An international perspective on skills supply and demand
A view from the UK

Jennifer C Smith
University of Warwick, Department of Economics

Skills Supply and Demand Round Table
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Questions

1. Why do we need to understand skills supply and demand?
2. What do we mean by the concepts of skills, skills supply and skills demand?
3. How do we understand the notion of skills imbalances?
4. How should we research skills supply, skills demand and skills imbalances in South Africa? How can both qualitative and quantitative approaches be synergised to obtain a holistic perspective of skills supply and demand in South Africa?
5. What indicators can we use to measure skills supply, demand and imbalances in South Africa?

Background

- The Migration Advisory Committee is an independent, non-statutory, non-time limited, non-departmental public body that advises the UK government on migration issues.
- Consists of 5 or 6 specialists – historically mainly academic economists but the most recent appointments have been academics focusing on comparative politics and comparative education – plus an *ex-officio* member from the host government Department, the Home Office.
- I was a member of the MAC 2012-2021.
- The MAC publishes periodic reviews of shortage – previously in response to particular commissions, but now on a timetable of annual minor reviews with major reviews every 3 years.

1. Why do we need to understand skills supply and demand?

- Productivity, growth, efficiency
- Reduce inequality, improve opportunity

- Labour markets do not clear, due to imperfections and costs
- Skills acquisition takes time so planning has an important role

- Many policy areas are affected: education (DfE), training, industrial policy (BEIS), labour market policy/benefits (DWP), migration (Home Office)
- “Drive economic growth through improving the skills pipeline, levelling up productivity and supporting people to work (cross-cutting outcome)” (DfE’s first priority).

2. What do we mean by the concepts of skills, skills supply and skills demand?

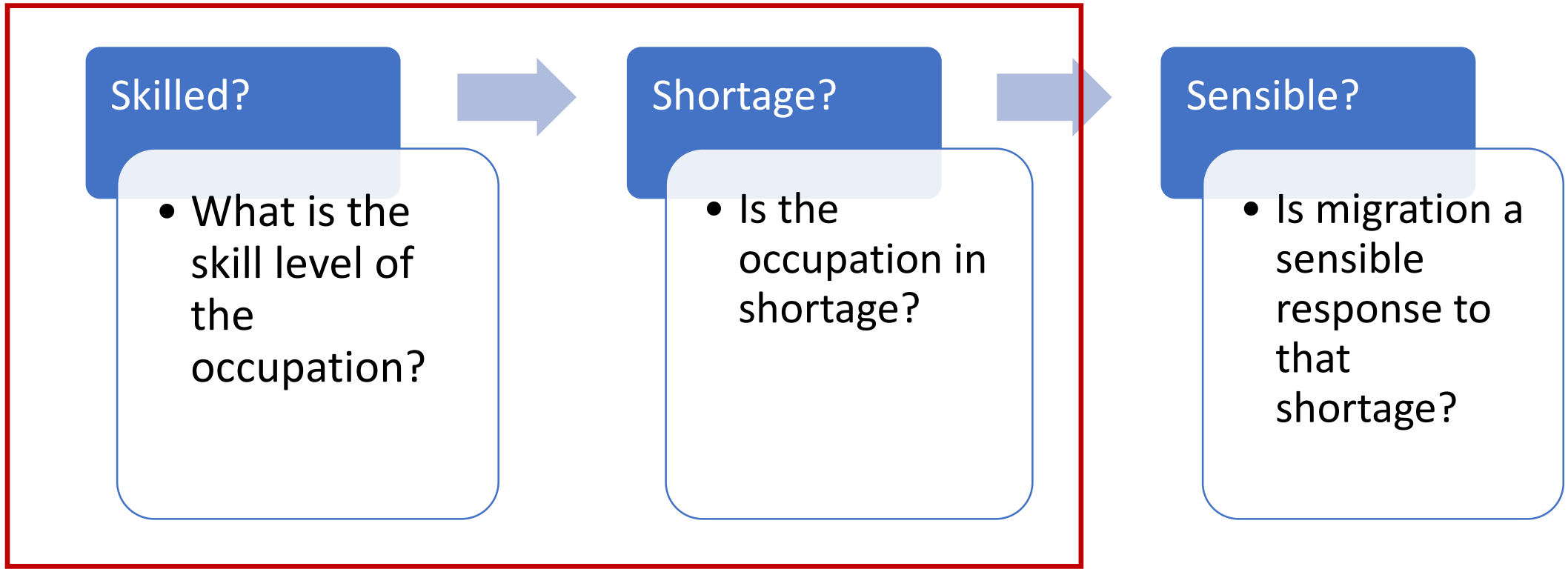
- There is no unique, objectively defined measure of skill
  - I will discuss measures used by the MAC shortly
  - Because of the multiple uses and users of measures of skill and shortage, it is not surprising that skills supply can be usefully measured in several ways.
- Skills demand: Employers view jobs as having a particular desired skill profile
  - The job can be performed by a range of individuals with different skills, but the employer would be justified in classing such an “imperfect” hire as, like no hire at all, indicating skill shortage.
- Skills supply: Education, training and experience give individuals characteristics suited to particular jobs

