

# GLOBAL TEACHER STATUS INDEX 2018

**PETER DOLTON, OSCAR MARCENARO,  
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This Report presents the results of a large scale public survey of 35 countries on Teachers and Educational Systems. A Global Teacher Status Index is reported.



National  
Institute of  
Economic and  
Social Research



**VARKEY  
FOUNDATION**

*Changing lives through education*

“This index finally gives academic proof to something that we’ve always instinctively known: the link between the status of teachers in society and the performance of children in school. Now we can say beyond doubt that respecting teachers isn’t only an important moral duty – it’s essential for a country’s educational outcomes.

“When we conducted the Global Teacher Status Index five years ago we were alarmed by the weight of evidence pointing to the low status of teachers around the world. It was this that inspired us to create the Global Teacher Prize, which shines a light on the extraordinary work that teachers do around the world.

“It’s heartening that since the first Global Teacher Status Index there has been a modest rise in the status of teachers globally. But there is still a mountain to climb before teachers everywhere are given the respect they deserve. After all, they’re responsible for shaping the future”.

**Sunny Varkey - Founder, Varkey Foundation**



# GLOBAL TEACHER STATUS INDEX 2018

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*Changing lives through education*

## **About the Varkey Foundation**

The Varkey Foundation is a not-for-profit organisation established to improve the standards of education for underprivileged children throughout the world. Our mission is to help provide every child with a good teacher. We work towards this by building teacher capacity, mounting advocacy campaigns to promote excellence in teaching practice at the highest levels of policy making, and providing grants to partner organisations that offer innovative solutions in support of our mission.

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The growth of internationally comparative student assessment measures such as the Programme for International Student Assessment (PISA), and the annual publication of the OECDs annual Education at a Glance, provides a global perspective of how children perform on comparable educational tests across many countries of the world. Understanding how this performance relates to the competence and effectiveness of teachers has been much debated – with the now famous aphorism that “the quality of an education system cannot exceed the quality of its teachers”.

But what is much less well understood within discussions of the roles of the teacher in improving pupil outcomes are the roles that social standing, or status, play in the position of teachers in each country, and how these might impact on education systems and pupil results?

In 2013, the Varkey Foundation conducted the first Global Teacher Status Index (GTSI13) to try and establish the answers to some of these questions. This showed that across all the countries reviewed, teachers occupied a mid-ranking of status, with teachers recording the highest status in China, and lowest in Israel and Brazil. Teachers were most commonly thought to be similar to social workers in terms of status.

Five years on, this work presents an updated analysis to build on the results.

In this report we are able to show that both high teacher pay and high status are necessary to produce the best academic outcomes for pupils.

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## CHAPTER 1

INTRODUCTION &  
EXECUTIVE SUMMARY

The growth of internationally comparative student assessment measures such as the Programme for International Student Assessment (PISA), and the publication of the Organisation for Economic Cooperation and Development's (OECD) annual Education at a Glance provides a global perspective of how children perform on comparable educational tests across many countries of the world. Understanding how this performance may relate to the resources that a country devotes to its educational system: how teachers are paid, and what proportion of resources are allocated to reducing class sizes, providing better training for teachers and providing more ancillary staff or better facilities, is crucial. What is much less well understood are the roles cultural, political and economic factors and social standing play in the position of teachers in each country, and how these might impact on education systems?

More specifically we need to understand:

- **How teachers are respected in relation to other professions.**
- **The social standing of teachers.**
- **What people think teachers ought to be paid, how many hours they work, how this compares to what teachers are actually paid and how many hours they actually work.**
- **Whether people think teachers ought to be paid according to the performance of their pupils.**
- **How much teachers are trusted to deliver a good education to our children.**
- **Whether parents would encourage their children to be teachers.**
- **Whether it is perceived that children respect their teachers.**

The first Varkey Global Teacher Status Index was published in 2013. In the intervening five years a lot has happened in different countries to their economies, their educational systems and to the position of teachers, their

pay and performance and the educational outcomes of school pupils. We wished to return to the main questions posed in this first report and ask many more. We also wished to survey many more countries and seek to be more ambitious in the issues we could research.

This Global Teacher Status Index survey in 2018 (GTSI 2018) went to 35 countries (instead of 21 countries as in 2013) and administered a questionnaire to over 1,000 members of the public in each country. Specifically, we went to 14 new countries (Taiwan, Hungary, Ghana, Uganda, Argentina, Peru, Colombia, Chile, Panama, India, Russia, Malaysia, Indonesia, and Canada). These countries were chosen on their performance in PISA and TIMSS assessments to represent each major continent and as representative of different strands of education systems. It was deemed important to compose a sample in line with the relevant proportions in the population. This was done by careful consultation of the available country-specific population census information. Quota sampling was used to allocate respondents using a balanced sample of 16 to 64-year-olds, which had sample fractions according to their: age, gender and region. As in 2013, the data for this study was collected by the polling company Populus using a web-based survey (WBS). The consistency of survey method and the retention of nearly all the questions we had in our previous questionnaire allow for significant comparative analysis.

We took advantage of five years of innovation in survey design to introduce a number of new elements to the survey in 2018. Firstly, as noted above, we extended the coverage of countries sampled. A second fundamental change in this new survey is that we also included an oversample of an additional 200 teachers in 27 of our countries. This extra over sample meant that we could make interesting comparisons of what the public thinks of

# INTRODUCTION & EXECUTIVE SUMMARY

teachers and the education system with what the teachers in the same country think of their job and the system they work in from the inside. This extra data proved to yield interesting new insights.

A third major new component in the GTSI 2018 survey was that we wished to incorporate an element of the 'implicit response' views of teachers and the general public. Specifically, we wished to add to the questions from 2013 which were primarily based on considered responses to questions relating to ordering, ranking and given considered opinions about teachers and their role by including an element of 'quick fire' implicit response questions with which we attempt to measure people's sub-conscious reactions and impressions of teachers. Hence, we sought to capture the innate, unconsidered views of people rather than those borne of long reflective processes. The underlying theory here is provided by Kahneman (2011) who suggests that there is a fundamental distinction between cognitive activity related to 'front of the brain' processes which can be thought of as 'implicit and intuitive' - rather than what the person really thinks in their subconscious; views and reactions and those of the 'back of the brain' considered and reflected opinions which may contain elements of what one is 'meant to' or 'expected to' think conventionally. We sought to do this by providing the respondent with 10 pairs of words and asked them to select in each pair the word which best represented teachers. We asked them to do this as fast as possible and encouraged them not to think or reflect on this too much.

A fourth new element in the GTSI 2018 is that we used the latest quasi-experimental survey design techniques to attempt to reveal new insights. For example, we provided a visual 'nudge' to respondents by providing a third of the sample with one image of an ordered classroom of diligent pupils, a second third with a different image of unruly pupils in a classroom and a final third got no image when answering questions. The question - inspired by the work a recent Nobel Laureate in Economics Richard Thaler, (see Thaler and Sunstein 2008) - we wish to explore here is whether people's perceptions are altered by having a different visual promoting image when answering questions.

A fifth experimental insight we used was to variously ask questions in a different order to half the sample (in the case of seeking answers to questions on occupational status and wage perception rankings) to see if we can disentangle whether perceptions about status causes perceptions

about pay - or - whether perceptions about pay causes perceptions about status. Additionally, we sought to examine the role that information about educational spending may play in shaping people's views on how much should be spent on education.

The results of this survey are collated in this report and presented in five key sections:

- Teacher status and the computation of the GTSI 2018.
- Teaching as an occupation.
- Teachers Earnings and Working Hours.
- A more rounded and implicit look at status and the GTSI and how it relates to GTSI 2013.
- Understanding the Key Relationships between GTSI 2018, teacher pay and pupil PISA outcomes.

## A. Teacher status and the computation of the GTSI 2018

This portion of our study focused on teacher status and provided indicators that formed the calculation of the Teacher Status Index. Teacher respect has a multitude of dimensions, however four indicators were deemed most beneficial to this study:

- Ranking status for primary teachers, secondary teachers and head teachers against other key professions
- Analysing the aspiration of teaching as a 'sought after' profession.
- Creating a contextual understanding of teachers' social status.
- Examining views on pupil respect for teachers.

**Our new data suggests that there is a correlation between the status accorded to teachers through the GTSI 2018 and student outcomes in their country. In other words, high teacher status is not just a 'nice to have' - increasing teacher status can directly improve the pupil performance of a country's students. Ministers should take teacher status seriously and make efforts to improve it.**

# INTRODUCTION & EXECUTIVE SUMMARY

## **B. Teaching as an occupation**

The study finds that the average respect ranking for a teacher across the 35 countries was 7th out of 14 professions, indicative of a mid-way respect ranking for the profession. There is no international consensus on what constitutes a comparative profession for teaching, but in the majority of countries people judged the social status of teachers to be most similar to social workers. The second closest status association was to librarians. In Ghana, France, Brazil, Spain, South Korea, Uganda, US, Turkey, Hungary, India and Peru, people thought teachers were most similar to librarians.

There is a clear and subtle relationship between respect for the teaching occupation and the pay perceptions people have in ranking occupations. These two rankings are clearly correlated and very occupation specific – that is, people tend to assign higher assumed pay to those professions which they consider high status. However, peoples' perceptions are influenced by their: age, gender, religion, education and whether they are a parent or not. Teaching does not figure particularly highly on either respect or pay perception rankings compared to other graduate occupations. Within the teaching profession, Headteachers are ranked more highly than Secondary school teachers who are, in turn, ranked more highly than Primary school teachers.

There are significant contrasts between countries in the extent to which parents would encourage younger generations to become teachers. While over 50% of parents in China, India, Ghana and Malaysia provide positive encouragement, less than 8% do so in Israel and Russia. Logically, the countries that have parents who encourage their children to become teachers also show a higher level of belief that pupils respect their teachers. Conversely in most of the European countries surveyed, more respondents thought that pupils disrespect teachers than respect them.

## **C. Teachers Earnings and Working Hours**

One important dimension of how an occupation is regarded, which is inextricably linked to social status, is pay. For many, status in a society depends on how much you are paid in absolute or relative terms. This section evaluates respondent perceptions of the estimated actual wage and perceived fair wage of teachers in their country and compared this to actual wages paid. In most countries, the perception of what teachers earn accords

reasonably with reality. However, in Singapore, Spain, Germany, Switzerland, Finland and Italy teachers earn more than people think they do. In the survey, 95% of countries said that teachers should be paid a wage in excess of the actual wage they thought they received.

Rather than raising teachers' wages in the hope of producing higher learning outcomes, many have asked whether teacher pay should be conditional on the achievement of their pupils. In order to establish public opinion on this, we asked our participants whether they thought that teachers ought to receive performance-related pay. Over all our 35 countries around 50% stated teachers ought to be paid according to the performance of their pupils. The average across countries was 70%, whilst in Egypt, Peru and Uganda the figure was over 80%. Remarkably the fraction who backed Performance-Related Pay (PRP) has fallen dramatically in the UK, Israel and New Zealand since 2013.

Further interesting results were found relating to teacher working hours. The countries where they work the longest hours are: Japan, New Zealand, Uganda, the UK and Singapore. Remarkably teachers in Malaysia work less than half the hours in those countries. In nearly all countries the public systematically underestimated the hours that teachers work, except for Italy, Indonesia, China and Finland where they have fairly accurate perceptions.

## **D. A more rounded and implicit look at status and the GTSI**

The questions which contribute to the GTSI 2018 ask respondents to give their explicit, considered perceptions of teachers. One of the important innovations of this study is that, in addition to these questions, we also attempt to get below the surface, to people's spontaneous, reflexive, potentially sub-conscious feelings about teachers – using a quick-response word-association task. We found that the words people associate with teachers provided significant extra information over and above the data from more conventional survey questions, capturing hitherto undocumented variation between countries – including countries where teachers were considered lower status with implicit responses than with more considered and socially desirable answers. We also found that adding the data from this task to the GTSI 2018 substantially increased its association with PISA outcomes – in other words, a more rounded picture of people's perception of teacher status shows a stronger correlation with pupil performance.

# INTRODUCTION & EXECUTIVE SUMMARY

## **E. Understanding the Key Relationships between GTSI 2018, teacher pay and pupil PISA outcomes.**

The substantive importance of measuring teacher status is the quest to understand better the relationship with pupil outcomes (as measured by PISA scores) and the link with teacher pay. We found that the GTSI 2018 related well to PISA scores and that this relationship was strengthened by making use of the word-association data and by the selective omission of some clear outlier countries. That is to say that higher teacher status correlates well with improved pupil performance as measured by PISA scores.

We did not find any association between the GTSI 2018 and OECD teacher wages in the cross-country aggregate data - in other words, teacher status itself does not drive higher pay for those teachers. The explanation of this non-association is that we are looking at this relationship at the aggregate country level and there is substantial heterogeneity across countries. Teacher wages in each country are set by country specific forces which are shaped by different educational systems, government and fiscal constraints, educational institutions and the wealth in the economy.

Finally, our new data reaffirms the relationship between teacher pay and PISA pupil performance. This substantive result, which we have reported before in 2013, is now recognised as robust and of considerable policy relevance. It suggests that there is a clear relationship between the relative quality of teachers a system recruits when the wages on offer to them is higher. The good news is that our new data has also strengthened our conviction that teacher status plays a role in the production of better pupil outcomes.

---

**In this report we provide a summary of the main findings of our study. We highlight the determination of the social status of teachers and disentangle this from what they are paid. Importantly, we separate out perceptions of teachers from the perceptions of the quality of the education system. We explain the differences in the light of the real differences between countries and in the efficiency of their education systems.**

---

We find that there are major differences across countries in the way teachers are perceived by the public. This informs who decides to become a teacher in each country, how they are respected and how they are financially rewarded. This affects the kind of job they do in teaching our children, and ultimately how effective they are in getting the best from their pupils in terms of their learning.





CHAPTER 2

# THE GLOBAL TEACHER STATUS INDEX 2018

This survey sought to identify the level of respect for teachers in different countries and their social standing. We examined: the profile of teacher respect; teaching as a sought-after profession; a contextual understanding of teachers' social status; views on pupil respect for teachers. These data are summarised below. We then developed an index or ranking of teacher status by country.

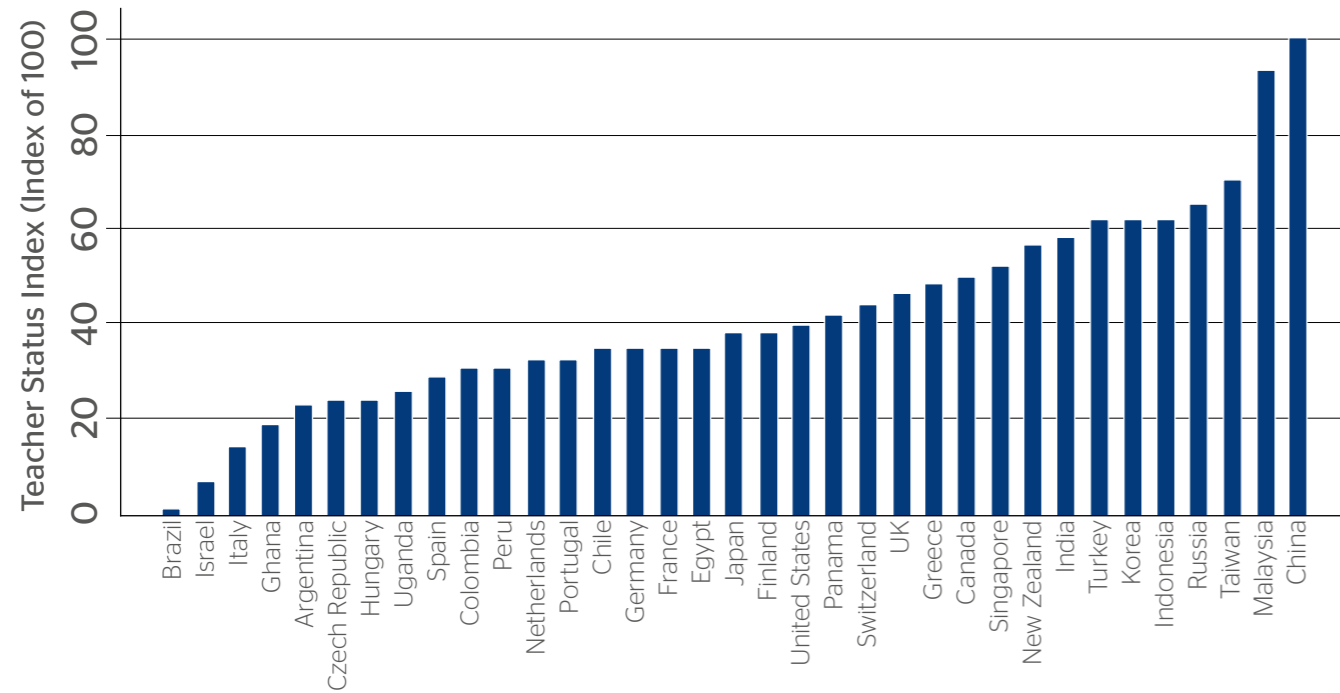
A statistical technique, Principal Component Analysis, was used to capture as much of the variance in the data as possible in the smallest number of factors. The aim of this procedure was to identify correlations between different variables where they were measuring the same thing, and hence reduce the observed variables into a smaller number of dimensions - called 'principal components'. The Index is based on four of the questions that we asked in the study:

1. **Ranking primary school teachers against other professions**
2. **Ranking secondary school teachers against other professions**
3. **Ranking of teachers according to their relative status based on the most similar comparative profession**
4. **Rating perceived pupil respect for teachers**

Full details of the statistical methodology and construction of the Index is in the technical appendices. This analysis produced a ranking on a 0-100 scale for how much teachers have status in each country under consideration (Fig 2.1)

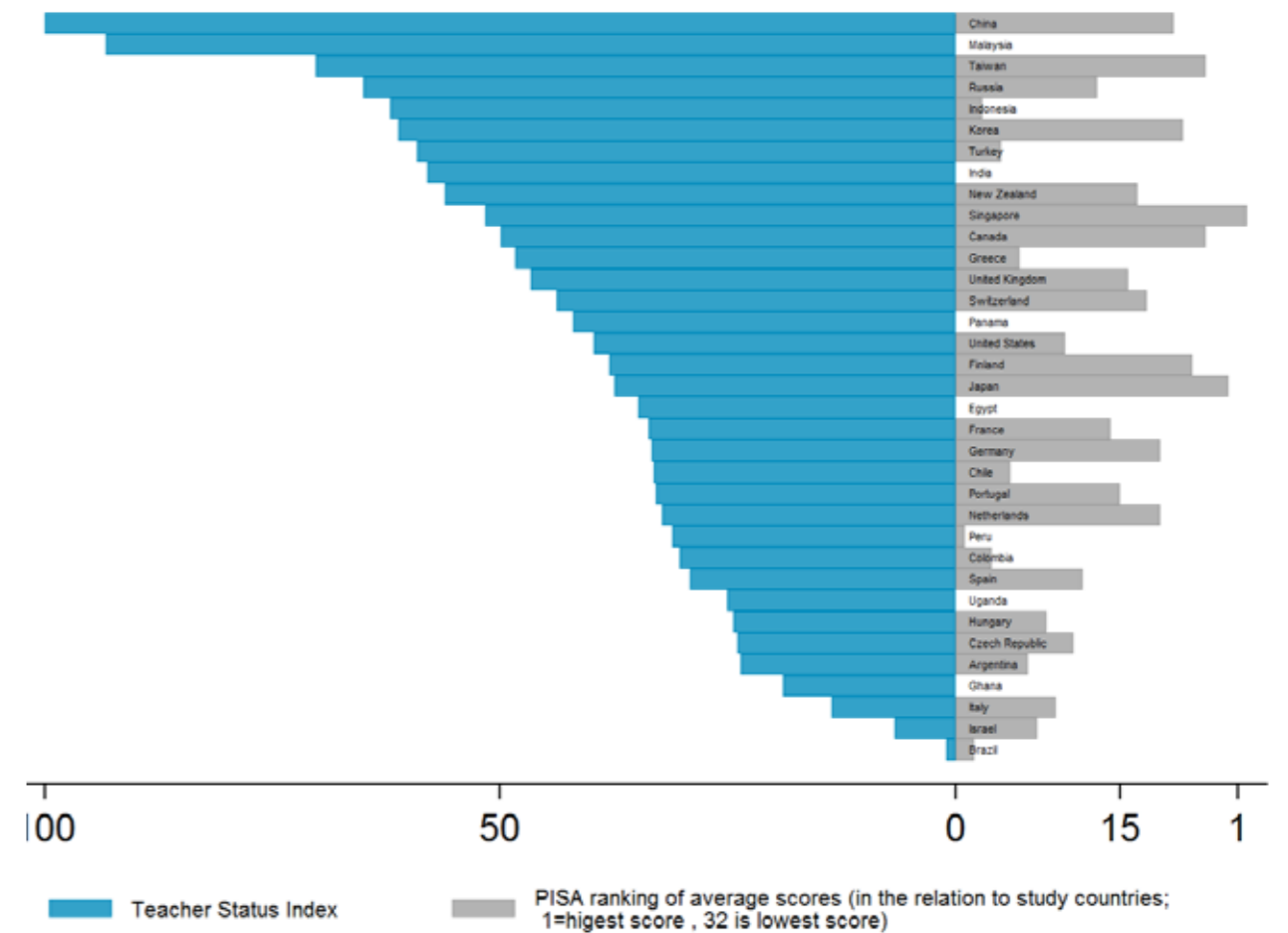
To act as a comparator, the Global Teacher Status Index 2018 is further presented (fig 2.2), against each country's PISA ranking of average scores per country. (PISA data is not available for Egypt, Malaysia, India, Panama, Uganda and Ghana.) Comparisons between the 2018 and 2013 findings for the original 21 countries are presented in fig 2.3 and 2.4.

Figure 2.1: The Varkey Foundation Global Teacher Status Index 2018 (GTSI 2018)



35 survey countries indexed on a relative scale 1-100

Figure 2.2: The GTSI 2018 Related to PISA 2015 Rankings



(35 survey countries indexed on a relative scale 1-100)

Figure 2.3: The GTSI 2018 Compared with the GTSI 2013 Rankings

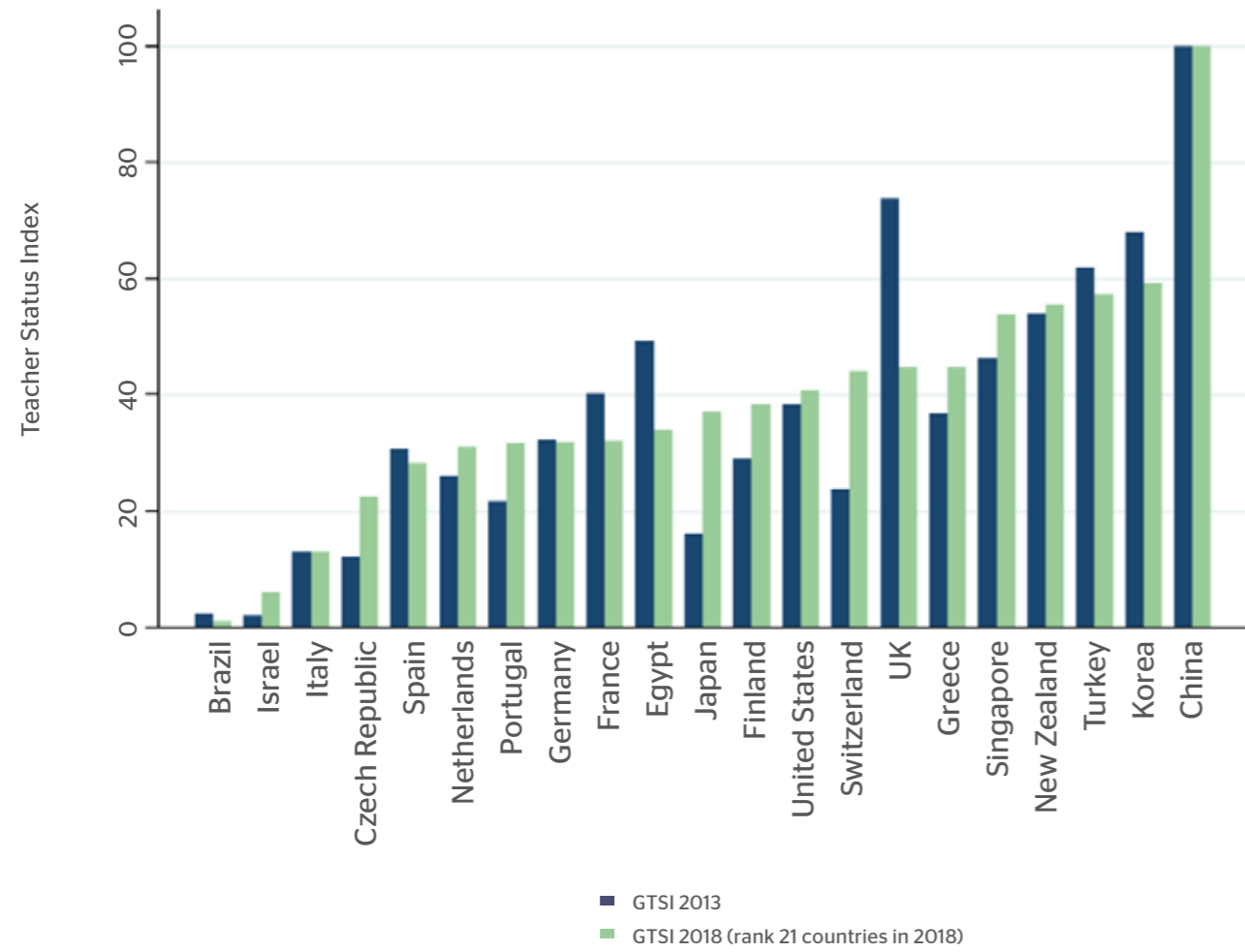


Figure 2.4: The Difference Between GTSI 2018 and GTSI 2013

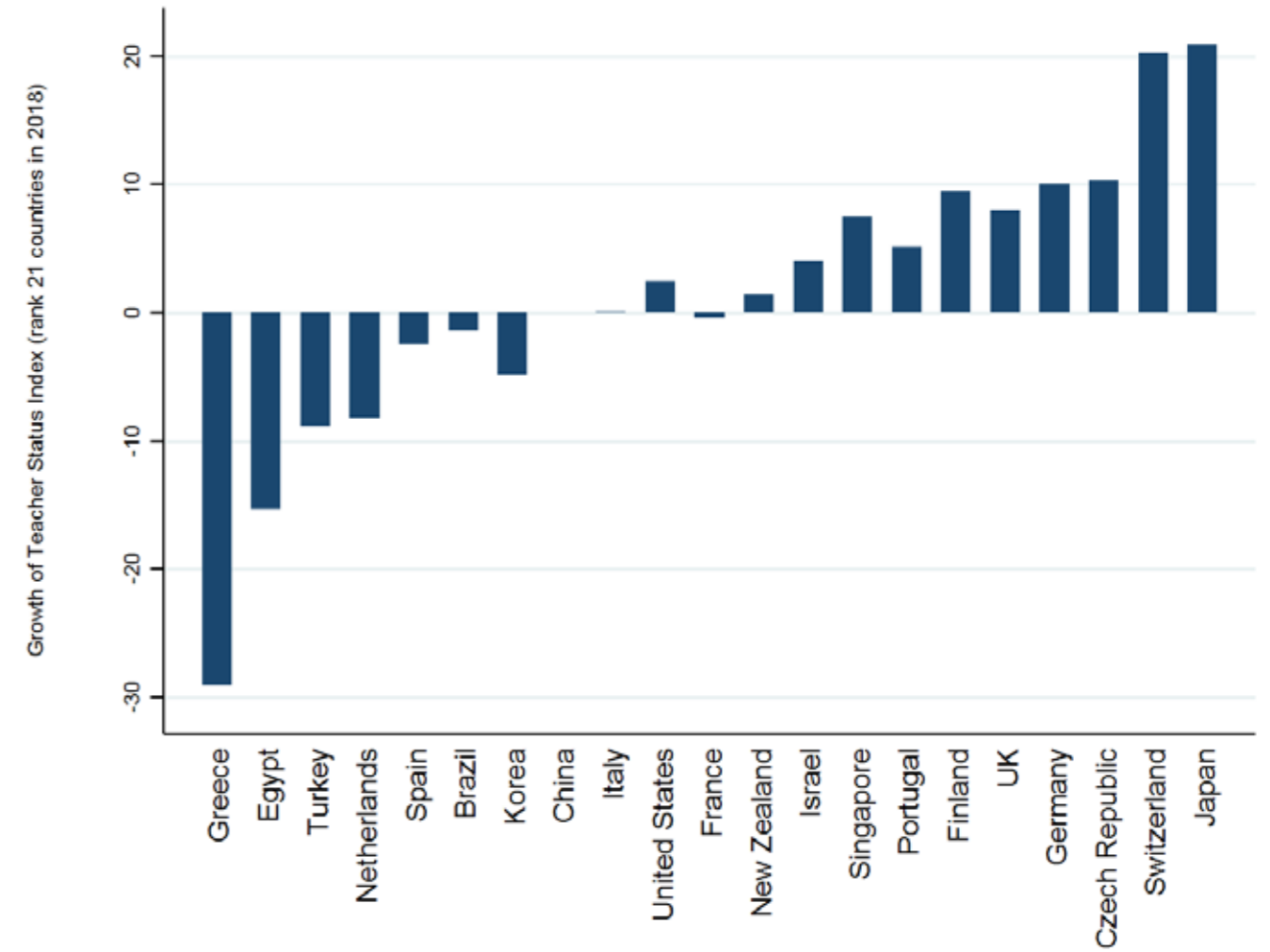


Table 2.1: GTSI, Teacher Salaries and PISA Ranking

COUNTRY	INDEX RANKING	ACTUAL TEACHER SALARY (\$USD, PPP, ADJUSTED)	PISA RANKING (1=HIGHEST PISA SCORE, 35=LOWEST PISA SCORE)
China	100.0	12,210	7
Malaysia	93.3	18,120	NOT AVAILABLE
Taiwan	70.2	40,821	3.5
Russia	65.0	5,923	15
Indonesia	62.1	14,408	27
Korea	61.2	33,141	6
Turkey	59.1	30,303	25
India	58.0	21,608	NOT AVAILABLE
New Zealand	56.0	33,099	11
Singapore	51.7	50,249	1
Canada	49.9	43,715	3.5
Greece	48.3	21,481	23
United Kingdom	46.6	31,845	12
Switzerland	43.7	77,491	10
Panama	42.0	16,000	NOT AVAILABLE
United States	39.7	44,229	18
Finland	38.0	40,491	5
Japan	37.4	31,461	2
Egypt	34.8	6,592	NOT AVAILABLE
France	33.7	33,675	14
Germany	33.4	65,396	8.5
Chile	33.1	20,890	24
Portugal	32.9	35,519	13
Netherlands	32.2	43,743	8.5
Peru	31.1	12,478	29
Colombia	30.3	18,806	26
Spain	29.1	47,864	16
Uganda	25.1	4,205	NOT AVAILABLE
Hungary	24.4	16,241	20
Czech Republic	23.9	18,859	17
Argentina	23.6	10,371	22
Ghana	18.9	7,249	NOT AVAILABLE
Italy	13.6	33,630	19
Israel	6.6	22,175	21
Brazil	1.0	12,993	28

This PISA ranking by country is based on the average actual PISA scores in Mathematics, Science and Reading reproduced in Appendix C section 6 for only the 29 countries in our data that are also included in the PISA survey.

### Key Country Findings

- **China, Malaysia, Taiwan and Indonesia respect their teachers more than all other European countries**
- **Brazil and Israel featured at the lower end of the Teacher Status Index with scores of 1 and 6.65 respectively**
- **Compared with 2013, China still has highest status index, and Brazil and Israel are still at the bottom.**
- **Compared with 2013, in Japan and Switzerland teacher the status index increased by more than 20. Meanwhile, the index has dropped 25 in Greece. The teacher status index in UK has grown by 10.**



CHAPTER 3

# TEACHING AS AN OCCUPATION

## THE RELATIVE RANKING OF TEACHERS

The survey sought to go beyond the construction of the index to explore the rationale behind it. Research in education has already begun to show to a reasonable level of validity across multiple countries how academic performance may relate to the resources that a country devotes to its educational system, the teacher recruitment process and how teachers are paid. What is much less well understood are the roles cultural factors and social standing play in the position of teachers in each country.

A central objective of our study was to understand how teachers are respected in different countries and what their social standing is. We did this in four ways, which are explored in further detail in order in this chapter:

- 
- **Exploring the profile of primary, secondary and head teacher status in terms of the public's perception of how they are respected and how they are paid relative to 11 other graduate type jobs.**
  - **Creating a contextual understanding of teachers' social status relative to other professions**
  - **Analysing teaching as a sought-after profession, in terms of parental encouragement for their children to become teachers**
  - **Examining views on perceived pupil respect for teachers**
-

In order to determine the social standing of the teaching profession, we asked our participants to rank 14 occupations in a restricted and 'forced' list in order of how, in their view, people undertaking those occupations are respected in their country. (All respondents were obliged to rank all occupations in the on-line questionnaire.) All terms were deliberately left up to respondents to define. We deliberately chose to keep these professions the same as they were in 2013 to facilitate ease of comparison. The occupations were:

- **Primary school teacher**
- **Secondary school teacher**
- **Head teacher**
- **Doctor**
- **Nurse**
- **Librarian**
- **Local government manager**
- **Social worker**
- **Website designer**
- **Policeman**
- **Engineer**
- **Lawyer**
- **Accountant**
- **Management consultant**

These occupations were deliberately chosen as graduate or graduate-perceived jobs which require broadly similar qualifications in terms of completing 'high school' and also undertaking further university or tertiary education or professional equivalent qualifications. The occupations were also carefully selected with respect to how similar or dissimilar the work might be - but also how perceptions of these occupations may differ according to whether they are in the private commercial sector or in the public sector. By giving respondents a variety of alternative professions, we were able to extract a precise relative ranking of occupations. The average status rank score (out of 14) by occupation across the whole sample of all our countries is tabulated in Table 3.1.

Here, the stark fact is that Headteacher is ranked in the top 4 of our graduate occupations and professions, but that Secondary and Primary teachers are near the bottom, only above, Librarian, Social Worker and Web Designer. This finding alone is motivation for this study. The world's children need to be taught by people in an occupation that engenders high respect and status. This opens up the agenda to ask the question of how this position can be changed.

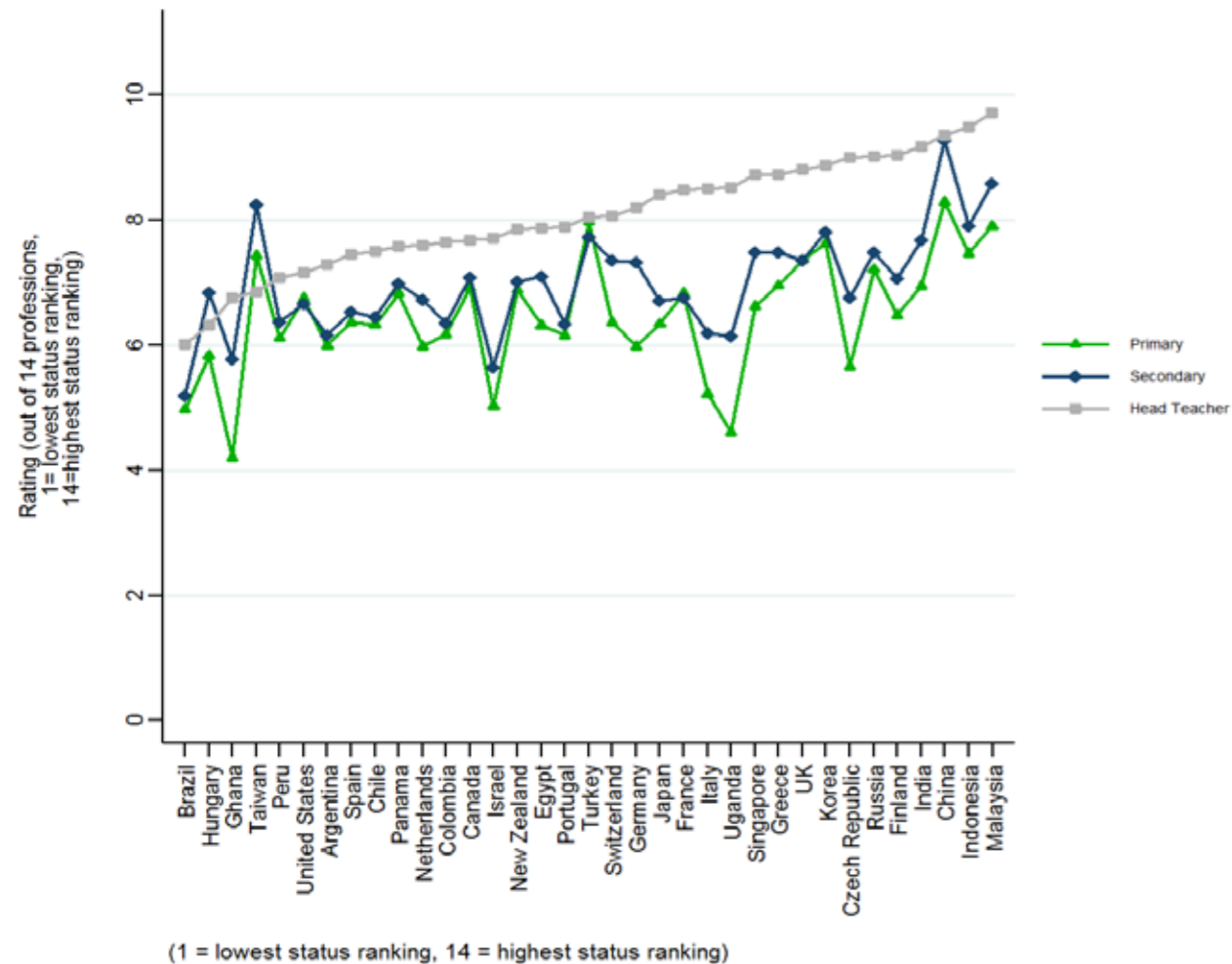
**Table 3.1: Average Status Rank across all countries**

Occupation	Average Rank (with 14 being the highest and 1 being the lowest)
Doctor	11.6
Lawyer	9.5
Engineer	9.1
Head Teacher	8.1
Policeman	7.8
Nurse	7.4
Accountant	7.3
Local Government Manger	7.3
Management Consultant	7.1
Secondary School Teacher	7.0
Primary School Teacher	6.4
Web Designer	5.9
Social Worker	5.8
Librarian	4.6

The essence of the results is captured in Figure 3.1. The graph shows the average ranking of primary, secondary and head teachers from 1-14, with 14 as the highest ranking profession. The line graph has been ranked in terms of respect for head teachers for reference purposes. The average respect ranking for a teacher across the 35 countries was 7th out of the 14 professions. This is indicative of a mid-way respect ranking for the profession relative to the other professions selected. In 94% of countries head teachers are more highly respected than secondary teachers. In 91% of countries secondary teachers are more respected than primary teachers.

Figure 3.1: Headteacher, Secondary Teacher and Primary Teacher Occupational Respect Rankings by the General Public across Countries.

Rating (out of 14 professions, 1= lowest status ranking, 14=highest status ranking)



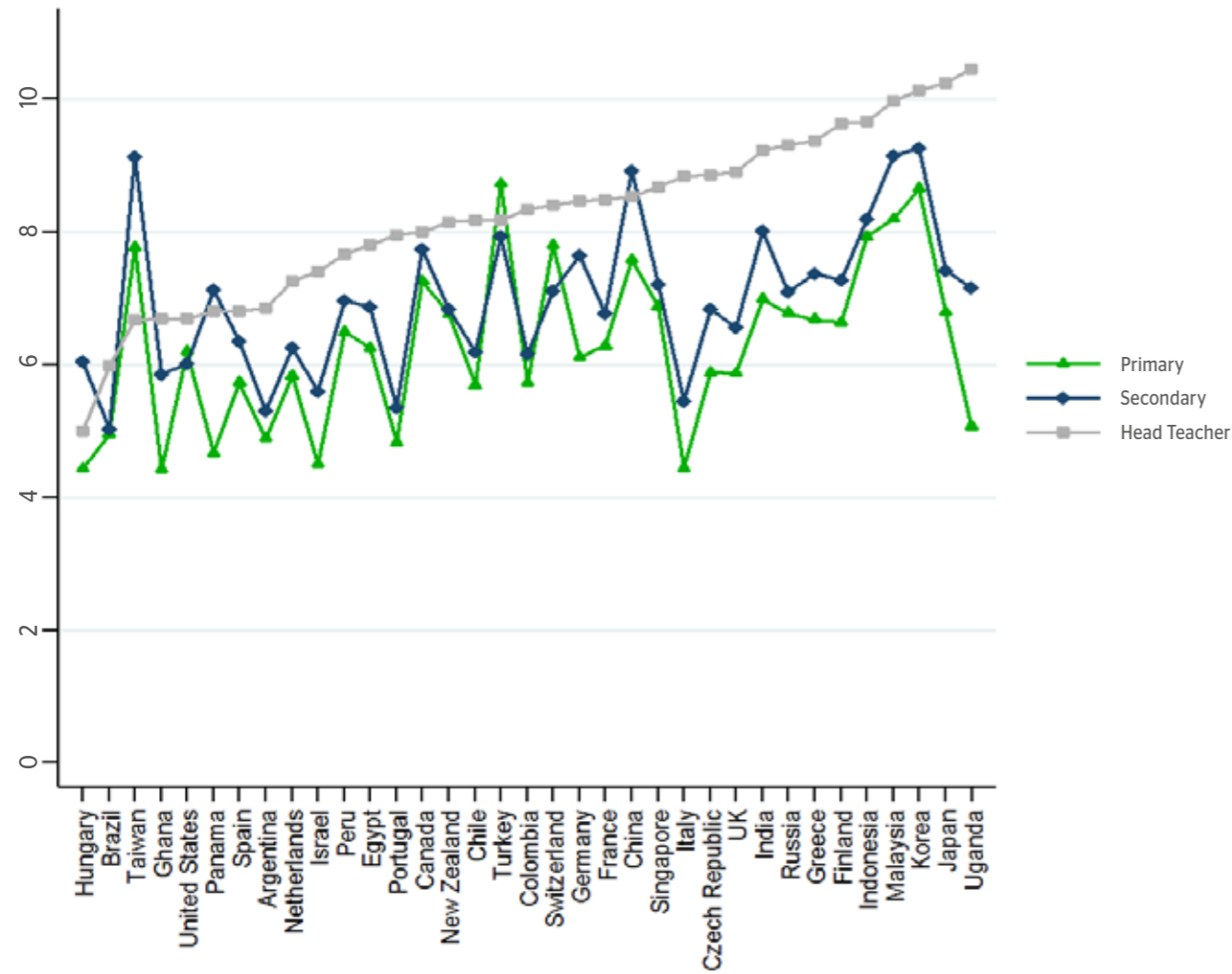
We utilised in this survey for the first time the teacher specific sub sample to explore teachers' own perception of their status (3.2). Similarly to the general public, in most countries Headteachers are accorded higher respect by teacher respondents than Primary or Secondary teachers. Also there is a broad similarity in the countries which have a higher respect ranking for teachers, whether the ranking is done by teachers themselves, or members of the general public.

However, there are interesting discrepancies with the way in which the different elements of the teaching profession are regarded by teachers themselves. Figures 3.3, 3.4 and 3.5 show teacher perceptions of respect compared to the general public for headteachers, secondary teachers and primary teachers respectively. For the most part the same countries are at the top on all three graphs - namely: China, Malaysia, India and Indonesia. Likewise, the same countries are at the bottom on all three graphs, namely: Ghana, Brazil and Israel.

However there are significant variations across all three of these sub professions. For instance, teachers have a much lower view of respect for the job of a Primary teacher than the general public in: the UK, Panama, Portugal, Argentina, and Hungary. The same is true when it comes to Secondary teachers in: the UK, Portugal, Argentina, and Hungary. In 14 countries teachers rank headteachers as higher status than the general public do, with large increases shown in Korea, Singapore and Germany.

Figure 3.2: Headteacher, Secondary Teacher and Primary Teacher Occupational Respect Rankings by Teachers across Countries.

Rating (out of 14 professions, 1= lowest status ranking, 14=highest status ranking)



(1 = lowest status ranking, 14 = highest status ranking)

Figure 3.3: Comparing Respect Rankings of Headteachers by General Public and Teachers across Countries.

