economies

MDPI

Article

Does Mainstreamed Aid Advance Gender Parity? Insights from Empirical Evidence

Bedassa Tadesse [1,*], Elias K. Shukralla [2] and Bichaka Fayissa [3]

[1] Department of Economics, University of Minnesota–Duluth, 1318 Kirby Drive, Duluth, MN 55812, USA
[2] Department of Economics, Siena College, Loudonville, NY 12211, USA; eshukralla@siena.edu
[3] Department of Economics and Finance, Middle Tennessee State University, Murfreesboro, TN 37132, USA; bichaka.fayissa@mtsu.edu
* Correspondence: btadesse@d.umn.edu

Abstract: This study investigates the effectiveness of gender-mainstreamed aid in mitigating gender inequality. We develop a robust theoretical model that accounts for the potential positive and perceived negative effects of shifts toward gender parity, capturing diverse societal perspectives. Utilizing a comprehensive dataset on aid activities focused on gender (in)equality and women's empowerment across 118 countries from 2009 to 2022, primarily low-income nations, we employ panel fixed-effects and mixed-effects random coefficient models to examine the impact of gender-related aid on gender inequality. Our findings reveal that significant gender-related aid (SGRA), which integrates gender considerations into broader development projects, reduces gender inequality in 115 out of 118 countries. In contrast, principal gender-related aid (PGRA), which explicitly targets gender equality, shows significant effects in only 85 countries. When analyzing the effects of both components of gender-related aid, we find that SGRA consistently impacts gender inequality. However, the effectiveness of PGRA becomes less clear-cut. This observation, coupled with the variation in the effectiveness of the components across countries, underscores the importance of developing strategies tailored to country-specific needs and conditions in promoting gender parity effectively.

Keywords: gender inequality; gender-related aid; aid effectiveness; panel data analysis; development economics

JEL Classification: F35; J16; O19

check for updates

Citation: Tadesse, Bedassa, Elias K. Shukralla, and Bichaka Fayissa. 2024. Does Mainstreamed Aid Advance Gender Parity? Insights from Empirical Evidence. *Economies* 12: 192. https://doi.org/10.3390/economies12080192

Academic Editor: Abbi M. Kedir

Received: 29 May 2024
Revised: 28 June 2024
Accepted: 19 July 2024
Published: 24 July 2024

Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1. Introduction

Gender inequality, a persistent global challenge, has been the focus of coordinated efforts and substantial investments. Gender-related (mainstreamed) aid, which specifically targets gender issues, holds the promise of being a transformative force in fostering gender equality. We develop a theoretical model that enables a better understanding of the complex social dynamics of gender (in)equality. Relying on the implications of the theoretical model, we empirically examine the impact of gender-related aid on gender equality progress in recipient countries. The understanding we develop is crucial for refining and enhancing the effectiveness of international interventions, thereby fostering a more equitable future.

According to the OECD (2020), bilateral aid focused on gender equality and women's empowerment reached an average of USD 48.7 billion annually (42% of all aid) in 2017–2018, indicating a significant commitment to integrating gender equality across development programs. The report further notes that approximately USD 44.2 billion was committed to programs considering gender equality as a significant objective, meaning that gender equality is an essential but secondary objective (OECD 2020). Gender-mainstreamed aid encompasses various initiatives, ranging from efforts to enhance women's health and education to those promoting their political participation and economic empowerment. The effectiveness of such aid has been a topic of extensive discussion among scholars,

policymakers, and practitioners. While there are studies indicating that targeted aid can significantly improve gender outcomes (Grown et al. 2005; Stromquist 1997), others present a more critical perspective, suggesting that governance issues and a lack of alignment with local needs (Deininger et al. 2020; Duflo 2012; Arora 2012) often dilute the impact of aid.

Utilizing a comprehensive dataset on aid activities focused on gender (in)equality and women's empowerment across 118 countries, primarily low-income nations, from 2009 to 2022, we employ panel fixed-effects and mixed-effects random coefficient models to examine the impact of gender-related aid on gender inequality. Previous research has shown mixed results regarding the effectiveness of gender-targeted aid, underscoring the need for this comprehensive analysis to provide insights into how such aid can promote gender equality in diverse socio-political contexts.

