EXPOSITION

Women in economics: a lifelong discouragement

The gender gap in economics science is worse than in other disciplines. Are women treated differently than men, in school and during their careers?

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In 1993, Hein Schreuder argued in *ESB* that in economics the difference between men and women would automatically disappear: the number of female students was increasing, and 'from low to high' this would result in more female doctoral students and academic staff. Eline van der Heijden (1993) had her doubts about this, and enumerated the structural obstacles that women faced when choosing economics and making a career in it.

Ten years later Aart Jan de Geus, the Minister of Social Affairs at the time, also claimed that due to the influx of female students, the difference between men and women as to careers would disappear. As a result, the Dutch newspaper *Trouw* wrote that the emancipation had been completed, and there was no role left for the government in this respect (Prast, 2016). This 'pipeline idea' of Schreuder and De Geus remains a persistent misunderstanding, because there don't seem to be or have been any facts to support this.

With a mere ten percent of female economics professors in the Netherlands, economics is doing worse than any of the other disciplines. This craves an explanation. In this article, I will look into the influx in economic studies and the careers of economic researchers.

PREFERENCES AND BEHAVIOUR

Economists traditionally assume that behaviour reveals preferences, and they regard preferences as given facts. Although understandable as an initial hypothesis, this does not do justice to existing knowledge, also in economics, about the influence of environmental factors and prejudice as to preferences and behaviour. Three examples in economics can illustrate this bias.

First, Huberman (2001), inspired by Merton (1987), explains the *investor home bias* as 'familiarity': people more often opt for shares in companies that are literally or figuratively close to home. As a consequence, not only do they diversify their financial capital insufficiently, they also place too many eggs in the basket in which their human capital is invested. Secondly, in a Harvard Business Case, Avery (2012) shows that Coca Cola misjudged the use of the word *Diet* in *Diet Coke*: men did not buy it, because the word 'diet' evokes a realm unbefitting to the stereotypical man. However, *Coke Zero* does not have that problem. Thirdly, there is a significant difference between men and women as to their self-declared financial risk attitudes. Nevertheless, when risk attitude is measured objectively, on the basis of skin reaction, there is no difference and women are just as risk-tolerant as men (Brighetti and Lucarelli, 2015). Apparently, women fill out the questionnaire in a way that is expected of them, which is due to the stereotyping effect.

To what extent can such factors contribute to the gender gap in economics science? First of all, a few facts.

ECONOMICS IN SECONDARY EDUCATION

Over half of the university students in the Netherlands are women – but, with approximately 35 percent of female economics students, their share in economics is a lot lower than that. Since almost all graduates with a pre-university education (vwo) meet the admission

requirements for studying economics, it is obvious to attribute this diversity to a congenital or biological gender difference as to preference. Such an explanation assumes that the context in which decisions are made is neutral, though this is, as is shown by behavioural sciences, hardly ever the case.

In order to demonstrate this bias, Box 1a presents the sexes and professions mentioned in the final exams for economics in 2016–2018. These are the individuals explicitly indicated as being male or female (he/she, his/her). If the gender is unclear, the person is not included.

In these exams, 26 men and 6 women appear. The women include a welfare recipient, her girl friend, an economics teacher, a journalist, a spokeswoman for the Consumers' Association, and a woman with a negative net return on her savings account. Most men in the exams are economists, directors, ministers or governors of central banks.

The products mentioned in the final exam also evoke a man's world. Men and women differ in their consumer expenditure (Figure 1). The biggest difference is cars (m >> f), followed by personal care (f >> m), and computers and accessories (m >> f).

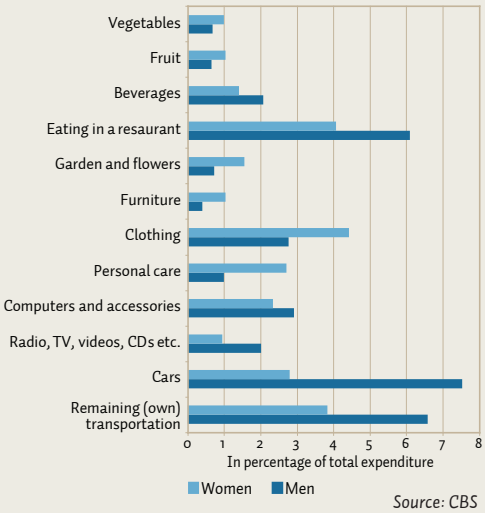
Box 1b gives an overview of the companies and products mentioned in the exams (not including financial products). If we consider mobile telephony to be included in 'computers and accessories', men's favourite products are mentioned five times and women's favourite products not at all. Furthermore, football is mainly associated with men as to sports (SCP, 2009; CBS, 2010).

