

Measuring temporary employment. Do survey or register data tell the truth?

Dimitris Pavlopoulos
Jeroen Vermunt

VU University Amsterdam - Tilburg University

- Investigate temporary employment.
- Focus on measurement error.
 - ◆ How many temporary contracts exist in the Netherlands?
 - ◆ How much mobility is there to permanent employment?
 - ◆ Which dataset should we use to measure employment contract?
- What is a “temporary contract” ?
 - ◆ Fixed-term contract.
 - ◆ No temporary agencies.
- Compare survey and register data.

Research question

Aim

Context

Measurement issue

Sources of error

Data

Descriptives

Econometric model

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Conclusions and
open issues

- Why studying temporary employment in the Netherlands?
 - ◆ Dynamic aspect of the Dutch labour market.
 - ◆ Firms use a 'minimum capacity' personnel strategy (Sels and van Hootegeem, 2001).
 - ◆ Sharp increase of temporary contracts: 5.9% in 1991 to 17.1% in 2010 (OECD Statistical Database).
 - ◆ 9.9% contribution in employment growth 1990-2010 (OECD, 2002)

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■ Two data sources...

- ◆ Survey data: Labour Force Survey (EBB).
- ◆ Register data: Polisadministratie.

■ ...that do not agree with each other!

- ◆ LFS: share of temporary employment is 16.5%.
- ◆ Polisadministratie: share of temporary employment is 25.2%.
- ◆ 15.6% of permanent workers in LFS have a temporary contract in the Polis.
- ◆ 18.3% of temporary workers in LFS have a permanent contract in the Polis.

■ Inconsistencies cannot be (fully) resolved by differences in the definition!

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■ Survey data - LFS

- ◆ Misreporting, miscoding.
- ◆ Contract: larger for young people and in 'flexible' sectors?
- ◆ Proxy interview.

■ Register data - Polis

- ◆ Miscoding.
- ◆ Autocorrelated structure expected.

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- 2 sources: LFS and Polisadministratie.
- We select: workers aged 25-55.
- We select: LFS-respondents that entered the panel in the first trimester of 2007.
- We use all 5 observations from LFS.
- We use matched data from the Polis, January 2007 - March 2008. 15 observations from the Polis.

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The size of temporary employment (January 2007)

| | Survey | Register |
|-----------|--------------|---------------|
| Permanent | 65.9 | 60.2 |
| Temporary | 8.0 | 12.3 |
| Other | 26.1 | 27.5 |
| Cases | 3,887 | 11,632 |

