

Kela|Fpa 

The labour market consequences of thyroid conditions: Evidence from Finnish administrative data

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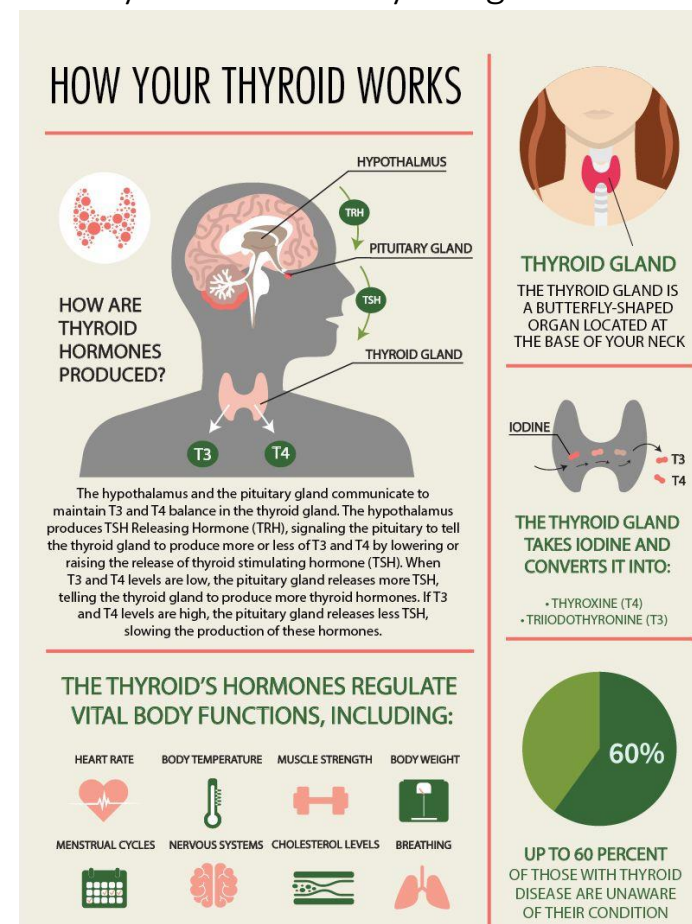
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Key stylised facts on thyroid dysfunctions:

- Thyroid dysfunction is widespread:
 - Thyroid dysfunctions impact the lives of over 200 million people globally (Lancet, 2012)
 - Approximately 6% of the Finnish population receives medication for thyroid diseases, especially **hypothyroidism** (kilpirauhasen vajaatoiminta).

The epidemiology of thyroid disease

Thyroid: “The Body’s Engine”




Source: thyroidwellness.com


Introduction

The epidemiology of thyroid disease


HYPOTHYROIDISM
symptoms




dry hair




loss of eyebrow hair




puffy face




enlarged thyroid




slow heartbeat




arthritis




cold intolerance




depression




dry skin




fatigue




forgetfulness




menstrual disorders




infertility




muscle aches



weight gain




constipation




brittle nails


HYPERTHYROIDISM
symptoms




hair loss




bulging eyes




sweating




enlarged thyroid




rapid heartbeat




nervousness




heat intolerance




irritability




tremor of fingers




difficulty sleeping




warm moist palms




scant menstrual period




infertility




muscle weakness



weight loss



frequent bowel movements



soft nails

Source: womenshealthnetwork.com

Introduction

Thyroid dysfunction and gender:

- **More common in women than in men**, particularly **hypothyroidism** (e.g.: Bauer et al, 2014; Castello and Caputo, 2019; Taylor et al, 2018; Vanderpump, 2011)
 - Thyroid diseases affect females 500% more than males – oestrogen environment, greater prevalence of autoimmune diseases (Costello & Caputo, 2019)
 - In women symptoms persist longer and are less effectively managed by therapy (Costello & Caputo, 2019)
- It is **difficult to get diagnosis** in the first place as many symptoms **mimic other conditions** (e.g.: depression, menopause, Alzheimer), **particularly true for women**
 - Higher risk of misdiagnosis in women (Costello & Caputo, 2019)

Previous literature

- **Increased risk of work impairment, sickness absence and unemployment:**
 - Thyroid patients are more likely to experience long-term sick leave and reduced working ability (Leso et al., 2020).
 - Evidence shows significantly higher rates of sickness absence, disability pension, and unemployment among thyroid patients (Nexo et al., 2014).
- **Impact on income and disability:**
 - Hypothyroidism: Associated with a lower growth in labour income and an 89% higher risk of receiving a disability pension (Thvilum et al., 2014).
 - Hyperthyroidism: Similarly linked to increased disability pension risk and reduced labour income (Brand et al., 2015).

