

ALTERNATIVE INVESTMENTS IN FOOD, ON THE EXAMPLE OF INVESTMENTS IN WHISKY

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ABSTRACT

The aim of the article is to indicate whether investing in whisky as a form of alternative investment is a viable form of investment and what the determinants of this profitability are. The reason for the research undertaken is an attempt to present the whisky investment market, which has so far been omitted in considerations of alternative investments. The profitability of investment in whisky was analyzed using static and dynamic methods on the basis of data available on the collector's market. A statistical analysis of the ROI determinant and the period of return on investment in whisky in the indicated market using the r-Pearson and the Spearman ranks was carried out. The analysis covered an eleven-year period (2008–2018). There were 40 selected collector bottles available for purchase at the World Whisky Index, whose purchase prices were announced. The whisky came from 29 distilleries, of which 21 were open and 8 were closed. The influence of the age of whisky on the ROI, whether the distillery from which it came was still functioning and its taste were analyzed. The research revealed that both the age of the whisky and its taste had a marginal impact on the ROI and PP on investment in whisky, which is surprising in a food commodity. The results showed that the factor which most determines the profitability of investment in whisky is the place of origin (the distillery), more precisely whether the factory is still functioning or not.

Keywords: *alternative investment, whisky, investment in food, rate of return*

JEL Classification: G2, G4, K2, N2, N4, O3

INTRODUCTION

In recent years, the production and consumption of whisky has been growing constantly (Gielda-inwestora.pl, n.d.). This trend has been observed both in the cradles of production of this liquor, i.e. in Europe and North America, as well as in areas where the tradition of drinking whisky is relatively young, such as in Asia or South America. (Forbes.pl, 2013). The whisky market is constantly segmented, and that product is progressively diversified, which is a result of, among other things, the growing interest in this type of alcohol. Currently, producers and distributors offer whisky to buyers guided by various motivations, including consumption, collecting and, what is most important for this work, investment (Ostrowska, 2014). These incentives are also available at prices ranging from around € 20 to € 20,000 (Wordwhiskey.com, n.d.). Therefore, the question arises about the effectiveness of investment in whisky, i.e. whether the purchase of the indicated beverage for investment purposes is profitable, and if so in what period, for what quality of alcohol etc., or what are the factors determining the profitability of such an investment.

1 SPECIFIC FEATURES OF INVESTMENTS IN EATABLE GOODS

One of the unusual alternative investment markets (more: Anson,2002; Aspandarec, 2013, p. 9-26; Bodie, Kane, Marcus, 2002;Boido, Fasano, 2009, p. 74-105; Chevalier, Ellison, 1999, p. 875-899; Chorafas, 2003; Cichorska,2015, p. 69-83; Dorsey, 2007; Felis, 2005; Gabryelczyk, 2010; Goetzmann, Rouwenhorst, 2005) are the markets of luxury eatable goods (foodstuffs). It includes mainly alcohols (including wine, whisky), truffles (Borowski 2010, p. 251-252), some species of fish and seafood (lobster, bluefin tuna, caviar, oysters), meat and sausages, spices (Goldenmark.com, n.d.), cheese (Bookofluxury.pl, n.d.) etc. These investments should be qualified as a specific group of alternative assets due to a number of characteristics specific only to them. They are as follows:

- a) a relatively short return horizon,
- b) the possibility of consuming (eating) a given good,
- c) a narrow group of buyers,
- d) high transaction costs,

- e) high storage costs,
- f) dependence of the available amount of goods on non-economic conditions (e.g. weather),
- g) occurrence of fashions.

A short payback period is a desirable feature for an active investment portfolio. In the case of food products, it results from a short period of their usefulness, in particular in the case of seafood or truffles (Nagrzyby.pl, 2024). It also applies to alcohol, especially to aged alcohols, i.e. to the collector's market. An example may be over 50 years of Whisky barrels in which the liquor loses alcoholicity. According to legal regulations, the alcohol content in whisky must be at least 40%. (MILER,2011). Likewise, wine that is improperly stored loses the status of wine and becomes vinegar (souring) (Koneserzy.pl, n.d.). Investing in barrels of whisky entails the risk of overlooking the moment when the alcohol content in the beverage drops below 40% and the investment will bring lower profits than expected.