Rating (out of 14 professions, 1= lowest status ranking, 14=highest status ranking)

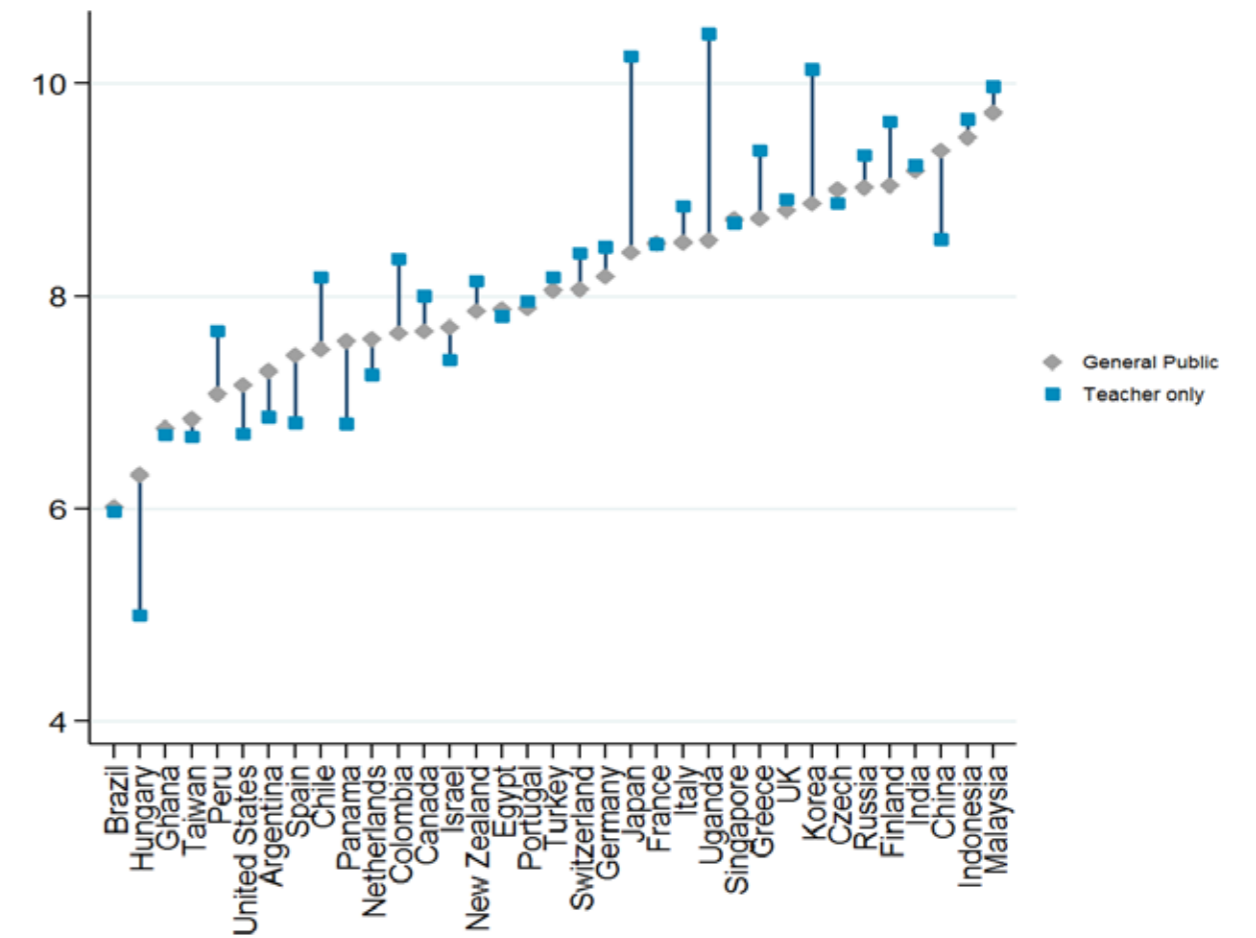




Figure 3.4: Comparing Respect Rankings of Secondary Teachers by General Public and Teachers across Countries.

Rating (out of 14 professions, 1= lowest status ranking, 14=highest status ranking)

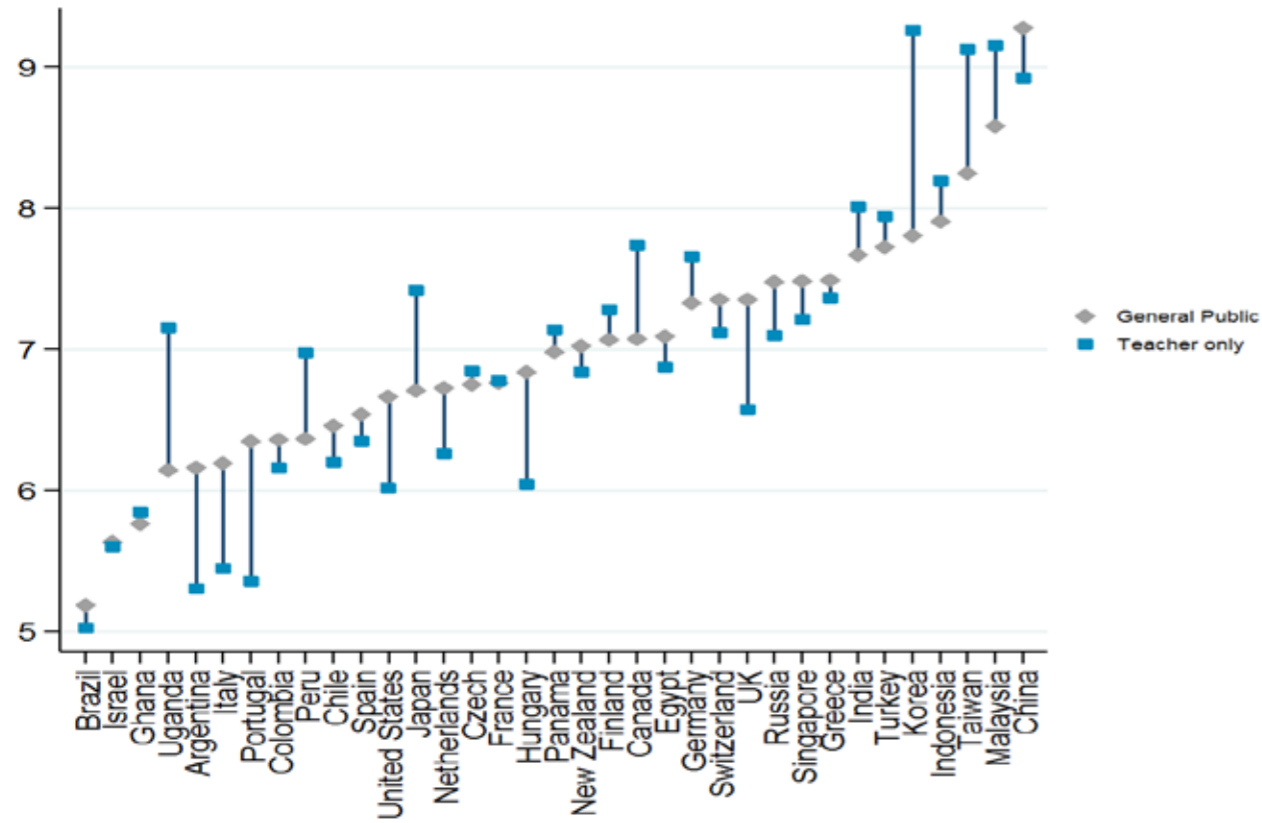
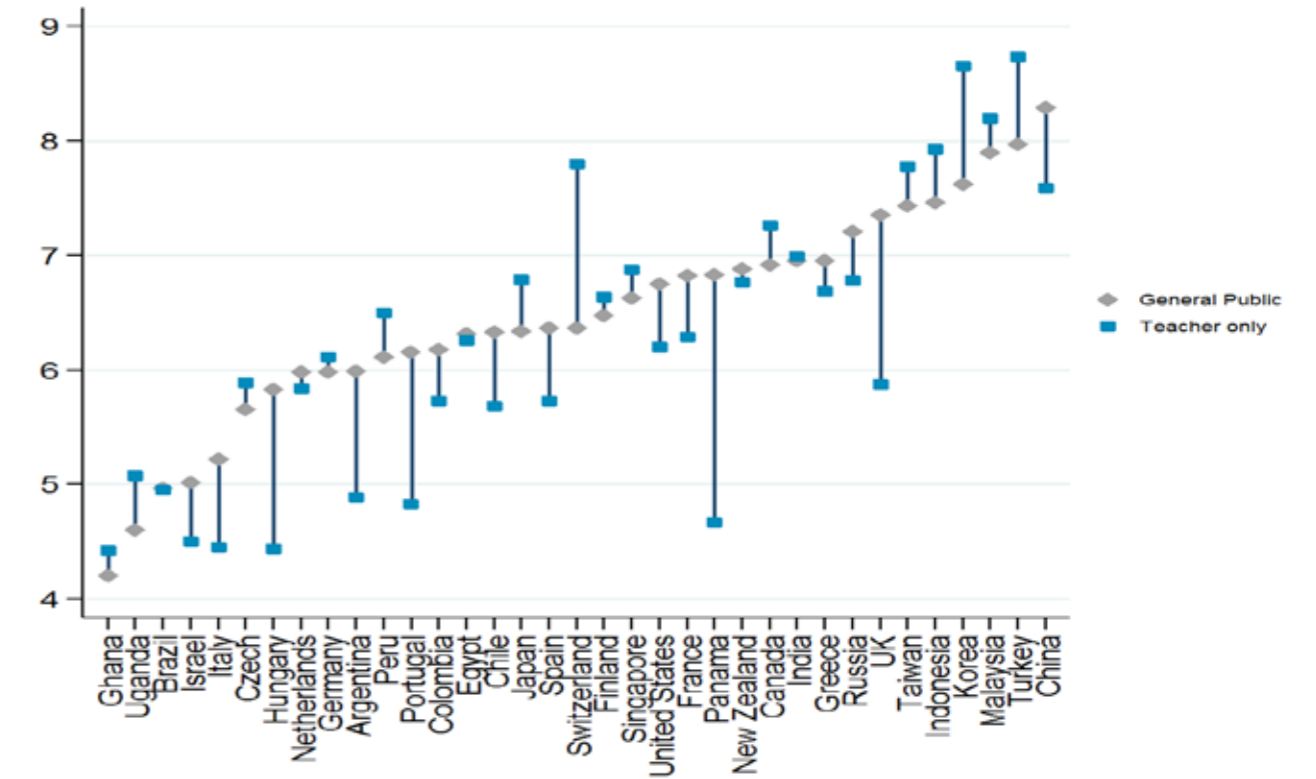


Figure 3.5: Comparing Respect Rankings of Primary Teachers by General Public and Teachers across Countries

Rating (out of 14 professions, 1= lowest status ranking, 14=highest status ranking)



### THE RELATIVE RANKING OF TEACHERS

Calibrating and putting a metric on the status of a profession is difficult if there is no qualitative understanding of what a ranking number translates to in the context of each country. There is no immediately obvious way of doing this which completely characterises how people perceive the job that teachers do in relative qualitative terms. So we repeated our insightful analysis of 2013, alongside ranking teaching as a profession against others, by asking respondents to nominate the profession that was most similar to teaching in their country. Figure 3.6 represents the summary of the responses in a graph that shows the number who responded to the five most named alternative career comparators.

- **Social worker**
- **Nurse**
- **Librarian**
- **Local government manager**
- **Doctor**

In Table 3.2 we list the most similar occupation to Teaching by country for both the general public sample and the teachers sample. In many countries there is some agreement in the two sub samples but there is no complete international consensus on what constitutes a comparative profession for teaching. However, in a majority (50%) of countries the social status of teachers is judged to be most similar to social workers. This is comparable to the information we got in 2013 (as reported in Table 3.3).

When analysing perceptions of the social status of teachers it was important to examine the factors that influenced respondent's choices.

One factor which explains some of the patterns in these responses is that teachers in many countries are formally employed as civil servants and treated as such in terms of the way their pay is fixed and up-rated, the nature of their pensions and the form of their work contracts, security of employment and entitlement to holidays. This is true of countries such as Germany, Italy, Switzerland, Taiwan and the Netherlands, where teachers are regarded as being most similar to social workers.

These comparators, therefore, are instructive of how teachers are regarded in different cultures. The judgements reflect the type of work teachers do in different countries and the way they go about their job. The high reverence for teachers in China and Russia is clear because the comparison with doctors shows their position among the most respected members of society. In contrast, countries where teachers are considered most like librarians suggest there may be a wholly different relationship of parents with teachers, who are regarded in a more formal administrative capacity. In approximately 50% of countries, however, teaching is seen as a job that deals with people on a personal supportive basis and, hence, the status equivalent to a social worker.

Table 3.2. Most Similar Occupation to Teachers by Country for the Public Sample and the Teacher Sample.

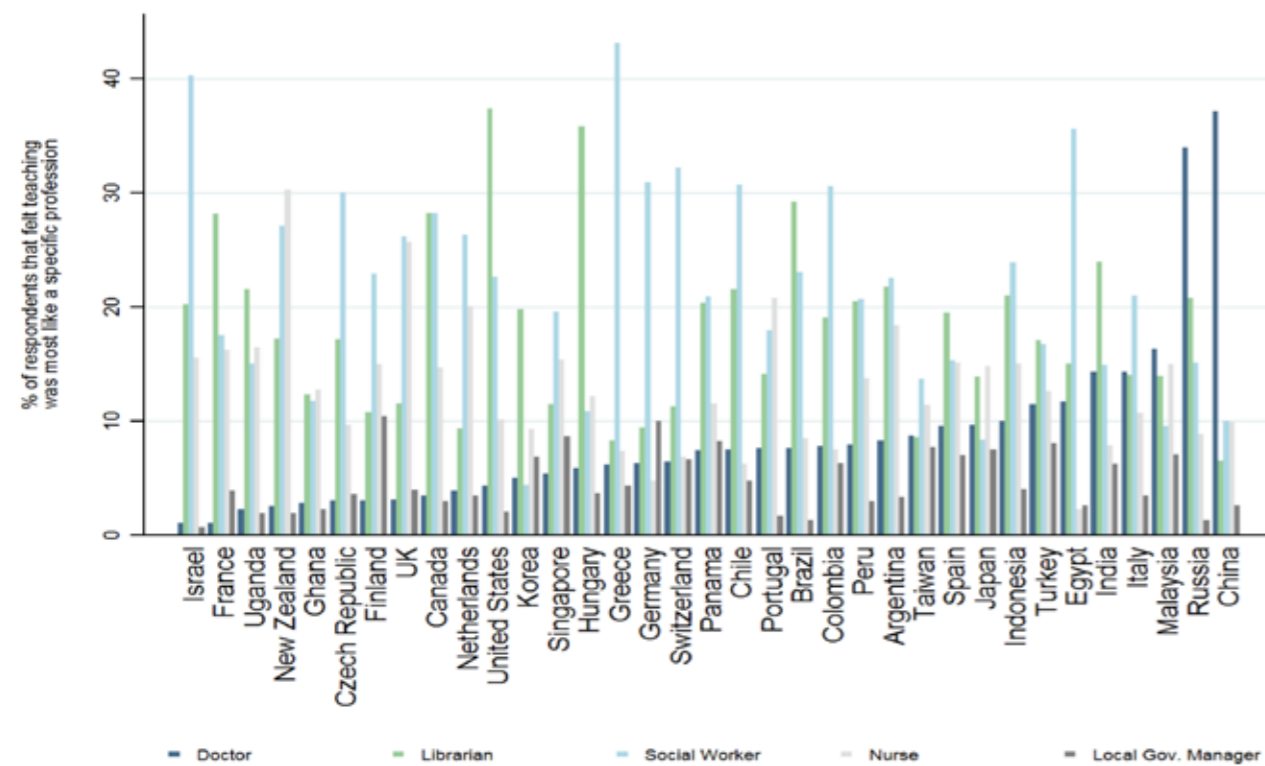
COUNTRY	SAMPLE: PUBLIC	SAMPLE: TEACHERS ONLY
Malaysia	Doctor	Doctor
China	Doctor	Doctor
Russia	Doctor	Social Worker
Spain	Librarian	Librarian
United States	Librarian	Local Government Manager
Turkey	Librarian	Doctor
Uganda	Librarian	Nurse
Brazil	Librarian	Nurse
France	Librarian	Social Worker
Korea	Librarian	Social Worker
Canada	Librarian	Nurse
India	Librarian	Librarian
Hungary	Librarian	Nurse
Ghana	Nurse	Nurse
New Zealand	Nurse	Nurse
Portugal	Nurse	Nurse
Japan	Nurse	Social Worker
Netherlands	Social Worker	Social Worker
Singapore	Social Worker	Nurse
Finland	Social Worker	Social Worker
Argentina	Social Worker	Social Worker
Greece	Social Worker	Nurse
Taiwan	Social Worker	Social Worker
Panama	Social Worker	Nurse
Czech	Social Worker	Social Worker
Indonesia	Social Worker	Nurse
Egypt	Social Worker	Social Worker
Germany	Social Worker	Social Worker
Peru	Social Worker	Librarian
Israel	Social Worker	Nurse
Chile	Social Worker	Nurse
Italy	Social Worker	Social Worker
Switzerland	Social Worker	Local Government Manager
Colombia	Social Worker	Nurse
UK	Social Worker	Nurse

Table 3.3: Most Similar Occupation to Teachers by Country; comparison 2013-2018

COUNTRY	2018	2013
China	Doctor	Doctor
Russia	Doctor	.
Malaysia	Doctor	.
India	Librarian	.
France	Librarian	Librarian
Turkey	Librarian	Librarian
Uganda	Librarian	.
Korea	Librarian	Social Worker
United States	Librarian	Librarian
Brazil	Librarian	Librarian
Canada	Librarian	.
Spain	Librarian	Social Worker
Hungary	Librarian	.
Japan	Nurse	Local Government Manager
Portugal	Nurse	Nurse
Ghana	Nurse	.
New Zealand	Nurse	Social Worker
UK	Social Worker	Social Worker
Argentina	Social Worker	.
Switzerland	Social Worker	Social Worker
Egypt	Social Worker	Social Worker
Czech	Social Worker	Social Worker
Panama	Social Worker	.
Taiwan	Social Worker	.
Chile	Social Worker	.
Germany	Social Worker	Social Worker
Singapore	Social Worker	Social Worker
Indonesia	Social Worker	.
Netherlands	Social Worker	Social Worker
Greece	Social Worker	Social Worker
Finland	Social Worker	Social Worker
Colombia	Social Worker	.
Israel	Social Worker	Social Worker
Peru	Social Worker	.
Italy	Social Worker	Social Worker

Figure 3.6 Comparisons of teachers to selected other professions

Most similar occupation to teachers by country



## PERCEPTIONS OF TEACHER REWARD

Understanding the relationship between the status or respect an occupation is held in by the public and the pay they receive, or are perceived to receive, is not straightforward. In this report, we sought to examine the data across all countries on an occupation by occupation basis by 'mapping' the nature of people's joint perceptions of these two related dimensions. As well as a 'forced' ranking of the status of the list of 14 occupations, respondents were asked to rank the same professions in order of how well they believed they were paid.

Figure 3.7 and all its sub-graphs 3.7a to 3.7j, set out how perceived pay and perceived status correlates for each profession. These are presented as joint frequency contour plots across the whole sample. These contour 'island plots' should be read as showing where respondents placed each profession against respect (on the y axis) and pay (on the x axis). The most common frequency - ie where most people placed each profession on the combination of that x and y axis - is shown as red, with lower frequency placings being shown in orange, then yellow, then green, and finally blue for the lowest frequency placings. Hence the island analogy. The levels of respect and pay perceptions which have the highest frequency amongst respondents are the 'hot and high' red areas - on top of the mountain on the island. The combinations of respect and pay perceptions which are the least likely to be held are represented by the 'cold' areas of blue sea.

To explain this using two specific examples, nearly everyone across all respondents in all countries believes social workers in their country are both low paid and have a low social standing in terms of respect. This result is nearly universal in the sense that the 'highest' frequency (the red area) is in the bottom left hand corner of the Figure 3.7c at low respect, and low pay.

The opposite is true of doctors - here everyone believes they are high paid and have high respect - so they are in the top right hand corner of the graph (figure 3.7j).

If we now consider our occupations of prime interest - Headteacher, Primary School Teachers and Secondary School teachers, respectively Figures 3.7f, 3.7g and 3.7h - we see that each of these occupations is an 'island' in joint frequency space with more graduated frequency in-between these two polar cases of Social Workers and Doctors. In accordance with the earlier finding that Headteachers are higher up the one dimensional 'respect' axis than primary or secondary teachers, we show that Headteachers are further

up the notional 45 degree 2 dimensional line of respect and pay than Secondary Teachers, and they, in turn, are further up both dimensions than Primary School Teachers.

The caveats of this analysis need to be clearly set out. First, we are only looking at a few select occupations in terms of the ranking. Second, this is a 'forced ranking' and for each respondent some occupation needs to be at the bottom on each criteria. So this does not mean the Primary School Teachers are low status and low pay, per se, but that they are low relative to the remaining 14 graduate-type occupations. The third caveat is that it should be emphasised that these figures are the result of the combined views of our respondents. They are not, for example, the factual representation of earnings. These will be discussed in Chapter 4, both in our survey and in relation to the OECD data.

Notwithstanding these caveats these figures give some important insights into the position of teachers relative to other graduate occupations. Examining Figure 3.7a and 3.7b further we see that Accountants and Management Consultants are both well paid and have high respect, but that the pay element attracts more frequency than the respect dimension. In contrast, Nurses in Figure 3.7d, are, on average, the opposite of Accountants and Management Consultants in the sense that they are perceived as having low status and pay but many people feel that they have considerable 'mass' of frequency in the respect dimension - ie many people see them as having considerable respect, despite their low pay. This is an important element of the value of these figures.

The remaining case of Policemen in Figure 3.7i are interesting. Here we see that there is considerable diversity of view about the public's perception on both dimensions. So, there is a broad mass of views which are quite heterogeneous with regard to this occupation. Interestingly, there is a sizeable mass point of frequency at very low respect and pay for this occupation. This may be due to the fact that in some countries in our data, policemen are lowly paid and may be prone to the temptation of corruption or perceived as having some form of dubious relationship to the military or politicians.

The obvious way forward for the analysis of this complex data is to use econometric techniques to evaluate the joint determinants both pay and respect. This requires methods beyond the scope of this expository discussion. Some of the formal results of this exercise are presented in Appendix D. Describing the technicalities of this are not appropriate for this

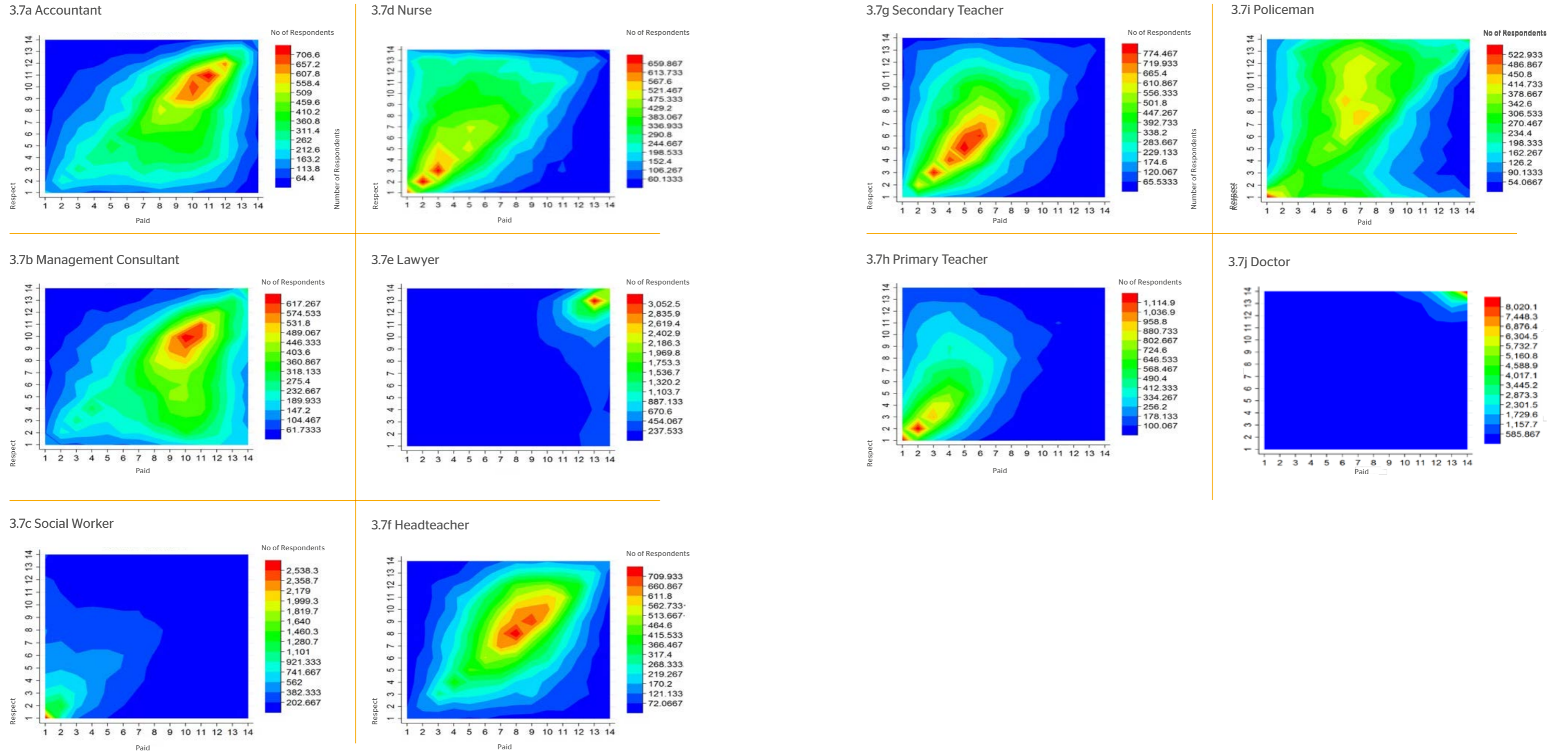
chapter, but the substantive findings can be recapped. These econometric estimates suggest that, *ceteris paribus*

- **There is huge diversity across countries.**
- **Older people respect teachers more.**
- **Graduates respect teachers more than non-graduates**
- **Men respect teachers more than women.**
- **Parents respect teachers more than those without children.**
- **Ethnic minorities tend to respect teachers less.**
- **Those of Islamic faith respect teachers more.**

The regression results presented suggest that, after having conditioned out for these factors, the countries where respect for teachers is high - up to a whole unit higher in the ranking are: China, The Czech Republic, Finland, Greece, India, Indonesia, Korea, Malaysia, Russia, Singapore and the UK. Countries where, conditioning out for all these factors, we can say that the respect rankings are significantly lower are: Brazil and Ghana.

Another interesting finding which is revealed in the tables of Appendix D is that the regression results suggest that if the question about pay ranking is asked before the respect ranking then the respect ranking is on average around .18 - .28 of a unit lower. The corresponding result for the pay ranking is that if this question is asked before the respect ranking question then the public thinks they have a pay ranking which is around .1 - .19 of a unit higher. The latter result may well be understated as it rises to around .2 - .27 of a unit when Instrumental Variables are used to control for the possible endogeneity of respect ranking with pay ranking.

Figure 3.7: Empirical Contour Plot of Joint Frequency Distribution of Respect Ranking and Pay Ranking by Occupation across all Countries.



### TEACHING: A SOUGHT-AFTER PROFESSION

To analyse the status of the teaching profession further we examined whether respondents thought of teaching as a profession they would have their children aspire to. We asked participants to rate the extent to which they would encourage their child to become a teacher. The answers to this question are summarised in Figure 3.8 below. For comparative purposes in Figure 3.9 we also report the figures for the common sample of countries in 2013. There is a reasonable degree of concordance even though the surveys are separated by 5 years.

To establish the extent to which a parent would encourage their child to enter the teaching profession can be used as an indicator of respect for teachers, we plotted the percentage from each country who responded with 'probably encourage' and 'definitely encourage' against the average teacher respect in relation to other professions (Figure 3.10). A significant positive correlation was found with an R<sup>2</sup> value of 0.31. This indicates that the higher the respect for teachers, the more likely a person is to encourage their child to enter the profession. We can therefore deduce from Figure 3.10 that countries such as China, Malaysia and Taiwan hold a higher level of respect for teachers. This evidence fits with our ranked respect levels for teachers.

An additional aspect related to the attractiveness of the teaching profession is that of the encouragement of parents to promote the possibility of a teaching career among their children. It could be the case that they encourage their children to consider this profession as it is respected or due to the potential earnings power of the job relative to unskilled or semi-skilled jobs. Figure 3.10 however shows that in countries with high Global Teachers Status Index (China or Malaysia) parents probably or definitely would encourage their children to become a teacher, however in Israel or Brazil (at the bottom of the Global Teachers Status Index) parents are reluctant to encourage their children. This gives some support to the correlation between status and encouragement, but what about the potential earning power? To answer this we regressed the percentage of participants for each country who answered that they would 'definitely encourage' or 'probably encourage' their children to become teachers, against the estimated, perceived fair and actual teacher wage for each country. All three regressions did not provide any significant correlation, indicating a lack of association between the wages of teachers and whether a parent would encourage their child to enter the profession. Thus, we cannot conclude that the earning power skews the parental encouragement of a child to join the teaching profession.

Figure 3.8: Would You Encourage Your Child to Become a Teacher by Country (2018).

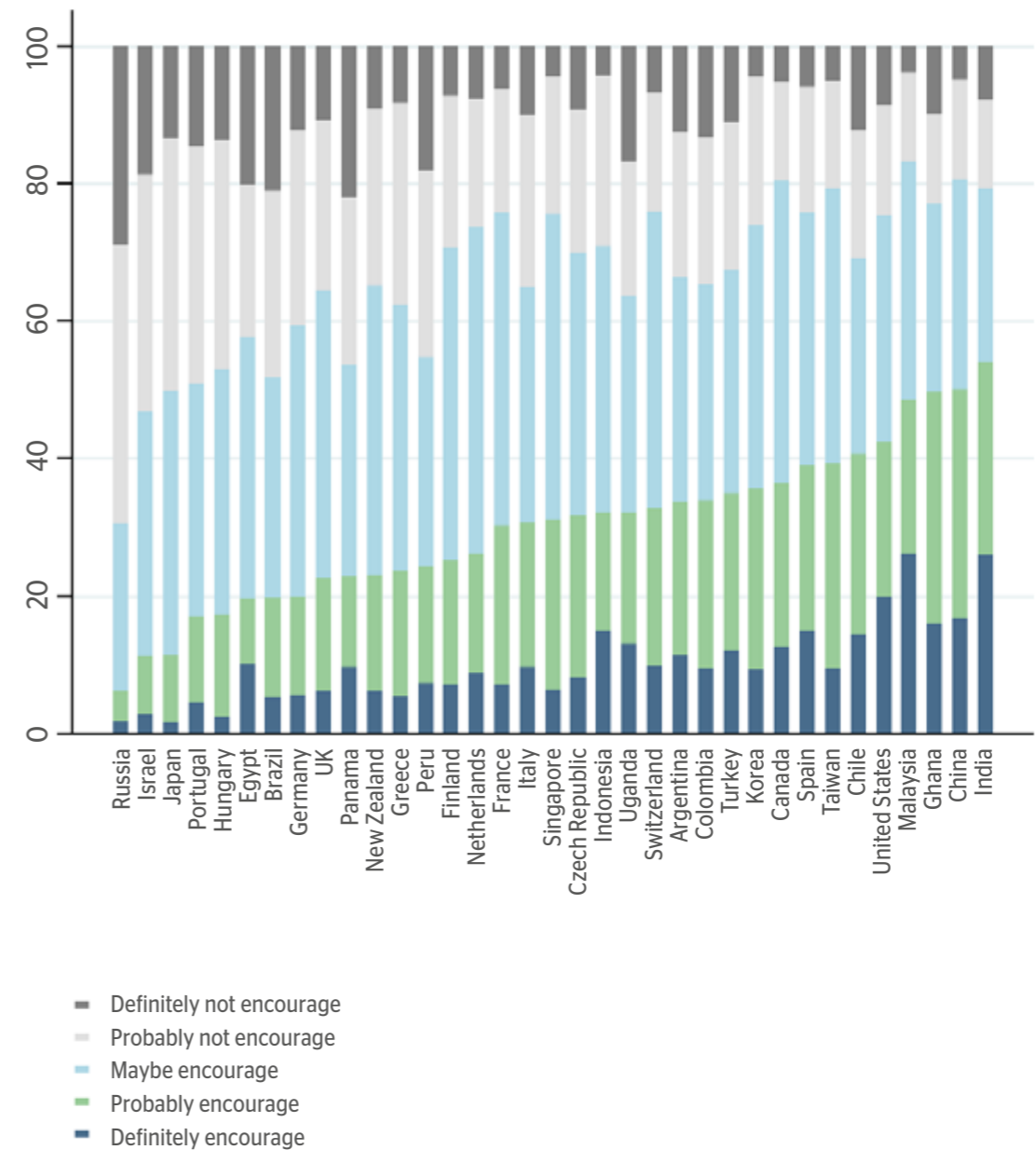


Figure 3.9: Would You Encourage Your Child to Become a Teacher by Country (2013).

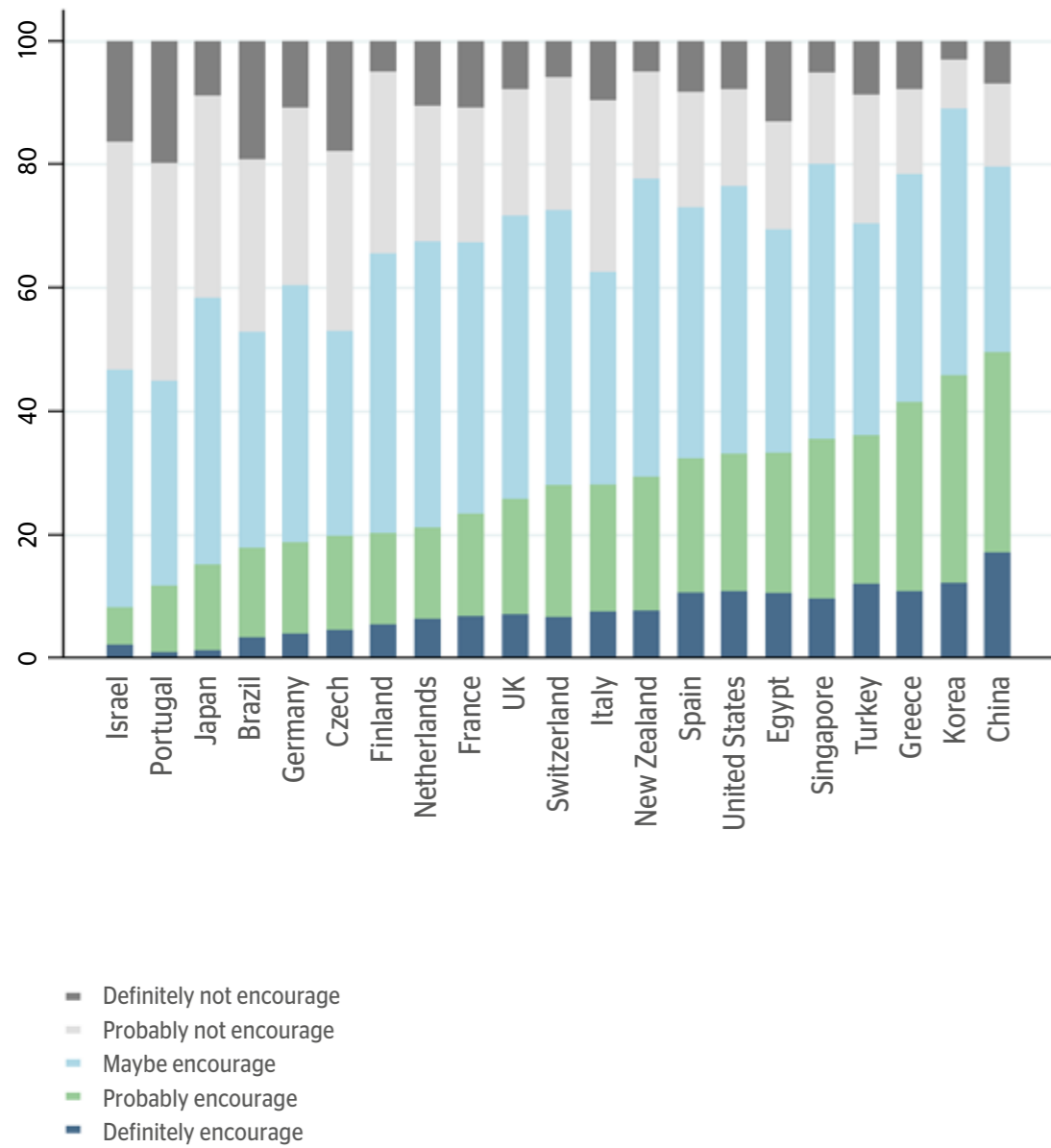
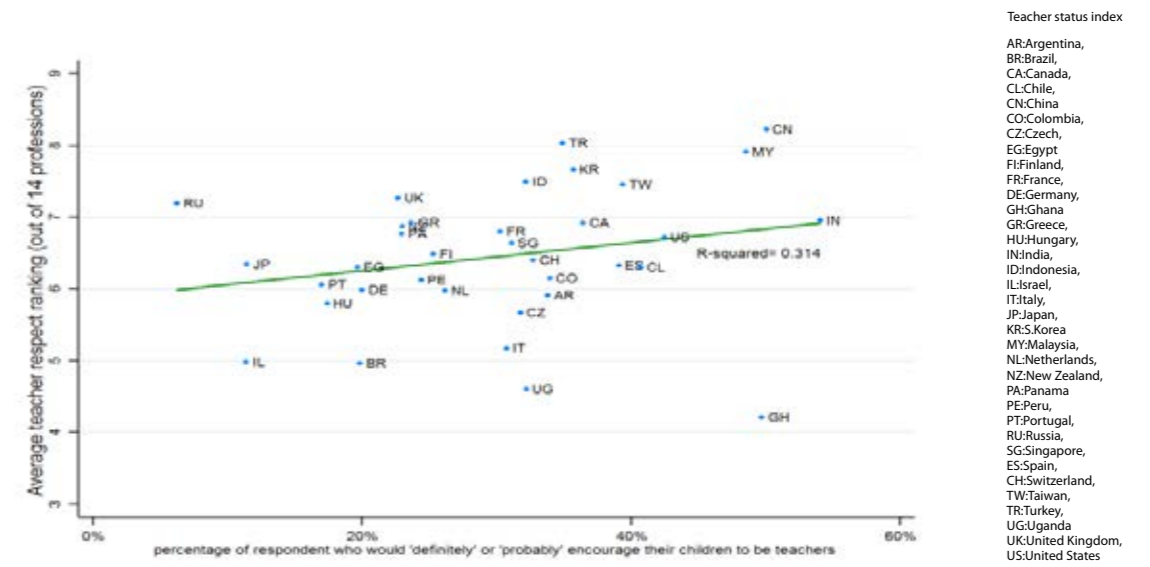


Figure 3.10: Scatter Plot of Would You Encourage Your Child to Become a Teacher against Teacher Respect Ranking across Countries.



**PUPIL RESPECT FOR TEACHERS**

There are many potential dimensions of respect for teachers. We also looked at respect by asking respondents whether they believe teachers are respected by their pupils. Figure 3.11 shows responses to this question by country. There are major international differences in how much people think that pupils respect teachers. Of interest is the fact that there is only a weak correlation ( $R^2 = 0.26$ ) between respect for teachers and the perceived pupil respect for teachers. For example, in Uganda average teacher respect was rated second lowest at 4.7, yet pupil respect for teachers ranked second highest out of the 35 countries. This might reflect a generational gap in the level of respect shown by countries such as Uganda. However, this is not the case for all countries. China has both high pupil and respondent respect for teachers. On the other hand, Israel and Brazil have both low pupil and respondent respect for teachers. Additionally, the relative ranking of countries, in terms of pupils respect for teachers, in 2018 follows closely the pattern underlined by the 2013 survey. Nevertheless, in 2013, in fifteen out of the twenty one countries surveyed only 25% in the sample tend to agree or strongly agree that pupils respect teachers. Whilst in 2018 only around half of the countries present this proportion, and fourteen reported over 40% of the sample who tend or strongly agree (as compared to just 4 countries in 2013).



Figure 3.11: Do Pupils Respect Teachers by Country (2018).

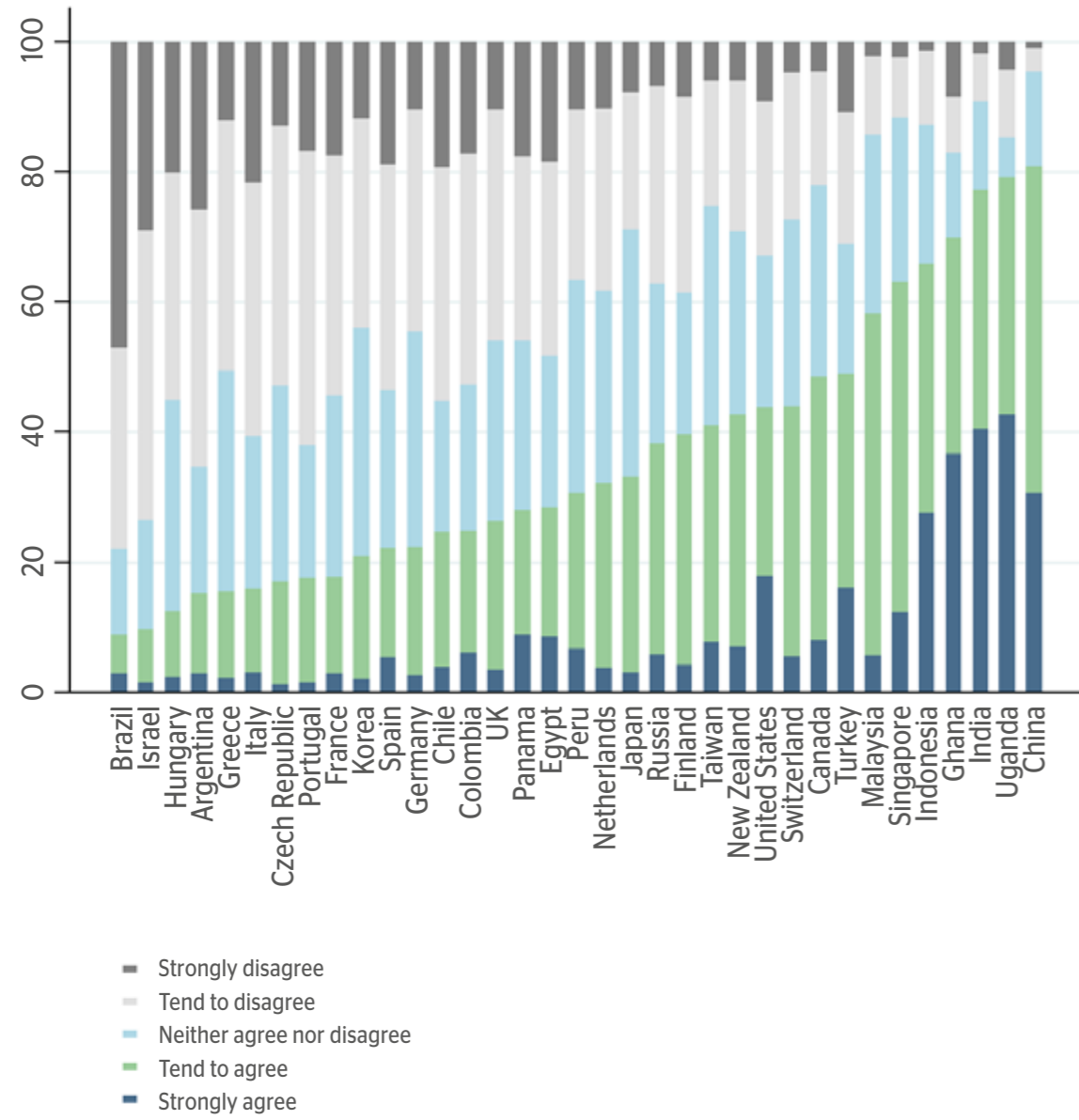
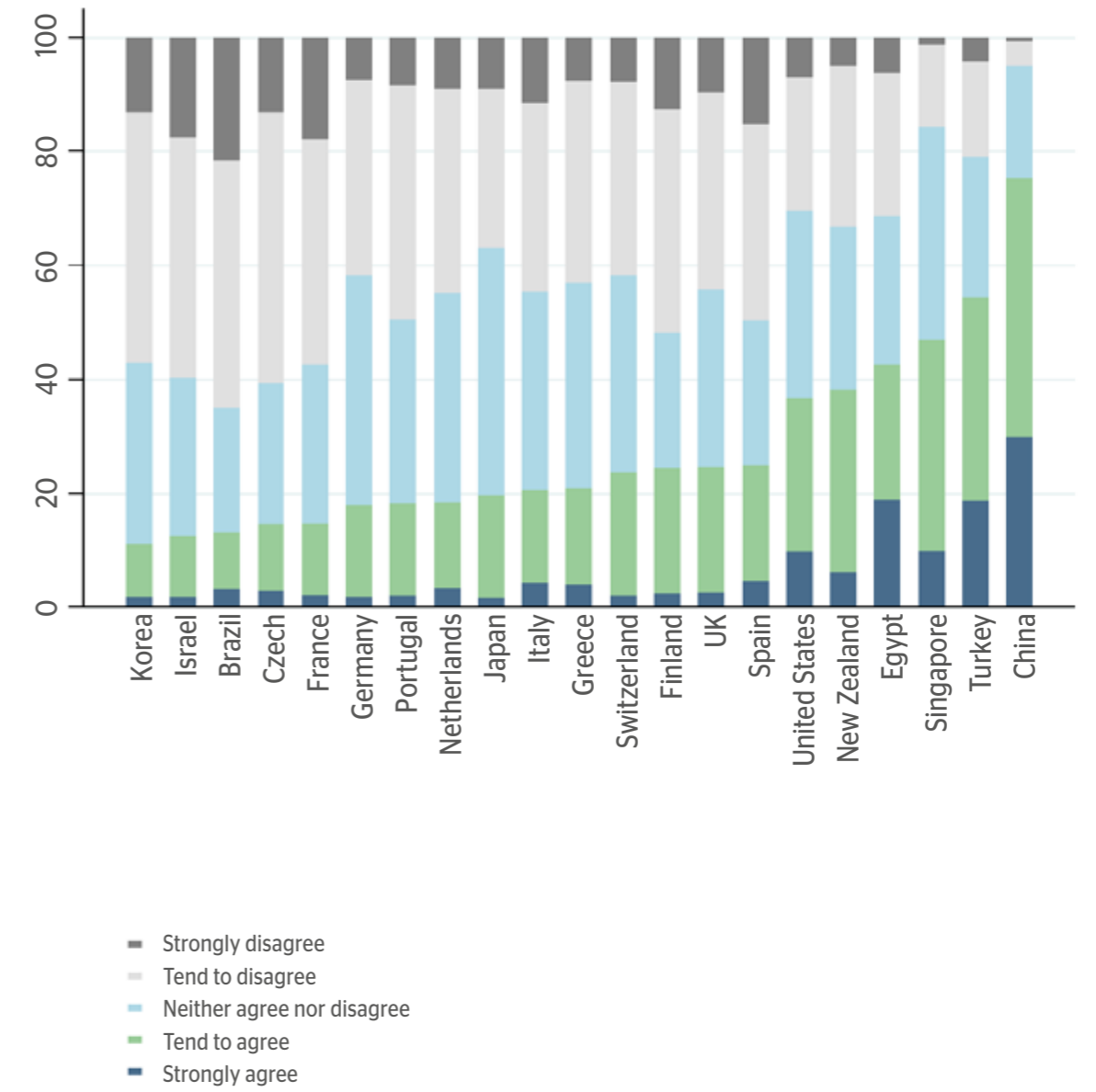


Figure 3.12: Do Pupils Respect Teachers by Country (2013).