The impact of gender-targeted aid, particularly in the health sector, has been the subject of extensive research. For instance, Bendavid and Bhattacharya (2014) demonstrate the positive effects of gender-related health initiatives, noting significant improvements in access to reproductive health services and reductions in maternal mortality rates. Conversely, Duflo (2012) and Deininger et al. (2020) highlight important challenges that can diminish the impact of such aid. They point to governance issues and misalignment with local needs as key factors that often dilute the intended outcomes of gender-targeted interventions. These obstacles can result in less pronounced improvements in gender equality than initially anticipated. The contrasting findings in existing literature emphasize the need for a more nuanced and comprehensive analysis, considering various socio-political contexts and types of gender-related aid. Analyzing the impacts of both SGRA and PGRA on gender inequality across various countries, our research provides a more holistic understanding of the effectiveness of gender-targeted aid.

Research on gender-mainstreamed aid has also focused on educational outcomes for women and girls. For example, Stromquist (1997) demonstrates that gender-focused educational programs can significantly boost literacy rates and educational attainment among female populations in low-income countries, emphasizing the importance of consistent and sufficient funding for sustainable impacts. Furthermore, political empowerment and economic participation receive significant attention in gender-mainstreamed aid discourse. Studies by Grown et al. (2016) and Gerard and McDonnell (2023) explore how aid to enhance women's political representation and economic status can bring broader societal benefits, although the success of such initiatives heavily depends on the recipient countries' political and economic contexts.

Political empowerment and economic participation also receive significant attention in the general- or gender-mainstreamed aid discourse. Grown et al. (2005) and Gerard and McDonnell (2023) explore how aid to enhance women's political representation and economic status may bring broader societal benefits. These studies also caution that the success of such initiatives heavily depends on the political and economic context of the recipient countries.

Alignment of donor strategies with recipient country policies and priorities is crucial for the effectiveness of gender-related aid. Ensuring alignment helps deliver aid effectively and sustain its impact over time (Farhall and Rickards 2021; Nissanke 2008; De Renzio and Mulley 2006). Civil society organizations (CSOs) also play a pivotal role in advocating for and implementing gender-focused initiatives due to their ability to raise awareness, mobilize communities, and hold stakeholders accountable. Therefore, the success of gender-related aid initiatives often depends on aligning donor strategies with CSO advocacy and partnerships (Farhall and Rickards 2021).

While our research aligns with the work of Su and Yang (2023), Minasyan and Montinola (2022), and Pickbourn and Ndikumana (2016), who examine the effectiveness of gender-related aid on various measures of gender development, it stands out for three key reasons. First, we develop a theoretical model that captures the positive and perceived negative effects of shifts toward greater gender equality. Second, we disentangle the interplay between gender-related aid targeting gender equality and women's empow-

erment as a principal focus (PGRA) and essential but secondary objective (SGRA). Third, we present results highlighting the country-specific effectiveness of both components of gender-related aid, enabling us to identify strategies tailored to each recipient country's unique socio-political and cultural contexts.

Thus, our research fills a crucial void in the literature by examining the long-term impacts of gender-related aid, enhancing our understanding of how sustained aid influences gender equality over time. The findings have profound implications for policymakers and donors, guiding future aid allocations and strategies aimed at gender equality. Our panel fixed-effects model estimation reveals that SGRA, which integrates gender considerations into broader development projects, significantly reduces gender inequality in 115 out of 118 countries, while PGRA, which explicitly targets gender equality, exhibits significant effects in only 85 countries. When both components are considered together, SGRA maintains its significance, whereas PGRA loses statistical significance unless its interaction with SGRA is accounted for, suggesting complex dynamics between the aid types. These results underscore the need for tailored, context-specific approaches prioritizing capacity building, awareness campaigns, and fostering supportive environments to overcome resistance to explicit gender equality initiatives.

The remainder of the paper is structured as follows. Section 2 briefly reviews the relevant literature. In Section 3, we develop the theoretical model underpinning our empirical analysis. Section 4 presents the empirical model, the variables and data, and the econometric approach. In Sections 5 and 6, respectively, we present the results of our analysis and discuss the implications of our findings relevant to practice in international development and gender equality.

2. Literature Review

Gender-related aid, which includes financial and technical assistance to promote gender equality and women's empowerment, is a key focus in development studies. The initiative addresses systemic gender disparities through targeted interventions (OECD 2016). Research has shown that such interventions can significantly enhance women's health, education, and economic participation, leading to broader societal benefits. For instance, Chirowa et al. (2013) provide a foundational cross-country analysis demonstrating that high gender inequality, as measured by the gender inequality index, correlates with high maternal mortality ratios, indicating the impacts of pervasive inequalities at macro, societal, and household levels. Similarly, Bali Swain et al. (2020) find that targeted investments in women's health and governance participation can markedly improve gender outcomes. Despite these positive findings, the effectiveness of gender-related aid varies across different socio-political contexts, highlighting a complex interplay of factors that influence its outcomes.

