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**Youth Employment Challenges and the Impact of Labor Market Reforms:
The Case of the Gulf Cooperation Council Countries**

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Abstract

High youth unemployment is recognized as a major employment challenge across MENA region countries. However, statistics from the high-income Gulf Cooperation Council (GCC) states reveal a distinct dimension to this challenge: a persistent female youth disparity evident in youth unemployment rates, labor force participation, and employment-population ratios.

This research empirically examines the determinants of these gender biases, with a specific focus on the commitment to the international labor standard of equal remuneration, which has been overlooked in gender disparity literature. We test three central hypotheses: first, commitment to the equal remuneration labor standard reduces the female-to-male youth unemployment rate ratio; second, commitment increases the female-to-male labor force participation rate ratio; and third, commitment raises the female-to-male employment-population ratio.

Using panel data from the six GCC countries for the period 1995–2020, we estimate an empirical model that explains gender disparity through variables including real GDP per capita, labor market freedom, communication technology penetration, population density, the social contract, and the commitment to equal remuneration.

Methodologically, the study employs panel model estimators to address the determinants of female youth disparity. A key challenge is the small cross-sectional sample (N=6) relative to the time dimension (T=26). After testing panel heterogeneity, within-panel correlation, and cross-sectional dependence, we adopt pooled OLS with Driscoll-Kraay standard errors, which is robust to these issues.

The empirical results indicate that commitment to the equal remuneration standard significantly reduces the female-male youth unemployment ratio and increases both the female-male labor force participation ratio and the employment-population ratio. This research contributes

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novel evidence that adopting international labor standards—specifically equal pay commitments—can effectively reduce gender disparity in GCC labor markets.

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Youth Employment Challenges and the Impact of Labor Market Reforms: The Case of the Gulf Cooperation Council Countries

1. Introduction

Many Middle East and North Africa (MENA) countries have adopted state-led development path since the sixties and seventies with government and the public sector becoming the main formal employer for the increasing labor force (Cammett et al., 2015). After the end of colonialism and gaining independence, the Arab MENA countries have embarked on modernization efforts in which governments spearheaded the development of agriculture, industry and services.

Governments also availed free public education to its citizens. Salehi-Isfahani (2012a) points out that the formal education system served employment in the public sector. Over time, however, state employment and free education have created three challenges: high youth unemployment, low productivity, and long-duration frictional unemployment.³

The combination of population growth and free public education has resulted in an excess supply of graduates who seek employment in the government administrative apparatus and the state-owned enterprises. In addition, education quality has been deteriorating and more focused on certification rather than learning (Salehi-Isfahani 2012a). Low investment in public education and vocational training have resulted in declining education quality and labor productivity, limiting the substitutability of employment between the public and the profit-seeking private sectors. Furthermore, the inequality of opportunity may have exacerbated frictional youth unemployment rate (YUR) and diminished labor productivity in the workplace (Salehi-Isfahani 2012a; 2012b).

The purpose of this research is twofold. First, it discusses the nature of the employment challenge in the oil-rich, high-income Gulf Cooperation Council (GCC) countries, a subgroup of MENA countries. It reveals a gender disparity in employment, with female youth (total females) experiencing persistently worse labor market outcomes than male youth (total males). Labor market outcomes include the unemployment rate (UR), the labor force participation rate (LFPR) and the employment-population ratio (EPR). Second, it empirically examines the determinants of female youth disparity focusing on the ratified ILO equal remuneration and discrimination standards. To the best of our knowledge, examining the impact of ILO labor standards on labor market outcomes has not been examined before.

The analysis addresses employment challenges from two angles: benchmarking GCC youth outcomes against the comparator group of other high-income countries and then comparing

³ Frictional youth unemployment in the region is often prolonged, lasting years, due to two interrelated factors: low formal labor market turnover and high reservation wages. Low turnover is primarily an institutional outcome, driven by stringent labor regulations, high job security, and socio-cultural resistance to dismissing workers (Assaad et al., 2010; Dhillon & Yousef, 2009; Egel & Salehi-Isfahani, 2010; Salehi-Isfahani, 2012b; Yassine, 2012). High reservation wages have distinct origins: in oil-exporting countries, they are fuelled by substantial oil rents, while in oil-importing countries, they reflect the "opportunity cost" of not working in higher-wage, oil-rich economies. This environment is further exacerbated by diminishing labor productivity, which can be traced to declining education quality, slow technological advancement, and adverse productivity spillovers from less competent workers.

outcomes for female and male youth within the GCC. Regarding the first angle, the analysis finds that the average youth unemployment rate (UR) in GCC countries from 2000 to 2020 was lower than the average of other high-income countries, while the average youth employment-to-population ratio (EPR) was comparable. However, the average youth labor force participation rate (LFPR) in the GCC is lower than in the high-income comparator group. The GCC therefore performed better on unemployment and similarly on employment but underperformed in labor force participation.

From the second perspective, the analysis identifies a consistent disparity for female youth in all labor market indicators. Female youth face an unemployment rate multiple times higher than their male counterparts, alongside lower labor force participation and employment rates. Therefore, the primary employment challenge in the high-income GCC is clearly the gender gap affecting young women.

To empirically examine the determinants of female youth disparity, this research employs panel data models. A key methodological challenge is the small sample size, where the time dimension ($T=26$) exceeds the number of cross-sectional units ($N=6$). The analysis tests for panel heterogeneity, within-panel correlation, and cross-sectional dependence. Among standard estimators—including random effects GLS, Feasible GLS, and pooled OLS with Driscoll-Kraay standard errors—the study adopts the pooled OLS methodology with Driscoll-Kraay correction.⁴

This research contributes novelty in two key respects. First, it is the first to analyze employment challenges in the high-income GCC countries. Second, it investigates the impact of labor market reforms, specifically the adoption of international labor standards, on gender disparity. To the best of our knowledge, it is the first study to undertake either of these analyses.

Following an overview of the GCC labor market context (2000-2020) and its policy reforms in Sections 2 and 3, respectively, the paper turns to its empirical analysis. Section 4 models female youth disparity, building on existing literature to test the impact of ILO equal remuneration and non-discrimination standards and presents the study's hypotheses and data. Section 5 addresses empirical considerations specific to the GCC data, leading to the presentation of results in Section 6. The final two sections discuss these findings and present the study's conclusions.

2. Analysis of GCC Labor Market Outcomes

This research analyzes whether high-income GCC countries experienced high youth unemployment, following the line of inquiry in Salehi-Isfahani (2012a). Moving beyond the unemployment rate, it examines a broader set of indicators—youth unemployment Rate (YUR), labor force participation rate (LFPR), and employment-to-population ratio (EPR)—through a two-pronged approach: benchmarking against other high-income countries and conducting within-GCC gender analysis.

⁴ The adoption of different estimation methodologies also serves as a robustness check.

A. Benchmarking Against High-Income Countries

A comparison of YURs in the GCC and the comparator group of high-income countries reveals that the GCC average was notably lower. As shown in Table 1, the average GCC YUR was about 10% (2000-2010) and 11% (2010-2020), compared to 17% and 18%, respectively, in the comparator group.⁵ This pattern holds when disaggregated by gender: the average GCC male YUR was roughly half that of the comparator group, while the GCC female YUR was broadly similar.

[Table 1 about here.]

B. The Within-GCC Gender Disparity

However, a comparison within the GCC reveals a pronounced gender gap. The female YUR was more than double the male rate in 2000-2010 and nearly triple in 2010-2020. Figure 1 illustrates this disparity across all six GCC countries, showing a widespread decline beginning around 2015, with earlier improvements in Bahrain and Qatar.

[Figure 1 about here.]

