UBS

Decipher

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COMPLEX INVESTMENTS

CLEAR ADVICE

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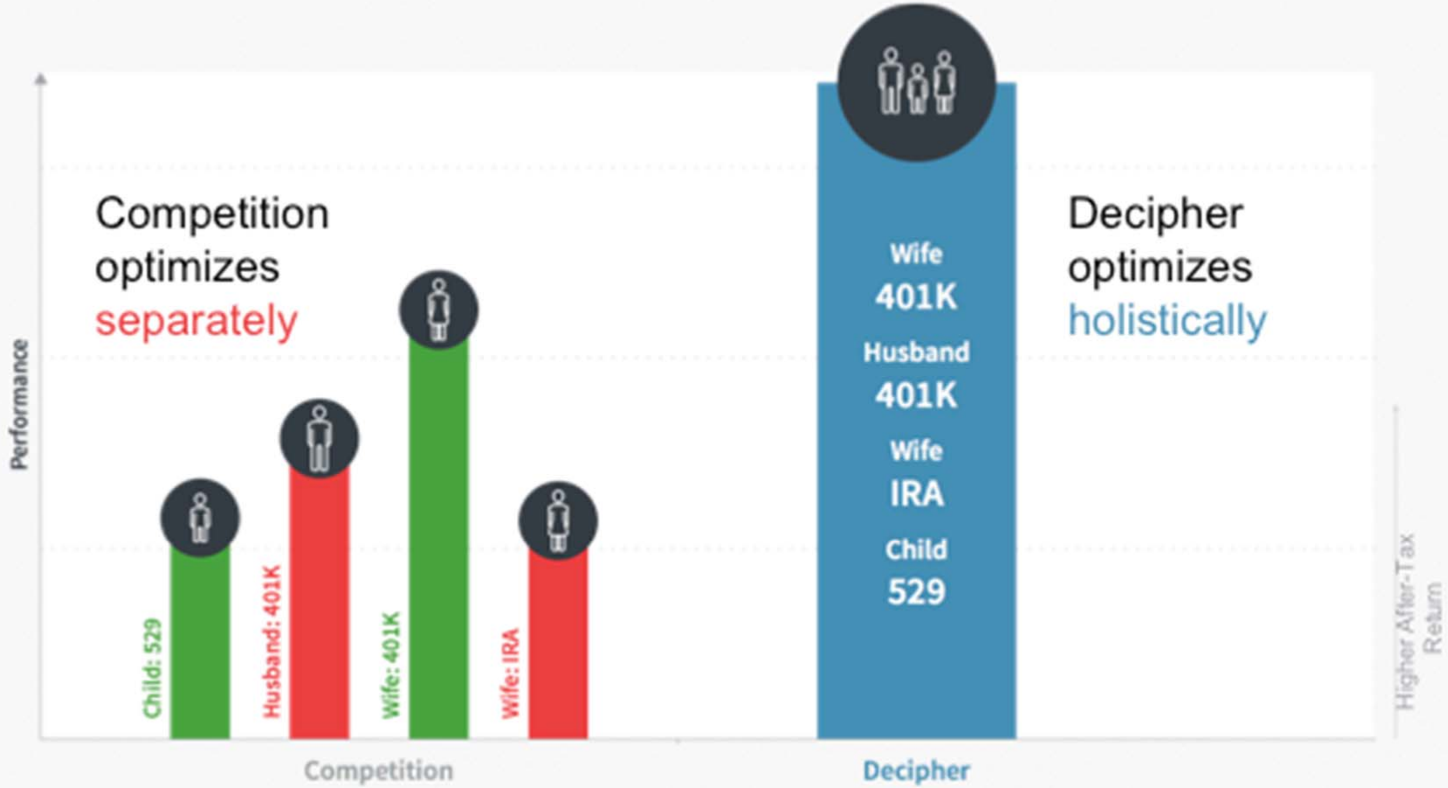
Holistic Advice Means More After-Tax Dollars



