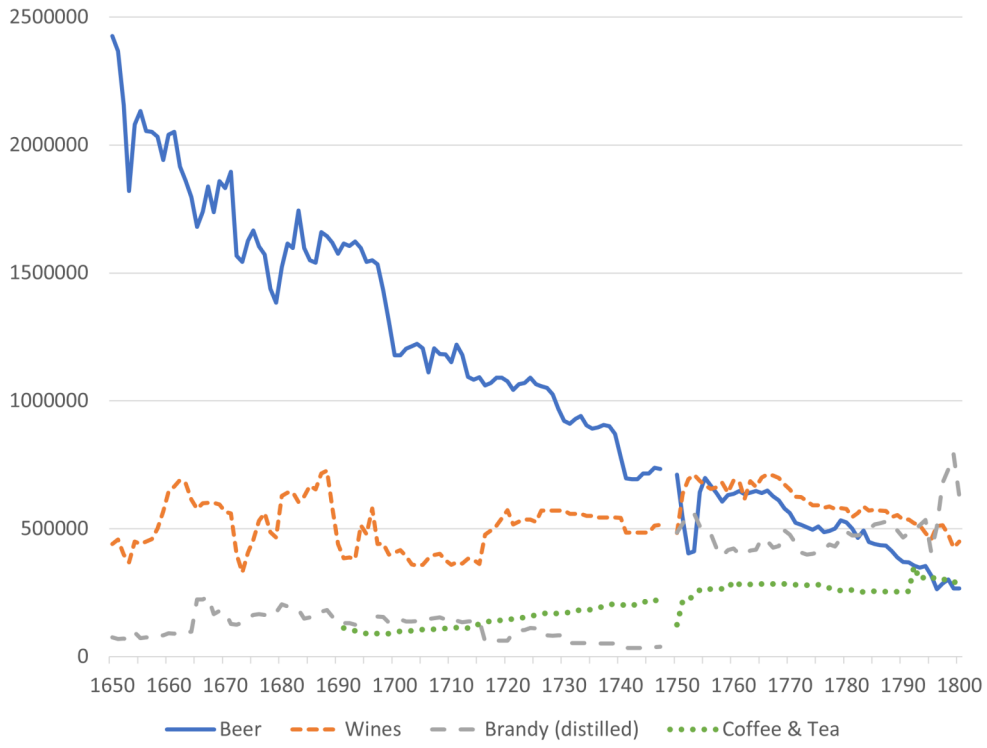

Figure 3. Holland: Excise Tax Revenue from Beverages (Guilders). Source: Liesker, R. & Fritschy, W. (2004) *Gewestelijke financiën ten tijde van de Republiek der Verenigde Nederlanden, Deel IV Holland (1572-1795).* The Hague: Instituut voor Nederlandse Geschiedenis, RGP Kleine Serie 100, pp.246-251.

Purchases of the drink grew dramatically. By the 1690s the value of sales were up 20 times from what they were in the middle years of the century. By 1800 sales were as much as 90 times what that had been in the 1650s. The rate of annual increase in the output of genever and brandy together from 1651 to 1800 averaged a remarkable 2.7%. Even more remarkable was the leap between 1660 and 1679 when, despite a war and a French invasion in 1672, the rate of yearly growth was 12.5%. The distilling industry was able to thrive through improvements in technology, help of government protection and, since it was relatively new, less government surveillance and regulation than brewing faced.[25] A number of Delft brewers converted their operations to making spirits since the processes had similarities and the market for spirits was increasing, not declining.

In 1690 the government in England raised duties on imported spirits and allowed anyone to produce strong drink, the idea being to promote a domestic industry. Increases at the same time in tax rates on beer and malt had a role in promoting the fourfold rise in consumption of spirits from 1684 to 1714.[26] The subsequent development of a method of distilling which created a drier drink than Dutch genever pushed consumption up further. The government was slow to react to the explosion in drinking 'London dry' gin. Through the first half of the eighteenth century, parliament moved in stages, raising duties on spirits, to contain the 'gin craze' and so hamper the most challenging competitor for beer. In 1688 when the general increases in excises started, consumption of spirits in England was some 2,250,000 litres but by 1735 it was up to over 29,000,000 litres. The rise certainly helps to explain the some-one-fourth fall in beer drinking in London in the same period and the stagnation in barrels of beer produced in the same half century. The rising taxes on gin helped beer but still it was not until around 1760 that beer sales returned to the levels of three and a half decades before, the recovery being largely attributable to population increase.[27]

