

# How Does Higher Education Among Women Affect the Labor Market of Poland?

Andrzej Bachleda-Curus<sup>1</sup> and Jihoon Sung<sup>#</sup>

<sup>1</sup>V Liceum Ogólnokształcące im. Augusta Witkowskiego w Krakowie, Poland

<sup>#</sup>Advisor

## ABSTRACT

This paper explores the effect of women's higher education in Poland on its labor market. First, I provide an overview of the Polish economy and its labor market. During its transition from a communist economy to a capitalist one, Poland experienced remarkable economic growth, transforming from a developing economy to a developed one. Consequently, the structural transformation of the Polish economy allowed it to achieve a 3% unemployment rate – a healthy level for even advanced economies. Second, I survey economic theories on the effect of women's higher education on the economy. Advanced economies such as the U.S. have experienced an increase in women's labor force participation rate, leading to an increase in the rate for the overall population and a narrowing of the gap in participation between men and women. Poland, on the other hand, has seen an increase in participation for both men and women to an equal extent, without a decrease in the gap in participation between genders. Third, I review case studies of other economies that have experienced dramatic changes in female education and labor participation, as has Poland. From this comparative analysis, it seems that strong gender norms in Poland, which can be partially explained by the strong Catholic presence there, can explain the persistence of the gap in participation and wage between men and women, despite the stellar educational attainment of women in Poland.

## Introduction

Women's education and the inequalities they face have been pressing issues for decades, impacting not only individual lives but also broader economic and social development. Growing up in a small mountain town in Poland, I have witnessed firsthand the challenges young women encounter in accessing higher education, especially in rural areas. In my hometown, where educational opportunities are limited, the prevailing mentality often discourages further education, particularly for girls. These experiences, combined with my work through the foundation 'ToMyDziewczyny!'—which empowers young women to pursue their academic and professional dreams—have fueled my passion for understanding the relationship between higher education and employment opportunities for women in Poland.

My interest in this topic is further grounded in my background in economics and finance. Having completed internships at a private lending company in New York City and an investment fund in Warsaw, I have developed a strong interest in analyzing economic trends and labor market dynamics. Additionally, I recently had the opportunity to study data science and probability and statistics at the Stanford Summer Session. Equipped with these analytical skills, I am further motivated to explore and understand the impact of education on employment more comprehensively.

Another reason I am doing this research is that the topic has been neglected in the recent decades, and most of the papers on the topic focus on the 1990s, a time when Poland transitioned from a communist economy to a capitalist one. I believe that gender equality is an essential topic to discuss in the context of Poland's economic and social development, as these topics shape the way people think, the jobs they take on, and the country's economic growth.

This paper aims to examine how higher education among women has influenced Poland's labor market. I answer the main question of how higher education among women affect the labor market of Poland. Understanding this relationship is crucial for addressing broader issues of gender equality and economic development within the country.

To achieve this, the paper is structured as follows: In the first section, I provide an overview of Poland's economy and labor market, highlighting the progression of higher education and women's participation over the years. The second section surveys economic theories relevant to the effects of women's higher education on the economy, including the impact on labor market trends, the gender wage gap, and labor force participation. The third section reviews academic research on the intersection of higher education and the labor market, incorporating both studies that focus on Poland and comparative analyses of other economies that have experienced similar trajectories in female education and employment and share comparable gender norms. Finally, the conclusion will synthesize the findings and discuss their implications for future policy and research.

## **Polish Economy and Its Labor Market, With A Focus on Higher Education and Women**

Over the past two decades, Poland has experienced remarkable economic growth and structural transformation, transitioning from an emerging economy to a developed one. This shift not only has reshaped the overall labor market but also has introduced new challenges and opportunities for women, particularly in higher education and employment.