3. and 5. How do we understand the notion of skills imbalances, and what indicators can we use to measure skills supply, demand and imbalances?

- Skills imbalances arise when there's an inequality of demand for and supply of workers with given skills or characteristics
- A 'shortage' can be defined where employers find it problematic to secure adequate numbers of workers with the required skills to fill their vacancies
- The MAC does not explicitly measure skills supply and demand
  - Other institutions in the UK do forecast skills demand.
- The MAC looks at indicators of the outcome of these: skills imbalances, focusing on skills shortages

Skills imbalances and the UK SOL

- The MAC measures skills imbalances as part of the process of drawing up its recommendations of occupations that should go on the UK's Shortage Occupation List



How does the MAC measure skill?

- Based on occupation
- Designed to calculate shortages for particular skill levels
- Uses 3 indicators of skill
- If the values of at least two of these indicators meet certain thresholds, then an occupation is determined to be skilled at or above the chosen level
- Case by case evidence is also taken from stakeholders and can change an occupation's skill classification – either overall or for a particular industry.

Why use more than one indicator of skill?

- More robust: different labour market factors/conditions influence training time and wages

How does the MAC measure skill?

Each occupation's skill level is classified based on

1. Time taken to become fully competent in that job (bottom-up information). UK Office for National Statistics produces a 4-level classification of 2-digit occupations.
   - Skill levels correspond roughly to education/training durations of: School leaver; School leaver + training/experience; Post-compulsory education/training; Degree/equivalent work experience.
2. Share of full-time employees within occupations who have a certain level of formal academic or vocational qualifications
   - Occupation judged skilled to a certain level when its proportion of FT employees at that RQF level exceeds the whole-economy proportion (Regulated Qualifications Framework is the Ofqual reference system).
3. Pay
   - Stems from the idea that the labour market ends up not too far from the neoclassical model, so pay reflects productivity which reflects skill (apart from regulated/national pay scales).
   - Median hourly pay of full-time employees within an occupation. Bit complex: An occupation is judged skilled at a certain level on this pay indicator if the occupation's pay rank exceeds the proportion of workers with a given RQF skill level.

If the values of at least two of these indicators meet certain thresholds, then an occupation is determined to be skilled at or above the chosen RQF level.

Shortage indicators

- There is a range of sensible shortage indicators.
- Economic theory and intuition suggests that shortages should lead to changes in pay, employment, hours, hiring, vacancy ratios (vacancies as a proportion of employment), unemployment and inactivity.
- Economic theory provides good guidance about particular specifications (formulations) of these variables
  - For example, rather than absolute vacancy levels, it is better to look at vacancy rates (vacancies as a proportion of current employment).
- However, economic theory and intuition do not provide good guidance about how to weight these various shortage indicators.