The rate of growth in tax income from spirits is misleading. The curve reflects not only rising consumption but also sharp increase in the rate of taxation. In 1751, for example, the rise was more than 50%.[28] Between 1695 and 1800 revenue from the levy on beer rose almost two and a half times but the flow of funds from taxing spirits went up more than

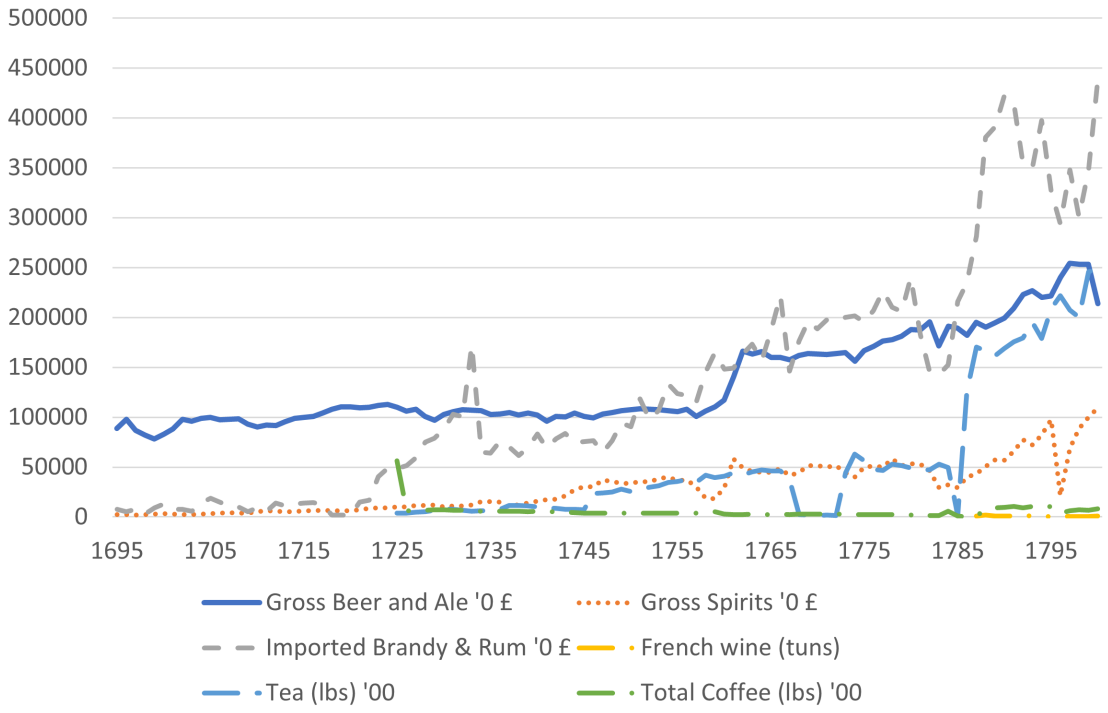

Figure 4. England: Excise Income from Beer, Brandy & Rum and Quantities of Imported French Wine, Tea and Coffee. Sources: Coffman, D. 'Excise Revenues in England, 1683-1825, Gross and Net Revenues - Excisable Liquors, Hops and Malt' (National Archives, CUST 145/4-CUST 45/13), https://www.esfdb.org/table.aspx?resourceid=12093 Accessed 29 March 2021; Coffman, D. 'Excise Revenues in England, 1683-1825, Excises -Exotic Groceries & Imported wines' (National Archives, CUST 145/4-CUST 45/13), https://www.esfdb.org/table.aspx?resourceid=12092 Accessed 29 March 2021; and Coffman, D. 'Excise Revenues in England, 1683-1825, Excisable Liquors - Imported Liquors (Quantities)' (National Archives, CUST 145/4-CUST 45/13), https://www.esfdb.org/table.aspx?resourceid=12082 Accessed 29 March 2021.

44 times. Even more striking is the climb in the returns from taxes on brandy and rum, the sales of which must have eroded the market for beer. Since the two, and especially brandy, were popular with smugglers the tax records must understate the rise in consumption. While the volume of coffee imports remained fairly constant from 1725 to 1800 the rise in tea consumption, which did not take off until the 1780s, was almost 67 times between those two dates. Competing drinks in England formed an even greater threat to brewers there than they did for their Dutch counterpart. Even with remarkable increases in the consumption of alternatives to beer, the drink held on enough to prevent anything like the rapid decline in Holland.

Reactions: brewers strategies

Brewers in the two countries on the facing shores of the North Sea did act to counteract the forces for contraction. They took political action though differently in the two. In Holland they made their efforts collectively. In England there was no national organization so it was through individual brewers, some of them with considerable influence. A common cause in both cases was getting governments to lower the taxes the brewers paid. One thing done in both England and Holland was to try to evade those taxes and often in inventive ways. Success in relieving the burden of charges by the state, however, was invariably limited.

