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Employment projection models, job quality and education

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Theo Sparreboom
Senior Labour Economist, PhD
Statistics Department, International Labour Office
Geneva, Switzerland

Overview

- Background and objectives of employment projection models – ILO perspective
- The Philippines Employment Projections Model
  - Macroeconomic scenarios and employment
- Job quality, education and structural change
  - Skills and qualifications mismatch
- Model development issues
- Discussion

Background and objectives

Demand for projection models

- Policy-related
  - Produce alternative projections based on different assumptions
  - Assess impact of exogenous economic shocks
  - Evaluate policy measures
- Development-related
  - Structural change, employment and job quality
  - Industrial/sectoral policy
- Employment services - guidance and counselling
- Development of labour market information and analysis systems
  - Provide a consistent framework to analyse the economy & labour market
  - LMIA systems: tracking indicators ⟶ Extrapolations ⟶ Relationships and projections ⟶ Models
  - Capacity building and information exchange

Sparreboom, T. 2013. 'Labour market information and analysis systems', Chapter 10 in *Perspectives on Labour Economics for Development*, ILO (Geneva): http://www.ilo.org/global/publications/books/WCMS_190112/lang--en/index.htm

Background and objectives

Anticipation of skills needs

- A major part of the interest for EPMs is related to the anticipation of labour and skills requirements
- Manpower planning, a technique that used macroeconomic and sector forecasts to derive how many workers with specific (technical) skills would be needed, was popular in the 1960s and 1970s (Jolly and Colclough, 1972; World Bank, 2012a, box 5.8)
- In most developed economies the focus has shifted from ensuring an adequate supply of skills to delivering demand-responsive, quality education and training systems with information for all labour market participants (Wilson et al., 2013)
- Nevertheless, employment projections often constitute an important element in the anticipation of skills requirements

Background and objectives

Types and (dis-)advantages of projection models

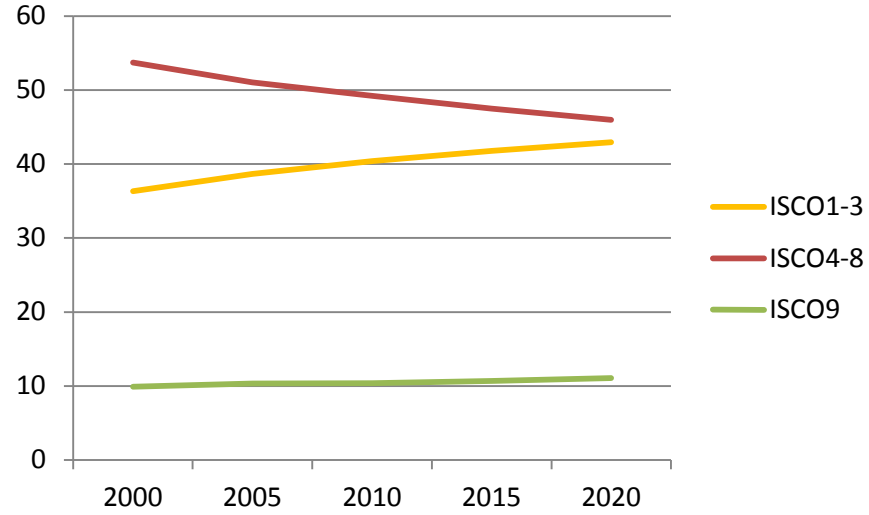
- *Comprehensive macroeconomic and labour market models*; Cedefop macroeconomic multisectoral and multi-country model (E3ME); labour market module includes employment demand, average wages, average hours worked and participation rates (Cedefop, 2012a and 2012b)
- *Models with more limited macro/labour market scope*; Inforum/ILO country employment projection models have been developed for Ukraine (2008), Viet Nam (Viet Nam Ministry of Labour, Invalids and Social Affairs, 2011), Mongolia (2011) and the Philippines (El Achkar et al., 2013)
- *Occupational projection models*, e.g. Namibian Occupational Demand and Supply Outlook Model (NODSOM)

- *Advantages* of projection models: comprehensive; consistent; transparent. *Disadvantages*: data hungry; costly; not everything is quantifiable; may give false impression of precision
- *Alternative approaches*: see Wilson et al (2013); Sparreboom and Powell (2009)