pay indicators

vacancy ratios

quantity indicators

Indicator	Data set(s) used	Description
P1: Percentage change of median real pay (1 year)	ASHE & CPIH	Percentage change in inflated median pay over one year
P2: Percentage change of median real pay (3 years)	ASHE & CPIH	Percentage change in inflated median pay over three years
P3: Return to occupation	APS	Predicted hourly wage for a set of reference characteristics relative to the average predicted wage for the same characteristics over all SOC codes. Separately calculated for all three skill levels.
E1: Vacancies/Employment	ESS & APS	$\frac{Total\ vacancies\ (ESS)}{Total\ employment\ (APS)}$
E2[74]: Vacancy postings/Employment	Burning Glass & APS	$\frac{Number\ of\ job\ postings\ (Burning\ Glass)}{Total\ employment\ (APS)}$
V2: Percentage change of employment level (1 year)	APS	Percentage change of employment over one year
V3: Percentage change of median paid hours worked (3 years)	ASHE	Percentage change of median paid hours worked over three years
V4: Change in new hires (1 year)	APS	$\frac{New\ Hires\ 2017}{Employment\ 2017} - \frac{New\ Hires\ 2016}{Employment 2016}$
A V1: Weighted stock of unemployment & inactive/Employment, unemployment and inactive	APS	$\frac{Weighted\ stock\ of\ unemployed\ and\ inactive}{Employed, unemployed\ and\ inactive}$

Details of construction of these shortage indicators can be found on pp.8-9 of the Annexes to the MAC 2020 Report https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/922021/SOL_2020_Annexes_Final.pdf

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How will these variables react to a shortage?
Answer: it depends on why the shortage arises:

	Rising Demand	Falling Supply	Structural
P1	+	+	0
P2	+	+	0
P3	+	+	-
E1	+	+	+
E2	+	+	+
V2	+	-	0
V3	+	+	0
V4	+	-	0
A V1	+	+	+

pay indicators

vacancy ratios

quantity indicators

A '+' indicates that one would expect the indicator to be satisfied for that cause of shortage, '-' that it would not be expected to be satisfied and a '0' that there is no expectation.

Code	Indicator	Source	Threshold data	Indicator values data
P1	Percentage change of median real pay (1 yr)	ASHE	2006 - 2007	2010-2011
P2	Percentage change of median real pay (3 yrs)	ASHE	2004 - 2007	2008-2011
P3	Return to occupation	LFS	Not benchmarked	2011 Q3 - 2012 Q2
I1	Change in median vacancy duration (1 yr)	JCP	Apr 06 - Mar 07 to Apr 07- Mar 08	Aug 10 - Jul 11 to Aug11 - Jul12
I2	Vacancies / claimant count	JCP	Jan 07 to Dec 07	Aug 11 to Jul 12
V1	Percentage change of claimant count (1 yr)	JCP	Mar 07 to Mar 08	Jul 11 to Jul 12
V2	Percentage change of employment level (1 yr)	LFS	2006 Q1 – 2006 Q4 to 2007 Q1 - 2007 Q4	2010 Q3 - 2011 Q2 to 2011 Q3 - 2012 Q2
V3	Percentage change of median paid hours worked (3 yr)	ASHE	2004 - 2007	2008 - 2011
V4	Change in new hires (1 yr)	LFS	2006 Q1 - 2006 Q4 to 2007 Q1 - 2007 Q4	2010Q3 - 2011Q2 to 2011Q3 - 2012Q2
E1	Skill-shortage vacancies/total vacancies	NESS	2007	2011
E2	Skill-shortage vacancies/hard-to-fill vacancies	NESS	2007	2011
E3	Skill-shortage vacancies/employment	NESS	2007	2011

Shortage indicators

- The MAC ranks occupations within each indicator.
- This gives a good indication of where shortages *may* be arising.
- But to be convincing you want consistent evidence from several indicators – e.g. a large increase in the hiring rate would be consistent with a rise in labour demand, but you would probably want to also see a rise in pay before concluding there was likely to be a shortage.
- The MAC constructs an overall shortage rank of each occupation (that occupation's relative shortage) by simply averaging the ranks of the individual indicators (on the grounds that there is no definitive objective way to prioritise amongst shortage indicators).

