DIGITALISATION, CHANGING DEMAND FOR SKILLS AND THE GENDER WAGE GAP

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Technological change = deroutinisation

high-skilled, cognitive work ↗

routine, codifiable work ↘

(Autor et al., 2003; Goos et al., 2014; Hardy et al., 2018)

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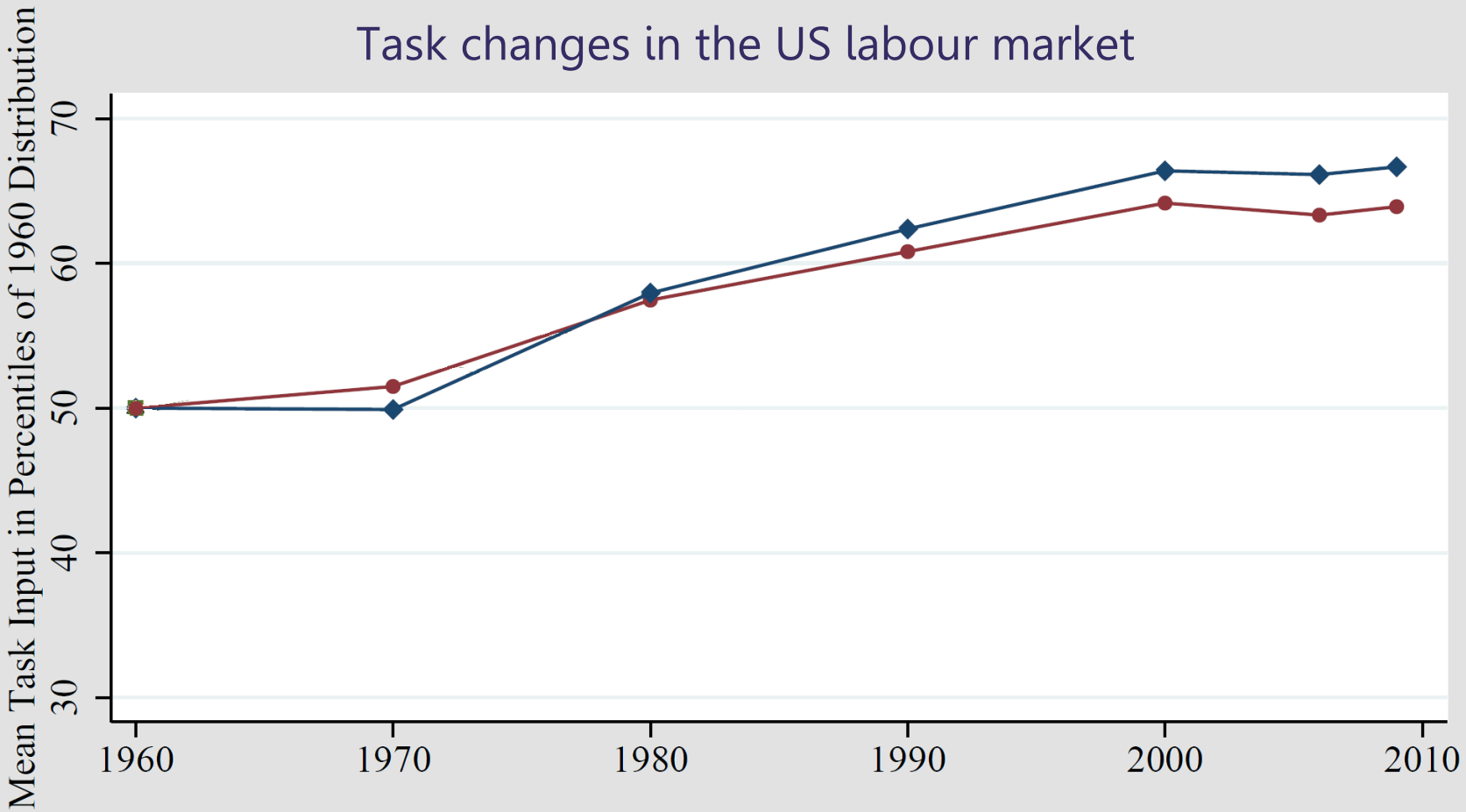
Point of view: the task content of jobs