Coming out of a centrally planned economy, Polish citizens were poor, and their earnings were very low compared to other Western countries. However, thanks to reforms and adjustments to the free-market economy, Poland's GDP per capita has grown from \$1,700 in 1990 to \$22,000 in 2023 (World Bank), which is an almost 13-fold increase. While this is an impressive growth, Poland still lags behind Germany, with a GDP per capita of \$52,200 in 2023, and the United Kingdom, with \$48,800 in 2023. It is worth noting that these countries had very different starting points—Germany had a GDP per capita of \$22,300 and the UK \$19,000 in 1990—so their growths have not been as large as Poland's, but their economies have had more time to develop. Comparing Poland to other countries that were part of the Eastern Bloc provides a more insightful perspective. In 1990, the Czech Republic had a GDP per capita of around \$4,000, which grew to \$30,500 in 2023. While the Czech Republic's GDP per capita is higher than Poland's today, its growth rate has been slower. A similar trend can be observed in Slovakia, where GDP per capita rose from \$2,400 in 1990 to \$24,500 in 2023. These figures show that while Poland's economic growth has been substantial, its trajectory is comparable to that of its Eastern European peers, which have also experienced rapid development but with varying end results in terms of GDP per capita.

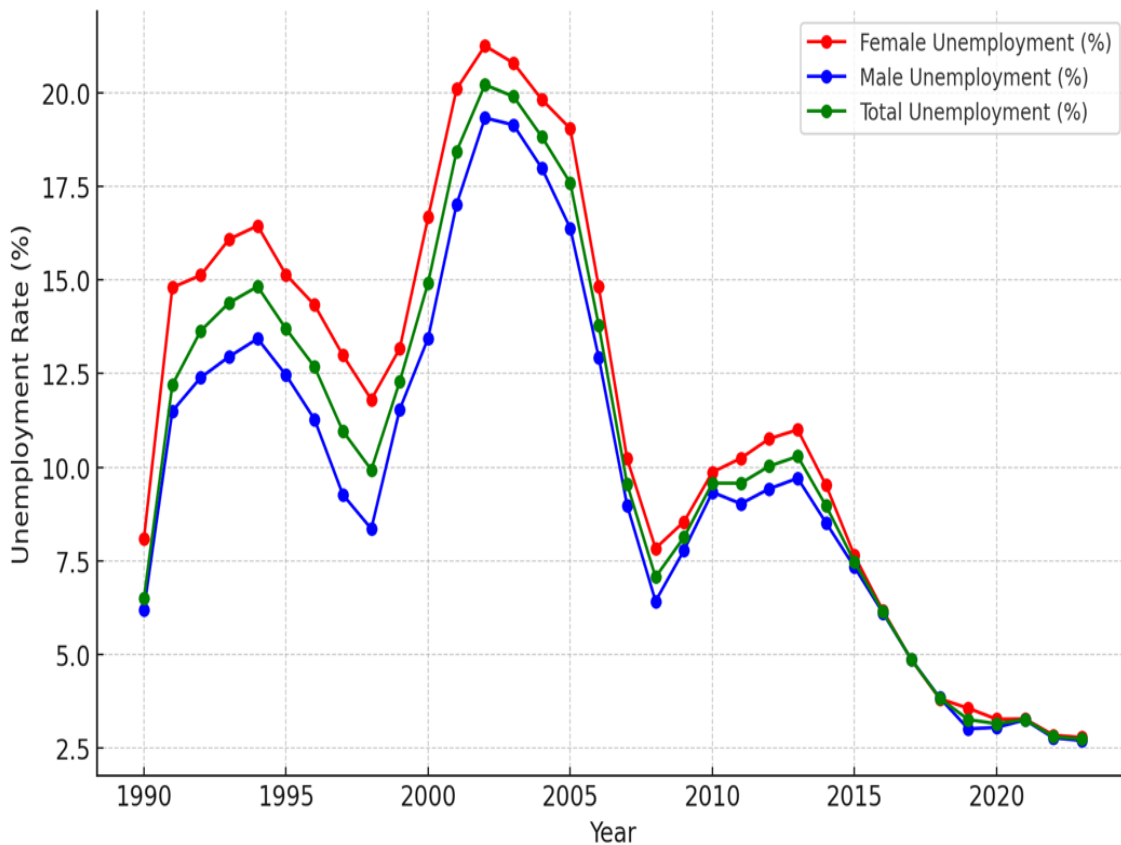
Poland's transition to a capitalistic economy started with the fall of the Soviet Union in 1991<sup>1</sup> and was followed by Poland joining the OECD in 1996 and then the EU in 2004. OECD integrated Poland into the global economic community, and enhanced credibility for foreign investors, as Poland increasingly adhered to OECD standards. Additionally, reforms like privatization and deregulation were encouraged, aligning Poland's economy with free-market practices. The EU membership allowed Poland to export goods to the EU tariff-free. In addition, Poland attracted foreign investment from companies across the EU seeking to take advantage of comparably cheaper labor costs than other EU countries such as France and Germany. The EU also provided Poland with significant structural and cohesion funds, enabling the modernization of infrastructure and driving GDP growth. Joining these international organizations allowed the Polish economy to be more connected with the global market, thereby catalyzing its growth.

