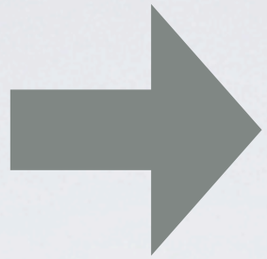
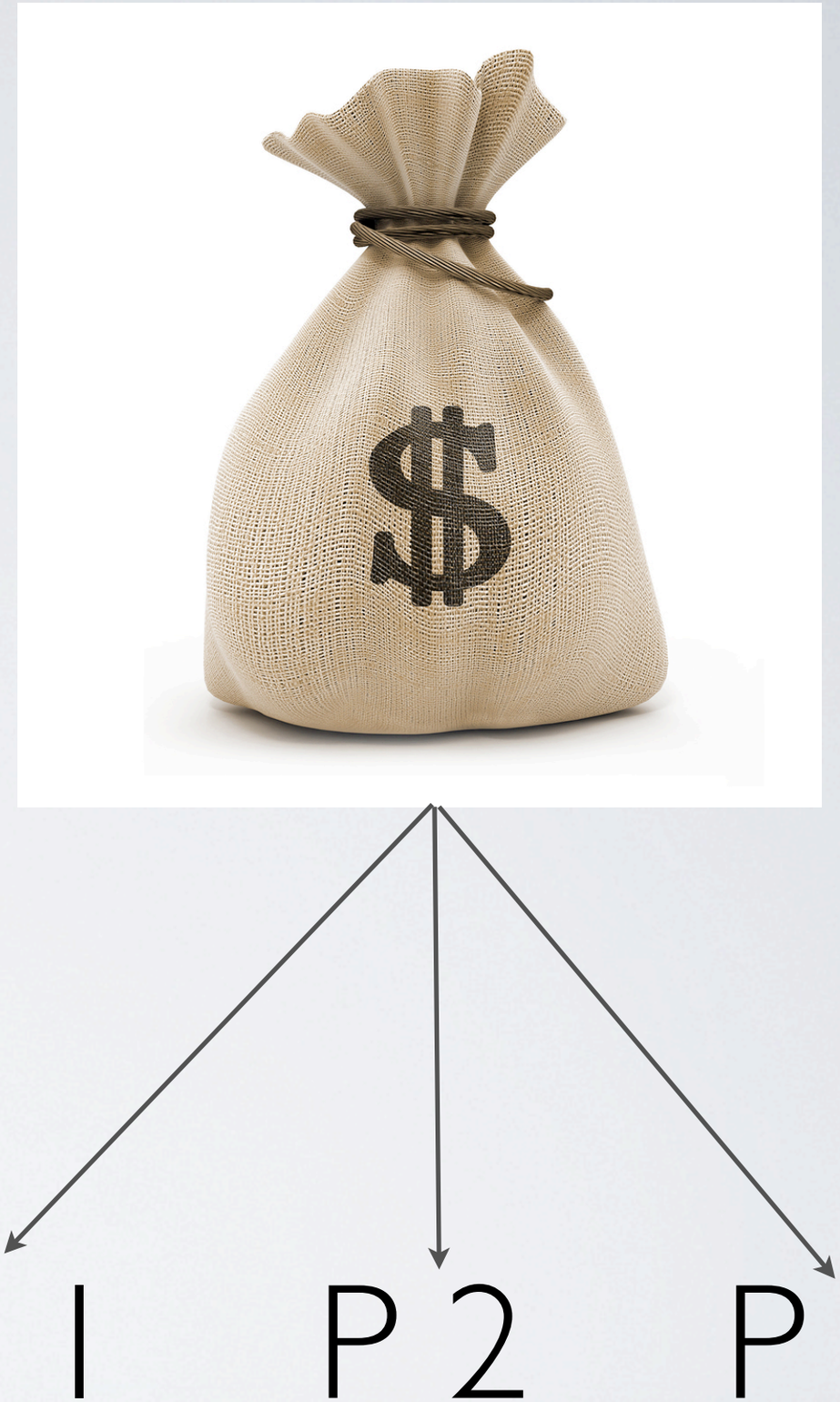
THICK TAILS, THIN TAILS, OR DEPENDENCE?

