

# the **Lisbon** council

making Europe fit for the future

Discussion of  
Professor David Neumark  
„Future Skill Shortages in the U.S. Economy?”

Catch the Train – Skills, Education and Jobs

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## Primary findings by Prof Neumark & al

*“Based on our formal projections, we see little likelihood of skill shortages emerging by the end of this decade” – ie the year of 2018, until when the US Bureau of Labor Statistics (BLS) has provided occupational projections”*

This is under 3 key assumptions of:

1. *„Projection that young adults will continue to experience improvements in educational attainment compared to the cohorts that preceded them*
  2. *Projection of continued upgrading of educational attainment levels of older workers in accordance with historic trends in skill acquisition*
  3. *Projections that labor force participation rates continue to rise for more highly-educated older adults, and that past patterns in retirement will prevail for the baby boom as it reaches retirement ages”*
- > i.e. under steady state assumptions of continuing main trends experienced during 2000-2008, matched against a demographic forecast until 2018

## Why are we concerned about a pending skills shortage?

### Because.....

*“The impending retirement of the baby boom cohort could pose dramatic challenges for the U.S. labor force for at least two reasons:*

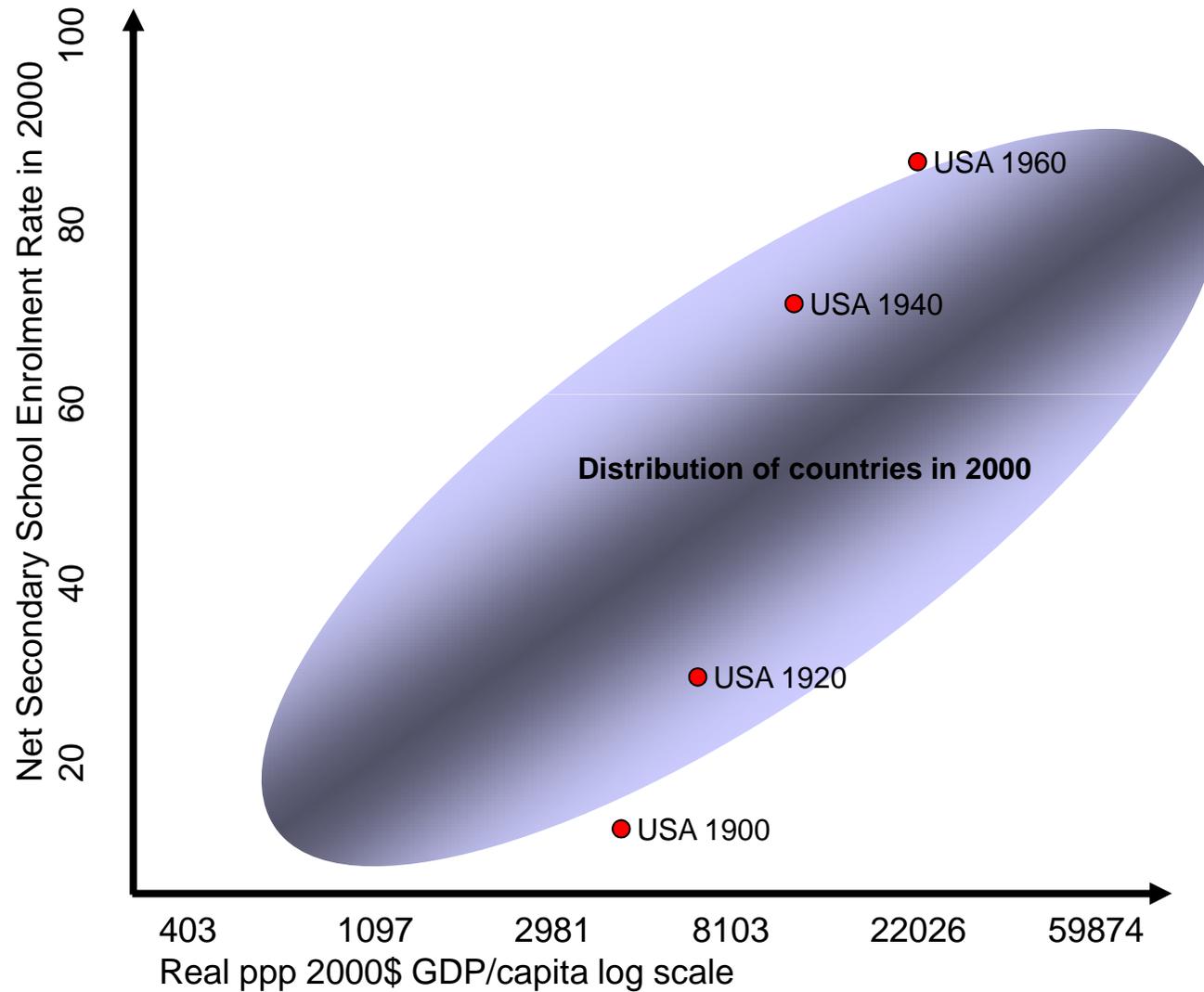
1. *the boomers – adults born between 1946 and 1964 – are large in number. In 2008, boomers made up 34 percent of all adults in the United States, and 38 percent of all workers*
  2. *boomers are relatively well-educated. Many came into adulthood just as the nation was rapidly expanding postsecondary educational opportunities in relatively low-cost public institutions”*
- Conditions that are not replicated in Europe:
1. EU more heterogeneous with less labor mobility than US: some countries are experiencing much sharper demographic changes than US, some less
  2. EU more heterogeneous in educational attainment than US: some countries have comparable education levels, others far less