The possibility of consumption of the object of investment is characteristic only for products intended for this purpose, typically for food products. This fact affects the price of other goods of a given species on the market, especially when only a limited edition was produced. It is difficult to state clearly whether, firstly the reduction of the quantity of a given good is more desirable for investors (the price of goods remaining on the market will increase) or secondly whether the market will remain unsated with a given good because the relative unavailability of goods will result in the loss of the status of a unique good which has a negative impact on its price and lengthens the payback period what is rather undesirable for food products. As A. Adamska writes, an additional value of investments in alcohol exists, a kind of emotional dividend. As the author states, if the investment in alcohol turns out to be not very lucrative, you can always drink it (Adamska, 2016, p. 579).

2 WHISKY MARKET AND SPECIFICITY OF INVESTMENT IN WHISKY

The three largest countries where whisky is currently produced and exported are: the United Kingdom (Scotland), Japan and the United States (Tpewhisky.com,

n.d.). Interestingly, over $\frac{3}{4}$ of the world's whisky production is produced in small areas such as Scotland and Japan (Ibidem). In the latter, in just eight distilleries in Japan approximately 15% of global whisky production is made. For this reason, but not only, it is worth looking at the main areas of whisky production, including in Japan, but above all in Scotland and America. The main whisky producers are also the largest exporters. Scotch whisky exports have seen a steady, albeit slight, increase in the interest in single malt whisky since 2007. Exports of other types of whisky have also been increasing, but the increases are smaller and there is greater fluctuation than in the single-malt market (Scotch-whiskey.org.uk, 2024).

The largest market for the consumption of Scotch whisky is the EU market, followed by North America (USA, Canada, Mexico) and the Asian market. In 2016, blended whiskies constituted the largest part of exports, as they are relatively inexpensive, intended for consumption and for mass consumers. Continued interest in buying whisky in bulk has been observed (0.1/0.2 trillion £ annually). (Gielda-inwestora.pl, n.d.).

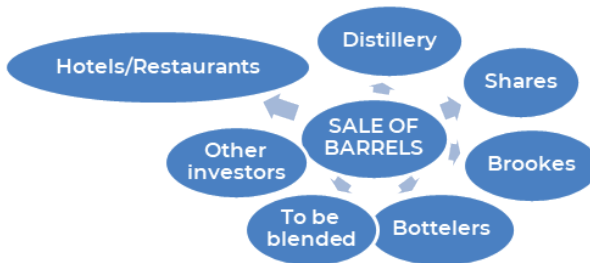
The whisky imports market remains diversified, both in terms of the quality of alcohol consumed and its strength. Among the developed countries, such as certain EU member states (Germany, Italy, the Netherlands, Latvia, Poland), the USA, Singapore, Japan and Panama, there is an increase in imports of whisky of higher quality and higher percentage. Some countries focus on importing lower quality whisky while maintaining the existing taste of alcohol percentage, such as France and Mexico. Others, in turn, import low-quality and low-alcohol whisky, i.e. blended whisky. An interesting case is China, which shows an increase in interest in better quality whisky, but of weak power (Foodfakty.pl, 2018). This demonstrates little knowledge about investing in whisky on the Chinese market, which is confirmed by practice (NaTemat.pl, 2012).

Whisky exists on the market as a consumer, collector and investment good. The classification of the described beverage as food, an item and an investment has been described above. The specifics of investing in whisky as an investment per se and as a collector's item are presented below. The investment in a whisky can be direct or indirect. Direct investments include the purchase of whisky bottles or barrels (Docplayer.pl, 2016), indirect investments can take the form of subsidies for the distillery or a purchase of their shares.

Collecting the collectible, bottled whiskies is the most popular form of whisky investment. It is also possible to invest in collector's barrels to distribute like single cask. Investments in barrels, however, are riskier because it is not always possible to check the content before bottling. These are investments that are much more profitable, but they also require more investment. It should be remembered that during whisky maturation, 2 to 5% of the volume evaporates each year, the so-called angel's share. Barrel whisky is an intermediate product that can be further sold (bearing the storage costs previously) or bottled to create a finished product or sell as a food good (see Diagram 1). The liquidity of the whisky barrel market is therefore greater than in the case of the bottle market, including primarily collector bottles. By investing cash in barrels of whisky you can use the services of whisky banking offered, among others by Stilnovisti (Stilnovisti.pl, 2019).

The most appreciated are singles cask and cask strength. It should be emphasized that the market for investment in bottled whisky is the largest part of the whisky collector market (see Diagram 2).