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<sup>1</sup> Although the Soviet Union officially dissolved in 1991, Poland had already begun its shift away from communism, starting its transformation into a market economy and democratic state in 1989, with the first partially free election held in June 1989, where the opposition, led by the Solidarity movement, decisively won.

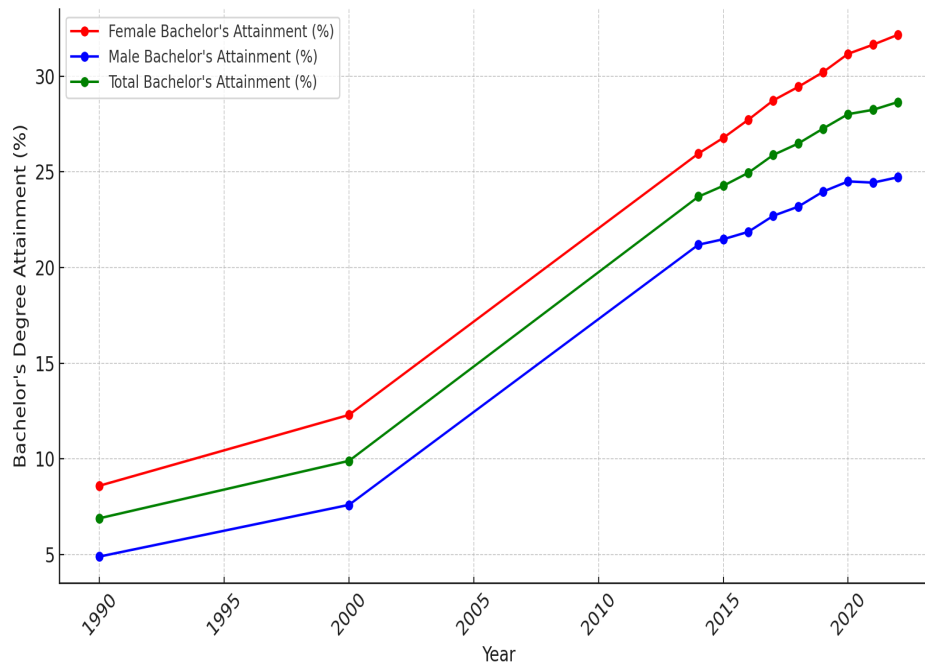
Poland transitioned from a centrally planned communist economy to a capitalist market system. A fundamental difference in the labor market was that under communism, the state assigned jobs to all workers, effectively eliminating unemployment by guaranteeing employment. However, this system often overlooked individual preferences and market dynamics. In contrast, a capitalist economy relies on job-seekers applying for positions based on their interests and qualifications, while employers choose candidates who best meet their needs. This freedom, while fostering more efficient job matching, also introduces the possibility of unemployment due to market fluctuations, skill mismatches, and economic cycles. The shift to capitalism in Poland brought these dynamics into play, reshaping the labor market and the employment landscape. The labor market transitioned from low-value-added industries, such as textiles and food processing, to high-value-added sectors, including automotive manufacturing, aerospace, electronics, and IT services (Szlanta & Zawistowski, n.d.).