...because there is a nagging suspicion about education expansion driving economic growth?

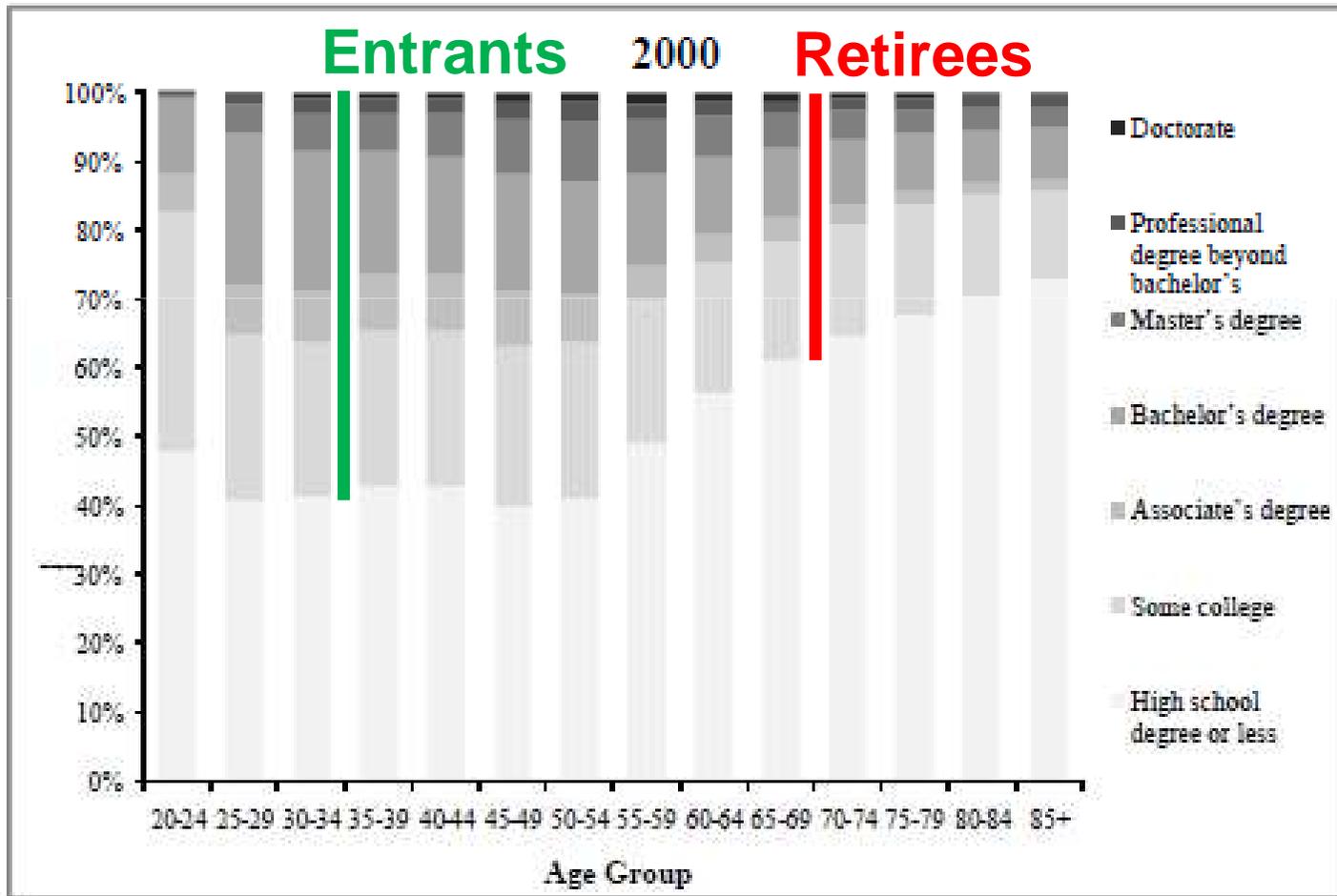
**Average annual percentage change in the US  
labor productivity      education expansion**

