The subjective costs of young children:
A European comparison

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AGE WELL ACCOUNTS

Aim:

Developing measures of child-related costs based on parents' self-reported ability to make ends meet

+ Analysing the impact of children on parents' subjective economic wellbeing
+ Disentangling subjective direct and indirect costs of children
+ Evaluating how governments and households perform in compensating these costs
- Subjective measures are likely influenced by non-economic factors such as expectations and happiness

Why is this relevant?

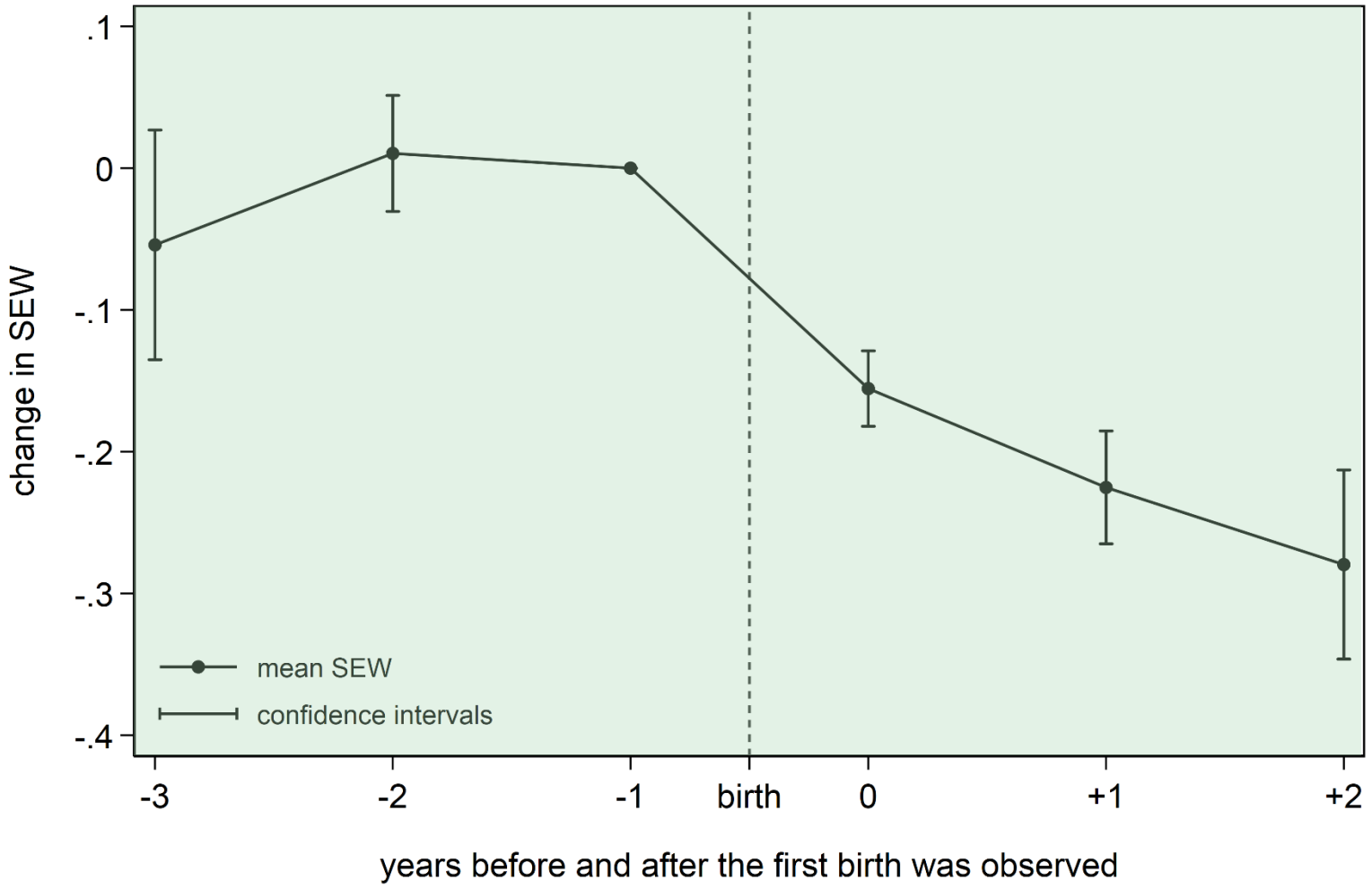
- The costs of raising children impact fertility and labour supply decisions
- European governments spend more and more to compensate these costs

Subjective economic wellbeing (SEW)

"A household may have different sources of income and more than one household member may contribute to it. Thinking of your household's total income, is your household able to make ends meet, namely, to pay for its usual necessary expenses?"

Very easily [6]
Easily [5]
Fairly easily [4]
With some difficulty [3]
With difficulty [2]
With great difficulty [1]