Ruud H. Koning, Dept. Economics, Econometrics & Finance, Faculty of Economics and Business, University of Groningen, The Netherlands, r.h.koning@rug.nl

BANK





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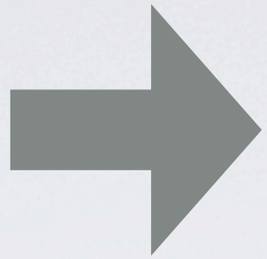

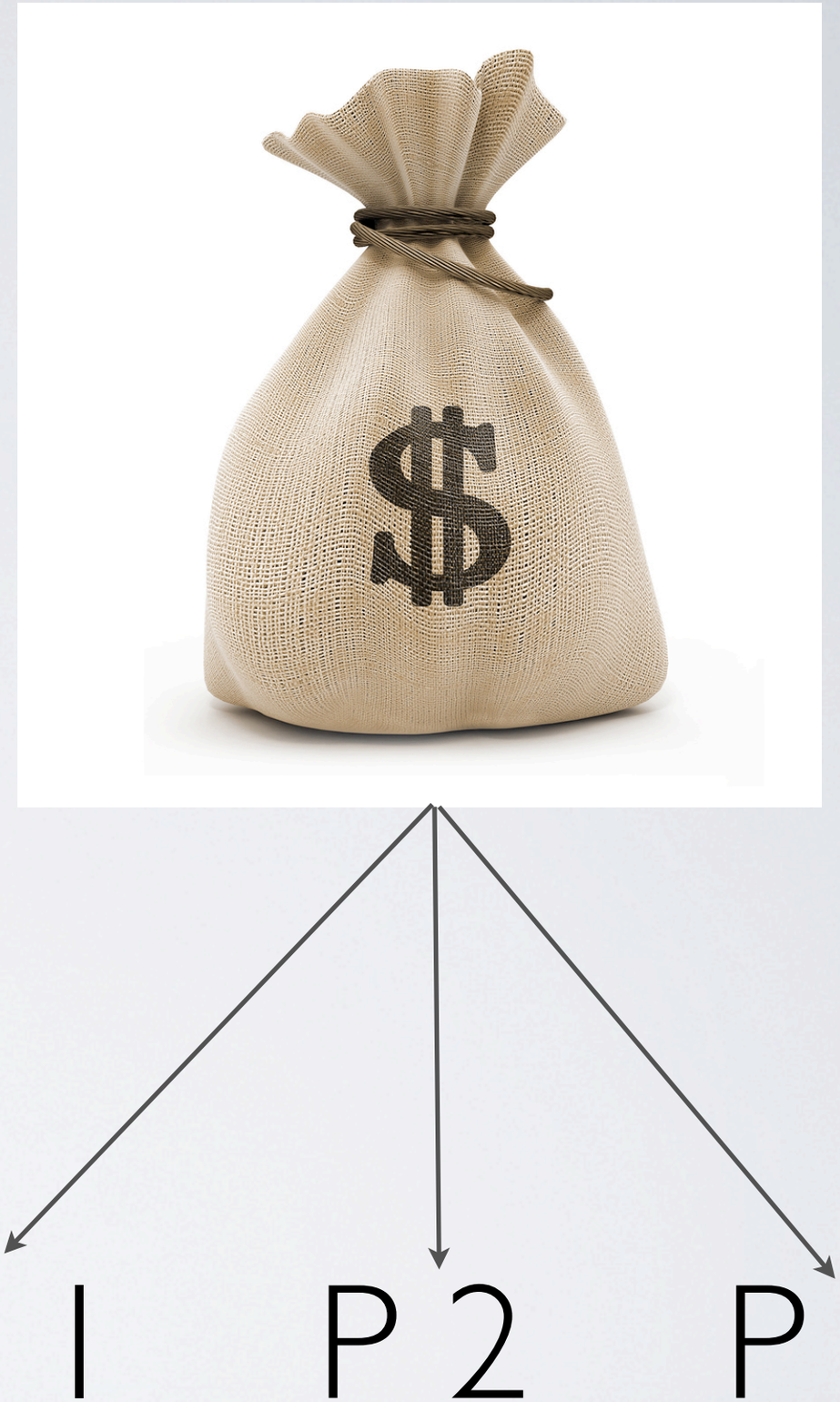

one year 0.9991 VaR

P 1 P 2 P 3

ABN·AMRO

SNS Regio Bank
ZELFSTANDIG
INTERMEDIAIR

Rabobank

icesave
DE MEEST TRANSPARANTE SPAARBANK OOIT

RBS
The Royal Bank of Scotland

FORTIS

BINCKBANK
VOOR BELEGGERS

Van Lanschot Bankiers
