Genetic Evaluation of Calving Traits in Denmark, Finland, and Sweden

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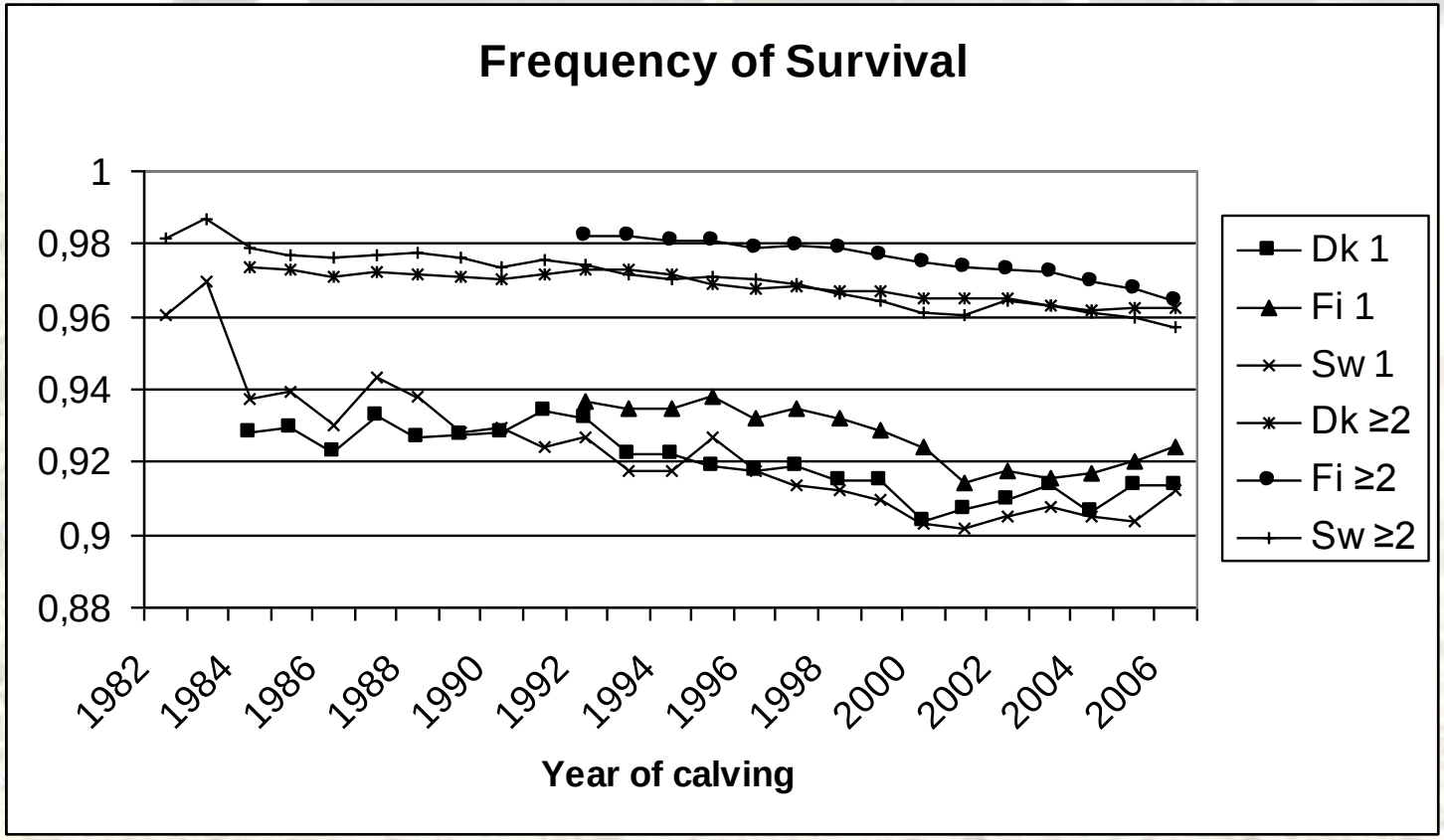
Introduction

- NAV: joined breeding value estimation across Denmark, Finland, and Sweden
- New group of traits: calving performance
- Two groups: Holstein and Red Dairy Group
- Procedures and results for Holstein will be presented here

