Strong performers and successful reformers in education
Lessons from Finland and other countries

Stanford
17 January 2012

Andreas Schleicher
Special advisor to the Secretary-General on Education Policy
Head of the Indicators and Analysis Division, EDU
A world of change – higher education

Cost per student

Expenditure per student at tertiary level (USD)

Graduate supply

Tertiary-type A graduation rate

Australia
Austria
Belgium
Canada
Chile
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Japan
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Luxembourg
Mexico
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New Zealand
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Poland
Portugal
Slovak Republic
Slovenia
Spain
Sweden
Switzerland
Turkey
United Kingdom
United States
A world of change - higher education

Expenditure per student at tertiary level (USD)

Graduate supply

Tertiary-type A graduation rate

Cost per student
A world of change – higher education

Expenditure per student at tertiary level (USD)

Tertiary-type A graduation rate

United Kingdom
A world of change - higher education

Expenditure per student at tertiary level (USD)

2001

Tertiary-type A graduation rate

Australia
A world of change - higher education

Expenditure per student at tertiary level (USD)

Tertiary-type A graduation rate
A world of change - higher education

Expenditure per student at tertiary level (USD)

Tertiary-type A graduation rate
A world of change – higher education

Expenditure per student at tertiary level (USD)

Tertiary-type A graduation rate

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A world of change - higher education

Expenditure per student at tertiary level (USD)

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Expenditure per student at tertiary level (USD)

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Sweden
Switzerland
Turkey
United Kingdom
United States

2008

Finland
A world of change – higher education

Expenditure per student at tertiary level (USD)

Tertiary-type A graduation rate

Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.

2008 United States
The composition of the global talent pool has changed...

Countries' share in the population with tertiary education, for 25-34 and 55-64 year-old age groups, percentage (2009)

55-64-year-old population

About 39 million people who attained tertiary level

25-34-year-old population

About 81 million people who attained tertiary level
The composition of the global talent pool has changed...
Countries’ share in the population with tertiary education, for 25-34 and 55-64 year-old age groups, percentage (2009)

55-64-year-old population

- United States, 35.8
- China, 6.9
- Germany, 6.3
- Japan, 12.4
- Korea, 1.6
- Australia, 1.7
- Mexico, 1.8
- Italy, 1.9
- Spain, 2.1
- Brazil, 3.5
- France, 3.5
- Canada, 4.2
- United Kingdom, 5.3
- other, 12.9

25-34-year-old population

- United States, 20.5
- China, 18.3
- Japan, 10.9
- Germany, 3.1
- United Kingdom, 4.4
- France, 4.1
- Canada, 3.1
- Brazil, 4.5
- Mexico, 3.9
- Italy, 2.0
- Spain, 3.5
- Korea, 5.7
- other, 14.5

The composition of the global talent pool has changed...
Countries’ share in the population with tertiary education, for 25-34 and 55-64 year-old age groups, percentage (2009)
...and will continue to change
Share of new entrants into tertiary education in 2009 (all OECD and G20 countries)

China, 36.6%
United States, 12.9%
Japan, 4.2%
Indonesia, 4.9%
Turkey, 3.7%
Korea, 3.1%
Mexico, 3.1%
United Kingdom, 3.3%
Argentina, 2.7%
Germany, 2.5%
Poland, 2.1%
Spain, 1.6%
Italy, 1.4%
Australia, 1.3%
Chile, 1.3%
Netherlands, 0.5%
Other countries, 4.8%

Other
Portugal 0.5%
Czech Republic 0.4%
Israel 0.4%
Sweden 0.4%
Belgium 0.4%
Hungary 0.4%
Austria 0.4%
New Zealand 0.3%
Switzerland 0.3%
Slovak Republic 0.3%
Denmark 0.2%
Norway 0.2%
Ireland 0.2%
Finland 0.2%
Slovenia 0.1%
Estonia 0.1%
Iceland 0.0%
Public cost and benefits for a man obtaining tertiary education (2007 or latest available year)