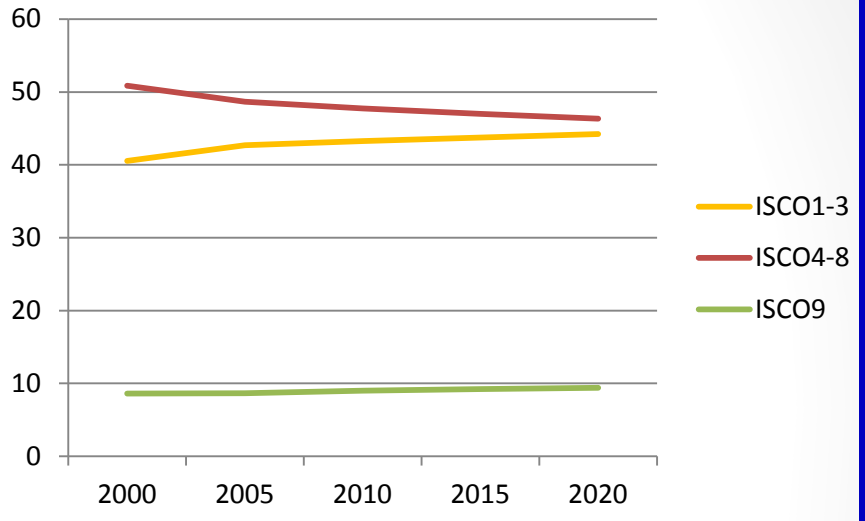
Background and objectives

Cedefop European occupational projections (%)

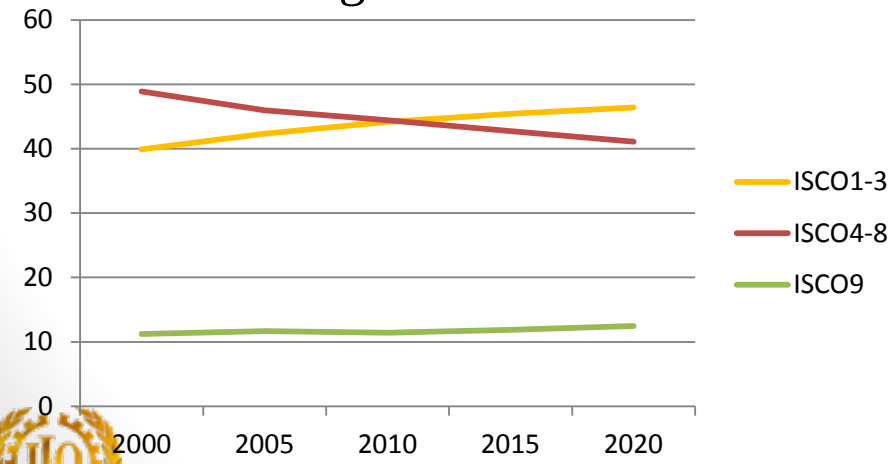
EU 27



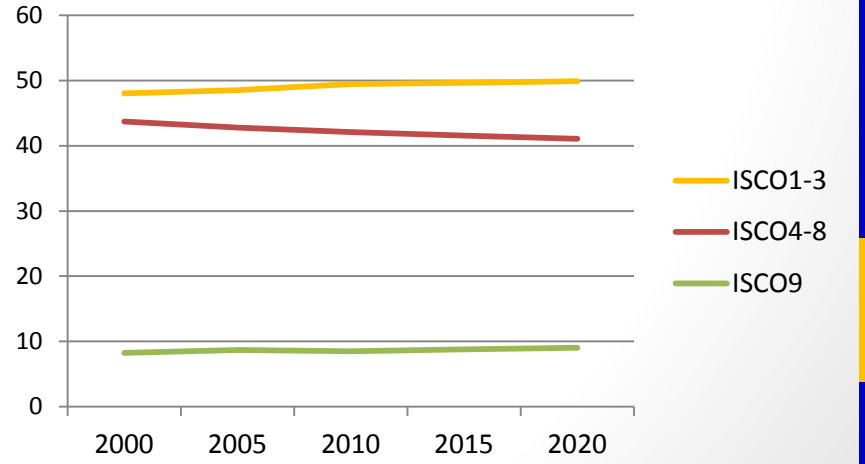
Germany



United Kingdom



Netherlands



Source: Cedefop online database (Cedefop 2012a and b)

Philippines Employment Projection Model
Methodology and data

- Interindustry macroeconomic model based on input output relationship

- Summary of data (2000-2010); 25 sectors (industries)
  - GDP by sector, current and constant prices (supply)
  - GDP by expenditure (C, I, G, etc.), current and constant prices (demand)
  - Gross output by sector
  - Input-output tables (2000 and 2006)
  - Employment by sector; total population and economically active population
  - Sectoral employment-occupation matrix

- Labour market outcomes
  - Labour productivity ratios applied to projected output to obtain employment by industry
  - Employment by occupation obtained from employment by industry using the industry-occupation matrix
  - Unemployment obtained as a residual from ILO labour force projections (EAPEP dataset)

El Achkar Hilal, S.; Sparreboom, T.; Meade, D. 2013. 'The Philippines Employment Projections Model. Employment targeting and scenarios', *Employment Working Paper,* No. 140, International Labour Office (Geneva). http://www.ilo.org/employment/Whatwedo/Publications/working-papers/WCMS_213378/lang--en/index.htm