A similar pattern of disparity is evident in the LFPR. The average total and female youth LFPR in the GCC are significantly lower than in the comparator group (Table 1). The difference is particularly striking for females, with a gap of nearly 19 and 17 percentage points in the two decades, respectively. Internally, the average GCC female youth LFPR is less than half the male rate. Figure 2 shows that this ratio has followed divergent national trends, improving in some countries like Bahrain and the UAE while exhibiting more volatility in others.

[Figure 2 about here.]

C. A More Robust Indicator: Employment-to-Population Ratio

To provide a more reliable measure of job creation, we also analyze the EPR. Table 1 shows that 38% of the GCC youth population is employed, a figure similar to the comparator group. However, this aggregate similarity masks a severe gender disparity: while about half of male youth are employed, the figure for female youth is only one-fifth. Consequently, the GCC's average female youth EPR is lower than that of the comparator group. As seen in Figure 3, the ratio of female-to-male EPR has improved in Bahrain and the UAE, while other nations show more mixed trajectories.

⁵ Other high-income countries include Australia, Austria, Bahamas, Barbados, Belgium, Brunei Darussalam, Canada, Channel Islands, Chile, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, French Polynesia, Germany, Greece, Guam, Hong Kong (China), Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Macao (China), Malta, Netherlands, New Caledonia, New Zealand, Norway, Poland, Portugal, Puerto Rico, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Trinidad and Tobago, United Kingdom, United States, Uruguay and Virgin Islands.

[Figure 3 about here.]

3. Labor Market Policy Reforms

The GCC countries have undertaken significant labor market policy reforms, many of which are likely contributors to reducing female youth disparity. These reforms fall into two main categories: the adoption of international labor standards and the enactment of domestic legal and labor policies aimed at empowering women.

A. Adoption of International Labor Standards

A key component of reform has been the ratification of core International Labor Organization (ILO) labor standards. Saudi Arabia and the UAE are parties to the ILO Equal Remuneration Convention (No. 100).⁶ Ratified by the UAE in 1997, this convention mandates "rates of remuneration established without discrimination based on sex," defining "remuneration" broadly to include all wages and additional emoluments. Together with its openness, this adoption likely gave the UAE a head start in improving female youth labor force participation (LFP) and employment rates relative to its neighboring GCC countries.

Except for Oman, all GCC countries have adopted the ILO Discrimination Convention (No. 111).⁷ This convention forbids discrimination "based on race, color, sex, religion... or social origin," obligating member states to align national policies to guarantee equality of opportunity and treatment.

B. Domestic Legal and Labor Reforms

Beyond international conventions, Saudi Arabia, the UAE, and Bahrain have implemented profound domestic reforms. Table 2 provides a summary, while the text below details key initiatives.

[Table 2 about here.]

Saudi Arabia, the biggest GCC economy, has recently enacted several reforms that have given women social and economic freedoms. In 2020, Saudi Arabia granted women domestic and

⁶ Saudi Arabia and the UAE ratified this convention in June 1978 and February 1997, respectively. This convention could be thought of a special case of Convention 111 pertaining to anti-discrimination on sex basis as discussed in the following paragraph.

⁷ Kuwait was the first GCC country to ratify this convention (December 1966) followed by Qatar (August 1976), Saudi Arabia (June 1978), Bahrain (September 2000) and the UAE (June 2001).

foreign mobility by giving them the rights to choose where to reside and head households and obtain passports and travel outside the country on their own in the same way as men. To support women’s motherhood and retirement in the long run, Saudi Arabia prohibited the dismissal of pregnant women and equalized the retirement age of men and women. To improve work equality and pay, Saudi Arabia granted women in 2021 the rights to work at night, in jobs deemed dangerous, and in industrial jobs.

In 2019, the UAE, the second biggest GCC economy, enhanced women’s foreign mobility by granting them the right to obtain passports on their own. A year later, the UAE allowed women more work-related risk and perhaps higher pay by granting them the rights to work at night, in jobs deemed dangerous, and in industrial jobs. It allowed women to head households. In 2021, the UAE followed Saudi Arabia’s suit and granted women domestic and foreign mobility by giving them the rights to choose where to reside and travel outside the country on their own in the same way as men. Furthermore, the law mandated equal remuneration of men and women for work of equal value.

Like Saudi Arabi and the UAE, Bahrain has adopted labor policy reforms that improve work equality and pay for women. In 2021, Bahrain allowed women to work in jobs deemed dangerous in the same way as a man. In 2022, Bahrain reformed the labor law to mandate equality in remuneration between men and women for work of equal value and allow women to work in industrial and dangerous jobs.

4. Empirical Model, Testable Hypotheses and Data Sources

In this section, we empirically examine the determinants of gender disparity focusing on the commitment to equal remuneration and non-discrimination through ILO conventions ratification. The empirical model is built on Mina (2023; 2024). Mina (2023) examines female youth unemployment in the GCC countries, while Mina (2024) examines unemployment rates in the GCC countries distinguished by age and gender.

The empirical model is specified as:

$$DISPARITY_{it} = B_0 + B_1 GDPCAPITA_{it} + B_2 LFREEDOM_{it} + B_3 TECHNOLOGY_{it} + B_4 DENSITY_{it} + B_5 CONTRACT_{it} + B_6 REMUNERATION_{it} + B_7 DISCRIMINATION_{it} + \varepsilon_{it} \quad (1)$$

where *DISPARITY* is the female youth disparity. We measure gender disparity in youth unemployment (YUR) as the female-to-male youth unemployment rate ratio. A higher ratio indicates greater difficulty for female youth in securing employment. Similarly, disparity in labor force participation (LFPR) and the employment-population ratio (EPR) is measured as the female-to-male youth ratios for each metric, respectively. Higher ratios signify greater relative encouragement for female labor force entry and relative ease in obtaining employment.

GDPCAPITA is real GDP per capita in constant 2015 US\$ (log). An increase in real GDP is associated with economic growth, which increases job opportunities and employment in the economy, thereby increasing LFPR and EPR and reducing the unemployment rates for both genders and presumably for youth (ages 15-24). Using FE/IV estimation methodology, Mina (2023) finds that real GDP per capita reduces female youth unemployment rate in the GCC countries. However, this influence is found to be sensitive to how labor market flexibility is measured. With lack of evidence on the response of male youth unemployment rate to the increase in real GDP per capita, we cannot tell *a priori* the direction of the influence of real GDP per capita on *DISPARITY*.

LFREEDOM is the degree of labor market freedom, as measured by the Heritage Foundation's labor freedom indicator (log). The indicator ranges from 0 to 100. A higher score indicates more labor freedom. The indicator is one of 12 indicators constituting the index of economic freedom.⁸ The labor freedom indicator considers aspects of the legal and regulatory framework of the labor market, including regulations concerning minimum wages, associational rights, laws inhibiting lay-offs, severance requirements, and restraints on hiring and hours worked, as well as LFPR and labor productivity.

Mina (2023) finds robust economic and statistical significance of labor market flexibility on female youth unemployment using FE/IV estimation methodology. He measures labor market flexibility using World Economic Forum's Global Competitiveness Index. It comprises several indicators: ease of hiring and firing, labor-employer cooperation, wage determination flexibility, link of pay to productivity, and reliance on professional management. Mina (2024) finds a negative influence of wage determination flexibility on both male and female youth unemployment rates, with stronger economic influence on female youth unemployment rate. We therefore expect that *LFREEDOM* reduces female YUR disparity. However, we cannot specify the direction of the influence on the other two measures of disparity *a priori*.

TECHNOLOGY accounts for adoption of technology in society measured by the percentage of the population using the internet. Internet is a component of digital technology. Digital technology reduces information barriers and risk of exclusion, enhances efficiency and boosts labor productivity (World Bank, 2016). In the case of GCC countries, internet adoption may therefore reduce female youth disparity, *ceteris paribus*.