<table>
<thead>
<tr>
<th>Country</th>
<th>Public benefits</th>
<th>Public costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>193,584</td>
<td>168,649</td>
</tr>
<tr>
<td>Germany</td>
<td>167,241</td>
<td>166,872</td>
</tr>
<tr>
<td>Belgium</td>
<td>155,664</td>
<td>154,872</td>
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<tr>
<td>Hungary</td>
<td>95,322</td>
<td>95,030</td>
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<td>Slovenia</td>
<td>91,036</td>
<td>89,705</td>
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<tr>
<td>Finland</td>
<td>90,361</td>
<td>89,034</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>85,917</td>
<td>85,705</td>
</tr>
<tr>
<td>Netherlands</td>
<td>84,532</td>
<td>82,932</td>
</tr>
<tr>
<td>Poland</td>
<td>82,932</td>
<td>81,307</td>
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<tr>
<td>OECD Average</td>
<td>81,307</td>
<td>79,774</td>
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<tr>
<td>Austria</td>
<td>79,774</td>
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<td>Korea</td>
<td>76,712</td>
<td>75,182</td>
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<tr>
<td>Ireland</td>
<td>75,182</td>
<td>73,652</td>
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<tr>
<td>Australia</td>
<td>73,652</td>
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<td>56,681</td>
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<td>Sweden</td>
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<td>Spain</td>
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<td>52,092</td>
<td>50,563</td>
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<td>Turkey</td>
<td>50,563</td>
<td>49,034</td>
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</table>

Net present value
<table>
<thead>
<tr>
<th>Then</th>
<th>Now</th>
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<tbody>
<tr>
<td>Learning a place</td>
<td>Learning an activity</td>
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<tr>
<td>Prescription</td>
<td>Informed profession</td>
</tr>
<tr>
<td>Delivered wisdom</td>
<td>User-generated wisdom</td>
</tr>
<tr>
<td>Uniformity</td>
<td>Embracing diversity</td>
</tr>
<tr>
<td>Conformity</td>
<td>Ingenious</td>
</tr>
<tr>
<td>Curriculum-centred</td>
<td>Learner-centred</td>
</tr>
<tr>
<td>Provision</td>
<td>Outcomes</td>
</tr>
</tbody>
</table>

Bureaucratic look-up \(\rightarrow\) Devolved - look outwards
How the demand for skills has changed
Economy-wide measures of routine and non-routine task input (US)

The dilemma for education and training:
The skills that are easiest to teach and test are also the ones that are easiest to digitise, automate and outsource

(Levy and Murnane)
PISA 2009 in brief

- Over half a million students... representing 28 million 15-year-olds in 74* countries/economies
- took an internationally agreed 2-hour test...
  - Goes beyond testing whether students can reproduce what they were taught...
  - to assess students’ capacity to extrapolate from what they know and creatively apply their knowledge in novel situations
- and responded to questions on...
  - their personal background, their schools and their engagement with learning and school
- Parents, principals and system leaders provided data on...
  - school policies, practices, resources and institutional factors that help explain performance differences.

* Data for Costa Rica, Georgia, India, Malaysia, Malta, Mauritius, Venezuela and Vietnam will be published in December 2011.
PISA 2009 in brief

- **PISA seeks to...**

  - Support governments to prepare students...
    - to deal with more rapid change than ever before...
    - for jobs that have not yet been created...
    - using technologies that have not yet been invented...
    - to solve problems that we don’t yet know will arise

  - Provide a basis for policy dialogue and global collaboration in defining and implementing educational goals, policies and practices
    - Show countries what achievements are possible
    - Help governments set policy targets in terms of measurable goals achieved elsewhere
    - Gauge the pace of educational progress
    - Facilitate peer-learning on policy and practice.
**PISA 2009 in brief**

- **Key principles**
  - ‘Crowd sourcing’ and collaboration
    - PISA draws together leading expertise and institutions from participating countries to develop instruments and methodologies... ... guided by governments on the basis of shared policy interests
  - Cross-national relevance and transferability of policy experiences
    - Emphasis on validity across cultures, languages and systems
    - Frameworks built on well-structured conceptual understanding of assessment areas and contextual factors
  - Triangulation across different stakeholder perspectives
    - Systematic integration of insights from students, parents, school principals and system-leaders
  - Advanced methods with different grain sizes
    - A range of methods to adequately measure intended constructs with different grain sizes to serve different decision-making needs
    - Productive feedback, at appropriate levels of detail, to fuel improvement at multiple levels.
What 15-year-olds can do
Average performance of 15-year-olds in reading - extrapolate and apply