1915 – 1940	2.45	0.50
1940 – 1960	2.92	0.49
1960 – 1980	2.41	0.59
1980 – 2005	2.18	0.37
1915 – 2005	2.47	0.48

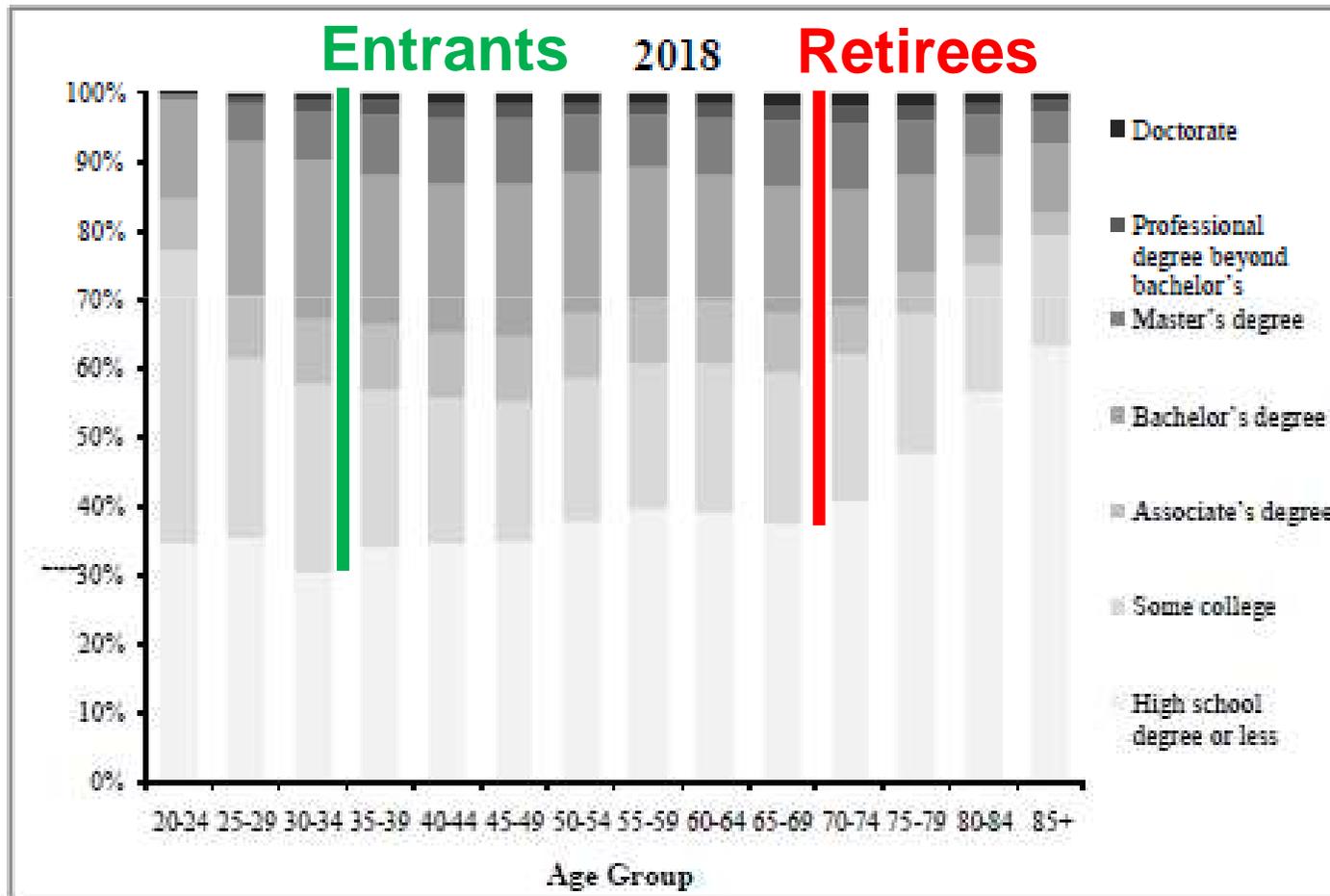
## Education is linked to wealth creation