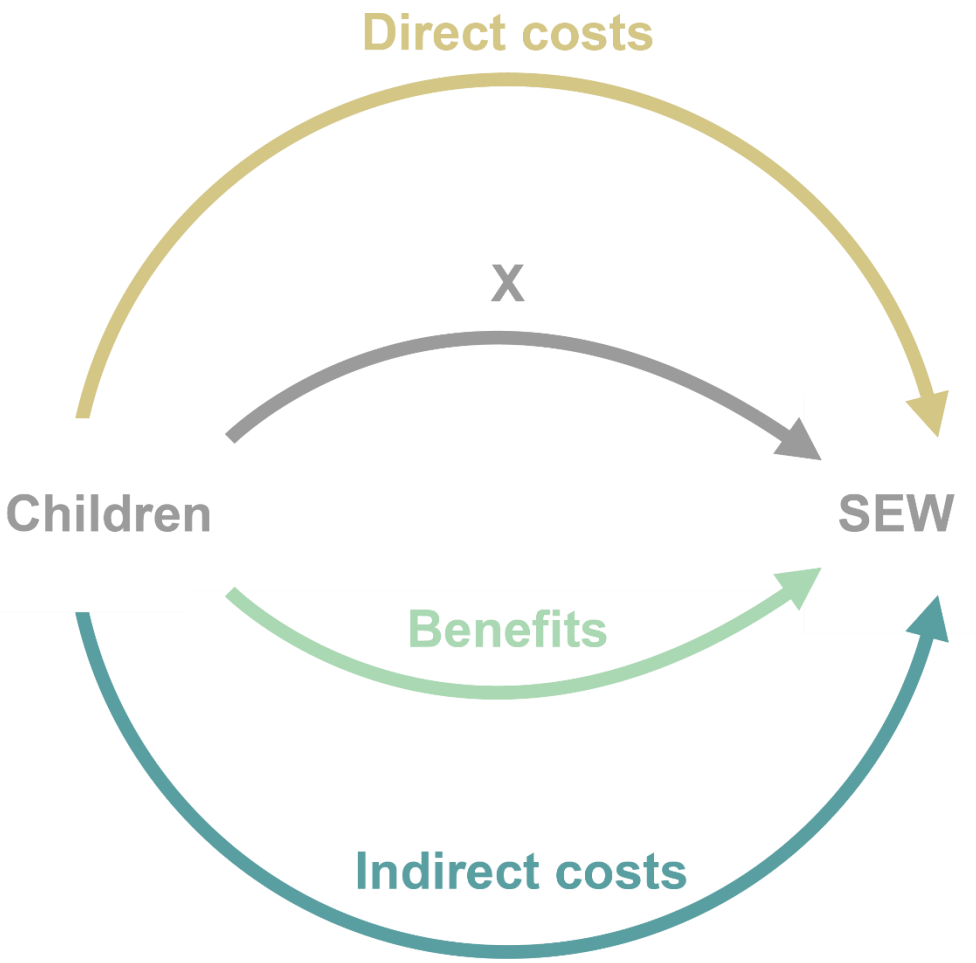
Children are costly….



Source: EU-SILC longitudinal data 2004-2015. This graph is based on the 5,994 couples in the sample that had their first child, but no additional child, during the observed period. In total, they provided 18,328 observations. SEW is set to 0 in the year before the birth was observed, which is why the confidence intervals at time -1 are not visible.

Cost components:

Total net cost = direct costs + indirect costs - benefits



Direct costs	Higher expenses for food, diapers, a bigger house, etc.
Indirect costs	Labour income losses (opportunity costs)
Benefits	Birth grants, parental and maternity leave payments, tax deductions, etc.

Research questions:

1. How does childbirth affect parents' SEW shortly after childbirth?
2. How do direct and indirect costs contribute to the change in SEW after childbirth?
3. How do direct and indirect costs of children differ across European regions?
4. Do family-related benefits compensate for the child costs occurring shortly after childbirth?

Data:

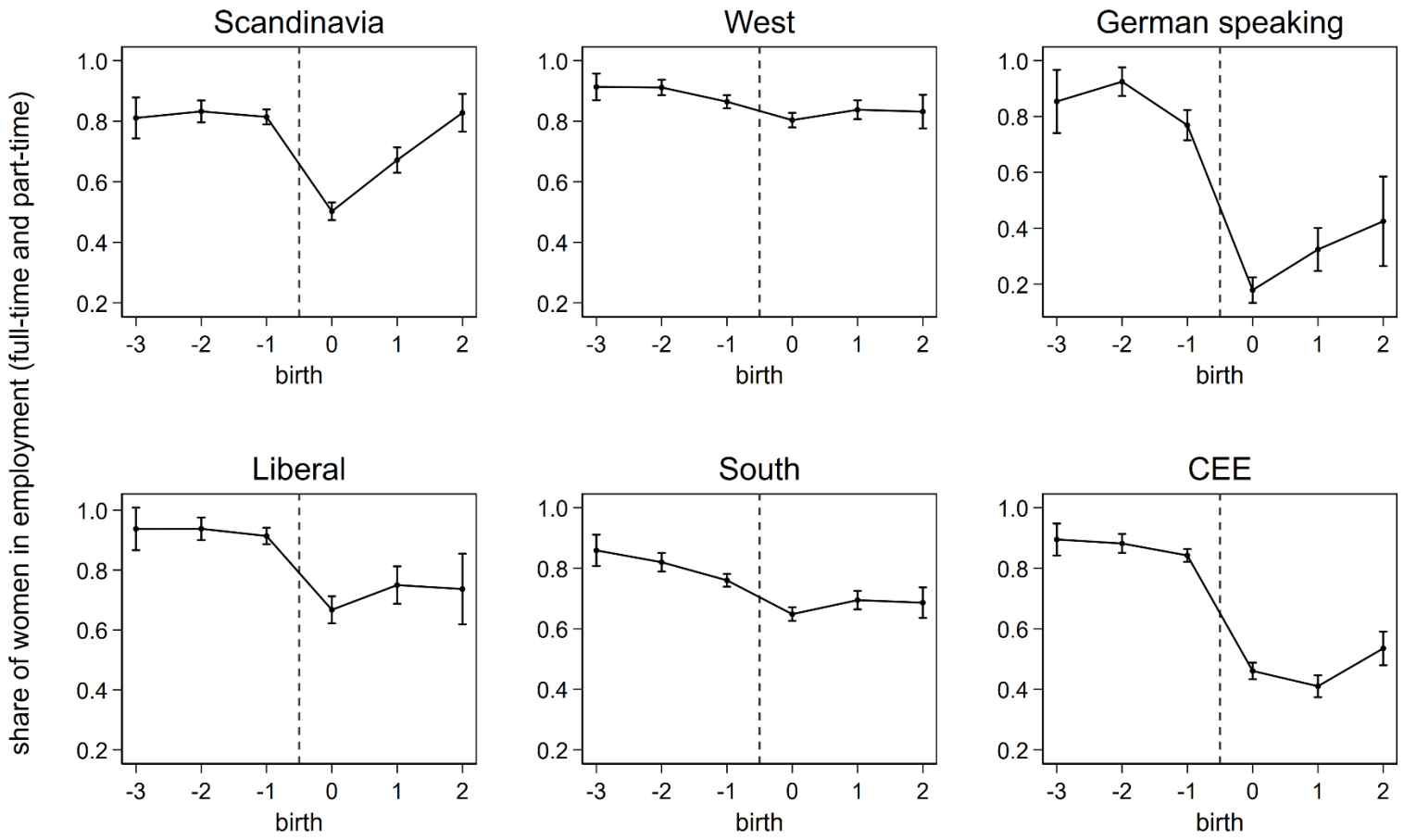
- EU-SILC longitudinal microdata for 30 countries
- Over 280,000 observations from over 120,000 households
- 2004 to 2015
- Couples with and without children
- Only couples living without additional adults
- Women aged 16-40, men aged > 16
- Maximum of four waves per couple