Previous literature

- **Productivity and gender wage gap:**
 - Undiagnosed thyroid conditions lead to productivity losses and lower wages (Montagna & Zangelidis, 2023).
 - Gender dimension: Women with hypothyroidism may face additional wage penalties, potentially widening the gender wage gap by up to 5 percentage points.
 - However, the study relied on survey data (UKHLS) with self-reported health conditions and labour market outcomes.
- Despite these findings, research on the **labour market consequences** of thyroid diseases remains **limited**.

This presentation

- We examine the impact of thyroid disease on various labour market outcomes in Finland, using full-population Finnish administrative register data from 2009–2017.
- **This presentation:** how sickness absences, labour earnings and employment of individuals develop before and after a thyroid condition is diagnosed (and treated)
 - More focus on hypothyroidism and individuals who manage to remain employed in this presentation

Data

- We include all 18-65 year old persons residing in Finland (2009-2017)
 - Health conditions can be diagnosed before 2009, between 1996 and 2017
- We use reimbursed outpatient prescriptions (2000-2017) combined with Care register (1994-2017) to identify **thyroid conditions** and 14 other **health conditions and comorbidities**:
 - Near complete coverage of **hypothyroidism** cases based on reimbursed outpatient prescriptions (expect some of the subclinical cases) – **this presentation**
 - Near complete coverage of **hyperthyroidism** cases based on Care register
 - **Supplement comorbidities** data with Special Reimbursement Rights and outpatient prescription data from Kela (for example, diabetes, hypertension, etc.)

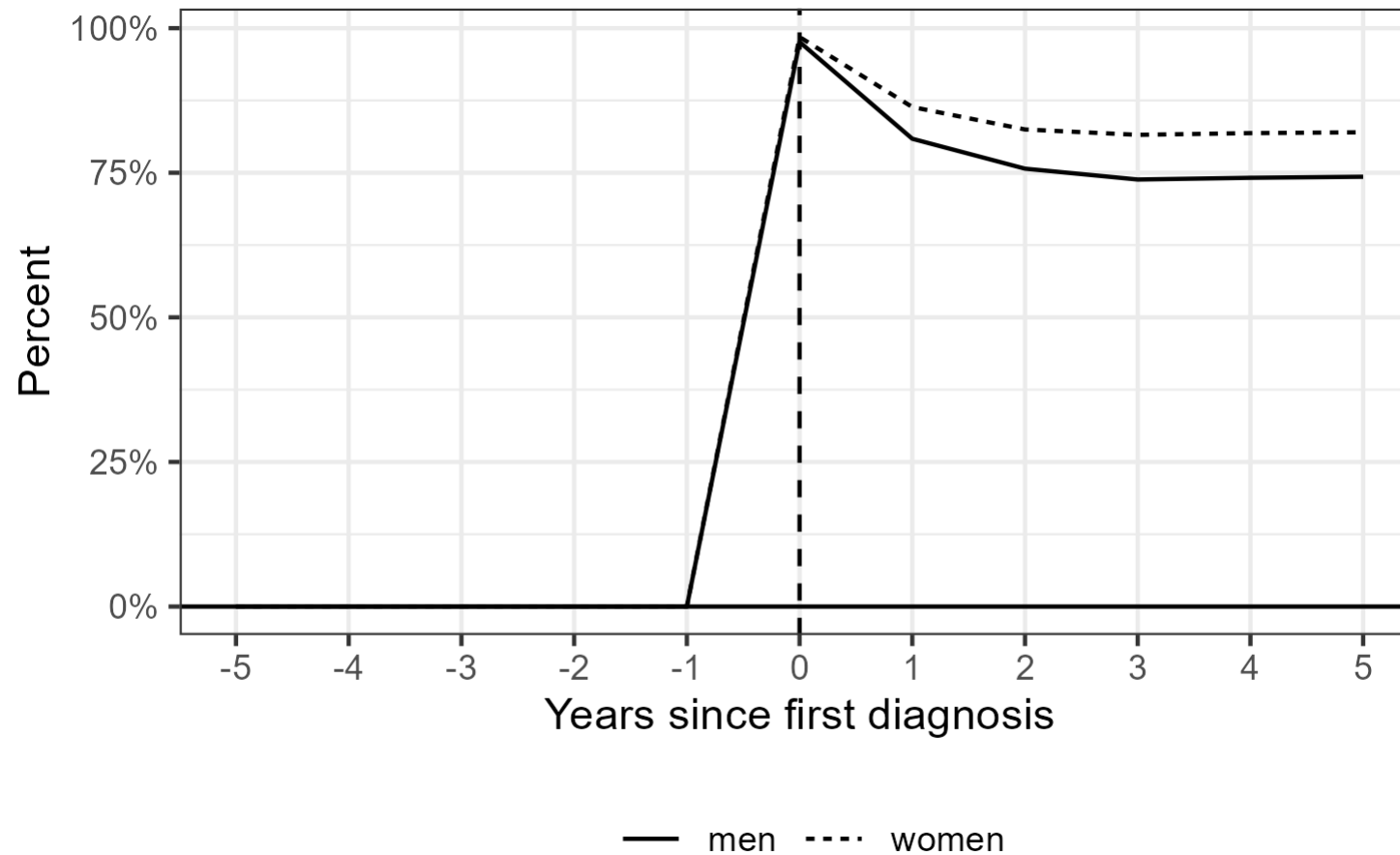
	Men		Women	
	Mean	Sd	Mean	Sd
Age	47.34	13.13	42.91	13.61
Detection age	51.34	13.13	46.91	13.61
Employed (0/1)	0.58	0.49	0.69	0.46
Active (0/1)	0.68	0.47	0.76	0.43
Pension (0/1)	0.22	0.42	0.12	0.32
Sickness allowance (0/1)	0.11	0.32	0.14	0.35
Sickness allowance, days	7.66	32.73	6.94	29.32
Annual earnings, Euro	22,910	27,159	20,689	19,784
N	16725		60395	