In Holland guilds or similar institutions existed in most towns which had a brewing industry of any size. Those organizations mounted a sustained struggle to get governments to change policies the guildsmen identified as detrimental to the industry. The guilds even formed a province-wide confederation to petition for relief from taxation and from stringent government oversight of their businesses. While there was informal cooperation in the first half of the seventeenth century among guilds it was in 1658 that brewers from

different towns joined together to address the provincial government. The unifying issue was taxes. Brewers were subject to varied levies, civic and provincial, on sales and production of beer, on their raw materials of grain and heating fuel and on their breweries, with inconsistency from one town to the next. Through the eighteenth century the guilds' lobbying of governments yielded some minor successes but only minor ones.[29] Efforts continued until the second half of the eighteenth century since positive responses were often a matter of survival for the firms. The minimal help from governments meant many did not survive.

Brewers' organizations experimented with various methods to get more income for their members. They tried to require bakers to buy their yeast from brewers. Guilds imposed stricter requirements on buyers of beer to return barrels when they were empty and to pay deposits on the barrels to motivate returns. Customers often found other uses for the containers and so kept them, forcing brewers to incur the expense of getting new barrels.[30] Brewers' guilds also joined together on occasion to buy bankrupt breweries, hoping that someone would take on the business or, at the least, guildsmen could distribute the equipment among themselves and sell the land.[31] Consolidation through joint action was tantamount to an admission that the decline in the industry was irreversible.

In England brewers, especially the big ones in London, were not above lobbying members of parliament on matters of beer taxation. Some of them sat as members of Parliament so their task of influencing legislation was somewhat easier. They proved largely successful since rates of excise tax, though fluctuating in the last decade of the seventeenth century, settled down with only a small increase in 1710 from the rate set in the 1690s. There was little change after that through the eighteenth century. The need to get help from governments was not as pressing in England since in general, and in London especially, the situation for English brewers was nothing like as dire as it was for Dutch ones.

In Holland the surviving records of brewers' guilds are filled with complaints about the high levels of tax they faced. While tax payers' complaints are all but universal the extent, the repetition and the evidence which brewers produced certainly indicate that what they said had some validity. In England in the 1770s over 50% of the cost of a barrel of beer was excise tax. In Holland the league of brewers' guilds claimed that 75% of the retail price of beer went to the state. The numbers are not exactly comparable since the Holland estimate, from a biased source, included local as well as provincial taxes, levies on raw materials and presumably also charges on beer sold in pubs. In England the modest increases in excise tax rates in 1780 had no obvious effect on prices. It appears that brewers simply absorbed the higher charges, cushioning the impact on consumers.[32] The state levies, and the close surveillance to be sure brewers paid them, may well have promoted innovation in brewing to maintain profit margins. Though that might have been true in England, there are few signs of the same effect in Holland.[33]

From the 1690s to the middle of the eighteenth the tax on beer sold to buyers directly, that is not through publicans, in Holland was considerably less and almost half that paid on strong beer in England. After a sharp drop in the tax in 1751 the rate in Holland was one quarter of that in England. In 1754 Holland doubled the rate on beer brewed, reinstituting the earlier higher charge which had existed for decades, so Dutch producers were back to paying about half what English producers paid. Dutch brewers, if faced with the comparison, would have been quick to point to local taxes paid on top of the general provincial tax as well as all the excise tax they paid on inputs. English brewers in turn could have pointed to the malt and hops taxes they paid. It is likely that Dutch brewers did in fact sustain a greater tax burden though seemingly the difference was small. English brewers enjoyed the protection of high tariffs on imported French wines, imposed in part to hurt the economy of an enemy but also to deflect consumers away from cheap imported wine to beer.[34] In the process the policy increased government income from the beer excise. It appears unlikely that the small difference in the rate of tax between England and Holland would have greatly impinged on the relative success of brewing and beer consumption in the two.

In both England and Holland brewers tried to evade taxes and in a number of different ways. The practice of using less grain per pint produced, cutting strength and body, when grain prices or taxes rose was a practice among brewers that knew no boundaries. Only the extent of the response varied. Reports of English tax commissioners indicate all sorts of devious methods to confound the officials including burying pipes to siphon off part of the brew so those assessing tax would underestimate production levels. The dominance of a small number of big brewers in London made for efficiencies in tax collection in England, something favourable for the government.[35] The complaints about ways tax farmers enforced levies in Holland suggest that evasion was no easier there than in England. The agents of Dutch tax farmers were even more motivated to be sure that brewers paid the full tax due than the bureaucrats in England. In addition, the complex system of purchasing and delivery of beer, the latter handled by city agents rather than the brewers as in England, enhanced oversight in Holland. As with all tax evasion it is impossible to offer any precision in assessing the extent of the share of charges brewers were able to avoid.