Country groups:

Cost components vary by country due to different foci in family policies, and due to differences in norms, institutions, and macroeconomic conditions

Nordic	Denmark, Finland, Iceland, Norway, Sweden
Western	Belgium, France, Netherlands
German speaking	Austria, Switzerland
Liberal	Ireland, UK
Southern	Cyprus, Greece, Spain, Italy, Malta, Portugal
CEE	Bulgaria, Czech Republic, Estonia, Croatia, Hungary, Lithuania, Latvia, Poland, Romania, Serbia, Slovenia, Slovakia

Example for varying cost components:
Share of women in employment before and after the birth of their first child



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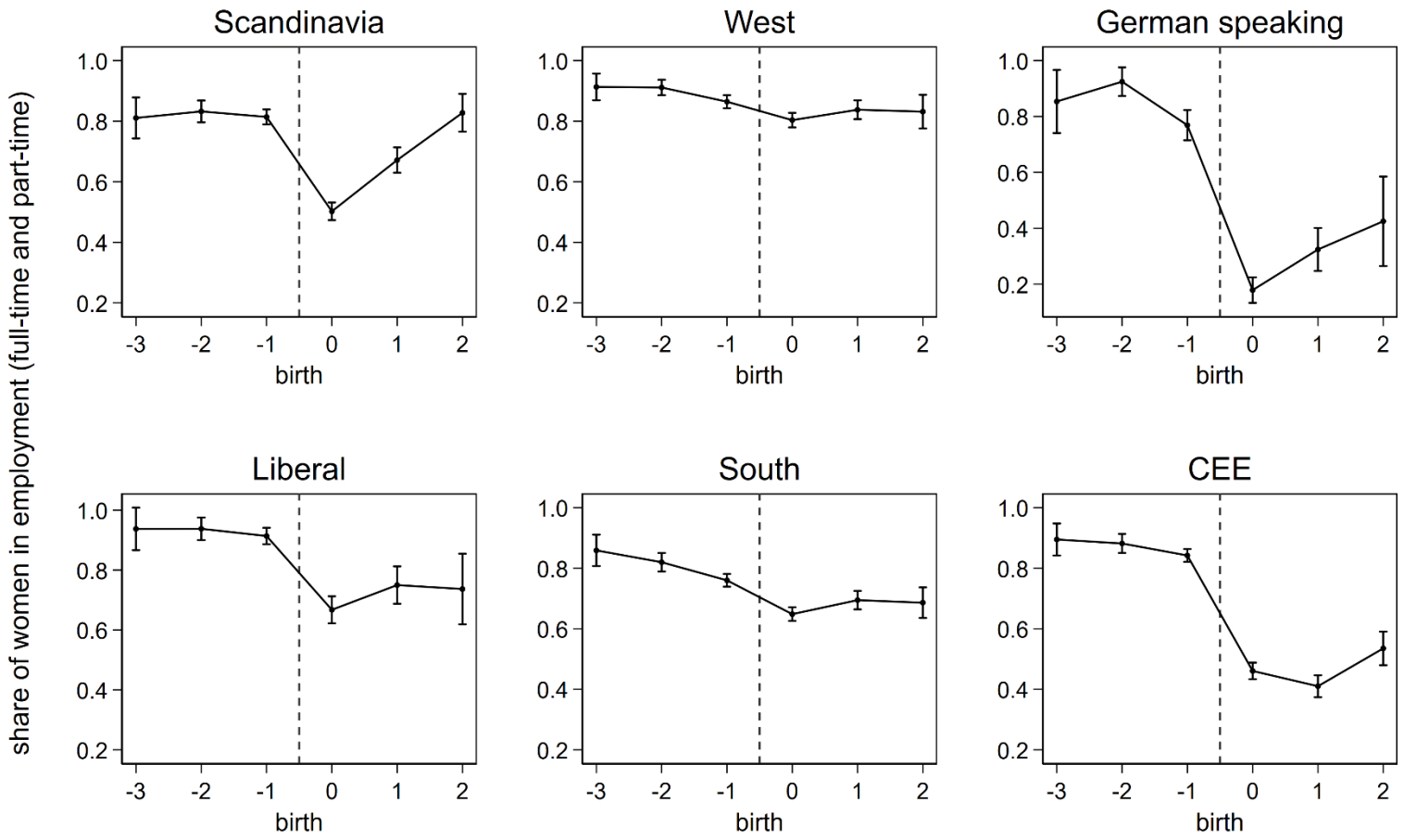
Very selective group: Women between 16 and 40 in stable relationships that will have their first child soon / just had their first child



