

Economic Studies 161



Olof Rosenqvist

Essays on Determinants of Individual Performance  
and Labor Market Outcomes



Olof Rosenqvist

Essays on Determinants of Individual Performance  
and Labor Market Outcomes



UPPSALA  
UNIVERSITET

Department of Economics, Uppsala University

Visiting address: Kyrkogårdsgatan 10, Uppsala, Sweden

Postal address: Box 513, SE-751 20 Uppsala, Sweden

Telephone: +46 18 471 00 00

Telefax: +46 18 471 14 78

Internet: <http://www.nek.uu.se/>

---

## ECONOMICS AT UPPSALA UNIVERSITY

The Department of Economics at Uppsala University has a long history. The first chair in Economics in the Nordic countries was instituted at Uppsala University in 1741.

The main focus of research at the department has varied over the years but has typically been oriented towards policy-relevant applied economics, including both theoretical and empirical studies. The currently most active areas of research can be grouped into six categories:

- \* Labour economics
  - \* Public economics
  - \* Macroeconomics
  - \* Microeconometrics
  - \* Environmental economics
  - \* Housing and urban economics
- 

Additional information about research in progress and published reports is given in our project catalogue. The catalogue can be ordered directly from the Department of Economics.

Dissertation presented at Uppsala University to be publicly examined in Ekonomikum, Hörsal 2, Kyrkogårdsgatan 10, Uppsala, Friday, 9 September 2016 at 13:15 for the degree of Doctor of Philosophy. The examination will be conducted in English. Faculty examiner: Professor Ghazala Azmat (Queen Mary University of London).

### **Abstract**

Rosenqvist, O. 2016. Essays on Determinants of Individual Performance and Labor Market Outcomes. *Economic studies* 161. 151 pp. Uppsala: Department of Economics, Uppsala University. ISBN 978-91-85519-68-2.

**Essay 1 (with Oskar Nordström Skans):** This paper provides field evidence on the causal impact of past successes on future performances. Since persistence in success or failure is likely to be linked through, potentially time-varying, ability it is intrinsically difficult to identify the causal effect of succeeding on the probability of performing well in the future. We therefore employ a regression discontinuity design on data from professional golf tournaments exploiting that almost equally skilled players are separated into successes and failures half-way into the tournaments (the “cut”). We show that players who (marginally) succeeded in making the cut substantially increased their performance in subsequent tournaments relative to players who (marginally) failed to make the cut. This success-effect is substantially larger when the subsequent (outcome) tournament involves more prize money. The results therefore suggest that past successes provide an important prerequisite when performing high-stakes tasks.

**Essay 2:** Recent experimental evidence suggests that women in general are more discouraged than men by failures which potentially can explain why women, on average, are less likely than men to reach top-positions in firms. This paper provides the first quasi-experimental evidence from the field on this issue using data from all-female and all-male professional golf tournaments to see if this result can be replicated among competitive men and women. These top-performing men and women are active in an environment with multiple rounds of competition and the institutional set-up of the tournaments makes it possible to causally estimate the effect of the result in one tournament on the performance in the next. The results show that both male and female golfers respond negatively to a failure and that their responses are virtually identical. This finding suggests that women’s difficulties in reaching top-positions in firms are caused by external rather than internal barriers.

**Essay 3:** Voting is a fundamental human right. Yet, individuals that are younger than 18 do typically not have this right since they are considered uninformed. However, recent evidence tentatively suggests that the political knowledge of youths is endogenous to the voting age. I test for the existence of such dynamic adjustments utilizing voting age discontinuities caused by Swedish laws. I employ a regression discontinuity strategy on Swedish register data to estimate the causal effect of early age voting right on political knowledge around age 18. The results do not support the existence of positive causal effects of early age voting right on political knowledge. Thus, we should not expect that 16-year-olds respond by acquiring more political knowledge if they are given the right to vote. This finding weakens the case for a lowering of the voting age from 18 to 16.