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### KEY COUNTRY FINDINGS

- Overall, teachers are ranked 7th out of 14 occupations, denoting a mid status profession
  - Head teachers are more highly ranked than secondary teachers who are more highly ranked than primary teachers
  - In Malaysia and China, teachers are compared to doctors - seen as the highest status profession in our sample, but it is most common for teachers to be compared with social workers (seen as the most comparable profession in a full 50% of the sampled countries)
  - At an individual profession level, there is a strong correlation between status and pay - that is, professions considered higher status by respondents are also considered higher paid
  - The higher the respect for teachers, the more likely a person is to encourage their child to enter the profession. This holds even when controlling for pay levels, indicating a lack of association between the wages of teachers and whether a parent would encourage their child to enter the profession
  - Across Europe there are higher levels of pessimism about students' respect for teachers than in Asia, Africa and the Middle East. In most of the European countries surveyed, more respondents thought that pupils disrespect teachers than respect them. In China 80% of respondents believe that pupils respect teachers (in 2018, just above the proportion in 2013), compared to an average of 36% per country. Yet in some countries where overall status is low - Uganda, Ghana, and India - there is a high level of belief that pupils respect teachers.
- 

The higher the respect for teachers, the more likely a person is to encourage their child to enter the profession.



## CHAPTER 4 TEACHERS' EARNINGS AND WORKING HOURS

In recent years, many countries have experienced a shortage of teachers, mostly in the mathematics field (OECD, 2013). In fact in some countries like, for example, United States, there is empirical evidence that highly qualified college graduates are less likely to choose teaching careers than low achieving graduates (Dolton, 2006; Vegas et al, 2001). This is worrying for educational authorities which need to find a way to attract and retain motivated high quality teachers. In this sense, as in any other occupation, employee quality can only be demanded and worker motivation elicited if working conditions, including salary and work loading are attractive (Dolton & Marcenaro, 2011).

This is the reason why this chapter is focused on teachers' reward, hourly workload and whether the performance of children on comparable educational tests across many countries of the world is correlated with teachers' salaries. We highlight teachers' salaries and working hours as two of the main mechanisms to attract and retain young people into this profession. Our comparable international survey contains valuable data on the 'attractiveness' of teaching as a career.

To the extent that our main concern is related to the status of teachers and this, within a culture, may depend how much they are paid, in this section we evaluate differences between actual teachers' wages, estimated actual wages of teachers and perceived fair wages of teachers by teachers themselves and the general population. In other words, we highlight the determination of the social status of teachers and disentangle this from how they are financially rewarded and the perception of people about this reward.

**More specifically we need to understand:**

- What people think teachers ought to be paid;
- What teachers themselves think they ought to be paid;
- Whether people think teachers ought to be paid according to the performance of their pupils;
- What people perceive that teacher working hours are, and how that compares with what teachers say they work.

### TEACHERS' REWARD

How well an occupation is rewarded is often taken as a proxy measure of standing or social status. In many countries, status within a culture depends on how much you are paid in absolute or relative terms. However, the qualitative dimension of status is not easy to grasp using this monetary approach, to the extent that it is not clear whether the general public distinguish how much teachers are actually paid, what people think they are paid, and what people think they ought to be paid. How the answers to these questions relate to social standing is even more subtle.

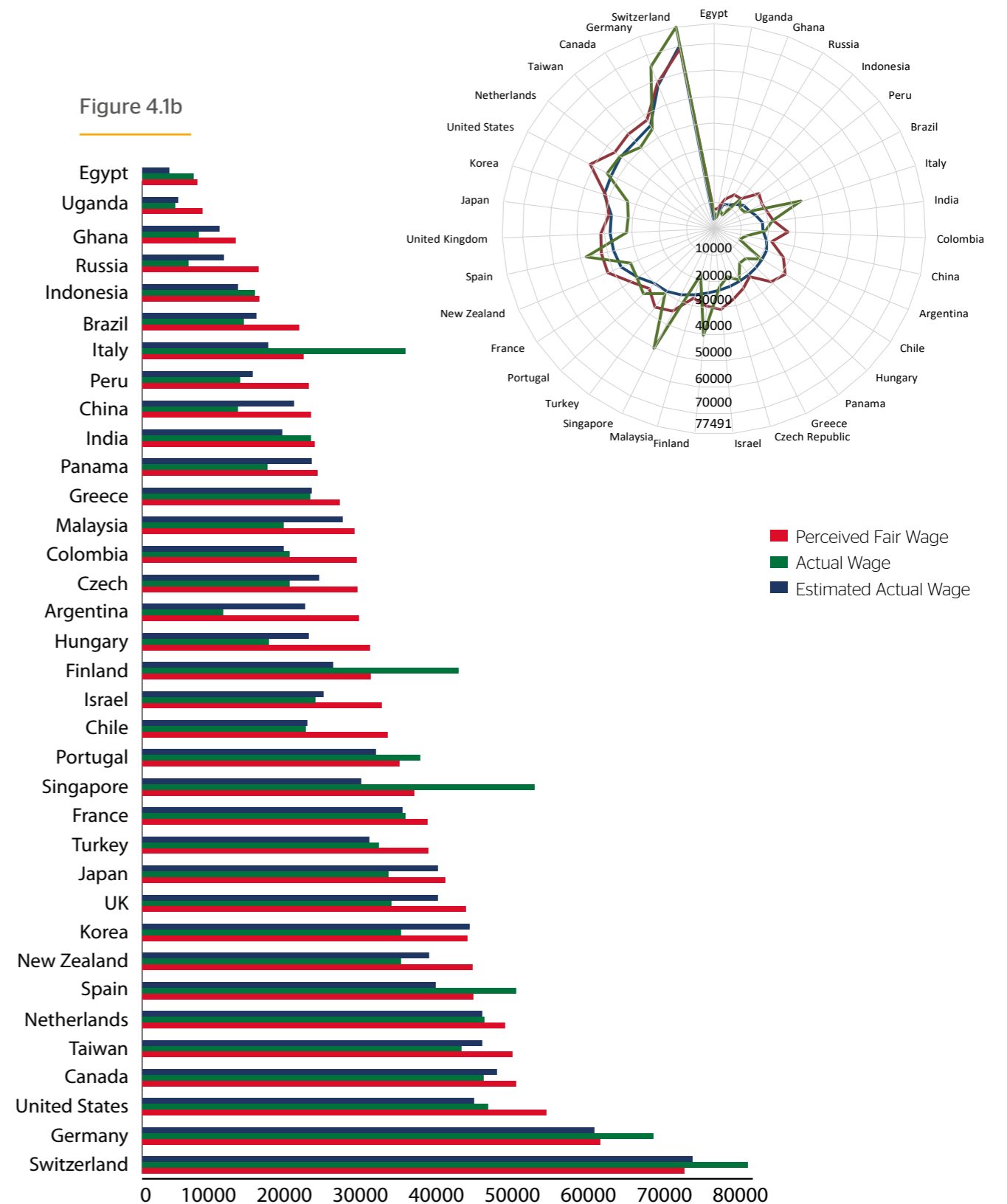
This study sought a novel way to make these distinctions. In strict order (with no way of seeing the questions which were to follow) we asked people what they thought a starting career secondary teacher was actually paid in their own country, the (Estimated Actual Wage.) Then we asked them what they thought was a fair wage for such a teacher, the (Perceived Fair Wage.) Finally, we told them what a secondary school teacher starting salary actually was in their own country (in local currency) labelled the Actual Wage, and asked them to judge whether they thought such a level of pay was too little, about right or too much.

In figure 4.1a, the blue line represents the first guess - the estimated wage - increasing from the lowest estimate which is Egypt and moving round clockwise to the highest estimated wage in our survey, which is Switzerland. The actual wage is then shown in green, and then respondents' views as to whether this represents a fair wage is shown in red.

In most countries, as we can see from Figure 4.1a the perception of what teachers earn is reasonably accurate. Yet, there is a set of countries where teachers earn substantially more than the population thinks they do. Specifically in three Northern European countries (Germany, Finland and Switzerland) and three of the Southern European countries (Italy, Portugal and Spain), in addition to Singapore (which also has the largest gap in the 2013 report).

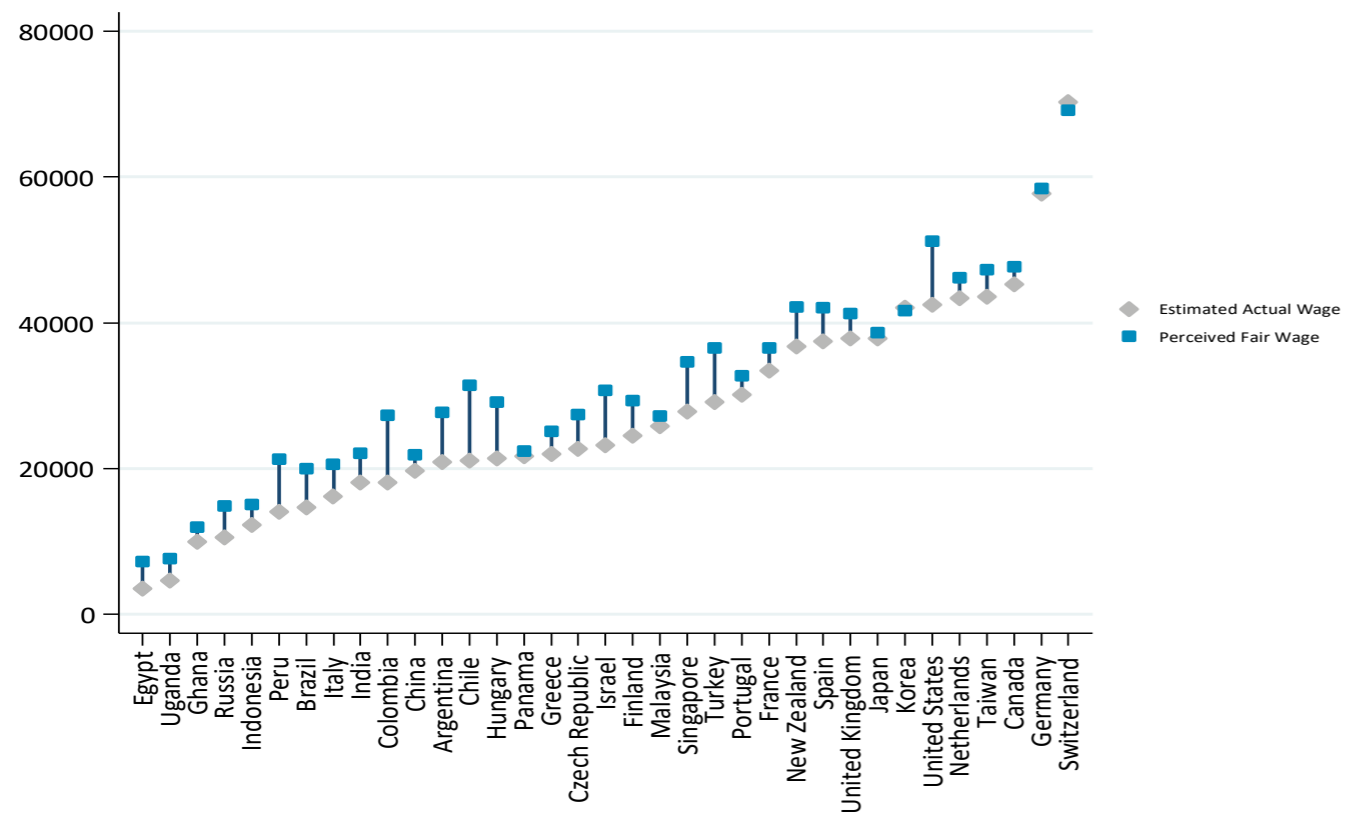
A different visual representation is provided in Figure 4.1b of the relationship between Estimated Actual Wage (Blue), Perceived Fair Wage (Red) and Actual Wage (Green). Here the overall scale of how both perceptions and actual wages are higher in both Germany and Switzerland than all other countries becomes clear. The poorer countries of Latin America and Africa are firmly at the bottom of the pay stakes. What is also clearer in this figure is the concordance between the three measures across countries. i.e. expectations and perceptions of earnings are broadly in line with actual wages.

Figure 4.1a: Estimated Teacher Wages, Perceived Fair Teacher Wages and Actual Teacher Wages by Country. (\$USD, PPP adjusted)



In Figures 4.2 and 4.3, we have -alternatively- drawn the distances between estimated and actual wages and perceived fair teachers' wage, respectively. Figure 4.2 shows that, with the exception of Switzerland (the country with highest teacher's salary), for the whole set of countries under scrutiny the salaries estimated by the population regarding teachers starting wage is well below those perceived as fair wages; this means that the population considers that teachers work should be better rewarded than they believe it is. This is particularly marked in South American Countries (Colombia, Peru, Chile and Argentina) and Russia, reporting estimated wages roughly 35% below fair wages.

Figure 4.2: Estimated Teacher Wages and Perceived Fair Teacher Wages by Country. (\$ USD, PPP adjusted)



When using real data on wages, from Figure 4.3 it is further observed that the starting actual wage for teachers in 28 of the sampled countries is lower than that perceived as fair. In the above mentioned South American countries, Russia, China and African countries (Uganda and Ghana) real wages are significantly lower than what people perceive as a fair wage. Respondents from these countries perceived as fair wages between 40% and 60% higher than the actual starting wage. Interestingly, at the upper end of the relative wage distribution, respondents noted that a fair wage was lower than that offered as a starting salary for teachers - for example in Switzerland and Germany and Singapore.

Figure 4.3: Actual Teacher Wages and Perceived Fair Teacher Wages by Country for General Public Sample. (\$ USD, PPP adjusted), 2018

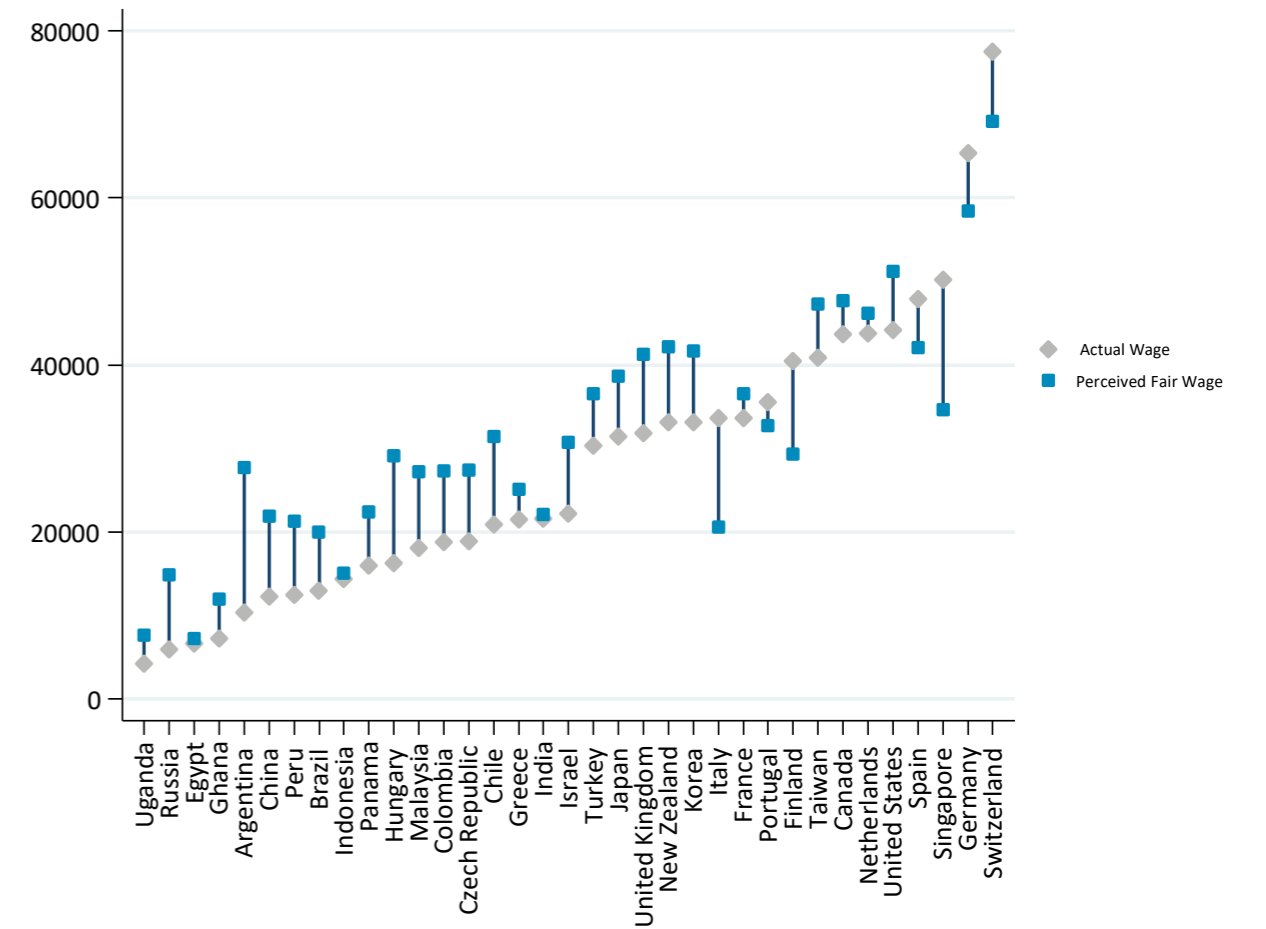


Figure 4.4 shows how the estimates have changed over time from the last time the survey was conducted - keeping figures constant in PPP USD. In most countries, guesses have increased over time but interestingly in two of the most high performing systems, Finland and Singapore, guesses have declined over time. Figure 4.3, by contrast, shows the actual wage growth over time. Figure 4.4 shows similarly the changes in perceived fair wages across our sample - recalling that this answer is always given after having been presented with information as to the actual wage.

Figure 4.4: Estimated Teacher Wages comparison 2013-2018. (\$USD, PPP adjusted)

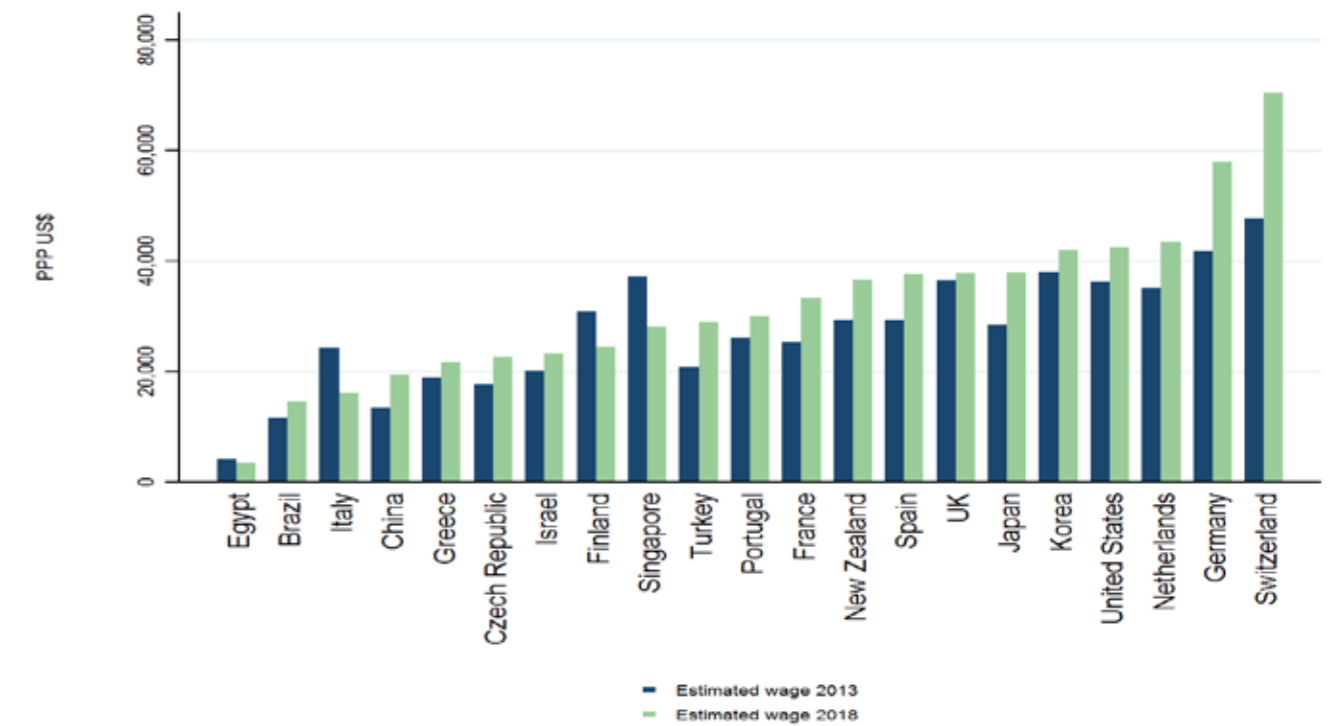


Figure 4.5: Actual Teacher Wages comparison 2013-2018. (\$USD, PPP adjusted)

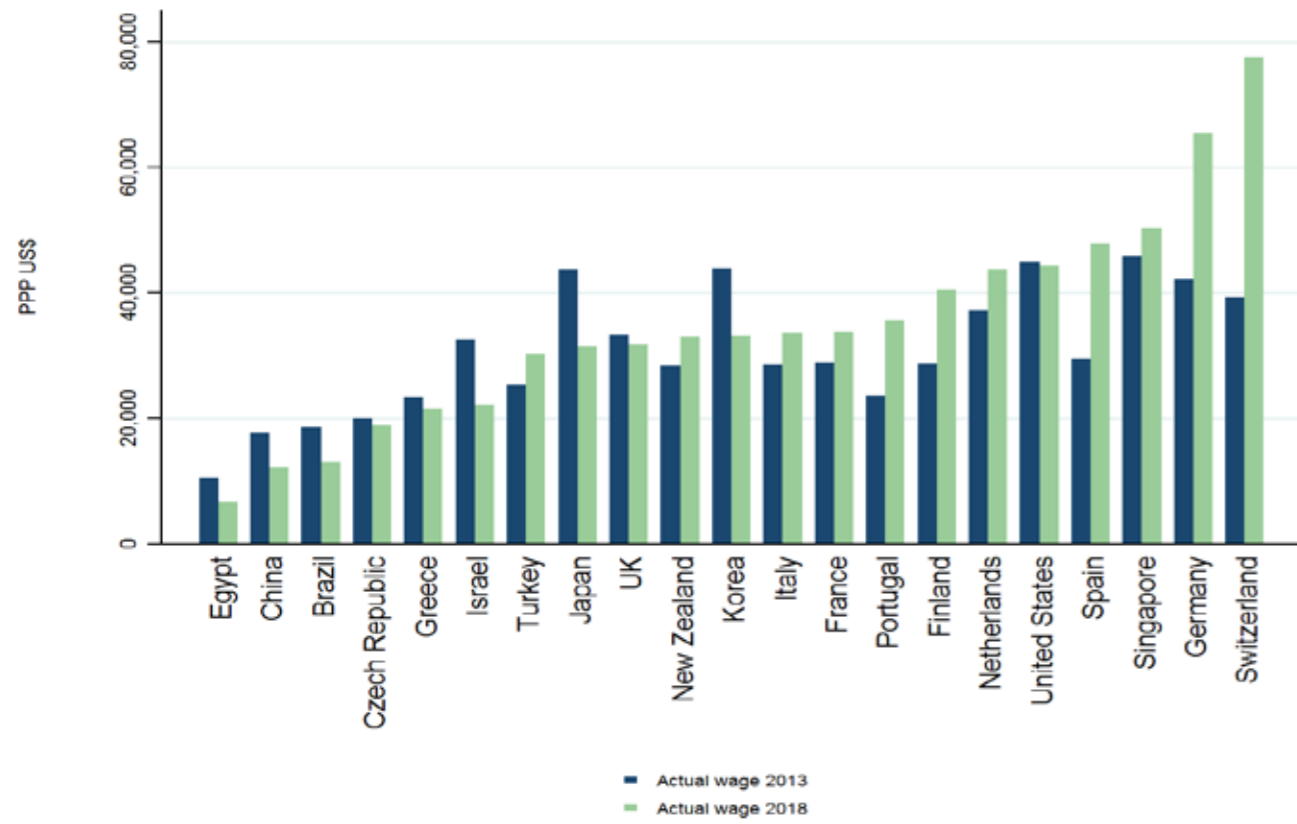


Figure 4.6: Perceived Fair Wages comparison 2013-2018. (\$USD, PPP adjusted)

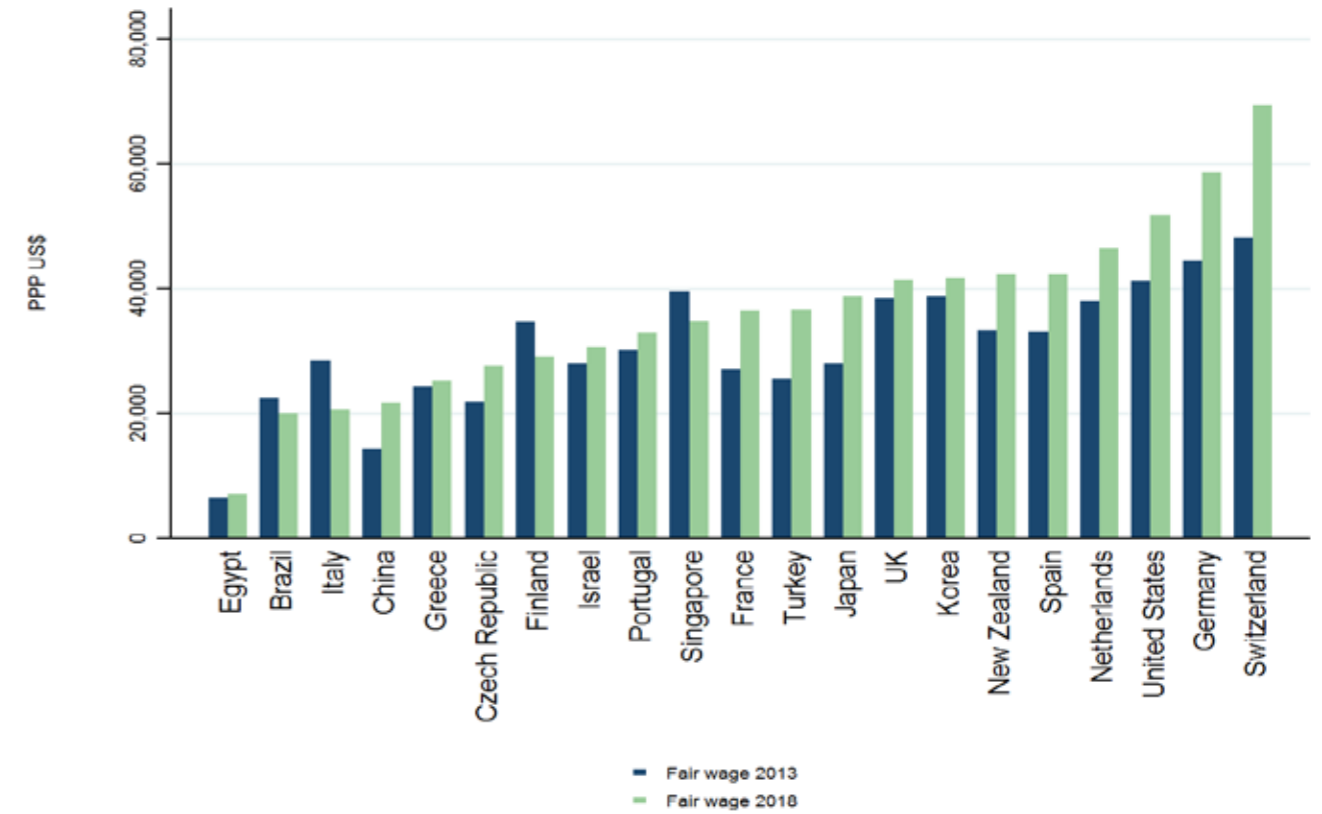
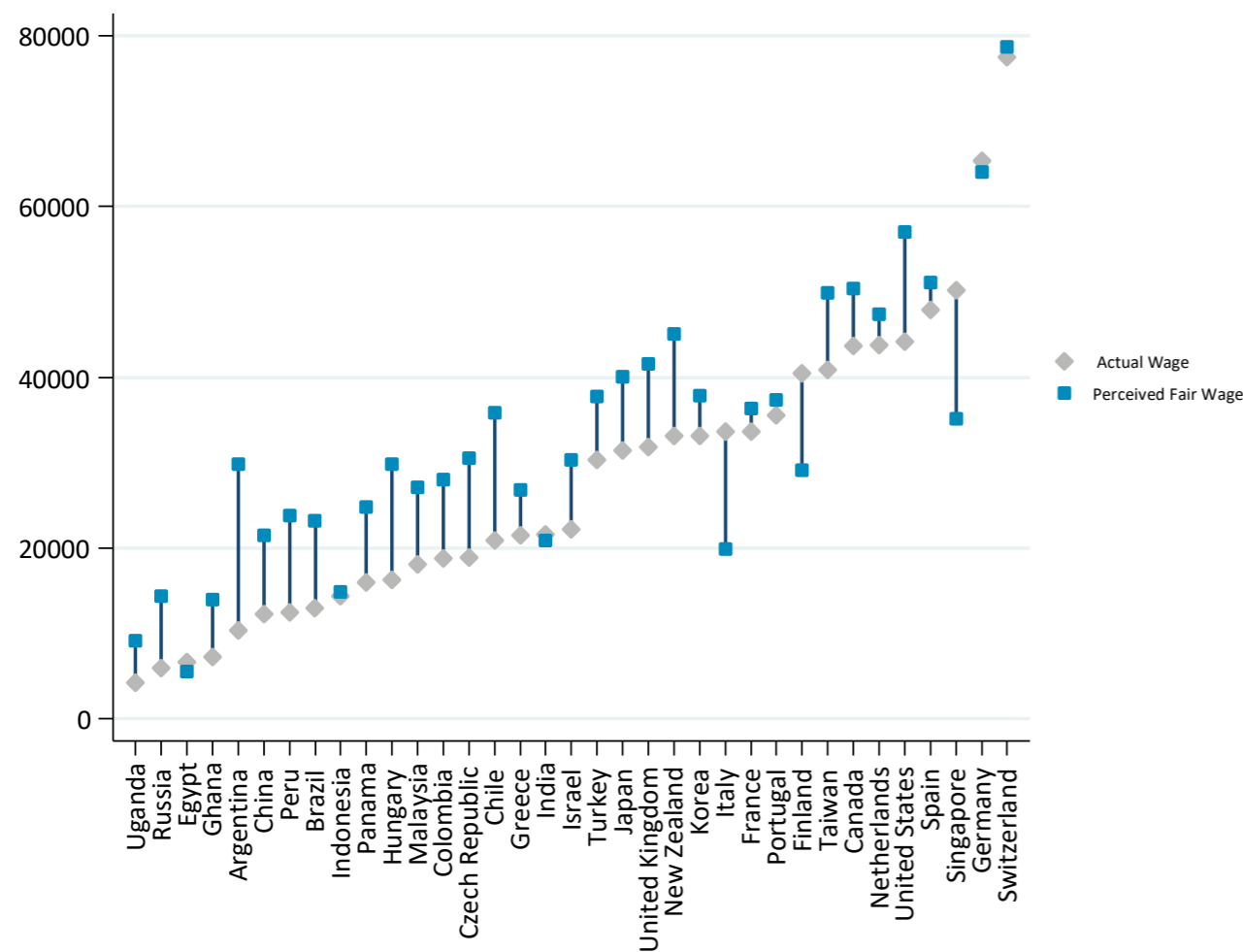


Figure 4.7: Actual Teacher Wages and Perceived Fair Teacher Wages by Country for Teachers Only Sample. (\$ USD, PPP adjusted)



When we use answers from the teachers' sample to examine the relationship between fair wages and actual wages, the graph (Figure 4.7) is very similar to that for the general public in (Figure 4.3.) Only in the extreme upper cases (Switzerland and Germany) do countries exhibit slight differences. In these countries the public's perception of a fair wage is about 10% lower than the teachers' perception. (The latter being matched with the actual wage they receive.) In other words, aside from the top end, the teachers' perception of what a fair wage is, is strongly conditioned by their experience of actual wages in their country. In short, teacher's perceptions track those of their general public. There is little evidence that these salary perceptions are related to their own perceptions of their status – as suggested in chapter 2.

### PERFORMANCE RELATED PAY

Some studies suggest that the impact of teacher quality on educational outcomes is far larger than any other quantifiable schooling input (Rivkin, Hanushek & Kain, 2005). Indeed, Goldhaber (2002) asserts that it is key to attract and retain high quality teachers, because of the link between teacher salaries and student outcomes.

Indeed, some of the best performing education systems clearly recruit their teachers from the top third of each graduate cohort. According to McKinsey (2007) in South Korea and Finland, which perform at the very top of the international assessment programs on pupil achievement, teachers are recruited from the top 5% and top 10% of graduates, respectively.

Although it has been established that higher salaries are associated with improved student outcomes, there has been much academic and political debate over how teachers should be paid. Rather than raising teachers' wages in the hope of higher student outcomes, many have asked whether teacher pay should be responsive and conditioned on the achievement of their pupils. Teachers would have their annual wage based on previous student outcomes to encourage a heightened responsibility for results (performance-related pay). Fryer et al. (2012), takes this one step further to argue that student outcomes are significantly improved when a process of 'loss aversion' is implemented. The process works by paying teachers a bonus at the start of the year, and asking them to give back the bonus if their students do not improve sufficiently. Fryer et al. (2013) found that math test scores increased by between 0.201 and 0.398 standard deviations when this concept was implemented. To probe the



opinion of the participants in our survey we asked them about whether they thought that teachers should be paid depending of the performance of their students. Figure 4.8 outlines the answers to this question for the general public and 4.9 for teachers.

Overall there is a lot of support (strong agreement or tending to agree) for the proposition that teacher Performance Related Pay (PRP) should be used. At least 49% of people across all surveyed countries either strongly agreed or tended to agree that teachers should be paid according to performance. However, there is also a remarkable degree of variation in the response across our countries. There is a weak negative correlation between the desire for a PRP-based system and educational outcomes. The relationship suggests that the higher the educational outcomes in mathematics, science and reading of a country, the weaker the desire for a PRP-based systems. It is interesting to note that where countries are performing well in PISA scores, there is less desire for PRP as this may relate to the successful promotion of their educational system. When we related levels of teacher respect to the desire for a PRP-based system, no significant relationship between the two variables was found. This indicates that respect for teachers does not influence the public's desire for this form of teacher pay.

There is a sharp contrast between the measure of support for PRP in 2018 compared to what we previously found in 2013. Figure 4.10 shows how support for PRP has fallen considerably over the last 5 years in all our original 21 countries in the GTSI2013.

Figure 4.8: Responses to 'Should teachers be rewarded in pay according to their pupils' results?' By Country. (As percentages of respondents) For the general public sample

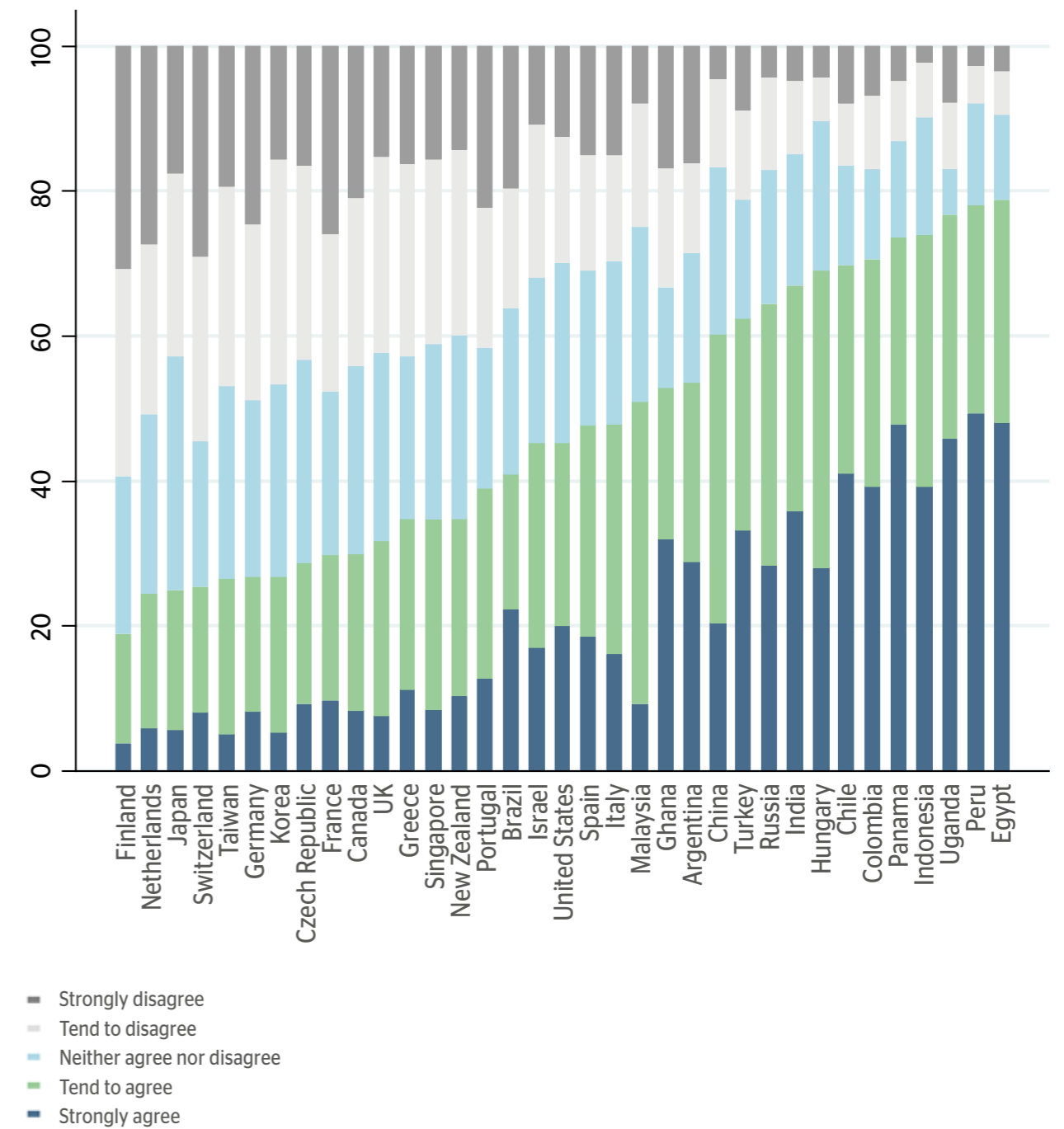
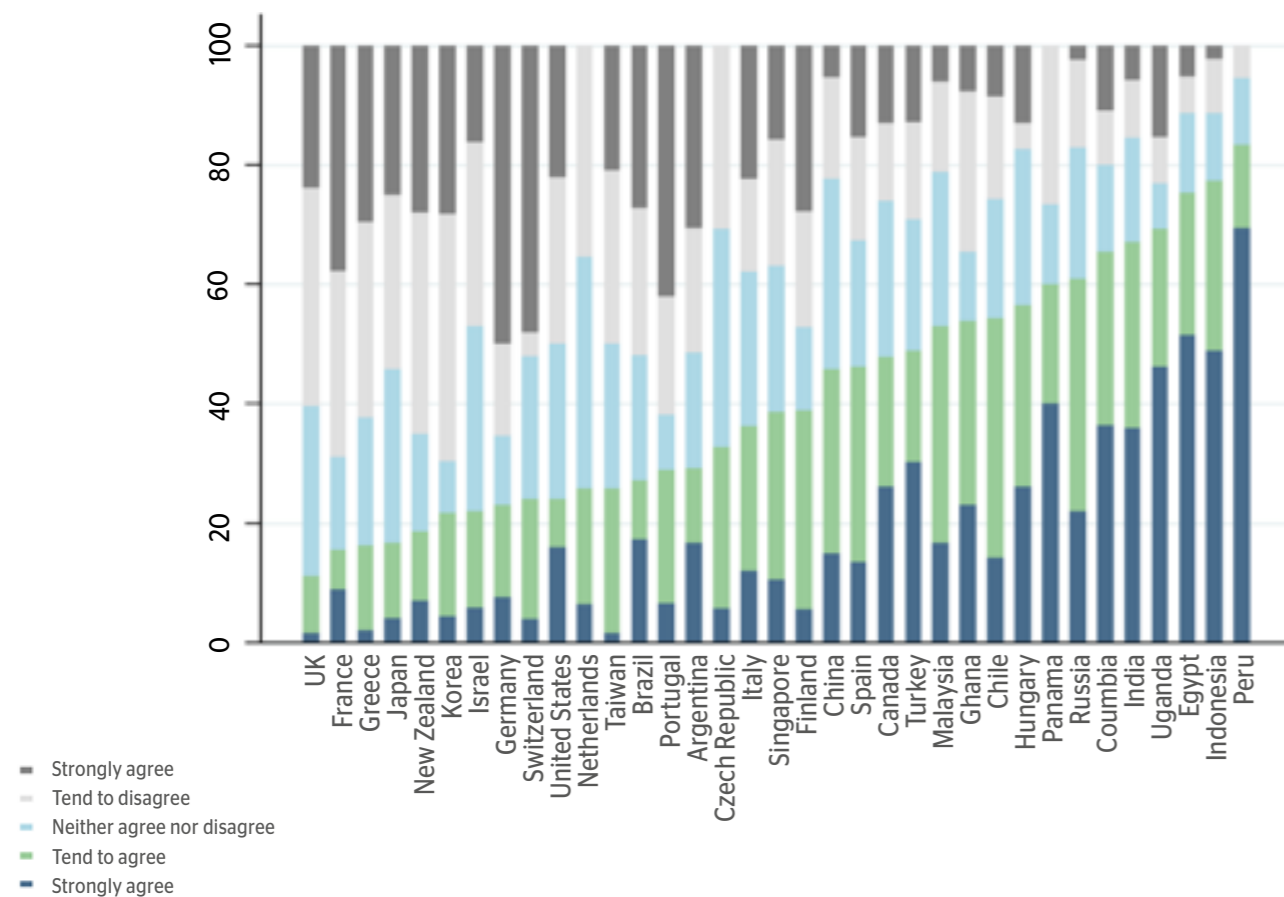


Figure 4.9: Responses to 'Should teachers be rewarded in pay according to their pupils' results?' By Country. (As percentages of respondents) For Teachers Only sample.