Diagram 1: »Ways of investing in barrelled whisky



Source: <http://docplayer.pl/10609649-Investment-w-szkocja-whisky.html>, (access on 12.12.2017)

Diagram 2: »Increase in value of bottled whisky



Source: <http://docplayer.pl/10609649-Investment-w-szkocja-whisky.html>, (access on 12.06. 2024)

Similarly, as in other investments, the question is when to invest in whisky, more precisely when to buy barrels or bottles. In the case of barrels, it depends on how long the alcohol has already been matured. The older the barrel, the greater the necessity and the cost of transforming the intermediate, i.e. barrelled whisky into ready-made collector's products like bottles. Thus, older whisky barrels are an investment with a short payback period and should be included in the active investment portfolio. Young barrels are, in turn, a passive investment with an extended return horizon. Before the investment is made it should be carried out an analysis of the quality of the purchased whisky, i.e. how it is assessed by critics, what is the opinion on the brand etc.

Regarding the investment in bottles, the oldest and rarest specimens are best purchased as soon as they appear on the market. New collector's editions are best purchased after saturation of the market with a given product, about two years after the appearance of the collection on the market. An investment in a young whisky requires prior analysis of the market. As a rule, it is indicated that such investment should take place as late as possible.

3 METHODS OF COUNTING THE PROFITABILITY OF INVESTMENTS IN WHISKY

To assess the effectiveness of an investment in whisky, static methods for the profitability of investments in the form of a rate of return on investment (ROI) and the period of return on investment in absolute and average values were used. There were 40 selected collector bottles available for purchase at the World Whis-

ky Index (Worldwhiskeyindex.com, n.d.), for which the prices of their earlier purchase were visible. The whiskies came from 29 distilleries, including 21 active ones (Ardbeg, Auchentoshan, Balblair, Benromach, Blairmhor, Bowmore, Clynelish, Deanston, Glenfarclas, Glenlivet, Glenmorangie, Highland Park, Kilbeggan, Lagavulin, Linkwood, Macallan, Macphail's, Springbank, Strathisla, Talisker, Tamdhu) and 8 inactive ones (Brora, Caperdonich, Hanyu, Killyloch, Kinclaith, Lochside, Port Ellen, Tomatin¹).

It was also checked how the value of the return on investment and the payback period are influenced by factors mentioned most often as determinants of the price of collector whisky, i.e. the continuous production in the whisky distillery, the age of the whisky and the taste of the whisky. The last factor was analyzed on the basis of the whisky qualification based on the taste proposed by D. Wishart (2013). The correlation study of the indicated factors on ROI and the payback period was calculated using the r-Pearson ratio and the Spearman rank.

Tab. 1: »Prices of selected whiskies in 2018 and the price of their previous purchase

Whisky	Price in 2018 (€)	Date of purchase	Price of purchase (€)
BOWMORE 42y.	17,500.00	04-10-2017	12,000.00
		28-08-2017	10,850.00
		18-11-2016	8,750.00
MACPHAIL'S 44y.	16,749.00	03-03-2009	1,275.00
BOWMORE 29y.	15,500.00	07-05-2013	8,255.00
		30-08-2011	3,900.00
TOMATIN 42y.	10,340.00	09-09-2016	595.00
		13-03-2014	203.00
		13-03-2014	203.00
BOWMORE No age on label (1964)	10,000.00	25-11-2013	5,000.00
		07-05-2013	4,826.00
		26-07-2011	3,600.00

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¹ The Tomatin distillery was closed in 1986 and reopened after being taken over by the Japanese company Takara Shuzo. The whisky bottles tested come from the defunct Tomatin distillery, not the functioning distillery (Wishart 2013a, p. 240).

Tab. 1: »Prices of selected whiskies in 2018 and the price of their previous purchase

Whisky	Price in 2018 (€)	Date of purchase	Price of purchase (€)
MACALLAN 34y.	9,850.00	29-01-2018	4,521.00
BOWMORE 38y.	8,900.00	10-03-2015	6,200.00
		02-12-2014	3,995.00
		25-11-2013	4,000.00
BOWMORE No age on label (1964)	8,900.00	13-12-2017	3,887.00
GLENLIVET No age on label	7,000.00	19-11-2013	4,293.00
GLENFARCLAS 58 Year	7,000.00	01-09-2016	5,600.00
		01-09-2016	5,000.00
		10-05-2015	5,600.00
MACALLAN 35 Year 1938	6,024.00	01-02-2016	2,500.00
		16-12-2013	2,200.00
		05-08-2011	1,550.00
MACALLAN 25 Year	5,500.00	17-04-2009	350.00
SPRINGBANK 33 Year 1951	5,000.00	20-08-2012	4,500.00
		30-08-2011	4,500.00
LAGAVULIN 37 Year	4,500.00	19-07-2016	2,510.00
GLENLIVET 55 Year 1943	4,200.00	19-11-2013	3,568.00
PORT ELLEN 22 Year 1979	3,900.00	19-07-2015	1,999.00
		13-10-2014	1,600.00
		08-07-2013	1,500.00
TAMDHU 35 Year 1973	3,551.00	24-02-2016	320.00
		14-01-2016	295.00
		12-10-2015	266.00
GLENFARCLAS 1966	3,400.00	09-09-2016	1,278.00
TALISKER 1952	3,000.00	26-07-2011	1,030.00
		12-01-2009	700.00
KILLYLOCH 22 Year 1972	2,999.00	20-08-2015	1,695.00
		22-08-2012	1,675.00
		05-01-2009	1,650.00