Method

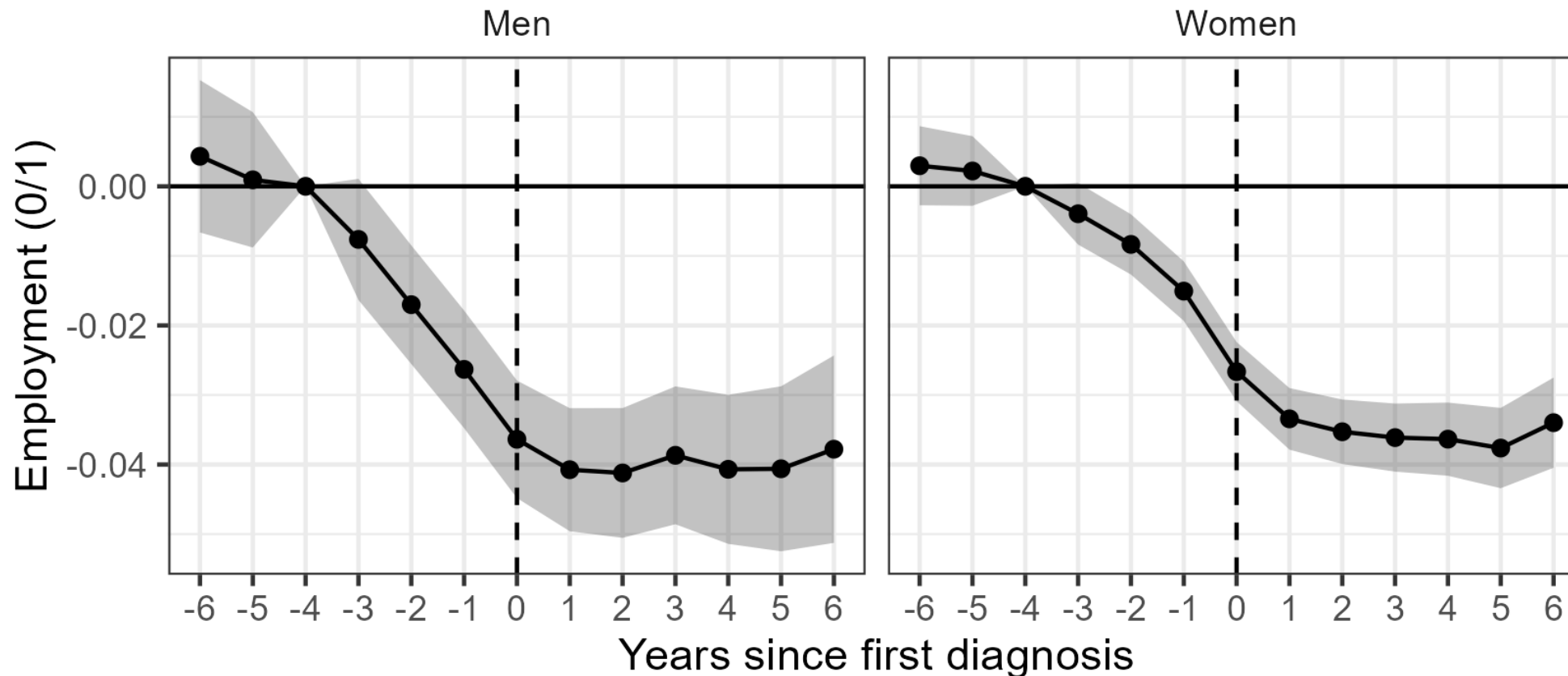
- Limit the sample to individuals diagnosed between 2009 and 2017 (no diagnosis or purchases in 2008 or before) and follow-up from 2009 to 2017
- Standard event-study specification (see, e.g., Kleven et al., 2019):
 - follow up 6 years before and 6 year after being diagnosed (and/or treated for thyroid condition)
 - omitted reference period is $t = -4$, since condition can start 1-3 years before receiving diagnosis (see Montagna & Zangelidis, 2023)
 - Year, Age and municipality FE
 - Controls for education and marital status
 - Controls for **14 other health conditions and comorbidities**