The exams evoke an image of a world in which men achieve a lot, and women little. In addition, being an economist is something for men, and also the spending and use of time refers to men. In itself, this might already influence the attitude of girls towards economics negatively. Activating a stereotype, which these exam questions seem to do, leads to people behaving accordingly, to wit stereotypically (Wheeler and Petty, 2001), and lowers women's self-confidence in areas that are associated with men. Stereotyping therefore influences performance, study choice and career (Carlana, 2018; Lavy and Sand, 2015). Nosek et al. (2009) compare 34 countries and find that scientific gender bias – measured by the extent to which people tend to associate alpha-studies more with women and beta studies more with men – is largest in the Netherlands.

The stronger a teacher has a stereotypical notion about pupils, the stronger her or his confirmation bias will be – the degree to which he or she filters and weighs

Spending for single men and women, 2008

FIGURE 1



Source: CBS

The vwo final economics exam (2016–2018)

BOX 1

1a. The sexes in the exam

Men (26)

- Economist (11×)
- Director of a football club
- Director of a pension fund
- Managing director of an online stock broker's
- Managing director of a theatre
- Manager multi-storey car park
- Manager of a telecom company
- Researcher (2×)
- Governor of the Central Bank
- Minister of transport
- Egg farmer
- Journalist
- Investor
- Friend of investor
- Employee with an income of 50,000 euros

Women (6)

- Welfare recipient
- Friend of welfare recipient
- Journalist
- Economics teacher
- Saver with negative net return
- Spokeswoman of Consumers' Association

1b. Companies and products in the exam

- Multi-storey car park
- Second-hand cars
- Car manufacturer
- Toll tunnel
- House (3×): renting, buying, mortgage
- Football club
- Physiotherapy
- Pharmaceuticals
- Mobile telephony
- Eggs
- Airbnb

up information about the pupil so that it confirms the stereotype judgment (Bordalo et al., 2016). It seems that the authors of these exam questions – economics teachers – have a stereotypical image of the sexes.

Box 2 shows the composition of the committees advising upon the final exam programme for economics, and the external experts they have consulted (Teulings, 2002; Commissie-Teulings I, 2002; Commissie-Teulings II, 2005). Women are a minority here, none of them have graduated in economics, and they have all adopted their husband's name.

The first committee (rightly) advocated a broadening of the economy's domain, giving as an example the division of tasks in the household. The second narrowed this down by explaining why women do more household chores than men, using the theory of comparative advantages. Moreover, they used the example of the man who marries his housekeeper to illustrate that GDP is an imperfect measure. The evaluation of the VWO Economics Examination Programme (2011) does indeed include a chapter on the exam, but it does not include any mention of the sexes that crop up in the exam. In Van Dalen and Koedijk (2012), fourteen economists give their view on economics education. Thirteen of them are Dutch males, the fourteenth is a non-Dutch author who has become a woman. The illustration on the cover is a shirt and tie.

Composition of advisory committees for the vwo economics programme

BOX 2

Teulings-1 (2002)		Chiel Renique MSc	Male
Prof. Coen Teulings	Male	Jan Klaver MSc	Male
Prof. Eric van Damme	Male	Marc Mittelmeijer MSc	Male
Prof. Hugo Keuzenkamp	Male		
Dr Henk Don	Male	***Teulings-2 (2005)***	
Dr Sierk Keuning	Male	Prof. Coen Teulings	Male
Els Borghols MSc	Female	Prof. Eric van Damme	Male
Dorien Klarenbeek MSc	Female	Prof. Jules Theeuwes	Male
A. Wels MSc	unknown	Loes Broer-Nieuwenhuis MSc	Female
		Dorien Doornebos-Klarenbeek MSc	Female
External collocutors:		Leon Knoben MSc	Male
Prof. Arnoud Boot	Male	Kees Blokker MSc	Male
Prof. Arnold Heertje	Male	Jos Steins MSc	Male
Prof. Jan Klaassen	Male	Eric Welp MSc	Male
Prof. Frans Leijnse	Male		
Prof. Piet Coppieters	Male	*External advisors:*	
Dr Louise Gunning	Female	Prof. Lans Bovenberg	Male
Dr Alexander Rinnooy Kan	Male	Prof. Rick van der Ploeg	Male
Dr Herman Wijffels	Male	Prof. Sweder van Wijnbergen	Male