Source: Autor and Price, 2013 update of Autor et al., 2003

Abstract

Non-routine cognitive interpersonal

Non-routine cognitive analytic

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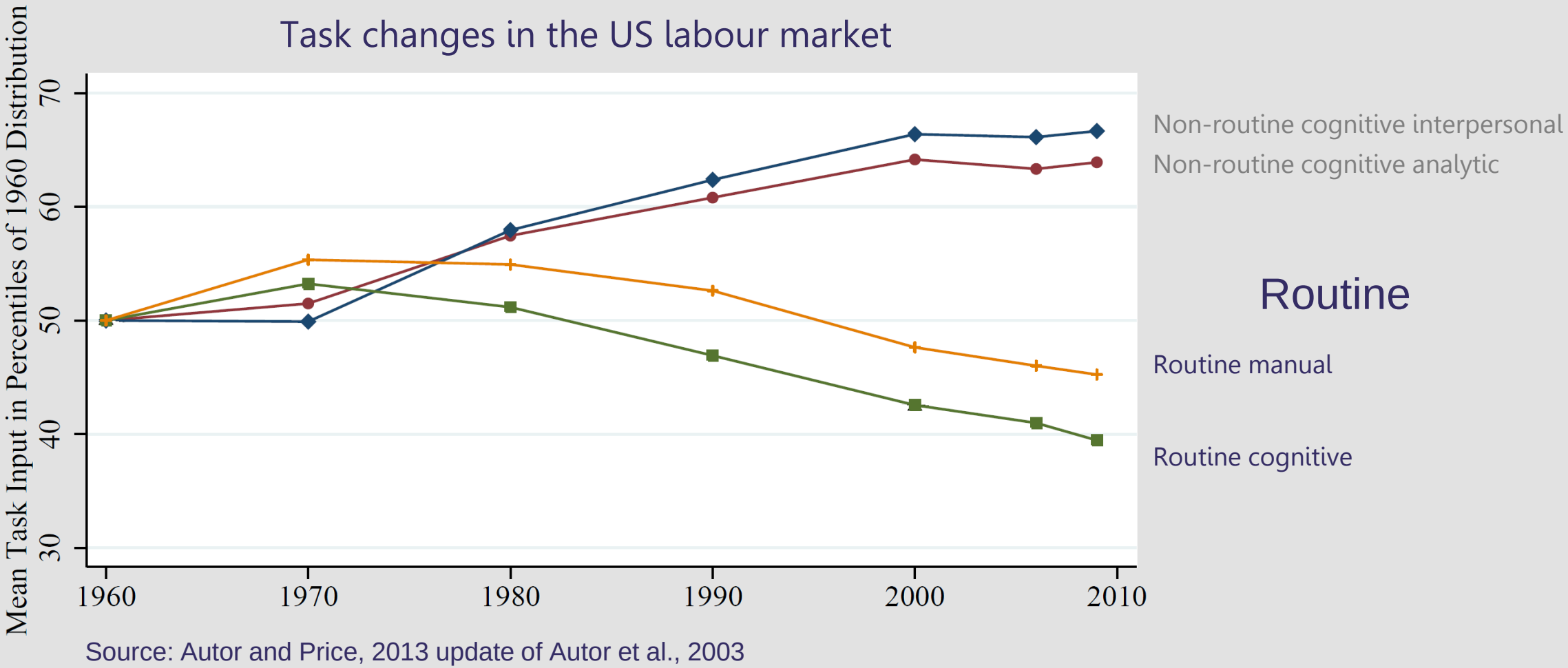
Point of view: the task content of jobs