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Tab. 1: »Prices of selected whiskies in 2018 and the price of their previous purchase

Whisky	Price in 2018 (€)	Date of purchase	Price of purchase (€)
PORT ELLEN 25 Year 1980	2,978.00	30-05-2014	400.00
		06-02-2010	350.00
LINKWOOD (No age on label) 1939	2,800.00	25-07-2012	1,900.00
		15-04-2010	1,700.00
		15-04-2010	1,700.00
KILBEGGAN 34 Year 1946	2,800.00	30-08-2011	1,900.00
HIGHLAND PARK 40 Year	2,775.00	04-03-2018	1,775.00
GLENMORANGIE 21 Year	2,660.00	28-11-2017	760.00
		11-12-2013	475.00
		19-11-2011	600.00
GLENFARCLAS 46 Year 1954	2,500.00	10-03-2015	800.00
		16-04-2014	656.00
		16-04-2014	656.00
HANYU 1988	2,500.00	23-11-2012	87.00
		11-01-2010	80.00
LOCHSIDE 31 Year 1966	2,499.00	28-04-2015	550.00
		26-11-2013	535.00
BRORA 30 Year	2,350.00	03-10-2016	1,320.00
		02-10-2014	392.00
		01-02-2009	290.00
CAPERDONICH 38 Year 1970	7,874.00	14-04-2013	200.00
		05-12-2012	180.00
		04-11-2012	165.00
KINCLAITH 36 Year 1969	1,825.00	12-05-2017	1,800.00
		12-12-2016	1,700.00
		13-11-2015	2,000.00
ARBEG	50.00	24-01-2018	55.00
		18-06-2017	55.00
		15-05-2017	57.00

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Tab. 1: »Prices of selected whiskies in 2018 and the price of their previous purchase

Whisky	Price in 2018 (€)	Date of purchase	Price of purchase (€)
DEANSTON 12 Year	65.00	23-12-2008	68.00
GLENLIVET	65.00	05-09-2016	70.00
BENROMACH 12 Year	66.00	12-01-2009	72.00
AUCHENTOSHAN 12 Year	70.00	17-02-2014	72.00
BLAIRMOHR 8 Year	70.00	30-08-2011	75.00
BALBLAIR 13 Year 1992	80.00	12-01-2016	85.00
CLYNELISH 38 Year 1971	1287.00	27-05-2017	322.00
		13-03-2010	189.00
		27-07-2009	164.00
STRATHISLA 50 Year 1965	750.00	27-03-2018	748.00
		14-03-2018	748.00
		26-02-2018	748.00

Source: own study based on data from <https://www.worldwhiskyindex.com/> (access on 12.12.2023)

3.1. RETURN OF INVESTMENT (ROI)

The rate of return on investment is the profit that is obtained from one monetary unit of invested capital. The ROI for absolute values is calculated on the basis of the following formula:

$$\text{ROI} = \frac{(\text{Profits from investment})}{(\text{Cost of investment})} \times 100\%$$

Tab. 2: »ROI in whisky on the collector's market

Whisky	ROI (%)	ROI per year (%)	Average ROI (%)
BOWMORE 42y.	146%	45.83%	169,4%
	161%	61.29%	
	200%	100.00%	
MACPHAIL'S 44y.	1314%	1213.65%	1314%
BOWMORE 29y.	188%	87.76%	293%
	397%	297.44%	
TOMATIN 42y.	1738%	1637.82%	3975%
	5094%	4993.60%	
	5094%	4993.60%	
BOWMORE No age on label (1964)	200%	100.00%	229%
	207%	107.21%	
	278%	177.78%	
MACALLAN 34y.	218%	117.87%	218%
BOWMORE 38y.	144%	43.55%	196%
	223%	122.78%	
	223%	122.50%	
BOWMORE No age on label (1964)	229%	128.97%	228%
GLENLIVET No age on label	163%	63.06%	163%
GLENFARCLAS 58 Year	125%	25.00%	130%
	140%	40.00%	
	125%	25.00%	
MACALLAN 35 Year 1938	241%	140.96%	301%
	274%	173.82%	
	389%	288.65%	
MACALLAN 25 Year	1571%	1471.43%	1571%