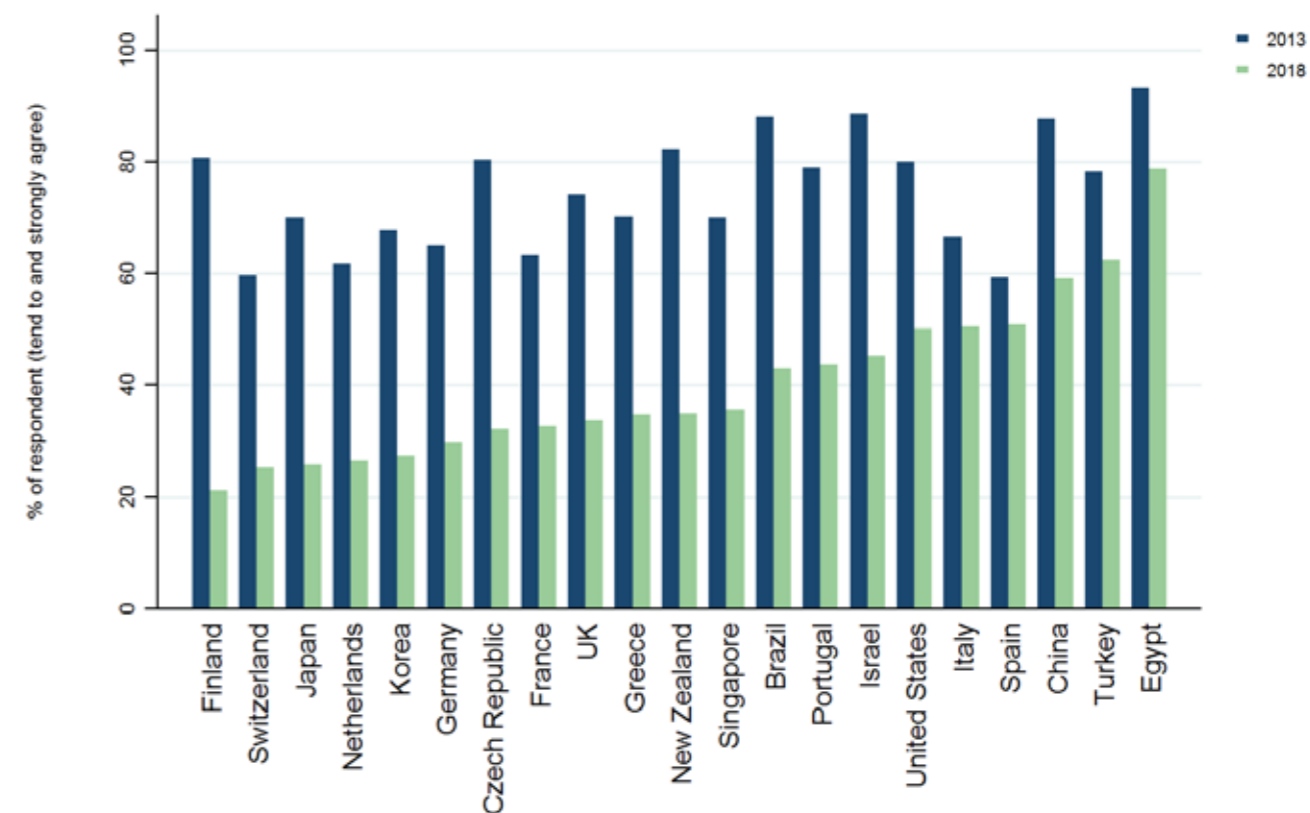


Interestingly enough when the sample of teachers was asked about whether they should be rewarded according to their pupils' results (Figure 4.9), the degree of variation is quite similar to the one showed by the general public sample, with some 40% of the sampled teachers either strongly agreeing or tending to agree that they should be paid according to performance. In fact the percentage is quite close for those countries reporting the highest figures (Egypt, Indonesia and Peru) but more distinct for countries like Finland or the UK.

A different way of tracking the value given by the population to the teacher profession, in a pecuniary sense, is to ask about the minimum annual salary people would need to be paid to become teachers'. The answer to this question is presented in Figure 4.11. The pattern reported is fairly similar to the ranking of countries according to their teachers' actual pay, which seems to indicate that actual salaries are reflecting, somehow, a good matching between supply and demand for the teacher profession.

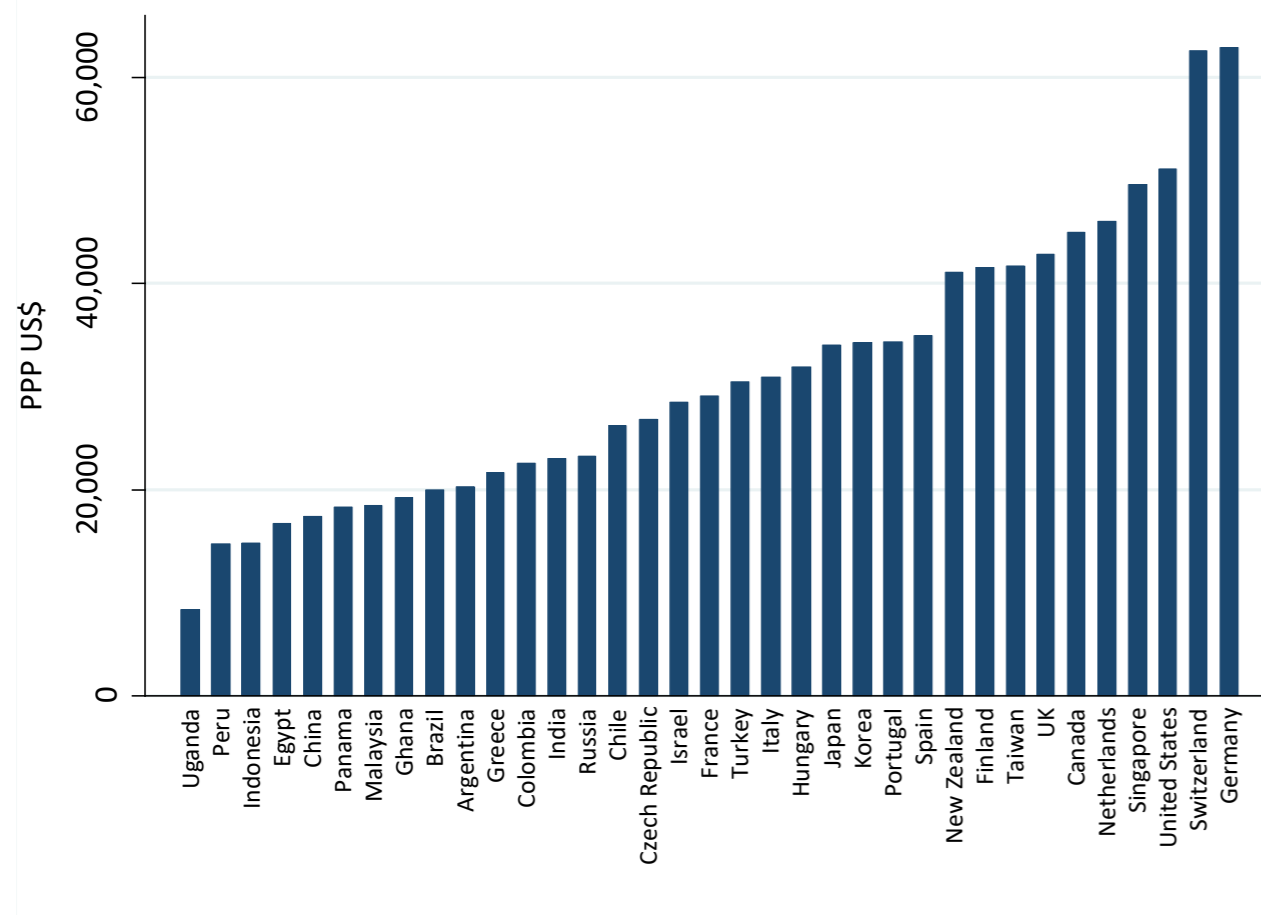
One of the most remarkable findings relating to the public perceptions on PRP for teachers is that if we compare our results in 2018 with those in 2013 we see that there is large move against PRP.

Figure 4.10: Should teachers be rewarded in pay according to their pupils' results?' By Country. 2013 v 2018



In 2013 a far higher fraction of the public agreed or tended to agree teachers salaries should be geared to their pupil's performance. This true in all of our original 21 countries from 2013. Support for PRP has waned most markedly in the countries which most strongly supported it in 2013, namely Finland, the Czech Republic, Japan, the UK and New Zealand.

Figure 4.11: Responses to 'What is the minimum annual salary you would personally need to be paid to become teachers?' By Country.



Furthermore, we have computed the rate between the minimum annual salary people need to become teachers and the - estimated- wage they think teachers perceive. The results are listed in Table 4.1. In Egypt and Russia, the minimum salary needed to become a teacher is 3.8 and 1.2 times higher, respectively, than the estimated wage. Conversely, mainly in Asian countries surveyed (Malaysia, Korea, China, Japan and Taiwan) the estimated wage in teaching is above the minimum earnings needed to potentially induce somebody to enter teaching. So, for example, in Malaysia people think the wages in teaching are 28% higher than would be necessary to induce them into teaching. The same effect is present in Korea, Panama, France, China, Switzerland and Japan, where the wage of offer in teaching is at least 10% higher than that which would be necessary to induce people into the job. Some of this effect could be that people in these countries systematically think teachers earn more than they actually do. But it shows that information on starting salaries is an important driver of recruitment into the teaching profession, and that unduly low estimates by the public may be deterring potential entrants into teaching.

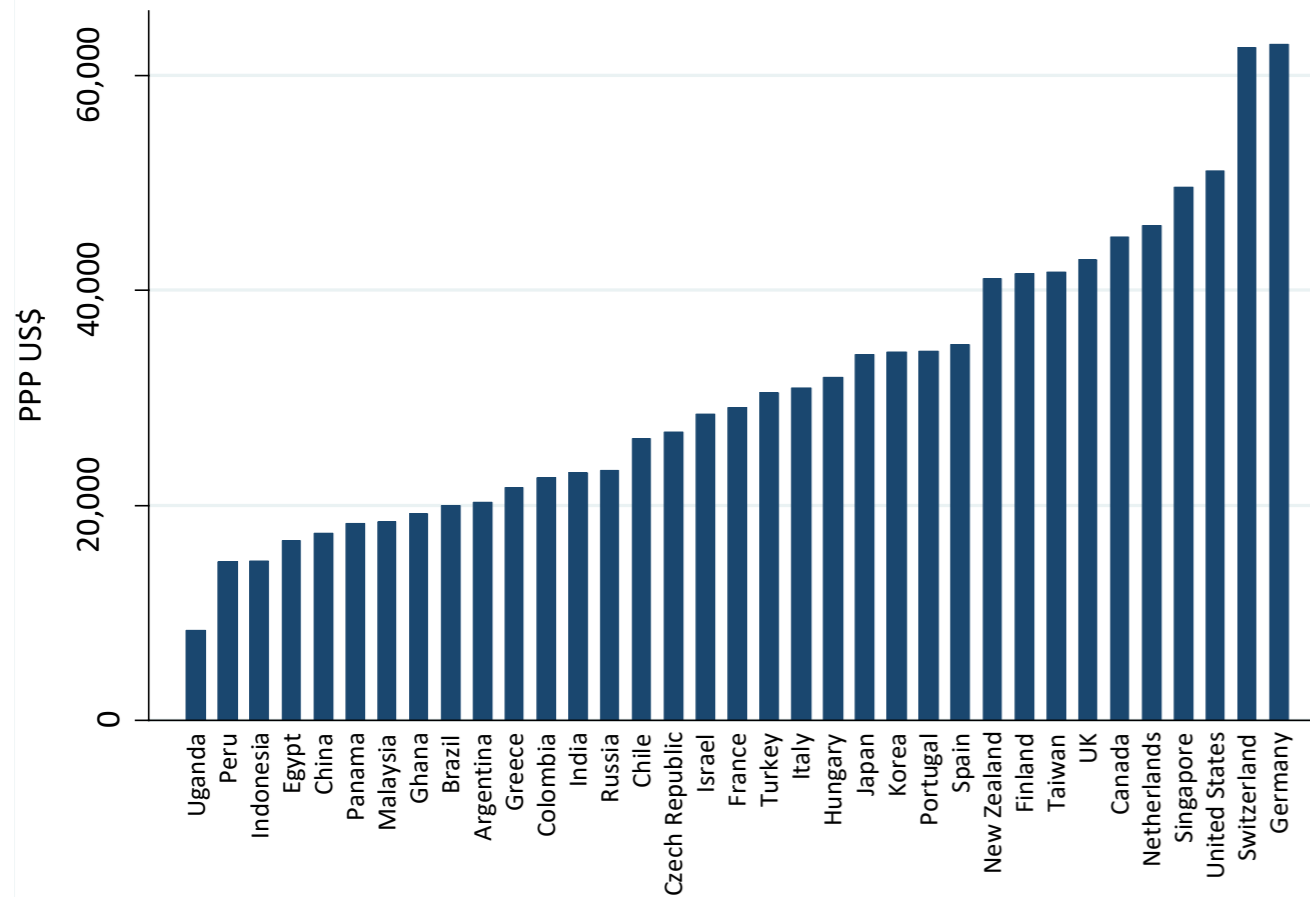
**Table 4.1: The Percentage Differences between the minimum annual salary people need to become a teacher and the estimated wage they think teachers actually earn.**

COUNTRY	Rate (%)
Malaysia	-28.5
Korea	-18.7
Panama	-15.6
France	-12.9
China	-12.0
Switzerland	-11.0
Japan	-10.1
Spain	-6.7
Taiwan	-4.4
Argentina	-2.9
Greece	-1.6
Canada	-0.6
Turkey	4.5
Peru	4.6
Netherlands	6.2
Germany	8.9
New Zealand	11.9
UK	13.3
Portugal	14.0
Czech Republic	18.4
Indonesia	20.3
United States	20.5
Israel	22.4
Chile	24.2
Colombia	25.1
India	27.4
Brazil	36.3
Hungary	49.1
Finland	69.5
Singapore	78.6
Uganda	81.8
Italy	90.9
Ghana	94.2
Russia	120.7
Egypt	376.2

The analyses of the power of salaries to retain workers in the teacher profession is showed in Figure 4.12. Specifically, in this Figure we represent the answer of the sub population of teachers to the question 3 'What is the minimum annual salary you would personally need to be paid for you to leave teaching?' The sorting of this 'teaching reservation wage' is comparable to that of actual wage. Notwithstanding, when we compute the rate of this reservation wage with the actual wage teachers receive some interesting issues come up.

First, countries like Russia and Egypt (and African countries), with the minimum salary needed to become a teacher clearly overcoming the estimated wage by the public opinion, are those which show a positive and high rate between teaching reservation wage –as stated by teachers- and actual wage; these rates are 2.34 and 1.68 times, respectively. Hence, in these countries the perception of teachers about the challenges of their profession is very positive and departs considerably from what the rest of the population perceives. Second, in Southern European countries (Italy, Spain, Portugal and Greece) there is no difference between teaching reservation wages and actual wages. This implies that teaching is seen as a tough profession. Consequently, the attraction and retention of teachers may be a more difficult task, despite the high unemployment rate suffered by these four countries.

Figure 4.12: Average Responses of teachers to 'What is the minimum annual salary you would personally need to be paid for you to leave teaching?' By Country.



So far we have examined the absolute –comparable across countries– teachers' actual wage as a mechanism to attract and retain young people into this profession. However, it could be the case that what really matters is the 'relative salary' of teachers as compared to the compensation to other occupations in the economy. In other words, we should compare how much teachers earn with what the whole working population earns in a year (income) to check how appealing is the teacher's profession in terms of monetary rewards. Clearly, if teacher pay is low relative to other professions, then the quality of new recruits will be lower than in those alternative professions. The average income of the population can be proxied by the Real GDP per head. This is what have been showed in Figure 4.13, where the relative position of a teacher's salary –in percentile terms– in the countries wage distribution that a teacher is paid at (See Data Appendix B for a description on how the teachers wage percentile position has been retrieved) has been drawn in increasing order.

Figure 4.13 shows that teachers in poor countries (e.g. India, Ghana or Uganda) earn more, in relative terms, than teachers in developed countries (e.g. UK or France). In other words, despite teachers in India earn much less than teachers in UK, relative to the income distribution, they tend to be better paid. This does not necessarily mean that in those countries teacher quality is higher. According to Figure 4.13 in most OECD countries, a teacher earns somewhere between 60% and 80% of GDP per capita. The African economies and India are at the upper range (paying teachers approximately the same as the level per capita GDP); conversely two Eastern European Countries (Russia and Czech Republic) are at the bottom, well below 40%. This could be related to the relative supply of teachers or, as suggested by Sandefur (2018), to the fact that in many countries civil service salaries are higher than market wages, and teachers are treated as Civil Servants in these countries.

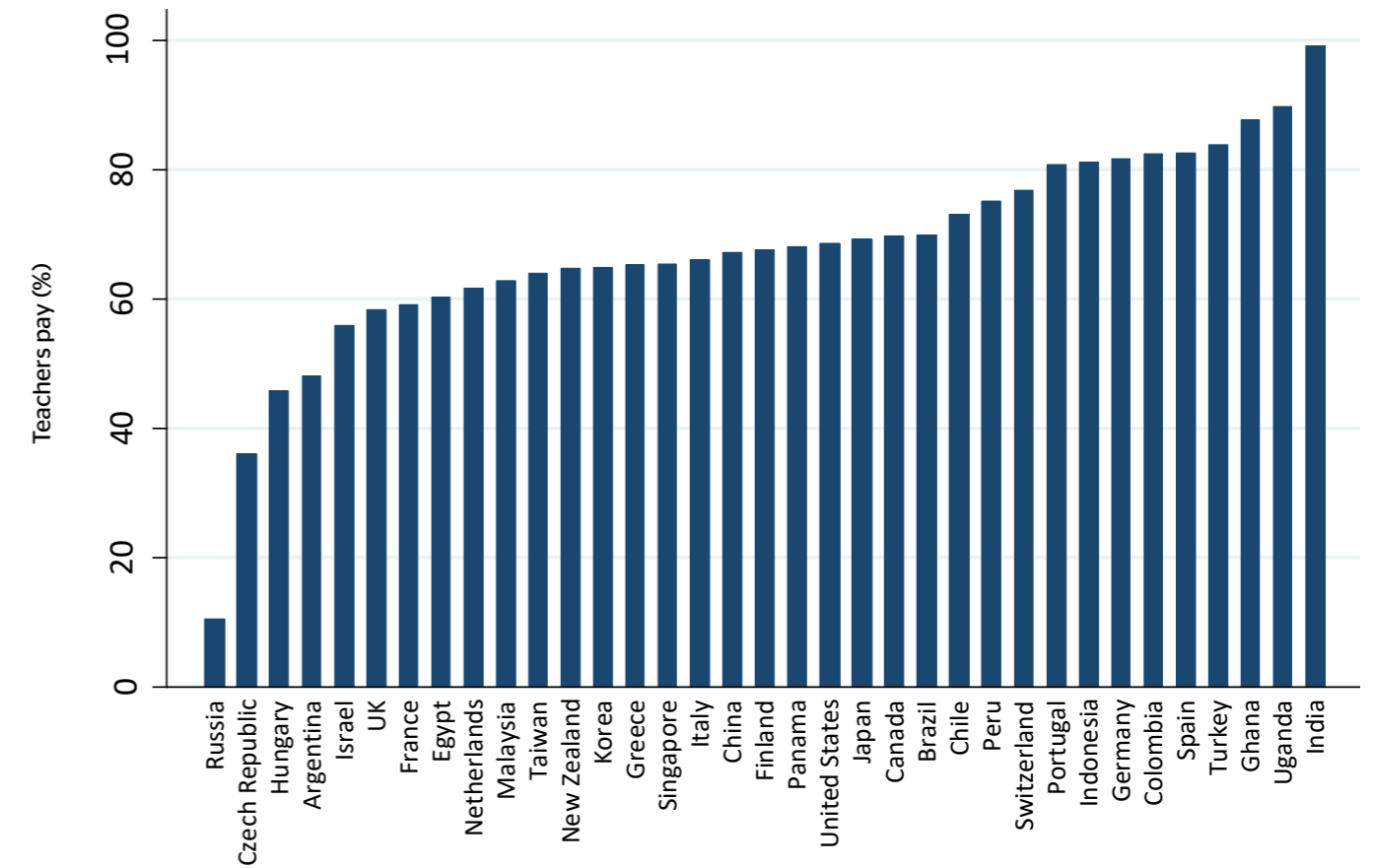
The results reported in Figure 4.13 give additional support to some of the issues raised in previous subsections. Specifically, in countries like India or Ghana parents are the ones that would provide positive encouragement to younger generations to become teachers; while less than 8% do so in Russia. Thus in countries where, in relative terms, teachers are better paid, parents encourage their children to become teachers, conversely in countries like Russia the opposite applies. Similarly, in Russia the public considers that the teaching occupation should be better rewarded and also in this country surveyed people report the highest rate between the minimum annual salary people need to become teachers and the - estimated- wage they think teachers receive.

There are of course some important 'health warnings' in the use of these data. As stated in previous Chapters, the percentiles shown in Figure 4.13 are not free from measurement error, particularly bearing in mind that both, the wages and GDP are collected from different data sources (mainly OECD "Education at a Glance" and "Penn World Tables" from Feenstra et al. (2015)). Additionally: there are significant other problems, for example:

1. Country \$PPP problems (see Appendix C Section 2, for a discussion on this).
2. Potential misreporting of GDP per head (in countries like Russia).

Additionally, the Real GDP variable (from Penn World Tables) is in millions of US dollars, not in per-capita terms. Thus, to convert GDP into per-capita terms we have used the population variable provided by this statistical source.

Figure 4.13: Teachers' pay percentile in the GDP per Head Distribution by Country.



## TEACHERS' WORKING HOURS

A related issue to that of salaries as a potential mechanism to attract and retain people into the teaching profession are the perceptions of the working hours of teachers. This, and other, on-the-job characteristics (such as class size, available of material resources, facing disruptive classrooms, etc.) has been mentioned by some previous researchers as a major reason teachers cited when asked about their decision to leave the profession (Barmby, 2006; Guarino, Santibanez, & Daley, 2006). To evaluate this, Figure 4.14 shows how teacher perceptions of working hours across countries compare to the general public's perception in their country. Explicitly, the question for the general population was 'On average, how many hours do you think full time primary and secondary school teachers work a week in term time (including work outside school such as marking and planning lessons)?'. In all our countries except Finland the general public perception of teacher's working hours underestimates teacher working hours. This difference (Figure 4.15) is remarkable in the case of South American countries (Peru, Argentina, Colombia, Chile and Brazil), in addition to Egypt and Panama, where this underestimation ratio is between 39% and 16%, when comparing actual working hours with the public's perception.

Figure 4.14: Perceptions of Teacher working hours (Teacher vs Public perceptions) by Country.

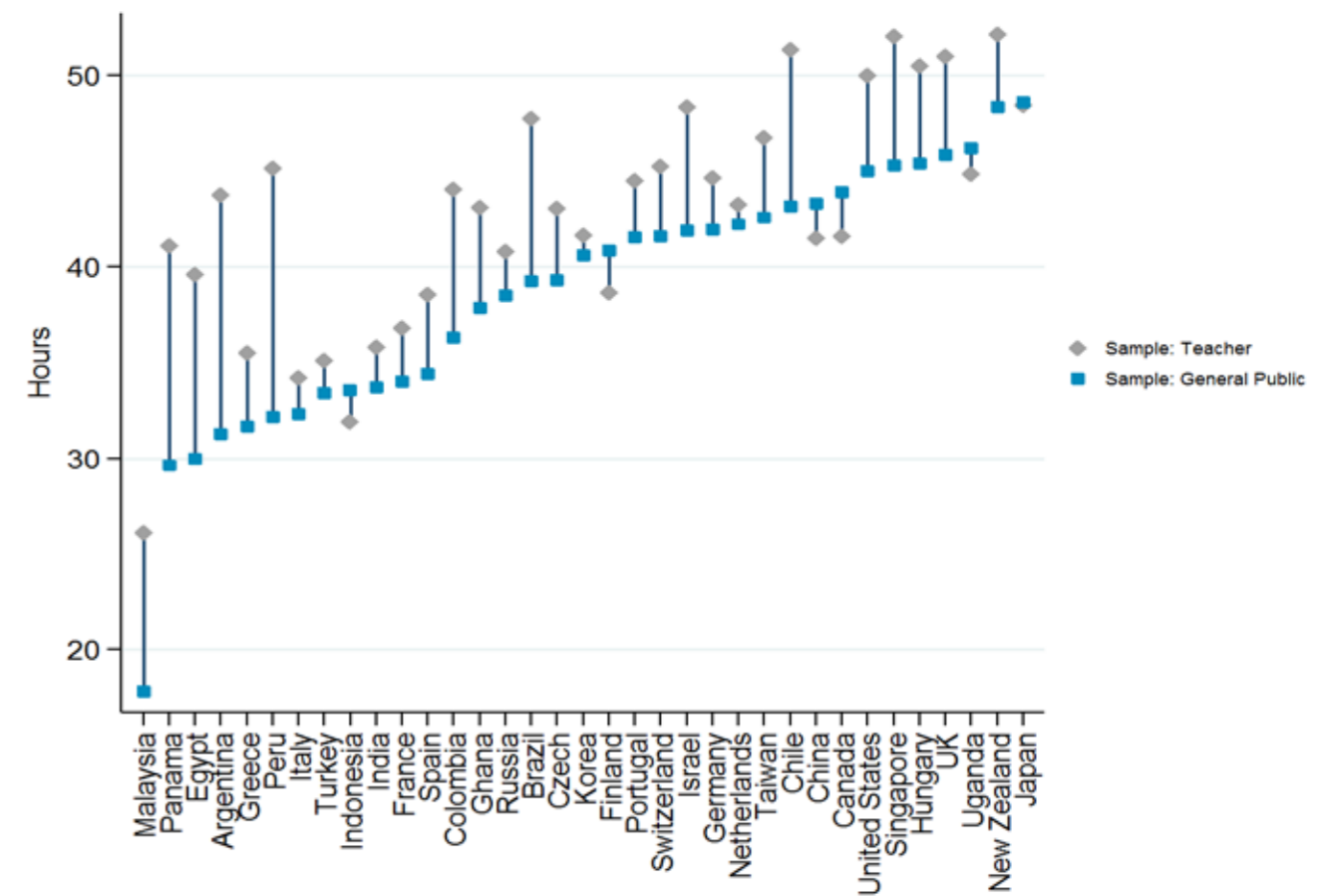
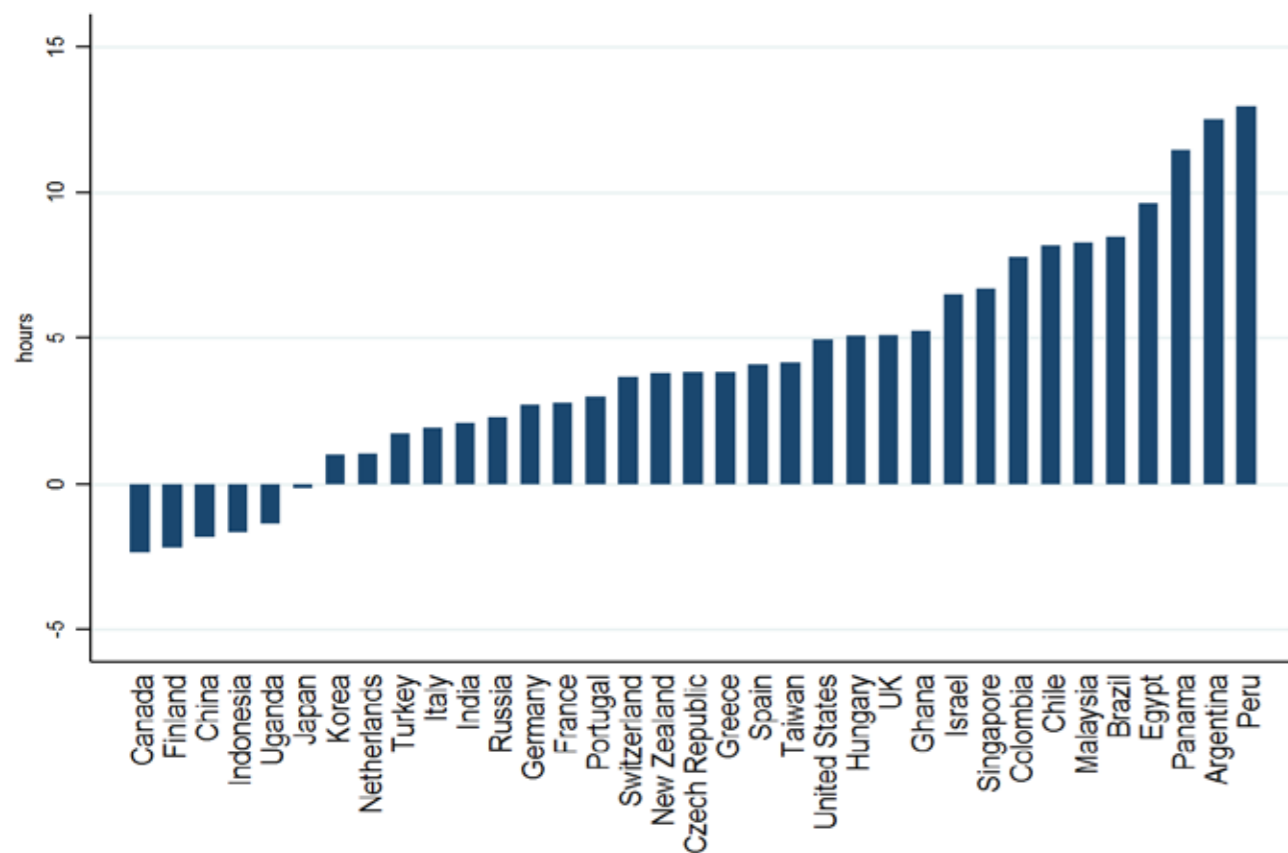


Figure 4.15: Difference between Public perception of Teachers' Working Hours and Teachers' Actual Working Hours per Week by Country.



#### KEY COUNTRY FINDINGS

- In the majority of countries, actual teacher wages were lower than what was perceived to be fair by respondents. In South American and African countries people think teachers ought to be rewarded with fair pay that is between 40-60% more than what they are presently getting. In the case of the US and the UK the same fairness question indicates that people think fair pay would involve teacher pay rising by 23% (in the UK) to 16% (in the US).
- Teachers do not report significantly different results as to their actual wages or perceived wages, other than in countries with high teacher salaries where they are more likely to say such wages are fair
- In all 35 countries, around 50% of people think teachers ought to be paid according to the performance of their pupils. In Egypt the figure was 78%, which is highest among 35 countries. However, it was over 90% in 2013. While in Israel, China, Brazil and New Zealand the figure was over 80%. However comparing with 2013, all countries show less agreement that teachers should be rewarded in pay according to pupil's results. There is a negative correlation between the desire for a PRP based system and educational outcomes
- The general public systematically underestimates how much teachers work per week - often by more than ten hours a week
- Support for PRP has fallen in all countries from 2013 to 2018. It has waned most markedly in the countries which most strongly supported it in 2013, namely Finland, the Czech Republic, Japan, the UK and New Zealand.





CHAPTER 5

## ASSESSING IMPLICIT VIEWS OF TEACHER STATUS IN GTSI 2018

We have already introduced the GSTI2018 and its score across our 35 countries. This score is based on how respondents within each country ranked the status of teachers compared to other professions, and the extent to which they felt teachers were respected by their students. Responses to these questions (which require ordering and comparison) reflect respondents' explicit, considered perceptions of teachers in their country.

A large volume of psychological research has demonstrated that people's spontaneous, unreflective feelings can be quite different to their deliberate, considered attitudes (Mayerl, 2013). In an often-studied example, spontaneous measures find evidence of negative attitudes towards ethnic minorities which are not picked up by conventional survey questions (Banaji, 2013). This may be a consequence of social desirability bias: when asked a conventional survey question, respondents give the answer they think will reflect best on them, rather than their true feelings (Dovidio et al., 1997). Or it may be because the negative attitudes in question are largely implicit. Implicit attitudes are unconscious, automatically activated feelings and associations we hold in relation to certain subjects or groups (Greenwald et al., 1998). For example, consciously we may genuinely believe that women are no less technically competent than men. However, due to persistent exposure to sexist stereotypes, unconsciously we may associate greater technical competence with men (Moss-Racusin et al., 2012).

The majority of the previous literature on the difference between spontaneous and deliberate attitudes has focused on negative feelings about traditionally stigmatised groups (Banaji, 2013). Teachers clearly do not fit this description. However, precisely the same processes may apply

to teachers as to other groups. When asked conventional survey questions, respondents may feel a social pressure to give a positive view of teachers, even if their true feelings or beliefs are quite different. Respondents may also hold positive or negative unconscious perceptions of teachers - feelings and associations of which they themselves are not fully aware. Measures which encourage spontaneous, unreflective responses may therefore offer an additional insight into the popular perception of teachers in the survey countries.

In this chapter, we first describe the pattern of spontaneously reported attitudes towards teachers across the countries in the survey. We then examine the effect of adding a selection of these measures to the GTSI 2018.

### SPONTANEOUS PERCEPTIONS OF TEACHERS

In order to measure respondents' spontaneous, unreflected perceptions of teachers, we added a word-association task to the survey, (prior to the main body of the questionnaire so as to not have responses conditioned by prior answers.) Respondents were presented with a sequence of word pairs. For each pair of words, respondents were asked to select the word which best described the teaching profession in their country. They were told to choose as quickly as possible, within a time limit of 10 seconds per word pair.

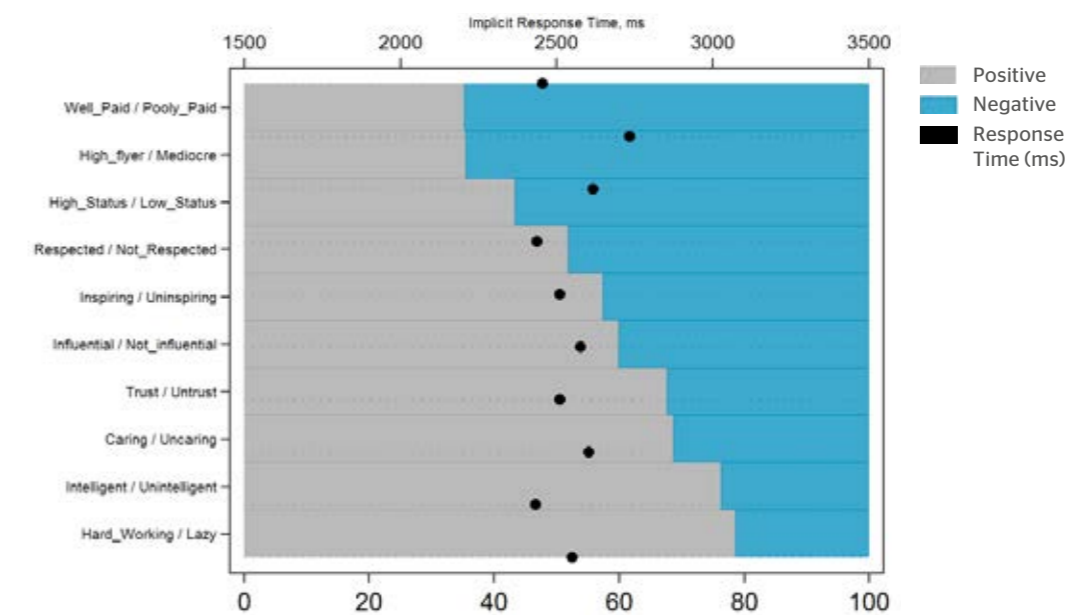
The word pairs, which were presented in a random order, were as follows:

1. **High flyer | Mediocre**
2. **Respected | Not respected**
3. **High status | Low status**
4. **Trusted | Untrusted**
5. **Influential | Not influential**
6. **Inspiring | Uninspiring**
7. **Hard working | Lazy**
8. **Caring | Uncaring**
9. **Intelligent | Unintelligent**
10. **Well-paid | Poorly paid**

These word pairs can be divided into three categories. The first three concern perceptions of teacher status or standing directly, pairs 4-9 measure factors more strongly associated with job performance (competence), and the final pair concerns teacher pay. (see Appendix B section 3).

Figure 5.1 shows the balance of respondents choosing each word from the pair across all countries - in other words, what the global average is for spontaneous perceptions of teachers. These are ranked in ascending order of the proportion of respondents who chose the positive half of the word pair. The strongest positive word globally associated with teachers is hard working, and the weakest are well paid and high flyer.

Figure 5.1 Summary of Positive and Negative Word Pairs across all Countries.



<sup>1</sup> It should be noted that each national survey translates these words into the relevant local language. As is the case for conventional survey questions, it is therefore possible that certain translations do not convey the exact meaning that they do in English. This is particularly the case for less straightforward terms such as 'high flyer' and 'mediocre'.

Figures 5.1a to 5.1j show the pattern of responses to each word pair across the 35 countries in the survey. These figures also plot the average response time for each word pair in each country.

Figure 5.1a Caring v Uncaring Association Word Association with Teacher and Response Times.

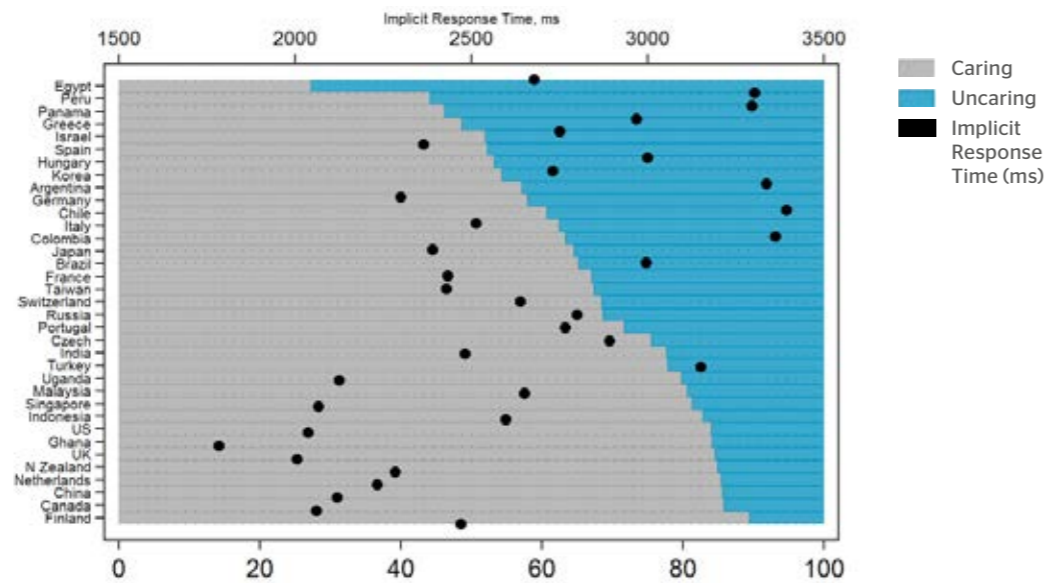


Figure 5.1b Hard Working v Lazy Association Word Association with Teacher and Response Times.

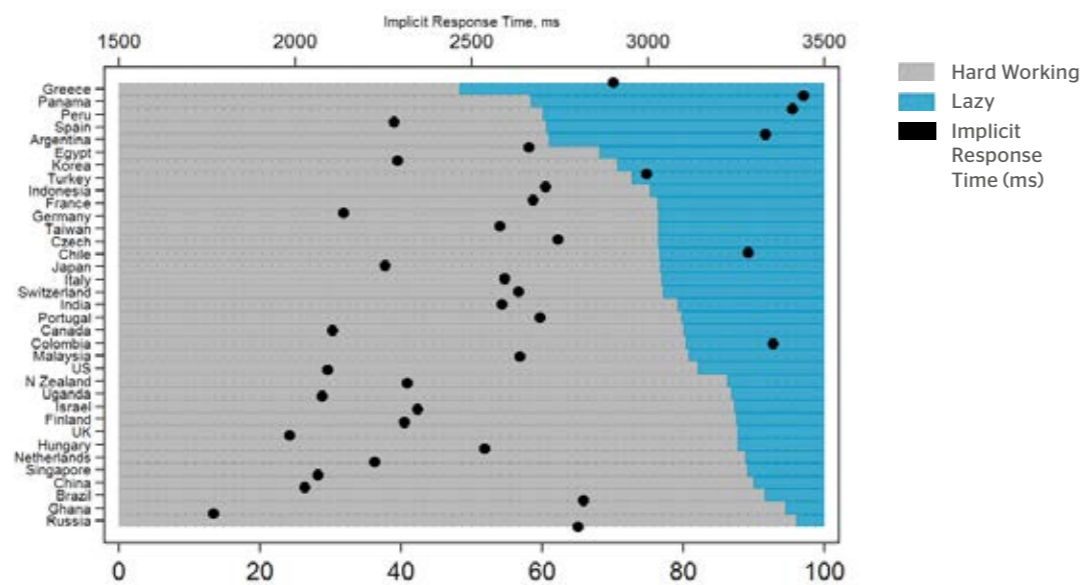


Figure 5.1c High flyer v Mediocre Association Word Association with Teacher and Response Times.

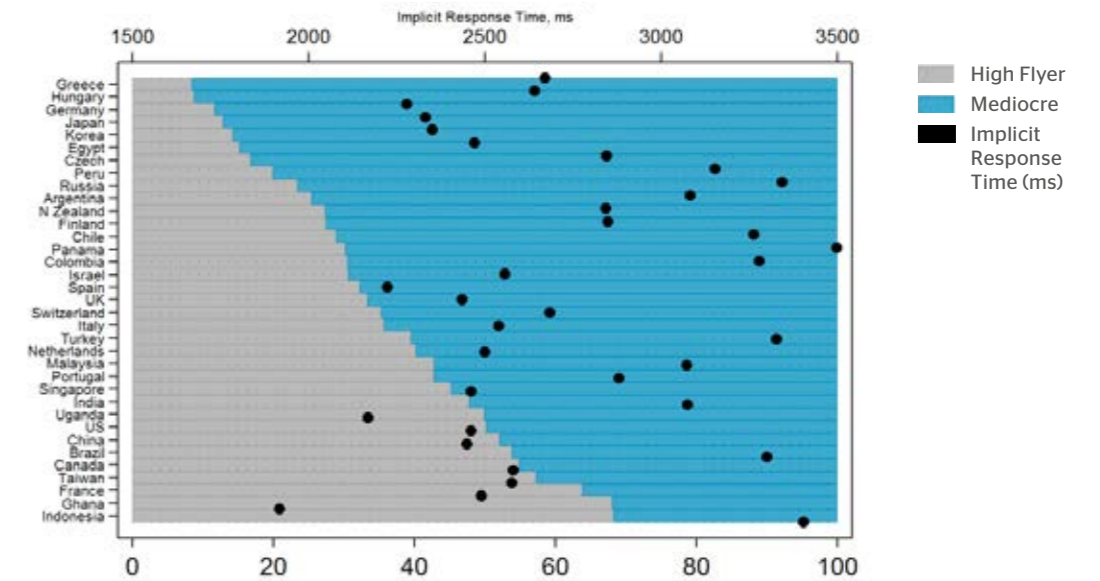


Figure 5.1d High status v Low status Association Word Association with Teacher and Response Times.

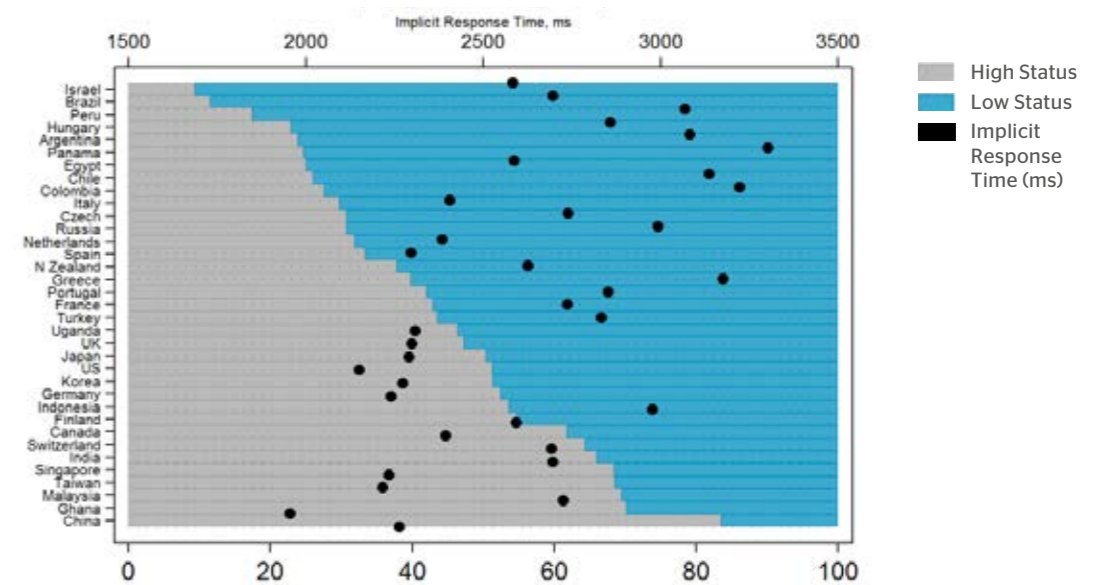


Figure 5.1e Influential v Not influential Association Word Association with Teacher and Response Times.