**Essay 4 (with Lena Hensvik):** We postulate that firms’ production losses from absence depend on the employees’ internal substitutability, incentivizing firms to keep absence low in positions with few substitutes. Using Swedish employer-employee data we show that absence is substantially lower in such positions even conditional on establishment and occupation fixed effects. The result reflects sorting on both entry and exit margins, with stronger separations responses when it was difficult to predict the absence of the employees beforehand. These findings highlight that internal substitution insures firms against production disruptions caused by absence and that absence costs are important aspects of firms’ hiring and separations decisions.

*Keywords:* Confidence, success, failure, performance, regression discontinuity design, golf, gender differences, glass ceiling, voting age, political knowledge, civic interest, dynamic effects, sickness absence, production disruption, coworker substitutes, hiring decisions, separations

*Olof Rosenqvist, Department of Economics, Box 513, Uppsala University, SE-75120 Uppsala, Sweden.*

© Olof Rosenqvist 2016

ISSN 0283-7668

ISBN 978-91-85519-68-2

urn:nbn:se:uu:diva-296299 (<http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-296299>)

# List of Papers

This thesis is based on the following papers:

1. Rosenqvist, O., Nordström Skans, O. (2015). Confidence enhanced performance? – The causal effect of success on future performance in professional golf tournaments. *Journal of Economic Behavior & Organization*, 117:281–295
2. Rosenqvist, O. (2016). Is there a gender difference in the ability to deal with failures? Evidence from professional golf tournaments. (In manuscript).
3. Rosenqvist, O. (2016). Rising to the occasion? Youth political knowledge and the voting age. (In manuscript).
4. Rosenqvist, O., Hensvik, L. (2016). The strength of the weakest link: Sickness absence, internal substitution and worker-firm matching. (In manuscript).

Reprints were made with permission from the respective publishers.



# Acknowledgements

Writing a Ph.D. thesis is very much like playing a round of golf. You start off on the first tee full of confidence and new ideas thinking that this will be the day when everything comes together. But soon you realize that the wind is strong and that your new swing ideas weren't that solid after all. Every hole becomes a struggle and you are forced to hit shots that you didn't know existed. When you finally reach the 18<sup>th</sup> green you are tired but also stimulated and your thoughts circle around one thing: how can I improve?

Holing out on the 18<sup>th</sup> green without exceeding the stipulated number of strokes requires that you are surrounded by good people that stop you from going out-of-bounds or into the water. My coach and supervisor Oskar Nordström Skans has done just that. Throughout my doctoral studies he has given me invaluable support through his enthusiastic attitude, his strategic thinking and his honest way of delivering critique. I would like to thank you for making my time as a Ph.D. student so stimulating and exciting.

Many thanks also go to my assistant supervisor Lena Hensvik for keeping my eyes on the ball and giving practical and constructive comments on my ideas and manuscripts. It has been a pleasure doing research with you and you have taught me valuable things about writing and working with data along the way. My gratitude further goes out to my licentiate-opponent Erik Lindqvist and my final seminar discussant Anna Sandberg for giving clear and constructive feedback on the papers included in this thesis. I would also like to thank Uta Schönberg for making it possible for me to stay a semester at University College London. This visit gave interesting insights into the international academic world and provided excellent opportunities for personal development.

I started my time as a Ph.D. student at the Department of Economics at Uppsala University but have spent the bulk of the time at the Institute for Evaluation of Labour Market and Education Policy (IFAU) in Uppsala. I would like to thank the administrative staff at both these organizations for very professional and effective support during the writing of my Ph.D. thesis. Furthermore I would like to thank my first-year companions Daniel, Evelina, George, Gunnar, Jacob, Josefine, Justice, Kristin and Sebastian for all the support and kindness you have given me. At IFAU I am grateful to Olof Åslund for giving me the chance to spend time in an environment with so many experienced researchers, and to all the people there who have been very welcoming. Special thanks go to Björn Ö, Kalle and Martin L who have provided valuable comments on my work and to Ali for our intense table tennis sessions.

I also wish to express my gratitude to friends and family. Thanks to Fredrik, my childhood friend, for always challenging me to go further and to Johan for making my time in Uppsala so enjoyable. I am lucky to have a loving family who has always supported and encouraged my academic ambitions. I would like to thank my parents, Kurre and Liane, for their unreserved love and my two older brothers, Björn and Eric, for paving the way for me and learning me about life.