Philippines Employment Projection Model

Model results (1): real GDP and components

	Actual				Projected		Annual or average annual change (%) Actual			Projected		
	2000	2008	2009	2010	2013	2016	00-10	08-09	09-10	10-13	13-16	10-16
Real GDP (bil. 2000 PHP)	3,581	5,237	5,297	5,702	6,452	7,734	4.8	1.1	7.6	4.2	6.2	5.2
Final consumption	2,994	4,225	4,366	4,516	5,064	5,817	4.2	3.3	3.4	3.9	4.7	4.3
Final consumption of households	2,585	3,731	3,818	3,946	4,429	5,084	4.3	2.3	3.4	3.9	4.7	4.3
Final consumption of government	409	494	548	570	635	733	3.4	10.9	4.0	3.6	4.9	4.3
Gross capital formation	658	985	899	1,184	1,346	1,571	6.1	-8.7	31.6	4.4	5.3	4.8
Net exports	-71	27	32	2	43	346						
Exports	1,839	2,589	2,386	2,886	3,062	3,744	4.6	-7.8	21.0	2.0	6.9	4.4
Imports	1,911	2,561	2,354	2,884	3,020	3,399	4.2	-8.1	22.5	1.5	4.0	2.8

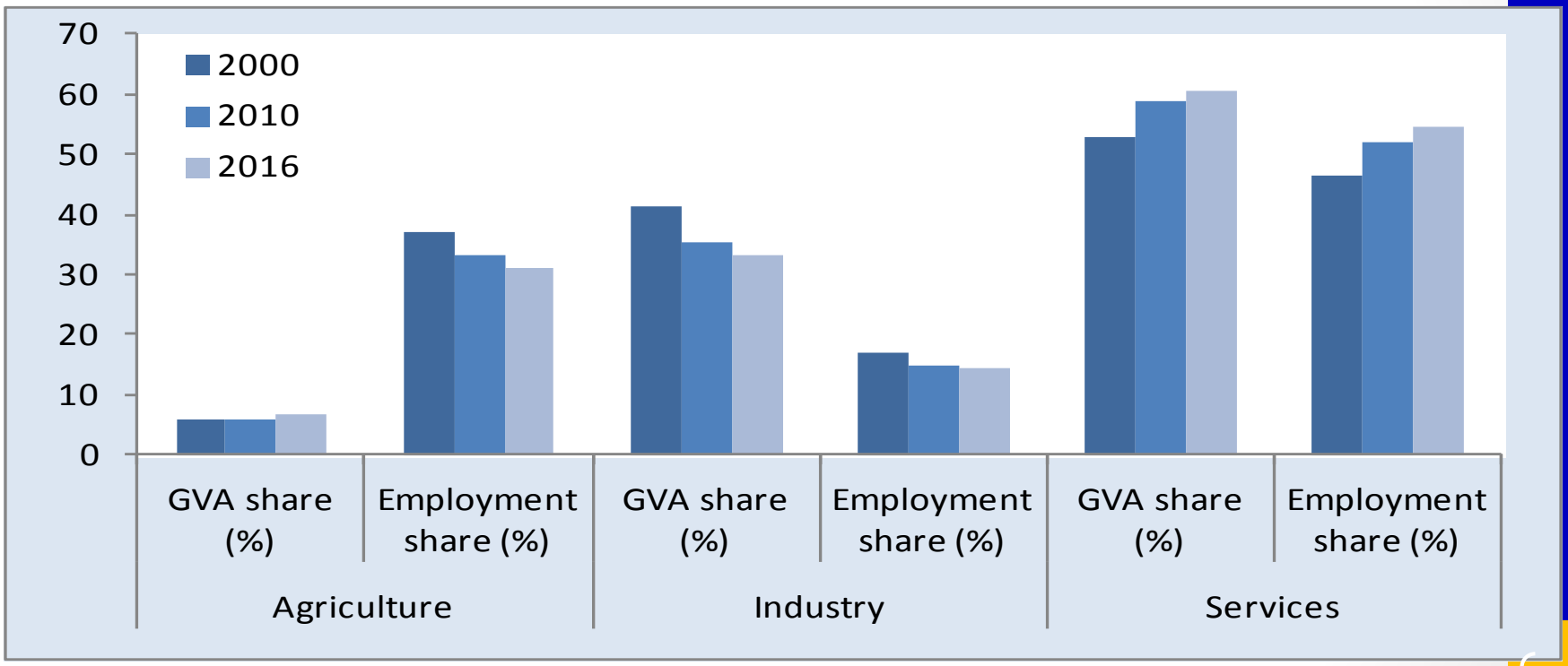
Philippines Employment Projection Model

Model results (2): labour market aggregates

	Actual			Projected		Annual or average annual change (%) Actual			Projected		
	2001	2008	2009	2010	2013	2016	01-10	08-09	09-10	10-13	13-16	10-16
Total population (mil.)	77.7	90.2	92.0	93.8	99.1	104.4	2.1	2.0	1.9	1.9	1.8	1.8
Working age population (15+, mil.)*	48.9	57.8	59.2	60.7	65.2	69.6	2.4	2.4	2.5	2.4	2.2	2.3
Labor Force (mil.)	31.4	36.8	37.9	38.9	41.6	44.5	2.4	3.0	2.6	2.3	2.2	2.3
Employment (mil.)	29.2	34.1	35.1	36.0	38.4	41.4	2.4	2.9	2.8	2.2	2.5	2.3
Unemployment (mil.)	2.2	2.7	2.8	2.9	3.2	3.1	3.0	4.2	1.0	3.9	-0.9	1.5
Labour Productivity (thous. PHP per worker)	126.4	153.6	151.1	158.2	167.9	186.9	2.5	-1.7	4.7	2.0	3.6	2.8
Labor Force Participation Rate (%)	64.1	63.6	64.0	64.1	63.9	63.9						
Employment-to-population Rate (%)	59.6	58.9	59.2	59.3	59.0	59.4						
Unemployment Rate (%)	7.0	7.4	7.5	7.3	7.7	7.0						

Philippines Employment Projection Model

Model results (3): employment and value added by sector



Job quality

- Dualism between traditional and modern segments characterizes the economic and labour market structure of developing economies, which is reflected in differences in job quality, productivity levels, social protection levels, educational attainment and other features (e.g. Campbell, 2013).

- Two measures of job quality :