Full sample

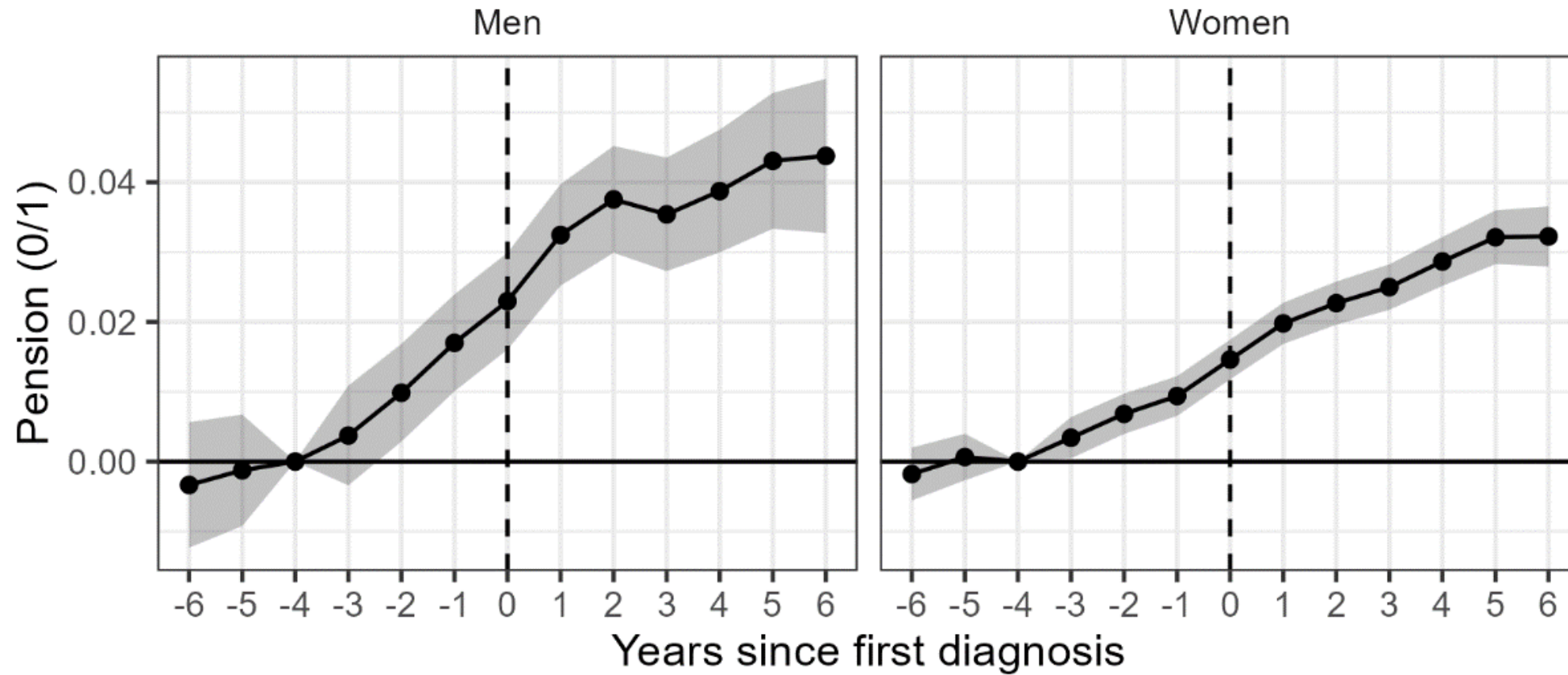
75% of hypothyroidism patients continue with thyroxine treatment 5 years after the first diagnosis/occurrence