1737

2007

LEHMAN BROTHERS

DSB BANK

ABN·AMRO

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FORTIS

BINCKBANK
VOOR BELEGGERS

Van Lanschot Bankiers 1737

2010

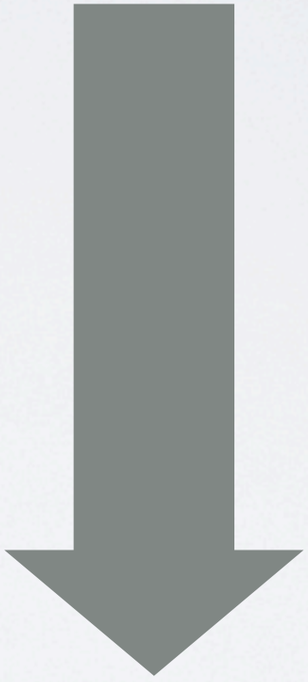
LEHMAN BROTHERS

SETUP

Portfolio of three holdings, no trading

normality

t distribution



symmetry, thin tails

gen. hypergeometric dist.

asymmetry, fat tails

MODEL

value at 0 p_0

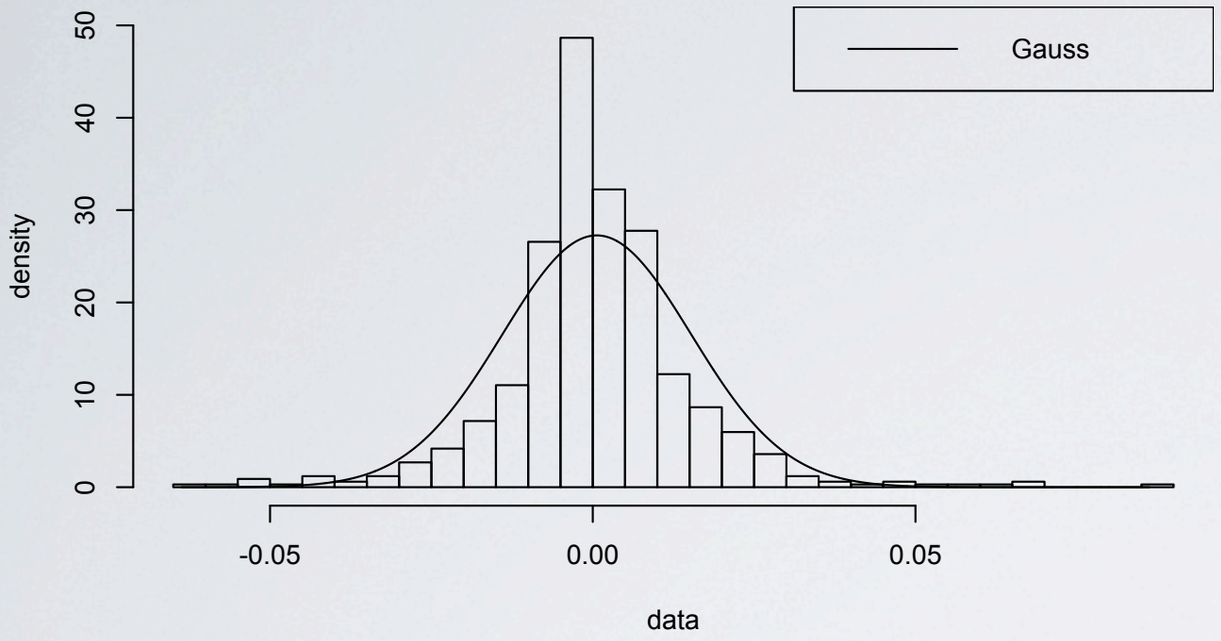
value at T $p_{i,t} = p_{i,0}((1 + r_{i,1}) \cdots (1 + r_{i,T}))$