While these changes laid the groundwork for sustainable growth, they also led to short-term challenges. In Figure 1, I plot the unemployment rate (total, male, female) in Poland from 1990 to 2023. From the figure, we can see that Poland's unemployment rate spiked to 20% in 2002, largely due to the economy's initial adjustment from the communist system. However, as the labor market stabilized and adapted to new economic realities, the unemployment rate dropped dramatically, reaching 2.7% in 2023 — a figure comparable to those seen in other developed economies. We can notice that a structural change – a fundamental change in the Polish economy – has presumably occurred to explain this sharp decrease in the unemployment rate, as such declines may not easily be explained by cyclical changes – booms and busts in the macroeconomy.



**Figure 1.** Unemployment rate (total, female, and male) in Poland. Source: World Bank

Another aspect to consider in Poland’s economy is education. While primary and secondary education are mandatory, resulting in nearly universal completion rates, the attainment of tertiary education paints a different picture. In Figure 2, I plot bachelor’s degree attainment (total, male, female) in Poland from 1990 to 2022. As we can see from the figure, the percentage of individuals holding a bachelor’s degree has risen from around 7% in 1990 to 28.5% in 2022—a more than fourfold increase. Notably, women’s bachelor’s degree attainment has surpassed that of men already back in 1968, and the gap has remained (Plomien, 2006). Despite the fact that women’s educational attainment has been higher, men’s wages have been consistently higher, with men earning, on average, 10.2% more than women in 2022 (OECD).



**Figure 2.** Bachelor’s Degree Attainment (total, female, and male) in Poland. Source: World Bank

This analysis sets the stage for a deeper exploration of how education, economic shifts, and labor market trends have come together in Poland, focusing on how they impact women’s roles and opportunities. The growing rates of educational attainment and the evolving economy highlight the need to understand the implications of these developments on gender equality and workforce participation.

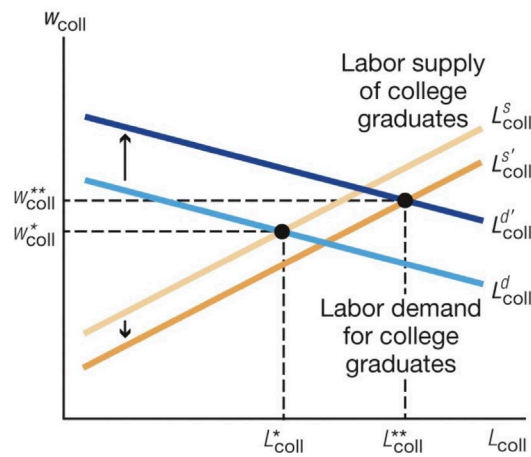
## Economic Theories on The Effect of Higher Education Among Women on The Economy

Having examined the significant changes in Poland’s labor market and the rising educational attainment among women, it is important to delve into the theoretical frameworks that explain these shifts. Economic theories offer valuable insights into how higher education, particularly for women, influences labor market trends, wage structures, and overall economic development.

The first concept to explore is the effect of higher education on the labor market. In other advanced economies, such as the United States, a surprising phenomenon occurred. Despite the increase in the supply of college-educated individuals, the wage premium for such workers also increased. This outcome is unexpected because, from a simple supply vs. demand perspective, an increase in the number of college graduates would normally decrease the