Performance distribution in US
18% do not reach baseline Level 2 (16% when excluding immigrants) (Finland 6%, Canada 9%)
10% are top performers (Shanghai 20%)

Economic cost: 72 trillion $
PISA OECD Programme for International Student Assessment

Strong performers and successful reformers
Andreas Schleicher
Stanford, 17 January 2012

Average performance of 15-year-olds in science – extrapolate and apply

Low average performance
Large socio-economic disparities

High average performance
Large socio-economic disparities

High reading performance

Socially equitable distribution of learning opportunities

Strong socio-economic impact on student performance

Macao-China
Slovak Republic, Czech Republic
Israel
Luxembourg
Austria
Dubai (UAE)

Low average performance

High social equity

Low reading performance

Low reading performance

High social equity

Singapore
New Zealand
Japan
Australia
Belgium
Switzerland
United States
Germany
Sweden
France
Ireland
Hungary
United Kingdom

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Strong performers and successful reformers

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Low average performance
Large socio-economic disparities

High average performance

High social equity

Strong socio-economic impact on student performance

Socially equitable distribution of learning opportunities

Australia
Belgium
Canada
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Mexico
Netherlands
New Zealand
Norway
Poland
Portugal
Spain
Sweden
Switzerland
UK
US

2009
High performing systems often prioritize the quality of teachers over the size of classes.

Contribution of various factors to upper secondary teacher compensation costs per student as a percentage of GDP per capita (2004).

- Salary as % of GDP/capita
- Instruction time
- 1/teaching time
- 1/class size

Percentage points

Portugal, Spain, Switzerland, Belgium, Korea, Luxembourg, Germany, Greece, Japan, Australia, United Kingdom, New Zealand, France, Netherlands, Denmark, Italy, Austria, Czech Republic, Hungary, Norway, Iceland, Ireland, Mexico, Finland, Sweden, United States, Poland, Czech Republic...
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High average performance
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US
**OECD Programme for International Student Assessment**

**Strong performers and successful reformers**
Andreas Schleicher
Stanford, 17 January 2012

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**Large socio-economic disparities**

- Low average performance
- High socio-economic impact on student performance

- Strong socio-economic impact on performance
- Large socio-economic disparities

---

**High average performance**

- High average performance
- Large socio-economic disparities

---

- High reading performance
- High social equity
- Socially equitable distribution of learning opportunities

---

**Other rapid improvers in reading:**
Peru, Indonesia, Latvia, Israel and Brazil

**Rapid improvers in mathematics:**
Mexico, Brazil, Turkey, Greece, Portugal, Italy and Germany

**Rapid improvers in science:**
Qatar, Turkey, Portugal, Korea, Brazil, Colombia, Italy, Norway, United States, Poland
Changes in performance by type of task

- **Multiple-choice - reproducing knowledge**
  - OECD: 0.8
  - Japan: 1.7

- **Open-ended - constructing knowledge**
  - OECD: 1.7
  - Japan: 6.5

OECD Programme for International Student Assessment (PISA)

Andreas Schleicher
Stanford, 17 January 2012
School performance and socio-economic background

United States

- Private school
- Public school in rural area
- Public school in urban area

Student performance

Disadvantage

PISA Index of socio-economic background

Advantage
School performance and socio-economic background

Finland

Score

Thousands

Student performance

Disadvantage

PISA Index of socio-economic background

Advantage

Private school

Public school in rural area

Public school in urban area

Thousands
Resilient student: Comes from the bottom quarter of the socially most disadvantaged students but performs among the top quarter of students internationally (after accounting for social background).
Does it all matter?
Increased likelihood of postsec. particip. at age 19/21 associated with PISA reading proficiency at age 15 (Canada) after accounting for school engagement, gender, mother tongue, place of residence, parental, education and family income (reference group PISA Level 1).
What does it all mean?
Strong performers and successful reformers
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Tools
Standards
Curricula
Technology