  - Vulnerable employment rate, which is defined as (the number of own-account workers + number of contributing family workers)/total employment. This indicator is based on the classification by status in employment (ICSE).
  - Working poverty rate, defined as employed persons in a household whose members are living below the poverty line, as a proportion of total employment.

- In PEPM, vulnerable employment and working poverty are projected using the shares in each of 25 sectors.

- Other employment characteristics, including informal employment, can be added.

Philippines Employment Projection Model

Model results (4): employment quality

		Actual			Projected		Annual or average annual change (%) Actual			Projected		
	2003	2006	2009	2010	2013	2016	03-06	06-09	09-10	10-13	13-16	10-16
Employment (mil.)	30.6	32.6	35.1	36.0	38.4	41.4	2.1	2.4	2.8	2.2	2.5	2.3
Vulnerable employment (mil.)	13.7	14.5	14.9	15.0	15.9	16.7	2.1	0.9	0.5	1.9	1.7	1.8
VER (%)	44.6	44.5	42.6	41.7	41.4	40.4						
Working poverty (1.25$/day, mil.)	5.7	6.5	5.7	6.0	6.1	6.2	4.1	-4.2	5.8	0.7	0.3	0.5
WPR (1.25$/day, %)	18.7	19.8	16.2	16.6	15.9	14.9						
Working poverty (2.00$/day, mil.)	12.3	13.7	13.6	14.0	14.8	15.4	3.8	-0.2	2.9	1.7	1.4	1.6
WPR (2.00$/day, %)	40.1	42.1	38.9	39.0	38.4	37.2						

Job quality, education and structural change

- Education intensity in developing economies, in particular in low-income countries, is still generally low, despite advances in education
- This may result in high rates of underqualification and other indications that a lack or shortage of education is an impediment for growth, development and better labour market outcomes
- Analysis of the role of education is often hampered by large differences in education intensity in different segments of the labour market (duality)
- Education intensity tends to rise when economies experience structural change

Education intensity

	Period	National	Agriculture	Industry	Services	Unemployed
India	2004	21.5	10.2	19.6	42.6	39.3
Indonesia	2004	45.9	23.1	53.7	61.4	81.4
Mozambique	2008	11.9	5.6	29.5	41.9	6.6
Namibia	2012	50.4	20.4	58.3	64.2	47.8
Philippines	2004	50.9	23.2	56.7	67.3	63.5
Tanzania	2006	5.9	1.6	11.3	17.9	9.1
Thailand	2005	36.5	17.5	46.6	51.9	65.4

Note: education intensity is defined as the proportion of workers with at least secondary education
Sources: ADB (2007); Sparreboom and Nübler (2013); Sparreboom and Abdullaev (2014).