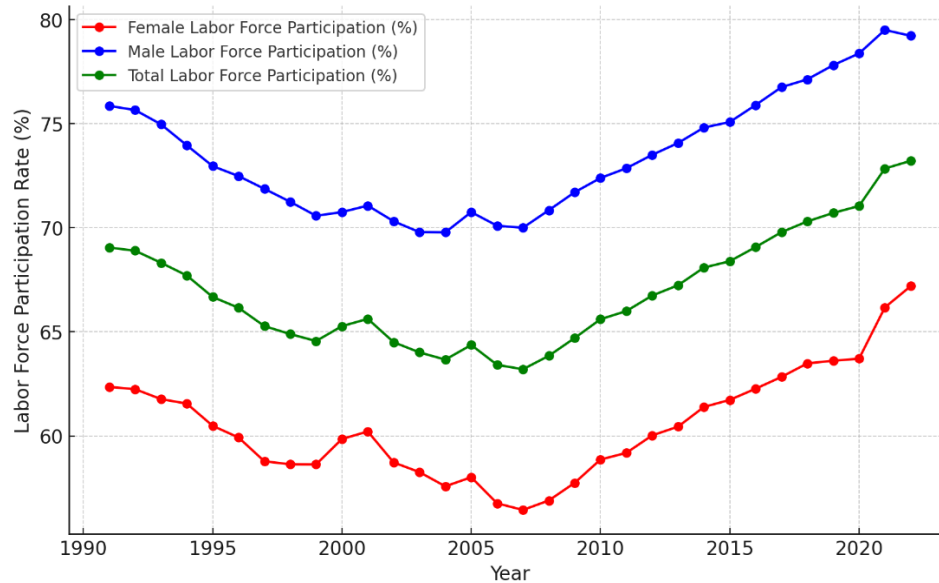
wage premium. In Figure 3, I plot the changes in supply and demand to better understand the labor dynamics. An increase in the supply of high-skilled workers pushes the labor supply curve to the right, so without any change in demand, the equilibrium wage should decrease. Therefore, other factors must also be in play.

One of the key explanations for this phenomenon is skill-biased technical change, a process where the economy evolves in a way that the demand for high-skilled workers grows faster than the supply of college graduates. This shift occurs as developing economies transition away from low-skilled labor (such as agriculture and manufacturing) to more knowledge-intensive sectors, such as technology and finance, which require a highly skilled workforce. In Figure 3, I represent skill-biased technical change with an increase in the demand for high-skilled workers, which shifts the labor demand curve to the right, to a greater extent than the shift in the supply curve. Consequently, the equilibrium wage has increased (Zilibotti, 2022).



**Figure 3.** Skill-biased technical change: labor demand and supply. Source: Yale University Intermediate Macroeconomics Lecture Slide

Another important aspect to consider is the effect of female participation on the labor market. In other advanced economies such as the US, even though female participation in the labor force increased, wages and unemployment (for men and women) did not change by much. This phenomenon can be attributed to the fact that the increase in labor demand has kept pace with the increase in the supply of women in the labor force. As economies expand, more jobs are created, leading to higher business investment and greater demand for labor. Consequently, the influx of women into the labor market has been absorbed without causing large-scale disruptions to unemployment rates.



**Figure 4.** Labor force participation rate (total, female, and male) in Poland. Source: World Bank

The evolution of labor force participation in Poland provides a unique case for analysis. Labor force participation in Poland has evolved quite differently than in other advanced economies such as the US, where the gap in labor force participation between men and women decreased over time, and total labor force participation decreased since the 2000s. Poland shows a different picture. In Figure 4, I plot the labor force participation rate (total, female, and male) in Poland from 1992 to 2022. At the aggregate level, labor force participation decreased from the 1990s to the 2000s during the transition from a communist to a capitalistic economy, and then increased in the 2010s and the 2020s. Surprisingly, between men and women, the gap in labor force participation has not changed over time at all, implying that there has not been progress in gender equality in the labor market. This is a surprising observation, since, in terms of the gender wage gap, there has been good progress in Poland (details in the next subsection).