Design, implementation and alignment of policies

Selection
Recruitment
Principals
Assessments
Development
Supervision
Retention

People
Teachers
Principals
Support personnel
Families

Processes
Selection
Preparation
Recruitment/induction
Work organisation
Development
Supervision
Retention

Support systems
Student learning
Practices
Instruction
Intervention
PISA: OECD Programme for International Student Assessment

Strong performers and successful reformers
Andreas Schleicher
13 October 2011

Policies and practices

Learning climate
- Discipline
- Teacher behaviour
- Parental pressure
- Teacher-student relationships

Dealing with heterogeneity
- Grade repetition
- Prevalence of tracking
- Expulsions
- Ability grouping (all subjects)

Standards /accountability
- Nat. examination
- Standardised tests

Policy System

School

Equity
- A commitment to education and the belief that competencies can be learned and therefore all children can achieve
  - Universal educational standards and personalisation as the approach to heterogeneity in the student body...
  ... as opposed to a belief that students have different destinations to be met with different expectations, and selection/stratification as the approach to heterogeneity
  - Clear articulation who is responsible for ensuring student success and to whom

Resources where they yield most

Incentives and accountability
Strong performers and successful reformers
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High average performance
Large socio-economic disparities

New Zealand
Japan

Australia
Belgium

United States
Sweden

France
Ireland

United Kingdom

Slovenia

Czech Republic
Slovak Republic

Austria

Dubai (UAE)

High degree of stratification
Low degree of stratification

Socially equitable distribution of learning opportunities

High social equity

High reading performance

High average performance

High reading performance

Low average performance

High social equity

2009

Low reading performance

Shanghai-China
Korea
Finland
Hong Kong-China

Canada

Netherlands
Norway

Iceland

Estonia

Liechtenstein

Chinese Taipei

Denmark

Italy

Latvia

Greece

Spain

Portugal

Croatia

Lithuania

Turkey

Russian Federation

High degree of stratification

Low degree of stratification

Early selection and institutional differentiation
Clear ambitious goals that are shared across the system and aligned with high stakes gateways and instructional systems

- Well established delivery chain through which curricular goals translate into instructional systems, instructional practices and student learning (intended, implemented and achieved)
- High level of metacognitive content of instruction
Capacity at the point of delivery

- Attracting, developing and retaining high quality teachers and school leaders and a work organisation in which they can use their potential
- Instructional leadership and human resource management in schools
- Keeping teaching an attractive profession
- System-wide career development
Teacher in-service development

- No matter how good the pre-service education for teachers is...
  - it cannot prepare teachers for rapidly changing challenges throughout their careers

- High-performing systems rely on ongoing professional to...
  - update individuals’ knowledge of a subject in light of recent advances
  - update skills and approaches in light of new teaching techniques, new circumstances, and new research
  - enable teachers to apply changes made to curricula or teaching practice
  - enable schools to develop and apply new strategies concerning the curriculum and teaching practice
  - exchange information and expertise among teachers and others
  - help weaker teachers become more effective.

- Effective professional development is on-going...
  - includes training, practice and feedback, and adequate time and follow-up support
Percentage of teachers without mentoring and induction

- No formal induction process
- No formal mentoring process

Source: OECD, TALIS Table 3.6 (Fig. 2.1 Building a High-Quality Teaching Profession)
Relatively few teachers participate in the kinds of professional development which they find has the largest impact on their work.

Comparison of teachers participating in professional development activities and teachers reporting moderate or high level impact by types of activity.

**TALIS Average**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Impact</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual and collaborative research</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Qualification programmes</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>Informal dialogue to improve teaching</td>
<td>70</td>
<td>30</td>
</tr>
<tr>
<td>Reading professional literature</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>Courses and workshops</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>Professional development network</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>Mentoring and peer observation</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Observation visits to other schools</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Education conferences and seminars</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>
Relatively few teachers participate in the kinds of professional development which they find has the largest impact on their work.

Comparison of teachers participating in professional development activities and teachers reporting moderate or high level impact by types of activity.