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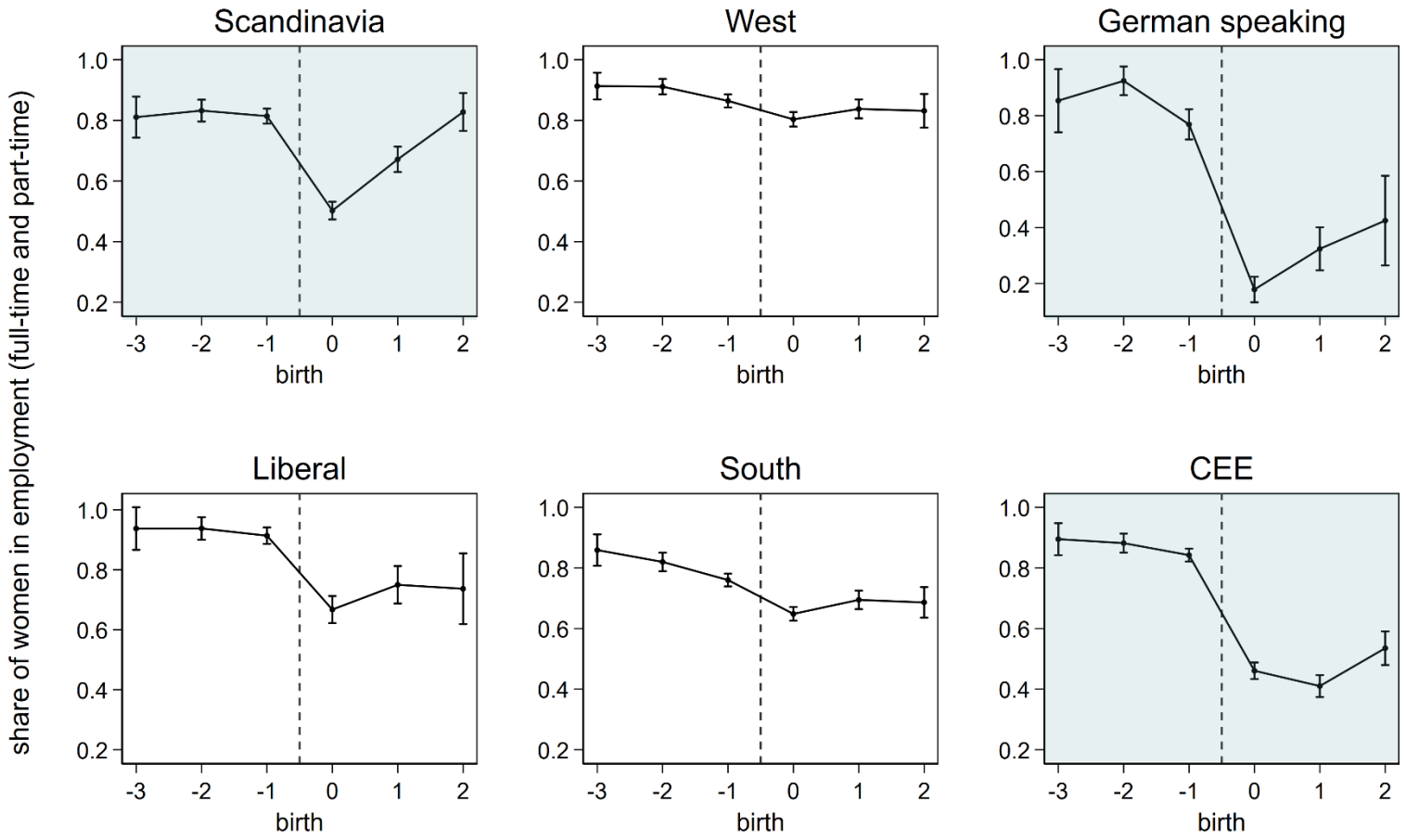

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Average income before and after the birth of the first child

Very selective group: Couples with women between 16 and 40 in stable relationships that will have their first child soon / just had their first child

Time	Household inc.		Labour inc. women		Labour inc. men		Benefits
	Absolute	Relative	Absolute	Relative	Absolute	Relative	Absolute
Scandinavia							
-1	43,413	100.0%	23,827	100.0%	32,874	100.0%	248
1	44,327	102.1%	11,794	49.5%	34,100	103.7%	10,336
West							
-1	41,598	100.0%	24,277	100.0%	32,448	100.0%	146
1	43,256	104.0%	20,893	86.1%	33,659	103.7%	2,330
German							
-1	48,423	100.0%	27,405	100.0%	38,452	100.0%	76
1	45,359	93.7%	8,082	29.5%	41,284	107.4%	8,193
Liberal							
-1	51,161	100.0%	29,665	100.0%	40,356	100.0%	112
1	48,274	94.4%	21,473	72.4%	37,745	93.5%	4,032
South							
-1	36,738	100.0%	17,912	100.0%	26,094	100.0%	229
1	38,459	104.7%	14,629	81.7%	28,272	108.3%	1,699
CEE							
-1	25,992	100.0%	13,815	100.0%	18,765	100.0%	21
1	27,327	105.1%	5,350	38.7%	20,604	109.8%	6,638

Source: EU-SILC longitudinal data 2004-2015. This graph is based on the 5,994 couples in the sample that had their first child, but no additional child, during the observed period. In total, they provided 18,328 observations. The relative changes are normalised and set to 100 percent at the year before the birth was observed. All values are provided per annum and are adjusted for inflation and differences in purchasing power.