Next, I will address the gender wage gap, which has persisted despite advancements in educational attainment. As this has been a very researched and explored topic, I would like to touch on key ideas. Firstly, men receive higher pay than women, even after controlling for education and skill level. This suggests that employers might hold biases or preferences favoring male workers, or there may be a belief that men are more "deserving" of higher pay. Additionally, men and women tend to cluster in different professions, which are often unequally valued and paid. Even within the same field, women are often found in lower-paying specializations or roles (for example, teachers in primary school compared to professors at university). While controlling for skill and education helps, differences in work experience due to maternity leave, caregiving responsibilities, or part-time work also affect the wage gap. Men are more likely to work longer hours or overtime, which often leads to higher wages, whereas women are more likely to take on flexible or part-time work for family reasons. All these factors contribute to women with the same education and skill level as a man, to make less (Didier, 2021).

The gender wage gap was somewhat decreasing until the 2000s, but after that period, progress stagnated (Pew Research). In the US, in 1982, women made, on average, 65% of what men made; in 2002, that number went up to 80%, but over the past 20 years, the number went up only by 2% to 82% in 2022. The initial reduction in the wage gap was largely driven by equal pay acts, anti-discrimination laws, and the implementation of family-friendly workplace policies, such as maternity and parental leave. However, social norms and inconsistent enforcement of these policies have limited further progress, and the gender wage gap persists.

Another important topic to touch on is gender norms. Traditional gender roles, which often view women as primary caregivers and men as breadwinners, influence career choices, hours worked, and salary negotiations. In

Poland, a predominantly Catholic country, these gender roles are even more pronounced. Due to these stigmas, women are less encouraged to pursue high-paying STEM fields, which are traditionally male-dominated, making it challenging for them to fit in and advance within these industries. Also, with men occupying many high-ranking positions, they often have the power to influence promotions. This dynamic can lead to favoritism towards other men, further perpetuating the gender gap in leadership and high-income roles (Łobodzińska, 1978).

With these economic theories and concepts in mind, the next section will explore the existing academic research on the intersection of higher education, gender, and labor markets.

## Existing Academic Research on The Topic of Higher Education and The Labor Market

The relationship between higher education and the labor market has been an extensively researched topic across different contexts and countries. In Poland, this relationship is particularly important to explore due to the country's rapid economic transition and the evolving role of women in education and the workforce.

I would like to begin by examining the research on the Polish labor market to provide a clearer understanding of its dynamics. Lewandowski's (2023) research highlights significant changes in Poland's labor market from 2000 to 2021. In the early 2000s, Poland's unemployment rate was as high as 20%, as the transition from the communist system to a free-market economy was still under way, but by 2021, it had dropped to 3.4%, and Covid-19 had only a mild impact on the Polish economy.

A challenge that many developed economies face is an aging population, and Poland is no exception. However, this issue has been mitigated to a certain extent by an influx of immigrants, primarily Ukrainians fleeing conflict, who often fill low-skilled jobs.<sup>2</sup> Due to demographic pressures, the retirement age was raised to 67 years, but it was then reverted back to 60 for women and 65 for men in 2017 due to public disapproval.

Another crucial aspect to consider is the gender wage gap. In Poland, the gender wage gap was 7% in 2018, which is lower than the EU average of 16.7% ("Gender Pay Gap in Poland"). However, significant gender wage inequality remains, particularly for temporary and low-skilled workers. In summary, Poland's labor market has evolved significantly in recent years, yet challenges such as demographic shifts and wage inequality continue to shape its landscape.

I would like to continue by focusing on the gender-specific employment trends discussed in Plomien's (2006) article, which examines Poland's transition from socialism to capitalism and developments in women's participation in the labor market. The article highlights that women in Poland have a significant presence in education but face challenges in translating this into higher wages and leadership positions. This disparity may stem from women not being encouraged to pursue high-paying positions, as these roles are often perceived to be male-dominated. A clear trend emerged in the post-communist economies, where men preferred private sector roles while women gravitated towards the public sector, such as teaching. Another significant change that adversely affected women was the alteration in retirement age policies. According to Plomien (2006), prior to the policy change, women's average pension was 75% of men's average pension, but after the change, women's average pension decreased to 57% of men's average pension. In sum, the change to a capitalistic economy in Poland was not necessarily beneficial for women; their position in the labor market did not change meaningfully.