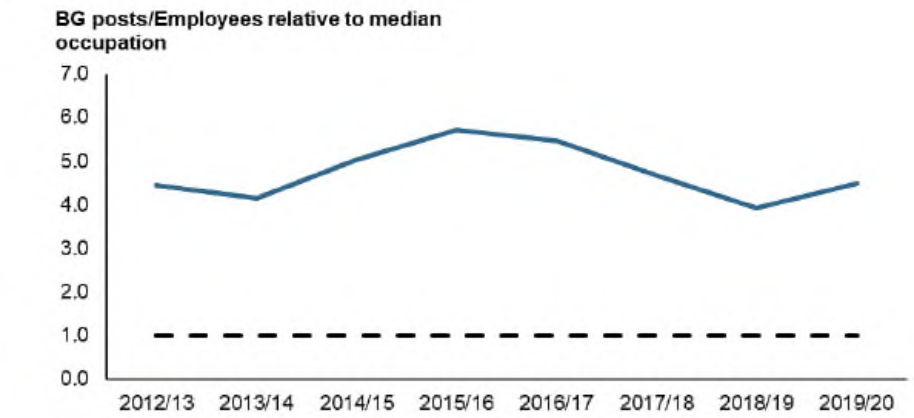
Limitations of the MAC methodology

- The level of disaggregation is limited due to small sample size of data sets
  - In the 2020 Report, the MAC decided to stop specifying shortages at some job-title (5-digit) level, instead classing the whole 4-digit unit group as in shortage if there was sufficient evidence
- Timing of data availability
  - And why doesn't the MAC explicitly forecast shortages?
- Volatility of results
  - Shortage is not the only factor affecting the indicators

Getting round these limitations

- Stakeholder evidence can be very important
- This ‘bottom-up’ evidence is often crucial
- Challenge: to obtain useful concrete information from stakeholders
- MAC experience can shed light on what has worked for the UK in terms of stakeholder engagement

SOC 3113: Engineering technicians

Summary table: SOC 3113 Engineering technicians	
Employment	
Share of total UK employees (APS, 2017-19)	0.4%
Share of employees born in the EEA (ex.UK & RoI) (APS, 2017-19)	6%
Share of employees born outside the EEA (APS, 2017-19)	6%
Share of employees continuously employed for 12 months or less (APS, 2017-19)	15%
Wages	
Median full-time annual wage (ASHE, 2019)	£33,400
25th percentile full-time annual wage (ASHE, 2019)	£27,300
Salary Threshold	
Minimum salary required without additional points	£27,300
Minimum salary required with SOL points	£21,840
Impact of COVID-19	
Exposure to diseases	Low
Proximity to others	Medium
Share of employees furloughed (LFS, 2020)	10%
Percentage change in job postings (Burning Glass, Aug 2019 compared to Aug 2020)	-30.6%
Vacancies	
Number of Burning Glass job posts/number of employees relative to the median ratio for all occupations eligible for the Skilled Worker route (2012/13-2019/20)	
	
Shortage indicator rank *(only including SOCs for which at least 5 indicators could be calculated)*	
Shortage indicator overall rank (/136 eligible occupations below RQF6)	106
Recommendation	
Do not recommend adding occupation to the SOL	

Shaded estimates are based on a small sample size, this may result in less precise estimates which are indicative only and should be interpreted with caution

Non-reported estimates are due to insufficient sample sizes or confidence intervals >20%

An example of a MAC shortage analysis for a 4-digit occupation unit group.

The shortage indicators are summarised in the Shortage indicator rank.

The vacancy ratio, relative to the median occupation's vacancy ratio, is picked out for all occupations as one of the most reliable individual indicators of shortage.

The employment size and wage of the occupation are shown.

Other data in this table relate in part to the particular UK consideration of shortage in relation to migration.

Stakeholder evidence

6N.41 We received 13 responses to the CfE regarding SOC code 3113.

6N.42 One stakeholder reported shortage in the nuclear industry, due to relevant knowledge for new reactors being primarily held abroad where these technologies are already being exploited. They cited long training delays as a key barrier for addressing shortage immediately.

6N.43 Evidence from councils suggested that greater remuneration and benefits offered by private sector companies exacerbated the recruitment and retention challenges already posed by a limited supply of technical engineering skills.

6N.44 We received responses from a range of employers from this SOC code, including job titles such as commissioning engineers, highways technicians and vehicle emissions engineering technician, but there was limited evidence from these.

6N.45 The response from the Northern Ireland's Minister for the Economy identified median salaries for engineering technicians to be 22 per cent lower than the UK median for the occupation in line with many other occupations incurring lower wages in Northern Ireland than the UK average.