Skills mismatch

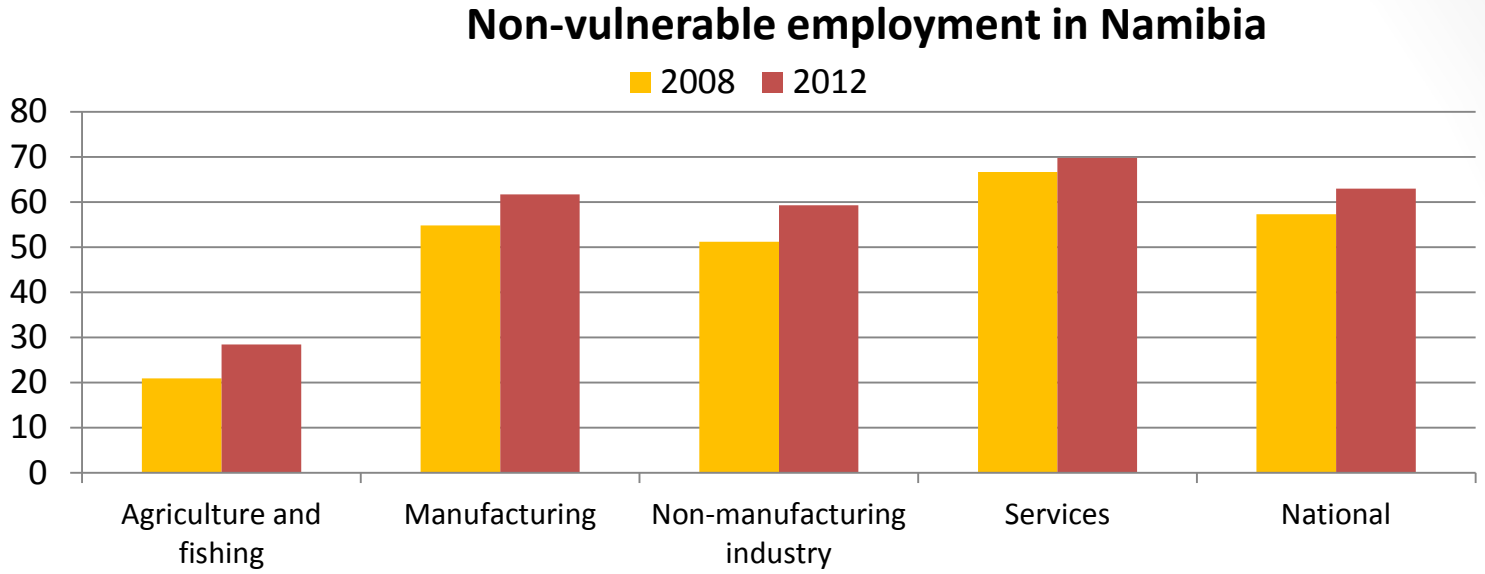
Incidence of overqualification and underqualification

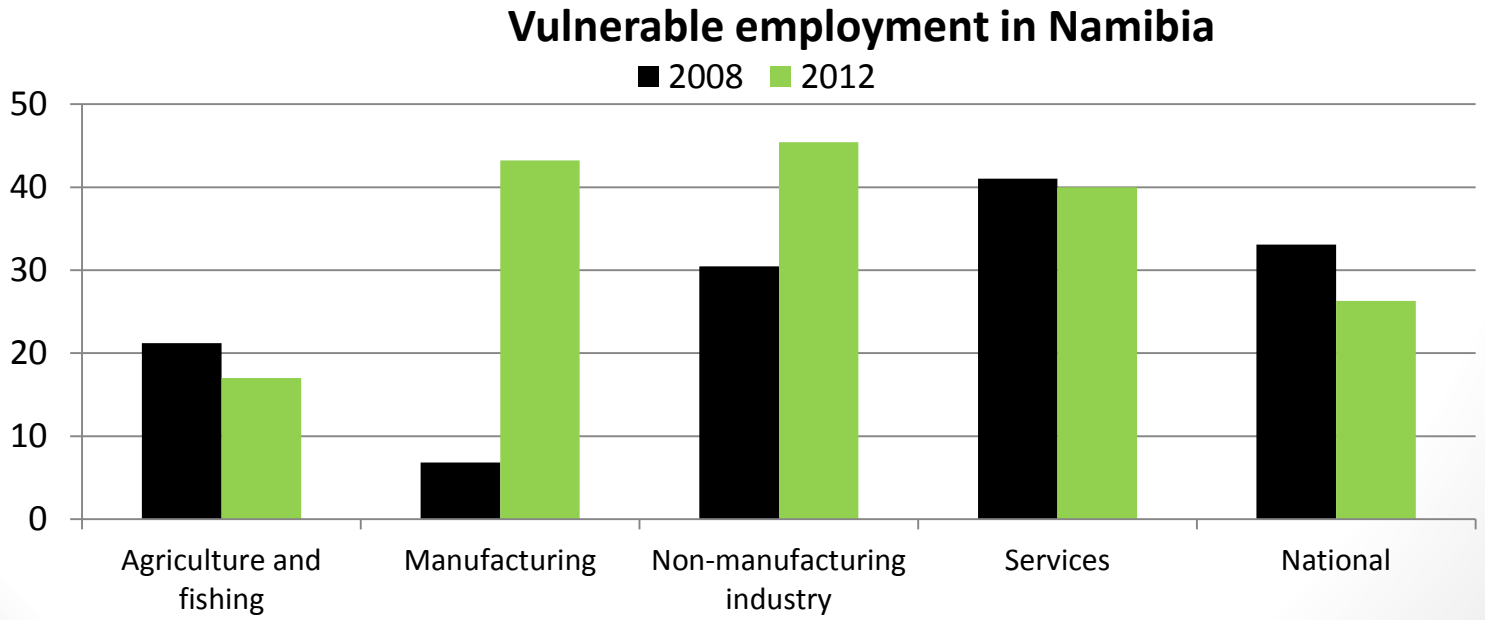
Underqualification (%)	2001/02	2004	2006	2008	2010
Europe	36.4	34.5	32.0	31.5	28.6
Namibia				50.9	
Philippines	35.9				29.4
Tanzania	93.5		90.7		