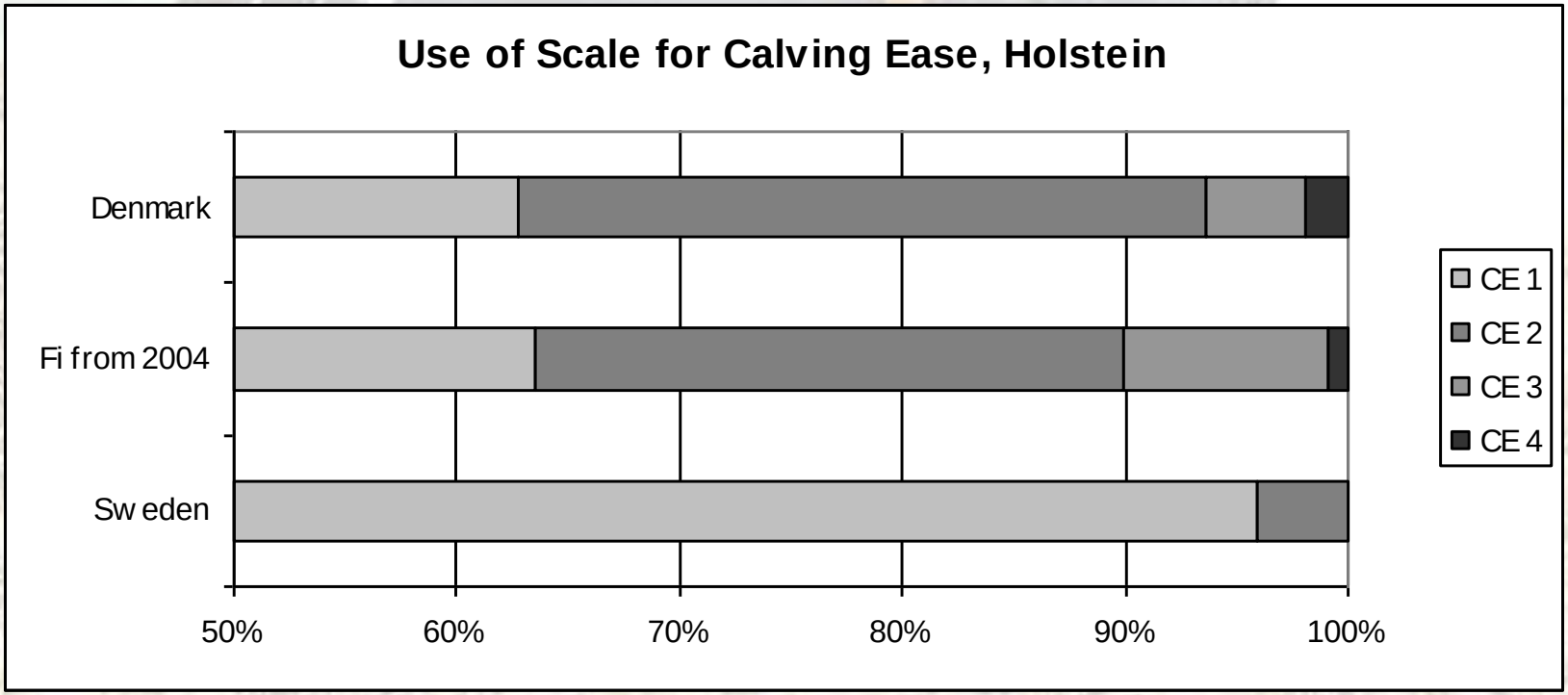
Calving Traits

	Denmark	Finland	Sweden
For all traits	1st and later calvings Direct and maternal effect		
Survival	Since 1985 cat. 0 – 1	Since 1992 cat. 0 – 1	Since 1982 cat. 0 – 1
Calving Ease	Since 1985 cat. 1 – 4	Since 2004 cat. 1 – 4	Since 1982 cat. 1 – 2
Size of Calf	Since 1985 cat. 1 - 4	none	none

