Wine: To Drink or to Invest?  
A Study of Wine as a Financial Asset in a French Portfolio Context

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The presentation outline

1. Background, literature and objectives
2. Methodology and Data
3. Results
4. Conclusion

Background

- Increasing interest in fine wine investment as a financial asset.

- **How to invest in wine?**
  - Buying wine from vineyards, wineries, “en primeur”, auctions.
  - Wine investment companies
  - Wine Investment Funds
  - Wine Investment Group

- **Literature (profitability of wine investments)**:
  - Profitability of wine investments:
    - First empirical study: Krasker (1979)
    - Samning et al. (2008), Fogarty (2010), Masset and Henderson (2010), Masset and Weisskopf (2010), Kumar (2010), Kourtis et al. (2012), …

Context and objectives

- Lack of studies on French portfolios including wine
- Lack of studies using French indexes on wine
- Lack of studies comparing wine to gold

- **Objectives**:
  - Studying the performance of wine investments (individual asset & portfolio diversifier) under French investors’ point of view.
  - Using indexes of iDealwine beside Liv-ex indexes
  - Comparison between wine and gold in a portfolio context.
Data (1)
Monthly data from January 2007 to December 2013

- **Wine prices**: Indexes from Liv-ex and from iDealwine
  - From iDealwine: WineDex Bordeaux, WineDex Bourgogne, WineDex Rhône, WineDex 100.
- **Gold**: Napoleon coins
- **French stocks**: CAC 40, CAC Mid 60, CAC Small.
- **International stocks**: MSCI World
- **Bonds**: Eurozone Government Bonds all maturities, EMTX index
- **Fixed asset**: Euribor 1 month

Data (2)
Monthly data from January 2007 to December 2013

Methodology (1)
Efficient frontiers: Mean-Variance and Mean-Value at Risk

- **Efficient frontiers**: Two sets of efficient frontiers
  1. Without any alternative asset
  2. With one wine index (among 8 indexes) or with one gold asset
- **Efficient frontiers’ comparison**: Wine (or gold) is profitable for portfolio diversification if the frontier with it is higher than the one without it.
- **Mean-Variance efficient frontiers**: Markowitz (1952)
- **Mean-Modified Value-at-Risk efficient frontiers**: Favre and Galeano (2002)

Methodology (2)
Mean-Variance efficient frontiers

- **Mean-Variance efficient frontiers**: Markowitz (1952)
  
  \[
  \text{Min} [V(R_p)]
  \]
  
  With
  
  \[
  V(R_p) = \sum_{i,j=1}^{n} w_i w_j \text{cov}(i,j)
  \]
  
  (1)
  
  \[
  w_i \geq 0
  \]
  
  (2)
  
  \[
  \sum_{i=1}^{n} w_i = 1
  \]
  
  (3)
Methodology (3)
Mean-Value at Risk efficient frontiers


\[ \min \{ \text{MVaR}(P) \} \]

With

\[ \text{MVaR}(P) = \sum_{i=1}^{n} w_i \text{MVaR}(i) \]  \hspace{1cm} (1)

\[ \text{MVaR}(i) = W \left[ \mu_i - \frac{1}{6} (\xi_i^2 - 1) S_i + \frac{1}{24} (\xi_i^2 - 3 \xi_i) K_i - \frac{1}{36} (2 \xi_i^2 - 5 \xi_i) S_i^2 \right] \sigma_i \]  \hspace{1cm} (2)

\[ w_i \geq 0 \]  \hspace{1cm} (3)

\[ \sum_{i=1}^{n} w_i = 1 \]  \hspace{1cm} (4)

Methodology (4)
Performance comparison

- Sharpe and modified Sharpe ratios: Sharpe (1964) and Favre and Galeano (2002)

- 9 diversified portfolios: With 8 wine indexes and 1 gold asset

- From 5% to 50% of alternative assets: Adding from 5% to 50% of wine or gold in the reference portfolio and excluding from 5% to 50% of other assets.

- For 5 investors’ risk profiles: Conservative, Moderately conservative, Balanced, Moderately aggressive, Aggressive (Canner et al. 1997)

- 300 different portfolios

French portfolios’ constitution, Canner et al. (1997)