Overqualification (%)	2001/02	2004	2006	2008	2010
Europe	7.4	8.4	8.9	9.5	10.1
Namibia				8.1	
Philippines	20.6				25.0
Tanzania	0.2		0.4		

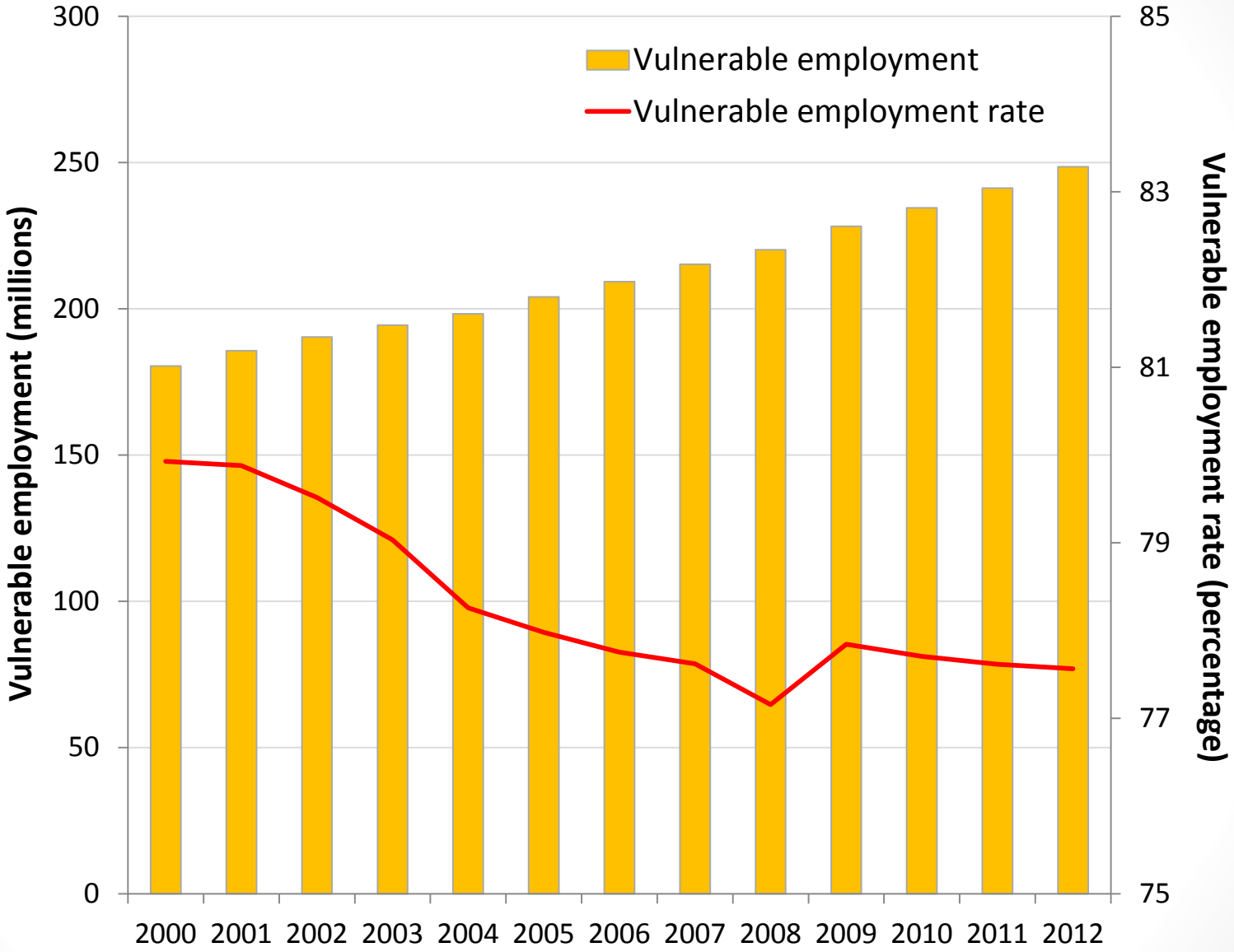
Sources: ILO (2013); El Achkar Hilal et al. (2013); Sparreboom and Nübler (2013); Sparreboom and Abdullaev (2014).