The use of the internet has facilitated job searches (Stevenson, 2009; Kuhn and Mansour, 2014), allowed women to work online and enabled the start of online businesses and entrepreneurship (World Bank, 2016; Guo et al., 2024), availed employer-needed skills (World

⁸ Labor freedom together with business and monetary freedom account for regulatory efficiency in the index of economic freedom.

Bank, 2016), and reduced frictional unemployment duration.⁹ Higher internet penetration increases the chances of getting contacted by employers (Stevenson, 2009). Kuhn and Mansour (2014) find that online job searches reduce unemployment duration for young US jobseekers by nearly 25 percent compared to offline job searches. In the National Longitudinal Survey of Youth (NLSY97) sample of young US jobseekers for the period 2005-2008, the internet job searches were disproportionately formal. However, contacting friends and relatives was useful in re-employment.

Internet use has also enabled entrepreneurship.¹⁰ Guo et al. (2024) find that internet development, improves access to information and finance, thereby increasing the likelihood of individual entrepreneurship and the number of new firm registrations in China.

DENSITY accounts for population density. It is measured by the number of people per square kilometer of land area (log). Population density tends to be associated with urbanization and infrastructure development (Mina, 2023; 2024). Transportation systems tend to be better in urban areas as opposed to rural areas thus facilitating mobility and improving access to work. Also, academic and vocational training institutions may be concentrated in urban areas. Therefore, density and urbanization may be associated with better labor productivity. Finally, childcare services tend to be concentrated in urban areas, which together with better transportation systems may improve LFPR especially of females.

CONTRACT accounts for the extent of the social contract.¹¹ In the GCC countries, the social contract takes the form of well-paid government jobs, generous pensions and free access to public education and health services (Mina, 2023; 2024). Natural resources have typically financed the social contract in the GCC countries. Thus, *CONTRACT* is measured by oil rents as a percentage of GDP. Mina (2023) finds that oil rents reduce female youth unemployment rates. We therefore expect oil rents to reduce the female YUR disparity and increase the relative female youth LFPR and EPR.

REMUNERATION and *DISCRIMINATION* account for the ratified ILO Equal Remuneration Convention (No. 100) and Discrimination Convention (No. 111), respectively. The conventions are accounted for through dummy variables taking the value of 1 as long as the convention is in force, and 0 otherwise. Modeling these conventions is novel to the best of our knowledge.

⁹ World Bank (2016) alerts *most gains* from digital technologies (including the use of internet) accrue *disproportionally to the better educated*, with technology *complementing* the skills and assets of users (page 104; *italics added*).

¹⁰ Anecdotal evidence suggests that internet access has enabled female youth entrepreneurship in the UAE to start online businesses.

¹¹ See Mina (2023; 2024).

We make the following two hypotheses regarding the impact of these two ILO conventions. First, the ILO remuneration convention reduces female youth disparity in the GCC countries. Thus, the *first testable null hypothesis* is $H_0: \beta_6 = 0$ against the alternative hypothesis $H_1: \beta_6 \neq 0$. Second, the ILO discrimination convention reduces female youth disparity in the GCC countries. Thus, the *second testable null hypothesis* is $H_0: \beta_7 = 0$ against the alternative hypothesis $H_1: \beta_7 \neq 0$.

Data on *DISPARITY* is calculated using the World Bank's World Development Indicators (WDI) database. Data on *GDPCAPITA*, *TECHNOLOGY*, *DENSITY* and *CONTRACT* are obtained from WDI. Data on *LFREEDOM* is obtained from the Heritage Foundation. Data on *REMUNERATION* and *DISCRIMINATION* are obtained from ILO's information system on international labor standards website.

5. Empirical issues

We consider empirical issues that could influence the empirical model. These are the presence of unobserved heterogeneity, heteroskedasticity, and within- and cross-panel correlation.

Unobserved heterogeneity arises from the presence of time-invariant, unobserved country- and/or time-specific factors. Failure to account for presence of unobserved heterogeneity results in biased and inconsistent estimates. The standard errors under- or over-estimate the true variability of the coefficient estimate, which influences hypothesis testing and inference. In addressing unobserved heterogeneity, we will use either fixed or random effects models.

Adopting a fixed effects model to address country-specific effects is plausible. However, this estimation methodology has its limitation: The effects of the time-invariant gender are absorbed into the fixed effects. In addition, since the ILO remuneration and discrimination conventions are modeled as (fixed) dummy variables that take a constant value (1) as long as the convention is in force, the adoption of a fixed effects model will be unsuitable. Thus, a random effects model is a logical alternative.

The random effects model can be written as:

$$y_{it} = X'_{it}\beta + u_{it}$$

$$u_{it} = \alpha_i + \epsilon_{it}$$

where α_i is the random entity-specific effect and ϵ_{it} is the idiosyncratic error term.

Within-panel correlation arises from the correlation of female youth disparity over time, resulting in correlation in the error term. Cross-panel correlation (or more generally cross-sectional or cross-panel dependence) arises first from the fact that the GCC countries are one political entity, which coordinates economic policies among its six member countries. Second, the GCC countries

have close social and religious culture and geographic proximity, which are key inputs in the formation of this political entity. Third, the GCC countries rely heavily on oil production, which can subject them to common oil price shocks. We should note though that cross-sectional dependence tests are more suitable to large panels in both cross section i and time t . In small panels, the tests may have low power to detect cross-sectional dependence. Tugcu (2018) posits, however, that Pesaran's (2004) cross-sectional independence test is suitable for small N and T .¹²

To test for panel heteroskedasticity, we use the likelihood ratio test. The null hypothesis assumes that panels are homoscedastic, while the alternative hypothesis assumes that panels are heteroskedastic. Table 3 presents the results of the likelihood ratio test results. Test results reject the null hypothesis of panel homoskedasticity in all regressions at the 1 percent level.

[Table 3 about here.]

To test for within-panel correlation, we use Wooldridge's (2002) serial correlation test.¹³ Test results are reported in table 3. Test results fail to reject the null hypothesis of no first-order autocorrelation for female youth LFPR and EPR disparity, and only marginally (at the 10 percent level) rejects the null hypothesis for female youth YUR disparity. Accordingly, we proceed with the null hypothesis assumption of no first-order autocorrelation.

For cross-sectional dependence, we report the results of Pesaran's (2004; 2021) cross-sectional independence test.¹⁴ We also report the Frees and Friedman test results. As table 3 shows, the Pesaran test results reject the null hypothesis of cross-sectional independence for YUR and LFPR. but fail to reject it for EPR.

In estimating the random effects model, we will report the GLS and FGLS estimator results. In GLS estimation of the random effects model, we will allow for robust or clustered standard errors. In FGLS estimation, we will allow for panel heteroskedasticity.¹⁵

We should note though that the FGLS is better suited for large samples as opposed to small samples. FGLS relies on large samples for estimates of the variance components of the error term u_{it} (σ_a^2 and σ_ε^2) (Wooldridge, 2010; Baltagi, 2021). In small samples, these estimates are imprecise, resulting in inefficient/inconsistent coefficient estimates of the empirical model. Therefore, we will also report the pooled ordinary least squares (OLS) estimator with Driscoll and Kraay (1998)

¹² Pesaran (2021) states that the cross-sectional dependence tests proposed “have the correct size in very small samples and satisfactory power, and as predicted by the theory, quite robust to the presence of unit roots and structural breaks.”

¹³ This test is developed for STATA by Drukker (2003).

¹⁴ The null hypothesis is cross-sectional independence.

¹⁵ We use STATA 18 econometric package.

standard errors. The Driscoll and Kraay (1998) standard errors correct for heteroskedasticity and (spatial) cross-sectional dependence.