My thoughts especially go to my beloved fiancée Linda. Ever since we met you have kept my heart warm through your love and my mind sharp through your delicious and nutritious vegan food. Without you as my caddie I wouldn't have made the cut. Thanks also to Signe and Zacke for lightning up my life.

Finally I would like to express my gratitude to the game of golf which over the years has stimulated my private as well as my professional life (you don't say). This great game has made major contributions to this thesis which I wish to repay by spreading the virtues of the game as described in the poem by Paul Bertholy:

What is Happiness?

Golf is happiness for  
Happiness is achievement.  
The father of achievement is motivation  
The mother is encouragement.  
The fine golf swing is truly achievement  
Man may lie, cheat, and steal for gain.  
But, these will never gain the golf swing  
To gain the golf swing man must work.  
Yet it is work without toil  
It is exercise without the boredom.  
It is intoxication without the hangover  
It is stimulation without the pills.  
It is failure yet its successes shine even more brightly  
It is frustration yet it nourishes patience.  
It irritates yet its soothing is far greater  
It is futility yet it nurtures hope.  
It is defeating yet it generates courage  
It is humbling yet it ennobles the human spirit.  
It is dignity yet it rejects arrogance  
Its price is high yet its rewards are richer  
Some say it's a boy's pastime yet it builds men  
It is a buffer for the stresses of today's living.  
It cleanses the mind and rejuvenates the body  
It is these things and many more.  
For those of us who know it and love it  
Golf is truly happiness.

Uppsala, June 2016  
Olof Rosenqvist

# Contents

Introduction.....	13
Essay 1: Confidence enhanced performance? – The causal effect of success on future performance in professional golf tournaments .....	21
1 Introduction .....	22
2 Empirical strategy .....	25
2.1 A stylized model .....	25
2.2 Empirical specification .....	26
3 Institutions and data .....	27
3.1 European professional golf tournaments .....	27
3.2 Data.....	28
3.3 Descriptive statistics .....	29
4 Validity and results.....	30
4.1 Validity of the empirical strategy .....	30
4.2 Main results .....	35
4.3 Confidence effects for different types of players.....	42
4.4 The role of tournament stakes.....	43
5 Conclusions .....	45
References .....	46
Appendix A: Protocol for selection of tournaments.....	49
Essay 2: Is there a gender difference in the ability to deal with failures? Evidence from professional golf tournaments .....	51
1 Introduction .....	52
2 Data .....	54
2.1 General description .....	54
2.2 Descriptive statistics .....	56
3 Empirical strategy .....	58
3.1 Empirical model.....	58
3.2 Validity of the empirical strategy .....	60
4 Results .....	64
4.1 Main results .....	64
4.2 Robustness checks: model variations, experience and prize money .....	67
4.3 Additional results: high and low stakes .....	69
4.4 Additional results: good and bad days.....	73

5 Conclusion.....	74
References .....	76
Appendix A: Additional results.....	78
Essay 3: Rising to the occasion? Youth political knowledge and the voting age.....	79
1 Introduction .....	80
2 Related literature, political knowledge and measurements .....	84
2.1 Voting at an early age.....	84
2.2 Political knowledge: Definition, importance and measurement....	85
2.3 Measures of political knowledge and political interest used in this paper.....	86
3 Institutional setting and data.....	89
3.1 Institutional setting: Elections in Sweden.....	89
3.2 Data: Sample restrictions.....	90
3.3 Data: Descriptive statistics .....	91
4 Empirical specification.....	93
5 Results.....	94
5.1 Tests of the identifying assumption.....	94
5.2 Main results .....	99
5.3 Heterogeneity analyses.....	105
6 Conclusion.....	107
References .....	109
Appendix A: Additional information on measures .....	112
Appendix B: Additional results.....	113
Essay 4: The strength of the weakest link: Sickness absence, internal substitution and worker-firm matching.....	119
1 Introduction .....	120
2 Data .....	123
2.1 Definitions and measurements.....	123
2.2 Descriptive statistics .....	126
3 Empirical strategy and findings.....	126
3.1 Empirical specification .....	126
3.2 Baseline results: employee substitutes and absence .....	128
3.3 Evidence from child sick spells .....	130
3.4 Robustness checks .....	131
3.5 Behavior vs. entry and separation responses .....	134
3.6 The role of information.....	136
4 Conclusions .....	138
References .....	139
Appendix A: Additional figures and tables.....	143