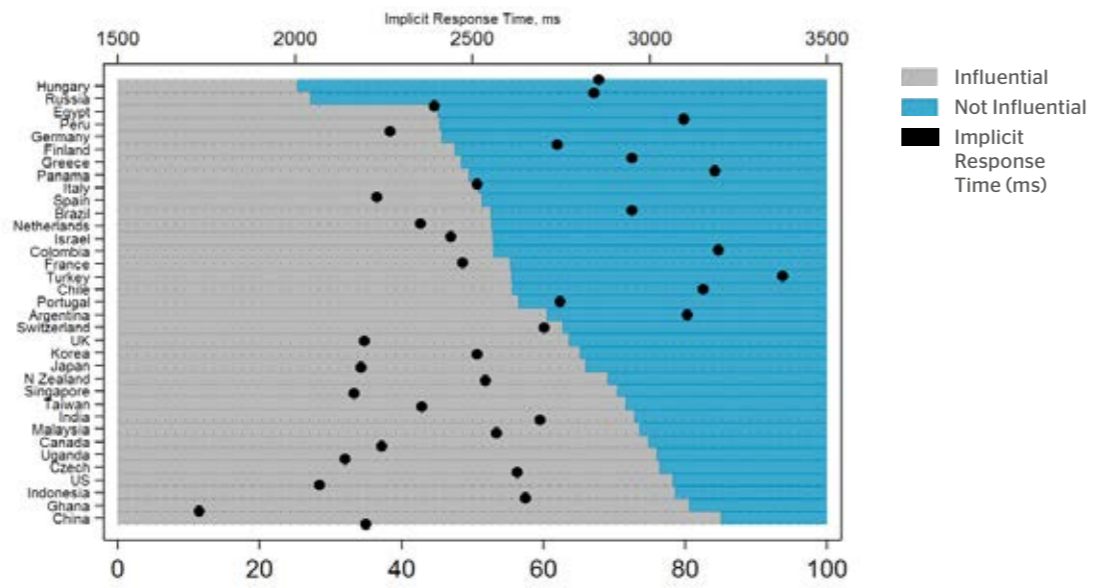


Figure 5.1g Intelligent v Unintelligent Association Word Association with Teacher and Response Times.

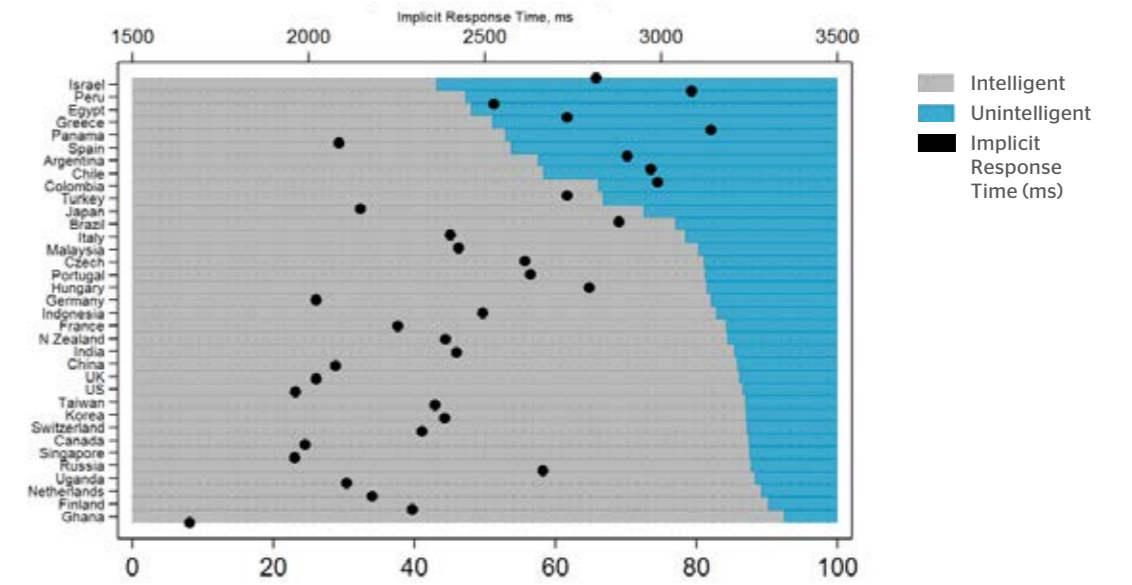


Figure 5.1f Inspiring v Uninspiring Association Word Association with Teacher and Response Times.

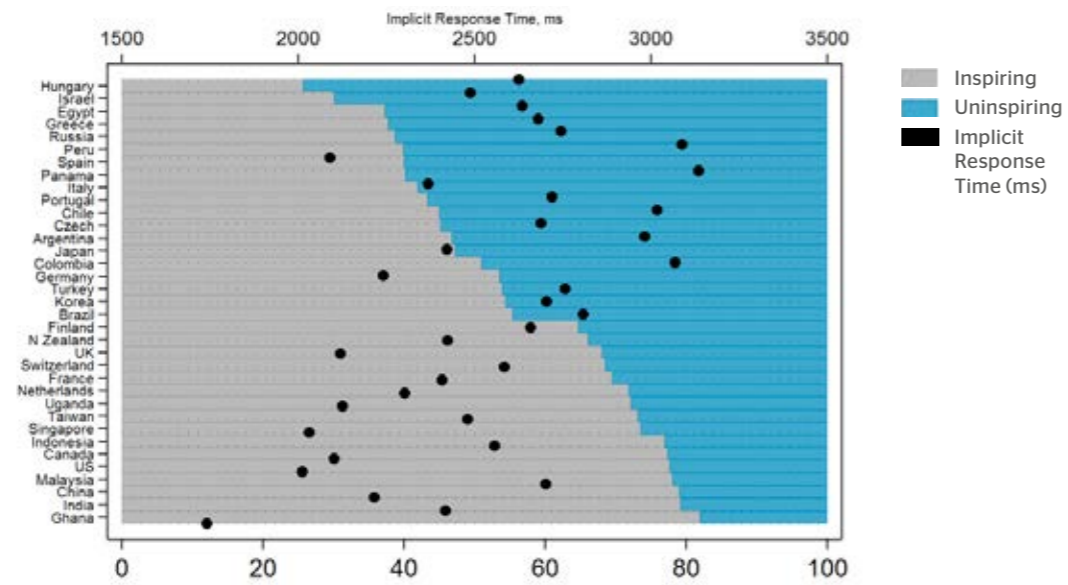


Figure 5.1h Respected | Not respected Association Word Association with Teacher and Response Times.

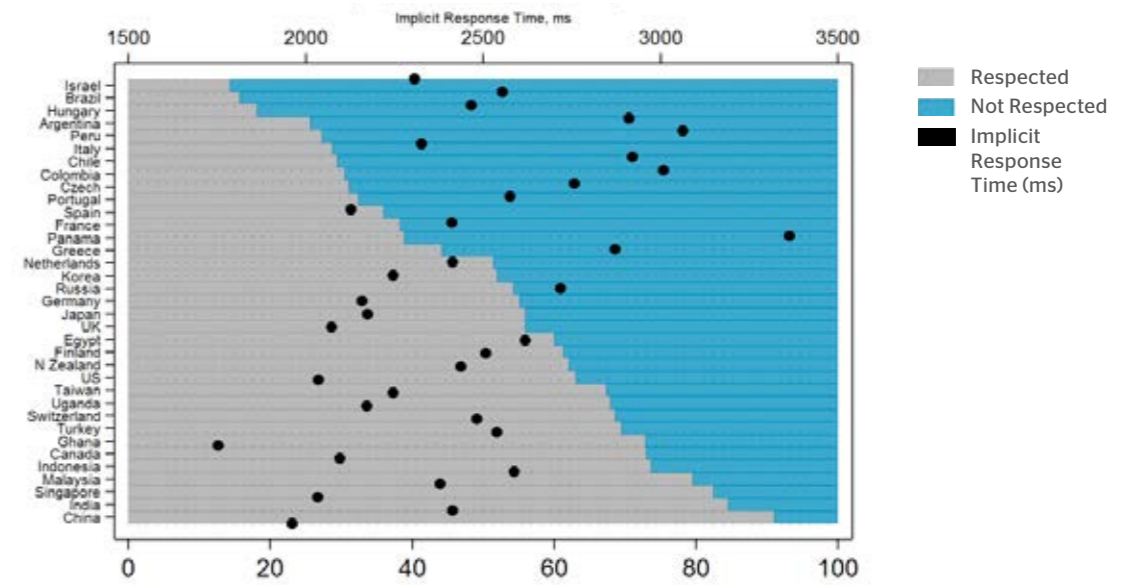


Figure 5.1i Trusted | Untrusted Association Word Association with Teacher and Response Times.

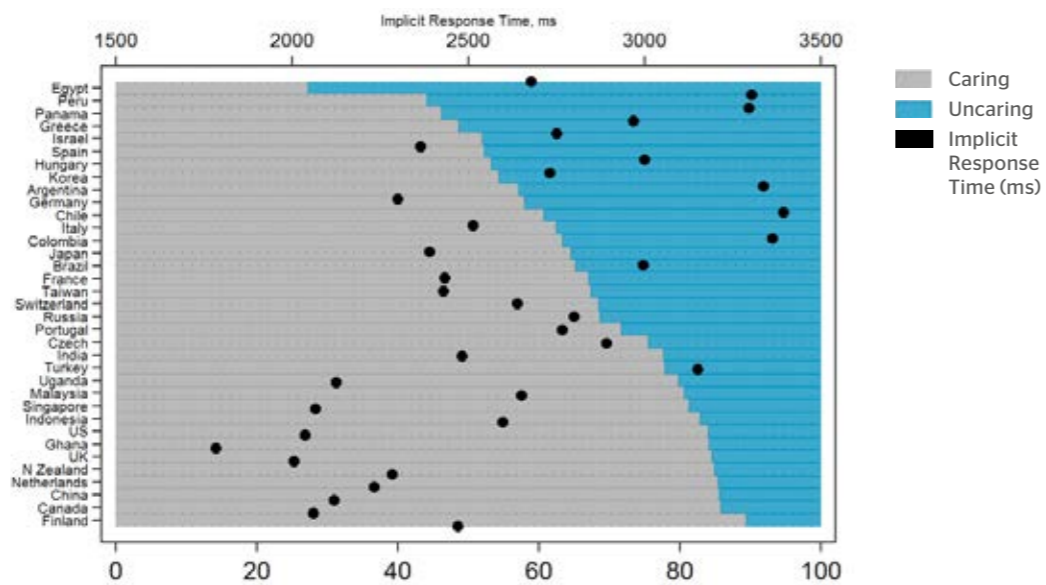
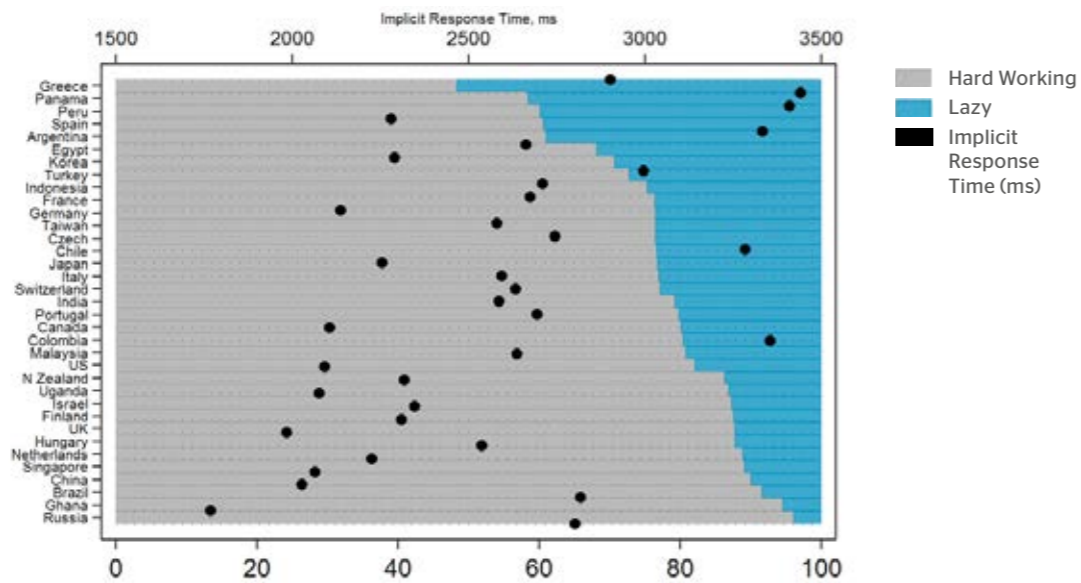


Figure 5.1j Well-paid | Poorly paid Association Word Association with Teacher and Response Times.

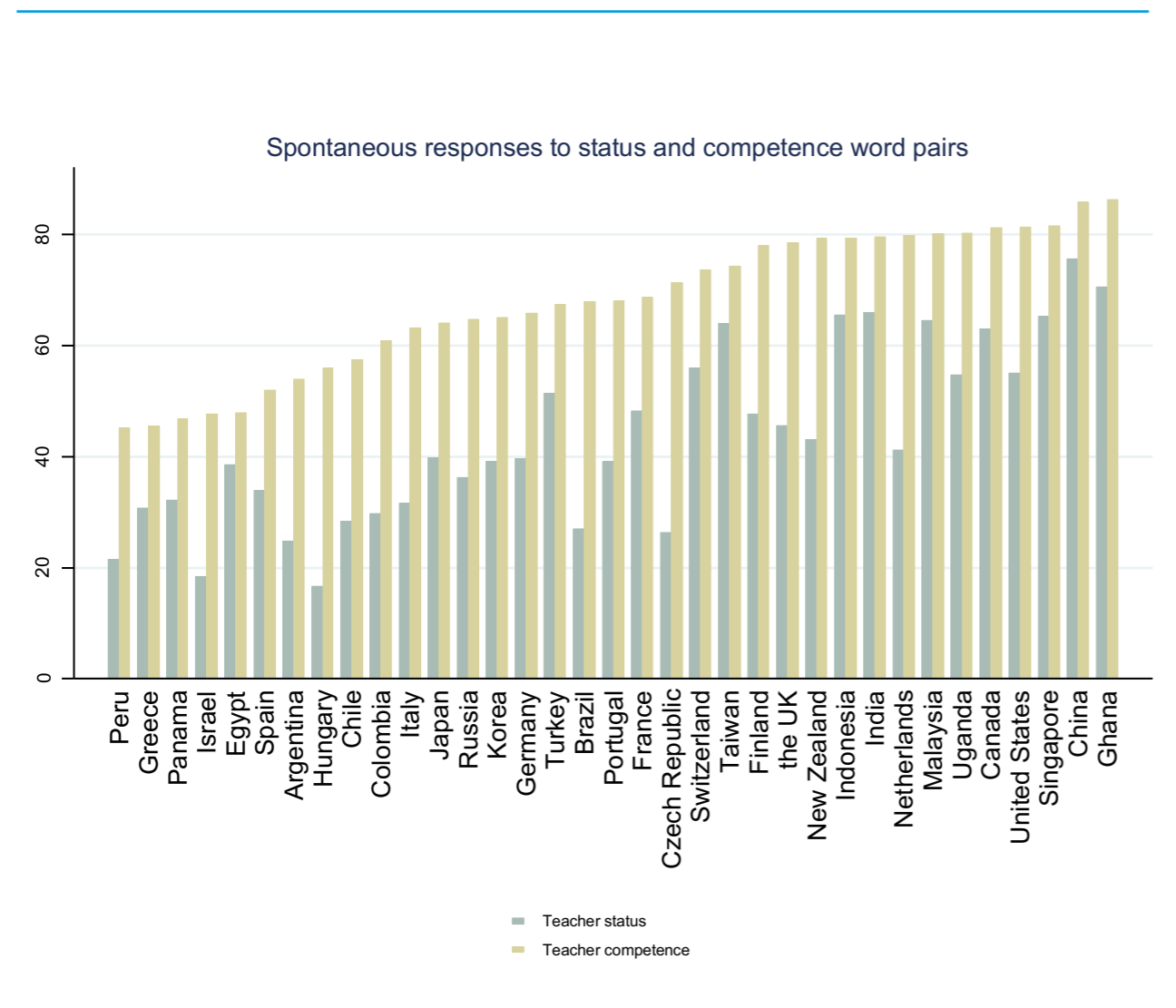


These results show that spontaneous perceptions of teacher competence are generally very positive. In the majority of countries, most respondents implicitly feel that teachers are caring, hard-working, influential, inspiring, intelligent, and trusted. However, there are substantial differences between countries.

The beige bars Figure 5.2 show the average proportion of respondents in each country choosing the positive word for the six competence measures. As this chart shows, positive spontaneous perceptions of teacher competence are highest in Ghana and China (with an average of 86% of respondents in both countries choosing positive competence descriptors), and lowest in Peru and Greece (with an average of 45% of respondents in both countries choosing the positive rather than the negative competence words to describe the teaching profession in their country).

The grey bars in Figure 5.2 show the average proportion of respondents in each country choosing the positive word from the three word-pairs relating to teacher status. These figures show that respondents' implicit perceptions of teacher status are generally much less positive than are their implicit perceptions of teacher competence.

Figure 5.2 Spontaneous Positive Responses to Status and Competence Word Pairs by Country

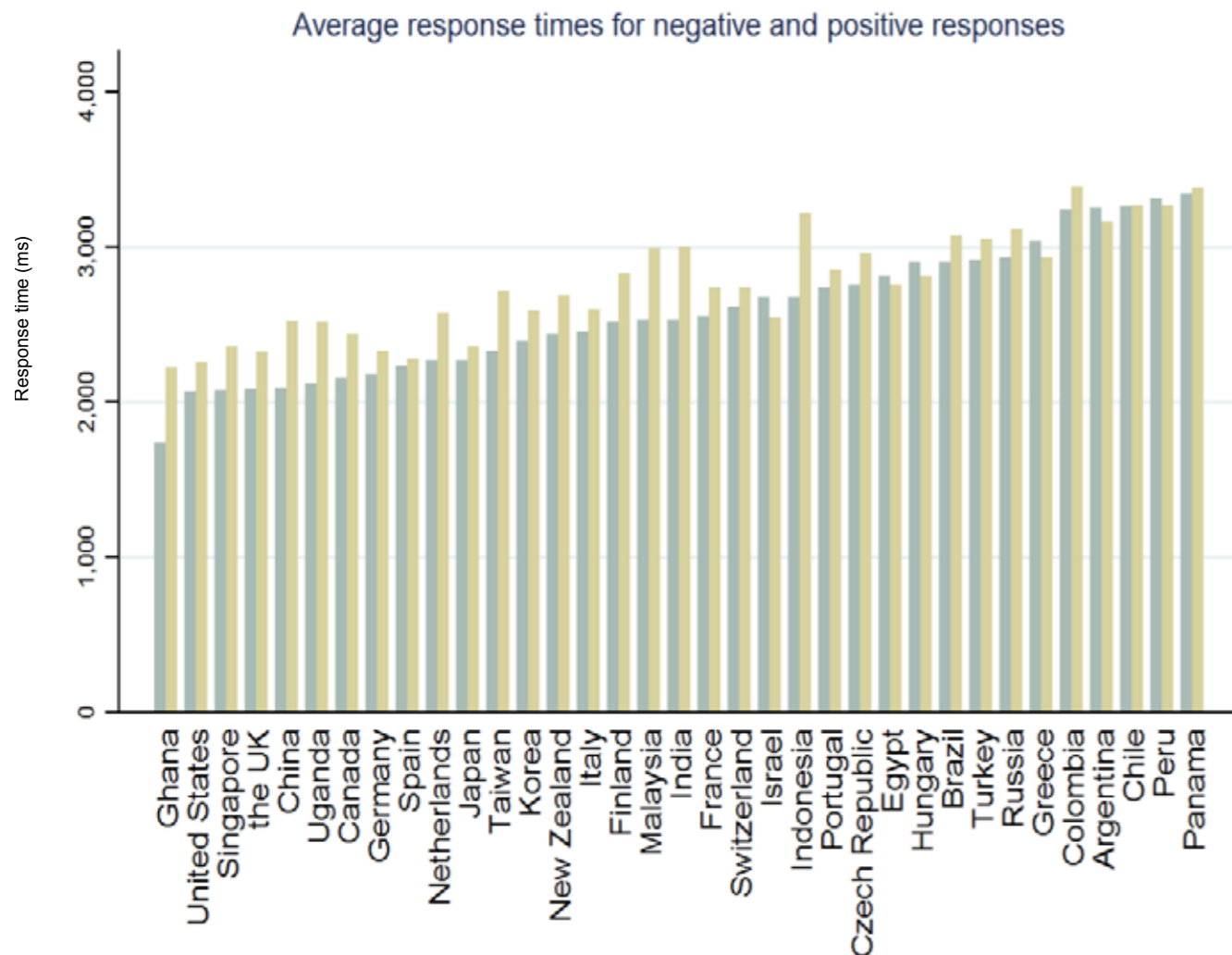


Responses on teacher status and competence are highly correlated: where teachers are viewed as highly competent, such as in China and Ghana, they also tend to be perceived as high status. The reverse is also true; for example in Peru, Greece, and Israel. However, this relationship is not perfect. There are a number of countries, such as the Netherlands, New Zealand, the UK, the Czech Republic, and Brazil, in which teachers are reflexively viewed as highly competent, but low status. Interestingly, there are fewer evident exceptions in the opposite direction - countries in which teachers are seen as low competence but high status.

A further notable result from Figures 5.1a to 5.1j is that responses tend to be slower on average in countries where greater proportions of participants respond negatively (an exception is the 'well-paid/poorly paid' word pair). For example, in countries where, on average, participants respond very quickly to the 'trust' word pair, respondents are more likely to choose 'trusted' than 'untrusted'; whereas in countries where responses are slower, participants are more likely to choose 'untrusted'. This suggests that more automatic, spontaneous responses may be more positive. Confirming this, Figure 5.3 compares, for each country, the average response time for participants who chose negative (beige bars) responses as compared with participants who chose positive responses (grey bars) (excluding the well-paid/poorly paid pair). This figure shows that, in the majority of countries, response times are longer for negative than for positive responses. This suggests that, in most countries, in order to respond negatively (for example, to rate teachers as 'untrusted') participants may need to pause to override automatic, positive stereotypes about teachers.<sup>2</sup>

<sup>2</sup> For some countries these differences are small and do not reach the conventional threshold for statistical significance. However, the overall pattern is clear.

Figure 5.3 . Comparison of average response times for negative and positive responses to the word pairs.



### COMPARISON OF SPONTANEOUS RESPONSES TO GTSI 2018

Figure 5.4 and 5.5 plot the relationship between a country's GTSI 2018 score and the average proportion of respondents choosing positive status and competence words, respectively. As these figures show, the correlation between these spontaneous measures and the GTSI 2018 is generally positive. Respondents in countries with a high GTSI 2018 score, such as China and Malaysia, also tend to respond positively to the spontaneous measures of teacher competence and status; whereas respondents in countries with a low GTSI 2018 score, such as Israel, and Brazil, tend to display more negative spontaneous attitudes. Unsurprisingly, given that GTSI 2018 is intended as a measure of status, this association is stronger for the status than for the competence measures. However, there are some notable differences. There are several countries with very low GTSI 2018 scores, such as Ghana and Uganda, in which spontaneous perceptions of teacher status nevertheless appear very positive. Ghana, for example, appears near the bottom of the GTSI 2018 rankings, but has among the highest proportions of participants who reflexively report that teachers are respected, high-status, high-flyers. It appears that here, teachers are implicitly perceived as being high-status, but their status is considerably lower when respondents are asked to give their deliberate, considered views.

There are also a number of countries, including Russia, Korea, and Greece, in which spontaneous views of teacher status appear to be substantially more negative than the explicit GTSI 2018 would predict.

In these countries, respondents appear to reflexively feel that teachers are low status, but 'correct' this perception upwards when asked to give their considered opinion.

Taken together, these results suggest that spontaneous responses are offering a meaningfully different window onto people's perceptions of teachers.

Figure 5.4. Relationship between GTSI 2018 and spontaneous competence responses.

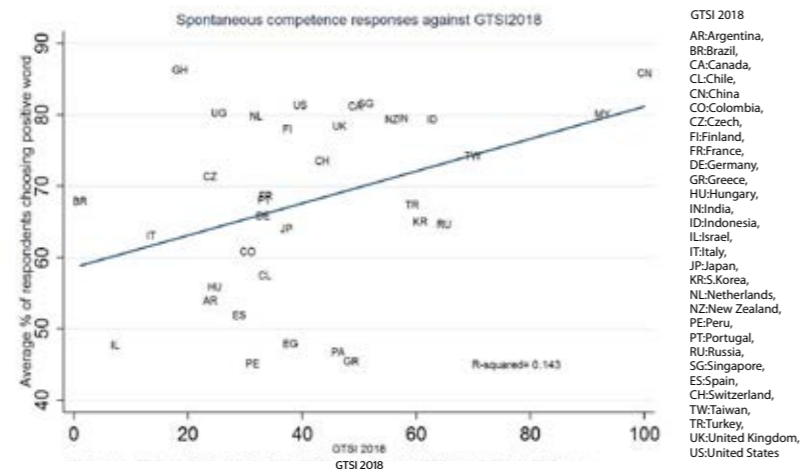
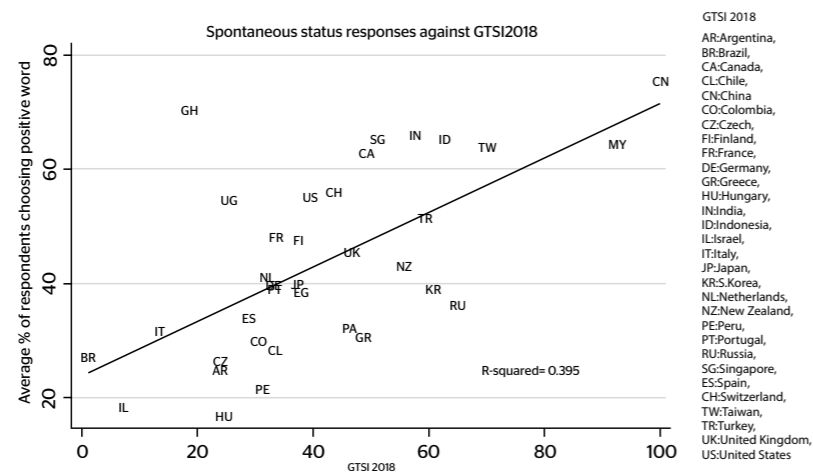


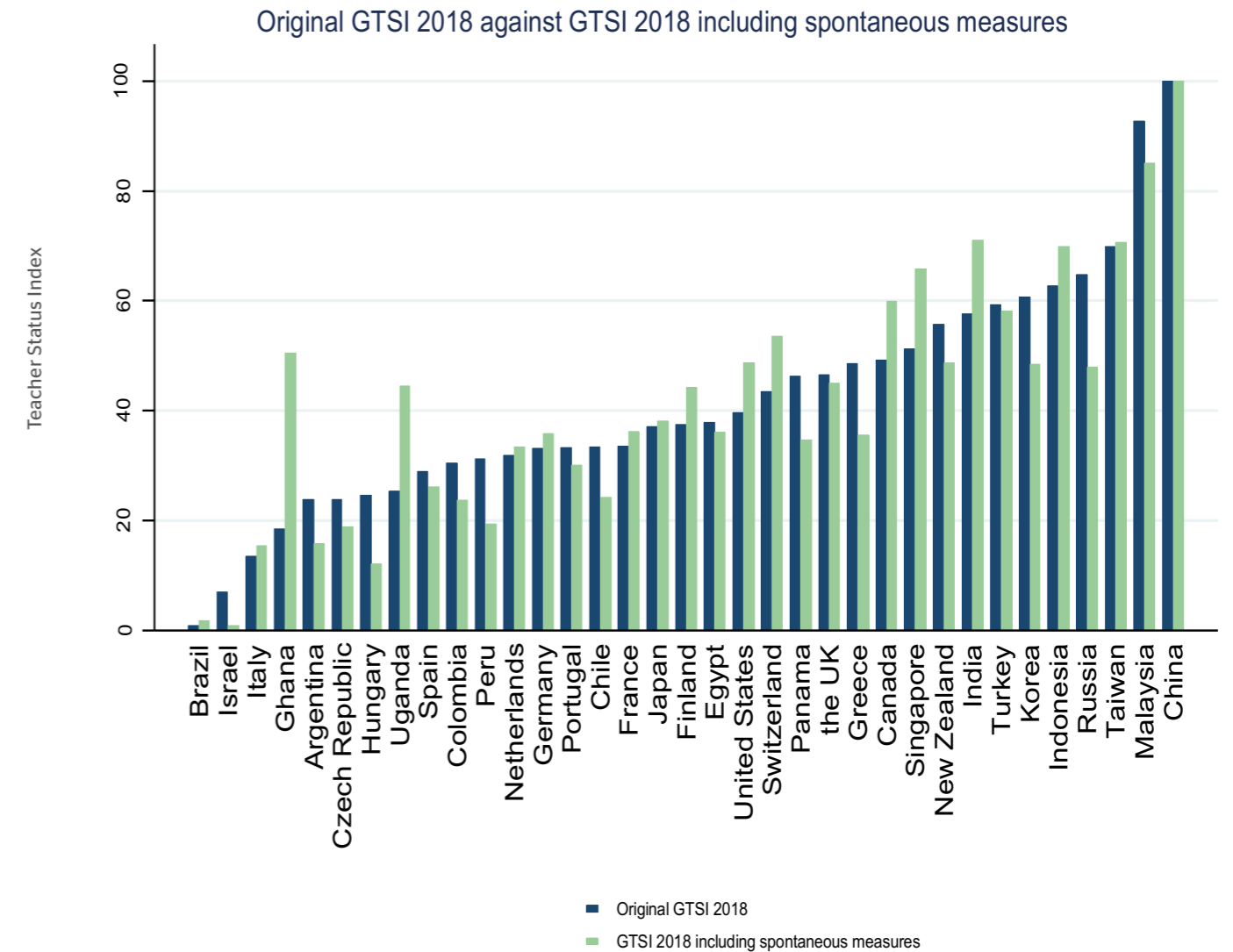
Figure 5.5. Relationship between GTSI 2018 and spontaneous status responses



### ADDING THE SPONTANEOUS MEASURES TO THE TEACHER STATUS INDEX

The results reported above suggest that spontaneous responses to the word-association task may offer additional information about perceptions of teachers, over and above the considered, deliberate responses given to conventional survey questions. We therefore added participants' responses to the three word-pairs reflecting teacher status (high-status/low-status, respected/not-respected, high-flyer/mediocre) to the GTSI 2018 by adding these measures to the Principal Component Analysis described above (and in Appendix B).

Figure 5.6. Comparison of the original GTSI 2018 against GTSI 2018 including spontaneous measures





There is a very strong correlation between the two measures ( $r=0.89$ ). However, some countries are affected quite strongly. Figure 5.6 and 5.7 shows the change in score for each country. This figure shows substantial positive changes for Canada, India, Singapore, Uganda, and particularly Ghana. In these countries, accounting for unreflective perceptions of teacher status has significantly improved the apparent standing of teachers in the country. On the contrary, accounting for unreflected attitudes towards teachers in Russia, Greece, Hungary, Korea, Peru, and Panama has led to a substantial decrease in their apparent standing.

**TEACHER STATUS ACCORDING TO TEACHERS VS. THE GENERAL PUBLIC**

Figure 5.8 compares teacher status (as measured by GTSI 2018, including spontaneous measures) as reported by the general population with teacher status as reported by teachers themselves. Figure 5.9 displays the difference between the two scores for each country. These figures show that, perhaps unsurprisingly, in the majority of (though not all) countries, teachers evaluate their own status higher than do the general public. The countries with the largest positive gap between teachers' views and those of the general public are Peru, India, Uganda, Indonesia, Switzerland, and (particularly) Panama. There are several countries in which teachers' view their own status more negatively than do the general public. These include Portugal, the USA, Hungary, Spain and France.

Figure 5.7. Change in the GTSI score due to adding spontaneous measures

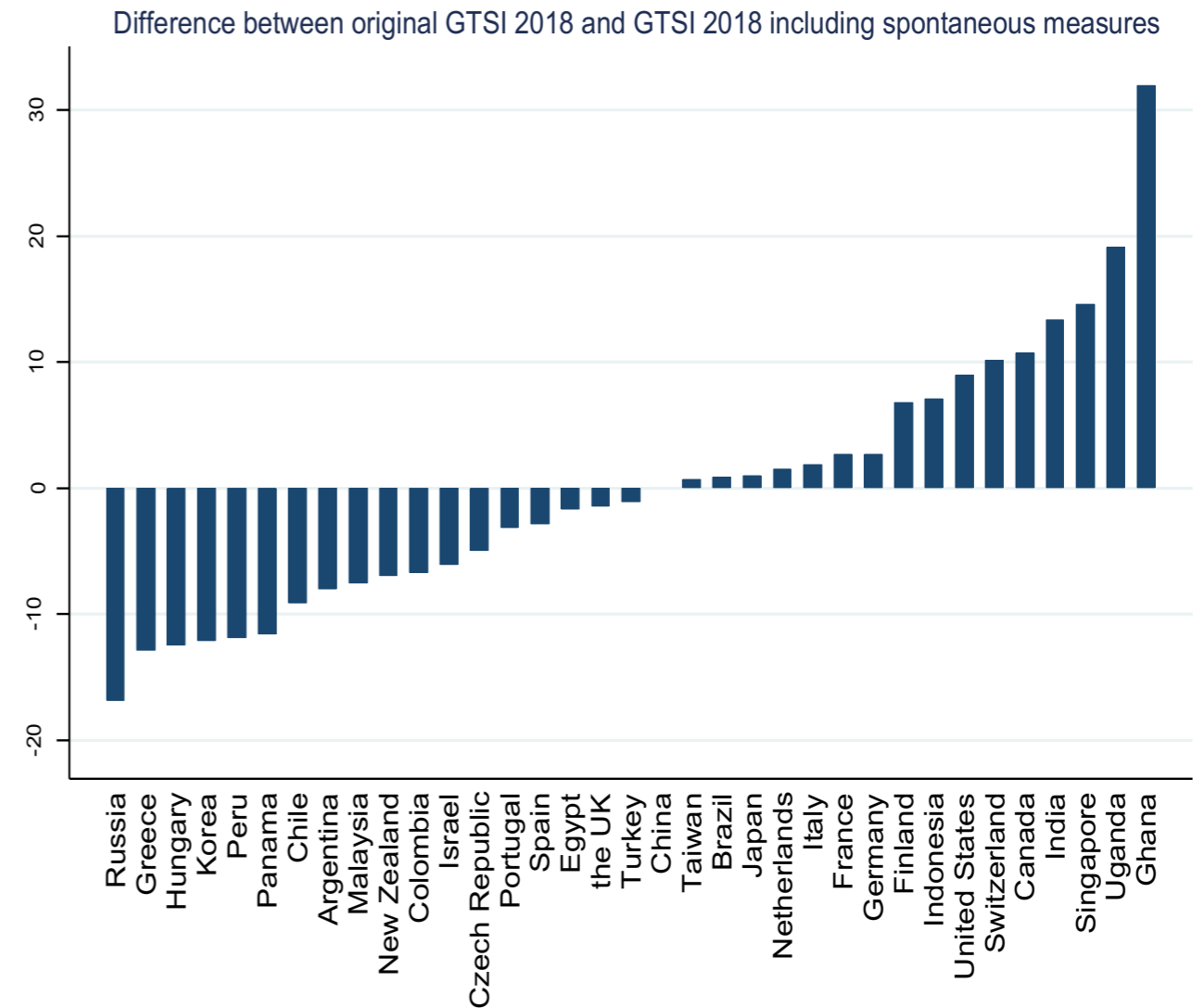


Figure 5.8. Teacher status (GTSI 2018) measured separately in the general population and teacher samples.

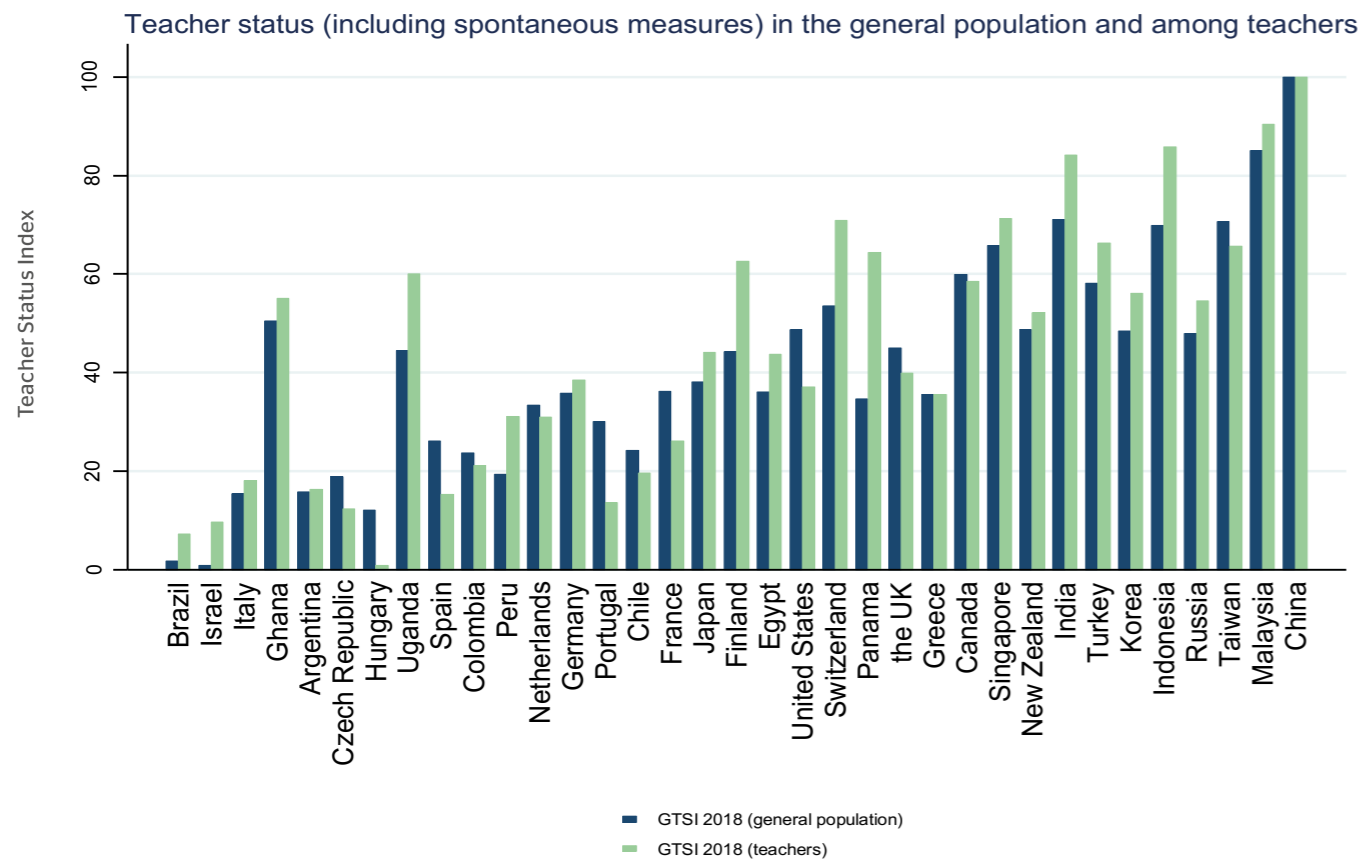
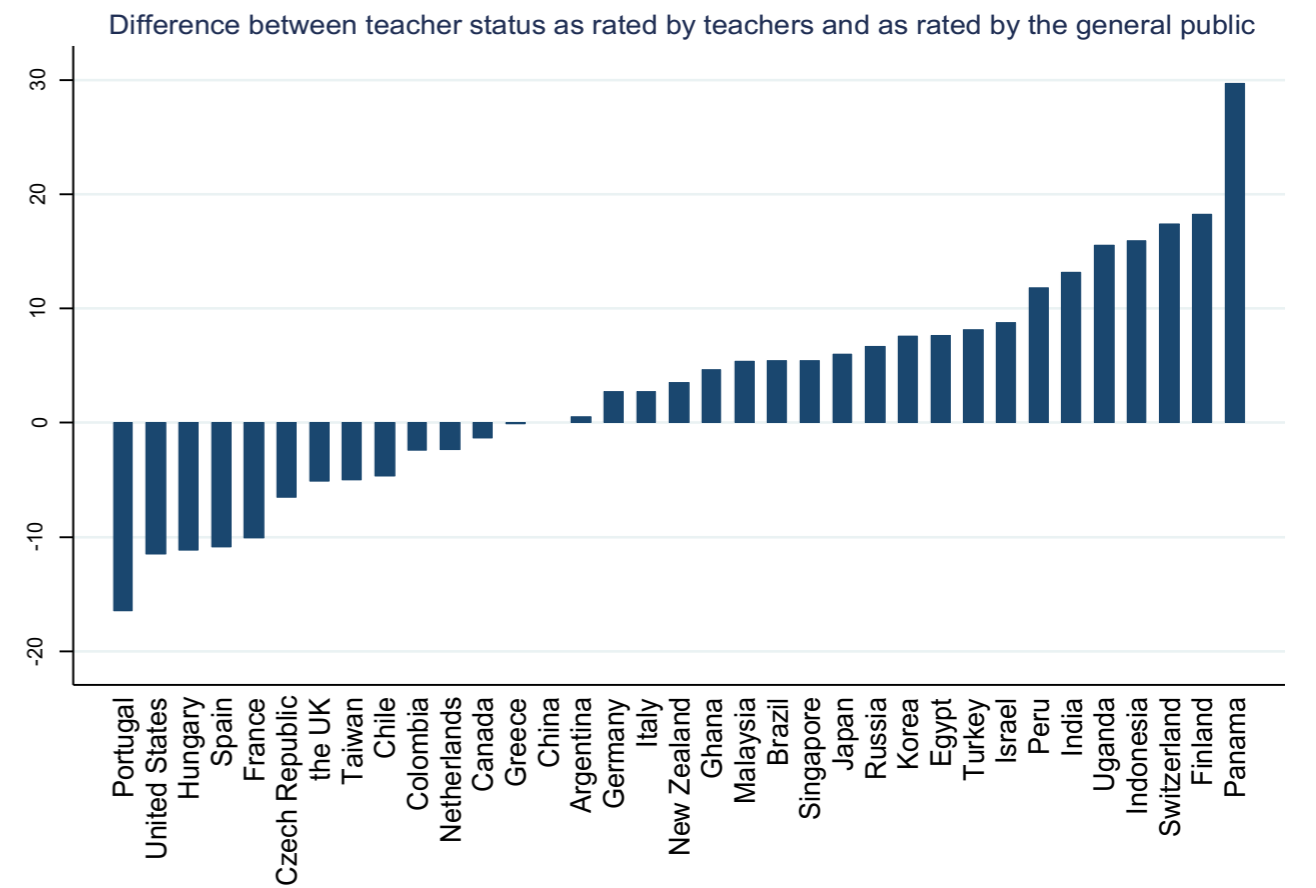


Figure 5.9. Differences in Teacher status (GTSI 2018) measured separately in the general population and teacher samples.




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## KEY COUNTRY FINDINGS

- **When asked for spontaneous perceptions of teachers, perceptions of teacher competence are generally positive, though there are substantial differences between countries. Spontaneous perceptions of teacher status are less positive.**
  - **Spontaneous perceptions of teacher status generally correspond with explicit perceptions of teacher status (as measured by GTSI 2018). However, there are a number of countries in which these reflexive perceptions are more positive than explicit perceptions (such as Ghana and Uganda), and where they are more negative than explicit perceptions (such as Russia, Korea, and Greece).**
  - **Perceptions of teacher status are correlated with perceptions of teacher quality. However, there are a number of countries in which teachers are implicitly viewed as high quality but low status. These include Ghana, Uganda, and the Netherlands.**
  - **On the whole, adding the three spontaneous measures of teacher status to the teacher status index did not dramatically change the rank order of countries but improvements were seen in Canada, India, Singapore, Uganda, and Ghana and decreases were seen in Russia, Greece, Hungary, Korea, Peru, and Panama**
  - **In the majority of countries, teachers' impression of their own status is higher than the general public's view of their status. The countries with the largest positive gap between teachers' views and those of the general public are Peru, India, Uganda, Indonesia, Switzerland, and (particularly) Panama. There are several countries in which teachers' view their own status more negatively than do the general public. These include Portugal, the USA, Hungary, Spain and France.**
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In the majority of countries, teachers' impression of their own status is higher than the general public's view of their status.



