Skill Mismatch Measurement based on LFS Data Approaches and Preliminary Results for Israel

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Economic theory

- **Human capital theory** suggests that field-of-study mismatch is temporary (even if it can be prolonged and costly for individuals), and firms will adjust their demand and productive process to the available stock of human capital.

- The **assignment theory** suggests that productivity and wages depend on the match quality between supply (in a specific field of education) and demand (in a particular occupational group).

Empirical Studies I

Mismatches is measured in various ways depending on available data. The different approaches have advantages and limitations; none yield more reliable or conceptually more correct estimates than the others (Leuven & Oosterbeek, 2011).

- Normative: Over/under-education is identified using the International Standard Classification of Occupations (ISCO), which categorizes major occupational groups by four levels of education in their requirement (ILO, 2012). Some studies using this methodology when exploring the determinants of skills mismatch are (among others) Chevalier and Lindley (2009) and Green et al. (2007).

- Empirical: This method estimates the educational requirement of an occupation by assessing the mean or modal level of education within a given occupation (the realised matches), classifying workers with acquired education above/below the average of the employee's occupation group as over/under-qualified. We used the mode following other studies (Kiker et al., 1997; Mendes de Oliveira et al., 2000; ILO, 2012).

Empirical studies II

- Horizontal mismatch measures the extent workers, typically graduates, are employed in an occupation unrelated to their principal field of study. It can be defined using both a subjective and an objective approach.

- Our (ETF) study used the objective approach following Levels et al., 2014; Wolbers, 2003; Béduwé and Giret, 2011; Domadenik et al., 2013.

- Using a normative correspondence table can provide a less biased indicator of horizontal mismatch (Somers et al., 2019).

- Having too many categories increases the probability that the combination of jobs and field degrees are defined as mismatched despite a large congruence of skills and knowledge (Malamud, 2011).

ETF approach

- Attempts to provice a common framework in processing data, as well as in defining the mismatch indicator.

- Provides NSO with assistance in reading national data-sets, and provides output (on-site, remote execution)

- Allows – to some degree – cross-country comparability by using international classifications.

- Needs to make strong assumptions on the correct transformation of education and occupational requirements (normative, horizontal).

Key mismatch indicators

| DIMENSION	TYPE	DEFINITION	METHOD
Vertical	Over-education (over-qualification)	Worker´s level of education (qualification) **exceeds** the required level for the job (occupation)	Normative (refers to the level of skills / education required to work in a specific occupation category according to ISCO classification
			Empirical (the statistical or realized matches method) using either the the mode of education within a occupation category
	Under-education (under-qualification)	The worker´s level of education (qualification) is **lower** than the required level for the job (occupation)	Normative (refers to the level of skills / education required to work in a specific occupation according to ISCO classifications
			Empirical (the statistical or realized matches method) using either the the mode of education within a occupation category
Horizontal	Field of education to occupation mismatch	The field of study does not match the occupational area of the job	Subjective (e.g. is your job matching your field of education?) Objective (using ISCO and ISCED-F codes)

Estimates for Israel – the ETF way

- Occupational mismatch for upper secondary qualification (normative method; international classification ISCO)
- Based on calculations using the Israeli LFS, 2016-2021