# Introduction

This thesis consists of four self-contained essays. The general purpose of the thesis has been to investigate the extent to which factors beyond ability (intelligence) and education affect individuals' performance and shape their labor market outcomes. Understanding and paying attention to the subtleties that determine our ability to perform complex tasks and that influence our career paths is essential for forming welfare-enhancing policies and for explaining patterns on the labor market. I study three broad and potentially important determinants of performance and labor market outcomes: confidence, motivation and health.

The research on confidence is based on data from professional golf tournaments while the other topics are studied through empirical analyses of Swedish register data with rich information on, among other things, individuals' labor market outcomes.

The first two essays specifically study the causal effect of a previous success, which is assumed to build *confidence*, on current performance among individuals participating in professional golf tournaments. The third essay investigates whether having the right to vote at an early age, which is assumed to increase the *motivation* to acquire political knowledge, improves the high school grade in Social Studies. The fourth essay considers how *health* and especially sickness absence shape labor market outcomes and career opportunities. I discuss these three themes below in turn.

## Confidence

It has long been known that human performance is sensitive to emotions and stereotypes (see, e.g., Ellis et al. [1997] and Steele and Aronson [1995]). At the same time, humans are known to exaggerate previous successes and forget previous failures, so that they think of themselves more highly than others do (see, e.g., Guthrie [2001] and Weinstein [1980]). In an interesting theoretical contribution, Compte and Postlewaite (2004) suggest that the latter behavior is an adaption to the former sensitivity. Their argument builds on the notion that confidence enhances performance and that the perceived empirical frequency of success affects confidence levels. Thus, according to Compte and Postlewaite (2004), it can actually be rational and welfare-enhancing to have positively biased recollections of previous performances.

Of course, this reasoning relies on a positive causal relationship going from confidence to performance. Although intuitively reasonable, this rela-

tionship has proven hard to show empirically. If confidence is defined by previous successes and failures, there will typically be a positive relationship between confidence and genuine ability since more able individuals more often succeed. Thus, regressing current performance on past outcomes leads to biased estimates, since the underlying ability is correlated with both current performance and past outcomes. Estimating the causal effect of confidence on performance instead requires a situation where ability can be held constant.

Situations like that are rare in naturally occurring settings which, up to this point, has led researchers to investigate the question using laboratory experiments where assignment to success and failure can be manipulated at the will of the researchers. These studies typically find that successful outcomes improve subsequent performance, while failures worsen future performance (see Gill and Prowse [2014] and Bélanger et al. [2013]). But do the results hold true in a real-world situation where the stakes are high?

This is the question that Oskar Nordström Skans and I try to answer in Essay 1 using data from male professional golf tournaments which offer an opportunity to study almost equally skilled players that experience successes and failures. Golf tournaments are played over four days (typically Thursday–Sunday) and 18 holes are played each day. Roughly 140 players participate in the typical tournament. Only players that are tied for 65<sup>th</sup> place or better after two days are qualified for the remaining two days and all of them will receive at least some prize money. Players who do not qualify must leave the tournament and receive no prize money at all, making participation a financial loss. Players close to the qualification threshold have performed almost equally well (i.e. they have almost the same ability) but will arguably remember the tournament differently in terms of success and failure.

We use a regression discontinuity design to compare the performance of marginally successful and unsuccessful players in the subsequent tournament, which is played the next week. We can thereby remove the confounding influence of underlying ability and estimate the causal effect of success, which is assumed to build confidence, on performance. We find that marginally successful players substantially outperform marginally unsuccessful players in the next tournament. Marginally successful players are about three percentage points more likely to pass the qualification threshold in the next tournament and use 0.25 fewer shots after two rounds. This finding shows that confidence in one's own ability is also crucial for human performance in high stakes real-world situations, which confirms the relevance of the hypothesis that it is rational and welfare-enhancing to have positively biased recollections of previous performances.