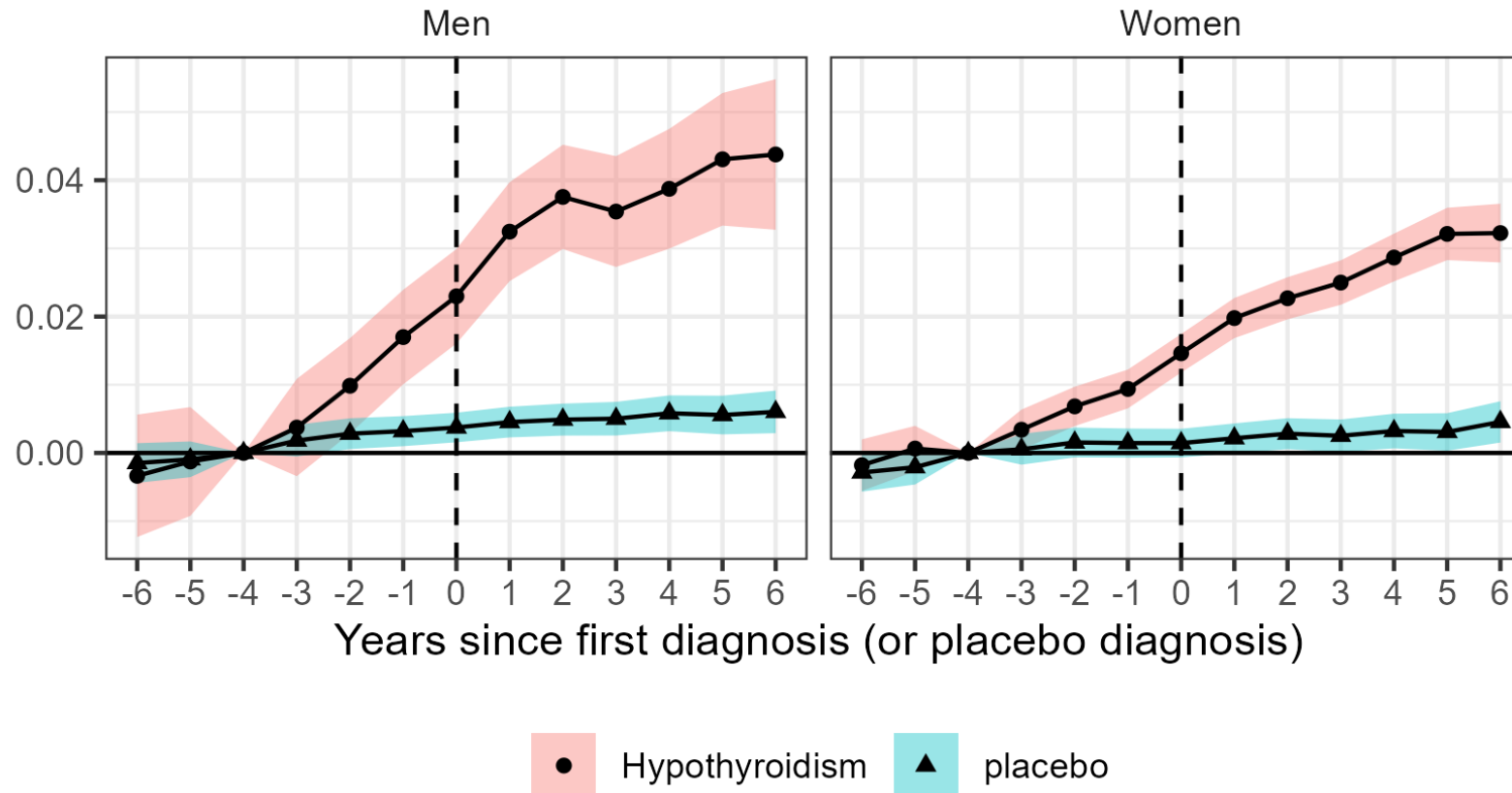
Employment rate starts to decrease 1-3 years before diagnosis