Occupational mismatch - overqualification upper secondary
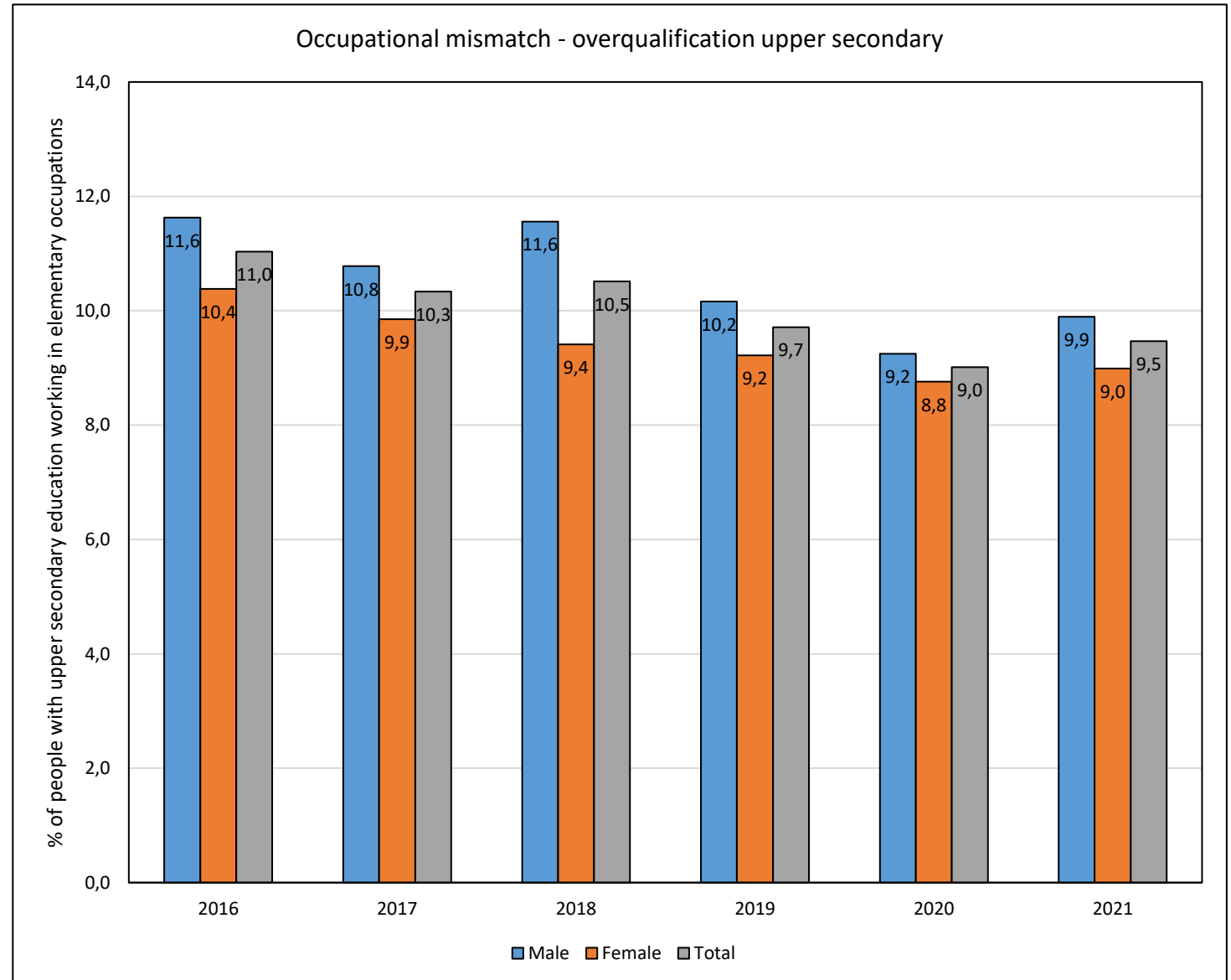
Vertical mismatch – Empirical Method

- Empirical method:

Based on the mode of qualifications within an occupation group, the education (level) requirement is determined. Deviations are counted towards over and undereducation.