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General model

$$SEW_{jt} = \beta_0 + \beta_1 CHILDREN_{jt} + \beta_2 X_{jt} + \beta_3 INCOME_{jt} + \mu_t + \alpha_j + \varepsilon_{jt}$$

$CHILDREN_{jt}$	number of children in household j at time t
X_{jt}	control variables age, age squared, and health
$INCOME_{jt}$	total net household income or labour income of both partners
μ_t	time fixed effect
α_j	time-constant error term (individual fixed effect)
ε_{jt}	error term, varies with household and time

General model

Includes couples with 0, 1, 2, 3, 4+ children

$$SEW_{jt} = \beta_0 + \beta_1 CHILDREN_{jt} + \beta_2 X_{jt} + \beta_3 INCOME_{jt} + \mu_t + \alpha_j + \varepsilon_{jt}$$

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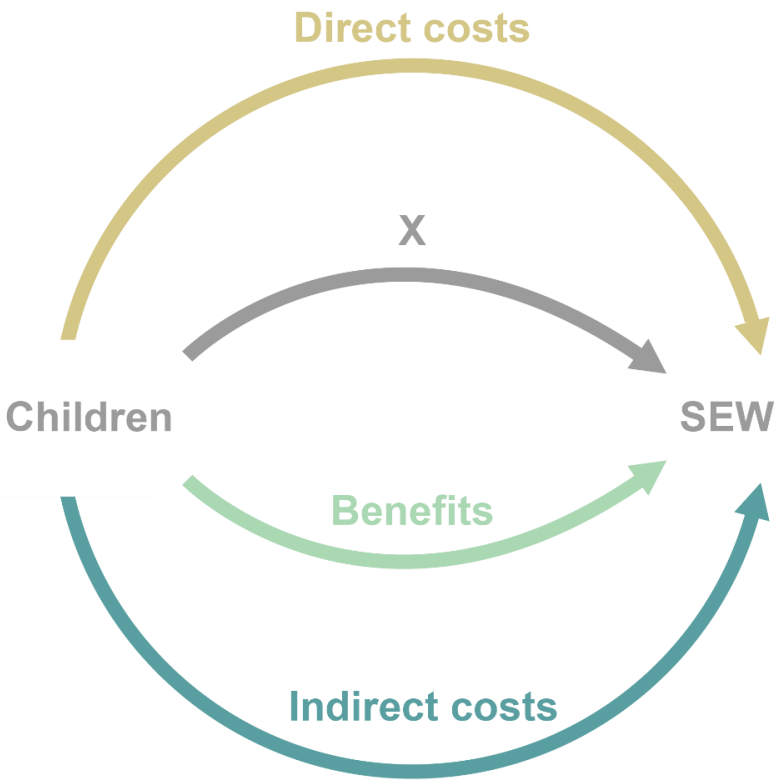
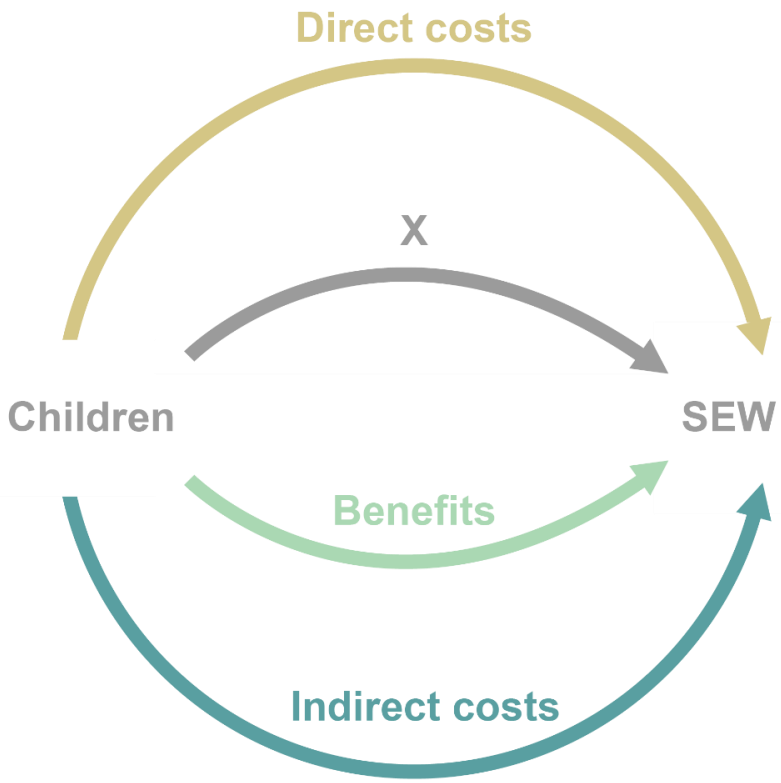
Disentangling direct and indirect costs