Examples of readability standards

BOX 3

Score	Formula
Gunning Fog	$0.40 \times \left(\frac{\text{words}}{\text{sentences}} + 100 \times \frac{\text{polysyllabic words}}{\text{words}}\right)$
SMOG	$3.13 + 5.71 \times \sqrt{\frac{\text{polysyllabic words}}{\text{sentences}}}$

Hengel (2017)

STUDY CHOICE

By no means do all students who are able to study economics take the vwo economics exam. That is why it is also important to look at what students encounter when they orientate themselves towards economics studies. An inventory of the texts in which the universities and economics faculties in our country describe and recommend the economics studies shows that they are *generic*, with terms such as 'broad', 'social', 'macro', 'meso', 'micro', 'current issues', 'many perspectives', or with specific emphasis on business, growth, cost prices, stock exchange and market forces. Scarcity of raw materials, labour-market participation, climate, unemployment, social security, income distribution and pensions are not included in these descriptions, although they are not the least challenges as regards a discipline that deals with the allocation of scarce resources. Growth, prosperity and power are masculine, while care, sharing and wellbeing are feminine values (Hofstede, 2001). The wage gap between the sexes is also lacking, even though the Netherlands is left dangling under *The Economist*'s glass ceiling index for OECD countries (The Economist, 2018) and you would expect that studying it would be worthwhile for economists.

In short, the field of economics seems not particularly attractive for girls in secondary school. How, then, do women fare who actually choose economics?

UNIVERSITY

In the grades of first-year economics students, there is actually no gender difference (Arnold and Roowaan, 2014). Moreover, women graduate more quickly, and forty percent of the economics PhD students are female (see Teunissen and Hogendoorn, in this dossier). So, are there other factors to explain why the percentage of female professors in economics is still so low?

Wu (2017) analyzes the words used by those who visit the *Economics Job Market Rumors*, an online forum where PhD students anonymously exchange information about the labour market, referring in doing so to men and women respectively. This forum gives the impression that visitors see their field as masculine and are proud of it, even though economics is essentially about allocation, distribution and welfare as a measure of well-being. This does not mean, however, that all economists talk about women in this way, nor that PhD students in economics look down on women more than PhD students in other fields.

Leading scientists also make statements that show a certain opinion about the qualities and preferences of women. Larry Summers doubts whether women have sufficient beta capacities and suggests that they were born to care of children (The Guardian, 2005). For that reason he had to resign as President of Harvard. In the Netherlands, former KNAW chairman Hans Clevers recently admitted that the gender balance in science is a problem: "But it's because of the women, we have a lot of young women with potential, but when push comes to shove, they quit. That's something we [the men] can do nothing about. Dutch women do not want to take the extra step." (NOS, 2018)

CAREER DIFFERENCES

Various scientific studies have been carried out which suggest that men and women in economics are judged differently. This applies to both education and research.

Education

Female economics teachers receive lower evaluation scores than men. This is because male students grade them worse, although there is no difference in the knowledge acquired by students (Boring, 2017). Male economics students grade identical study material as worse if their working group teacher is a woman, and are also less satisfied with the speed of review, although all grades are announced at the same time (Menger et al., 2017). This difference is even greater in economics courses where mathematics plays a role. That bias is a factor here is also apparent from Macnell et al. (2015), because they find that students evaluate the teacher of an online course with higher grades if they think it's a man.

A lesser educational evaluation can, directly as well as indirectly, adversely affect the scientific career of women in economics. Female economics scientists spend more time on education and less on research than men do (Link et al., 2008). After all, those who receive a lower score will spend more time preparing their classes, which will go at the expense of research. Moreover, low scores can make women insecure and demotivate them, as they confirm the bias that women and economics form a lesser combination, and they can offer an argument to not promote a women to a permanent position.

Research

Women in economics seem to have to meet higher standards than men in order to get their article published. Hengel (2017) compares the readability of articles in *American Economic Review*, *Econometrica*, *Journal of Political Economy* and *The Quarterly Journal of Economics* and their earlier working paper versions on the basis of quantitative standards (Box 3).

According to these standards, both the articles and the working paper versions of female authors are easier to read than those of men, and the difference is the largest in the final version. So, women take more steps to improve their papers, although their first version was already more readable. That takes time, because the average time between the working paper and final version is longer for articles by female authors. The extra time that women spend on rewriting cannot be spent on new research, which may result in realizing less research output than men do.