Share of over-educated and under-educated workers, 2016-2021
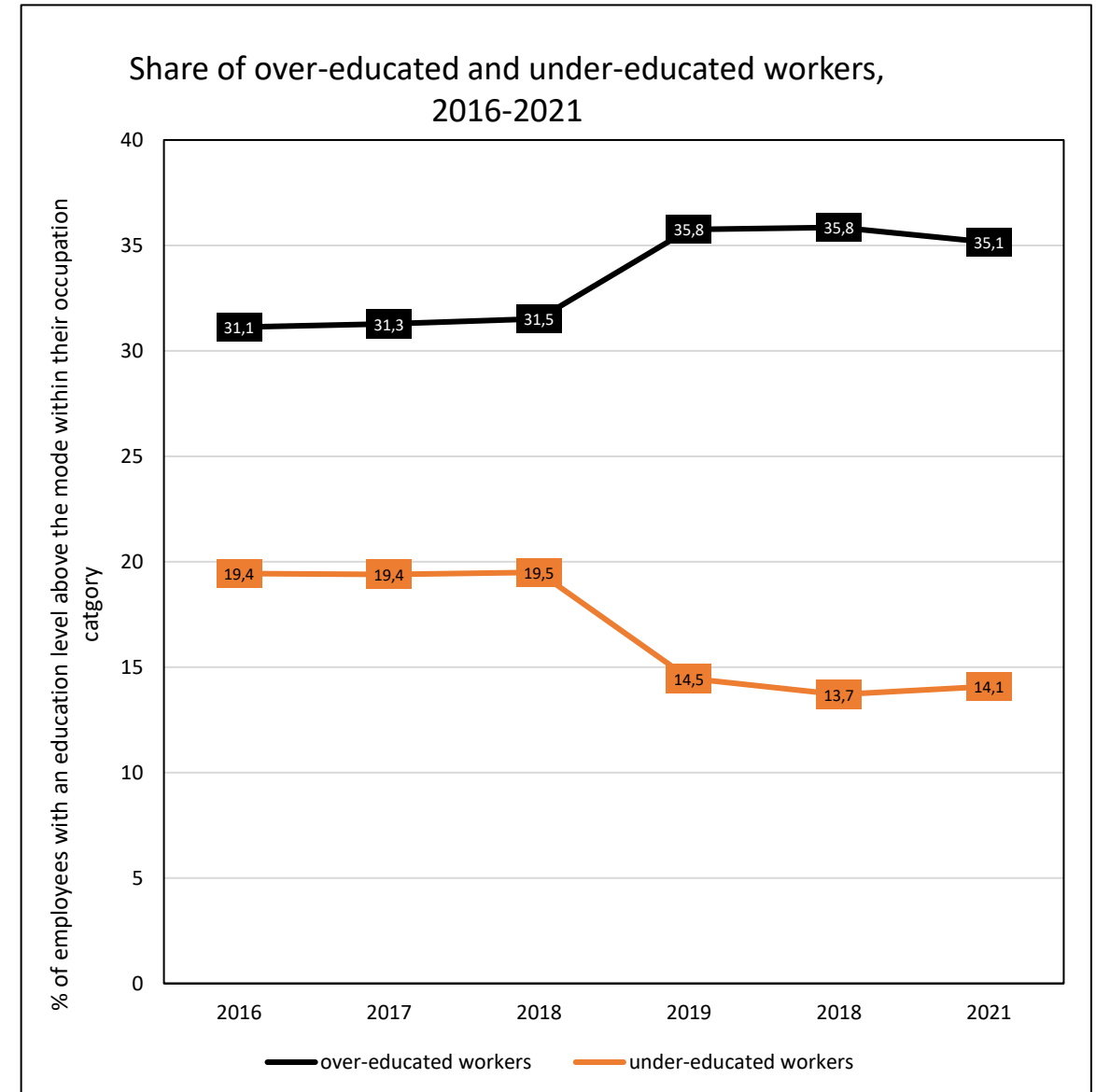
The missing details

- The ETF approach was developed to easily implement three mismatch measures (following definitions/recommendations by ILO).

- Common approaches and aggregate representations are usually not good in picking up national specificities:
  - Institutional differences (e.g., the duration and moment of military service, gender specificities, 'vulnerable' groups);
  - They do not care for national opportunities: national classifications might be more precise than international correspondences; national LFS might provide additional indicators of mismatch (subjective questions).

- In the following, I will use some examples how the Israeli (PUF) LFS provides somewhat better insights …

Using Israeli LFS (PUF)

The Israeli LFS includes **subjective questions** on a mismatch between jobs and qualifications: *"Is the work suitable for the respondent's education or the training he has?"* which is used for the solid line (Mismatch of working people).

For comparison, the percentage of job-seekers indicating they seek a new job because of mismatch is indicated as the dotted line.

Work not suitable for qualification level

Using Israeli LFS – Detailed by Religious Group

Using the Israeli LFS allows a better distinction by groups. They can reflect institutional differences (or important groupings) or they can be lead by policy questions.