In 2000 labor market entrants were more numerous and better educated than retirees in the US



In 2018 entrants are relatively less numerous and relatively less well educated compared to 2000 in the US



So while the numbers just about match in 2018, the authors suspect that thereafter trouble might be brewing....

*“we expect that projections of the U.S. economy to 2030 would show a continuation of current patterns, with greater rates of growth in industries and occupations that employ highly-educated workers, consistent with the longstanding trend in the United States of moving towards a more highly-skilled economy.*

*One certainty is that the aging of the boomer cohorts will drive up the demand for health care. Because health care occupations tend to have higher skill requirements than other occupations, the more rapid growth of this sector will contribute to greater demand for highly-educated workers.*

*Combined with the demographic supply forecasts to 2030, it is plausible, then, that general skill shortages would be more evident in projections extended to 2030.”*

## But what is the target?

*„Our starting point, which we take as given, is BLS projections of employment growth by occupation (Woods, 2009; Lacey and Wright, 2009).*

*In the BLS model labor force projections are derived from U.S. Census Bureau population projections, a macroeconomic model generating industrial composition forecasts, and a matrix providing occupational projections based on industry composition and levels (Bartsch, 2009).”*

➤ i.e. a circulatory loop of macroeconomic growth projection based on resources available (and a likely steady state continuation of historical experience), which then confirms that these resources are indeed available.



Grey indicates educational level higher than deemed necessary for success in this job category