CHAPTER 6

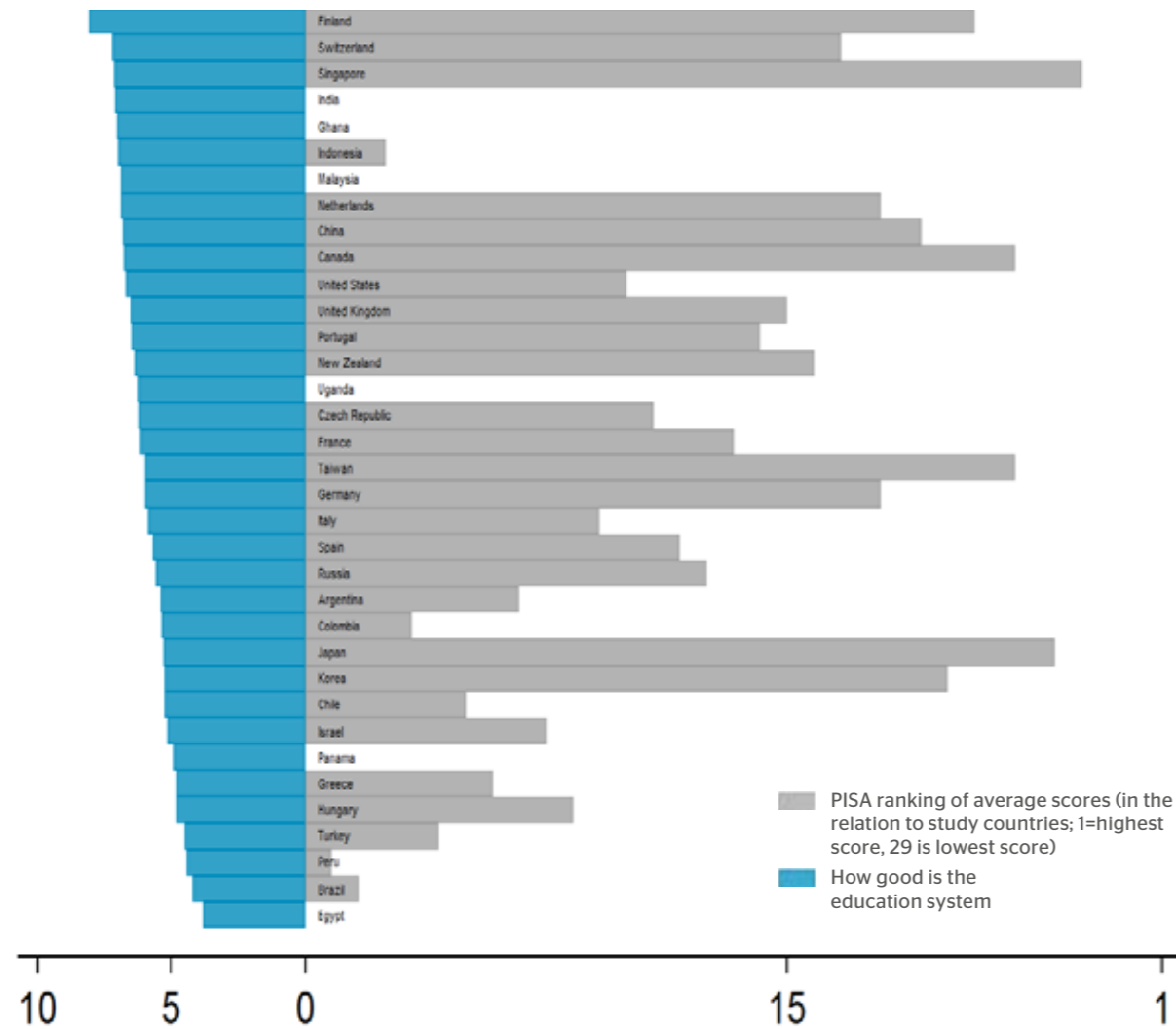
# EDUCATION SYSTEM DIFFERENCES

Education systems differ hugely across countries. The extent to which the results of the system are down to: different amounts of resources going into the system, different methods of teaching, different allocation of resources across different parts of the system, and the variability of teacher training, professional development and quality is uncertain. The preferences of the public about how much a country spends on education are very variable. Even allowing for how much the public wishes to spend on education (rather than health care or other publicly provided private goods) it is also questionable how the public would wish to allocate the education budget. It is also important to ask the question of whether the public perceptions in different countries are realistic about the quality and constraints of their own system. In this chapter, we seek to address these issues to provide some contextual background as to how the education system in our countries is different and the way that the public perceives their education system.

## PERCEPTIONS OF THE QUALITY OF THE EDUCATION SYSTEM

The first thing we explored was the perceptions that the public had in each country about their own educational system. We found different results when we asked people to rank their education system without attributing any responsibility to teachers. This summary information is contained in Figure 6.1. An interesting dimension is given by simply examining how people rank their education system alongside how that system actually performs in terms of the PISA scores for the children. Here we see that some countries that have good PISA scores are mostly ranked as good by the public - namely Finland, Switzerland and Singapore. Clearly, much of the message and country-wide perception of an education system is now being internalised in terms of PISA scores and the international rankings produced by the OECD. Similarly, some of the countries where PISA scores are low (Egypt, Brazil, Peru and Turkey) also have low public perceptions of how good their education system is. Interestingly, what clearly varies is the extent to which teachers are held responsible for the success or failure of a country's educational system.

Figure 6.1: Public Perceptions of How Good their Own Education System is Across Countries Related to PISA 2015 Score.



### KEY COUNTRY FINDINGS

- The average score across all countries is a rating of 5.9. Seven countries (Egypt, Brazil, Peru, Turkey, Hungary, Greece and Panama) rate their education system below 5, suggesting they perceive their education system as substandard.
- The evidence shows Finland, Switzerland and Singapore are at the top of the table, and Brazil, Egypt and Peru are at the bottom. This provides evidence of the link between those countries that do well at PISA (and poorly) and the way that the public's perceptions are formed.
- Finnish respondents have more faith in their education system than respondents in any other country. Our evidence suggests that Finland is perceived as having a good education system and teachers are given the credit.

### DESIRED SPENDING ON EDUCATION

How should we decide to allocate resources to education and within education? This is a key question of importance to government. Most countries seek to have a form of government which makes the resource allocation process responsive to the needs and wishes of its electorate. However it is seldom the case that an electorate gets a chance to express a view about the allocation of money to a specific public service. Usually a general election will be characterised by a general stance on public spending as a whole and whether it should rise or fall rather than spending levels on a specific public service.

A first order question is what the level of public spending on education should be. How much do people think is spent on education and what would they like to see spent on education? There is limited evidence about these attitudes both in relation to perceptions of what is spent and what they think ought to be spent.

Before we can gauge the general level of what the public thinks ought to be spent we need to find out how much they presently think is actually spent.

The perennial problem in this area is that if you ask members of the general public what they would like to see spent on public services they will usually say they would like to see more spent. This is because they do not necessarily examine the potential implications of more government spending on their own tax bill. Nearly everybody would wish to see more resources allocated to public services - like education and healthcare - if they did not have to foot the bill. The second problem in this area is that members of the general public do not usually see the trade-offs which invariably accompany government spending activity. All governments are subject to spending constraints. This means that if more is spent on defence, for example, then less is available to spend on healthcare or education. Unless of course we increase taxes. We examine the evidence on this issue with respect to educational spending and its allocation.

The next logical issue is that given that society spends a specific amount of money on educational spending - then how would they like to see this allocated? Would the public prefer to see: more teachers, lower class sizes, more ancillary staff or more spent on computers and better buildings? Or, indeed, would they not wish to see more spent on education but actually seek to have money allocated to another public service or have less tax to pay? We allowed for these possible responses in our survey. We will analyse and report on them in a separate follow-on study.

In assessing people's views of teachers and educational systems it is impossible not to take into account what each country spends on education and how the country allocated its resources to the different parts of the education system. We sought to understand this by first ascertaining what people thought should be spent on primary and secondary education and then seeking to clarify how people thought that should be spent.

The first figure (Figure 6.2) below expresses the amount people wish to spend on education firstly in \$PPP terms and then Figure 6.5 as a fraction of teacher's wage. (Figure 6.5) We can see in the former case that the countries where people are happy to see the most spent are indeed those countries where the higher amounts are actually spent, namely Singapore, Switzerland, the US and Germany. This is no surprise and again indicates that \$PPP calculations don't exactly take all factors relating to cost of living differences on board in facilitating cross country comparisons. (See Appendix C, Section 2.) The \$PPP conversion is meant to take into account the higher cost of living in the most wealthy countries and normalise them

to a 'standard consumption bundle'. The problem is that the standard consumption bundle does not exist in countries as diverse as the US, Switzerland with countries like Uganda, Ghana, Panama and Egypt.

We use both the GDP per head and the actual educational spending to normalise the general public think ought to be spent on primary and secondary education. These ratios can provide us some idea about the perceived educational spending, considering each country's characteristics. For the measurement using GDP per head (Figure 6.3), Egypt has the highest value, and Ghana and Uganda have considerable gap between primary and secondary school spending. Although some wealthy countries like Switzerland, and Canada, still have a relatively high value, they are no longer in the highest group. For the latter measurement (Figure 6.4), normalizing relative to what the public think ought to be spent, it is clear that some poor countries, like Egypt, attach higher values to relative spending on education, and some rich countries like France, and Japan, do not.

The logic is that if the cost of living is lower then teachers wages will, on average be lower and hence expressing the desired spending on education as a fraction of education spending in the country gives us an alternative yardstick to judge spending preferences. Hence in our comparative figures (Figure 6.5) we express them as a fraction of the teacher's wage. The reason for 'normalising' these calculations by the size of the teacher's wage and expression it as a fraction of this, is effectively comparing like with like. Hence, we see a completely different ordering. Specifically, we see that expressed in this way the countries which are willing to spend the most proportionately are Russia, followed by Egypt. These countries are way out ahead in the desired spending stakes. Argentina and the Czech Republic and Hungary follow. Interestingly, next come the UK and the US and Israel. Not all these countries are rich in GNP per head terms, but the citizens of these countries set a high value on relative spending on education. Down at the bottom of the table are some poor countries like India, Indonesia, Panama, Ghana and Uganda, but then come some wealthy countries Germany and Switzerland.

Figure 6.2 What the General Public Think Ought to be Spent on Primary and Secondary Education by Country (USD \$PPP adjusted).

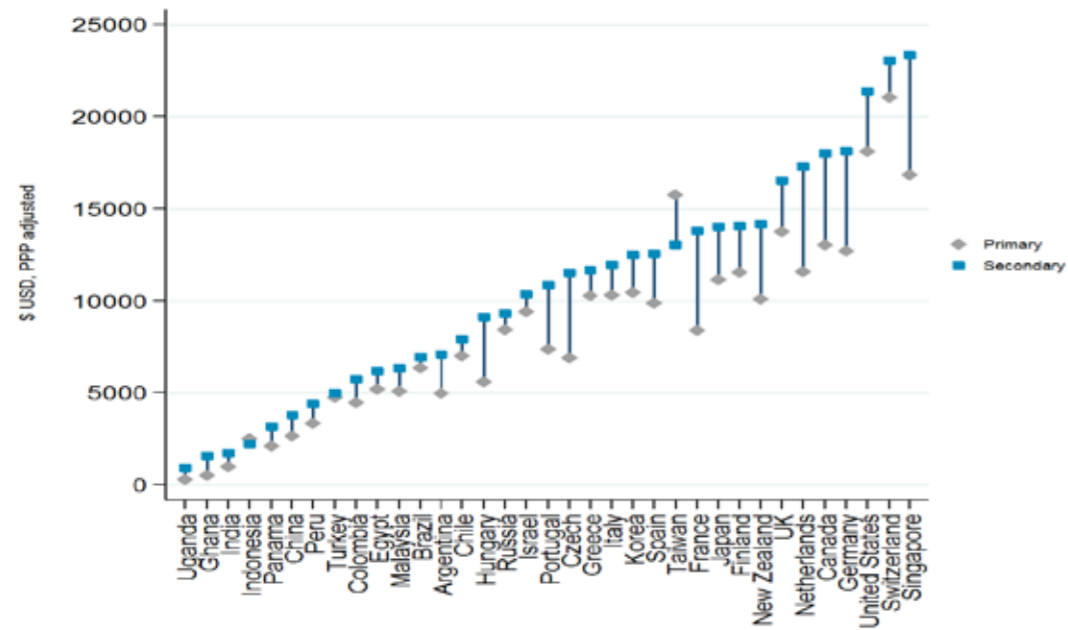


Figure 6.3. Ratio of What the General Public Think Ought to be Spent on Primary and Secondary Education Relative to GDP per Head by Country.

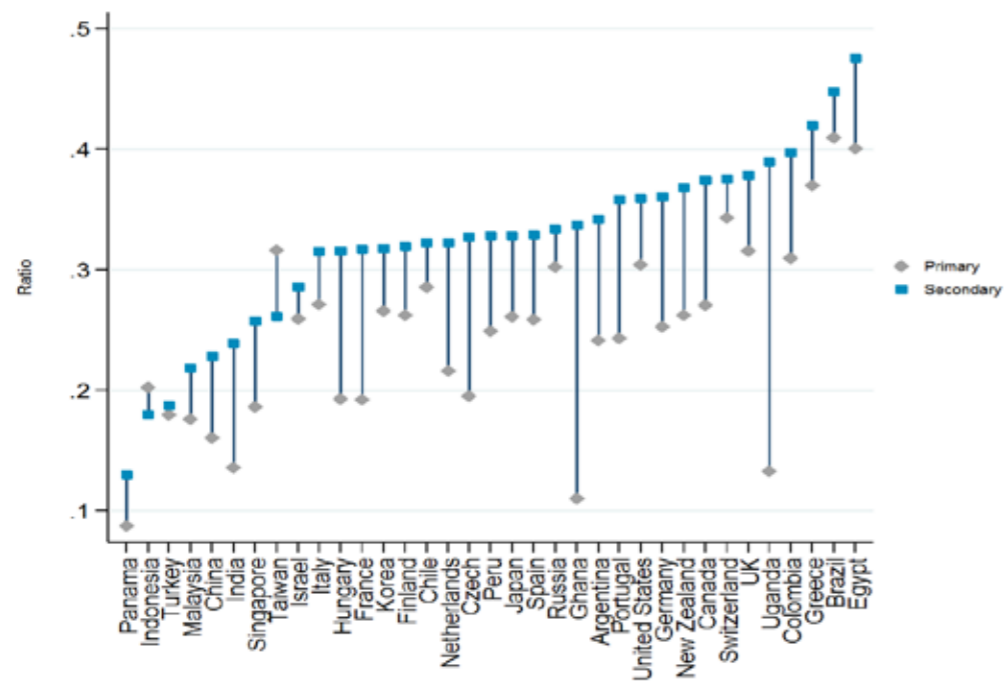


Figure 6.4. Ratio of What the General Public Think Ought to be Spent on Primary and Secondary Education Relative to What is Actually Spent by Country.

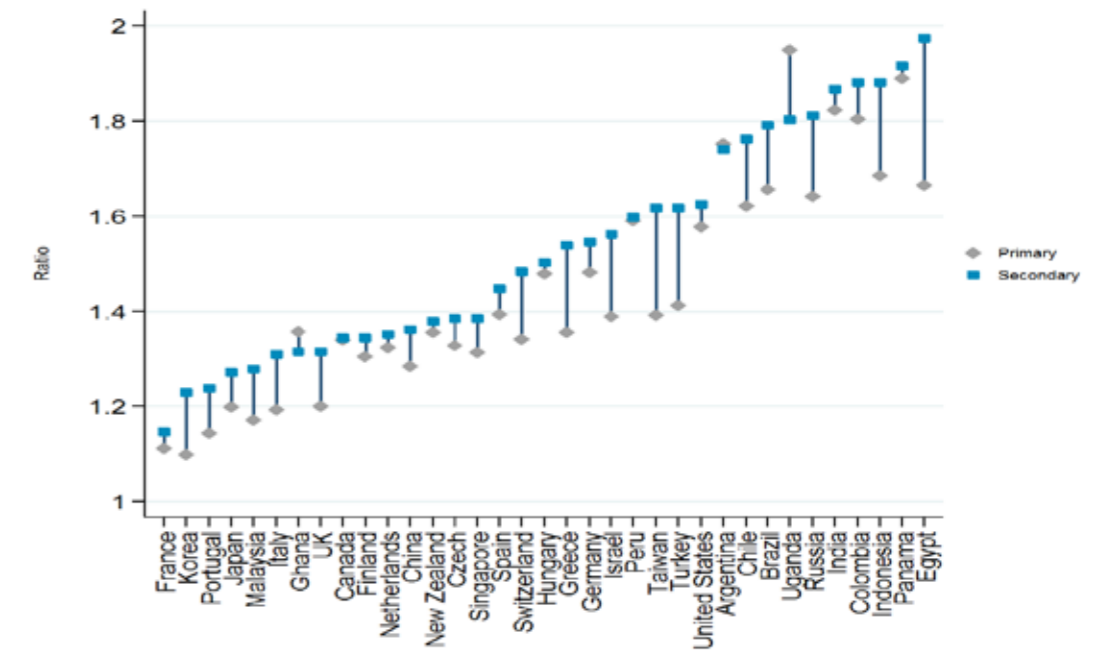
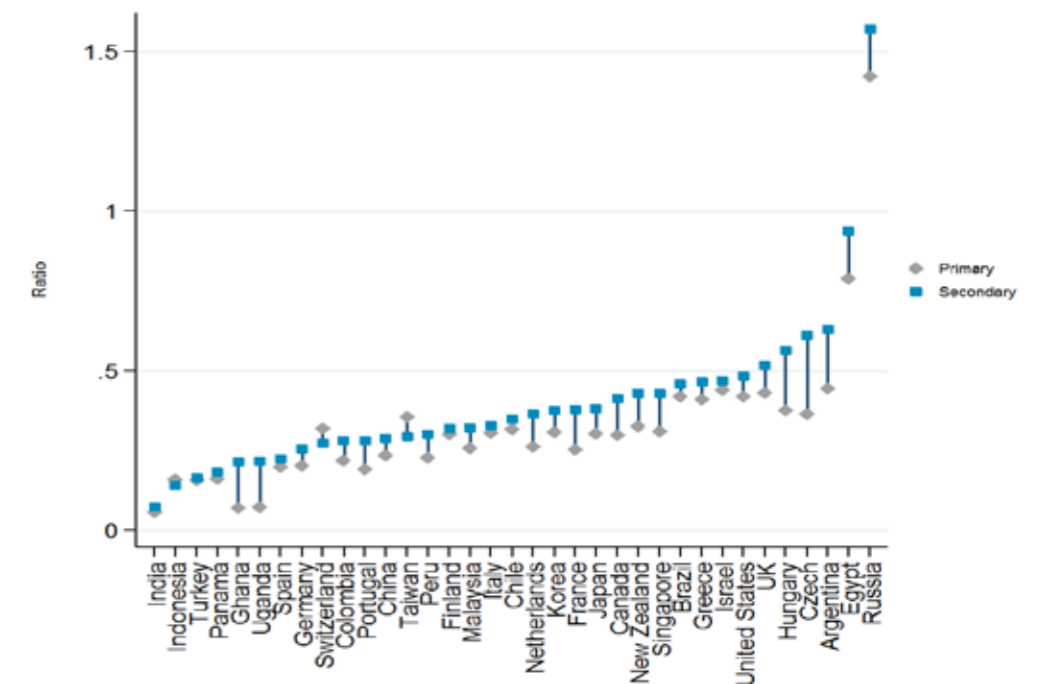


Figure 6.5. Ratio of What the General Public Think Ought to be Spent on Primary and Secondary Education Relative to Teachers Pay by Country.



## CHAPTER 7

# KEY RELATIONSHIPS AND POLICY IMPLICATIONS.

Probably the most important question about status is whether it has any impact above and beyond its own intrinsic worth. In other words, is it worthwhile for policymakers to try and improve teacher status in their country, given the time and money and also opportunity costs of doing so? If they are to do so, what benefits might they expecting to realise?

This chapter examines the possible key relationships between:

- **The GTSI 2018 and pupil attainment (as measured by pupil level PISA scores measured at the country level)**
- **The GTSI 2018 and the level of teacher wages.**

We also seek to confirm the previously found relationship between teachers' pay and PISA scores. (See Dolton and Marcenaro, 2012)

### THE RELATIONSHIP OF GTSI 2018 (INCLUDING SPONTANEOUS MEASURES) TO PISA SCORES

Figure 7.1 plots each country's original GTSI 2018 score against their 2015 average PISA score. We show a moderate positive correlation between this measure of teacher status and PISA scores.

Figure 7.1. Scatter Plot of GTSI 2018 against 2015 PISA Score by Country.

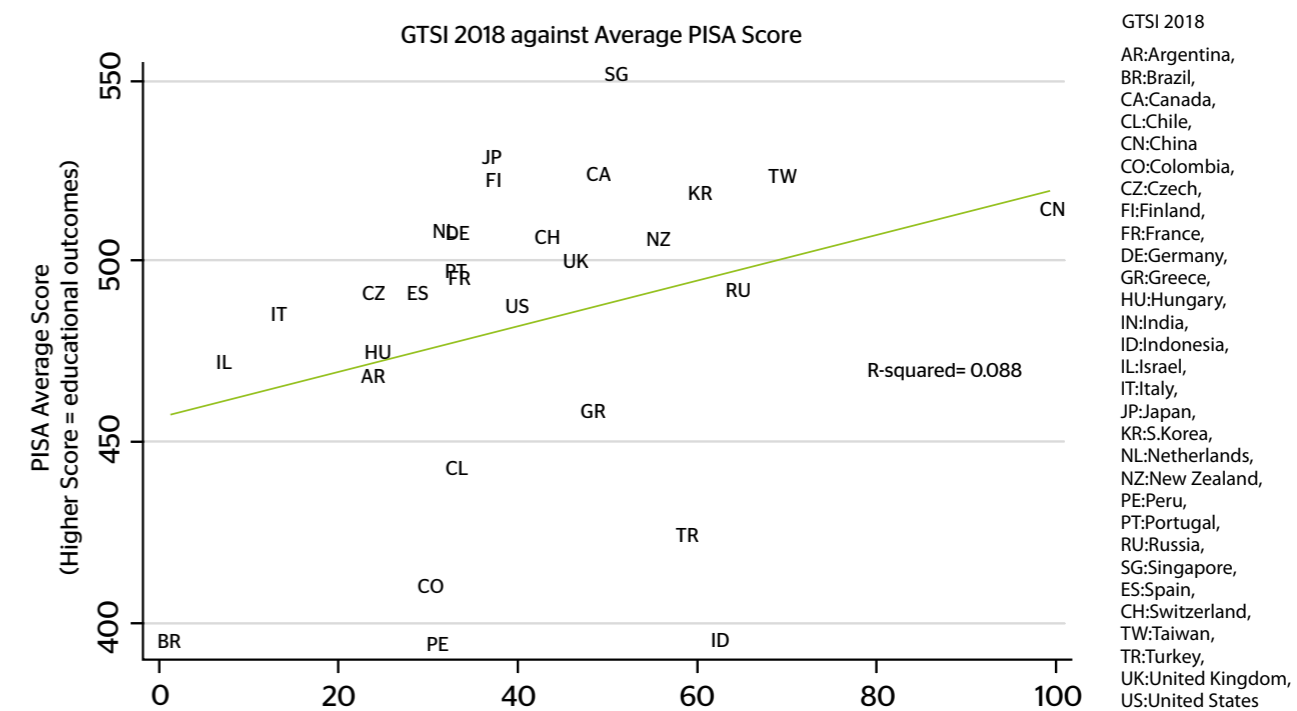
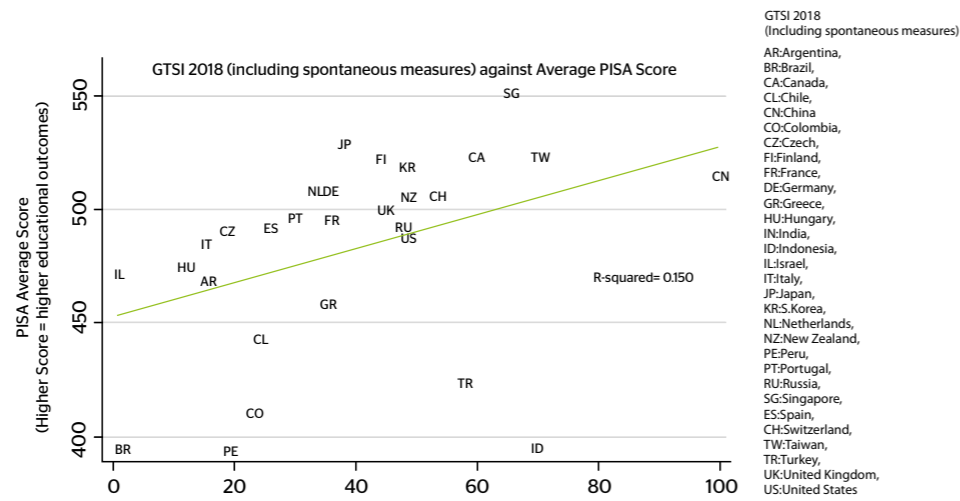




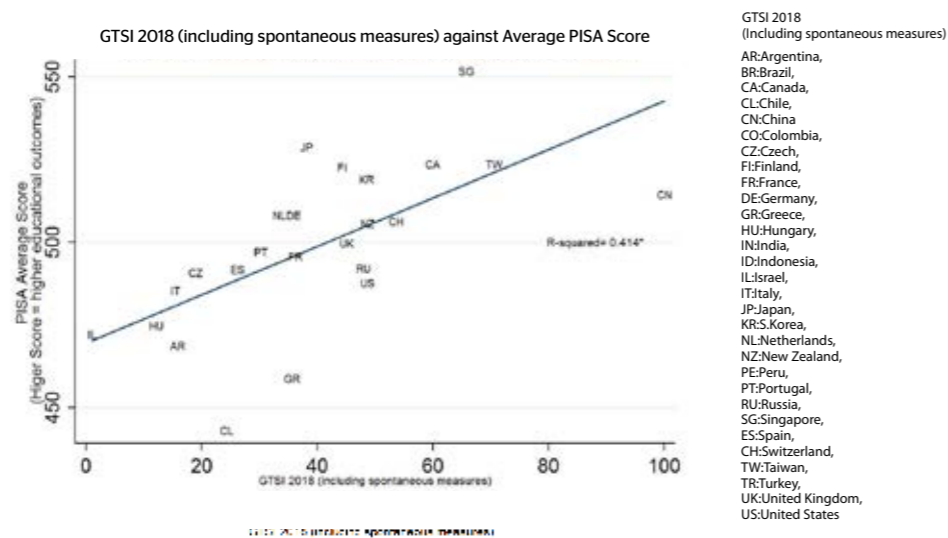
Figure 7.2a plots the same data, replacing each country's original GTSI 2018 score with its GTSI 2018 score including the spontaneous measures of teacher status. This figure shows that including the spontaneous measures considerably improves the correlation between teacher status and PISA scores.

Figure 7.2a. Scatter Plot of GTSI 2018 (including Spontaneous Measures) against 2015 PISA Score by Country.



In both Figure 7.1 and 7.2a the same countries are outliers, namely: Brazil, Peru, Colombia, Taiwan and India. Excluding these countries gives an even clearer relationship between PISA scores and the GTSI 2018, as shown in figure 7.2b

Figure 7.2b. Scatter Plot of GTSI 2018 (including Spontaneous Measures) against 2015 PISA Score by Country excluding Outliers.



### THE RELATIONSHIP OF GTSI 2018 (INCLUDING SPONTANEOUS MEASURES) TO TEACHER PAY

Figure 7.3, shows the values for each country of the Global Status Teachers Index against teachers' actual pay in that country. There appears to be no correlation at all between the status of the teaching profession and the wage they earn when we use the OECD reported measure of teacher pay in \$PPP in each country.

Figure 7.3 Scatter Plot of GTSI 2018 against Teacher Average Pay by Country.

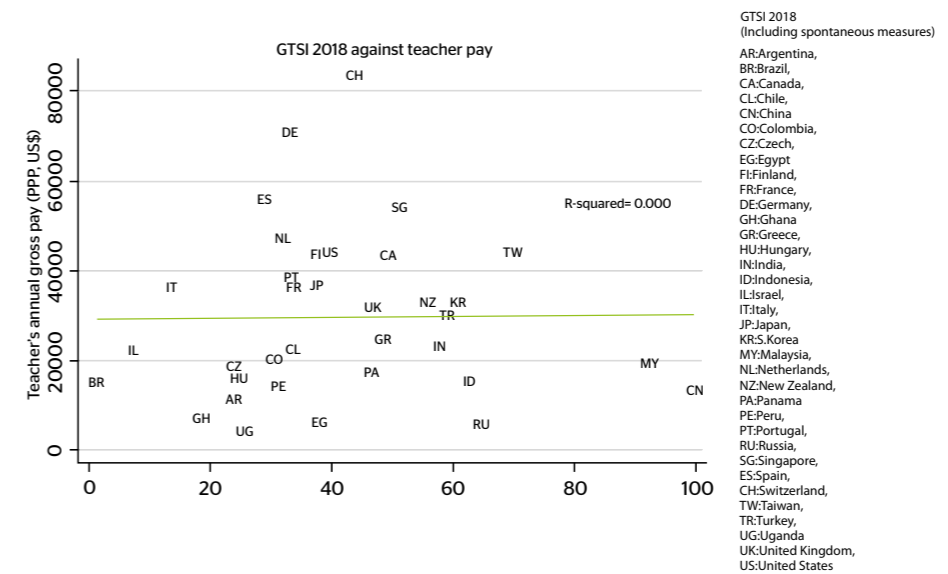
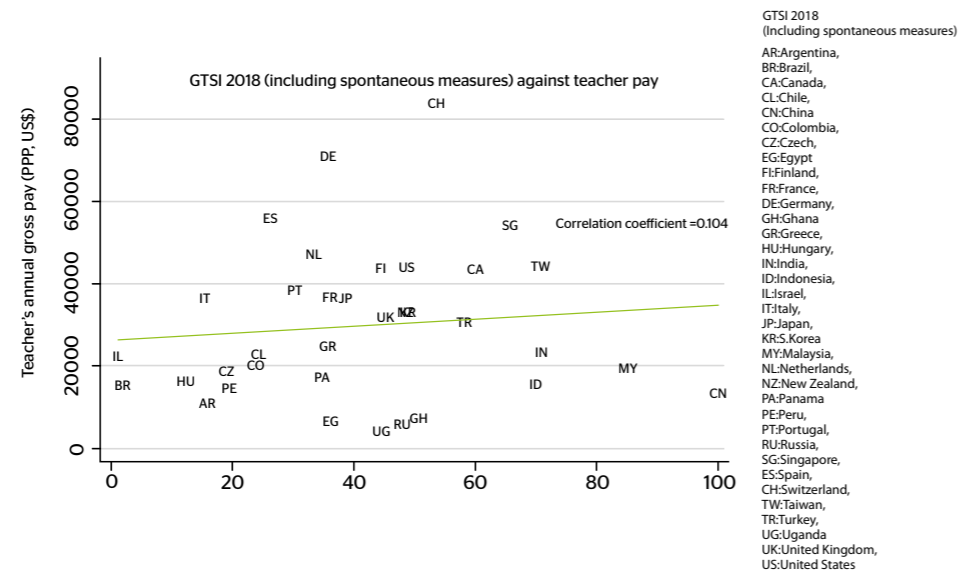


Figure 7.4 plots the same data, replacing each country's original GTSI 2018 score with its GTSI 2018 score including the spontaneous measures of teacher pay. This figure shows that including these measures significantly improves the correlation between teacher status and teacher pay. However, the relationship remains weak.

Figure 7.4. Scatter Plot of GTSI 2018 (including Spontaneous Measures) against Teacher Wage by Country.



Similarly, figures 7.5 through to 7.8, which explore different dimensions of pay against status, do not show a correlation, suggesting that teacher status is not a driver of pay in a country. One important explanation of this non-association is that we are looking at this relationship at the aggregate country level. The association may be weak because our GTSI 2018 has been determined by aggregating the views of 41,000 responses. In contrast teacher wages in each country are set by country specific forces which are shaped by different educational systems, government and fiscal constraints, educational institutions and the wealth in the economy. It will be totally another matter to examine what the relationship between teacher pay and the status of teachers is using individual data on people's perceptions and views. We have an econometric identification strategy to examine this relationship and this will be reported in follow-on research in due course.

Figure 7.5 Scatter Plot of GTSI 2018 against pay percentage in the wage distribution by Country.

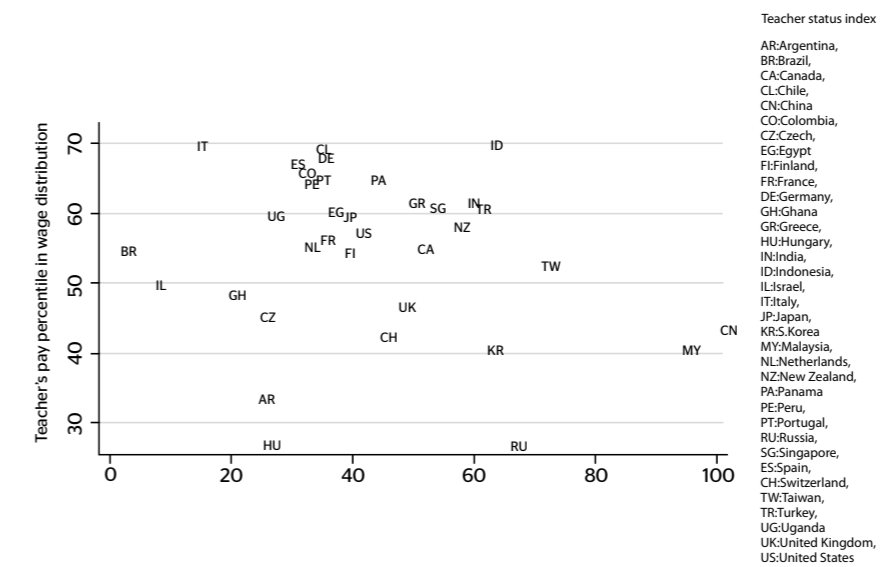


Figure 7.6 Scatter Plot of GTSI 2018 against Teacher Pay divided by the GDP per head by Country.

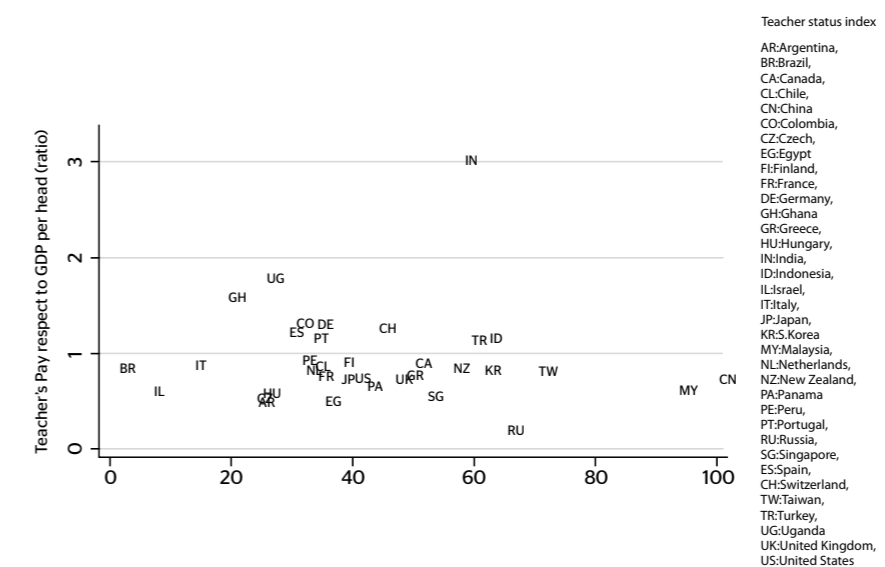


Figure 7.7. Scatter Plot of GTSI 2018 against Estimated Teacher Average Pay by Country.

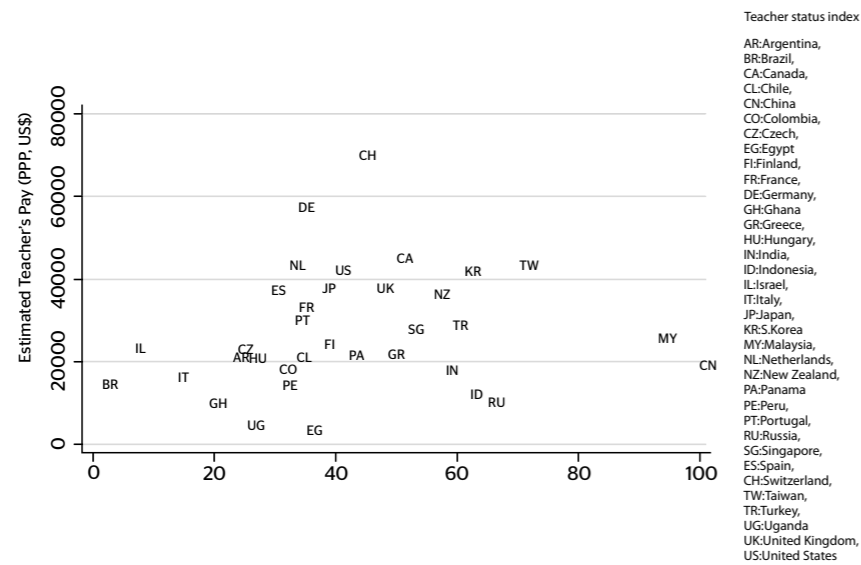
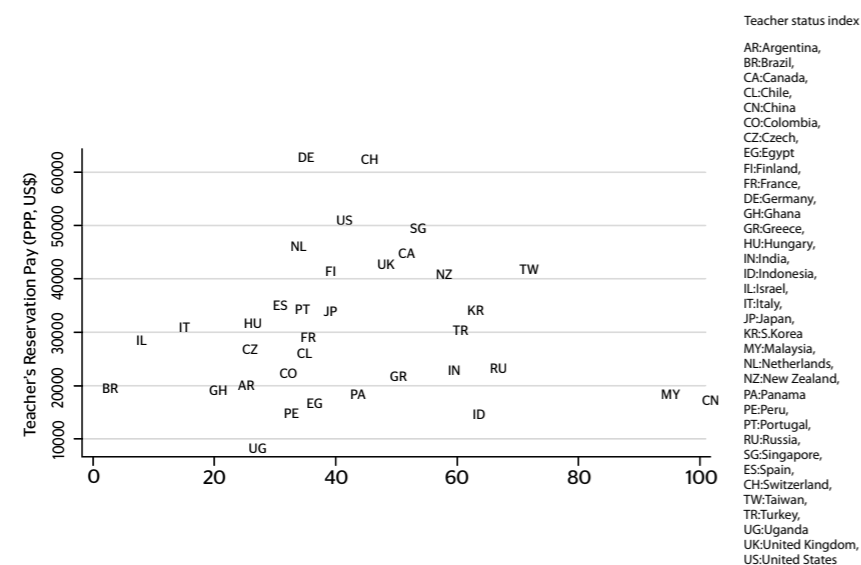


Figure 7.8. Scatter Plot of GTSI 2018 against Teacher's reservation wage by Country.



### THE RELATIONSHIP BETWEEN TEACHER PAY AND PISA SCORES

Previous work undertaken by Dolton and Marcenaro (2011) suggests that the quality of teachers is likely to be higher if they are paid more in relative terms and the former is considered to be a key factor predicting student academic outcomes.

Following this logic we assume that teacher salaries should be correlated with student outcomes. To check the degree to which our data support this hypothesis, in Figures 7.9 and 7.10 we have correlated each country's average PISA score (in absolute and relative terms, respectively) against the estimated actual wage. Both Figures allow us to verify that there is a significant relationship between estimated teachers' wages and student performance which is non-linear, this latter meaning that once the teachers exceed a certain wage the relationship is less steep.

Interestingly enough when the non-linear fit was conducted replacing estimated wages by actual wages and perceived fair wages, the model explained 47% and 48% of the variability in students outcomes, not far from the 58.5% obtained when fitting the respondents estimated actual wage. What it is more, the proportion of the variance in the PISA average Scores predicted from the estimated actual wages increases up to 65% when we try to explain the percentile position of each country average PISA scores within the overall distribution (Figure 7.10). Thus, the higher the teacher wage in a country, the better the student outcome.

Beside the estimated teacher's wage, Figure 7.11 shows the actual teacher's wage correlated with PISA score, and Figure 7.12 presents the actual teachers' (here and throughout) wage correlated with PISA percentile position. We found the non-linear relationship between the actual teacher's wage and students' performance, and these figures allow us to confirm the statement that the higher teacher wages are associated with better pupil outcomes.

Figure 7.9. Scatter Plot of Respondent's Estimated Teacher Wage against 2015 PISA Score by Country.

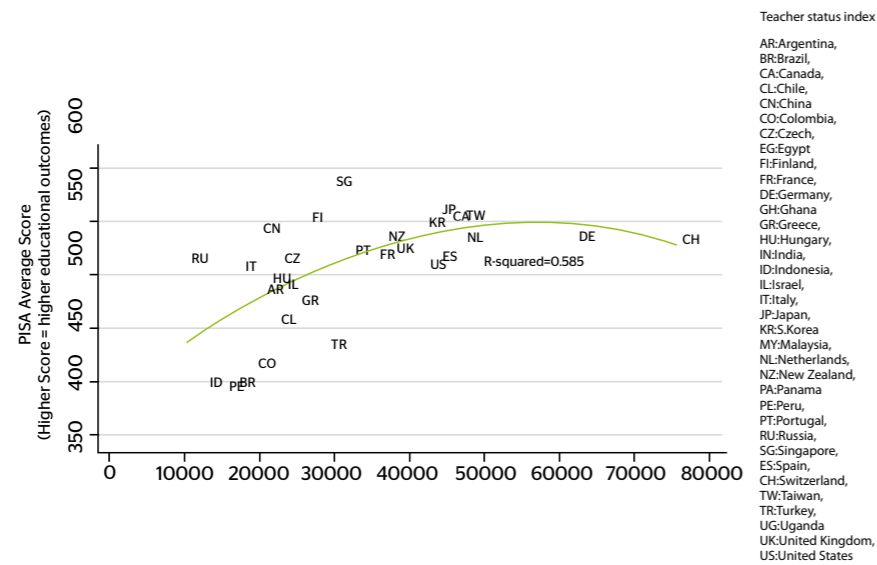


Figure 7.10. Respondents' Estimated Teacher Wage Correlated Against the Percentile Position of each country across the 2015 OECD PISA Scores

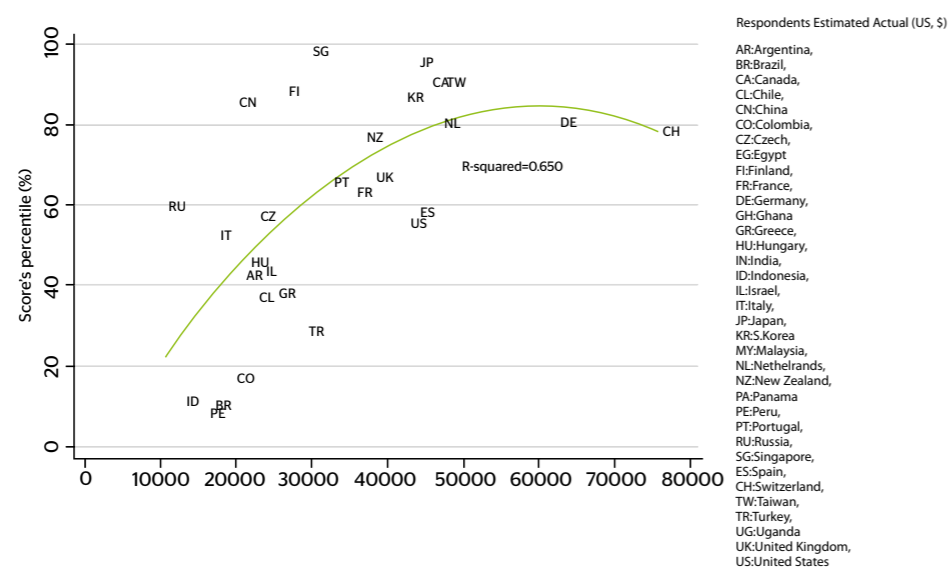


Figure 7.11. Actual Teacher Wage Correlated Against 2015 OECD PISA Scores Distribution.

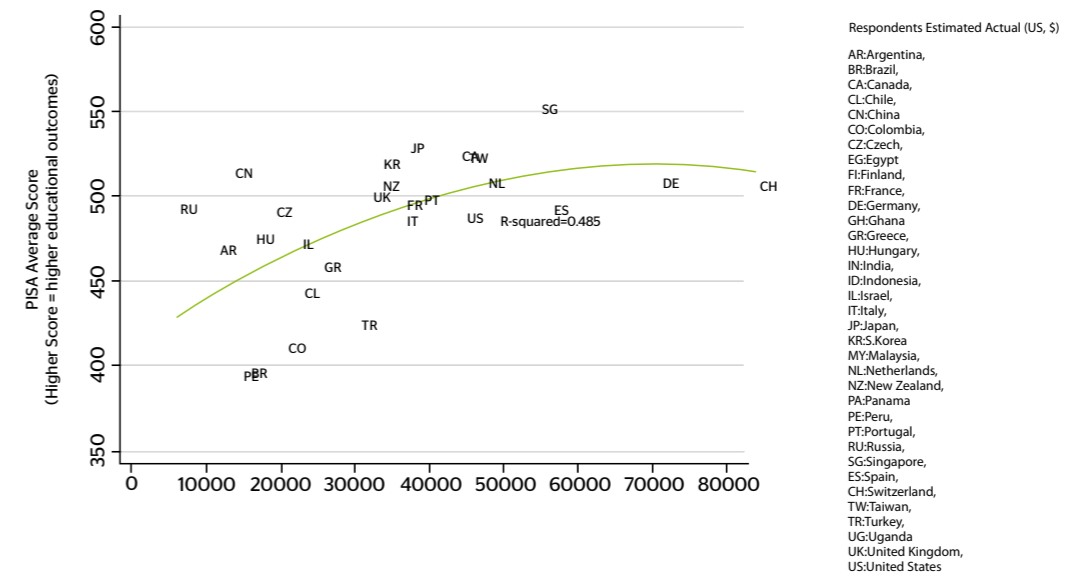


Figure 7.12. Actual Teacher Wage Correlated Against the Percentile Position of each country across the 2015 OECD PISA Scores Distribution.

