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Press Release

Job loss due to milking machines – a blessing for Norwegian women

Artificial intelligence, self-driving cars or smart robots are rapidly changing the way we work. People are more and more afraid of being replaced by machines. A study by the Mannheim professor Philipp Ager shows that the career outlook is not necessarily negative.

Hand milking of cows was a task typically performed by young rural women. Hundreds of thousands of them were being displaced by the uptake of milking machines in the 1950s. “This was a real technology shock,” says Philipp Ager from the EPoS Economic Research Center. Ager holds the Chair of Applied Macroeconomics at the University of Mannheim. “We analyzed the effects over a period of 40 years and find that women paid a high price initially. They lost their job and were being pushed out of agriculture altogether. Yet, the data also reveal that those affected benefited in the long term.”

Investment in education makes the difference

The reason: Affected women moved to the cities where they invested in their education. Later on, as middle-aged adults, they had higher-skilled jobs and better incomes compared to rural women who were not displaced. “It is important to stress that such positive outcomes would not have been possible without the initial investment in better education,” says Ager.

Men stayed on farms

Unlike young women, men were not displaced by the new technology and remained largely in rural areas. This disparity contributed to reducing the gender income gap in Norway. Another positive effect for the economy: as women moved to municipalities, workers were better distributed across economic sectors to where they were needed. The Norwegian economy at the time provided new job opportunities in the cities. Growth rates were high and the economy was in a transition phase, especially in the manufacturing and service industries. Apart from education, the economic momentum also helps to explain why women on average benefited from being pushed from the farms in the long run.

Parallels to current debate on AI

“Our findings have some parallels to today’s debate about the adoption of more and more sophisticated technologies, such as artificial intelligence, self-driving cars and industrial robots,” says Ager. “There are concerns about the effects of new technologies which — like

milking machines did in the past — could replace traditional jobs. In light of our results, the need to provide workers with new skills for future work cannot be overemphasized. Policy-makers and employers should support workers to adapt to changes in the world of work in good time.”

Ager, P., Goñi, M., Salvanes, K. *Gender-Biased Technological Change: Milking Machines and the Exodus of Woman From Farming*. <https://www.crctr224.de/research/discussion-papers/archive/dp535>

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