Tab. 2: »ROI in whisky on the collector's market

Whisky	Price in 2018 (€)	Date of purchase	Price of purchase (€)
SPRINGBANK 33 Year 1951	111%	11.11%	111%
	111%	11.11%	
LAGAVULIN 37 Year	179%	79.28%	179%
GLENLIVET 55 Year 1943	118%	17.71%	
PORT ELLEN 22 Year 1979	195%	95.10%	118%
	244%	143.75%	
	260%	160.00%	
TAMDHU 35 Year 1973	1110%	1009.69%	1216%
	1204%	1103.73%	
	1335%	1234.96%	
GLENFARCLAS 1966	266%	166.04%	266%
TALISKER 1952	291%	191.26%	360%
	429%	328.57%	
KILLYLOCH 22 Year 1972	177%	76.93%	1216%
	179%	79.04%	
	182%	81.76%	
PORT ELLEN 25 Year 1980	745%	644.50%	798%
	851%	750.86%	
LINKWOOD (No age on label) 1939	147%	47.37%	159%
	165%	64.71%	
	165%	64.71%	
KILBEGGAN 34 Year 1946	147%	47.37%	147%
HIGHLAND PARK 40 Year	156%	56.34%	156%
GLENMORANGIE 21 Year	350%	250.00%	451%
	560%	460.00%	
	443%	343.33%	
GLENFARCLAS 46 Year 1954	313%	212.50%	358%
	381%	281.10%	
	381%	281.10%	

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Tab. 2: »ROI in whisky on the collector's market

Whisky	Price in 2018 (€)	Date of purchase	Price of purchase (€)
HANYU 1988	2874%	2773.56%	2999%
	3125%	3025.00%	
LOCHSIDE 31 Year 1966	454%	354.36%	461%
	467%	367.10%	
BRORA 30 Year	178%	78.03%	529%
	599%	499.49%	
	810%	710.34%	
CAPER-DONICH 38 Year 1970	3937%	3837.00%	4361%
	4374%	4274.44%	
	4772%	4672.12%	
KINCLAITH 36 Year 1969	101%	1.39%	100%
	107%	7.35%	
	91%	-8.75%	
ARDBEG	91%	-9.09%	90%
	91%	-9.09%	
	88%	-12.28%	
DEANSTON 12 Year	96%	-4.41%	96%
GLENLIVET	93%	-7.14%	93%
BENROMACH 12 Year	92%	-8.33%	92%
AUCHENTOSHAN 12 Year	97%	-2.78%	97%
BLAIRMOHR 8 Year	93%	-6.67%	93%
BALBLAIR 13 Year 1992	94%	-5.88%	94%
CLYNELISH 38 Year 1971	400%	299.69%	622%
	681%	580.95%	
	785%	684.76%	
STRATHISLA 50 Year 1965	100%	0.27%	100%
	100%	0.27%	
	100%	0.27%	
Mean	673%	572.75%	610%

Source: own study based on data from <https://www.worldwhiskyindex.com/> (access on 12.06.2024)

The average rate of return on investment was 610% in absolute terms, which means that from a single euro invested in whisky on the collector's market, it returns an average of EUR 5.1. The average value of the annual ROI amounted to approx. 573%, that is, EUR 4.7 is paid annually from one euro.

For the examined investment items, the ROI in absolute terms ranged from 90% to 4361%. A wide spread of the value of the rate of return indicates a high risk related to investments in a given market.

3.2. PAYBACK PERIOD

The payback period is the time needed for the ROI to reach at least 100%, which is necessary to achieve a profit equal to at least the investment costs. It is described by the formula:

$$T_0 = \frac{\text{Outlay}}{\text{Net profit}} = \frac{1}{ROI}$$

Tab. 3: »The payback period for the investment in whisky

Whisky	PP (in days)	Average pp (in days)
BOWMORE 42y.	252	219
	226	
	183	
MACPHAIL'S 44y.	29	29
BOWMORE 29y.	193	142
	91	
TOMATIN 42y.	22	11
	7	
	7	
BOWMORE No age on label (1964)	183	161
	175	
	131	
MACALLAN 34y.	168	168

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Tab. 3: »The payback period for the investment in whisky