TALIS Average

- Individual and collaborative research
- Qualification programmes
- Informal dialogue to improve teaching
- Reading professional literature
- Courses and workshops
- Professional development network
- Mentoring and peer observation
- Observation visits to other schools
- Education conferences and seminars

Font: OECD Tables 1.2 y 3.5
Incentives, accountability, knowledge management

- Aligned incentive structures
  
  For students
  - How gateways affect the strength, direction, clarity and nature of the incentives operating on students at each stage of their education
  - Degree to which students have incentives to take tough courses and study hard
  - Opportunity costs for staying in school and performing well
  
  For teachers
  - Make innovations in pedagogy and/or organisation
  - Improve their own performance and the performance of their colleagues
  - Pursue professional development opportunities that lead to stronger pedagogical practices

- A balance between vertical and lateral accountability
- Effective instruments to manage and share knowledge and spread innovation - communication within the system and with stakeholders around it
- A capable centre with authority and legitimacy to act
How much autonomy individual schools have over curricula and assessment

Establishing student assessment policies, OECD average
- Finland

Choosing which textbooks are used, OECD average
- Finland

Determining course content, OECD average
- Finland

Deciding which courses are offered, OECD average
- Finland

- Only "regional and/or national education authority"
- Both "principals and/or teachers" and "regional and/or national education authority"
- Only "principals and/or teachers"
How much autonomy individual schools have over resource allocation

Selecting teachers for hire, OECD average

- Finland

Firing teachers, OECD average

- Finland

Establishing teachers' starting salaries, OECD average

- Finland

Determining teachers' salaries increases, OECD average

- Finland

Formulating the school budget, OECD average

- Finland

Deciding on budget allocations within the school, OECD average

- Finland

- Only "regional and/or national education authority"

- Both "principals and/or teachers" and "regional and/or national education authority"

- Only "principals and/or teachers"
School autonomy, accountability and student performance

Impact of school autonomy on performance in systems with and without accountability arrangements

- School autonomy in resource allocation
- Systems with more autonomy
- Systems with less autonomy
- Schools with more autonomy
- Schools with less autonomy

System's accountability arrangements

PISA score in reading
500
498
495
489
493
490
480

School autonomy in resource allocation

Systems with more accountability

Systems with less accountability

Impact of school autonomy on performance in systems with and without accountability arrangements
Local responsibility and system-level prescription

System-level prescription
'Tayloristic' work organisation
Schools today
The industrial model, detailed prescription of what schools do

Schools tomorrow?
Building capacity

Finland today
Every school an effective school

Schools leading reform
Teachers as 'knowledge workers'

Trend in OECD countries
Public and private schools

- Government schools
- Government dependent private
- Government independent private

Observed performance difference
Difference after accounting for socio-economic background of students and schools

Score point difference

Private schools perform better
Public schools perform better

Australia, Austria, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States, Argentina, Brazil, Hong Kong-China, Indonesia, Jordan, Russian Federation, Shanghai-China, Singapore, Chinese Taipei.
Lessons from PISA on successful education systems

- Investing resources where they can make most of a difference
  - Alignment of resources with key challenges (e.g. attracting the most talented teachers to the most challenging classrooms)
  - Effective spending choices that prioritise high quality teachers over smaller classes
A learning system

- An outward orientation to keep the system learning, technology, international benchmarks as the ‘eyes’ and ‘ears’ of the system
- Recognising challenges and potential future threats to current success, learning from them, designing responses and implementing these
Some teachers are left alone

Teachers who received no appraisal or feedback and teachers in schools that had no school evaluation in the previous five years.

Countries are ranked in descending order of the percentage of teachers who have received no appraisal or feedback.

Source: OECD. Table 5.1 and 5.3
Coherence of policies and practices

- Alignment of policies across all aspects of the system
- Coherence of policies over sustained periods of time
- Consistency of implementation
- Fidelity of implementation (without excessive control)
PISA
OECD Programme for International Student Assessment

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PISA
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Strong performers and successful reformers

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Low skills and social outcomes

Odds ratios

- Has fair to poor health
- Does not volunteer for charity or non-profit organizations
- Poor understanding of political issues facing country
- Poor level of general trust
- Higher propensity of believing people try to take advantage of others
- Lower propensity to reciprocate
- Poor political efficacy

Odds are adjusted for age, gender, and immigration status.