Likelihood of pension increases before and after diagnosis



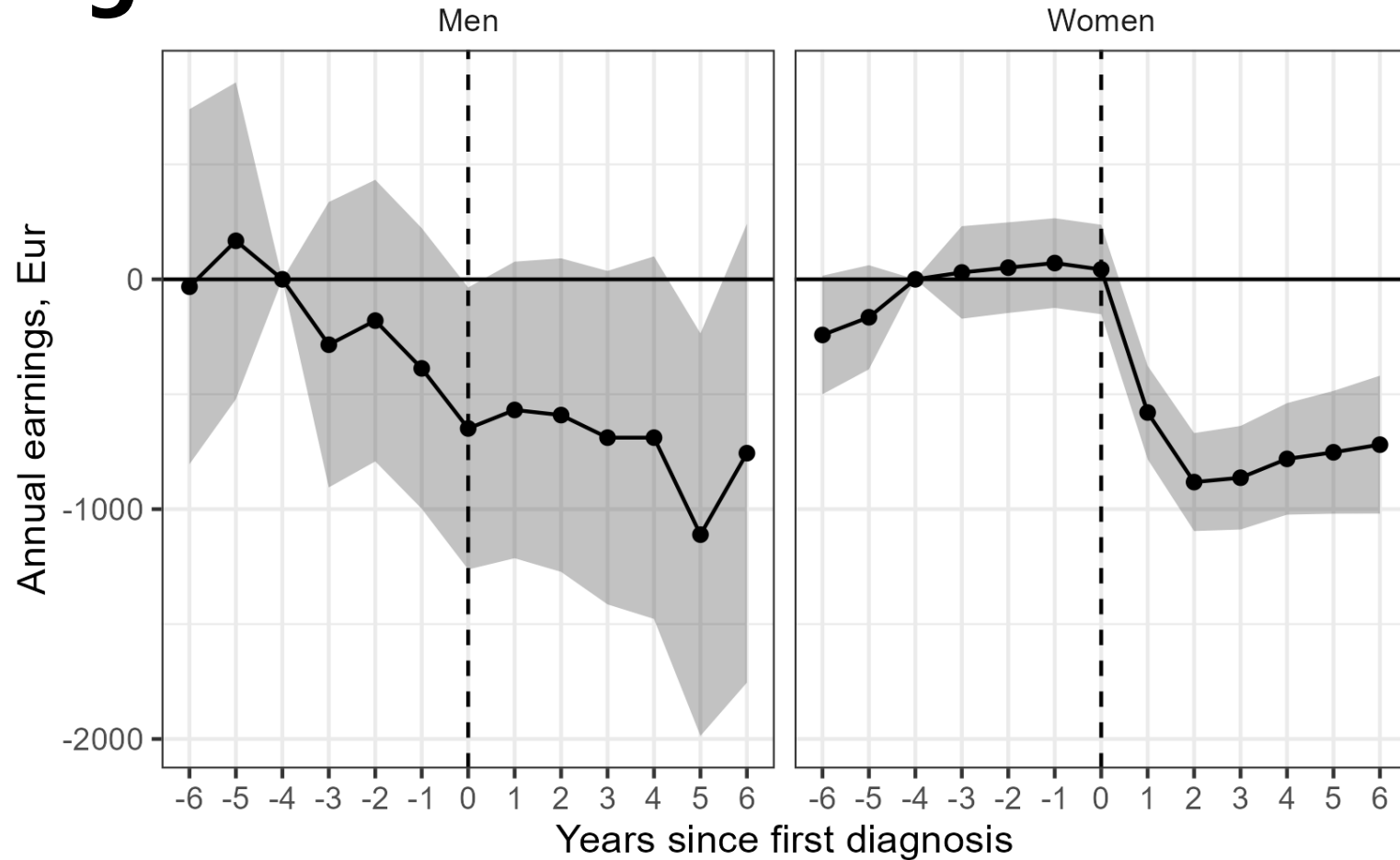
Results using pseudo-event study confirm the results on pension transitions