Whisky	Price in 2018 (€)	Date of purchase
BOWMORE 38y.	256	193
	164	
	164	
BOWMORE No age on label (1964)	161	164
GLENLIVET No age on label	223	223
GLENFARCLAS 58 Year	292	281
	259	
	292	
MACALLAN 35 Year 1938	153	128
	135	
	95	
MACALLAN 25 Year	22	22
SPRINGBANK 33 Year 1951	329	329
	329	
LAGAVULIN 37 Year	204	204
GLENLIVET 55 Year 1943	310	310
PORT ELLEN 22 Year 1979	186	161
	150	
	139	
TAMDHU 35 Year 1973	33	29
	29	
	26	
GLENFARCLAS 1966	139	139
TALISKER 1952	124	106
	84	
KILLYLOCH 22 Year 1972	208	204
	204	
	201	

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Tab. 3: »The payback period for the investment in whisky

Whisky	Price in 2018 (€)	Date of purchase
PORT ELLEN 25 Year 1980	47	47
	44	
LINKWOOD (No age on label) 1939	248	230
	223	
	223	
KILBEGGAN 34 Year 1946	248	248
HIGHLAND PARK 40 Year	234	234
GLENMORANGIE 21 Year	106	84
	66	
	84	
GLENFARCLAS 46 Year 1954	117	102
	95	
	95	
HANYU 1988	11	11
	11	
LOCHSIDE 31 Year 1966	80	80
	77	
BRORA 30 Year	204	102
	62	
	44	
CAPERDONICH 38 Year 1970	11	7
	7	
	7	
KINCLAITH 36 Year 1969	361	365
	339	
	402	
ARBEG	402	405
	402	
	416	
DEANSTON 12 Year	383	383

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Tab. 3: »The payback period for the investment in whisky

Whisky	Price in 2018 (€)	Date of purchase
GLENLIVET	394	394
BENROMACH 12 Year	398	398
AUCHENTOSHAN 12 Year	376	376
BLAIRMOHR 8 Year	391	391
BALBLAIR 13 Year 1992	387	387
CLYNELISH 38 Year 1971	91	62
	55	
	47	
STRATHISLA 50 Year 1965	365	153
	365	
	365	
Mean	183	193

Source: own study based on data from <https://www.worldwhiskyindex.com/> (access on 12.06.2024)

The average payback period for whisky investments on the collector's market was 183 days, i.e. 6 months. The average value of the estimated indicator was 193 days, i.e. about half a year. Therefore, when investing in whisky, you can expect a return on investment after a six-month period on average.

The fastest, ca two-week period of return was achieved by whiskies produced in inactive distilleries like Caperdonich, Hanyu or Tomatin. The longest payback period was recorded for Ardbeg, Benromach, Glenlivet (unlicensed), Balirmhor, Balblair and Auchentoshan whiskies, and it ranged from 12 to 13 months.

The following distilleries made extraordinary profits: Caperdonich's (4261% of the invested amount), Tomatin (3875% of the invested amount) and Hanyu's whisky from Japan (2899% of the invested amount). The indicated positions were also characterized by the shortest payback period of about 10 days. A quarter of the investments in whisky yielded profits about five times higher than the investment costs incurred. 28% of the tested sample yielded an extraordinary profit (profit-cost) equal to at least the value of the investment. 50% of all investments yielded a profit equal to only the investment cost or less, hence it was ineffective in the

analyzed period. In some cases, an upward trend may be predicted, which is noticeable in the case of Ardbeg, Stratshikla or Kinklaith.

4 DETERMINANTS OF ROI IN WHISKY ON THE COLLECTOR'S MARKET

There is a lack of research in the literature on investment in whisky. The author proposes his own division of determinants of investment in this liquor. The following factors that affect the investment in whisky can be distinguished: its age, origin (distillery) and taste. This catalogue is not closed. There may also be other specific determinants, such as historical conditions (consumption of a specific whisky by famous people), national (popularity of a given whisky in a given country in a given period) or cultural and social (origin of semi-finished products for whisky production, method of production). Hereinafter only those determinants are discussed which, in the author's opinion, are the most universal and most important in the investment process.

4.1. AGE

The age of whisky is the length of the maturation process, i.e. maturing in a barrel.