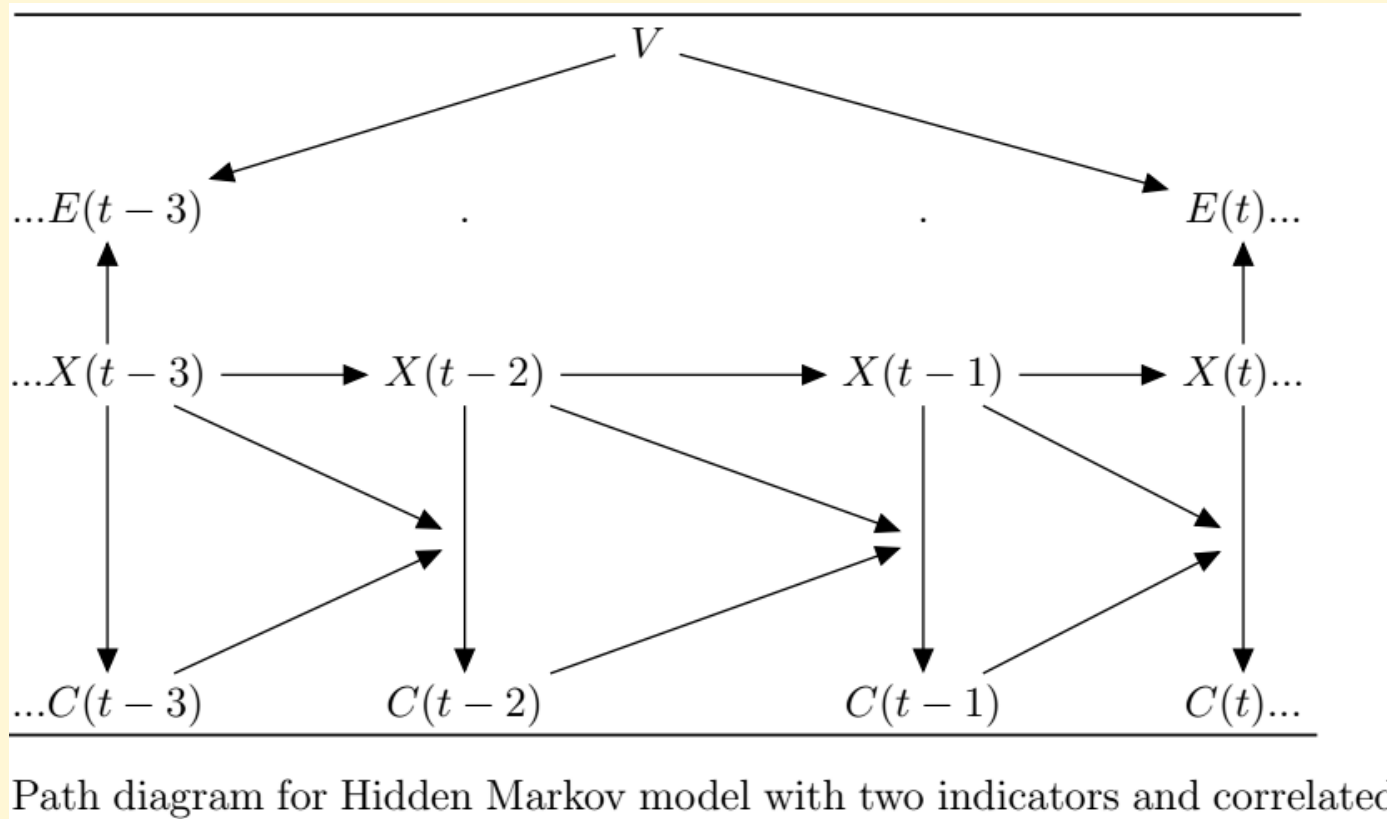
- More temporary contracts in de register data.

Mismatches between survey and register data

| Register data | Survey data | | | Total |
|---------------|-------------|-----------|--------|--------|
| | Permanent | Temporary | Other | |
| Permanent | 94.4 | 3.9 | 1.7 | 100 |
| Temporary | 50.2 | 43.7 | 6.1 | 100 |
| Other | 8.1 | 3.0 | 88.9 | 100 |
| Total | 66.7 | 8.7 | 24.6 | 100 |
| Cases | 32,225 | 4,216 | 11,856 | 48,297 |

- Most mismatches in temporary contracts.

Mixed Latent Markov model



- Error in LFS depends on age, proxy interview.
- Error in Polis is 'autocorrelated'.
- Restrictions: different parameters for error repetition.

Mixed Latent Markov model

Joint probability:

$$\begin{aligned} P(\mathbf{C}_i = \mathbf{c}, \mathbf{E} = \mathbf{e}_i | \mathbf{V}_i, \mathbf{Z}_i) &= \sum_{k=1}^K \sum_{x_0=1}^3 \sum_{x_1=1}^3 \dots \sum_{x_T=1}^3 \pi_k P(X_{i0} = x_0 | \mathbf{Z}_{i0}, k) \\ &\prod_{t=1}^T P(X_{it} = x_t | X_{i(t-1)} = x_{t-1}, \mathbf{Z}_{it}, k) \\ &P(C_{i0} = c_0 | X_{i0} = x_0) \\ &\prod_{t=1}^T P(C_{it} = c_t | X_{it} = x_t, X_{i(t-1)} = x_{t-1}, C_{i(t-1)} = c_{t-1}) \\ &\prod_{t=0}^T P(E_{it} = e_t | X_{it} = x_t, \mathbf{V}_{it})^{\delta_{it}} , \end{aligned} \quad (1)$$