Education intensity by broad sector (%) show large differences between vulnerable and non-vulnerable segments of the employed





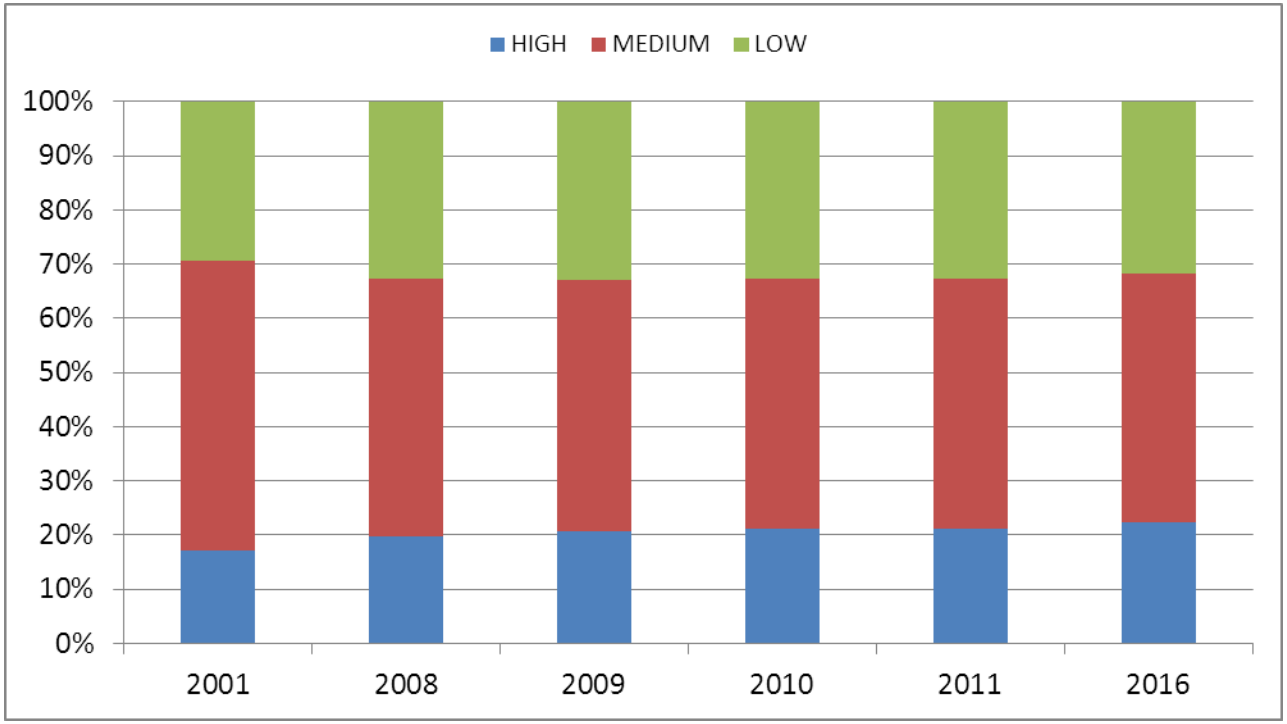
Vulnerable employment in sub-Saharan Africa



Source: *Global Employment Trends 2014: Risk of jobless recovery?* (Geneva, ILO, January 2014)