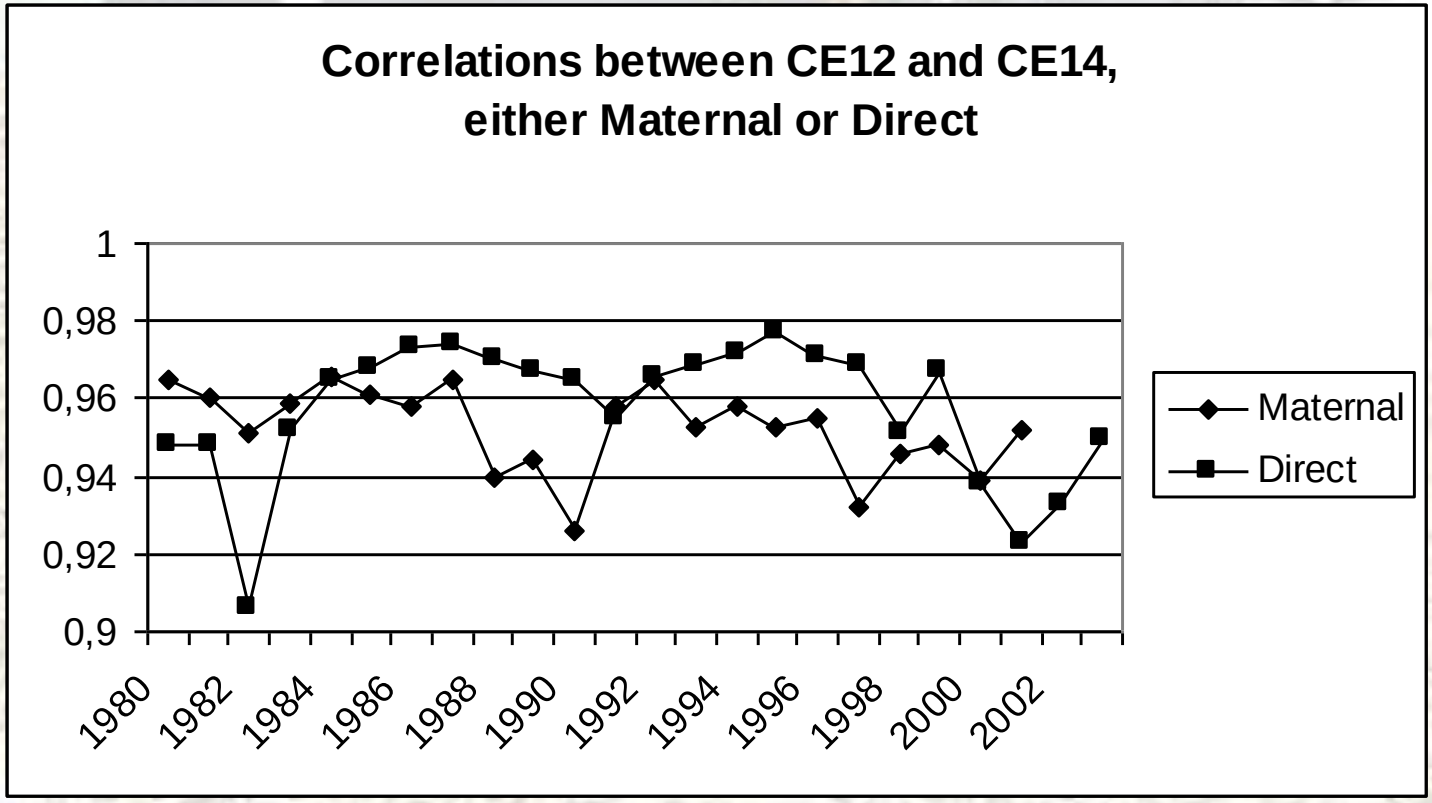
Survival


Frequency of Survival
1
0,98
0,96
0,94
0,92
0,9
0,88
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Year of calving
Dk 1
Fi 1
Sw 1
Dk ≥2
Fi ≥2
Sw ≥2

Calving Ease



Calving Ease: 2 Scales



The Statistical Model

Y =	
Age at calving*country	fixed
Year of calving*month of calving*country	fixed
Sex of calf*year of calving* country	fixed
Herd*5year*country	fixed
Breed and heterosis	regression
Year within 5year-herd-country	random
Sire	random
Maternal Grandsire	random
Residual	random

Genetic Parameters: Heritabilities

	Direct	Maternal
Survival 1	0.04	0.035
Calving Ease 1	0.08	0.06
Size of Calf 1	0.20	0.04
Survival ≥ 2	0.01	0.01
Calving Ease ≥ 2	0.05	0.03
Size of Calf ≥ 2	0.18	0.04