T = d + i – b



Disentangling direct and indirect costs

Model 1: Total net cost



Model 1

Total cost

$T = d + i - b$

$ß_{1.1} = d + i - b$

Disentangling direct and indirect costs

Model 1: Total net cost

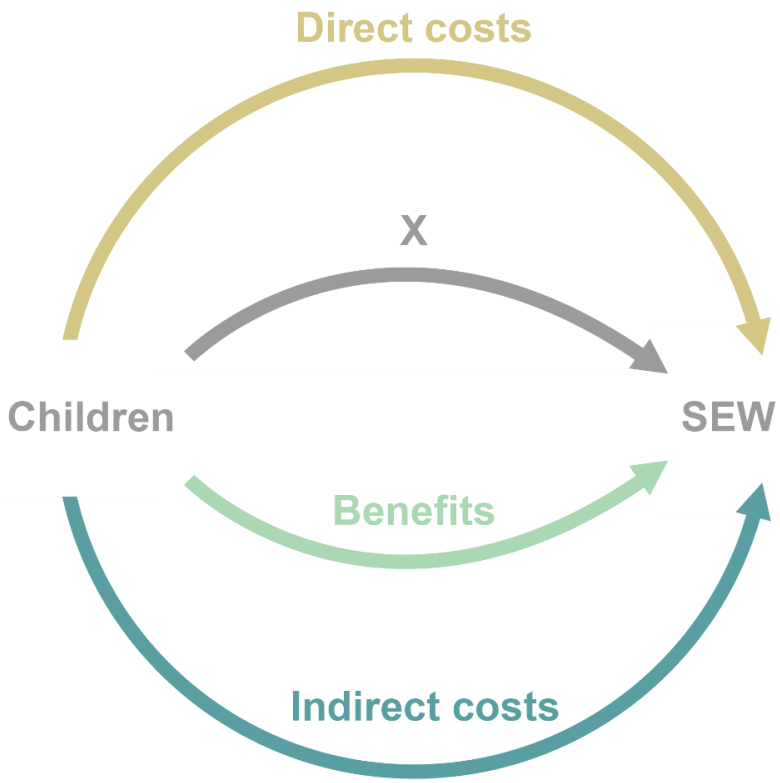
$$SEW_{jt} = \beta_0 + \beta_{1.1} CHILDREN_{jt} + \beta_2 X_{jt} + \mu_t + \alpha_j + \varepsilon_{jt}$$

Total net cost = direct costs + indirect costs – benefits

$\beta_{1.1}$ = direct costs + indirect costs – benefits

Disentangling direct and indirect costs

Model 2: Direct costs



Model 1
Total cost

$T = d + i - b$

$ß_{1.1} = d + i - b$

Model 2
Direct costs

$ß_{1.2} = d$

Disentangling direct and indirect costs

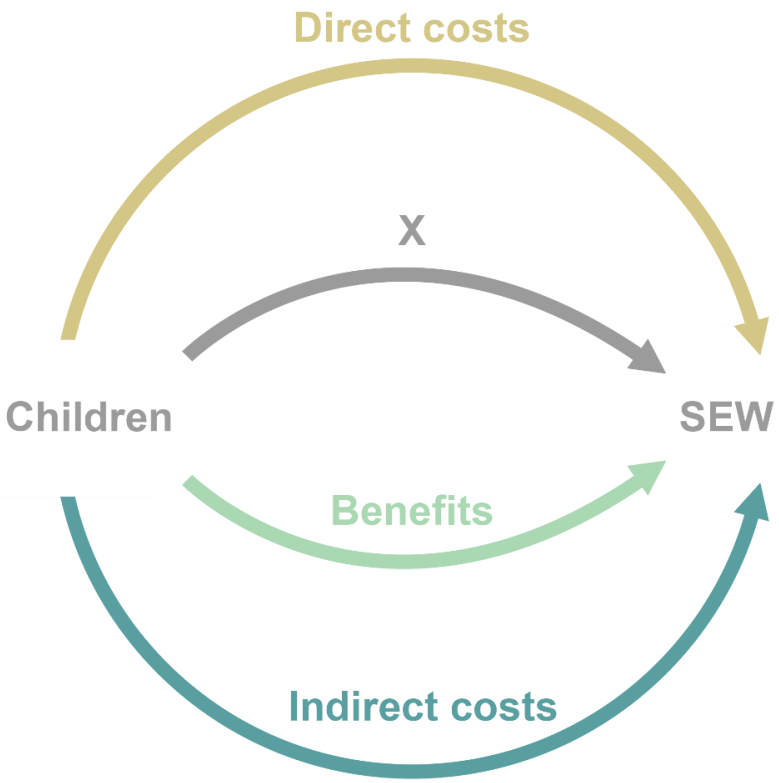
Model 2: Direct costs

$$SEW_{jt} = \beta_0 + \beta_{1.2}\, CHILDREN_{jt} + \beta_2\, X_{jt} + \beta_3\, HOUSEHOLD\ INCOME_{jt} + \mu_t + \alpha_j + \varepsilon_{jt}$$

HOUSEHOLD INCOME = LABOUR INCOME + BENEFITS

$\beta_{1.2}$ = direct costs

Disentangling direct and indirect costs
Model 3: Indirect costs via auxiliary



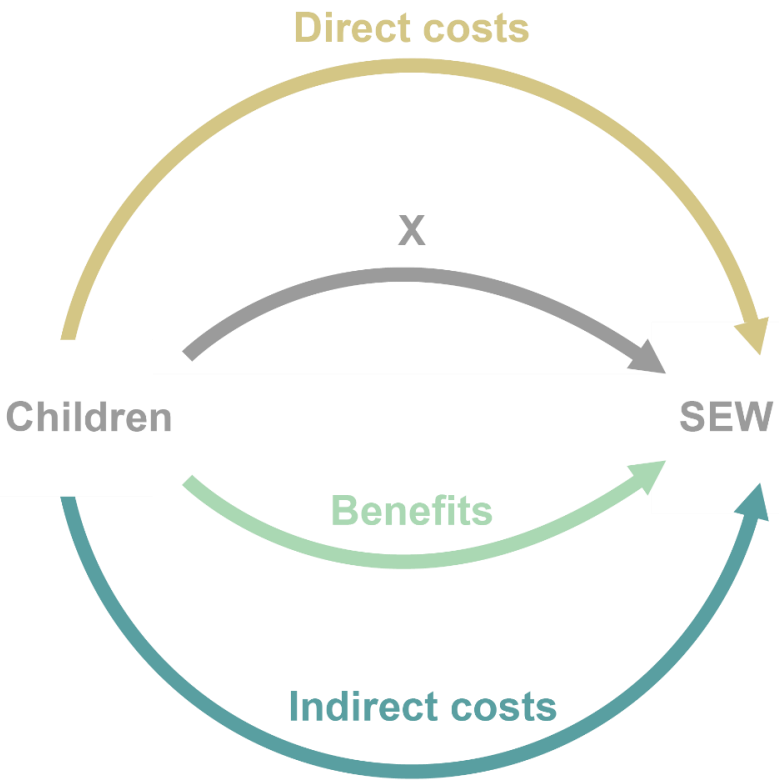
Model 1	Model 2	Model 3
Total cost	**Direct costs**	**Auxiliary**
$T = d + i - b$		
$ß_{1.1} = d + i - b$	$ß_{1.2} = d$	$ß_{1.3} = d - b$