Recommendation

6N.46 **We do not recommend including SOC code 3113 (engineering technician) to the shortage occupation list.** The vacancy rate is consistently above the average, but the occupation ranks low in the RQF3-5 shortage indicators (106th). We received some responses from employers in this industry demonstrating shortage, though this was somewhat limited, and not sufficient to demonstrate persistent shortages across the whole occupation.

6N.47 The share of EEA workers in the occupation is low, so we do not expect that shortages will be substantially exacerbated following the end of free movement.

The verdict for this occupation (do not include on SOL) reflects not just those 'top-down' data but also stakeholder evidence, where any was provided. Sometimes the judgement is clear, but in many cases competing factors have to be carefully weighed. Having independent experts to do this is very helpful.

4. How should we research skills supply, skills demand and skills imbalances in South Africa?

How can both qualitative and quantitative approaches be synergised to obtain a holistic perspective of skills supply and demand in South Africa?

Advice based on UK experience

- Use all available data
  - MAC work indicates most shortages are persistent, so even if the data are “old” it is very likely they give useful information. Another implication: forecasting is less important (MAC avoids forecasting: very unlikely to be able to predict the future well enough to be more useful than the recent past).
- Use, establish, enhance relations with government departments, employer and worker stakeholders, industry representative bodies, consultancies, interested parties, and hold regular meetings at all levels. These are a valuable source of information.
- Consultation with stakeholders while preparing reports works well. Run surveys – “calls for evidence” (online has worked well in the UK). Provide strong guidance about what evidence will be most convincing.

Important considerations

- The analysis of skill shortages is a cross-cutting issue.
- Important to retain buy-in from as many interested parties (stakeholders) as possible – within government, employer organisations, individual employers, unions, industry bodies.
- The MAC places huge emphasis on communication with stakeholders.

MAC stakeholder engagement for 2020 Report

The MAC held stakeholder events with the following organisations:

- Nine Government departments
- All devolved administrations
  - Wales roundtable meetings with cross sector representatives
  - Northern Ireland roundtable meetings with cross sector representatives
  - Scotland roundtable meetings with cross sector representatives
- Four Advisory groups with stakeholders representing national, education,
- employer and vulnerability interests
- Meetings with stakeholders including:
  - The British Chambers of Commerce: representing business
  - PWC: with representatives from banking/finance, consulting, oil & gas, manufacturing, defence, pharma, engineering, real estate, retail, construction, hospitality and tech
  - London First: with representatives from food making and distribution, design and consultancy; engineering; legal; hospitality; further and higher education and finance
  - The Cavendish Coalition: with representatives from the NHS and Social Care
  - EY: with representatives from aeronautical engineering and manufacture; the automotive industry, business consulting; the chemicals industry, financial services (including fintech), insurance, the IT and AI sector, manufacturing, media, oil & gas, pharmaceuticals/ life sciences, retail and sustainable technology
  - The Food and Drink Federation
  - A group of stakeholders representing the food chain in the UK, including agriculture, food and drink manufacture/processing and logistics
  - Fragomen

Forms and nature of consultation

- Recent reports have involved electronic consultation with employers and employer organisations. Structured questions can be asked about shortages and employer responses.
- 2020 report received 200 responses. E.g.:
  - Within the last 12 months 177 respondents stated that they, or those they represented, had experienced difficulties recruiting staff. Only 14 stated that they had not experienced any difficulties.
  - 108 “prefer to wait for someone who has most of the skills needed, even if that means leaving a position unfilled for a while”
  - 49 are “willing to compromise on some of the skills needed in order to fill a vacancy sooner”
  - Responses to this question should be viewed in the context of how employers approach training and investment in staff. Further questions concerning training made it clear that there was a preference in the UK for employers to buy in labour rather than train up individuals within their own organisations

Important considerations

- Independence is helpful.
  - The UK's process of appointing independent experts is good, but somewhat flawed as the (Prime) Minister has final say. Independence can be maintained, and impact, information, argument and decisions enhanced, by the presence of civil servants as *ex-officio* members of the committee.
- Permanancy/longevity is helpful.
  - The MAC is a non-statutory body; it would be better to be statutory and report to Parliament rather than reporting to a particular Department, and it would give even greater robustness to political change.
- Trust is essential.
  - Consult widely and independently.
- Maintaining good relations across government is important. Receiving commissions agreed (thrashed out) by all departments is good. Consulting and briefing all is important.