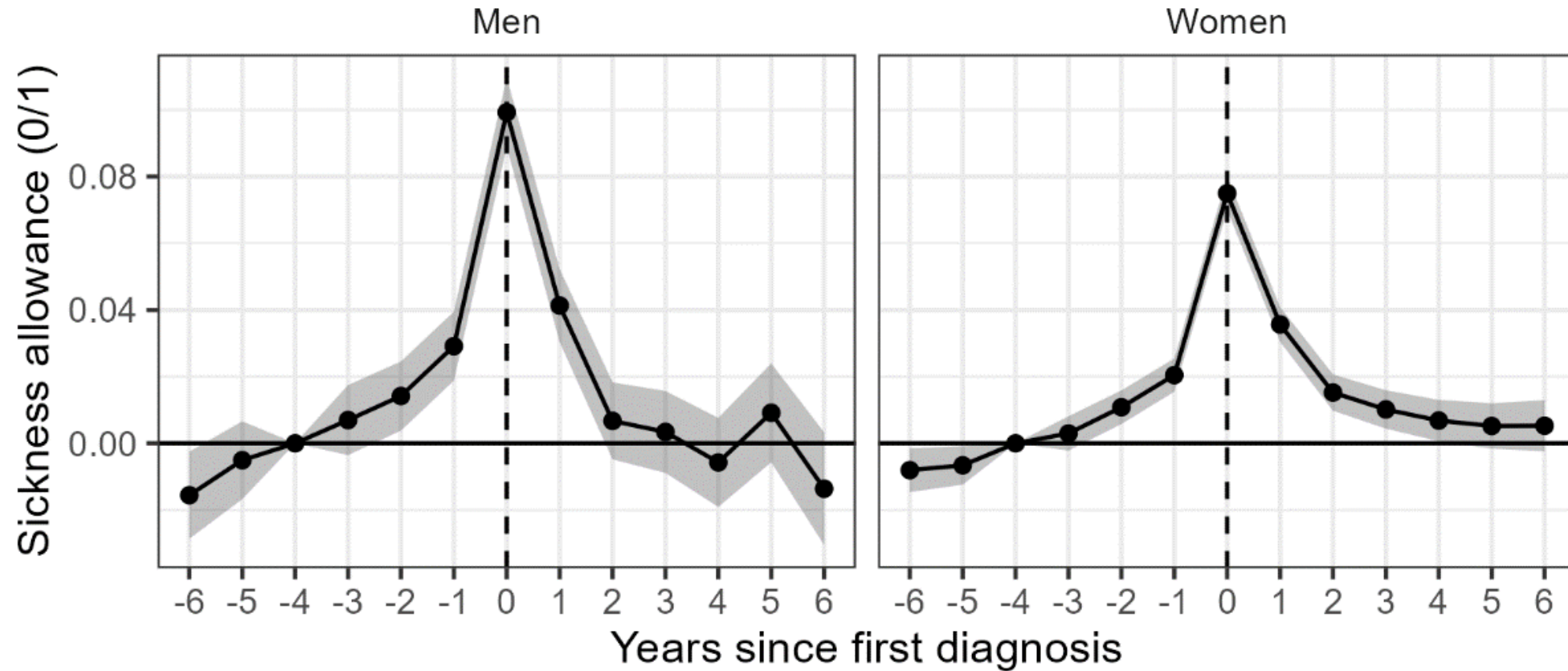
Main sample

**Employed persons (excl.
self-employed)**

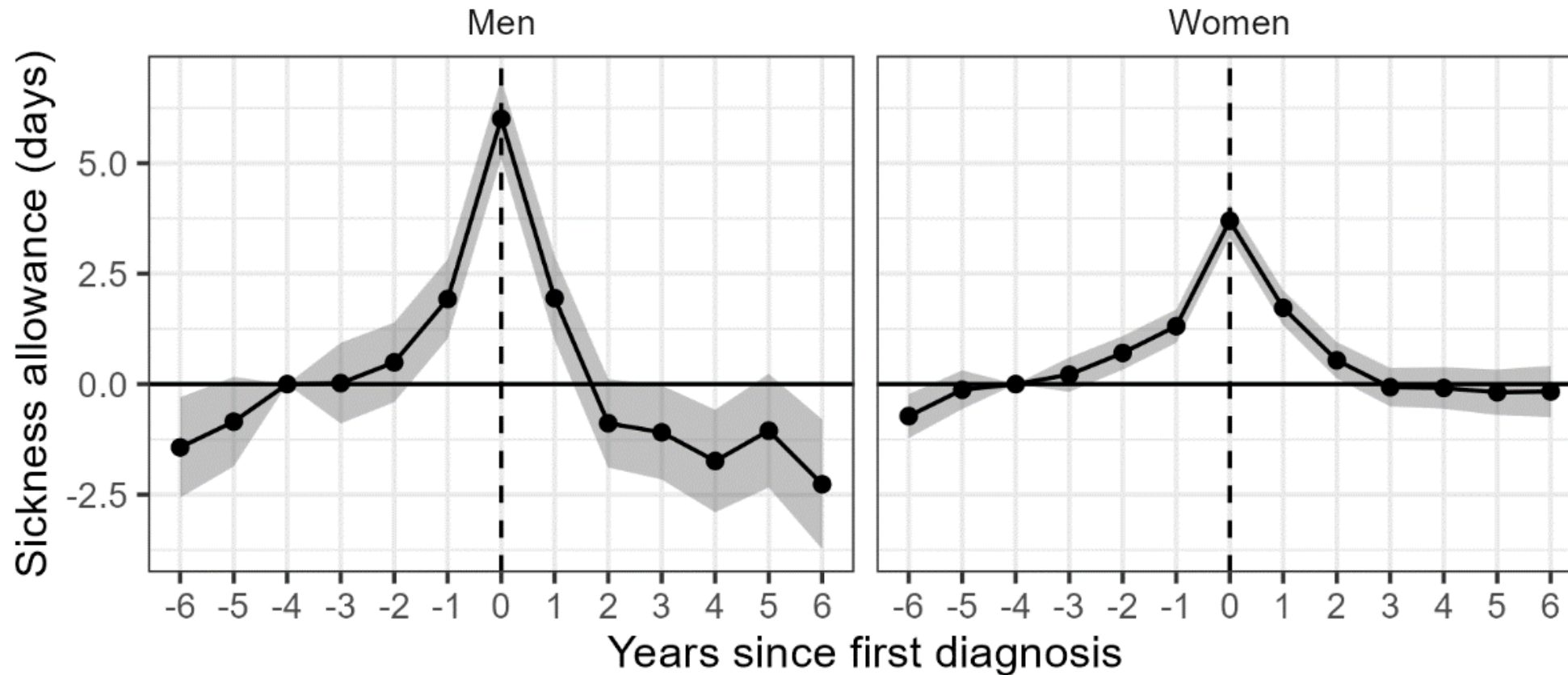
Men's annual earnings begin to decrease before diagnosis. Earnings of women decrease 1-6 years after diagnosis



Sickness allowance use increases by one third during the year of diagnosis



Similarly, average number of days increases but even out after 3 years



Summary

- Employment rate starts to decrease 1-3 years before receiving a hypothyroidism diagnosis
- The decrease in employment rate halts 1-2 years after being diagnosed
- Women and men who remain employed:
 - Are more likely to use sickness allowance 0-2 year after being diagnosed.
 - Have, on average, 3% lower annual earnings in the after period
 - Are less likely to work fulltime. No effect on overtime or hourly earnings

Conclusion

- Hypothyroidism causes significant short- to medium-term disruptions in employment and earnings, even after diagnosis and treatment.
- Women are more likely to develop hypothyroidism, which amplifies pre-existing gender labour market differences
- The pre-diagnosis decline in employment and increased sickness absence suggest that timely diagnosis and treatment could yield significant labour market benefits.
- The increase in part-time work for 1–5 years post-diagnosis among female employees indicates that workplace flexibility is crucial.
- Recognising thyroid disease as a common chronic condition requiring workplace adjustments and support could reduce its labour market costs.

Yhteistyössä



Thank you

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