Breeding Values for Birth and Calving Traits

- **Birth Traits:**

  direct breeding value = 2 x effect as sire of the calf
  + direct breed effects

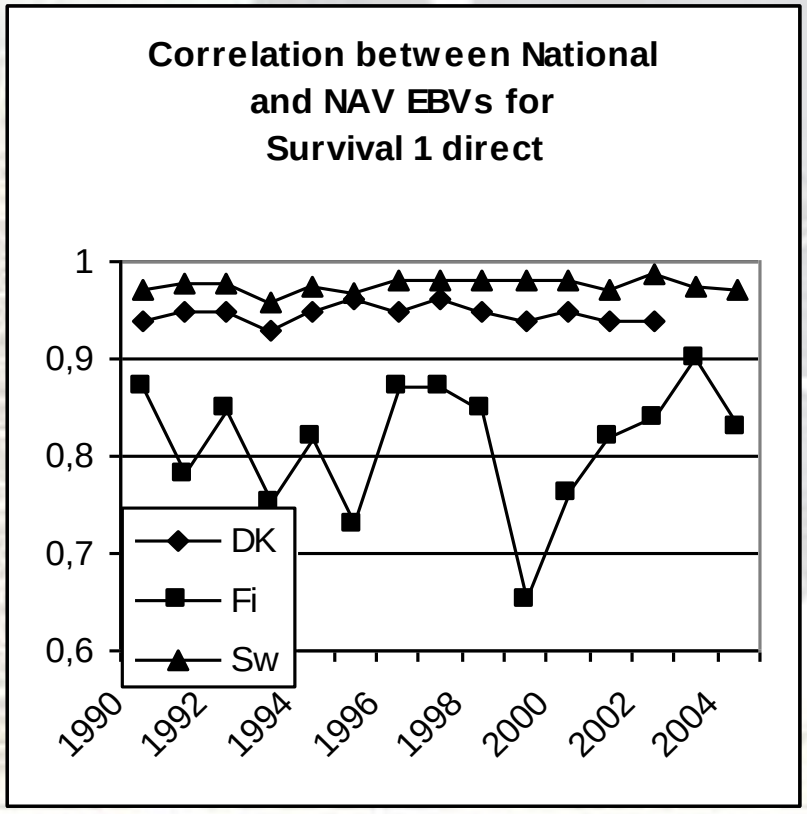
- **Calving Traits (DK + Fi):**

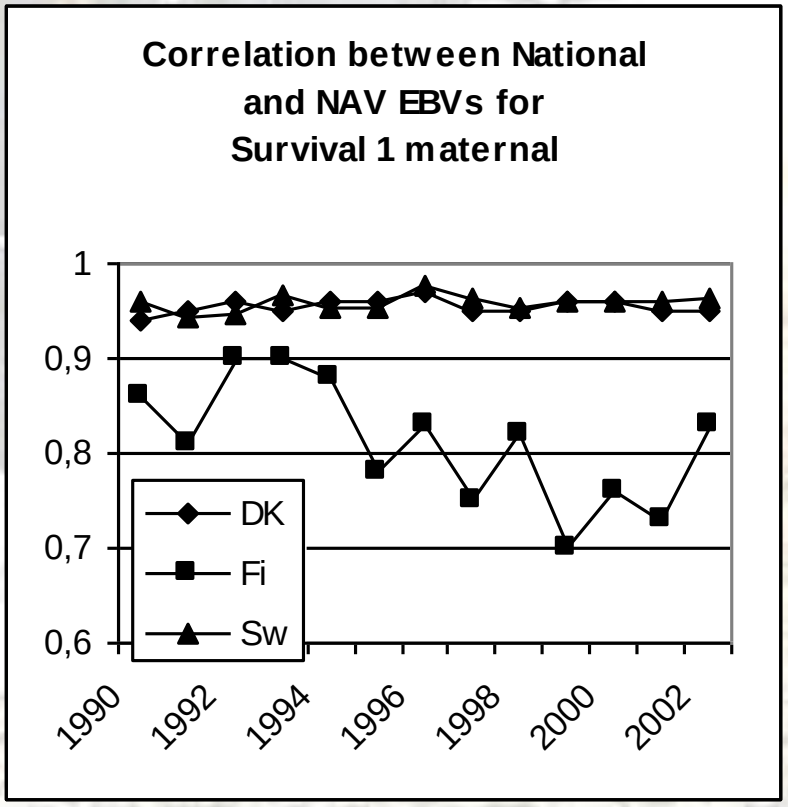
  maternal breeding value = 2 x effect as MGS
  + maternal breed effects
  – 0.5 x direct breeding value