Size of the error

Survey data

| Latent contract in t | Observed contract in t | | |
|------------------------|--------------------------|-----------|-------|
| | Permanent | Temporary | Other |
| Permanent | 0.997 | 0.001 | 0.002 |
| Temporary | 0.135 | 0.827 | 0.038 |
| Other | 0.004 | 0.005 | 0.991 |

Register data

| Latent contract in t | Observed contract in t | | |
|------------------------|--------------------------|-----------|-------|
| | Permanent | Temporary | Other |
| Permanent | 0.889 | 0.080 | 0.031 |
| Temporary | 0.236 | 0.684 | 0.079 |
| Other | 0.032 | 0.017 | 0.951 |

Error in register data

| Observed contract in $t - 1$ | Latent contract in t | Latent contract in $t - 1$ | Permanent | Temporary | Other |
|------------------------------|------------------------|----------------------------|-----------|-----------|-------|
| Permanent | Permanent | Permanent | 0.987 | 0.009 | 0.004 |
| Permanent | Permanent | Temporary | 0.987 | 0.009 | 0.004 |
| Permanent | Permanent | Other | 0.987 | 0.009 | 0.004 |
| Permanent | Temporary | Permanent | 0.047 | 0.929 | 0.024 |
| Permanent | Temporary | Temporary | 0.969 | 0.030 | 0.001 |
| Permanent | Temporary | Other | 0.047 | 0.929 | 0.024 |
| Permanent | Other | Permanent | 0.005 | 0.005 | 0.990 |
| Permanent | Other | Temporary | 0.005 | 0.005 | 0.990 |
| Permanent | Other | Other | 0.915 | 0.000 | 0.085 |

- Almost error-free...
- ...except for the cases where error is repeated.

How many fixed-term contracts are there?

| | Observed | | Latent |
|-----------|----------|----------|---------|
| | Survey | Register | |
| Permanent | 0.667 | 0.597 | 0.634 |
| Temporary | 0.087 | 0.130 | 0.109 |
| Other | 0.246 | 0.273 | 0.257 |
| Cases | 48,297 | 174,480 | 174,480 |

- Temporary employment is larger in the register than in the survey...
- ...and in-between according to the the predicted-'latent' contract.

How much mobility is there?

Observed transitions from the survey data

| | | Contract in t | | |
|--------------------|-----------|---------------|-----------|-------|
| | | Permanent | Temporary | Other |
| Contract in t-3 | Permanent | 0.982 | 0.009 | 0.009 |
| | Temporary | 0.062 | 0.888 | 0.050 |
| | Other | 0.017 | 0.034 | 0.949 |
| | Total | 0.674 | 0.089 | 0.237 |

Observed transitions from the register data

| | | Contract in t | | |
|--------------------|-----------|---------------|-----------|-------|
| | | Permanent | Temporary | Other |
| Contract in t-3 | Permanent | 0.971 | 0.016 | 0.013 |
| | Temporary | 0.089 | 0.865 | 0.046 |
| | Other | 0.020 | 0.037 | 0.943 |
| | Total | 0.624 | 0.128 | 0.247 |

How much mobility is there?

| | | Contract in t | | |
|---------------------|----------|---------------|-----------|-------|
| | | Permanent | Temporary | Other |
| Temporary in t-3 | Survey | 0.062 | 0.888 | 0.050 |
| | Register | 0.089 | 0.865 | 0.046 |
| | Latent | 0.033 | 0.930 | 0.037 |

- More mobility in the Polis...
- ...but much less according to the 'latent' transitions.

- Controlling for measurement error is important for the contract type.
- Register data (Polis) is contain more error. Persisting error is the problem.
- Less temporary-to-permanent mobility than observed.
- Advice: improve the register data. They can become error-free!

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