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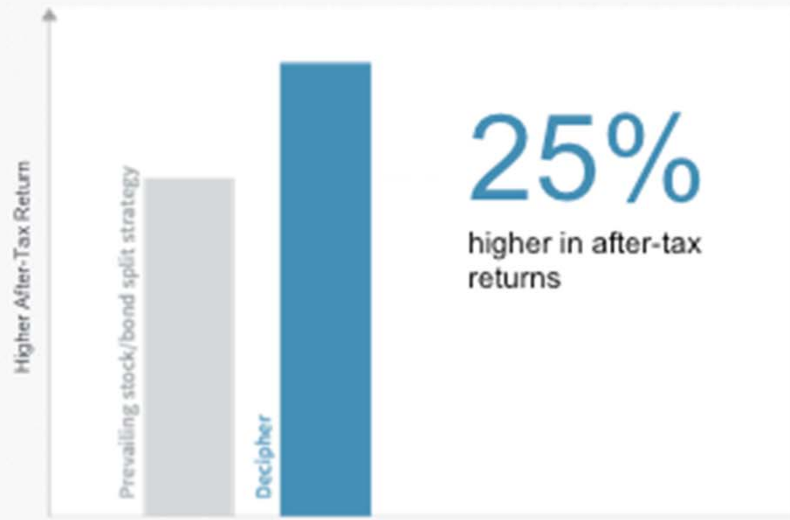
Potential



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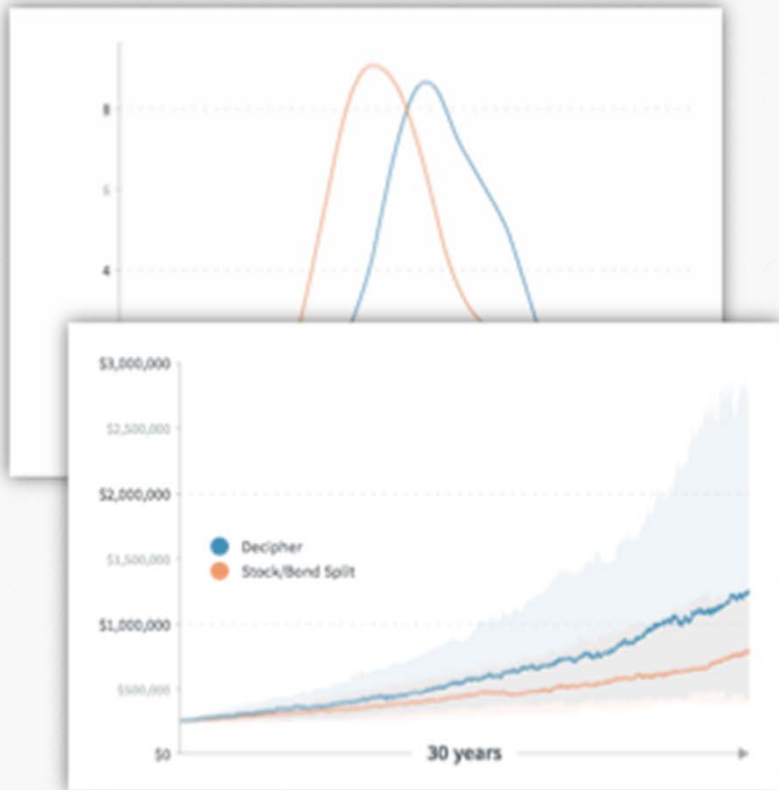
Pioneering



The system now sets up the objective function for the optimization as in equation (1) by replacing $\hat{\mu}$ and $\hat{\Sigma}$ with $\hat{\mu}^{(A)}$ and $\hat{\Sigma}^{(A)}$ respectively with $K^{(A)} = K \cdot n$ rows and $\mathbf{x}^{(a)}$ is the vector of positions in account a.

$$\max_{x} E(U) = \hat{\mu}^{(A)}\mathbf{x} - \kappa\mathbf{x}^T\hat{\Sigma}^{(A)}\mathbf{x} \quad (4)$$

subject to:

1. $\mathbf{x} \geq \mathbf{0}$
2. $\mathbf{1}^T\mathbf{x} = d$
3. $\mathbf{1}^T\mathbf{x}^{(a)} = d_a, \forall a \in A$ where d_a is the dollar amount of all securities and cash in account a
4. $(\mathbf{r}^{(a)})^T\mathbf{x}^{(a)} = 0, \forall a \in A$ where $r_{aj} = 1$ if security $s_j \notin S_a$ and 0 otherwise
5. $\mathbf{Fx} = \mathbf{f}$ where each entry $F_{i,j} = 1$ if $s_j \in S_F$ and $i = j$ and $\mathbf{f}$ is the vector of fixed positions
6. $\mathbf{Gx} \leq \mathbf{h}$ where $G_{i,j} = 1$ if $f(s_j) = \theta_i$ for $i = 1, 2, ..., n$ and $h_i = B_U(\theta_i)$ where there are n factors and $B_U(\theta)$ is the upper dollar bound on factor θ
7. $\mathbf{Gx} \leq \mathbf{h}$ where $G_{i,j} = -1$ if $f(s_j) = \theta_i$ for $i = 1, 2, ..., n$ and $h_i = -B_L(\theta_i)$ where there are n factors and $B_L(\theta)$ is the lower dollar bound on factor θ
8. $\mathbf{Gx} \leq \mathbf{h}$ where $G_{i,j} = 1$ if $i = j$ and $h_i = B_U(s_j, a_{\lceil i/m \rceil})$ where $B_U(s, a)$ is the upper dollar bound on security s in account a and there are m accounts
9. $\mathbf{Gx} \leq \mathbf{h}$ where $G_{i,j} = -1$ if $i = j$ and $h_i = -B_L(s_j, a_{\lceil i/m \rceil})$ where $B_L(s, a)$ is the lower dollar bound on security s in account a and there are m accounts
10. $\mathbf{y}^{(a)} \geq \mathbf{0}, a \in A$
11. $\nu^{(a)} - \frac{\mathbf{1}^T\mathbf{y}^{(a)}}{N_T} \geq \delta^{(a)}, a \in A$