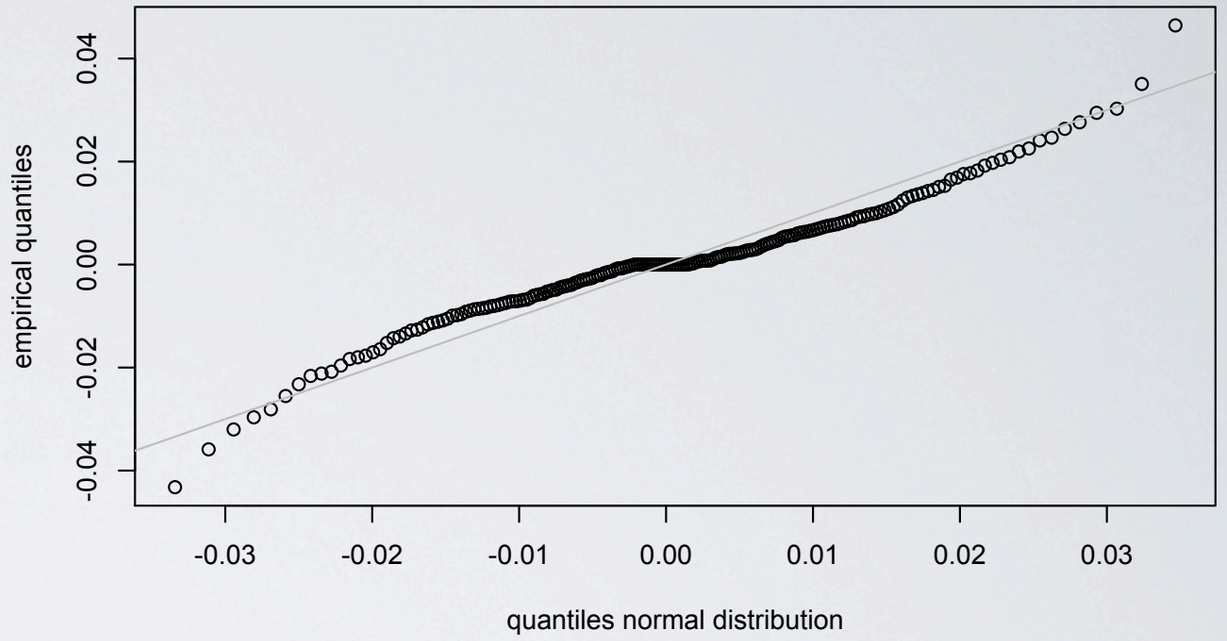
additional flexibility $p_{i,T} = 0 \quad \text{if} \quad p_{i,\tau} \leq p_i^*$

(nationalisation, bankruptcy)

MODEL SELECTION

- normal distribution 4832.636
- symmetric t distribution 5237.622
- asymmetric t distribution 5240.157
- generalized hyperbolic distribution 5442.606