6. Empirical Results

We start this section by presenting in table 4 the average female youth disparity using the three labor market indicators for each of the six GCC countries, as well as the period average for the explanatory variables. The table shows that Qatar and Bahrain have the highest female youth unemployment disparity although they did not experience high female youth unemployment rates compared to other GCC countries as table 1 shows. The highest female youth LFPR and EPR disparities are in Kuwait, Bahrain and UAE.¹⁶

[Table 4 about here.]

Among the GCC countries, the highest real GDP per capita is in Qatar. However, the most labor freedom and technology adoption is in the UAE. Population density is highest in Bahrain and Kuwait, the two countries with the highest relative female youth LFPR and EPR. Kuwait has the highest percentage of oil rents to GDP among the GCC countries.

Table 5 presents the pairwise correlation coefficients. The magnitude of the correlation coefficients between the three labor market disparities and the explanatory variables is not strikingly high (0.6 and above). This in turn reduces concerns about potential multicollinearity in the empirical model.

[Table 5 about here.]

a. *Random Effects Model Estimates*

The random effects GLS estimates of the three female youth disparities are presented in tables 6-8. In these tables, the baseline specification (1) does not include any ILO labor convention. Specification 2 includes the ILO remuneration convention. Specification 3 includes the ILO discrimination convention. Specification 4 includes both conventions.

Table 6 presents the YUR disparity estimates. *GDPCAPITA* increases the ratio of female youth to male youth unemployment rates, as specifications 2 and 4 show. An increase in real GDP per capita by one percentage point increases the ratio of female to male unemployment rates by about 0.05 point in specification 2 and about 0.037 in specification 4.¹⁷ Population density, *DENSITY*, reduces this ratio as well in specifications 2 and 4. An increase in population density

¹⁶ The disparities in these countries favourably suggest that female youth LFPR and EPR are higher than those for male youth!

¹⁷ We discuss the statistically significant coefficients at the 5 percent level at least.

by one percentage point reduces the ratio of female youth to male youth unemployment rates by about 0.9 percentage point in specification 2. This influence is strengthened further in specification 4 to 2 percentage points.

[Table 6 about here.]

Having the ILO equal remuneration convention in force, *REMUNARATION*, reduces the ratio of female to male youth unemployment rates further as specifications 2 and 4 show; the binary nature of this dummy suggests that having the convention in force (as opposed to its absence) reduces disparity. This evidence rejects the null hypothesis of no influence of ILO equal remuneration convention on YUR disparity.¹⁸

The ILO discrimination convention, *DISCRIMINATION*, by itself has no influence on YUR disparity, as specification 3 shows. However, in presence of the ILO equal remuneration convention, the discrimination convention surprisingly increases the ratio of female to male youth unemployment rate, as specification 4 shows. This evidence rejects the null hypothesis of no influence of ILO discrimination convention on YUR disparity but in favour of worsening YUR disparity.¹⁹

Table 7 presents the estimates for LFPR disparity. The table shows that population density, *DENSITY*, encourages female youth labor force participation relative to male youth in the four specifications, probably suggesting that population density enhances information and knowledge sharing. *REMUNERATION* and *DISCRIMINATION* have similar influences to those in table 6.

[Table 7 about here.]

This evidence rejects the null hypothesis of no influence of ILO equal remuneration convention on LFPR disparity in favour of the alternative hypothesis of a positive influence. Evidence also rejects the null hypothesis of no influence of ILO discrimination convention on LFPR disparity in favour of improving it.

Table 8 presents the EPR disparity estimates. *GDP CAPITA* increases the relative female-youth EPR as all specifications show. An increase in real GDP per capita by one percentage point increases the ratio of female to male EPR between about 0.01- 0.02 point. Population density, *DENSITY*, improves this ratio in all. An increase in population density by one percentage point improves the ratio of female to male EPR between 0.05 percentage point in specification 1 to 0.09 percentage point in specification 4, when ILO conventions are accounted for.

¹⁸ It is very likely that this influence is more applicable to the UAE given the fact that it is the only GCC country that ratified this convention in 1997, as mentioned in section 3 above.

¹⁹ See footnote 20 above.

[Table 8 about here.]

REMUNARATION increases the ratio of female to male youth EPR, as specification 4 shows. This evidence rejects the null hypothesis of no influence of ILO equal remuneration convention on EPR disparity. *DISCRIMINATION* reduces EPR disparity, as specifications 3 and 4 show. Evidence therefore rejects the null hypothesis of no influence of ILO discrimination convention on EPR disparity in favour of surprisingly worsening the EPR disparity.

b. Feasible Generalized Least Squares Estimates

Accounting for panel heteroskedasticity and cross-sectional dependence, we present the FGLS estimates of the three female youth labor market disparities in tables 9-11.

GDPCAPITA increases the ratio of female youth to male youth unemployment rates in all specifications of table 9. Population density, *DENSITY*, reduces this ratio in all specifications but specification 3. Compared to the random effects GLS results, the FGLS estimates of *LFREEDOM* and *CONTRACT* have a significant negative influence on this ratio, suggesting that flexible labor markets and generous social contract favourably influence female youth.

[Table 9 about here.]

REMUNARATION reduces the ratio further as specifications 2 and 4 show. Similarly, *DISCRIMINATION* reduces the YUR disparity, as specification 3 shows. However, in presence of *REMUNARATION*, *DISCRIMINATION* increases the ratio, as specification 4 shows. These results are similar to those of table 6.

Table 10 shows that *GDPCAPITA*, *LFREEDOM*, *DENSITY*, *CONTRACT*, and *REMUNERATION* increase the ratio of female to male youth LFPR in all specifications. *TECHNOLOGY* in contrast reduces this ratio. The negative influence of *DISCRIMINATION* shows again in specification 4.

[Table 10 about here.]

Similar to the results of Table 10, Table 11 shows that *GDPCAPITA*, *LFREEDOM*, *DENSITY*, and *CONTRACT* increase the ratio of female to male youth EPR in all specifications. *TECHNOLOGY* in contrast reduces this ratio. The positive influence of *REMUNERATION* shows in specification 4, while *DISCRIMINATION* shows a negative influence in specifications 3 and 4.

[Table 11 about here.]

c. Pooled Ordinary Least Squares Estimates

Accounting for panel heteroskedasticity and cross-sectional dependence in small panels, we present the pooled OLS estimates of the three female youth disparities in tables 12-14. Table 12 shows that *GDPCAPITA* increases the relative female YUR as all specifications show. Population density, *DENSITY*, reduces this ratio in all specifications except in specification 3. Similar to the FGLS estimates of table 9, *LFREEDOM* and *CONTRACT* have a significant negative influence on this ratio, suggesting that flexible labor markets and the generous social contract work in favour of female youth.

[Table 12 about here.]

REMUNARATION reduces the ratio of female to male unemployment rate further as specifications 2 and 4 show. *DISCRIMINATION* reduces the YUR disparity, as specification 3 shows. However, in presence of the ILO equal remuneration convention, the discrimination convention increases the ratio of female to male unemployment rate, as specification 4 shows. These results are similar to those of tables 9 and 6.

Table 13 shows that *GDPCAPITA*, *DENSITY*, and *CONTRACT* increase the ratio of female to male youth LFPR. *LFREEDOM* increases the ratio in all specifications except in specification 4, while *REMUNERATION* increases the ratio only in specification 4. Unlike table 10, *TECHNOLOGY* and *DISCRIMINATION* have no influence.

[Table 13 about here.]