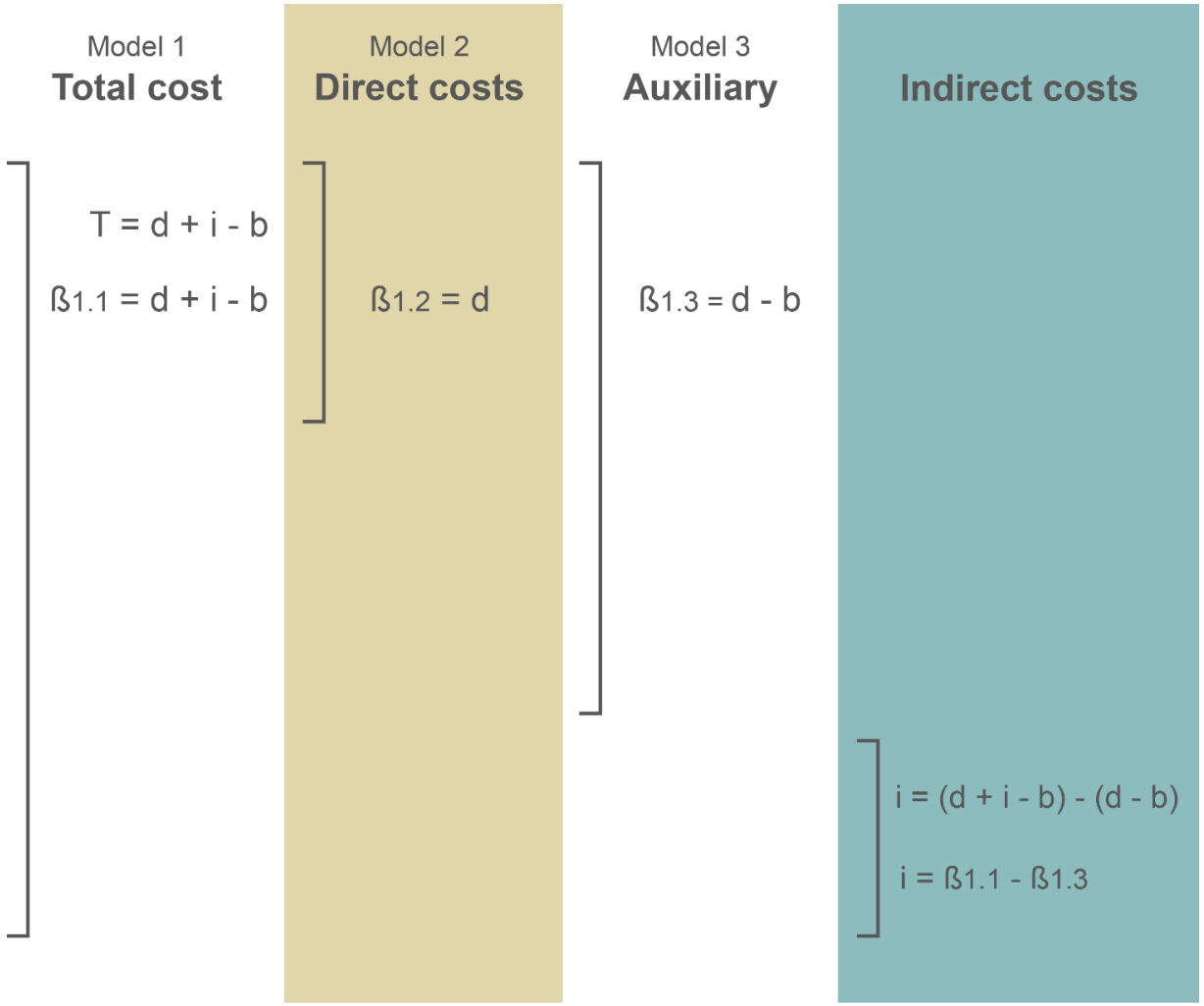
Disentangling direct and indirect costs
Model 3: Indirect costs via auxiliary

$$SEW_{jt} = \beta_0 + \beta_{1.3}\, CHILDREN_{jt} + \beta_2\, X_{jt} + \beta_3\, LABOUR\ INCOME_{jt} + \mu_t + \alpha_j + \varepsilon_{jt}$$

$\beta_{1.3}$ = direct costs - benefits

Disentangling direct and indirect costs
Model 3: Indirect costs via auxiliary





Disentangling direct and indirect costs
Model 3: Indirect costs via auxiliary

Total cost from Model 1: $\beta_{1.1} = d + i - b$

Direct costs from Model 2: $\beta_{1.2} = d$

Auxiliary from Model 3: $\beta_{1.3} = d - b$

Disentangling direct and indirect costs
Model 3: Indirect costs via auxiliary

Total cost from Model 1: $\beta_{1.1} = d + i - b$

Direct costs from Model 2: $\beta_{1.2} = d$

Auxiliary from Model 3: $\beta_{1.3} = d - b$

By rearranging $T = d + i - b$ and inserting the estimation coefficients $\beta_{1.1}$ and $\beta_{1.3}$, we can now calculate the indirect costs of children

$$T = d + i - b$$
$$i = T - (d - b)$$
$$i = \beta_{1.1} - \beta_{1.3}$$

Estimation methods: linear and ordered outcomes

1. **Linear fixed effects model with OLS**

2. **"Blow-up and cluster" (BUC) estimator (Baetschmann et al. 2011)**

   (i) Recode SEW into k-1 different dichotomisations based on k-1 thresholds ("blow up")