Tab. 4: »Correlation between ROI and payback period for whisky and its age

Whisky	Age	ROI (%)
BLAIRMOHR	8	0.933333
AUCHENTOSHAN	12	0.972222
DEANSTON	12	0.955882
BENROMACH	12	0.916667
BALBLAIR1992	13	0.941176
GLENMORANGIE	21	4.511111
KILLYLOCH1972	22	12.16126
PORT ELLEN1979	22	2.329492
MACALLAN	25	15.71429

Tab. 4: »Correlation between ROI and payback period for whisky and its age

Whisky	Age	ROI (%)
PORT ELLEN1980	25	7.976786
BOWMORE	29	2.926004
BRORA	30	5.292883
LOCHSIDE1966	31	4.607332
SPRINGBANK1951	33	1.111111
MACALLAN 34y.	34	2.178722
KILBEGGAN1946	34	1.473684
TAMDHU1973	35	12.16126
MACALLAN1938	35	3.011411
KINCLAITH1969	36	0.999973
LAGAVULIN	37	1.792829
CAPERDONICH1970	38	43.61189
CLYNELISH1971	38	6.217993
BOWMORE	38	1.962756
HIGHLAND PARK	40	1.56338
TOMATIN	42	39.75002
BOWMORE	42	1.690412
MACPHAIL'S	44	13.13647
GLENFARCLAS1954	46	3.582317
STRATHISLA1965	50	1.002674
GLENLIVET1943	55	1.17713
GLENFARCLAS	58	1.3
r-Pearson coefficient	-	0.15

Source: own study based on data from <https://www.worldwhiskyindex.com/> (access on 12.06.2024)

The research showed a slight positive correlation between the age of the whisky and the profitability of investing in it on the collector's market (a Pearson's ratio of 0.15) with extreme values from 0.916667% to 43.61189% and a moderate correlation between the period of return and the age of the whisky (r-Pearson coefficient -0.35) with a significance level of approx. 18% ($R^2 = 0.1822$). To sum up, the age of the whisky has extremely small (if any) impact on the profitability of investment in it, but it can contribute to shortening the payback period.

4.2. DISTILLERY

In the sample under study, 8 whiskies came from distilleries that did not produce whisky anymore, while the remaining ones came from 21 still active distilleries.

Tab. 5: »Correlation between ROI and payback period for whisky and its age

Open	ROI (%)	PP (in years)	Closed	ROI (%)	PP (in years)
Ardbeg	90%	405	Brora	529.29%	102
Auchentoshan	97%	376	Caperdonich	4361.19%	7
Balblair	94%	387	Hanyu	2999.28%	11
Benromach	92%	398	Killyloch	1216.13%	204
Blairmhor	93%	391	Kinclaithe	100%	365
Bowmore	223%	175	Lochside	460.73%	80
Clynelish	622%	365	Port Ellen	515.32%	106
Deanston	96%	383	Tomatin	3975%	11
Glenfarclas	251%	175			
Glenlivet	125%	310			
Glenmorangie	451%	84			
Highland Park	156%	219			
Kilbeggan	147%	248			
Lagavulin	179%	204			
Linkwood	159%	230			
Macallan	697%	106			
Macphail's	1314%	29			
Springbank	111%	329			
Strathisla	100%	153			
Talisker	360%	106			
Tamdhu	1216%	29			
Mean	318%	245	Mean	1630.25%	110

Source: own study based on data from <https://www.worldwhiskyindex.com/> (access on 12.06.2024)

Tab. 6: »Correlation between ROI and payback period for whisky and its age

	Open distillery (0)	Closed distillery (1)	Rang-Spearman coefficient
ROI	313.27%	1630.25%	0.58
PP	226	110	-0.43

Source: own study based on data from <https://www.worldwhiskyindex.com/> (access on 12.06.2024).

Studies have shown that regarding the relation between the functioning of a given distillery and the ROI of its whisky on the collector’s market there is a medium-high positive correlation between the inactivity of a given distillery (a Rank-Spearman coefficient of 0.58) and a moderate negative correlation between the period of return of investment and inactivity of distilleries (a Rank-Spearman correlation of -0.43). There is, therefore, a fairly strong correlation between the functioning of the distillery and the profitability of investments in the whisky coming from it. Failure to operate a distillery contributes to a statistical increase in ROI and, in the same way, a reduction in the payback period.

4.3. TASTE

The analysis was based on the division of whisky into three flavour groups proposed by D. Wishart covering group 1 (A-C), group 2 (D-G) and group 3 (H-J).