An essential aspect of understanding the Polish labor market is the influence of religion and gender norms, as explored in Siemieńska's (1996) research. Her work highlights the Catholic Church's role in shaping traditional gender roles in Polish society, affecting women's participation in the labor market and limiting opportunities for self-employment and leadership. The Catholic Church plays a significant role in Polish society, shaping traditional views

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<sup>2</sup> I am referring not only to Russia's invasion of Ukraine in 2022, but previous armed intervention as well, such as Russia's annexation of Crimea in 2014.

on women's roles, particularly promoting the idea that motherhood takes precedence over professional work, deeply influencing whether women choose to pursue jobs. This perspective faced significant criticism, even as far back as the 1980s, when the Church's model of the family was criticized for its exceptionally traditional stance. Despite this, during that period, 94% of Poles expressed confidence in the Church. However, the family model promoted by the Church was seen as rigid, reinforcing gender roles that limited women's economic participation. Ultimately, it is evident that the Church has had a lasting influence on how gender roles are perceived and how women's employment is shaped in Poland.

Examining research from other countries can offer valuable insights into the relationship between women's education and labor market dynamics. One study on South Asia (Voumik et al., 2023) explores the impact of female education on women's employment, emphasizing that factors like trade openness and economic development influence this relationship. The study highlights that increasing female education does not significantly raise female employment rates, as a 1% increase in female education leads to a 0.047% increase in employment. Like South Asian countries, Poland's female labor force participation has been influenced by economic growth and globalization. Trade openness in Poland has shaped employment opportunities for women, reflecting a similar trend where higher education for women leads to increased employment opportunities. However, in Poland, the effect is complicated by socio-economic structures and the transition from a centrally planned economy. This paper found that female education did not greatly increase the employment rate. This finding is consistent with what we see in Poland, where despite the very high levels of female educational attainment, the gender gap in both labor force participation and wages has persisted.

Continuing with Asian countries, Cameron, Dowling, and Worswick (2001) discusses how women's education significantly impacts their labor force participation across Asian countries, emphasizing cultural and gender norms. Educating women has been shown to yield substantial economic benefits, with higher economic returns compared to investments in men's education, as it opens doors for women to pursue professional careers that would otherwise be inaccessible. This is supported by findings that a woman with tertiary education is 49% more likely to be employed in the labor market than a woman with no education. The results clearly point to the importance of tertiary education over lower levels of education in promoting labor force participation. This analysis is particularly relevant to Poland, especially when considering the comparison with Korea, a society deeply rooted in traditional gender norms. The importance of tertiary education as a key factor in women's employment is likely to be mirrored in Poland as well.

Further exploring the effects of providing easily accessible education, we will look at a paper about Chile (Didier, 2021), which examines how higher education attainment reduces gender gaps in the labor market. However, the paper notes that the glass ceiling persists, especially outside of white-collar jobs, after a law was passed that made access to student loans much easier. Higher education in Chile increased female labor force participation, but this mostly benefited lower-paid sectors. We should note that the expansion did not significantly reduce gender inequality in high-skill, high-wage jobs, showing that structural barriers remain. The study highlights that to truly reduce gender inequality, policies beyond education are needed, such as anti-discrimination laws, affirmative action, and family-friendly workplace policies. Poland has also seen significant growth in higher education among women, but this has not necessarily translated into equal outcomes in the labor market, as evidenced by persistent wage gaps and underrepresentation in leadership roles. We see a similar situation in Chile's case, where expansion in higher education has not fully eradicated gender inequalities in employment.