Similar to the results of Table 11, Table 14 shows that *GDPCAPITA*, *LFREEDOM*, and *DENSITY* increase the ratio of female to male youth EPR in all specifications, while *CONTRACT* has a positive influence in specifications 3 and 4. *TECHNOLOGY* in contrast reduces this ratio. The positive influence of *REMUNERATION* shows in specification 4, while *DISCRIMINATION* shows a negative influence in specifications 3 and 4.

[Table 14 about here.]

7. Discussion

In this section, we discuss the empirical evidence on the determinants that have shown robustness to changes in estimation methodology. These are real GDP per capita, population density, and the ILO equal remuneration convention.

The empirical evidence we have obtained suggests that income matters for female youth disparity in the three labor market outcomes. Real GDP per capita favourably increases relative female youth labor force participation rate and employment-population ratio but unfavourably

increases the relative female youth unemployment rate. The former favourable influence likely arises from the opportunity cost of higher incomes for female youth driving them to participate and seek employment opportunities. The latter unfavourable influence likely stems from the income effect on labor supply and the high wage cost on labor demand, if female youth have above equilibrium market wages.

As mentioned in the empirical model section above, population density tends to be associated with urbanization and infrastructure development. Transportation systems tend to be better in urban areas thus facilitating mobility and improving access to work. Academic and vocational training institutions may be concentrated in urban areas. Therefore, density and urbanization may be associated with better labor productivity, which increases demand for labor. Childcare services tend to be concentrated in urban areas, which together with better transportation systems tend to improve labor force participation rates, especially of females. Higher population density may also imply more information and knowledge sharing about job opportunities. All these factors tend to reduce female unemployment, encourage their participation in the labor force, and increase their employment.

Empirical evidence shows that the ILO equal remuneration convention reduces female youth unemployment disparity and increases their relative labor force participation and employment. The evidence lends support to the rejection of the null hypothesis of no influence on the three female youth labor market disparities. Compared to the ratified ILO discrimination convention by most GCC countries, the equal remuneration convention seems to be more positive about commitment to equal treatment of females. This positive influence may have spread from the UAE - the only GCC country that ratified this convention - to other GCC countries.

8. Conclusion

This research examines the employment challenges in the high-income GCC countries. The analysis finds that the major employment challenge in the GCC countries is not the high youth unemployment rates. The real employment challenge lies in female youth labour market outcome disparities. The disparities are observed in unemployment rate, the labor force participation rate, and the employment-population ratio.

The research models these disparities and estimates the influence of their determinants, focusing on the ILO equal remuneration and discrimination conventions. Addressing panel heterogeneity, within correlation, and cross-sectional dependence in small samples and adopting three estimation methodologies, empirical evidence shows that the ILO equal remuneration convention reduces the relative female youth unemployment rate and increases the relative labor force participation rate and employment ratio.

The research is novel in two respects. First, it identifies the nature of employment challenges in the oil-rich, high-income GCC countries. Second, it shows that international commitment to equal remuneration can be useful in addressing gender disparities in the GCC countries.

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Table 1: Youth Labor Indicators in the GCC Countries (Percent; period average)

Country	LFPR			EPR			YUR		
	Total	Female	Male	Total	Female	Male	Total	Female	Male
	2000-2010								
Bahrain	41.8	25.5	53.7	40.4	23.1	53.0	4.5	10.9	2.2
Kuwait	31.6	24.2	37.9	29.5	21.8	36.0	6.0	7.5	5.2
Oman	36.9	21.4	50.0	33.3	17.7	45.9	9.4	16.1	7.1
Qatar	64.6	33.2	80.7	64.8	30.5	80.0	2.0	8.3	0.9
Saudi Arabia	17.9	7.4	27.8	13.5	4.0	21.5	29.7	46.3	25.9
UAE	50.2	27.3	62.7	48.9	25.0	60.9	6.4	10.0	5.6
Total	40.5	23.2	52.1	38.4	20.4	49.5	9.7	16.5	7.8
	2010-2020								
Bahrain	41.5	26.0	53.1	39.6	22.9	52.2	5.7	13.2	3.0
Kuwait	26.6	17.9	34.1	22.6	14.1	30.1	14.3	21.6	11.3
Oman	38.6	14.8	55.1	35.3	10.8	52.6	9.4	28.3	5.8
Qatar	70.2	36.2	80.9	69.0	34.4	80.0	0.8	4.5	0.3
Saudi Arabia	18.5	8.7	27.7	13.4	4.1	22.2	28.5	53.9	21.2
UAE	50.9	31.5	62.1	49.5	27.4	58.5	6.6	12.1	5.5
Total	41.1	22.5	52.2	38.2	19.0	49.3	10.9	22.3	7.8
	Other High-Income Countries								
2000-2010	46.7	42.0	50.7	39.0	34.4	42.8	16.8	18.3	16.1
2010-2020	44.2	39.8	47.7	36.2	32.3	39.3	18.2	19.6	17.9

Source: Author's calculations using World Bank Open Data, 2000-2020. Data available at: <https://data.worldbank.org>

Table 2: Business and Legal Reforms in the GCC Countries in Support of Women Empowerment

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
Mobility						
Can a woman:						
choose where to live in the same way as a man?	.	.	.	.	2020	2021
travel outside her home in the same way as a man?	.	.	.	.	2020	2021
apply for a passport in the same way as a man?	2007	2011	2022	2008	2020	2019
travel outside the country in the same way as a man?	1971	1971	.	.	2020	2021
Pay						
Does the law mandate equal remuneration for work of equal value?	2022	.	.	.	2012	2021
Can a woman work:						
at night in the same way as a man?	2022	.	.	1971	2021	2020
in a job deemed dangerous in the same way as a man?	2021	.	.	1971	2021	2020
in an industrial job in the same way as a man?	2022	.	1971	1971	2021	2020
Marriage						
Is the law free of legal provisions that require a married woman to obey her husband?	.	.	1971	.	2020	2021
Can a woman be head of household in the same way as a man?	2019	1971	.	1971	2020	2020
Is there legislation specifically addressing domestic violence?	2017	2021	.		2016	2020
Can a woman obtain a judgment of divorce in the same way as a man?	.	.	.	.	.	.
Does a woman have the same rights to remarry as a man?	.	.	.	.	.	.
Parenthood						
Is paid leave of at least 14 weeks available to mothers?	.	.	.	.	.	.
Paid maternity leave						
length (number of days)	45; 60	70	42; 50	50	70	45; 60

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
start date	1977; 2014	1971	1976; 2013	2006	1971	1982; 2023
Does the government administer 100% of maternity leave benefits?	.	.	.	.	.	.
Is there paid leave available to fathers?	1995	.	.	.	2007	2021
Is there paid parental leave?	.	.	.	.	.	2021
Shared days	.	.	.	.	.	0
Days for the mother	.	.	.	.	.	7
Days for the father	.	.	.	.	.	7
Is dismissal of pregnant workers prohibited?	1978	.	.	.	2020	2020
Entrepreneurship						
Does the law prohibit discrimination in access to credit based on gender?	2021	.	.	.	2020	2020
Can a woman:						
sign a contract in the same way as a man?	1971	1971	1971	1971	1971	1971
register a business in the same way as a man?	1971	1971	1971	1971	1971	1971
open a bank account in the same way as a man?	1971	1971	1971	1971	1971	1971
Assets						
Do men and women have equal ownership rights to immovable property?	1971	1971	1971	1971	1971	1971
Do sons and daughters have equal rights to inherit assets from their parents?	.	.	.	.	.	.
Do male and female surviving spouses have equal rights to inherit assets?	.	.	.	.	.	.
Does the law						
grant spouses equal administrative authority over assets during marriage?	1971	1971	1971	1971	1971	1971
provide for the valuation of nonmonetary contributions?	.	.	.	.	.	.
Pension						
Is the age at which						
men and women can retire with full pension benefits the same?	.	.	.	.	2020	2000
men and women can retire with partial pension benefits the same?	1978	1978	1993	.	1971	2000
Is the mandatory retirement age for men and women the same?	1971	1971	1971	1971	2020	1971

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
Are periods of absence due to childcare accounted for in pension benefits?	2021	.	.	.	1971	2000

Source: Anonymous (2024a).