Su and Yang (2023) assess the impact of gender-focused international aid on reducing gender inequality in non-OECD countries using OECD-DAC data and panel fixed-effect models. They find that gender-mainstreamed aid, which integrates gender equality as a significant objective across various projects, effectively reduces gender inequality. In contrast, aid explicitly targeting women's rights and gender issues does not show a statistically significant impact, highlighting the crucial role of aid's primary focus and intentionality in determining its effectiveness. However, their study does not adequately address potential biases stemming from data limitations and the choice of variables, which might affect the robustness of their conclusions.

Minasyan and Montinola (2022) investigate the impact of gender-focused international aid on women's legal empowerment in non-OECD countries, finding a positive association between such aid and legal reforms promoting gender equality. Utilizing a comprehensive dataset from 1990 to 2019, they employ panel fixed-effects models and an instrumental variable approach to address potential endogeneity issues. However, the study faces limitations, including the validity of the instrumental variables used, challenges

in capturing the multifaceted nature of legal empowerment, and limited generalizability due to regional variations.

Pickbourn and Ndikumana (2016) examine how foreign aid targeting different sectors affects gender inequality. Their research reveals that foreign aid directed toward sectors such as health and education substantially reduces gender inequality. However, the study's use of cross-sectional data might not fully account for the dynamic nature of aid effectiveness, potentially missing the long-term impacts of aid interventions.

Bali Swain et al. (2020) use a structural equation model to explore whether foreign aid enhances gender performance in recipient countries. Focusing on health, employment, and women's agency as a measure of gender performance, they report that the positive effects of micro-level aid interventions do not consistently translate into significant macro-level improvements. They conclude that to have a significant impact on gender outcomes, foreign aid must directly target women's health and governance participation through more significant and better-targeted investments.

Dreher et al. (2015) report the absence of a meaningful relationship between gender-related aid and various measures of women's economic and political empowerment. Their observation aligns with the findings from Pickbourn and Ndikumana (2016) and Onditi and Odera (2017), who point out that the impact of aid on gender inequality is dependent on initial human development and per capita income. The counterintuitive outcome might be attributed to unintended consequences or challenges in effectively implementing aid intervention, especially in areas where inequality is entrenched with cultural norms and societal expectations based on gender.

Contextual and institutional factors are likely to influence the effectiveness of gender-related aid. Langer et al. (2015), for example, emphasize that institutional and cultural barriers (e.g., discriminatory social norms and legal frameworks) significantly impede the success of gender-related interventions. Lwamba et al. (2022) support this view, noting that gender norms and practices obstruct intervention effectiveness. Tsikata (2016) contend that recipient governments' political will and commitment are crucial for promoting gender equality, indicating gender-related aid may have limited impact without genuine ownership and accountability, as the effectiveness of the aid is often conditioned by the policy and institutional environment (Burnside and Dollar 2000; Collier and Dollar 2004).

Grown et al. (2005) provide a thorough review of how international aid can promote gender equality and women's empowerment. They stress the need to incorporate gender issues into wider development strategies. While their analysis is extensive, the study would be stronger if it included more robust empirical evidence to support its theoretical arguments about how aid affects gender equality outcomes.

A critical aspect of studying the impact of gender-related aid also relies on the reliability and appropriateness of the measures used to assess gender equality. Hawken and Munck (2013) and Permanyer (2011), for example, challenge the construction and weighting of the GEM, arguing that it may not accurately reflect the multidimensional nature of gender equality and could be subject to cultural biases. The criticism highlights a significant challenge in gender studies: the need for robust, culturally sensitive, and multidimensional measures that can accurately capture the complexities of gender equality across different contexts.

In summary, the available empirical studies on the effectiveness of gender-related development assistance in promoting gender equality show mixed results, ranging from positive associations to null or negative effects. This variation highlights the need to consider factors such as the type of aid, socio-political context, and measurement methods. Notably, existing studies lack a theoretical framework that captures the complex social dynamics of gender (in)equality, including positive and negative perceptions of changes in gender equality. Our research addresses this gap by developing a model that reflects these dynamics, aiming to inform more effective, context-specific strategies for leveraging gender-related aid to advance gender equality goals.