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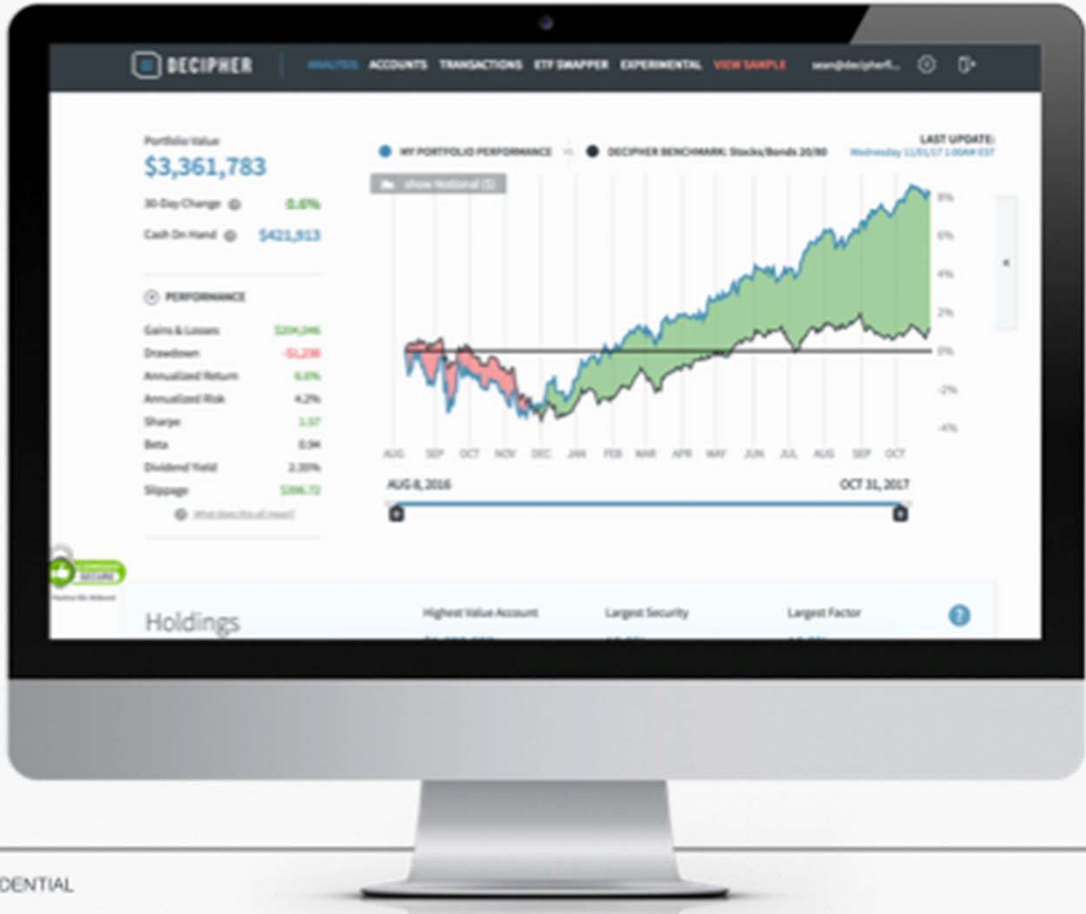
Practical



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Plan

- Expert Analysis
- Market Data
- Investor Behaviour
- Actuarial Data
- Interest Rates
- Investor Profile

Truly Automated Holistic Financial Management

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Summation

Hyper-Personalization

Higher Returns

Reduced Tail Risk

Reduced Taxes

Happy Customers

Higher Revenue