Lastly, let us discuss the polarization of job opportunities in the US, with growth in both high-skill/high-pay and low-skill/low-pay jobs (Autor, 2010). The U.S. labor market has become polarized, with growth concentrated in high-skill, high-pay jobs and low-skill, low-pay jobs, leading to a decline in middle-skill jobs. A leading explanation for polarization focuses on the consequences of ongoing automation and offshoring of middle-skilled "routine" tasks that were formerly performed primarily by workers with moderate education (a high school diploma but less than a four-year college degree). The polarization of the labor market seen in the U.S. is relevant to Poland as well. Poland's shift towards a market-based economy and its integration into the EU have led to similar labor market trends, with challenges in middle-skill employment and increasing demand for high-skilled positions.



Examining these research papers uncovered several social and economic challenges, including the influence of gender roles, social stigmas, and job selection patterns. They have provided valuable insights into understanding the labor market of Poland and the relationship between women's education and employment.

## Conclusion

In this paper, I have examined how higher education among women shaped the labor market in Poland. I found that the unemployment rate in Poland has fallen from 20% in 2002 to 2.7% in 2023, and concurrently, bachelor's degree attainment has increased from 10% in 2000 to 28.7% in 2022. Even though women's college attainment has consistently been higher than men's, there is no clear evidence that the unemployment rate has fallen more for women.

In the first section, I provided an overview of the Polish economy and its labor market, with a focus on higher education and women. Since the fall of the communist bloc, Poland has transformed from a developing economy with a GDP per capita of \$1,700 in 1990 to a developed one with a GDP per capita of \$22,000 in 2023. In the second section, I surveyed economic theories on the effect of higher education among women on the economy. I reviewed skill-biased technical change, a phenomenon in which the industrial composition of economies has changed such that the demand for high-skilled labor increased faster than the supply of college graduates. Additionally, I explored the effects of female participation in the labor market, particularly focusing on labor force participation trends in Poland. Finally, I analyzed the gender wage gap, investigating its underlying causes and persistence.

In the third section, I reviewed academic research on the role of higher education among women and its impact on labor markets. This analysis included case studies from various countries that have experienced an increase in female participation in higher education and, subsequently, in the workforce. Across these countries, both genders have seen increases in college attainment, and shifts in gender norms have contributed to higher female labor force participation. When analyzing research specific to Poland, it is evident that the country has undergone significant positive changes since the fall of the Soviet Union. Unemployment has declined to levels comparable with well-developed nations, and labor force participation has steadily increased since the 2007-2008 financial crisis.

However, despite these advances, further progress is constrained by social stigmas and entrenched norms. Many leadership and white-collar positions remain dominated by men, and the female labor force participation rate is approximately 14 percentage points lower than that of men. Examining other countries, we observe similar outcomes and trends. Studies of Asian economies reveal that increases in female education are correlated with higher employment rates. Chile provides a compelling example where higher education, particularly among women, led to greater employment opportunities and participation in the labor market. The U.S. labor market also offers a relevant perspective, particularly in understanding how educational attainment and gender norms influence labor market polarization and opportunities for women.

To summarize, the research showed that increasing educational attainment for women has a significant positive impact on economic indicators, such as reducing unemployment, narrowing the gender wage gap, and boosting GDP per capita. These findings reinforce the importance of continuing to promote higher education among women to drive economic growth and improve gender equality in the labor market.

To conclude, I would like to suggest directions for further research. One of the puzzles in the Polish labor market is that although women's educational attainment has been higher than men's, the gender wage gap persists. Future research may investigate to what extent gender norms and other factors may lead to alleviating the gender wage gap. Additionally, further studies could investigate strategies for encouraging higher education among women, particularly in STEM fields, where female representation remains low. Addressing social stigmas and cultural perceptions that discourage women from pursuing these fields is crucial. Another important area for future research is examining the role of workplace policies, such as flexible work arrangements, parental leave, and childcare support, in facilitating women's full participation in the labor market. Understanding how these policies affect career progression and employment opportunities for women can provide insights into how to create more equitable work environments.

## Acknowledgments

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