3. Theoretical Model

In our quest to explore the complex social dynamics surrounding gender (in)equality, we propose a theoretical model predicated on a utility function that captures both the perceived positive and negative effects of changes in the existing level of gender (in)equality, reflecting that while many individuals and institutions benefit from increased gender equality, others might view the shifts as threats to their existing privileges or status-quo. Equation (1) describes the utility function:[1]

$$U_{it} = \alpha(GEM_{it}) - \beta(1 - GEM_{it}) + \gamma_{it} \tag{1}$$

GEM (Gender Equality Measure) represents the level of gender equality at time t in country i, ranging from 0 (no equality) to 1 (perfect equality); α quantifies the utility derived from improvements in gender equality for stakeholders who benefit from the change. The coefficient β quantifies the disutility experienced by stakeholders who might be adversely affected by increases in gender equality. The term is subtracted from the utility, indicating the negative impact on the group's utility as gender equality improves. The term, γ_{it} is a constant that encapsulates other factors influencing overall utility unrelated to gender equality (i.e., baseline utility levels derived from other factors such as social welfare and historical and cultural influences not captured by variables that influence the utility associated with gender equality or biases). Including γ_{it} in the speciation helps to adjust the utility function to a realistic base level, ensuring that the measured impacts of gender (in)equality are relative to this baseline.

Model Dynamics

Our model introduces a nuanced utility maximization problem that reflects societal trade-offs. First, the positive impact (α) encapsulates the view that for many stakeholders, increased gender equality enhances utility by promoting fairness, economic efficiency, and broader societal benefits, such as improved productivity and social cohesion. The negative impact (β) captures the view that for others, particularly those who benefit from existing inequalities (e.g., through privileged access to resources or positions of power), increases in gender equality are perceived as diminishing their relative advantages, thus reducing their utility.[2]

To develop a comprehensive analysis based on the utility function that captures both the positive and potential negative gender equality impacts, we solve the utility maximization problem by considering the constraints imposed by the available gender-related aid. The constraint we consider is the total available gender-related aid, denoted by *Aid*. We consider that aid linearly influences the achievable level of GEM:

$$GEM_{it} = \frac{Aid_{it}}{K} \tag{2}$$

where k is the total aid required to achieve full gender equality ($GEM = 1$). To maximize the utility U subject to the aid constraint, we plug the constraint into the utility function:

$$U_{it} = \alpha\left(\frac{Aid_{it}}{k}\right) - \beta\left(1 - \frac{Aid_{it}}{K}\right) + \gamma \tag{3}$$

Re-arranging, we obtain:

$$U_{it} = (\alpha + \beta)\frac{Aid_{it}}{K} - \beta + \gamma \tag{4}$$

To find the optimal allocation of *Aid* that maximizes U, differentiating U with respect to *Aid* and setting the derivative to zero yields:

$$\frac{dU}{dAid} = \frac{(\alpha + \beta)}{k} \tag{5}$$

Since this derivative does not naturally go to zero, it suggests that the more aid is provided, the higher the utility will be when Aid reaches its maximum allowable limit. Thus, the optimal Aid is the maximum Aid available.

4. The Empirical Model

Including the moderating variables, the empirical model describing the relationship can be presented as follows:

$$GEM_{it} = \beta_0 + \beta_1 Aid_{it} + \beta_2 Z_{it} + \epsilon_{it} \quad (6)$$

where GEM is the Gender Equality Measure; Aid is the total amount of gender-related aid received; Z is a vector of control variables (to be discussed below) moderating the effects of gender-related aid; u is an independently and identically distributed error term capturing the influence of all other factors not included in the model. To explore how the impact of principal gender-related aid (PGRA) might vary with different levels of significant gender-related aid (SGRA), we partition the total gender-related aid into its components and introduce an interaction term:

$$GEM_{it} = \beta_0 + \beta_1 SGRA_{it} + \beta_2 PGRA_{it} + \beta_3 (SGRA_{it} \times PGRA_{it}) + \alpha' Z_{it} + \epsilon_{it} \quad (7)$$

While the coefficients β_1 and β_2 capture the direct effects of gender-related aid components, our main variables of interest, the coefficient of the interaction terms (β_3), enables us to examine whether higher levels of either of the gender-related aid components enhance or hinder the effectiveness of the other gender-related aid in improving GEM.

The Control Variables

We consider a range of variables that potentially moderate the impact of gender-related aid on the gender equality (inequality) measure (GEM or GII), each reflecting distinct but interlinked dimensions of societal context. First, economic development, typically gauged by per capita GDP, is fundamental as it directly influences the availability of infrastructure and resources crucial for successfully implementing gender equality programs effectively (Duflo 2012). South Korea is a practical example. Rapid economic growth in South Korea, with its GDP per capita rising significantly over the past decades, has facilitated substantial investments in infrastructure and resources. These investments have supported extensive gender equality programs, including advancements in education and workforce participation for women, improving gender parity (Kim et al. 2016; Song and Kim 2013).