Tab. 7: »Average ROI and payback period for whisky from individual flavour groups according to the classification proposed by D. Wishart

Open	ROI (%)	PP (in years)	Closed
Macallan	A	697%	0.29
Strathisla	B	100%	0.42
Glenfarclas	B	251%	0.48
Glenlivet	C	125%	0.85
Auchentoshan	D	97%	1.03
Tomatin	F	3975%	0.03
Deanston	F	96%	1.05
Glenmorangie	H	451%	0.23
Bowmore	I	223%	0.48
Springbank	I	111%	0.90
Highland Park	I	156%	0.64
Ardbeg	J	90%	1.11
Lagavulin	J	179%	0.56

Source: own study based on data from <https://www.worldwhiskyindex.com/> (access on 12.06.2024)

Tab. 8: »Average ROI and payback period for individual whisky flavour groups according to the classification proposed by D. Wishart

1 taste group (A-C)	
Average ROI (%)	293%
Average PP (in years)	0.51
2 taste group (D-G)	
Average ROI (%)	1389%
Average PP (in years)	0.70
3 taste group (H-J)	
Average ROI (%)	202%
Average PP (in years)	0.65

Source: own study based on data from <https://www.worldwhiskyindex.com/> (access on 17.06.2024)

For the indicated data, the Rank-Spearman correlation coefficient was calculated in which the following classification values were adopted: group 1 (1), group 2 (2), group 3 (3). The calculated ratio was -0.09 for the average ROI, and 0.17 for the average return period. It follows that the whisky taste has a negative (near zero) effect on the ROI and a slight positive impact on the payback period. It follows from the above that the taste of whisky does not affect the ROI of whisky. This is because, although it is a food good, it is not consumed. Another conclusion is the slight extension of the period of return on investment in whisky with a more demanding peat flavour. This may be due to the fact that an investment in this type of whisky is a more advanced stage of contact with whisky and thus requires a great experience at the connoisseur level.

In summary, investing in whisky is profitable even in a relatively short period. However, there should be bear in mind the high risk incurred when deciding on this form of thesaurisation. Choosing an investment in whisky, first of all, the potential investor should be guided by its place of origin, in particular whether the distillery is still functioning. The profitability of the investment in whisky does not significantly depend on its age or taste. Therefore, it can be concluded that

investing in whisky is rather slightly driven by emotions or passion for this liquor, but more by desire to secure the investment portfolio, i.e. economic incentives. The acquisition of collector's bottles of whisky is rarely directed to its consumption. Their purchase is frequently a conscious investment decision. The analysis including data from the 2008–2018 period showed that in about 50% of cases an extraordinary profit was made from the investment in whisky at a level equal to at least the size of the investment. The other half of the investment turned out to be unprofitable or yielded zero extraordinary profits (profits equal investment costs). The interest in investing in the whisky collector's market is therefore not makeshift. It can therefore be concluded that this market is currently a relatively constant area of alternative investments

CONCLUSION

Whisky is on the market both as a consumer, collector and investment good. You can invest in it directly or indirectly. Direct investments include the purchase of whisky bottles or barrels, while indirect investments consist of subsidies for the distillery or the purchase of their shares. Barrel whisky is a semi-finished product that can be resold (previously bearing storage costs) or bottled to create a finished product or sell as a food good. The liquidity of the whisky barrel market is therefore greater than in the case of the bottle market, including primarily collector bottles. By investing cash in barrels of whisky you can use the services of whisky banking offered, among others by Stilnovisti. To assess the effectiveness of investment in whisky, static methods of profitability of physical investments in the form of the rate of return on investment (ROI) and the period of return on investment in absolute and average values were used. There were 40 selected collector bottles available for purchase at the World Whisky Index, for which also the prices of their earlier purchase were available. Whisky came from 29 distilleries, including 21 active and 8 inactive distilleries. It has been checked how the rate of return on investment and the payback period are influenced by the factors mentioned most often as determinants of the price of collector whisky, i.e. the continuous operation of the whisky distillery, the age of the whisky and the taste of the whisky. The last factor was analyzed on the basis of the whisky qualification based on the taste proposed by D. Wishart. The correlation study of the indicated

factors on the ROI and the payback period was calculated using the r-Pearson ratio and the Spearman rank. The analysis covered data from the 2008–2018 period. In about 50% of cases, it showed an extraordinary profit from investment in whisky at a level equal to at least the size of the investment. The other half of the investment turned out to be unprofitable or yielded zero extraordinary profits (profits equal investment costs). Research has shown that investing in whisky is profitable even in a relatively short period. However, one should remember the high risk incurred when deciding on a given form of thesaurisation. When choosing an investment in whisky, first of all, the potential investor should be guided by its place of origin, in particular whether the distillery is still functioning. The profitability of investment in whisky does not significantly depend on its age or taste, which proves that its purchase is a conscious investment rather than a manifestation of passion for this liquor.

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