Here, we provide the percentages of employed that are subjectively mismatched, broken down by the three most common religious groups.
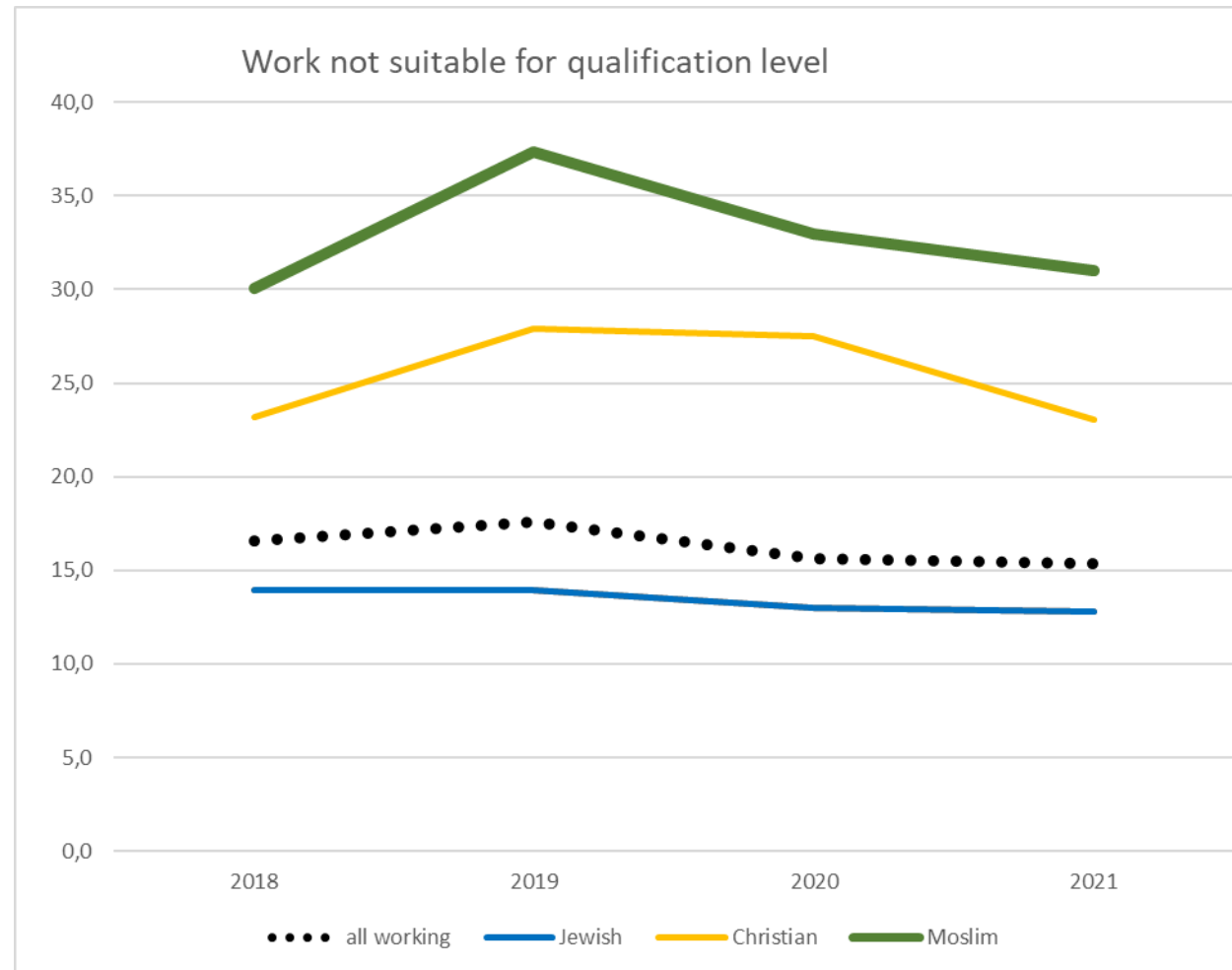
Further Research

Further Research

Israel has several data sources that allow a differentiated approach to measuring skill mismatch. This would allow us to investigate the dependence of the result on the method and variables used.

Additional analysis could be done to:

- Reflect on mismatch as measured here versus self-reported mismatch
- Reflect on competencies/skills versus mismatch
- Investigate in more detail qualifications that are more prone to skill mismatch. How do the various measures behave?

Approach

- Analyse the Skills Survey, PIAAC, and LFS data to establish the deviation across different data sets.
- Use the specific aspects of the data (variables) to enrich the (naïve) concept of skill mismatch to detail the various facets of mismatch.
- Better definitions and methods to measure skill mismatch can be proposed.
- The methodological deviations can be identified for data sets needing more detail.

Some Links

Eurostat – skills mismatch statistics

https://ec.europa.eu/eurostat/web/experimental-statistics/skills

ILO / International Conference of Labour Statisticians - Guidelines concerning measurement of qualifications and skills mismatches of persons in employment

https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_648557.pdf

CEDEFOP - Insights into skill shortages and skill mismatch

https://www.cedefop.europa.eu/en/publications-and-resources/publications/3075

ETF reports on skills mismatch

Skills mismatch measurement in ETF partner countries

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