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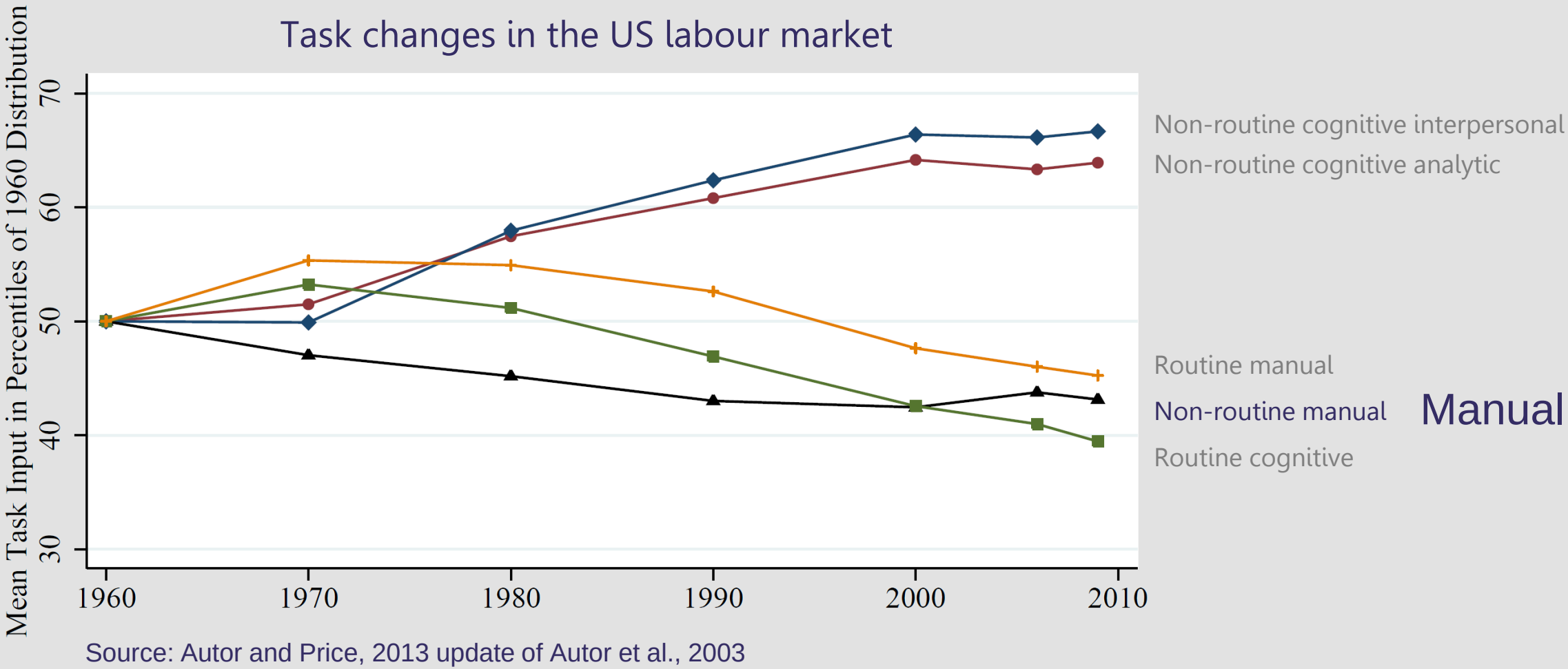
Point of view: the task content of jobs



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Deroutinisation affected women differently:

Women have higher tertiary education attainment, but not in STEM fields

Women left routine jobs faster than men
(Black and Spitz-Oener, 2010; Cortes et al 2020)

Women often entered into social tasks; but rarely into analytic ones
(Cortes et al., 2018; 2020, Fedorets, 2014)

Social tasks are both on the increase and with increasing returns
(Deming, 2017)

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Yet, the effects on wages remain unclear

Social tasks vary and:

care remains largely underpaid (England, 2005)

„Social interaction (…) is disproportionately found in both high- and low-paying jobs"

– Cortes et al., 2020

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We study the effects on wages and:

Focus on the increasingly important social and analytic tasks

Split the inward- and outward-oriented social tasks

Focus on the EU context (jointly and by country)

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New measures for the EU context

European Skill / Competences, qualifications and Occupations [ESCO]

2018 version: 13 485 skills/competences for 2492 occupations. Examples:

Social	Analytic	Routine	Manual
Develop therapeutic relationships	Develop code exploits	Apply quality standards in youth services	Restrain individuals
Communicate with local residents	Apply scientific methods	Meet deadlines and follow schedules	Adjust feeder tubes
Play with children	Use learning strategies	Reversed: Adapt to change	Patrol area
Chair a meeting	Create new recipes		Use firearms
Instruct kitchen staff			Restock towels
Consult with technical staff			

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New measures for the EU context

European Skill / Competences, qualifications and Occupations [ESCO]

2018 version: 13 485 skills/competences for 2492 occupations. Examples:

Social	Analytic	Routine	Manual
OUTWARD-ORIENTED	Develop code exploits	Apply quality standards in youth services	Restrain individuals
Develop therapeutic relationships	Apply scientific methods	Meet deadlines and follow schedules	Adjust feeder tubes
Communicate with local residents	Use learning strategies	Reversed: Adapt to change	Patrol area
Play with children	Create new recipes		Use firearms
INWARD-ORIENTED			Restock towels
Chair a meeting			
Instruct kitchen staff			
Consult with technical staff			

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Our approach:

ESCO tasks + EU Structural Earnings Survey for 13 countries and:

1) How do male and female workers sort into tasks?

2) How are male and female workers paid for specific tasks?

3) How have these relationships changed over time?