<table>
<thead>
<tr>
<th>In %</th>
<th>Conservative</th>
<th>Moderately conservative</th>
<th>Balanced</th>
<th>Moderately aggressive</th>
<th>Aggressive</th>
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<tr>
<td>Fixed income</td>
<td>40</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Euribor</td>
<td>40</td>
<td>35</td>
<td>40</td>
<td>20</td>
<td>0</td>
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<tr>
<td>Bonds</td>
<td>40</td>
<td>35</td>
<td>40</td>
<td>20</td>
<td>0</td>
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<tr>
<td>EMTX</td>
<td>40</td>
<td>35</td>
<td>40</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Blue chips</td>
<td>20</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>CAC 40</td>
<td>20</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>Mid Caps</td>
<td>0</td>
<td>10</td>
<td>30</td>
<td>15</td>
<td>20</td>
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<tr>
<td>CAC Mid 60</td>
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<td>10</td>
<td>30</td>
<td>15</td>
<td>20</td>
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<tr>
<td>Small Caps</td>
<td>0</td>
<td>10</td>
<td>30</td>
<td>15</td>
<td>20</td>
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<tr>
<td>CAC Small</td>
<td>0</td>
<td>10</td>
<td>30</td>
<td>15</td>
<td>20</td>
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<tr>
<td>International</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>20</td>
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<tr>
<td>MSCI World</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>20</td>
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</tbody>
</table>

Results (1) - Efficient frontiers: Mean-Variance

- With WineDex Bordeaux
- With Liv-ex 100
- With Gold
**Results (2) - Efficient frontiers: Mean-Value at Risk**

- With WineDex Bordeaux
- With Liv-ex 100

![Graphs showing efficient frontiers with WineDex Bordeaux and Liv-ex 100]

**Results (3) - Performance’s comparison between without and with wine (or gold) in %**

<table>
<thead>
<tr>
<th>Performance &amp; Index</th>
<th>Sharpe M</th>
<th>Sharpe M</th>
<th>Sharpe M</th>
<th>Sharpe M</th>
<th>Sharpe M</th>
<th>Sharpe M</th>
<th>Sharpe M</th>
<th>Sharpe M</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WineDex 100</strong></td>
<td>29.52</td>
<td>30.38</td>
<td>63.01</td>
<td>63.10</td>
<td>139.55</td>
<td>136.17</td>
<td>230.51</td>
<td>220.80</td>
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<tr>
<td><strong>WineDex Bordeaux</strong></td>
<td>35.34</td>
<td>35.93</td>
<td>74.56</td>
<td>74.38</td>
<td>154.60</td>
<td>152.46</td>
<td>264.14</td>
<td>257.60</td>
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<tr>
<td><strong>WineDex Bourgogne</strong></td>
<td>33.82</td>
<td>34.16</td>
<td>70.99</td>
<td>70.92</td>
<td>156.62</td>
<td>153.49</td>
<td>247.86</td>
<td>246.52</td>
</tr>
<tr>
<td><strong>WineDex Rhone</strong></td>
<td>4.07</td>
<td>4.51</td>
<td>8.63</td>
<td>9.45</td>
<td>19.47</td>
<td>20.76</td>
<td>31.00</td>
<td>34.22</td>
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<tr>
<td><strong>Liv-ex 50</strong></td>
<td>32.72</td>
<td>34.11</td>
<td>66.06</td>
<td>66.70</td>
<td>129.87</td>
<td>123.58</td>
<td>187.16</td>
<td>170.86</td>
</tr>
<tr>
<td><strong>Liv-ex 100</strong></td>
<td>20.14</td>
<td>21.72</td>
<td>41.08</td>
<td>43.19</td>
<td>82.84</td>
<td>82.28</td>
<td>132.38</td>
<td>115.87</td>
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<td><strong>Liv-ex 500</strong></td>
<td>30.37</td>
<td>31.45</td>
<td>62.76</td>
<td>63.37</td>
<td>151.76</td>
<td>153.73</td>
<td>203.30</td>
<td>184.14</td>
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<tr>
<td><strong>Liv-ex Investables</strong></td>
<td>27.78</td>
<td>29.03</td>
<td>56.64</td>
<td>57.69</td>
<td>114.76</td>
<td>110.67</td>
<td>170.62</td>
<td>157.29</td>
</tr>
<tr>
<td><strong>Gold - Napoleon coins</strong></td>
<td>33.17</td>
<td>35.67</td>
<td>73.64</td>
<td>74.86</td>
<td>140.05</td>
<td>130.26</td>
<td>193.03</td>
<td>176.05</td>
</tr>
</tbody>
</table>

**Conclusion**

**Wine: To Invest!**

- Wine is profitable both as an individual asset and a portfolio diversifier.
- The higher the proportion of wine, the better the performance of the portfolios.
- Bordeaux wines are the most profitable and Rhone wines are the least.
- Gold is as profitable as Liv-ex indexes but less profitable than iDealwine indexes.
- iDealwine indexes are more profitable than Liv-ex indexes.

**Further research**

- Taking into account inflation, taxes and storage costs.
- Using a new database with prices and not indexes.