In Essay 2, I complement the analysis with more data from female professional golf tournaments. It has been suggested in previous research that women become more discouraged than men by experiencing failures and that this might be one explanation for why women are underrepresented in

top-positions in firms and other organizations (see Gill and Prowse [2014]). In competitive environments, individuals are bound to occasionally experience failures and if those failures worsen future performance more for women than for men, then initially unsuccessful women might face problems making future career advancements. Some women might also avoid competition intensive careers altogether if they anticipate these dynamics.

The hypothesis of gender differences in the performance response to previous failure has, however, not been tested using data from real-world situations with repeated competition. In Essay 2, I do just that using data from all-male and all-female professional golf tournaments. Using the same empirical strategy as in Essay 1, I find that the difference in current performance between previously marginally successful and marginally unsuccessful players is virtually the same for men and women. This result, although from a rather particular empirical context, suggests that men and women are actually equally sensitive to previous competitive outcomes, which indicates that gender differences in the ability to cope with failure is an unlikely explanation for the underrepresentation of women in top-positions on the labor market.

## Motivation

As economists, we think it is important for policy-makers to consider potential dynamic effects of changes in policies and laws. Individuals might, e.g., adjust their labor supply in response to a change in the income tax, making fiscal calculations based on a static world misleading. Similarly, it is also important to take motivation or incentives into account in areas outside pure economics. In Essay 3, I therefore step into the world of political science to investigate whether a lower voting age can have dynamic effects with respect to the level of political knowledge among young people, i.e. is the level of political knowledge at age 16 greater if an individual can vote at age 16 rather than at age 18?

This piece of research is motivated in part by the recent popular debate in many western countries, including Sweden, about the appropriate voting age, and also by two studies that have examined the level of political knowledge for different age groups in the UK and Austria. The voting age in the UK is 18, and that has been the case for several decades, whereas the voting age in Austria was lowered to 16 in 2007. The study carried out in the UK (Chan and Clayton [2006]) used data from 1991 and 2001 and investigated the level of political knowledge among individuals who were at least 16 years of age. They found a clear age gradient in political knowledge, with 16-year-olds exhibiting the worst results. Based on this result, the researchers suggested that the voting age should not be lowered to 16 in the UK. Note that this conclusion was reached under a voting age regime of 18. The study carried out in Austria (Wagner, Johann and Kritzinger [2012]) used data from 2009 and performed a similar analysis. Contrary to the first study, they

found that 16-year-olds possessed virtually the same level of political knowledge as their somewhat older fellow citizens and based on that finding, they concluded that a voting age of 16 was reasonable. Wagner, Johann and Kritzinger (2012) also suggested that their study had a substantial advantage compared to Chan and Clayton (2006), since their conclusion was reached under a voting age regime of 16. They argue that this is important because 16-year-olds might become more politically knowledgeable simply because they are given the right to vote.

But the diverging results in Chan and Clayton (2006) and Wagner, Johann and Kritzinger (2012) could also potentially be explained by cross-country differences other than the voting age between the UK and Austria, such as the school system. In Essay 3, I therefore investigate the hypothesis that having the right to vote increases the motivation to become politically knowledgeable in a more controlled framework. Conceptually, I try to answer the following question: Consider a pair of twins, where one of the twins can vote at 16 and the other at 18. Will the twin who can vote at 16 exhibit higher levels of political knowledge at age 16 than the other twin, since he or she has stronger incentives to learn about the political system and the different political alternatives? Empirically, I answer this question by comparing the high school grade in Social Studies of individuals who turn 18 just before and just after a major election in Sweden. This allows me to estimate the causal effect of early age voting right on levels of political knowledge around age 18. I find that individuals turning 18 just before and just after a major election in Sweden exhibit virtually identical levels of political knowledge around or shortly after age 18. Even though I study 18-year-olds rather than 16-year-olds, this result generally indicates that having the right to vote does not make young individuals more motivated to learn about politics and society.

Thus, while lowering the voting age to 16 might be reasonable based on general human rights considerations, we should not expect 16-year-olds to become more engaged in and more knowledgeable about society just because they are given the right to vote.