Notes: “.” Indicates a negative answer to the question. The date provided indicates a positive answer to the question and when the reform was in place.

Table 3: Panel Heteroskedasticity and Correlation Test Results

Heteroskedasticity: Likelihood Ratio (χ^2) Test				
	ILO Convention			
	Baseline	Remuneration	Discrimination	Both
YUR	211.09***	184.88***	215.46***	191.32***
LFPR	63.38***	63.10***	79.04***	46.85***
EPR	55.28***	72.46***	58.81***	69.14***
Within Correlation: Wooldridge (Z) Test				
	ILO Convention			
	Baseline	Remuneration	Discrimination	Both
YUR	4.635*	4.635*	4.635*	4.635*
LFPR	2.283	2.283	2.283	2.283
EPR	2.221	2.221	2.221	2.221
Cross-sectional Dependence				
	ILO Convention			
	Baseline	Remuneration	Discrimination	Both
YUR				
Pesaran (Z)	2.802***	3.007***	1.393	5.863***
Friedman (χ^2)	23.515***	24.147***	17.647***	42.162***
Frees (Q)	0.768***	0.819***	0.903***	1.211***
LFPR				
Pesaran (Z)	2.035**	2.102**	2.10**	3.513***
Friedman (χ^2)	21.029***	21.691***	21.206***	30.397***
Frees (Q)	1.389***	1.384***	1.355***	1.321***
EPR				
Pesaran (Z)	-0.393	-0.455	0.216	1.921*
Friedman (χ^2)	9.926*	9.838*	15.691***	25.338***
Frees (Q)	1.562***	1.50***	1.309***	1.063***

Notes: Baseline regression excludes ILO remuneration (*REMUNERATION*) and discrimination (*DISCRIMINATION*) conventions.

Table 4: Empirical Model Variables (Period Average)

Country	<i>DISPARITY</i>			<i>GDPCAPITA</i>	<i>LFREEDOM</i>	<i>TECHNOLOGY</i>	<i>DENSITY</i>	<i>CONTRACT</i>
	YUR	LFPR	EPR					
Bahrain	4.70	0.47	0.43	22,003.90	72.16	48.70	1,359.82	15.61
Kuwait	1.83	0.56	0.53	32,693.25	69.98	45.38	158.72	43.24
Oman	3.60	0.38	0.36	19,510.11	73.78	34.41	9.88	31.54
Qatar	10.48	0.43	0.41	61,736.45	65.41	47.29	122.50	27.04
Saudi Arabia	1.95	0.28	0.19	18,277.75	73.60	36.99	10.52	35.20
UAE	1.82	0.45	0.43	49,910.74	78.29	54.86	83.53	18.99
Total	4.06	0.43	0.39	33,104.34	72.21	44.60	290.83	28.60

Notes: Period averages for non-log transformed variables for the period 1995-2020.

Table 5: Correlation Coefficients

	<i>YUR</i>	<i>LFPR</i>	<i>EPR</i>	<i>GDP</i> <i>CAPITA</i>	<i>LFREEDOM</i>	<i>TECHNOLOGY</i>	<i>DENSITY</i>	<i>CONTRACT</i>
<i>GDP</i> <i>CAPITA</i>	0.473	0.244	0.309	1				
<i>LFREEDOM</i>	-0.279	0.052	0.073	-0.128	1			
<i>TECHNOLOGY</i>	0.241	0.118	-0.030	0.128	-0.012	1		
<i>DENSITY</i>	0.102	0.292	0.220	-0.215	0.036	0.243	1	
<i>CONTRACT</i>	-0.223	0.029	0.016	-0.187	0.062	-0.297	-0.462	1

Notes: Pairwise correlation. Bold fonts indicate statistical significance at the 5 percent level.

Table 6: YUR Disparity – Random Effects GLS Estimation Results

	(1)	(2)	(3)	(4)
	Baseline	REM	DISC	Both
<i>GDPCAPITA</i>	4.810	4.914**	5.505*	3.655**
	(3.236)	(2.232)	(3.189)	(1.525)
<i>LFREEDOM</i>	-5.813	-3.662*	-5.828	-1.868
	(4.612)	(2.033)	(4.272)	(1.312)
<i>TECHNOLOGY</i>	-0.188	0.336	0.215	-0.015
	(0.693)	(0.901)	(0.905)	(0.884)
<i>DENSITY</i>	-0.315	-0.869**	0.043	-2.015***
	(0.467)	(0.387)	(0.560)	(0.362)
<i>CONTRACT</i>	-0.084	-0.103	-0.057	-0.171***
	(0.067)	(0.075)	(0.080)	(0.059)
<i>REMUNERATION</i>		-4.170**		-7.592***
		(1.879)		(1.551)
<i>DISCRIMINATION</i>			-3.152	6.090***
			(2.025)	(1.356)
Constant	-15.471	-23.403	-24.000	-13.432
	(35.133)	(21.333)	(32.227)	(14.914)
Observations	96	96	96	96
Number of countries	6	6	6	6
R-squared	0.364	0.517	0.404	0.564
Wald Chi-squared test	25.38***	95.08***	60.43***	113.78***

Notes: REM: Remuneration. DISC: Discrimination. Standard errors in parentheses. ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Table 7: LFPR Disparity – Random Effects GLS Estimation Results

	(1)	(2)	(3)	(4)
	Baseline	REM	DISC	Both
<i>GDPCAPITA</i>	0.071	0.070c	0.072	0.089***
	(0.044)	(0.041)	(0.046)	(0.030)
<i>LFREEDOM</i>	0.091	0.081	0.091	0.055
	(0.081)	(0.066)	(0.082)	(0.058)
<i>TECHNOLOGY</i>	-0.012	-0.015	-0.012	-0.010
	(0.029)	(0.030)	(0.031)	(0.031)
<i>DENSITY</i>	0.048***	0.050***	0.048***	0.067***
	(0.009)	(0.008)	(0.010)	(0.008)
<i>CONTRACT</i>	0.002	0.002	0.002	0.003b
	(0.002)	(0.002)	(0.002)	(0.001)
<i>REMUNERATION</i>		0.019		0.069b
		(0.032)		(0.034)
<i>DISCRIMINATION</i>			-0.005	-0.089***
			(0.029)	(0.031)
Constant	-0.915b	-0.879b	-0.928b	-1.024a
	(0.428)	(0.386)	(0.436)	(0.278)
Observations	96	96	96	96
Number of countries	6	6	6	6
R-squared	0.669	0.675	0.669	0.691
Wald Chi-squared test	65.43***	184.39***	180.04***	197.18***

Notes: REM: Remuneration. DISC: Discrimination. Standard errors in parentheses. ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Table 8: EPR Disparity – Random Effects GLS Estimation Results

	(1)	(2)	(3)	(4)
	Baseline	REM	DISC	Both
<i>GDPCAPITA</i>	0.118**	0.118**	0.138***	0.162***
	(0.052)	(0.056)	(0.053)	(0.032)
<i>LFREEDOM</i>	0.131	0.140	0.130	0.077
	(0.092)	(0.095)	(0.103)	(0.069)
<i>TECHNOLOGY</i>	-0.041	-0.039	-0.029	-0.026
	(0.029)	(0.027)	(0.029)	(0.028)
<i>DENSITY</i>	0.054***	0.051***	0.064***	0.091***
	(0.012)	(0.010)	(0.012)	(0.008)
<i>CONTRACT</i>	0.002	0.002	0.003	0.004**
	(0.002)	(0.002)	(0.002)	(0.002)
<i>REMUNERATION</i>		-0.019		0.101***
		(0.052)		(0.029)
<i>DISCRIMINATION</i>			-0.091***	-0.214***
			(0.034)	(0.020)
Constant	-1.517***	-1.553**	-1.762***	-1.903***
	(0.563)	(0.604)	(0.576)	(0.378)
Observations	96	96	96	96
Number of countries	6	6	6	6
R-squared	0.681	0.685	0.719	0.75
Wald Chi-squared test	48.14***	193.48***	227.30***	264.49***