- **Calving Traits (Sw):**

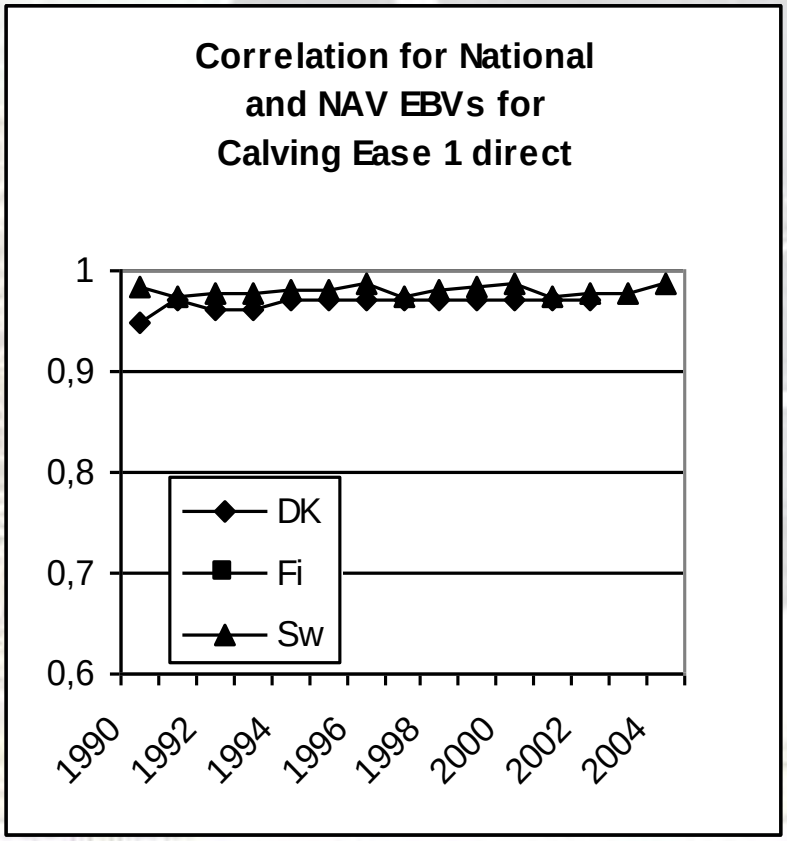
  MGS Breeding Value = 2 x effect as MGS
  + maternal breed effects