Philippines Employment Projection Model

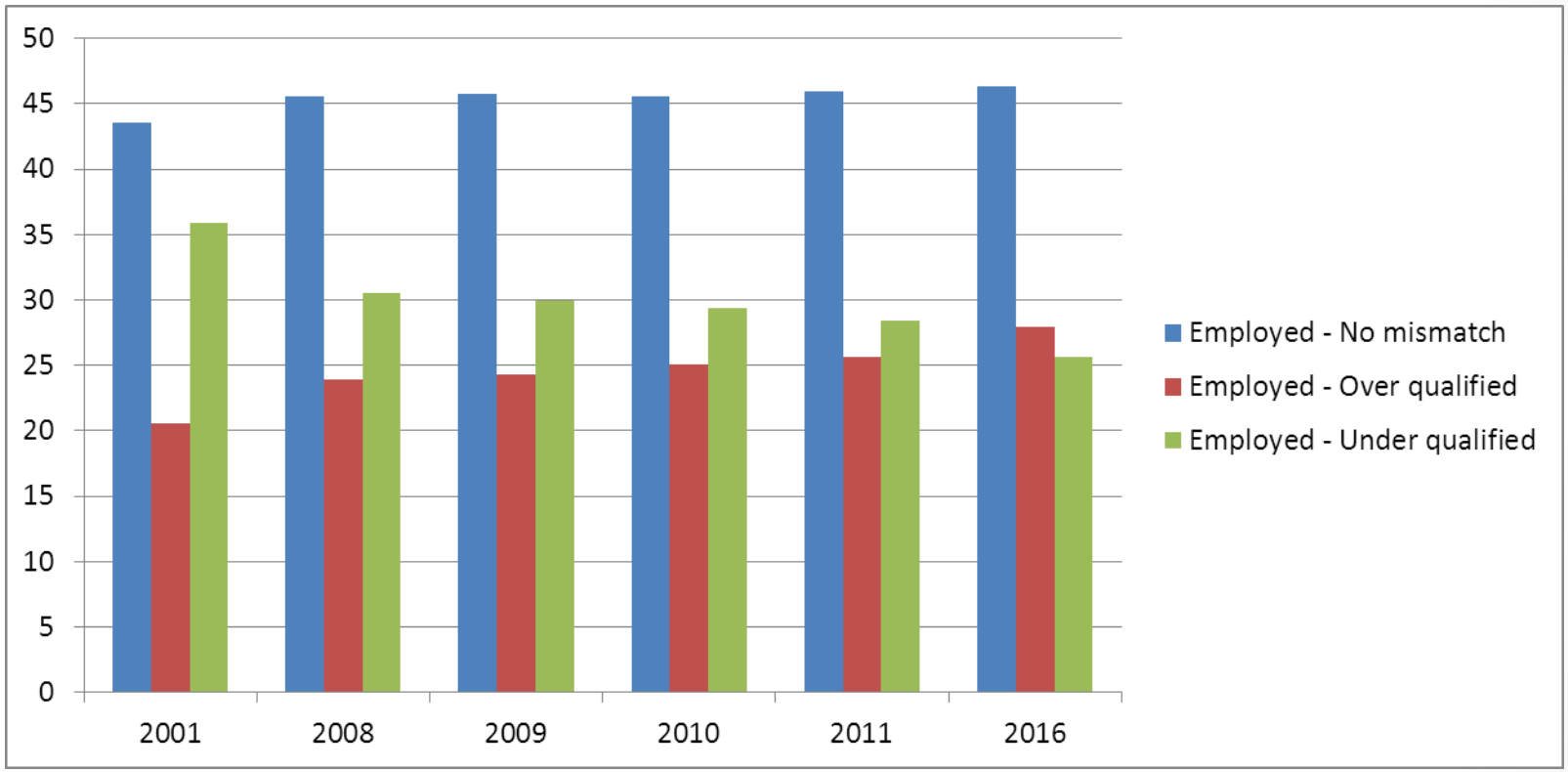
Model results (5): occupational distribution and skills



ISCO-1988 – Major groups		ISCO skill level*
1	Legislators, senior officials and managers	--
2	Professionals	4
3	Technicians and associate professionals	3
4	Clerks	2
5	Service workers and shop and market sales workers	2
6	Skilled agricultural and fishery workers	2
7	Craft and related trades workers	2
8	Plant and machine operators and assemblers	2
9	Elementary occupations	1
0	Armed forces	--

Philippines Employment Projection Model

Model results (6): projections of qualifications mismatch



Philippines Employment Projection Model

Model results (7): mismatch by major group (2010)

	No mismatch	Over-qualified	Under-qualified
Officials of government and special interest organizations, corporate executives, managers, managing proprietors and supervisors	41.0	0.0	59.0
Professionals	99.6	0.0	0.4
Technicians and associate professionals	71.1	0.0	28.9
Clerks	13.7	79.8	6.5
Service workers and shop and market sales workers	38.3	37.2	24.5
Farmers, forestry workers and fishermen	16.9	8.7	74.5
Trades and related workers	36.3	18.2	45.4
Plant and machine operators and assemblers	42.0	24.7	33.2
Laborers and unskilled workers	62.8	37.2	0.0
Special occupations	31.0	69.0	0.0
All Occupations	45.6	25.0	29.4

Employment Projection Models

Some development issues

- Supply of skills: construction of a 'selective manpower planning model' to support industrial or sectoral policies within a broader educational/ occupational planning framework ('mismatch')
- Taking duality in the economy and the labour market into account based on measures of job quality
- Incorporating the role of education in determining long term growth based on a production function (trends in capacity utilization)

Thank you for your attention