   (ii) Apply conditional logit estimation with clustered standard errors

Results

Cost components of first-order children in the first years after their birth

	Model 1	Model 2	Model 3	
	Total net cost	**Direct costs**	**Auxiliary**	**Indirect costs**
	$\beta_{1.1}$	$\beta_{1.2}$	$\beta_{1.3}$	$\beta_{1.1} - \beta_{1.3}$
Nordic	0.261	0.248	0.177	0.084
Western	0.238	0.238	0.235	0.003
German speaking	0.270	0.261	0.237	0.033
Liberal	0.180	0.180	0.179	0.001
Southern	0.092	0.096	0.082	0.010
CEE	0.190	0.188	0.139	0.051

Conclusion

- **The birth of a child reduces parents' SEW**
- **Economies of scales:** first child is costliest

- **Direct costs**
  - ➡ Dominate drop in SEW
  - ➡ Highest in high-income regions

- **Indirect costs**
  - ➡ Vary substantially by region, depending on maternal employment patterns
  - ➡ Mothers' wage losses are compensated for by other income components

Limitations

- Do expectations or general wellbeing change with the birth of a child? How does this influence SEW?
- Long term effects of children on SEW?
  Or adaptation?
- Self-selection into parenthood?

Questions?
Suggestions?

This project has received funding from the Austrian Federal Ministry of Science, Research and Economy (BMWFW) and the French Agence nationale de la recherche (Award no. ANR-16-MYBL-0001-02), in the framework of the Joint Programming Initiative (JPI) "More Years, Better Lives – The Challenges and Opportunities of Demographic Change“.

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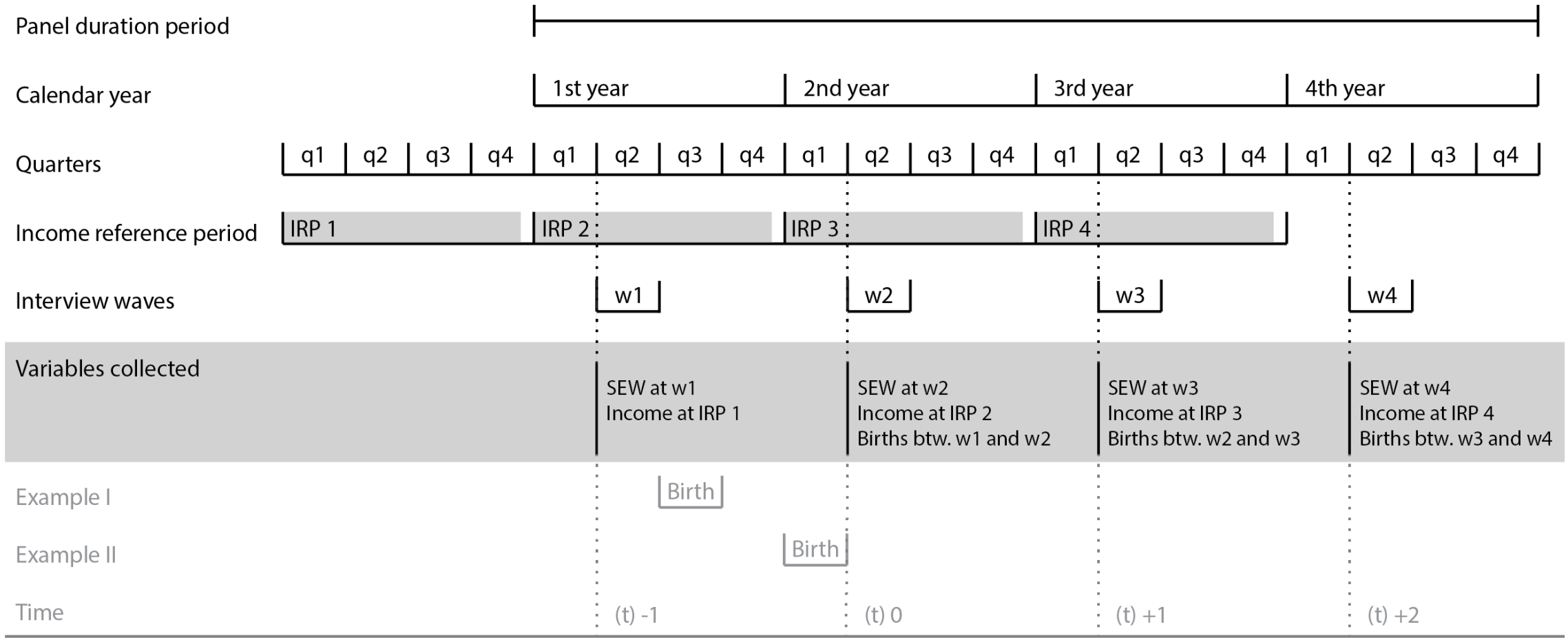
Appendix


Panel duration period
Calendar year
1st year
2nd year
3rd year
4th year
Quarters
q1 q2 q3 q4 q1 q2 q3 q4 q1 q2 q3 q4 q1 q2 q3 q4 q1 q2 q3 q4
Income reference period
IRP 1
IRP 2
IRP 3
IRP 4
Interview waves
w1
w2
w3
w4
Variables collected
SEW at w1
Income at IRP 1
SEW at w2
Income at IRP 2
Births btw. w1 and w2
SEW at w3
Income at IRP 3
Births btw. w2 and w3
SEW at w4
Income at IRP 4
Births btw. w3 and w4
Example I
Birth
Example II
Birth
Time
(t) -1
(t) 0
(t) +1
(t) +2