## Evidence of a skills shortage

**Table 4: Estimated Returns to Schooling, Above and Below the Maximum BLS Required Skill Category, 2008**

Occupation Descriptions	Coefficients Relative to Lowest Category (High School or Less)						Joint Test	
	Some College	Associate's Degree	Bachelor's Degree	Master's Degree	Professional Degree	Doctorate	P-value	D.o.F.
Management occupations	0.165 (0.006)	0.171 (0.008)	0.465 (0.005)	0.630 (0.006)	0.702 (0.014)	0.775 (0.014)	<.0001	3
Business and financial operations occupations	0.114 (0.009)	0.099 (0.011)	0.379 (0.008)	0.596 (0.010)	0.620 (0.020)	0.670 (0.030)	<.0001	3
Computer and mathematical science occupations	0.102 (0.012)	0.074 (0.013)	0.293 (0.011)	0.403 (0.012)	0.404 (0.031)	0.481 (0.022)	na	na
Architecture and engineering occupations	0.075 (0.011)	0.117 (0.012)	0.400 (0.010)	0.547 (0.011)	0.419 (0.026)	0.663 (0.020)	<.0001	3
Life, physical, and social science occupations	0.056 (0.025)	0.091 (0.029)	0.294 (0.020)	0.406 (0.021)	0.422 (0.032)	0.541 (0.022)	na	na
Community and social services occupations	0.055 (0.014)	0.084 (0.017)	0.202 (0.012)	0.386 (0.013)	0.374 (0.023)	0.412 (0.025)	0.2522	1
Legal occupations	0.048 (0.030)	0.044 (0.033)	0.198 (0.029)	0.433 (0.040)	0.821 (0.026)	0.740 (0.036)	na	na
Education, training, and library occupations	0.036 (0.009)	0.095 (0.012)	0.458 (0.008)	0.673 (0.008)	0.746 (0.014)	0.926 (0.010)	na	na
Arts, design, entertainment, sports, and media occupations	0.137 (0.020)	0.129 (0.023)	0.328 (0.018)	0.426 (0.023)	0.533 (0.056)	0.507 (0.054)	<.0001	3
Health care practitioners and technical occupations	0.059 (0.010)	0.294 (0.009)	0.418 (0.009)	0.544 (0.011)	1.075 (0.010)	0.902 (0.015)	na	na
Health care support occupations	0.081 (0.008)	0.181 (0.011)	0.182 (0.014)	0.371 (0.030)	0.597 (0.038)	0.547 (0.068)	<.0001	4
Protective service occupations	0.204 (0.008)	0.278 (0.010)	0.376 (0.009)	0.550 (0.018)	0.497 (0.045)	0.679 (0.066)	<.0001	4

## Evidence of skills shortage even in „low-education“ jobs

Food preparation and serving related occupations	0.097 (0.008)	0.235 (0.013)	0.242 (0.012)	0.279 (0.035)	0.127 (0.075)	0.447 (0.134)	<.0001	6
Building and grounds cleaning and maintenance occupations	0.107 (0.008)	0.121 (0.015)	0.149 (0.014)	0.282 (0.039)	0.129 (0.066)	0.238 (0.193)	<.0001	6
Personal care and service occupations	0.087 (0.011)	0.150 (0.017)	0.287 (0.014)	0.288 (0.032)	0.252 (0.070)	0.372 (0.156)	<.0001	5
Sales and related occupations	0.163 (0.005)	0.191 (0.008)	0.525 (0.006)	0.708 (0.011)	0.707 (0.029)	0.701 (0.045)	<.0001	3
Office and administrative support occupations	0.091 (0.003)	0.117 (0.004)	0.248 (0.004)	0.402 (0.008)	0.370 (0.023)	0.523 (0.035)	<.0001	4
Farming, fishing, and forestry occupations	0.092 (0.022)	0.190 (0.040)	0.292 (0.032)	0.497 (0.098)	0.145 (0.187)	0.863 (0.235)	<.0001	6
Construction and extraction occupations	0.111 (0.006)	0.162 (0.011)	0.145 (0.011)	0.145 (0.029)	0.195 (0.056)	0.179 (0.112)	<.0001	6
Installation, maintenance, and Repair occupations	0.120 (0.006)	0.172 (0.008)	0.190 (0.011)	0.290 (0.027)	-0.089 (0.069)	0.174 (0.122)	0.0003	3
Production occupations	0.153 (0.004)	0.198 (0.008)	0.287 (0.008)	0.427 (0.019)	0.234 (0.047)	0.493 (0.060)	<.0001	5
Transportation and material moving occupations	0.108 (0.005)	0.123 (0.010)	0.287 (0.010)	0.411 (0.024)	0.105 (0.064)	0.157 (0.104)	<.0001	1

Standard errors are shown in parentheses. Grey cells represent the education categories above the highest BLS category.