Other tasks

Compared to men, women in science devote more time to activities that are important for the department, faculty or university, but not for their own scientific career (McLaughlin Mitchell and Hesli, 2013; Porter, 2007). Is this due to preferences? Babcock et al. (2017) conclude that it is not. They compare the behaviour of male and female economics students in a mixed group with the behaviour in a group with only their own sex. In the mixed group, women volunteer significantly more often than men. As such, this might indicate a difference in preferences between the sexes, were it not that women in a group with only women behave in the same way as men in a group with only men. Apparently there is no difference in within-group preferences, but the women are expected to volunteer more often, which in a mixed group is a 'self-fulfilling prophecy'. Babcock et al. (2017) also find that faculties and departments more often ask women than men to perform tasks that are not helpful to a career in science.

Hiring and promotion

On top of the fact that the aforementioned factors ay have the that women with the same qualities can build up a resumé that is not as good, there is the risk that exactly the same resumé will be less well assessed if it is by a woman. This has been demonstrated in many previous studies regarding different professional groups. For the exact sciences, Moss-Racusin et al. (2012) find that the judgment of beta scientists as to the resumé of a hypothetical candidate varies, depending on whether they think it is by a man or a woman: 'men' score higher on competence, 'hirability' and the salary earned.

Research proposals

Committees of the Netherlands Organisation for Scientific Research (NWO) assess women's research proposals similarly as those of men (Van der Lee and Ellemers, 2015), but less often accept their applications (14.9 and 17.7 percent respectively), especially in the Social and Behavioural Sciences (including economics), Earth and Life Sciences, and in Medical science.

Policy recommendations

BOX 4

- Further research into the positioning of men and women in economics texts (study material and exams)
- To take into account implicit gender attitudes within adoption and promotion policies and in membership assessment committees
- The screening of NWO application and assessment forms as to implicit discrimination (masculine qualifications and correction for size of the appointment)
- To abolish or correct education evaluations as to gender bias before sharing results
- Composition of advice committees and experts on economics education, explicitly choosing those who challenge the stereotypical image instead of confirming it: more women than men; female professors and graduates; female doctoral students
- Gender bias and (self-)stereotyping, and the consequences of this for economics in the VWO exam programme and for the university degree in economics
- A gender quota for women in economics

The reason is that they undervalue female applicants. This may be due to the gender bias illustrated above, but the NWO rules and forms do not help either. The pre-notification forms for Veni, Vidi and Vici grants require a number of years since promotion and are bestowed according to the type of contract (temporary, permanent), but not for the scope of the employment, and the output also does not correct for length of employment and for absence due to pregnancy and childbirth. However, the applicant must only fill in the number of months of 'care or sick leave' or 'leave', which means that her absence due to bearing children is treated the same as illness and is therefore a defect. Because evaluators in the preliminary round only see the number of publications, uncorrected as to employment, they will underestimate the relative productivity of women, and overestimate that of men.

Furthermore, funding for Vidi and Vici research can be requested up to eight resp. fifteen years after promotion, regardless of the employment's size. What also does not help are the characteristics as to which the applicants must be assessed according to the NWO forms. Gaucher et al. (2011) show that job advertisements in sectors where there are mainly men working, describe the candidate's desired characteristics differently than in sectors in which mainly women work. The terms with which assessors must assess the NWO applicants are generally of the first type, and refer to the male stereotype: 'challenging', 'excellent', 'outstanding', 'adventurous', which makes men seem to meet the set requirements more. Moreover, the use of language is based on a male candidate: "is part of the top in *his* field" (Van der Lee and Ellemers, 2015).

POLICY IMPLICATIONS

The most common explanations for the gender gap in economics – namely that women have different preferences and other capacities, respectively that there is a *pipeline effect* – lead to the conclusion that policies are unnecessary. However, there is no scientific basis for this claim. The existing scientific research and anecdotal evidence point in the direction of an implicit gender bias, especially among male economists, with consequences for study choice, assessment of women in economics, and the allocation of tasks. The seemingly innocent rules applied by NWO even go a step further. These *do* require policy if we want to combat discrimination and the suboptimal use of human capital (Box 4).

In brief

- Environmental factors and prejudice influence preferences and behaviour.
- Men and women are judged differently, both in education and research.
- The seemingly innocent rules by NWO require policy if we want to combat discrimination.

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