Having consistent and comparable price series for beer in Holland and England would help to evaluate the credibility of brewers' claims in both about how much excise taxes hurt their industries. The existing prices series are incomplete and since beer came in many different types and strengths, all with different prices, it is difficult at best to know what drinkers paid. The price data for the eighteenth century are not comparable. The English series is for a strong beer which is the category used for the commodity from the first data point, which is for 1400, to the last which is for 1869. There was no such consistency in the beer sold. The Dutch series has many gaps with missing years filled in with estimates based on the price of vinegar, a by-product brewers regularly made from spoiled beer. There is no specification of beer type and the drink changed character over time in Holland as it did in England. While there is good reason for using vinegar prices, they reflect not only beer prices but also spoilage rates which varied from year to year. It is almost certainly possible that some beers in London were better in taste and had more alcohol than the version of the drink available in Holland. Without consistent data on what type of beer sold for how much it is impossible to make any, let alone a robust, comparison in quality and cost to consumers over the 150 years up to 1800.[36]

In conclusion: the changing context for brewing

The brewing industry in northern Europe, after a lengthy period of expansion in the fifteenth and sixteenth centuries, faced slackening demand in much of the seventeenth, part of a general stagnation in the economy. In the eighteenth century there were new threats to beer making in both England and Holland. Those challenges were largely the same for the two but with variations in intensity. The beers produced in the two regions were not exactly the same. There were differences in hopping, in body, in alcohol content and in taste. One reason was that oats were common among the grains used in Holland and barley overwhelmingly predominated in England. Another was differences in methods of malt drying and, possibly, in types of adulteration. The conditions made reactions to the problems of the eighteenth century vary between England and Holland. The most telling difference in the ability of brewers to respond to the forces facing them in the two was the increasing pace of growth in population and in total national income in England and the stagnation in the former and slow pace of the latter in Holland.

Brewers in England took advantage of the growing numbers of people in the country, especially in London, and the rising incomes of people on average but especially those at the lower end of the prosperity spectrum. Labourers and skilled artisans were the most likely among people to use the extra income they were getting to buy beer. They were less vulnerable to the temptations of new drinks from the tropics than those better off. They could, however, opt for gin which did, without question, have a lasting impact on beer sales. In Holland there were more people who were better off. The poor fared better in the Low Countries because of the most extensive welfare system in Europe. They were still potential beer drinkers. Their numbers did not rise nor did the population at large, neither by natural increase nor by immigration both of which had bolstered numbers in the decades around 1600. Shrinking export markets compounded the problem. Without the primary essential element of an expanding market, Dutch brewers found their business contracting rather than expanding. They had few if any chances to reap efficiencies by increasing the scale of production nor by introducing new techniques. They had limited capital and limited opportunities to experiment with better ways of making beer. English brewers, especially those in London, had chances to do both.

In the eighteenth and nineteenth centuries, relative to its Dutch counterpart, the English brewing industry enjoyed considerable success. Brewing in the Dutch Republic and, after substantial political changes from 1795 to 1814, in the Kingdom of the Netherlands faded into a shadow of its thriving condition of the early seventeenth century. In England there was reorganization and redistribution of breweries. Some did well and others not so well. There was the underlying problem that brewing did not expand at the pace of the rest of the economy. There were missed opportunities but there were still enough opportunities. There was a considerable number of English brewers who seized the possibilities that materialized so the industry showed signs of progress. Their success often continued through the nineteenth century. Brewing in the Netherlands revived only from the 1860s, that the result of adopting Bavarian style beers, ones made with yeasts that fell to the bottom of the tanks during fermenting. The technical innovation led to expansion and consolidation, aided by growth in GDP and rising population, the same forces that fed the pattern in London 150 years and more before. The preferred beers of drinkers in the two countries became different. More conservative English brewing survived and thrived even if the rate of economic growth slowed. Into the twentieth century brewing on both sides of the North Sea enjoyed greater efficiencies and rising sales. Drinkers benefited from better distribution and marketing as well as improvements in the quality, durability and reliability of beer. By 1900 the common growth in sales, the greater size of breweries and consolidation in the industry meant that brewing was on similar paths in England and Holland.[37] It was the opposite of what happened in the two from the mid seventeenth to the end of the eighteenth century.

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