 Grey indicates educational level higher than deemed necessary for success in this job category

Demonstrates the need to forecast on the basis of actual job content as evidenced by employment practices ex-post, rather than only on formal qualifications required ex-ante

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## Additional alarming statement

*“We know that in the latter part of the 20th century, there were sharp increases in the returns to schooling (e.g., Goldin and Katz, 2007). Yet there is essentially no evidence that there was a supply response in terms of increased shares of workers with higher education.*

*Indeed the most serious part of the run-up in schooling wage premia is attributed to the rising demand for educated workers in the face of a decline in the growth rate of educated workers (Blackburn et al., 1990; Goldin and Katz, 2007). According to Goldin and Katz the decline in the growth rate of education is not principally due to rapid growth in immigration beginning in 1965, but instead to developments among the native-born (p. 155).*

*Note that this apparent absence of a supply response is among young cohorts who can respond easily by staying in school.”*

## Explicit Top Down Targets at the EU for 2020

1. **75 % of the population aged 20-64 should be employed**
2. 3% of the EU's GDP should be invested in R&D
3. the "20/20/20" climate/energy targets should be met
4. **the share of early school leavers should be under 10%, and at least 40% of the younger generation should have a tertiary degree**
5. 20 million less people should be at risk of poverty

With 1. and 4. leading to subtargets for education and training:

- a) the share of early leavers from education and training should be less than 10%;
- b) the share of 30-34 year olds with tertiary educational should be at least 40%;
- c) at least 95% of children between the age of four and the age for starting compulsory primary education should participate in early childhood education;
- d) the share of 15-years olds with insufficient abilities in reading, mathematics and science should be less than 15% ;
- e) an average of at least 15% of adults (age group 25-64) should participate in lifelong learning

...incur rather large numbers of LLL training. 41 million equivalent secondary educations need to be achieved

The first target of the Europe 2020 strategy is to achieve an employment level of 75% of all 20-65 year olds

Assuming some reasonable employment rates by attainment rates, this target means that ca 31 million largely unskilled (no secondary schooling degree) workers, and ca 10 million skilled (with secondary schooling degree) must be found a competitive job (otherwise it will not be secure employment).

This will presumably require for both groups a massive investment in skills on the level comparable to a secondary schooling degree, ie 41 million complete sets of educations to be generated during adulthood in the next ten years (for comparison, the total European population aged 0-24 years old is 27.8 million).

## 45 million equivalent tertiary degrees may need to be generated over the next one or two decades

The fourth target of the Europe 2020 strategy aims for 40% of the 30-34 year old work force to have a third level education or equivalent skill level.

This target implies that in order to be globally competitive actually all generations should have that level of educational attainment.

Of the currently working 225 million Europeans, 61 million already have a tertiary degree (representing 82.8% of all tertiary degree holders).

To reach the 40% target, a total of 45 million tertiary degrees need to be generated for them, or put differently: 42% of all currently employed skilled workers not holding a tertiary degree or equivalent, need to acquire one over the next one or two decades (demography does not help yet in reducing these numbers, because the bulk of the today's insufficiently educated will still be working in the next 20 years).

## The EU 2020 targets may imply a near doubling of the size of the current formal schooling system of EU

In summary, to reach the 75% employment target the EU needs to generate 41 million sets of secondary education, and to reach the 40% third level education target it needs to generate 45 million sets of tertiary education.

If each set of education takes three years to complete, and in each year 5% of those 41+45 million would start their LLL-education, this would imply an adult student population of 13 million in each year in some kind of formal education over the next 20 years. This is almost as large as the entire primary, secondary and tertiary education system in EU today.

Assuming that each such set of education costs 40.000 Euros in cash, this would amount to an investment of 200 billion Euro over 20 years, or about 1.7% of European GDP per year.