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Women more likely to perform (outward-oriented) social tasks

Selection into tasks

	Social	Outward	Inward	Analytic	Routine	Manual
Female	0.35**	0.39**	0.15	-0.06	0.07	-0.23*
R-squared	0.28	0.25	0.23	0.16	0.17	0.31

Note: regressions include country-fixed effects, job characteristics (sector, firm size, contract).
Standard errors are clustered at the 3-digit occupation level.
* p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01

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Social tasks are slightly less paid

(Hourly) wage returns to tasks

	(1) log(wage)
Female	-0.15***
Social tasks	-0.03
Observations	10.4 million
R-squared	0.78

Note: regressions include country-fixed effects, individual (age, education, tenure) and job characteristics (sector, firm size, contract), as well as other task categories. Standard errors are clustered at the 3-digit occupation level. All regressions on 2018 data.
* p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01

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Social tasks are slightly less paid – though mostly for men

(Hourly) wage returns to tasks

	(1) log(wage)	(2) log(wage)
Female	-0.15***	-0.15***
Social tasks	-0.03	-0.05*
Female # Social tasks		0.04**
Observations	10.4 million	10.4 million
R-squared	0.78	0.78

Note: regressions include country-fixed effects, individual (age, education, tenure) and job characteristics (sector, firm size, contract), as well as other task categories. Standard errors are clustered at the 3-digit occupation level. All regressions on 2018 data.
* p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01

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however, it is the female-dominated social tasks that are paid less

(Hourly) wage returns to tasks

	(1) log(wage)	(2) log(wage)	(3) log(wage)
Female	-0.15***	-0.15***	-0.14***
Social tasks	-0.03	-0.05*	
Female # Social tasks		0.04**	
Social tasks: inward			0.04*
Social tasks: outward			-0.05***
Observations	10.4 million	10.4 million	10.4 million
R-squared	0.78	0.78	0.79

Note: regressions include country-fixed effects, individual (age, education, tenure) and job characteristics (sector, firm size, contract), as well as other task categories. Standard errors are clustered at the 3-digit occupation level. All regressions on 2018 data.
* p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01

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even if women receive higher wages for these tasks than men do

(Hourly) wage returns to tasks

	(1) log(wage)	(2) log(wage)	(3) log(wage)	(4) log(wage)
Female	-0.15***	-0.15***	-0.14***	-0.14***
Social tasks	-0.03	-0.05*		
Female # Social tasks		0.04**		
Social tasks: inward			0.04*	0.04
Female # Social tasks: inward				0.01
Social tasks: outward			-0.05***	-0.09***
Female # Social tasks: outward				0.06**
Observations	10.4 million	10.4 million	10.4 million	10.4 million
R-squared	0.78	0.78	0.79	0.79

Note: regressions include country-fixed effects, individual (age, education, tenure) and job characteristics (sector, firm size, contract), as well as other task categories. Standard errors are clustered at the 3-digit occupation level. All regressions on 2018 data.
* p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01

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Women also receive less for analytic and manual tasks and slightly more for routine ones

(Hourly) wage returns to tasks

	(4) log(wage) (continued)
Analytic tasks	0.07***
Female # Analytic tasks	-0.05***
Routine tasks	-0.08***
Female # Routine tasks	0.03*
Manual tasks	-0.05*
Female # Manual tasks	-0.03*
Observations	10.4 million
R-squared	0.79

Note: regressions include country-fixed effects, individual (age, education, tenure) and job characteristics (sector, firm size, contract). Standard errors are clustered at the 3-digit occupation level. All regressions on 2018 data.
* p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01

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Slow change beneficial to female workers

We compare 2002-2006 with 2014-2018

Selection based on gender does not change

Returns to analytic tasks of female workers slowly catching up

Returns to outward-oriented social tasks become less negative

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Do women gain or lose on the increasing demand for abstract tasks?

Women do perform more social tasks, but mostly those lower-paid

They also do fewer analytic tasks and receive lower returns

Controlling for everything else, the sorting doesn't seem to change

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Do women gain or lose on the increasing demand for abstract tasks?

Women do perform more social tasks, but mostly those lower-paid

They also do fewer analytic tasks and receive lower returns

Controlling for everything else, the sorting doesn't seem to change

-> Yet, gradually the returns to outward-oriented social tasks become less negative for women

-> Yet, returns to analytic tasks for women slowly catch up with those for men

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Thank you!

Horizon 2020
European Union funding
for Research & Innovation

UNIVERSITY OF WARSAW
Faculty of Economic Sciences