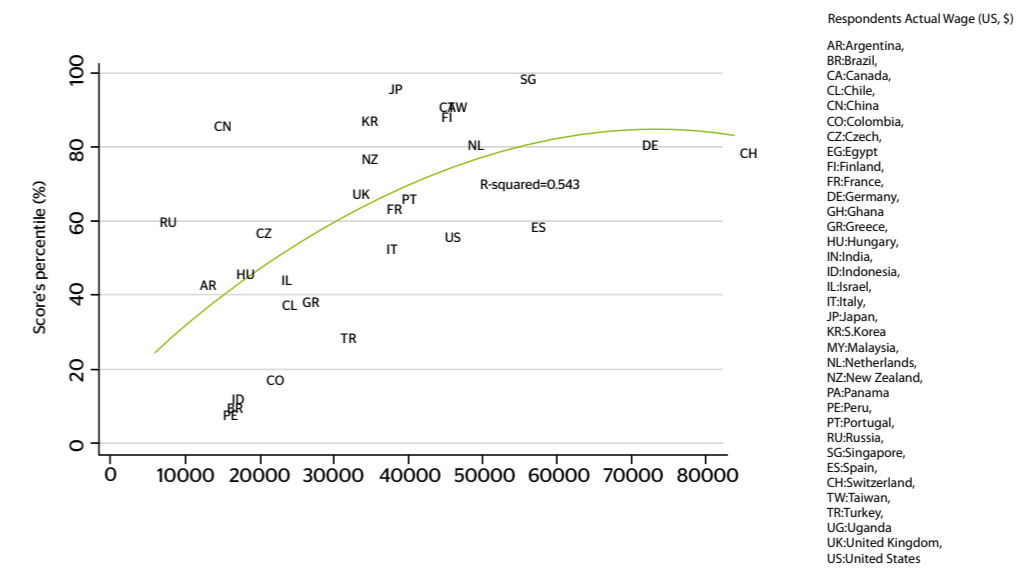


Figure 7.11 reveals a positive relationship between the actual teacher's wage and student outcomes, and suggests that the relationship could be non-linear. However, it is also clear that there are country outliers, like China and Russia, where students' outcomes are good despite teachers having low wages. Conversely, countries like Switzerland and Germany perform well on PISA but have very high teacher's wages. These conclusions are clarified by examining the regression results in Table 7.1. Here we examine the correlation between average PISA scores and Teacher's actual pay and the Teacher Status Index. We see that the relationship between PISA scores and teacher's wage is quite robust and gets stronger if it is estimated non-linearly. Based on these results there is good evidence that higher teacher pay is positively associated with higher average PISA scores. It would also appear that there is a clear relationship between GTSI 2018 and PISA scores. This is clear in the multiple regression results reported in column (2) (in linear terms) and (3) (in non-linear terms) of Table 7.1. Here we see that both GTSI 2018 and Wages are positively statistically significant in determining PISA score although clearly wages are considerably more important in this relationship than GTSI 2018. In other words, although the GTSI 2018 and PISA scores do not appear to be positively associated when considered as a simple bivariate relationship, it is the case that GTSI 2018 does become a significant positive determinant of PISA scores if considered in conjunction with teachers wages. Hence we may conclude that both teacher wages and teacher status significantly contribute to the determination of pupil performance and its variation across countries.

**Table 7.1: Basic Regression Results on Average PISA Score.**

	(1)	(2)	(3)
Actual Wage	0.00128***	0.00128***	
	(3.34)	(3.53)	
GTSI 2018 Index		0.647*	
		(2.00)	
log GTSI 2018 Index			16.90**
			(2.15)
log Actual Wage			33.66***
			(3.01)
Constant	439.7***	413.4***	77.94
	(30.39)	(21.74)	(0.68)
N	29	29	29
R <sup>2</sup>	0.293	0.387	0.381

t statistics in parentheses

\* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

## UNDERSTANDING THE KEY RELATIONSHIPS BETWEEN STATUS, PAY AND PUPIL OUTCOMES

This report explores two substantive potential links to teacher status – between status and teacher pay, and between status and pupil outcomes (as measured by performance in international tests).

In Chapter 3 the report shows that at the individual profession level, there is a clear link between perceived status and perceived pay by the general public. For the majority of professions, higher status links to higher pay. Teachers are perceived as being paid modestly in a comparison to the other 11 graduate or majority graduate professions, and are perceived as having moderate status. Indeed, the position of Primary and Secondary teachers, is that they have quite low status when compared to other graduate professions.

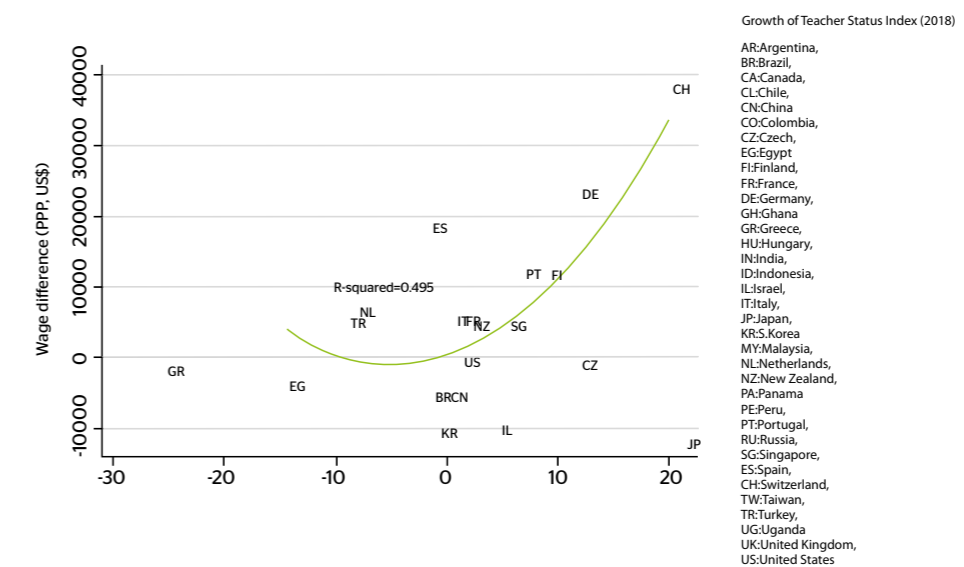
However, the report found hardly any association between the GTSI 2018 and actual OECD teacher wages in the cross-country aggregate data in the simple bivariate correlation. The real explanation of this is that the countries themselves are responsible for how they pay their teachers in absolute and relative terms.

This is a repeat of the conclusion from GTSI 2013. In other words, although pay and status correlate in many people's minds, and an increase in wages is likely to lead, *ceteris paribus*, to an increase in status, there is no link at country level between the wages the countries choose to pay teachers and the status they enjoy in the eyes of the public in that country. This is because at a country level, teacher pay is set by a combination of factors including relative wealth of the country, bargaining power of the government versus teacher bodies, relative attractiveness of the teaching force as an occupation, and many other factors. The report concludes that although an increase in pay will be likely to improve status, it is possible for teaching to become a high status profession without relative pay being high. The most ready analogy is nurses who have even lower pay in most countries but have reasonable status due to the compassionate nature of the work they do and the high regard the public has for their dedication.

Secondly, the report explored the link between status and performance of pupils. GTSI 2013 showed an indicative possible link between teacher status and pupil performance when teacher pay is controlled for. Importantly, this new data now reconfirms this relationship. That is to say, an increase in teacher status in a country is a clear driver (along with higher pay) of increased pupil performance (as measured by pupil performance of 15 year olds on PISA tests.) This report further shows that when implicit attitudes are taken into account, the relationship holds more strongly - that is, whether implicit views about teachers are more negative or more positive overall, it is that full association which correlates with performance. Countries in which teacher status is high, such as China, Taiwan, and Singapore have better student outcomes, as measured by PISA scores, than countries in which teacher status is low, such as Brazil and Israel.

In seeking an explanation of the relationship between pay and status we sought to investigate the possible mechanism of change. The report clearly shows a correlation between change in status and change in pay. Please see Figure 7.14. That is to say, in countries where relative pay has increased since 2013, it is more likely than not that relative status increases, and vice versa. This suggests that one possible mechanism for changing status is changing relative pay within the country over time.

Figure 7.14 Scatter of the Change in GTSI 2018-GTSI2013 Related to Growth in Teacher Wages by Country.



## CONCLUSIONS

The nature of this survey was so wide-ranging and the countries surveyed so diverse that simple generalisations would be inappropriate. However it is possible to highlight some generally robust findings and conclusions that we would wish to emphasize to policy makers.

Occupational status - at an aggregate level across a country - is not an easy thing to move over time. Relative to our index in 2013 - our index in 2018 does not show up very many countries whose ranking has changed remarkably. One possible exception is Greece where teachers status has fallen markedly over this 5 year period. But then, of all the countries in our data, Greece has probably fared worse than any in terms of the relative real wage position of public sector employees.

Relative to other professional graduate occupations teachers do not enjoy very high status and are not paid very well. Unquestionably, a part of their low relative status is due to the fact that they are paid modestly in most countries. Headteachers are accorded higher respect than Secondary teachers who in turn are accorded more respect than Primary teachers. All teachers do not compare well relative to doctors and lawyers.

Unquestionably – in terms of what the public perception is – if a job is highly paid it is also very likely to be one that is accorded high respect. However, when the data is aggregated to the country level there does not seem to be an overall positive relationship between these two composite indicators. In other words – actual teacher pay and average status score, at the country level, is not correlated. But this does not mean that respect and pay are not associated in the individual data.

Cultural factors play a huge role in the relative standing of teachers in different countries. Most notably in China, Russia and Malaysia teachers are thought to be most similar to doctors as a professional occupation. It is unclear what aspects of culture may be the driving force behind these results. Again this is an area of promising potential future research.

By and large teachers are not paid what the public thinks they ought to be paid as a ‘fair’ wage. The public also systematically underestimates the actual amount of working hours that goes into doing a teaching job.

Our data, when merged with the PISA data continues to suggest that there is a clear and systematic relationship between how much a teacher is paid in a country and the PISA pupil performance in that country. A slightly weaker, but nonetheless clear relationship is evident between our GTSI 2018 and pupil PISA performance. The relationship is clearest when we consider the effect of both teacher pay and teacher status on pupil outcomes.

These findings have clear implications for governments in the sense that it is evident that paying teachers more in relative terms gives rise to better pupil performance, most logically because this acts as a device to recruit more able graduates into the profession.

However, our findings do not suggest that it is appropriate for policy makers to see the relative status of teachers as a reason for paying them relatively low wages. Hence governments cannot expect to recruit the most able graduates into teaching very easily when their wages are low on the presumption that they have high relative status and this will act as

a form of compensating pay differential. Rather, governments should seek to improve both the pay and status of teachers in order to effect an improvement in pupil academic achievement.

In conclusion, this research replicates and extends initial analysis from 2013 showing that teacher status is a necessary consideration for governments around the world. Status is not just a nice to have, but something which can be a direct contributor to improved pupil performance – via an increased likelihood of more effective teachers entering the profession and remaining in the profession. Whilst status is already high in some countries, it remains a mid ranked profession in many, and therefore presents a real and present challenge to governments as they seek to improve the capacity of their teaching profession.

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## KEY COUNTRY FINDINGS

- **There is a clear positive relationship between teacher status and PISA scores. Countries in which teacher status is high, such as China, Taiwan, and Singapore have better student outcomes, as measured by PISA than countries in which teacher status is low, such as Brazil and Israel.**
  - **This relationship is clearer when accounting for implicit as well as explicit perceptions of teachers.**
  - **Notable exceptions to this pattern include Turkey and Indonesia – countries in which teacher status is relatively high, but student outcomes are very poor.**
  - **There is only a weak positive relationship between teacher status and teacher pay. In many countries where teacher status is high, including China, Malaysia, India, and Indonesia, teacher pay nevertheless remains relatively low. Similarly, in many countries where teacher status is relatively low, such as Spain and Germany, teacher pay is relatively high. The relationship between teacher pay and teacher status is stronger when accounting for implicit as well as explicit perceptions of teachers, however it remains weak.**
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# TECHNICAL APPENDICES

- 
- A. Data Collection and Survey Methods
  - B. Measuring Teacher Status and Principal Component Analysis
  - C. Data Merging and Economic Data Considerations
  - D. The Econometric Identification of Occupational Pay and Respect/Status
  - E. Educational Systems Efficiency
-



## Appendix A. Data Collection and Survey Methods

### INTRODUCTION

This appendix sets out the surveys technical design used to develop and carry out the VARKEY Foundation questionnaire on teachers.

We chose to use a mix online and face-to-face computer aided personal interviewing (CAPI) via web-based survey (WBS) data collection approach. We took this decision for five main reasons:

1. This kind of survey provides accurate answers on many questions that would not be possible in a paper questionnaire.
2. The cost of a web-based survey was much lower and therefore a very practical alternative for most countries.
3. CAPI was used in Ghana and Uganda due to a lack of available online panels, which meant the only route for administering a web based survey in these countries whilst achieving representative samples was to use CAPI.
4. The strict ordering of specific questions so that the respondent could not see them until we desired is only possible in a WBS if visual questions are used.
5. Using a computer allowed the respondents to drag and drop their responses into an order so that it was possible to create rankings, the integration of an implicit response test and the use of the maximum differentiation scaling methodology.

By examining country national surveys carefully, and using quota sampling, we ensured that the sample composition was in proportion to the country's population for each of the public samples. Teacher samples did not have quotas applied due to their low incidence within the population.

The 35-country survey was conducted with 1,000 representative respondents of the general public in each of the following countries: Argentina, Brazil, Canada, Chile, China, Colombia, Czech Republic, Egypt, Finland, France, Germany, Ghana, Greece, Hungary, India, Indonesia,

Israel, Italy, Japan, Malaysia, Netherlands, New Zealand, Peru, Portugal, Russia, Singapore, South Korea, Spain, Switzerland, Taiwan, Turkey, Uganda, UK, USA. A sample of 500 general public respondents was achieved in Panama, due to relatively immature online panels being available in that market.

These countries were chosen for several reasons. First, we wished to have the countries that had performed the most favourably (Finland, South Korea Switzerland and Singapore), and least favourably (Brazil, Turkey, Israel, Greece, Italy and Spain) in Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) scores. Secondly, we wished to include the countries that had attributed the most policy credence to the PISA scores (US, UK, Germany and France). Thirdly, we wanted to have at least one country from each major continent or culture. Therefore, we included Egypt as an Islamic country and the Czech Republic as a former communist country. Finally, we included China and Brazil so that we could understand the educational position in two of the so-called fast growing BRIC countries (Brazil, Russia, India and China).

Surveys with 200 currently serving teachers were conducted in each of the following 27 countries: Argentina, Brazil, Canada, Chile, China, Colombia, Czech Republic, Finland, France, Germany, Ghana, India, Indonesia, Italy, Japan, Malaysia, Netherlands, Portugal, Russia, Singapore, South Korea, Spain, Taiwan, Uganda, UK, USA. A sample of 116 teachers was obtained in Peru, due to relatively immature online panels being available in that market.

### SURVEY QUOTAS

Populus is a full service research and strategy consultancy that carries out high-quality consumer, reputational and political research. Populus is a founding member of the British Polling Council and abide by its rules.

Populus used a WBS administered online and via CAPI with a balanced sample of 16 to 64-year-olds formed by: age, gender and region. In each country, a minimum quota of 100 16-21-year-olds was applied, although in

the majority of cases this number was achieved naturally within the overall age quotas.

Individuals were invited to participate in the online administered survey from a large database of online internet mailing lists.

Those who participated in the CAPI administered survey were selected via a multi-stage sampling approach based upon random selection of households from within each district. Age, gender and region quotas were also applied to the CAPI methodology.

We then used the available country-specific population census information to construct the final balanced sample for each country.

## **PAY PERCEPTIONS**

One important dimension of how an occupation is regarded, and which is inextricably linked to standing or social status, is pay. An individual's standing in a culture depends on how much they are paid in absolute or relative terms. Hence, it is quite difficult to disentangle what teachers are actually paid, what people think they are paid, and what people think they ought to be paid – the pay that is considered fair. How the answers to these questions relate to social standing is even more subtle.

This study developed an innovative way to make these distinctions. We asked people question in a strict order, and in such a way that they could not see which questions followed. We asked: what they thought the starting salaries for primary and secondary teacher was in their own country – the estimated actual wage; then what was a fair wage for such teachers – the perceived fair wage. Finally, we told them what the primary and secondary school teacher starting salary actually is in their own country in their local currency – the actual wage – and asked them to judge whether they thought such a level of pay was too little, about right or too much.

In the interviews, for each of the three numeric value questions (S12 income, Q4A & Q5A) the respondents were given a field to type in their numeric answer.

The figures in the data are what the respondent chose to enter.

There are no data processing errors in the recording of these values. Populus imposes one of the most comprehensive quality control procedures in the industry. However, with open-ended numeric questions the numeric range was reviewed by applying an acceptable upper and lower limit after the research was complete. This is commonplace across all methodologies in order to prevent rogue figures distorting the average salary. In separate appendices we describe the checks we made and the detailed methods we employed to take care of the period of pay and whether they are paid annual bonuses in the form of a 13th or 14th month. We isolated records that we felt were unrealistic, and found this represented under 2% of the total sample.

There are a number of potential reasons for these high and low values:

- Simple miss typing, for example, by adding an extra '0'.
- Skewed view of teachers' salaries generally.
- Lack of interest can mean that some respondents type in random numbers and move on to the next screen.

## FREQUENTLY ASKED QUESTIONS

### How can we be sure that the sample is representative?

Quotas were set on age, gender and region in each market. Flexibility on some quotas was required in some countries such as Egypt and Panama to meet the sample numbers required.

### In an online administered web-based survey we know nothing about non-response – is there a bias here?

Online respondents opt in to take part in surveys rather than being approached face-to-face (F2F) or via telephone. In general we know online respondents tend to be more technically knowledgeable, slightly less loyal towards brands and are more likely to be early adopters of new technology products and services. We also must be mindful that they are motivated by incentive, which means researchers must put in place rigorous quality control procedures to ensure that respondents give each survey their full attention and avoid 'happy clicking' or rushing through surveys to reach the reward at the end.

### How do people sign up to be on your database to get the invite to be surveyed?

Members are recruited into global panels typically through banner adverts on thousands of different websites. The typical procedure is that once initially directed to the panel provider's website, the respondent is asked to pre-register. This registration requires a valid post code and address as proof of identity. Only when valid pre-registration is achieved does the panel send an email invitation to complete a fuller registration. This is called a double opt-in registration. Given that incentive payment is linked to their personal details there is no motivation to provide false information.

### What do you pay people to be part of the survey?

The vast majority of surveys use a voucher/points incentive-based system. Incentive levels are determined according to the following factors: subject matter; commitment (i.e., length of interview required); and incidence. If the respondents are joining a panel and/or will

participate in repeat surveys, an incentive would be appropriate to maximise response rates at each stage. Populus's points-based incentive system enables members to use their points to exchange for vouchers and gifts, which is clearly highlighted to all members. The incentives differ in each country or market, so it is difficult to give an overall estimate other than to say that the amount is carefully gauged based on the respondents likelihood to take part. The same is true for the CAPI approach.

### What checks are made that the data has valid responses?

All quality checks are built in at the point of interview. Populus also enforces logic check questions at the front and back of the survey. Any respondent failing this test is removed from the sample because they have demonstrated that they are not giving the task their full attention and their answers cannot be trusted. To ensure respondents have maintained concentration, a quality assurance test is applied at the end of the survey which must be passed in order for responses to be valid.

For the timed implicit response test, additional quality checks are applied in survey to both encourage fast response and to moderate respondents who select answers too quickly. Post-field checks are also applied to remove respondents who took too long on the implicit response test overall.

### Do we know anything about how many cases in each country were rejected towards the end of the study because they didn't fit in with the sampling quotas?

If respondents failed on quotas they would have been screened out at the beginning of the survey, not the end.

The table below outlines the quotas fails in each market.

	QUOTA FAIL
Argentina	3,381
Brazil	364
Canada	439
Chile	723
China	1,705
Colombia	3,940
Czech Republic	186
Egypt*	2,229
Finland	2,826
France	2,631
Germany	17
Ghana	40
Greece*	1,930
Hungary*	185
India	372
Indonesia	3,350
Israel*	443
Italy	109
Japan	1,476
Malaysia	1,154
Netherlands	225
New Zealand*	86
Panama*	4
Peru*	131
Portugal	2,437
Russia	1,753
Singapore	483
South Korea	1,029
Spain	310
Switzerland*	241
Taiwan	1,717
Turkey*	1,974
Uganda	95
UK	272
USA	773

\*Teacher quota not applicable in this market.

Countries with very low quota fails tend to reflect a well-managed distribution of invitations and interviews in line with the target quotas. A particularly high quota fail reflects those countries where we struggled to achieve the numbers needed for particular demographic quotas. Therefore, a larger sample was sent in an attempt to reach the quotas required.

**Do we know anything about the biases in this kind of survey compared to a conventional survey, and has anyone ever evaluated the two approaches side by side for the same questionnaire?**

All surveys have their relative merits and disadvantages. A massive amount has been written on the accuracy of online research, but it is not the aim of this technical appendix to review that literature.

**What kinds of questions is a WBS good for, and how is it better than a conventional survey?**

Again much has been written on this issue. However, to summarise a few benefits of online surveys:

- High level of quality control with regards to the way in which of the survey is administered.
- Good for sensitive subjects, including declaring salaries.
- Speed of turnaround.
- Low cost.
- Convenience for respondents.
- Good for complex or iterative survey designs, such as implicit response tests and maximum differentiation scaling.
- Reduced likelihood of data processing error, as all responses are automatically collated into a single database as they are completed.

## Appendix B: Measuring Teacher Status and Principal Component Analysis

### INTRODUCTION

#### MEASURING TEACHER STATUS

There is no universally agreed way to measure social status or ranking of an occupation, we allowed the literature to influence the survey design.

In the literature review we looked at other papers that also attempted to measure teacher quality and teacher status. The most relevant papers were by Judge (1988), Verhoevena et al (2006), and Everton et al (2007). We used the principles of all these papers to develop a theoretical and methodological approach to how to measure attitudes to teacher quality. We also used their questions, or adapted them, to formulate the questionnaire.

We asked people to rank 14 occupations in order of how they are respected. These occupations were: primary school teacher; secondary school teacher; head teacher; doctor; nurse; librarian; local government manager; social worker; website designer; police officer; engineer; lawyer; accountant; and management consultant. These occupations were deliberately chosen as graduate (or graduate type) jobs. The occupations were also chosen carefully with respect to how similar or dissimilar the work might be to teaching. By giving respondents many alternatives we were able to extract a precise ranking of occupations. We wanted to make this ordering task quite demanding and deliberately asked respondents to actually rank each occupation in a 'drag and drop' ladder on the computer screen. We also asked people to name the single occupation that they felt was most similar to a teacher in terms of social status.

### CONSTRUCTING AN INDEX OF TEACHER STATUS

The most appropriate way to construct the index of teacher status from the data is to use principal component analysis (PCA) with the Stata statistical software programme (Dunteman, 1989; and Jackson 1991).

The main purpose of using PCA is to reduce the dimension of the data and to identify new underlying variables. Mathematically, PCA is a procedure that uses transformation to convert a set of observations of possibly correlated variables into a set of linearly uncorrelated variables, which are called principal components.

This is a useful reduction procedure when we have data on a number of variables, and where we believe that there is some redundancy in those variables. Thus, some of the variables are correlated with one another, possibly because they are measuring the same thing. The superfluous data means it should be possible to reduce the observed variables into a smaller number of principal components. This will indicate common patterns among the set of variables under scrutiny. Therefore, the PCA creates an index of teacher status as a summary of the information contained in a set of variables related to teacher status: "rank of primary school teachers (based on the answer to the question Q1 subcategory "C"); rank of secondary school teachers (based on the answer to the question Q1 subcategory "D"); ranking of teachers according to their relative status (based on the most frequent, modal value on the answer to the question Q3); proportion of the survey sample by country – who state that they strongly agree or tend to agree to the statement "pupils respect teachers" (question Q13 subcategory "D").

Our index of teacher status comes from the first component extracted in the PCA. It explains the largest amount of total variance in the observed variables, so it is significantly correlated with some of the observed variables. In particular, we chose the first component because it explains a substantial fraction of the total variance (three-fifths 59.78%), and is the only one with an eigenvalue well above 1:

COMPONENT	EIGENVALUE	DIFFERENCE	PROPORTION	CUMULATIVE
COMPONENT 1	2.39132	1.53722	0.5978	0.5978
COMPONENT 2	.854103	.195808	0.2135	0.8114
COMPONENT 3		.562014	0.1646	0.9759
COMPONENT 4		.	0.0241	1.0000

The composition of this first component, the index of teachers' status in terms of the original variables, is shown at the following table:

VARIABLE	COMPONENT 1	COMPONENT 2	COMPONENT 3	UNEXPLAINED
RANKING PRIMARY SCHOOL TEACHERS	0.5732	-0.1802	-0.4718	0.04009
RANKING Secondary SCHOOL TEACHERS	0.6108	0.0497	-0.2851	0.0523
RANKING TEACHERS RELATIVE STATUS	0.4022	-0.5603	0.7239	0.02324*10 <sup>-3</sup>
	0.3696	0.8069	0.4149	0.003862

It is clear from this pattern matrix that the relevance of this variable in the factor (component 1) is quite balanced (i.e. the contribution of each variable to the index is roughly the same).

The values of this new variable (PC) for the observations are called factor scores. These factor scores can be interpreted geometrically as the projections of the observations of the principal component. The factor scores for the first component give us a measure of the relative position of each country, compared to the other 34 countries, in terms of teacher status.

### ADDING THE SPONTANEOUS MEASURES TO THE TEACHER STATUS INDEX

The status score given above is derived from four explicit measures of teacher status. To determine whether spontaneous measures of teacher status provide additional insight into popular perceptions of teachers, we added responses to the following three word-pairs to the PCA model:

<sup>3</sup>Sometimes the application of this methodology comes to a price, as each PC is a linear combination of all principal component variables, and the loadings are typically non-zero. This makes it often difficult to interpret the derived PCs. However, this was not major drawback in our case.

<sup>4</sup>The second and following components extracted will have two important characteristics. First, this component will explain the largest amount of variance in the data set that was not explained by the first component. Therefore, the second component will be correlated with some of the observed variables that did not show strong correlations with the first component. It will also be uncorrelated with the first component.

1. **High flyer | Mediocre**
2. **Respected | Not respected**
3. **High status | Low status**

In each case, positive responses (high-flyer, respected, high status) were coded 1 and negative responses were coded 0. The results of this model are given in the table below:

Component	Eigen value	Proportion of variance explained
1	3.90	0.56
2	1.54	0.22
3	0.73	0.10
4	0.48	0.07
5	0.23	0.03
6	0.08	0.01
7	0.04	0.01

As in the original model, the first principal component explains the majority (56%) of the total variation in responses to the seven observed variables. The composition of this first component is given in the following table:

Variable	Component 1	Component 2	Component 3	Unexplained
Ranking of primary school teachers	0.35	0.47	-0.22	0.16
Ranking of secondary school teachers	0.42	0.37	-0.23	0.05
Ranking of teacher status	0.21	0.42	0.87	0.01
Respected by pupils	0.42	-0.34	0.04	0.14
Respected/Not respected	0.47	-0.15	-0.15	0.07
High status/low status	0.45	-0.15	-0.05	0.16
High flyer / mediocre	0.23	-0.56	0.34	0.24

As in the previous analysis without the spontaneous measures, all of the observed variables contribute positively to this component, and the contributions are of roughly similar magnitudes. The exception to this is the teacher status rank variable, which contributes less than in the previous PCA, and responses to the high-flyer/mediocre word pair. Nevertheless, this first component appears to function well as an indicator of overall teacher status. This component is therefore used in all of the analyses above – indicated by 'GTSI 2018 (including spontaneous measures)'.<sup>4</sup>

## Appendix C: Data Merging and Economic Data Considerations

### 1. Data resource

In this section, we provide the data resource for teacher's wages and education spending. The data of teacher's wages are majority from OECD Education at a Glance 2017 (OECD EAG 2017). In addition, we use the country's inflation rate to calibrate the data up to 2017. For those countries whose data is not available in EAG 2017, we disclose the data resource as following:

Argentina: [http://midtownblogger.blogspot.co.uk/2016/02/buenos-aires-herald\\_27.html](http://midtownblogger.blogspot.co.uk/2016/02/buenos-aires-herald_27.html)

China: <https://m.sohu.com/n/463880212/>

Egypt: Global Teacher Status Index 2013 (Varkey Foundation)

Ghana: [http://ugspace.ug.edu.gh/bitstream/handle/123456789/8394/Mpere%20Dennis%20Larbi%20%20The%20Implementation%20of%20the%20Single%20Spine%20Salary%20Structure%20%28Ssss%29%20In%20Ghana%20\\_2015.pdf?sequence=1](http://ugspace.ug.edu.gh/bitstream/handle/123456789/8394/Mpere%20Dennis%20Larbi%20%20The%20Implementation%20of%20the%20Single%20Spine%20Salary%20Structure%20%28Ssss%29%20In%20Ghana%20_2015.pdf?sequence=1)

India: "Teachers in the Indian Education System: How we manage the teacher work force in India", National University of Educational Planning and Administration in Delhi (NUEPA). [http://www.nuepa.org/New/download/Research/Teachers\\_in\\_the\\_Indian\\_Education\\_System.pdf](http://www.nuepa.org/New/download/Research/Teachers_in_the_Indian_Education_System.pdf)

Indonesia: <https://www.quora.com/What-is-the-range-of-salary-for-teacher-in-Jakarta>

Malaysia: <https://cilisos.my/are-malaysian-teachers-paid-enough-we-talked-to-6-teachers-to-find-out/>

Panama: <https://www.teachaway.com/teach-in-panama>

Peru: <http://www.minedu.gob.pe/reforma-magisterial/docentes-contratados.php>

Russia: <http://gawker.com/russian-prime-minister-tells-underpaid-teachers-to-get-1784831264>

Singapore: Teacher Education & Teaching Profession in Singapore, Lim Kam Ming, National Institute of Education, Singapore. [https://www.researchgate.net/publication/266477034\\_Teacher\\_Education\\_Teaching\\_Profession\\_in\\_Singapore](https://www.researchgate.net/publication/266477034_Teacher_Education_Teaching_Profession_in_Singapore)

Taiwan: International Comparison of Education Statistical Indicators 2017, Ministry of Education, Taiwan. [http://stats.moe.gov.tw/files/ebook/International\\_Comparison/2017/i2017.pdf](http://stats.moe.gov.tw/files/ebook/International_Comparison/2017/i2017.pdf)

Uganda: <http://www.monitor.co.ug/News/National/Proposed-salary-for-civil-servants-leaks/688334-4192956-13v66n6z/index.html>

For the education spending per student, most data are from EAG 2017 and the database of United Nations Educational, Scientific and Cultural Organization (UNESCO), <http://data.uis.unesco.org/>. For the countries whose educational spending are not available from the resources mentioned above, we list their resource as following:

China: "Education in China a snapshot", OECD report 2016. <https://www.oecd.org/china/Education-in-China-a-snapshot.pdf>

Egypt: "Arab Republic of Egypt: Selected Issues", International Monetary Foundation (IMF)

Singapore: "Education Statistics Digest 2016", Ministry of Education, Singapore. <https://www.moe.gov.sg/docs/default-source/document/publications/education-statistics-digest/esd-2016.pdf>

Taiwan: International Comparison of Education Statistical Indicators 2017, Ministry of Education, Taiwan. [http://stats.moe.gov.tw/files/ebook/International\\_Comparison/2017/i2017.pdf](http://stats.moe.gov.tw/files/ebook/International_Comparison/2017/i2017.pdf)

Uganda: "The Education and Sports Sector Annual Performance report" (ESSAPR). <https://eprcug.org/children/publications/development/quality-primary-education/the-education-and-sports-sector-annual-performance-report>

The data of country's population is from United Nations Department of Economic and Social Affairs, and the GDP per head is from IMF 2017.

## 2. Issues with Purchasing Power Parity (PPP)

The monetary variable questions used in this report are asked in each country using its own currency. That means that to compare the data, each variable must be converted into a common currency. However, there are several ways to do that conversion and each can give a markedly different answer. The most popular convertor is the Purchasing Power Parity (PPP) – this is a standard type of conversion used by the OECD and World Bank.

When using PPP to make comparable figures on income, wages, etc. we are, implicitly assuming that all consumers in all countries have a similar consumption basket. This is a restrictive assumption, as the basket of goods consumed in different countries is very different. In addition, substitution and other factors must be taken into account. For example, if a person in Spain mostly consume pork meat when in China instead of chicken or lamb because those are significantly more expensive; then consumers can substitute and don't always buy a static basket of goods. Additionally there is the issue of quality comparability, because PPP only accounts for price differences but fails to address quality differences between products.

Having said that, we have to acknowledge that any econometric alternative to PPP is imperfect; each methodology has its advantages and disadvantages. Among the advantages of PPP exchange rates are:

- It is relatively stable over time.
- It is a better fit when the price of non traded goods and services are compared across countries. This is why PPP is generally considered a better measure of overall well-being.

For a description on the technicalities of PPP, see OECD (2006).

We found that the data in the EAG 2017 to be logically quite inconsistent with respect to PPP. For the actual teacher's salary, in the OECD Education at a Glance 2017 (OECD EAG 2017) page 432, the starting salary for secondary school teacher is Euro 31,415 in Spain. The US PPP

factor is 0.658 for EURO from OECD dataset, then the converted secondary teacher's pay is roughly  $31,415/0.658=47,743$  US\$ PPP. However, in the OECD EAG 2017 page 374, it shows that secondary school teacher' starting salary is US\$ PPP 42,002, which is quite different from our calculation (roughly 5,700 less). We are aware this issue, but PPP conversion is widely adopted in many reports. Therefore, we make a note here that there is concern over how these calculations are made.

We are not alone in facing these issues. Freeman et al (2002) discusses the problem of how to make inter country comparisons of wages. Likewise Ravillion (2016) also discusses in general terms the limitations of \$PPP conversions in measuring incomes and poverty. Essentially all development economists face the same issue. In our report we can see that in nearly any cross country comparison – no matter that a \$PPP conversion has been made – it is still the case that the rich developed countries where GDP per head is the highest remain at the top of the spending or earnings league tables, and the countries which are poorer and less developed are most frequently at the bottom of such tables. If \$PPP conversions are 'true' neutral conversions which take account of the relative cost of living in different countries then one may expect such patterns not to appear so consistently.

Indeed, when comparison are normalised by either measuring relative to GDP per head, as in the case of Figure 6.3 on teachers salaries or as in the case of educational spending where we measure relative to teachers wages, in Figure 6.5 we see a very different pattern. All we can do, at this juncture in a report on Teacher Status, is note the problems and recognise the limitations.

<sup>5</sup>This is based on the average prices for 1,000 closely specified products.



### 3. 13th and 14th Month Bonus Payment

When we ask the general population about estimating the actual wage of teachers, we have to take it as a crude proxy, not only because of the differences in people's perception about reality, but also because depending on the country of residence people think in terms of 12th payslip (one per month) 13 or 14. This is so because in some countries the total yearly wage is computed on the base of 12 months plus 1 or 2 bonus months - typically paid at the end of the calendar year. On top of that the way to compute the 13th or 14th month bonuses are not exactly the same. In general 13th month bonuses are equal to 1/12 of an employee's pay in the preceding 12 months, and 2/12 in the case of 14th month bonuses. However, for example, in Argentina bonuses are based on the highest month's salary in the preceding six months; in Colombia, half of the bonus is paid in December and the other half in June. In some European countries, particularly Mediterranean countries (Portugal, Spain and Greece) annual pay is divided into 14 instalments (Spain) and 13 in Portugal and Greece. Additionally in some other European countries (France, Germany and Italy, among others) 13th month bonuses are typically set by a national or industry agreement. In Asia, bonus monthly payments are less common.

These particularities forced us to standardize on the yearly wage estimated by surveyed people without accounting for potential bonuses. Employees in many countries are entitled to so-called 13th and 14th month bonuses by law, collective agreement, individual employment contract, and these bonuses are usually not included when people response how much their salary and wages are. This study tries to take into account the bonuses payment in order to capture the more reliable figure of employee's salary. 13th month bonuses are equal to 1/12 of an employee's pay in the preceding 12 months. The countries that have mandatory 13th bonus payment are Argentina, Chile, China, Colombia, Finland, France, Germany, India, Indonesia, Italy, Malaysia, Netherlands, Panama, Portugal, Singapore, Switzerland and Taiwan. Additionally, there are some countries that have 13th and 14th bonus payment: Brazil, Greece, Japan, Peru and Spain. Other countries, such as UK and USA, do not have the policy of bonus payment. It is a complex task to understand if each country has the policy of bonus payment so this

study takes a web page from Aon plc as reference to identify which country has the policy of bonus payment.

<sup>6</sup> The web address of the reference is: <https://radford.aon.com/insights/articles/2017/13th-and-14th-Month-Bonus-Rules-in-Latin-America-Europe-Africa-and-Asia>.

### 4. Wages (Gross and Net)

The time period over which a respondent is typically paid (hence thinks about their earnings) is very different in different countries. We allowed for this in the survey by allowing the respondent to report their earnings either: annually, monthly, weekly, daily or hourly. We therefore had to be very careful in terms of standardising this data to the same units - of earnings per year. For example, a UK respondent in a salaried graduate type job, when asked how much they earn will usually give the gross annual salary if they need to provide the wage information, but French respondents will typically provide their net monthly salary. This report provides the flexibility to participants to provide the hourly, daily, weekly, monthly or yearly wage. They are required to indicate if the salary is gross or net. This report uses gross yearly salary as measurement. If a participant provides the net salary, we calculate his/her gross salary by using the information of the country's structure of progressive tax rate. It is a very complex and difficult task to exactly convert the net salary to gross salary. We only convert the net salary with central-government personal income tax, and do not consider the local-government income tax in the formula. Due to the space limit, the tax rate of each country is available upon request.

Hourly pay is multiplied 1960 to represent annual pay, daily pay is multiplied 240, weekly pay is multiplied 48, and monthly pay is multiplied 12 to represent annual pay. After this multiplication, if the observation is outside of the range between maximum and minimum value, we consider it as invalid data. The upper boundary is set as three times the actual teacher's payment, and the lower boundary is the country's legal minimum wage. <sup>7</sup>This process will increase the reliability of data and drop unreasonable observations.

<sup>6</sup> Aon plc is a global professional services firm headquarters in London that provides risk, retirement and health consulting.

<sup>7</sup> The data resource of each country's minimum wages is as following: [https://en.wikipedia.org/wiki/List\\_of\\_minimum\\_wages\\_by\\_country](https://en.wikipedia.org/wiki/List_of_minimum_wages_by_country)

### 5. Retrieving the Teachers Pay Percentile in the Income Distribution:

In this section we describe how it is possible to retrieve the teachers' pay percentile in the income distribution from a knowledge of their average wage and the GDP per head in economy. Provided we know the above two pieces of information as well as the Gini coefficient as a measure of the income inequality in the economy and we assume that the income distribution is lognormal, then we can retrieve the percentile that teachers on average are paid at. The logic is as follows.

Let  $\ln(x) \approx N(\theta, \sigma^2)$  so that  $x$  has a lognormal income distribution with parameters  $\theta$  and  $\sigma^2$ . The median is  $\exp\{\theta\}$ , the mode is  $\exp\{\theta - \sigma^2\}$  and the mean is  $\exp\{\theta + (1/2)\sigma^2\}$ . If  $u(p)$  is the value in the  $N(0,1)$  distribution at percentile point  $p$  (so that  $u(1/2)=0$ , etc) then  $x(p) = \exp\{\theta + u(p)\sigma\}$  is the income level at percentile  $p$ . The Gini coefficient is  $G = 1 - 2u|\sigma/\sqrt{2}|$ , or, indeed, twice the area under  $N(0,1)$  between the ordinates  $u = 0$  and  $u = \sigma/\sqrt{2}$ . So if you know the Gini coefficient, you can infer  $\sigma$ . And then, knowing the mean (or median or mode) you can infer  $\theta$ . So if the teachers' average wage is mean of  $x$ , you can get their average percentile by solving mean of  $x = x(\text{mean of } p)$



## 6. Country Data Appendix

Country/Territory	GDP Per Head (PPP) Int\$	Population (M)	Secondary School Revised (PPP US\$) Starting salary	GTSI_2018	GTSI_2018+Implicit	GTSI_2013	PISA Science	PISA Reading	PISA Mathematics	Primary education spending per student PPP US\$	Secondary education spending per student PPP US\$	Public Educational Expenditure of GDP (%)
Argentina	20677	44.27	10370.51	23.58	18.24	N/A	475	475	456	2848.39	4064.74	3.35
Brazil	15500	209.29	12993.03	1.00	1.72	2.4	401	407	377	3836.38	3875.52	3.04
Canada	48141	36.62	43714.85	49.87	49.80	N/A	528	527	516	9714.46	13411.95	2.10
Chile	24588	18.05	20890.06	33.15	29.48	N/A	447	459	423	4333.26	4491.02	2.12
China	16624	1409.52	12209.51	100.00	100.00	100	518	494	531	2076.02	2784.67	1.88
Colombia	14455	49.07	18805.73	30.33	27.58	N/A	416	425	390	2482.23	3050.53	3.57
Czech Republic	35223	10.62	18859.09	23.92	22.41	12.1	493	487	492	5181.13	8319.84	1.70
Egypt	12994	97.55	6592.474	34.83	27.13	N/A	N/A	N/A	N/A	3128.55	3128.55	1.87
Finland	44050	5.52	40491.1	37.96	38.94	28.9	531	526	511	8863.18	10448.03	2.47
France	43550	64.98	33675.49	33.72	31.66	32.3	495	499	493	7540.88	12046.81	2.51
Germany	50206	82.11	65396.25	33.40	29.77	21.6	509	509	506	8574.25	11722.49	1.90
Ghana	4605	28.83	7249.041	18.94	23.01	N/A	N/A	N/A	N/A	374.48	1181.90	2.28
Greece	27776	11.16	21480.69	48.34	38.82	73.7	455	467	454	7581.28	7581.28	N/A
Hungary	28910	9.72	16240.75	24.43	20.69	N/A	477	470	477	3771.51	6075.06	1.19
India	7174	1339.18	21607.63	58.01	58.27	N/A	N/A	N/A	N/A	533.73	918.72	1.62
Indonesia	12378	263.99	14407.98	62.06	63.10	N/A	403	397	386	1484.18	1181.97	2.11
Israel	36250	8.32	22175.36	6.65	1.00	2	467	479	470	6763.31	6629.98	2.27
Italy	37970	59.36	33629.78	13.58	11.56	13	481	485	490	8640.45	9136.87	1.78
Japan	42659	127.48	31460.65	37.41	33.22	16.2	538	516	532	9302.23	11023.29	2.04
Malaysia	28871	31.62	18120.08	93.30	90.65	N/A	N/A	N/A	N/A	4335.42	4940.94	3.64
Netherlands	53582	17.04	43742.59	32.17	34.59	40.3	509	503	512	8758.42	12780.48	2.48
New Zealand	38502	4.71	33098.75	56.01	56.93	54	513	509	495	7448.58	10280.72	2.98
Panama	24262	4.10	16000	42.00	34.38	N/A	N/A	N/A	N/A	1120.41	1646.82	1.46
Peru	13342	32.17	12478.13	31.10	24.08	N/A	397	398	387	2091.90	2740.79	2.55
Portugal	30258	10.33	35519.24	32.88	30.74	26	501	498	492	6429.20	8759.85	3.10
Russia	27890	143.99	5922.533	64.98	63.33	N/A	487	495	494	5132.21	5132.20	2.05
Singapore	90531	5.71	50249.38	51.67	52.01	46.3	556	535	564	12817.41	16845.22	1.31
South Korea	39387	50.98	33141.46	61.18	54.48	62	516	517	524	9515.99	10166.50	2.66
Spain	38171	46.35	47864.09	29.11	22.38	30.7	493	496	486	7089.86	8675.32	2.14
Switzerland	61360	8.48	77490.6	43.74	41.57	23.8	506	492	521	15702.13	15541.23	2.51
Taiwan	49827	23.63	40821.16	70.21	67.42	N/A	532	497	542	11328.14	8051.98	2.28
Turkey	26453	80.75	30302.8	59.10	56.41	68	425	428	420	3367.74	3066.12	2.15
Uganda	2352	42.86	4204.867	25.12	28.94	N/A	N/A	N/A	N/A	160.18	508.19	1.68
United Kingdom	43620	66.18	31845.26	46.59	46.44	36.7	509	498	492	11462.52	12555.84	3.15
United States	59495	324.46	44228.73	39.69	40.96	38.4	496	497	470	11474.91	13174.59	2.55

Note: OECD Secondary school teacher starting salary is PPP US\$ 33824

## Appendix D: The Econometric Identification of Occupational Pay and Respect/Status

### 1. Data resource

The identification of the causal econometric relationship between occupational pay and status is complex. In simple terms: does higher status cause higher pay, or does higher pay cause higher status. Many authors have wrestled with this problem. Notable economists who have discussed the determination of status and its link to pay (Frank 1985, Becker et al 2000) have seldom attempted to take the theory to any real data. One early attempt to estimate a model of occupational choice which recognised the importance of both pay and status in the occupational decisions of graduates was Dolton et al (1989). This model found a trade-off between these elements in the choices of young people but the econometric identification was based on a multinomial logit sample selection strategy which was driven by the assumptions of specific exclusion restrictions.

The classic econometric identification problem of determining the influences on supply and demand in a market are directly analogous. The standard way around these problems is to use exclusion restrictions or Instrumental Variables (IV). Crudely we seek factors which exogenously shift pay but do not change status and vice versa, in order to identify the relationships in question.