## Health

Sickness absence rates are rising in Sweden and in many other European countries. While high absence rates and associated sickness insurance expenditures are generally acknowledged as a major national fiscal problem that needs to be tackled, less focus has been given to the individual consequences of sickness absence. By definition, sickness absence is of course associated with different degrees of suffering for the sick individual, but can it also lead to adverse consequences on the labor market, such as decreased access to certain types of jobs?

This is the question that Lena Hensvik and I study in Essay 4. Our starting point is the idea that there are complementarities between job characteristics

and worker characteristics that can lead to match-specific gains in productivity (see Sattinger [1975] and Tinbergen [1956] for the origin of this idea). A substantial part of the research in labor economics is devoted to how firms and workers search for their optimal partners and how this affects wages and job separation patterns. While the focus of this research has been on complementarities between workers' skills and the skill requirement of different jobs (see, e.g., Abowd et al. [2007], Andersson et. al [2009] and Lazear [2009]), little is known about how other worker characteristics, such as health, go along with different types of jobs.

In Essay 4, we test the novel hypothesis that there is a positive association between individuals' sickness absence probabilities and their degree of substitutability on the workplace. The fundamental idea is that firms are reluctant to hire individuals with high sickness absence probability for jobs that require skills that few other employees on the workplace possess. Absence from those kinds of jobs can lead to major production disruptions for a firm, since nobody on the workplace can fill the position and carry out the associated tasks. Conceptually, think of a workplace in which all employees are dependent on IT services, but that can only afford to employ one IT technician. If the IT technician is absent, the rest of the employees may face problems performing their work.

We measure sickness absence by a dummy for receiving sickness pay (i.e. being absent more than 14 days) and substitutability by the number of other employees in the same combination of workplace and occupation (i.e. potential *substitutes*).

We reach four major conclusions. First, in the cross-section, it is clear that having few substitutes is associated with low sickness absence. Second, *new hires* in jobs with relatively few substitutes had significantly lower *pre-hire* sickness absence than new hires in jobs with a relatively high number of substitutes. Third, by following individuals over time, we can see that the same individual has significantly lower sickness absence when he or she works in a job with few substitutes than when he or she works in a job with a relatively high number of substitutes. Fourth, exhibiting sickness absence in a job with few substitutes is more strongly associated with job separation than exhibiting sickness absence in a job with a relatively high number of substitutes.

The results are consistent with our hypothesis that there should be a positive association between individuals' sickness absence probabilities and their degree of substitutability in the workplace. The results also show that firms use three different strategies to achieve an allocation where low-absence workers work in low substitutability jobs and vice versa: pre-hire screening, on-the-job pressure and post-hire adjustments. Thus, despite the fact that an individual's probability of being sick is arguably much harder to observe for an employer than, for example, formal credentials (such as education level) it is somehow observed, or at least approximated, and it blocks individuals

from entering certain jobs. However, more research is needed to find out exactly how employers are able to assess the sickness absence probabilities of job seekers.

### Concluding comments

Overall, the findings in this thesis support the idea that factors other than ability and education substantially affect individuals' performance and labor market outcomes. The results suggest that confidence is crucially important when performing complex high stakes tasks, while a good and stable health appears to be of major importance for getting access to positions in firms where absence potentially can lead to major production disruptions.

The positive causal relation between confidence and performance that was established in Essay 1 and Essay 2 is of particular interest from a social inequality perspective since initial confidence has been found to be positively correlated with socioeconomic background (see Twenge and Cambell [2002]). Confidence might therefore be a mechanism that widens the performance and income gap between individuals from advantaged respectively disadvantaged socioeconomic backgrounds and that consequently contributes to intergenerational rigidity in socioeconomic mobility.

The fact that the effects of earlier successes (which are assumed to build confidence) on current performance appear very similar for men and women further indicates that career differences between men and women, especially with respect to representation in top positions in the labor market, are not caused by gender differences in the psychological sensitivity to previous competitive outcomes which Gill and Prowse (2014) speculated.