Gauss
density
data
0
10
20
30
40
50
-0.05
0.00
0.05


empirical quantiles
quantiles normal distribution
-0.04
-0.02
0.00
0.02
0.04
-0.03
-0.02
-0.01
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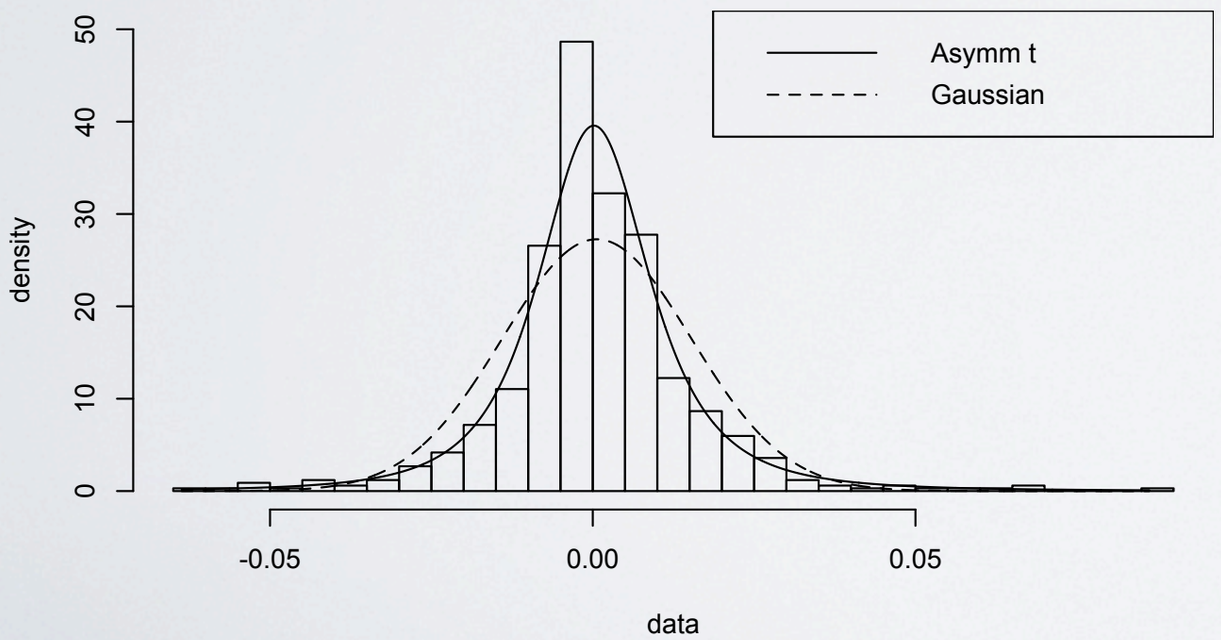
Asymm t
Gaussian
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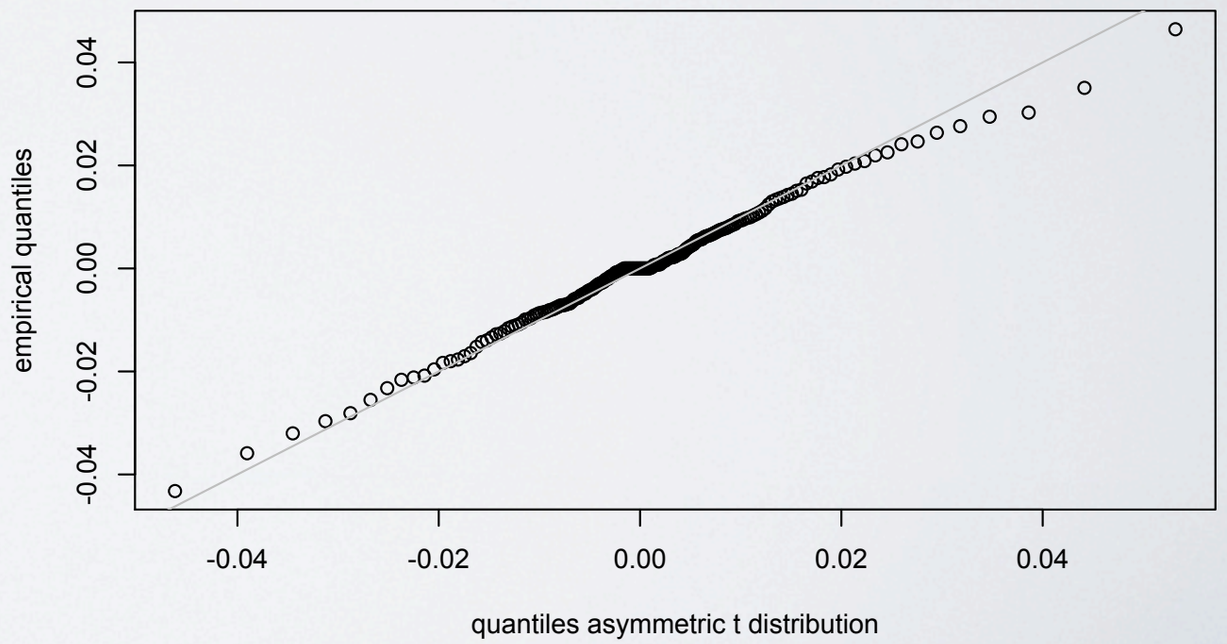
empirical quantiles
quantiles asymmetric t distribution
-0.04
-0.02
0.00
0.02
0.04
-0.04
-0.02
0.00
0.02
0.04

	0.95	0.99	0.995	0.9991
$\hat{\mu} = 0$ (gaussian)	116.4	154.8	167.6	192.6
$\hat{\mu} = 0$ $(\text{asymmetric}\, t)$	150.8	190.5	203.3	228.9
$\hat{\mu} = 0, p^*$ (gaussian)	122.5	164.5	181.2	377.8
$\hat{\mu} = 0, p^*$ $(\text{asymmetric}\, t)$	162.3	360.3	382.6	386.1

CONCLUSIONS

- Technical: `ghyp` objects offer simple flexibility
- Graphs carry the message, EC to be increased by 20%
- Risk of nationalisation nonnegligible
- Strategic holdings reduced