Notes: REM: Remuneration. DISC: Discrimination. Standard errors in parentheses. ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Table 9: YUR Disparity – FGLS Estimation Results

	(1)	(2)	(3)	(4)
	Baseline	REM	DISC	Both
<i>GDP</i> <i>CAPITA</i>	3.563***	3.102***	3.953***	2.248***
	(0.461)	(0.557)	(0.550)	(0.488)
<i>LFREEDOM</i>	-4.489***	-2.715***	-4.281***	-1.867***
	(0.577)	(0.376)	(0.590)	(0.276)
<i>TECHNOLOGY</i>	-0.039	0.065	0.226	-0.012
	(0.207)	(0.223)	(0.182)	(0.307)
<i>DENSITY</i>	-0.297***	-0.745***	0.129	-1.239***
	(0.057)	(0.074)	(0.093)	(0.241)
<i>CONTRACT</i>	-0.060***	-0.087***	-0.040***	-0.121***
	(0.009)	(0.010)	(0.008)	(0.023)
<i>REMUNERATION</i>		-3.648***		-5.228***
		(0.325)		(0.695)
<i>DISCRIMINATION</i>			-3.543***	2.428**
			(0.600)	(1.177)
Constant	-10.299**	-9.597*	-15.696**	-2.398
	(5.213)	(5.601)	(6.184)	(4.874)
Observations	96	96	96	96
Number of countries	6	6	6	6
Wald Chi-squared test	158.95***	218.25***	181.89***	376.37***

Notes: REM: Remuneration. DISC: Discrimination. Accounting for panel heteroskedasticity and cross-sectional dependence. Standard errors in parentheses. ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Table 10: LFPR Disparity – FGLS Estimation Results

	(1)	(2)	(3)	(4)
	Baseline	REM	DISC	BOTH
<i>GDPCAPITA</i>	0.076***	0.080***	0.077***	0.096***
	(0.007)	(0.009)	(0.007)	(0.009)
<i>LFREEDOM</i>	0.078***	0.070***	0.080***	0.056***
	(0.010)	(0.009)	(0.010)	(0.009)
<i>TECHNOLOGY</i>	-0.022***	-0.024***	-0.024***	-0.022**
	(0.007)	(0.007)	(0.008)	(0.009)
<i>DENSITY</i>	0.049***	0.052***	0.046***	0.064***
	(0.001)	(0.001)	(0.004)	(0.005)
<i>CONTRACT</i>	0.002***	0.002***	0.002***	0.003***
	(0.000)	(0.000)	(0.000)	(0.001)
<i>REMUNERATION</i>		0.030**		0.072***
		(0.015)		(0.017)
<i>DISCRIMINATION</i>			0.015	-0.060**
			(0.021)	(0.025)
Constant	-0.873***	-0.900***	-0.874***	-1.052***
	(0.082)	(0.109)	(0.083)	(0.112)
Observations	96	96	96	96
Number of countries	6	6	6	6
Wald Chi-squared test	2619.52***	3571.78***	2502.67***	3397.42***

Notes: REM: Remuneration. DISC: Discrimination. Accounting for panel heteroskedasticity and cross-sectional dependence. Standard errors in parentheses. ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Table 11: EPR Disparity – FGLS Estimation Results

	(1)	(2)	(3)	(4)
	Baseline	REM	DISC	BOTH
<i>GDP</i> <i>CAPITA</i>	0.127***	0.129***	0.148***	0.176***
	(0.007)	(0.010)	(0.006)	(0.010)
<i>LFREEDOM</i>	0.112***	0.117***	0.107***	0.080***
	(0.013)	(0.014)	(0.013)	(0.012)
<i>TECHNOLOGY</i>	-0.055***	-0.053***	-0.052***	-0.044***
	(0.006)	(0.006)	(0.009)	(0.011)
<i>DENSITY</i>	0.053***	0.050***	0.061***	0.085***
	(0.002)	(0.002)	(0.004)	(0.006)
<i>CONTRACT</i>	0.001***	0.001***	0.002***	0.003***
	(0.000)	(0.000)	(0.000)	(0.001)
<i>REMUNERATION</i>		-0.013		0.094***
		(0.015)		(0.020)
<i>DISCRIMINATION</i>			-0.075***	-0.181***
			(0.018)	(0.024)
Constant	-1.443***	-1.475***	-1.642***	-1.943***
	(0.098)	(0.129)	(0.091)	(0.126)
Observations	96	96	96	96
Number of countries	6	6	6	6
Wald Chi-squared test	2769.31***	2584.86***	2311.49***	2743.65***

Notes: REM: Remuneration. DISC: Discrimination. Accounting for panel heteroskedasticity and cross-sectional dependence. Standard errors in parentheses. ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Table 12: YUR Disparity – Pooled OLS Estimation Results

	(1)	(2)	(3)	(4)
	Baseline	REM	DISC	BOTH
<i>GDPCAPITA</i>	4.810**	4.914***	5.505***	3.655**
	(1.276)	(1.161)	(1.238)	(1.041)
<i>LFREEDOM</i>	-5.813***	-3.662**	-5.828***	-1.868
	(1.138)	(0.981)	(0.784)	(1.303)
<i>TECHNOLOGY</i>	-0.188	0.336	0.215	-0.015
	(0.419)	(0.392)	(0.340)	(0.278)
<i>DENSITY</i>	-0.315***	-0.869***	0.043	-2.015**
	(0.068)	(0.109)	(0.147)	(0.554)
<i>CONTRACT</i>	-0.084***	-0.103***	-0.057**	-0.171**
	(0.019)	(0.018)	(0.021)	(0.043)
<i>REMUNERATION</i>		-4.170***		-7.592***
		(0.480)		(1.470)
<i>DISCRIMINATION</i>			-3.152**	6.090*
			(1.150)	(2.860)
Constant	-15.471	-23.403	-24.000	-13.432
	(16.201)	(13.015)	(13.476)	(14.996)
Observations	96	96	96	96
R-squared	0.364	0.517	0.404	0.564
Countries	6	6	6	6
<i>F</i> -test	115.96***	177.24***	103.97***	201.55***

Notes: REM: Remuneration. DISC: Discrimination. Driscoll-Kraay corrected standard errors in parentheses (for panel heteroskedasticity and cross-sectional dependence). ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Table 13: LFPR Disparity – Pooled OLS Estimation Results

	(1)	(2)	(3)	(4)
	Baseline	REM	DISC	BOTH
<i>GDPCAPITA</i>	0.071***	0.070***	0.072***	0.089***
	(0.015)	(0.014)	(0.013)	(0.009)
<i>LFREEDOM</i>	0.091**	0.081*	0.091**	0.055
	(0.026)	(0.036)	(0.026)	(0.038)
<i>TECHNOLOGY</i>	-0.012	-0.015	-0.012	-0.010
	(0.012)	(0.009)	(0.007)	(0.007)
<i>DENSITY</i>	0.048***	0.050***	0.048***	0.067***
	(0.004)	(0.002)	(0.009)	(0.008)
<i>CONTRACT</i>	0.002***	0.002***	0.002**	0.003**
	(0.000)	(0.000)	(0.001)	(0.001)
<i>REMUNERATION</i>		0.019		0.069***
		(0.029)		(0.017)
<i>DISCRIMINATION</i>			-0.005	-0.089
			(0.048)	(0.045)
Constant	-0.915**	-0.879***	-0.928**	-1.024***
	(0.231)	(0.211)	(0.236)	(0.237)
Observations	96	96	96	96
R-squared	0.669	0.674	0.669	0.691
Countries	6	6	6	6
F-test	1484.55***	2222.37***	1620.97***	2287.85***