The alternative approach is to seek an instrumental variable which is related to the endogenous variable of interest but is unrelated to the stochastic error term which captures the unobserved heterogeneity in the equation of interest. Suitable IV variables are often controversial and it is hard to find satisfactory candidates.

Our approach to this problem of identification in this monograph is to use a series of innovative strategies. Firstly, we did not ask people to record a measure of status for a specific occupation – such metrics are difficult to calibrate. (see Goldthorpe and Hope, 1974). A common approach is to ask respondents to rank a select list of occupations. This we did with our 14 graduate occupations asking them to judge the

respect the occupation was held in. We also asked them to perform the same ranking of occupations on what they thought they were paid. To help us attempt to disentangle the influences we randomised the sample by asking half the sample to rank respect first then pay and the other half to rank pay first then respect. This was done to see if the order in which the questions appeared made a difference to people's judgements.

Next we did a PCA analysis on the implicit scores (See Appendix B) to try to identify the multivarious determinants of status. Finally in this Appendix we use IV methods to examine the relationship between pay ranking and respect ranking. More specifically in the Pay Ranking equation we use the spontaneous elements of our implicit analysis to attempt to reveal the subconscious elements of what people really think about teachers. Our suggestion is that such a measure is correlated to the rational respect ranking but likely to be uncorrelated with the error term in the pay ranking equation. The results in Table E3 suggest that the true relationship between pay ranking and respect ranking are likely to be roughly twice as large (around .6 of a unit) when this endogeneity is taken care of.

Table OLS Regression of Respect Rank

COUNTRY	(1) Headteacher	(2) SECONDARY	(3) PRIMARY
PayRankH	0.287*** (52.12)		
PayRankS		0.293*** (52.05)	
PayRankP			0.328*** (59.04)
Q1/Q2 Order	-0.286*** (-9.46)	-0.255*** (-8.25)	-0.187*** (-5.67)
Age in Years	0.00923*** (7.52)	0.0138*** (11.01)	0.0121*** (9.02)
Male	0.116*** (3.74)	0.275*** (8.69)	0.304*** (8.97)
Parent	0.0898*** (2.81)	0.137*** (4.19)	0.236*** (6.77)
Graduate	0.122*** (3.51)	-0.0276 (-0.78)	-0.134*** (-3.54)
Teacher	0.0447 (1.07)	-0.117*** (-2.75)	-0.178*** (-3.91)
Ethnic	-0.264*** (-5.82)	-0.116** (-2.51)	-0.109** (-2.20)
Christian	0.146*** (3.88)	0.0187 (0.48)	0.0906** (2.20)
Islamic	0.414*** (5.05)	0.230*** (2.75)	0.349*** (3.90)
Buddhist	0.109 (1.32)	0.0298 (0.35)	-0.0781 (-0.87)
Jewish	0.210 (1.03)	-0.364* (-1.75)	-0.449** (-2.02)
Country Fixed Effects			
Brazil	-0.809*** (-6.52)	-0.776*** (-6.15)	-0.872*** (-6.46)
Canada	0.355*** (2.87)	0.826*** (6.54)	0.925*** (6.84)
Chile	0.0722 (0.58)	0.334*** (2.63)	0.378*** (2.78)

China	1.342*** (10.60)	2.582*** (20.04)	2.045*** (14.86)
Colombia	0.253** (2.04)	0.0734 (0.58)	0.0521 (0.38)
Czech Republic	1.223*** (9.72)	0.270** (2.11)	-0.488*** (-3.56)
Egypt	0.562*** (4.22)	0.602*** (4.42)	0.349** (2.40)
Finland	1.282*** (10.23)	0.639*** (5.01)	0.539*** (3.95)
France	0.269** (2.13)	0.0235 (0.18)	0.467*** (3.43)
Germany	0.459*** (3.69)	0.480*** (3.76)	-0.289** (-2.13)
Ghana	-0.478*** (-3.80)	-0.522*** (-4.06)	-1.675*** (-12.20)
Greece	1.114*** (8.57)	0.943*** (7.11)	0.530*** (3.73)
Hungary	-0.641*** (-4.91)	0.245* (1.84)	-0.389*** (-2.74)
India	1.735*** (13.79)	1.305*** (10.16)	0.884*** (6.44)
Indonesia	1.933*** (14.18)	1.621*** (11.66)	1.620*** (10.89)
Israel	0.0554 (0.25)	-0.264 (-1.19)	-0.559** (-2.35)
Italy	0.923*** (7.49)	-0.0305 (-0.24)	-0.609*** (-4.54)
Japan	0.782*** (6.12)	0.437*** (3.36)	0.449*** (3.22)
Korea	1.159*** (9.23)	1.394*** (10.90)	1.493*** (10.91)
Malaysia	1.904*** (14.05)	1.944*** (14.05)	1.558*** (10.54)
Netherlands	0.0336 (0.27)	0.332*** (2.62)	0.0331 (0.24)

Table OLS Regression of Respect Rank

New Zealand	0.784***	0.884***	1.125***
	(6.00)	(6.63)	(7.88)
Panama	0.131	0.556***	0.416**
	(0.82)	(3.42)	(2.39)
Peru	-0.141	0.460***	0.389***
	(-1.11)	(3.55)	(2.81)
Portugal	0.169	-0.298**	-0.125
	(1.37)	(-2.36)	(-0.92)
Russia	0.984***	1.148***	1.131***
	(7.86)	(9.03)	(8.32)
Singapore	1.089***	1.038***	0.624***
	(8.60)	(8.03)	(4.51)
Spain	-0.215*	-0.194	-0.176
	(-1.74)	(-1.54)	(-1.30)
Switzerland	0.110	0.501***	0.0433
	(0.84)	(3.74)	(0.30)
Taiwan	-0.352***	1.506***	1.015***
	(-2.77)	(11.57)	(7.30)
Turkey	0.321**	1.282***	1.676***
	(2.22)	(8.69)	(10.62)
Uganda	1.052***	0.0315	-0.828***
	(8.41)	(0.25)	(-6.05)
UK	0.975***	0.970***	1.287***
	(7.81)	(7.65)	(9.49)
United States	0.0830	0.500***	0.693***
	(0.67)	(3.95)	(5.12)
Constant	4.873***	4.114***	3.923***
	(44.72)	(38.23)	(34.35)
Observations	41129	41129	41129
R <sup>2</sup>	0.144	0.133	0.152

t statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Base Case Country is Argentina

Table OLS Regression of Pay Rank

COUNTRY	(1) Headteacher	(2) SECONDARY	(3) PRIMARY
Respect Rank	0.216***	0.211***	0.238***
	(52.12)	(52.05)	(59.04)
Q1/Q2 Order	0.104***	0.178***	0.186***
	(3.97)	(6.79)	(6.60)
Age in Years	-0.00195*	0.00425***	-0.00385***
	(-1.83)	(4.00)	(-3.37)
Male	0.193***	0.0857***	0.123***
	(7.19)	(3.19)	(4.28)
Parent	0.0192	0.126***	0.183***
	(0.69)	(4.57)	(6.16)
Graduate	0.0913***	-0.101***	-0.134***
	(3.03)	(-3.37)	(-4.14)
Teacher	-0.0197	-0.00855	-0.137***
	(-0.54)	(-0.24)	(-3.54)
Ethnic	-0.0520	0.136***	0.426***
	(-1.32)	(3.47)	(10.11)
Christian	0.0641*	0.115***	0.130***
	(1.96)	(3.53)	(3.70)
Islamic	-0.0433	0.269***	0.208***
	(-0.61)	(3.79)	(2.72)
Buddist	-0.0383	0.167**	0.167**
	(-0.54)	(2.34)	(2.18)
Jewish	-0.294*	-0.123	-0.0707
	(-1.66)	(-0.69)	(-0.37)
<b>Country Fixed Effects</b>			
Brazil	-1.119***	-0.0531	0.0247
	(-10.42)	(-0.50)	(0.21)
Canada	-0.148	0.268**	0.147
	(-1.38)	(2.50)	(1.28)
Chile	0.612***	-0.159	-0.0372
	(5.67)	(-1.48)	(-0.32)
China	2.031***	1.174***	0.680***
	(18.54)	(10.71)	(5.79)
Colombia	0.258**	0.381***	0.406***
	(2.40)	(3.55)	(3.51)
Czech Republic	1.517***	0.872***	0.586***
	(13.90)	(8.03)	(5.02)

Egypt	0.234** (2.02)	1.359*** (11.79)	0.615*** (4.97)
Finland	1.684*** (15.51)	0.997*** (9.23)	0.275** (2.37)
France	2.950*** (27.21)	1.458*** (13.50)	0.674*** (5.81)
Germany	1.587*** (14.71)	2.347*** (21.82)	1.148*** (9.94)
Ghana	-0.315*** (-2.88)	0.643*** (5.91)	-0.0725 (-0.62)
Greece	0.835*** (7.40)	1.105*** (9.82)	1.324*** (10.96)
Hungary	-1.014*** (-8.96)	1.314*** (11.64)	0.839*** (6.93)
India	0.746*** (6.83)	1.273*** (11.69)	0.980*** (8.38)
Indonesia	-0.0161 (-0.14)	-0.00302 (-0.03)	-0.543*** (-4.28)
Israel	0.989*** (5.24)	0.648*** (3.44)	0.704*** (3.48)
Italy	1.110*** (10.39)	0.201* (1.89)	-0.115 (-1.01)
Japan	1.379*** (12.45)	0.437*** (3.96)	0.239** (2.01)
Korea	1.475*** (13.55)	1.049*** (9.66)	0.985*** (8.44)
Malaysia	1.129*** (9.59)	1.335*** (11.37)	0.921*** (7.31)
Netherlands	0.755*** (7.01)	0.504*** (4.69)	0.0338 (0.29)
New Zealand	-0.540*** (-4.76)	-0.128 (-1.13)	-0.562*** (-4.62)
Panama	0.582*** (4.21)	1.245*** (9.02)	1.458*** (9.83)
Peru	0.000909 (0.01)	-0.428*** (-3.90)	-0.213* (-1.81)
Portugal	1.308*** (12.20)	1.161*** (10.85)	0.698*** (6.07)

Russia	2.135*** (19.73)	0.350*** (3.24)	0.363*** (3.13)
Singapore	0.868*** (7.90)	1.058*** (9.65)	0.734*** (6.23)
Spain	0.798*** (7.43)	1.272*** (11.88)	1.254*** (10.90)
Switzerland	2.207*** (19.47)	2.206*** (19.50)	1.383*** (11.39)
Taiwan	-0.260** (-2.36)	1.847*** (16.76)	1.622*** (13.72)
Turkey	0.630*** (5.02)	0.184 (1.47)	0.219 (1.62)
Uganda	0.619*** (5.69)	0.469*** (4.33)	-0.907*** (-7.79)
the UK	1.689*** (15.64)	0.261** (2.43)	-0.171 (-1.48)
United States	-1.071*** (-9.95)	-0.217** (-2.02)	0.0671 (0.58)
Constant	5.157*** (55.19)	3.225*** (35.24)	2.694*** (27.55)
Observations	41129	41129	41129
$R^2$	0.195	0.133	0.130

$t$  statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Base Case Country is Argentina

Table IV Regression of Pay Rank

VARIABLES	(1) Headteacher	(2) SECONDARY	(3) PRIMARY
Respect Rank	0.582*** (0.04-56)	0.568*** (0.0243)	0.619*** (0.0250)
Q1Q2Order1	0.199*** (0.0332)	0.266*** (0.0310)	0.232*** (0.0335)
AgeInYears	-0.00557*** (0.00130)	-0.00129 (0.00130)	-0.00801*** (0.00138)
Male	0.138*** (0.0328)	-0.00709 (0.0321)	-0.0252 (0.0351)
Parent	-0.0318 (0.0327)	0.0656** (0.0325)	0.0584 (0.0359)
Graduate	0.0324 (0.0363)	-0.0902** (0.0351)	-0.0632 (0.0385)
Teacher	-0.0299 (0.0424)	0.0751* (0.0423)	-0.0301 (0.0463)
Ethnic	0.0751 (0.0488)	0.183*** (0.0466)	0.396*** (0.0507)
Christian	-0.00910 (0.0386)	0.0921** (0.0378)	0.0790* (0.0413)
Islamic	-0.190** (0.0865)	0.139* (0.0842)	0.0577 (0.0920)
Buddist	-0.0219 (0.0831)	0.144* (0.0827)	0.186** (0.0901)
Jewish	-0.316 (0.204)	0.0843 (0.203)	-8.43e-05 (0.222)
<b>Country Fixed Effects</b>			
Brazil	-0.677*** (0.140)	0.266** (0.128)	0.404*** (0.140)
Canada	-0.300** (0.127)	-0.110 (0.127)	-0.258* (0.139)
Chile	0.463*** (0.133)	-0.267** (0.132)	-0.225 (0.144)
China	1.164*** (0.161)	-0.0173 (0.150)	-0.283* (0.154)
Colombia	0.146 (0.131)	0.210 (0.129)	0.383*** (0.141)
Czech Republic	0.891*** (0.151)	0.667*** (0.128)	0.668*** (0.139)

Egypt	0.0470 (0.141)	0.998*** (0.140)	0.364** (0.150)
Finland	0.995*** (0.153)	0.628*** (0.128)	-0.0168 (0.138)
France	2.496*** (0.140)	1.261*** (0.127)	0.308** (0.139)
Germany	1.225*** (0.132)	1.898*** (0.128)	1.129*** (0.135)
Ghana	-0.0959 (0.139)	0.714*** (0.136)	0.562*** (0.154)
Greece	0.239 (0.151)	0.546*** (0.137)	0.837*** (0.148)
Hungary	-0.658*** (0.140)	1.061*** (0.132)	0.845*** (0.143)
India	-0.0383 (0.159)	0.592*** (0.136)	0.434*** (0.143)
Indonesia	-0.799*** (0.168)	-0.632*** (0.146)	-1.109*** (0.157)
Israel	0.829*** (0.218)	0.622*** (0.217)	0.950*** (0.237)
Italy	0.587*** (0.138)	0.179 (0.124)	0.118 (0.136)
Japan	0.896*** (0.141)	0.186 (0.129)	0.00874 (0.141)
Korea	0.902*** (0.149)	0.389*** (0.135)	0.234 (0.147)
Malaysia	0.243 (0.177)	0.437*** (0.152)	0.174 (0.160)
Netherlands	0.649*** (0.126)	0.321** (0.125)	-0.0107 (0.136)
New Zealand	-0.841*** (0.136)	-0.505*** (0.134)	-0.971*** (0.146)
Panama	0.393** (0.172)	0.859*** (0.172)	1.044*** (0.187)
Peru	0.0443 (0.136)	-0.564*** (0.135)	-0.303** (0.147)
Portugal	1.100*** (0.130)	1.131*** (0.127)	0.603*** (0.138)
Russia	1.521***	-0.187	-0.221



Table IV Regression of Pay Rank

	(0.148)	(0.130)	(0.141)
Singapore	0.316**	0.538***	0.423***
	(0.144)	(0.134)	(0.142)
Spain	0.778***	1.178***	1.117***
	(0.125)	(0.124)	(0.135)
Switzerland	1.919***	1.771***	1.205***
	(0.137)	(0.135)	(0.144)
Taiwan	-0.109	0.994***	0.994***
	(0.131)	(0.140)	(0.146)
Turkey	0.389***	-0.305**	-0.484***
	(0.150)	(0.152)	(0.167)
Uganda	0.187	0.356***	-0.435***
	(0.147)	(0.133)	(0.148)
the UK	1.083***	-0.154	-0.700***
	(0.144)	(0.128)	(0.140)
United States	-1.066***	-0.478***	-0.297**
	(0.126)	(0.125)	(0.138)
Constant	2.706***	1.290***	0.713***
	(0.328)	(0.168)	(0.174)
Observations	35,439	35,439	35,439
R-squared	0.052	0.122	0.093

Standard errors in parentheses

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$



## Appendix E: Educational Systems Efficiency

### Introduction: Educational Systems Efficiency and Data Envelopment Analysis

In what follows we have used a non-parametric estimation technique – namely Data Envelopment Analysis (DEA) – in order to establish efficiency rankings of countries. DEA was developed relying on the concept of “Pareto efficiency”. Given that the concept of efficiency is closely related to productivity, which establishes the capacity to transform inputs into outputs, the organization with the highest productivity in all inputs will be the most efficient ones.

This method draws the frontier of efficient DMUs that do better than the rest, (i.e. taking the convex hull of the outer most productive points for any given set of inputs) and measures the distance of the other DMUs to the frontier. In other words, it allows to identify an empirical best practice frontier and the shortcomings of units evaluated are revealed and measured, by means of efficiency scores, with respect to this best practice frontier. This method allows us to measure efficiency in organizations where there are multiple inputs and outputs, whose prices are unknown. It is mainly for this reason that it is an appropriate method to measure the efficiency of educational process. Another particularity of the educational processes is that there is not a clear production function to describe it.

DEA allows us to identify the inefficiency causes through peer comparison by comparing each DMU with the nearest one on the frontier and measures the distance to the frontier. This distance shows the reduction of inputs (input orientation) or the increase of outputs (output orientation) that each non-efficient DMU needs to achieve to become efficient (i.e. to be at the frontier). With this information, it is possible to calculate the percentage of inefficiency of each organizations (country) compared to the most efficient one.

The results are independent of the model choice, and Coelli (1996) points out that both models (output orientated and input orientated) estimate identical frontiers and, therefore, the same efficient DMUs. Because of that, only inefficient DMUs could differ between the models.

The DEA methodology assumes the existence of a convex production frontier constructed using linear programming methods. To formally describe the DEA methodology we must start by defining the DEA ratio methodology, in which each measurement DMU seeks a ratio of all outputs on all inputs of the form  $\left(\frac{s'r_i}{h'x_i}\right)$ , where  $s$  is a weight vector of outputs  $M \times 1$ , and  $h$  is a vector of weights of the inputs. The optimum weights are obtained by solving the following problem:

$$5) \quad \max_{s,h} \left(\frac{s'r_i}{h'x_i}\right)$$

$$\text{subject to } \left(\frac{s'r_i}{h'x_i}\right) \leq 1,$$

$$\text{for } i=1,2,\dots,l. \quad s, h \geq 0$$

This will allow us to obtain the values that make “s” and “h” measure of efficiency for the  $i$ th DMU is maximized, subject to the constraints that all efficiency measures are less than or equal to unity. Because this type of formulation is infinite solutions, multiplication shape is defined by adding a new constraint in the form:

<sup>8</sup> One of the main advantages of DEA is that it provides with useful managerial information, including peer groups for the purpose of benchmarking and an analysis of slacks in terms of amounts of inputs and outputs that could be reduced/improved, so it helps to make optimal decisions to policy makers.

<sup>9</sup> An important limitation in the context of our analysis is that it assumes that countries are homogeneous in any other aspect except for efficiency and the quantities of used inputs.

$$\begin{aligned}
 6) \quad & \max_{\alpha, h} (\alpha' r_i) \\
 & \text{subject to } \gamma' x_i = 1, \\
 & \alpha' r_i - \gamma' x_i \leq 0, \\
 & \alpha, \gamma \geq 0
 \end{aligned}$$

for  $i=1,2,\dots,I$ .

Where it has become known “s” and “h” as “ $\alpha$ ”, while “ $\gamma$ ” is used to indicate that this is another linear programming problem. This can be derived by duality to rewrite the optimization as an alternative linear programming problem:

$$\begin{aligned}
 7) \quad & \min_{\delta, \rho} \delta \\
 & \text{subject to } -r_i + R\rho \geq 0 \\
 & \delta x_i - X\rho \geq 0 \\
 & \rho \geq 0
 \end{aligned}$$

where “ $\rho$ ” is a  $1 \times I$  vector of constants and “ $\delta$ ” is a scalar. This form is most often used when solving these problems, it includes fewer restrictions than the multiplicative form, namely  $N + M$ , instead of  $I+1$  restrictions. The parameter  $\delta$  represents the efficiency for the  $i$ th DMU (the problem is solved  $I$  times for each DMU in the analysis), provided that the estimate of  $\delta$ - which is set to 1 when at an efficient point of the border- indicates that the DMU is efficient (Farrell, 1957). In other words,  $\delta$  measures the distance between a country and the efficiency frontier, defined as a linear combination of the best-practice observations. When  $\delta > 1$ , then  $1/\delta < 1$ , and the country is inside the frontier (i.e. it is inefficient), while  $\delta = 1$  it implies that the country is on the frontier. Following the discussion in Coelli (1996), the DMU is called ‘efficient’ when the DEA score is 1 and all slacks are 0. If only the first condition is satisfied, the DMU is called efficient in terms of “radial”, “technical” and “weak” efficiency. If both conditions are satisfied, the DMU is called efficient in terms of “Pareto-Koopmans” or “strong” efficiency.

Following this technical approach we have generated different estimates of the efficiency ranking for the set of countries with available data for the variables considered. There are some heterogeneity in the efficiency ranking we obtain depending on if we use as input teaching working hours per week or, alternatively, annual teachers gross wage. We move on towards the results from implementing DEA to our dataset, the results are quite consistent regardless of the orientation and the returns to scale we specify to solve the model (we only report the output oriented constant returns to scale, to conserve space). The results (Tables A to D) show that Russia, Italy and Finland are at the top of the efficiency ranking, in fact Russia is the only “Pareto-Koopmans” - is the referent (benchmark) for all other countries- and Italy and Finland are - strongly- efficient DMUs. In other words, the efficiency scores ( $\hat{\theta}$ ) of the rest of countries is determined by comparing their level of working hours/teachers’ wages with the “minimum” for the same output achieved by Russia.

Conversely, South American countries such as Colombia, Chile and Brazil are classified at the bottom of the efficiency distribution; despite having low educational resources their productivity is even lower, because those countries produce very poor PISA scores with the resources available, i.e. are inefficient. This also applies to the United States.

**A) DEA efficiency estimate**

(output oriented, constant returns to scale):  
output=PISA 2015 by country, inputs= teaching  
working hours per week, annual teachers gross  
wage

COUNTRY	RANK	THETA
Russia	1	1
Italy	1	1
China	3	1.003
Greece	4	1.023
Indonesia	5	1.037
France	6	1.040
Finland	7	1.049
Korea	8	1.100
Spain	9	1.112
Czech Republic	10	1.125
Turkey	11	1.149
Netherlands	12	1.208
Japan	13	1.223
Portugal	14	1.228
Germany	15	1.247
Israel	16	1.317
Hungary	17	1.330
UK	18	1.354
Colombia	19	1.372
United States	20	1.428
Chile	21	1.474
Brazil	22	1.497

**B) DEA efficiency estimate**

(output oriented, constant returns to scale):  
output=PISA 2015 by country, inputs= teaching  
working hours per week, percentile of teachers  
wage at the country income distribution (relative  
to GDP per head)

COUNTRY	RANK	THETA
Russia	1	1
Italy	1	1
China	3	1.023
Greece	4	1.032
Indonesia	5	1.089
France	6	1.100
Finland	7	1.112
Korea	8	1.112
Spain	9	1.124
Czech Republic	10	1.145
Turkey	11	1.153
Netherlands	12	1.174
Japan	13	1.236
Portugal	14	1.242
Germany	15	1.257
Israel	16	1.345
Hungary	17	1.352
UK	18	1.370
Colombia	19	1.381
United States	20	1.515
Chile	21	1.569
Brazil	22	1.643

**C) DEA efficiency estimate**

(output oriented, constant returns to scale):  
output=PISA 2015 by country, inputs= students  
per classroom, annual teachers gross wage

COUNTRY	RANK	THETA
Russia	1	1
UK	1	1
Finland	3	1.006
Italy	4	1.137
Hungary	5	1.152
Czech Republic	6	1.168
Netherlands	7	1.191
Greece	8	1.195
Portugal	9	1.215
Germany	10	1.242
France	11	1.321
Spain	12	1.391
United States	13	1.455
Korea	14	1.510
Israel	15	1.545
Japan	16	1.579
Brazil	17	1.773
Chile	18	1.820
Colombia	19	1.837
Indonesia	20	1.904
China	21	1.972
Turkey	22	2.089

**D) DEA efficiency estimate**

(output oriented, constant returns to scale):  
output=PISA 2015 by country, inputs= students  
per classroom, percentile of teachers wage at  
the country income distribution (relative to GDP  
per head)

COUNTRY	RANK	THETA
Russia	1	1
UK	1	1
Finland	3	1.006
Italy	4	1.138
Hungary	5	1.157
Czech Republic	6	1.169
Netherlands	7	1.188
Greece	8	1.204
Portugal	9	1.217
Germany	10	1.242
France	11	1.321
Spain	12	1.391
United States	13	1.451
Korea	14	1.512
Israel	15	1.550
Japan	16	1.583
Brazil	17	1.792
Chile	18	1.832
Colombia	19	1.856
Indonesia	20	1.926
Turkey	21	2.099
China	22	2.479

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# GLOBAL TEACHER STATUS INDEX GENERAL PUBLIC QUESTIONNAIRE 2018



<b>Client</b>	Varkey Foundation
<b>Project</b>	Teacher Index Survey
<b>Sample</b>	1000 adults 16-64
<b>Public Market Countries (35)</b>	Online: Brazil, China, Czech Republic, Egypt, Finland, France, Germany, Greece, Israel, Italy, Japan, South Korea, Netherlands, New Zealand, Portugal, Singapore, Spain, Switzerland, Turkey, UK, USA  Taiwan, Hungary, Ghana, Uganda, Argentina, Peru, Colombia, Chile, Panama, India, Russia, Malaysia, Indonesia, and Canada.  CAPI: Uganda, Ghana
<b>Teacher Countries (27)</b>	Online: Brazil, China, Czech Republic, Finland, France, Germany, Italy, Japan, South Korea, Netherlands, Portugal, Singapore, Spain, UK, USA, Taiwan, Argentina, Peru, Colombia, Chile, India, Russia, Malaysia, Indonesia, and Canada.  CAPI: Uganda, Ghana
<b>Quotas</b>	Age, Gender, Region  Quotas of 100 aged 16-21 within overall sample  Note: some flexibility needed on older age groups; CAPI will focus on population dense areas.
<b>Sub-Sample</b>	200 serving teachers in each country.
<b>Methodology</b>	Online



## PERSONAL & BACKGROUND

### ASK ALL

#### S1 Are you...

CODE ONE

1. Male
2. Female

#### S2 Please enter your date of birth. Please enter this in the format of dd-mmm-yyyy, so 4th January 1975 would be entered as 04-Jan-1975.

ENTER TEXT

#### S3 Which of the following best describes the area where you live...

CODE ONE

1. Inner city
2. Suburban area
3. Town
4. Predominantly rural

#### S4 - REGION (Refer to region document for each country)

CODE ONE

#### S5 Which of the following best describes you...

CODE ALL THAT APPLY

1. I am not a parent [MULTI EXCLUSIVE]
2. I am a parent of children aged 18 or under
3. I am a parent of children over 18

#### S6 Which of the following best describes your current marital status?

CODE ONE

1. Single
2. In a relationship but not living together
3. Married
4. Civil Partnership
5. Cohabiting
6. Widowed
7. Separated
8. Divorced
9. Prefer not to answer

#### S7 What is the level of education that most closely represents the highest level of education that you have achieved to date?

CODE ONE

1. Primary School
2. Secondary school, high school
3. University degree
4. Higher academic degree - e.g. masters, doctorate, MBA.
5. Formal Professional qualification (e.g. Law, Accountancy, Surveying, Architecture, Banking)
6. Still in full time education
7. Not applicable - I have no formal education

**S8 What type of school did you last attend as a pupil or student up to the age of 18?**

SINGLE CODE

1. State school (funded by the government, state or federal authorities)
2. Independent OR private school (paid for privately)
3. Special school (e.g. specialising in educating those with special abilities or disabilities),
4. Other type of school
5. Not applicable - I have no formal education

**S9 Apart from school, did you, receive any additional teaching, tuition or coaching at any stage during your school years up until the age of 18?**

MULTICODE

1. Private (one to one or small groups) tuition or coaching
2. Supplementary or additional teaching (at the weekend or evening) inside your own school.
3. Supplementary or additional teaching (at the weekend or evening) outside school.
4. Other
5. None

**S10 Which of the following best describes your current working status?**

CODE ONE

1. Working full time in the private sector <go to S11>
2. Working part time in the private sector <go to S11>
3. Working full time in the public sector (Government controlled organisations) <go to S11>

4. Working part time in the public sector (Government controlled organisations) <go to S11>
5. Not working - seeking work <go to S10A>
6. Not working - not seeking work as unavailable / looking after family / home <go to S10A >
7. Not working - not seeking work as unavailable due to illness or other reasons <go to S10A >
8. Student <go to S10A >
9. Retired <go to S11>

**S10A You said you are not currently working, have you ever been employed full or part time?**

1. Yes <go to S11>
2. No <go to S10>

**S11 What is your current occupation?**

[IF YES AT S10A OR CODE 8 AT S10] Which of the following was your previous main occupation?

**What is your occupation?**

- Teacher
- Manager, Director, Senior Official
- Professional
- Technical
- Administrative, Secretarial
- Skilled trade
- Unskilled trade, Craft
- Carer

- Sales, Customer services
- Machine operator
- Other

**In which sector do you work?**

- Agriculture, forestry, fishing
- Mining, quarrying
- Manufacturing
- Energy
- Water
- Wholesale and retail trade, repair
- Accommodation, restaurant, catering
- Transport, storage
- Financial and insurance services
- Information and communication technology
- Real estate
- Professional, scientific and technical services
- Administrative and support services
- Public administration and defence
- Education
- Health and social work
- Arts, entertainment, recreation
- Other

**IF TEACHER**

**S11T What sort of Teacher are you? Your current job description  
(Please tick as many as apply)**

**[IF YES AT S10A OR CODE 8 AT S10] What sort of Teacher were you  
in your last teaching role?]**

- Early Years, Preschool or Nursery teacher
- Primary School teacher
- Lower Secondary School teacher (ages 11-14)
- Upper Secondary School teacher (ages 15-18)
- Temporary or Supply teacher
- Assistant / Deputy Headteacher
- Headteacher / Principal
- Adult Education or Further Education teacher
- Other

**S12 Please enter your personal income BEFORE ANY TAX  
DEDUCTIONS have been made.**

**[IF YES AT S10A OR CODE 8 AT S10]**

**Please enter your personal income from your last occupation  
BEFORE ANY TAX DEDUCTIONS have been made.**

**Please write in as either an hourly daily, weekly, monthly or annual  
amount. If you have variable working patterns you can write your  
hourly wage.**

**Please round to the nearest unit in your currency and remember to  
include the full number**

SINGLE CODE ONLY ALLOW ANSWER FOR ONE TIME SCALE

1. Hourly [INSERT NUMERIC - AUTO INSERT CURRENCY SYMBOL FOR MARKET]
2. Daily [INSERT NUMERIC - AUTO INSERT CURRENCY SYMBOL FOR MARKET]
3. Weekly [INSERT NUMERIC - AUTO INSERT CURRENCY SYMBOL FOR MARKET]
4. Monthly [INSERT NUMERIC - AUTO INSERT CURRENCY SYMBOL FOR MARKET]
5. Annual [INSERT NUMERIC - AUTO INSERT CURRENCY SYMBOL FOR MARKET]
6. Refused

**S13 Can we just check is your <weekly/monthly/annual> personal income of <INSERT ANSWER FROM S10> ...**

**[IF YES AT S8A OR CODE 8 AT S8]**

**Can we just check was your <weekly/monthly/annual> personal income of <INSERT ANSWER FROM S10> ...**

CODE ONE

1. Gross salary before any tax deductions
2. Net salary after any tax deductions

**S14 How many hours do you work in an average week?**

**[IF YES AT S10A OR CODE 8 AT S10] How many hours did you work in an average week?**

[INSERT NUMERIC - MAX 100, MIN 1]

### **IF TEACHER**

**S14T How many hours do you work in an average week, including work outside school such as marking and planning lessons?**

**[IF YES AT S10A OR CODE 8 AT S10]**

**How many hours did you work in an average week, including work outside school such as marking and planning lessons?**

[INSERT NUMERIC - MAX 100, MIN 1]

**S15 How many years have you worked in your current occupation**

**[IF YES AT S10A OR CODE 8 AT S10]**

How many years did you spend working in your previous main occupation?

**S16 Do you consider yourself to be an ethnic minority in <INSERT COUNTRY>?**

CODE ONE

1. Yes
2. No
3. Prefer not to say.

**S17 What religion are you?**

We would like to remind you that this is an anonymous survey and your answers to this question will not be linked back to you by name.

- Christianity - Protestant
- Christianity - Catholic
- Christianity - Other
- Islam - Shia
- Islam - Sunni
- Hinduism
- Sikhism
- Buddhism
- Judaism
- Shinto
- Chinese folk religion /Taoism
- Christianity -Evangelical Lutheran Church of Finland
- Christianity -Pentecostal/Charismatic
- Christianity -Eastern Orthodoxy
- Christianity -Calvinism
- Christianity -Anglican
- Christianity -Presbyterian
- Christianity -Russian Orthodox
- Christianity -Swiss Reformed Church
- Other
- Agnostic / Atheist
- None
- Prefer not to answer

**IMPLICIT EXERCISE****Pre-test warm up****Actual test:****Teaching profession in your country**

Trusted/ Untrusted

Well paid/ Poorly paid

Influential/ Not influential

Inspiring/ Uninspiring

Respected/ Not respected

High status/ Low status

Hard working/ Lazy

Caring/ Uncaring

High flyer/ Mediocre

Intelligent/ Unintelligent

**TEACHER ONLY QUESTIONS****T1. Have you had a previous occupation(s) before becoming a teacher?**

1. Yes <go to T1A>
2. No <go to T2>

**T1A. How many years did you work in that previous occupation(s) before becoming a teacher?****If less than 1 year, please round to the nearest year**

OPEN ENDED NUMERIC - MAX 70 YRS, MIN 0

**T2. What are your main career aspirations for the next five years? (please tick one)**

1. Continue to Teach full time as a classroom teacher
2. Continue to Teach part time as a classroom teacher
3. Progress to a higher level within the teaching profession
4. Have a career break for family or other reasons
5. Pursue a career outside school teaching
6. Retire from Teaching
7. Something else [ANCHOR]
8. I don't know [ANCHOR]

**T3. Which of the below best describes the type of school you currently teach at?**

1. State school (funded by the government, state or federal authorities)
2. Independent OR private school (paid for privately)
3. Special school (e.g. specialising in educating those with special abilities or disabilities),
4. Other type of school
5. Not in one school (other type of teacher)

**T4. Approximately how many pupils are there in your current school, in total?**

SINGLE CODE

1. Fewer than 50
2. 50 - 99
3. 100 - 199
4. 200 - 399
5. 400 - 599
6. 600 - 999
7. 1,000 -1499
8. 1500 or more
9. I don't know

**T5. Which of the below best describes the location of the school you currently teach at?**

SINGLE CODE

- Inner city
- Suburban area
- Town
- Predominantly rural

**T6. When was the last time you engaged in formal training, or professional development (PD), related to your teaching job?**

SINGLE CODE

- A day or less within the last week
- More than a day within the last month
- A day or less within the last school term or semester
- More than a day within the last school term or semester
- A day or less within the last year
- More than a day within the last year
- More than a year ago
- I have never had formal training or professional development related to my teaching job

**MAIN QUESTIONNAIRE****ASK ALL****50/50 split rotate order of Q1 and Q2****Q1 Please rank the following 14 professions in order of how well you think they are RESPECTED. With 1 being the most respected and 14 being the least respected.****Please drag the items into the target boxes on the right of the screen.****DRAG ITEMS - RANDOMISE ORDER****[INCLUDE TIME STAMP]**

- A. Doctor
- B. Policeman
- C. Primary School Teacher
- D. Secondary School Teacher
- E. Head Teacher
- F. Lawyer
- G. Engineer
- H. Local Government Manager
- I. Accountant
- J. Librarian
- K. Management Consultant
- L. Nurse
- M. Social Worker
- N. Web Designer

**DROP BOXES**

1 - Most Respected

2

3

4

5

6

7

8

9

10

11

12

13

14 - Least Respected

**Q2 Please rank the following 14 professions in order of how well you think they are PAID.****With 1 being the most respected and 14 being the least respected.****Please drag the items into the target boxes on the right of the screen.**

RANDOMISE ORDER

**[INCLUDE TIME STAMP]**

- A. Doctor
- B. Policeman
- C. Primary School Teacher
- D. Secondary School Teacher

- E. Head Teacher
- F. Lawyer
- G. Engineer
- H. Local Government Manager
- I. Accountant
- J. Librarian
- K. Management Consultant
- L. Nurse
- M. Social Worker
- N. Web Designer

**DROP BOXES**

1 - Highest Paid

2

3

4

5

6

7

8

9

10

11

12

13

14 - Lowest Paid

**ASK ALL**

**Q3 Thinking now about the list of occupations below, which do you think is most similar to a teacher in terms of STATUS?**

**ROTATE ORDER - CODE ONE****[INCLUDE TIME STAMP]**

1. Doctor
2. Policeman
3. Lawyer
4. Engineer
5. Local Government Manager
6. Accountant
7. Librarian
8. Management Consultant
9. Nurse
10. Social Worker
11. Web Designer
12. None of these

**ASK ALL**

**Q4A We would now like you to think about both primary and secondary school teachers in your country. Approximately how much do you think is the starting salary for a full time primary school and secondary school teacher in <INSERT COUNTRY>?**

**Please enter the total amount before any tax deductions have been made.**

**Please round to the nearest unit in your currency and remember to include the full number**



**GRID****COLUMNS:****Primary school teacher****Secondary school teacher****ROWS****SINGLE CODE- MAX 3x starting salary**

1. Annual [INSERT NUMERIC - AUTO INSERT CURRENCY SYMBOL FOR MARKET]

**Q4B Can we just check is this annual starting salary estimate of a full time primary school and secondary school teacher in <INSERT COUNTRY> ...**

**CODE ONE**

1. Gross salary before any tax deductions
2. Net salary after any tax deductions

**ASK ALL**

**Q5A Again thinking about both primary and secondary school teachers in your country, what do you personally think would be a fair starting salary for a full time primary school or secondary school teacher in <INSERT COUNTRY>? Please enter the total amount before any tax deductions have been made.**

**Please round to the nearest unit in your currency and remember to include the full number.**

**GRID****COLUMNS:****Primary school teacher****Secondary school teacher****ROWS****SINGLE CODE - MAX 3x starting salary**

1. Annual [INSERT NUMERIC - AUTO INSERT CURRENCY SYMBOL FOR MARKET]

**Q5B Can we just check is your < annual> salary estimate of <INSERT ANSWER FROM Q4A> ...**

**CODE ONE**

1. Gross salary before any tax deductions
2. Net salary after any tax deductions

**Q6 If we told you that the starting salary for full time primary school teachers in <INSERT COUNTRY> is an average of <INSERT AMOUNT FROM SPREADSHEET> per annum before tax, would you say this was:**

**CODE ONE**

1. Too much
2. About right
3. Too little

**Q7 If we told you that the starting salary for full time secondary school teachers in <INSERT COUNTRY> is an average of <INSERT AMOUNT FROM SPREADSHEET> per annum before tax, would you say this was:**

**CODE ONE**

1. Too much
2. About right
3. Too little

**Q8 [GEN POP]**What is the minimum annual salary you personally would need to be paid to become a full time teacher? Please enter the total amount before any tax deductions have been made.

Please round to the nearest unit in your currency and remember to include the full number.

OPEN NUMERIC - AUTO INSERT CURRENCY SYMBOL FOR MARKET

I would never become a teacher regardless of salary

**[TEACHERS]** What is the minimum annual salary you would you personally need to be paid for you to leave teaching? **Please enter the total amount before any tax deductions have been made.**

**Please round to the nearest unit in your currency and remember to include the full number.**

OPEN NUMERIC - AUTO INSERT CURRENCY SYMBOL FOR MARKET

I would never leave teaching regardless of salary

### ASK ALL

**Q9 [ASK THIS TEXT IF CODE 2-3 AT S5]**To what extent would you encourage or not encourage your child to become a teacher?

**Q10 [ASK THIS TEXT IF CODE 1 AT S5]** Imagine you had children. To what extent do you think you would encourage or not encourage them to become a teacher?

CODE ONE - FLIP ORDER

1. Definitely encourage
2. Probably encourage
3. Maybe encourage
4. Probably not encourage
5. Definitely not encourage

**Q11a [ASK THIS TEXT IF CODE 2-3 AT S5]** To what extent do you think that the education system in <INSERT COUNTRY> provides your children with a good or poor education?

**Q11b [ASK THIS TEXT IF CODE 1 AT S5]** Again, thinking about if you had children, to what extent do you think that the education system in <INSERT COUNTRY> would provide your children with a good or poor education?

Please give your answer on a scale where 10 means 'provides an excellent education' and 0 means it 'provides a very poor education'.

CODE ONE - FLIP ORDER

10 - Provides excellent education

9

8

7

6

5

4

3

2

1

0 - Provides very poor education

**Q12. [GEN POP + TEACHERS (PAST AND CURRENT)]** On average, how many hours do you think full time primary and secondary school teachers work a week in term time (including work outside school such as marking and planning lessons)?

ROWS

Primary School teachers

Secondary School teachers

COLUMNS

OPEN NUMERIC [MAX 100, MIN 1]

**Q13. To what extent do you agree or disagree with each of the following statements in your country?**

RANDOMISE ORDER

- A. Being an effective teacher requires rigorous training
- B. It is too easy to become a teacher
- C. The quality of teachers is too variable
- D. Pupils respect teachers in my country
- E. The teachers in my children's school are respected by their pupils
- F. Teachers work hard
- G. Teachers should be rewarded in pay according to their pupils' results
- H. Teachers should be rewarded in pay for the effort they put into their job
- I. Teachers enjoy a positive media image.
- J. Teachers have long holidays
- K. Teachers have the autonomy to exercise their professional judgement

CODE ONE PER ITEM

- A. Strongly agree
- B. Tend to agree
- C. Neither agree nor disagree
- D. Tend to disagree
- E. Strongly disagree

**RANDOMISE WHICH IMAGE THEY GET:**

[TEST CELL 1]

No image

[TEST CELL 2]



[TEST CELL 3]



**ASK ALL**

**Q14. In your country, how much is currently spent, per pupil per year, on primary education?**

Don't worry if you're not sure of the answer, we're just looking for your best estimate.

0 ..... [ ] ..... 10000

**ASK ALL**

**Q15. In your country, how much is currently spent, per pupil per year, on secondary education?**

Don't worry if you're not sure of the answer, we're just looking for your best estimate.

0 ..... [ ] ..... 10000

**RANDOMISE HALF SAMPLE INTO Q16a & Q17b and HALF into Q16b & Q17b**

**Q16a. Actually, in primary education, the government spends around £4500 per pupil per year. How much do you think the government should spend?**

0 ..... [ ] ..... 10000

-I agree with the current government spend

**Q16b. How much do you think the government should spend, in primary education, per pupil per year.**

0 ..... [ ] ..... 10000

**Q17a. Actually, in secondary education, the governments spends around £6000 per pupil per year. How much do you think the government should spend?**

0 ..... [ ] ..... 10000

-I agree with the current government spend

**Q17b. How much do you think the government should spend, in secondary education, per pupil per year.**

0 ..... [ ] ..... 10000

**ASK ALL****MAX DIFF**

**Q18. Imagine the government of your country proposed extra taxes on the citizens of your country in order to spend 10% more of the state's money on something. Which of the below would your HIGHEST PRIORITY and LOWEST PRIORITY your government to spend the money on?**

**[10 OPTIONS DISPLAYED ACROSS SEVERAL SCREENS, WITH RESPONDENTS CHOOSING HIGHEST AND LOWEST PRIORITY OPTIONS. AFTER EACH SCREEN AN ANCHOR QUESTION (Q18A) WILL BE ASKED TO PROVIDE ABSOLUTE APPEAL ON THE MEASURES]**

**[BATTERY OPTIONS]**

Reducing class size in Primary schools (pupils aged 8-11 years)

Reducing class size in Secondary schools (pupils aged 12-18 years)

Employing more teachers

Higher salaries for existing teachers

Better training and professional development for teachers

Improving school buildings and computers

Employing more non-teaching staff in schools (e.g. counsellor, pastoral staff etc.)

Do not spend it on education but instead spend it on something else (e.g. healthcare)

Do not spend any extra money and keep taxes the same

### ASK ALL

**Q18a. Considering all the options listed above, do you think:**

[SINGLE CHOICE]

All of them are high priority

Some of them are high priority

None of them are high priority

### ASK ALL

**Q19 Government should redistribute income from the better off to those who are less well off.**

strongly disagree    disagree    neutral    agree    strongly agree

### ASK ALL

**Q20 Ordinary working people do not get their fair share of the nation's wealth.**

strongly disagree    disagree    neutral    agree    strongly agree

### ASK ALL

**Q21 How important is hard work for getting ahead in life?**

essential    very important    fairly important    not very important    not important at all

### ASK ALL

**Q22. Next we will ask you a few quiz questions. Please answer them as quickly and as accurately as you can.**

**A bat and ball cost £5.50. The bat cost £5.00 more than the ball. How much does the ball cost?**

[SINGLE CHOICE]

£0.25

£0.50

£5.25

Other

### ASK ALL

**Q23. If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?**

[SINGLE CHOICE]

1 minute

5 minutes

20 minutes

100 minutes

500 minutes

Other

**ASK ALL**

**Q24. In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half the lake?**

[SINGLE CHOICE]

24 days

47 days

Other



# GLOBAL TEACHER STATUS INDEX 2018







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