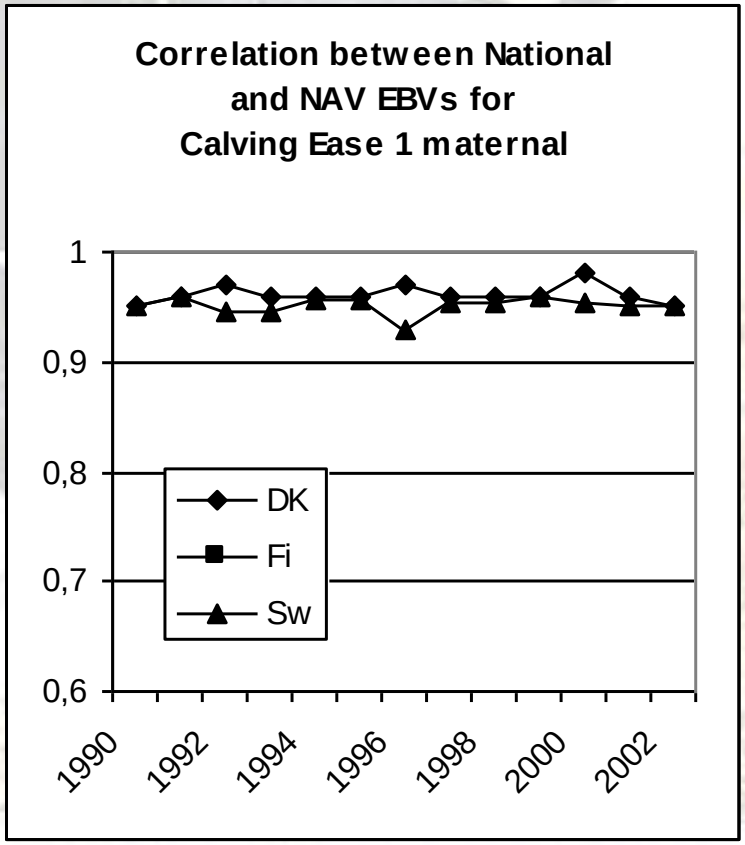
Results: Survival 1



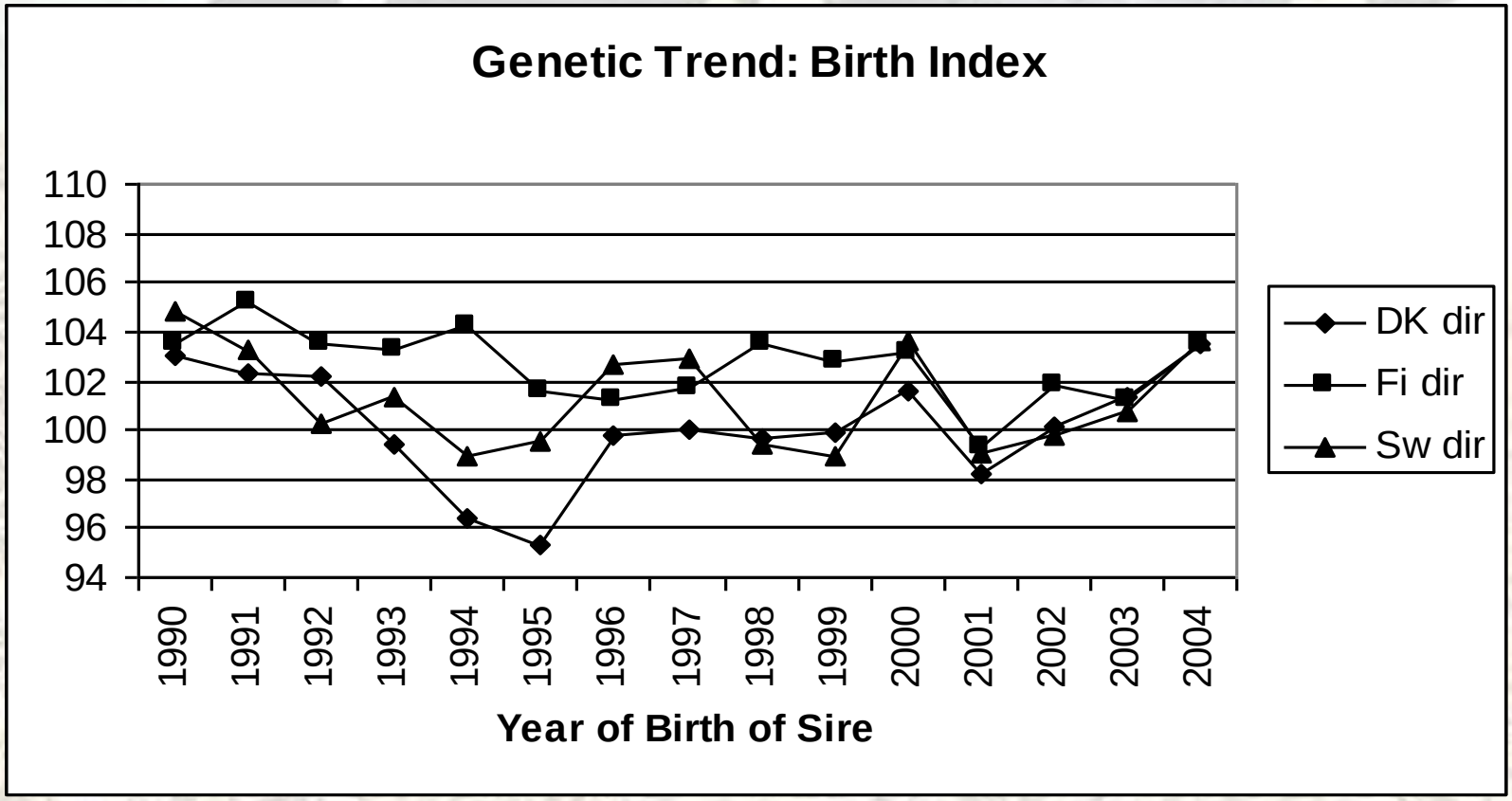


Results: Calving Ease 1

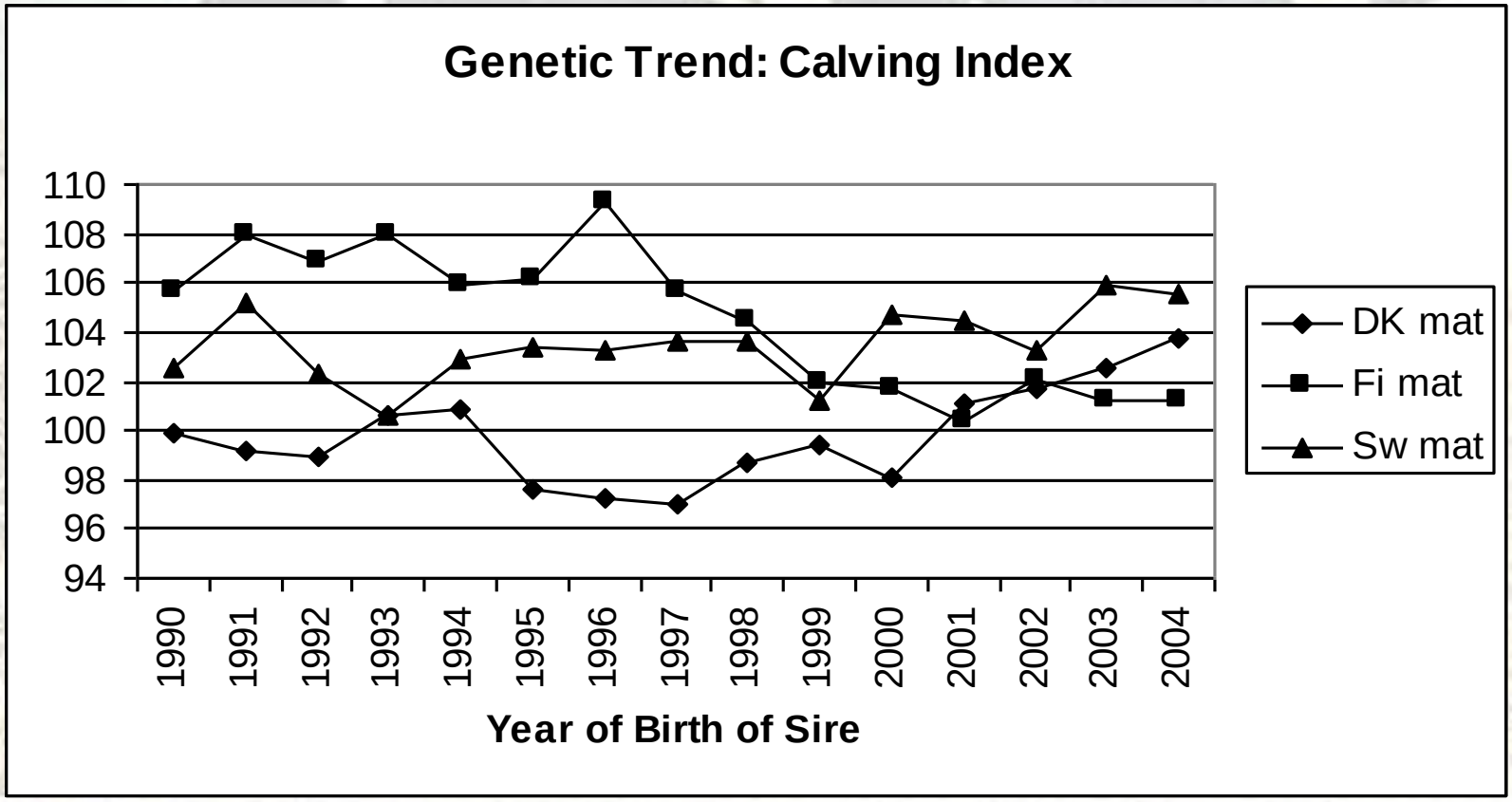




Results: Birth Index



Results: Calving Index



Changes to National Systems (1)

	Denmark	Finland	Sweden
Data basis		x	x
Multi-trait (1. + later calvings)		x	x
Multi-trait (SU, CE, (Size))			x
Effects in model	x	x	x

Changes to National Systems (2)

	Denmark	Finland	Sweden
Breed proport. + het.		x	x
h^2 + correlations	x	x	x
Mat – MGS effect			x
Base: national - NAV	x	x	x

Outlook

- Interbull testrun in March 2007
- Still national breeding value estimation
- Model for Holstein ready for implementation
- Work still under progress for Red Dairy Cattle