Notes: REM: Remuneration. DISC: Discrimination. Driscoll-Kraay corrected standard errors in parentheses (for panel heteroskedasticity and cross-sectional dependence). ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Table 14: EPR Disparity – Pooled OLS Estimation Results

	(1)	(2)	(3)	(4)
	Baseline	REM	DISC	BOTH
<i>GDPCAPITA</i>	0.118***	0.118***	0.138***	0.162***
	(0.018)	(0.018)	(0.015)	(0.010)
<i>LFREEDOM</i>	0.131***	0.140***	0.130***	0.077
	(0.021)	(0.030)	(0.030)	(0.046)
<i>TECHNOLOGY</i>	-0.041**	-0.039***	-0.029***	-0.026***
	(0.011)	(0.008)	(0.007)	(0.005)
<i>DENSITY</i>	0.054***	0.051***	0.064***	0.091***
	(0.005)	(0.003)	(0.010)	(0.011)
<i>CONTRACT</i>	0.002	0.002	0.003*	0.004**
	(0.001)	(0.001)	(0.001)	(0.001)
<i>REMUNERATION</i>		-0.019		0.101**
		(0.026)		(0.026)
<i>DISCRIMINATION</i>			-0.091*	-0.214***
			(0.042)	(0.043)
Constant	-1.517***	-1.553***	-1.762***	-1.903***
	(0.193)	(0.206)	(0.218)	(0.182)
Observations	96	96	96	96
R-squared	0.681	0.685	0.719	0.750
Countries	6	6	6	6
F-test	1977.67***	2509.57***	1230.08***	1756.83***

Notes: REM: Remuneration. DISC: Discrimination. Driscoll-Kraay corrected standard errors in parentheses (for panel heteroskedasticity and cross-sectional dependence). ***, **, * denote statistical significance at the 1%, 5%, 10% levels, respectively.

Figure 1

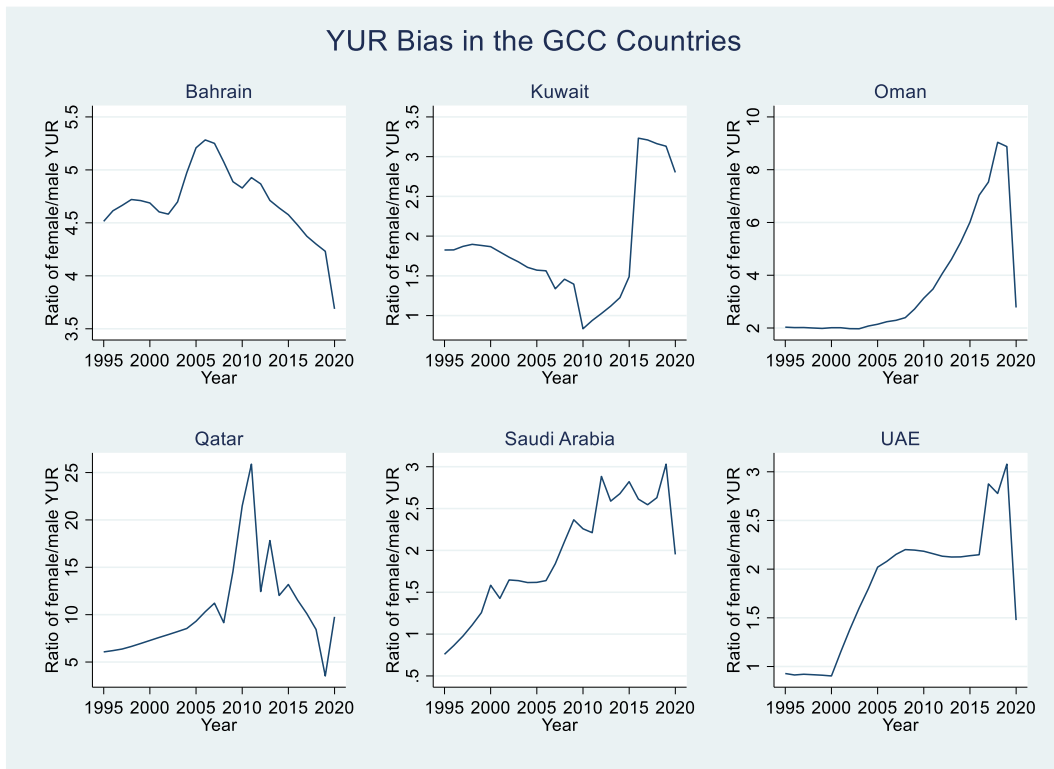


Figure 2

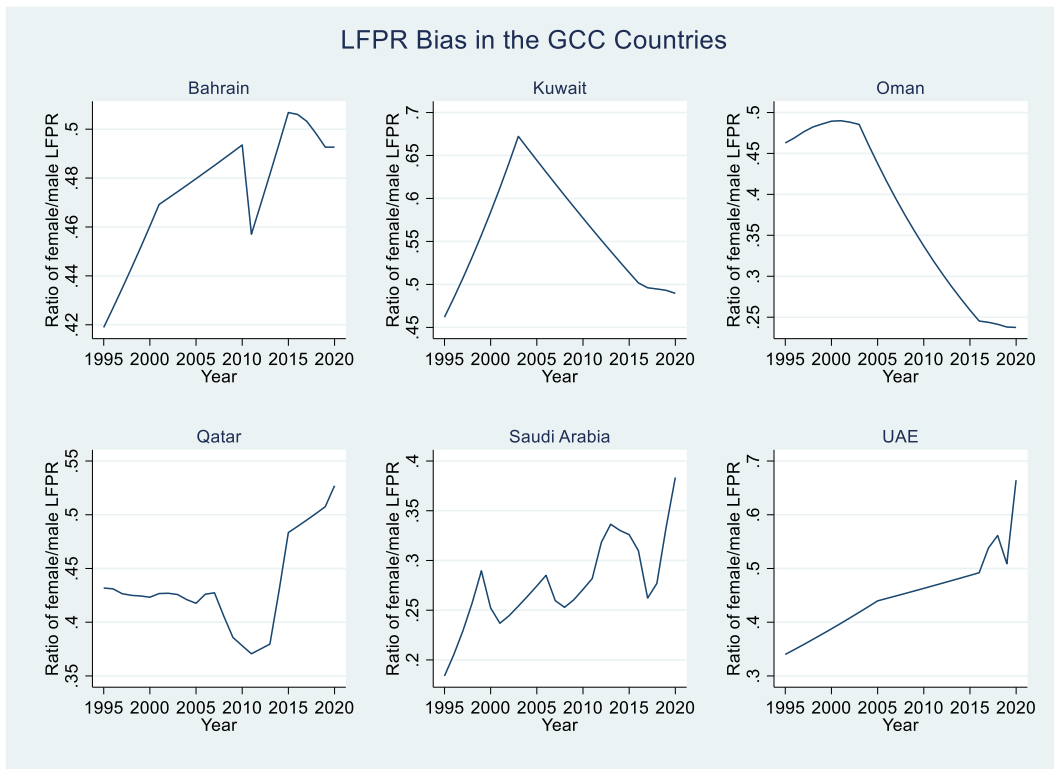


Figure 3