The thesis also present novel results on sickness absence which should be considered a central labor market phenomenon. And, quite surprisingly, economists have paid little attention to how sickness absence affect firms' production processes and to what extent varying costs of production disruptions caused by absence affect hiring, firing and absence rates. The results clearly indicate that the interaction between production disruption costs and sickness absence are of crucial importance for understanding the relationship between health and labor market outcomes. Notably, it is well established in the literature that sickness absence is decreasing in socioeconomic status (see, e.g., Fuhrer et al. [2002]). Given the adverse consequences of exhibiting sickness absence for labor market outcomes that were documented in Essay 4 it is thus also troubling, from an equality perspective, that individuals from poor backgrounds are particularly susceptible to spells of sickness absence and, as the results indicate, may thus also be excluded from the parts of the labor market where absence is more costly.

All the hypotheses that are tested in this thesis are, however, not supported by the data. The analysis of the interaction between voting right and political knowledge in Essay 3 suggests that young people do not rise to the occasion and become more politically knowledgeable just because they are

given the right to vote. Thus, while motivation is a key driver for human behavior in many aspects of life, having the right to vote does clearly not generate sufficient motivation to learn more about politics. This is an important piece of evidence when considering the potential effects of lowering the voting age.

## References

- Abowd, J. M., J. Haltiwanger, J. Lane, K. L. McKinsey, and K. Sandusky. 2007. "Technology and the demand for skill: an analysis of within and between firm differences". NBER Working Paper 13043.
- Andersson, F., M. Freedman, J. Haltiwanger, J. Lane and K. Shaw. 2009. "Reaching for the stars: who pays for talent in innovative industries?". *The Economic Journal*, 119(538), F308–F332.
- Bélanger, J. J., M. K. Lafrenière., R. J. Vallerand, and A. W. Kruglanski. 2013. "Driven by fear: the effect of success and failure information on passionate individuals' performance". *Journal of Personality and Social Psychology*, 104(1), 180–195.
- Chan, T. W. and M. Clayton. 2006. "Should the voting age be lowered to sixteen? Normative and empirical considerations". *Political Studies*, 54(3), 533–558.
- Compte, O. and A. Postlewaite. 2004. "Confidence-enhanced performance". *American Economic Review*, 94(5), 1536–1557.
- Ellis, H. C., S. A. Ottaway, L. J. Varner, A. S. Becker, and B. A. Moore. 1997. "Emotion, motivation, and text comprehension: the detection of contradictions in passages". *Journal of Experimental Psychology*, 126(2), 131–46.
- Fuhrer, R., M. J. Shipley, J. F. Chastang, A. Schmaus, I. Niedhammer, S. A. Stansfeld, M. Goldberg, and M. G. Marmot. 2002. "Socioeconomic position, health, and possible explanations: a tale of two cohorts". *American Journal of Public Health*, 92(8), 1290–1294.
- Gill, D. and V. Prowse. 2014. "Gender differences and dynamics in competition: the role of luck". *Quantitative Economics*, 5(2), 351–376.
- Guthrie, C., J. Rachlinski, and A. Wistrich. 2001. "Inside the judicial mind: heuristics and biases". *Cornell Law Review*, 86(4), 777–830.
- Lazear, E. (2009). "Firm-specific human capital: a skill-weights approach". *Journal of Political Economy*, 117(5), 914–940.
- Sattinger, M. (1975). "Comparative advantage and the distribution of earnings and abilities". *Econometrica*, 43, 455–468.

- Steele, C. M. and J. Aronson. 1995. "Stereotype threat and the intellectual test performance of african-americans". *Journal of Personality and Social Psychology*, 69(5), 797–811.
- Tinbergen, J. (1956). "On the theory of income distribution". *Weltwirtschaftliches Archiv*, 77, 156–173.
- Twenge, J. M. and W. K. Cambell. 2002. "Self-esteem and socioeconomic status: a meta-analytic review". *Personality and Social Psychology Review*, 6(1), 59–71.
- Wagner, M., D. Johann, and S. Kritzinger. 2012. "Voting at 16: turnout and the quality of vote choice". *Electoral studies*, 31(2), 372–383.
- Weinstein, N. D. 1980. "Unrealistic optimism about future life events". *Journal of Personality and Social Psychology*, 39(5), 806–20.