Second, political stability also plays a significant role, encompassing the quality of governance and the overall political environment essential for designing and successfully executing these programs (Besley and Persson 2011). Rwanda presents a practical example illustrating the importance of political stability in the successful design and execution of gender equality programs. Following the 1994 genocide, Rwanda focused on stability and governance, implementing effective gender policies. As a result, women hold 61% of parliamentary seats, the highest in the world, demonstrating how political stability and good governance can support gender equality initiatives (Burnet 2008).

Third, cultural norms representing societal attitudes toward gender roles may also significantly impact the outcomes of gender equality initiatives (Inglehart and Norris 2003). Such norms can either facilitate or hinder the progress of these initiatives, depending on how progressive or conservative the societal viewpoints are toward gender roles. Bangladesh presents a practical example of overcoming the influence of cultural norms on gender equality initiatives. Despite traditional gender roles (e.g., household duties, decision-making, early marriage, societal expectations), women's education and microfinance initiatives have led to substantial progress, illustrating that even in conservative cultural contexts, targeted programs can foster significant improvements (World Bank 2018).[3]

Finally, education levels are pivotal, mainly focusing on women's educational attainment or literacy rates. Education empowers women directly and is a critical tool for broader societal change toward gender equality (Nussbaum 2000). Ethiopia's case in recent decades, where investments in the education of girls have led to improved literacy rates, health outcomes, and women's economic participation, illustrating the transformative impact of education on gender equality, presents a good example (UNICEF 2018; World Bank 2022).

Each factor plays a crucial role in shaping the effectiveness of gender-related aid, necessitating a comprehensive approach to understanding their interplay and combined impact on gender equality outcomes. Progress in economic development should correlate with better resources and infrastructure, facilitating gender equality initiatives. We expect a positive sign (+) for the economic development variable. Political stability is anticipated to have a positive sign (+) since stable governance systems can better implement and sustain gender-focused programs. The impact of cultural norms could vary; progressive norms are expected to have a positive sign (+), whereas conservative views might show a negative sign (−), reflecting resistance to gender equality. Higher education levels should have a positive sign (+), reflecting the empowering effect of education on women's status and broader societal equality.

5. Empirical Results

5.1. Descriptive Statistics

Table 1 presents panel descriptive statistics of two gender equality (inequality) measures we use as our dependent variable, aid activities targeting gender equality and women's empowerment among the beneficiary 158 countries included in our study both at the aggregate level and disaggregated by major area of emphasis: principal and significant gender-related aid, alongside the variables included in our empirical model as control factors. The data on gender-related aid are from the OECD (2024) credit reporting system.

Table 1. Panel Descriptive Statistics of the Variables in the Empirical Model.

Variable		Mean	Std. Dev.	Min	Max	Obs.
Gender Development Index	overall	0.923	0.07	0.46	1.00	1274
	between		0.07	0.56	1.00	118
	within		0.02	0.82	1.03	11
Gender Inequality Index	overall	0.456	0.14	0.10	0.84	1274
	between		0.14	0.13	0.80	118
	within		0.03	0.36	0.65	11
Total Official Development Assistance (ODA) Inflows	overall	657.783	793.83	5.61	6671.11	1274
	between		709.24	5.61	4278.37	118
	within		329.95	−1471.35	3050.53	11
Total Gender-Related Aid (GRA)	overall	209.690	281.32	0.57	2189.35	1274
	between		252.60	0.79	1640.89	118
	within		113.52	−454.98	1024.74	11
	within		21.22	−92.46	212.68	11
Significant GRA	overall	181.221	243.70	0.52	2035.05	1274
	between		216.92	0.60	1454.41	118
	within		102.54	−441.48	893.52	11
Mean Years of Schooling	overall	7.209	2.86	1.07	13.34	1274
	between		2.86	1.45	12.68	118
	within		0.45	5.37	9.49	11
Per capita Income	overall	8,922.700	6503.04	715.98	40,284.54	1274
	between		7172.83	779.01	40,284.54	118
	within		1269.66	−959.78	17,986.90	11
Institutional Quality Index	overall	0.003	0.01	0.00	0.04	1274
	between		0.01	0.00	0.04	118
	within		0.00	−0.01	0.01	11
Cultural Globalization	overall	43.592	16.02	9.61	83.00	1274
	between		16.09	9.75	80.77	118
	within		2.88	30.14	54.83	11
Economic Globalization	overall	56.593	9.90	33.56	81.06	1274
	between		9.90	36.79	80.02	118
	within		1.75	49.61	63.09	11

Our primary dependent variable of interest is the gender inequality index (GII)—a composite metric reflecting the loss in potential human development due to inequality between female and male achievements. The index is computed based on three dimensions: reproductive health, empowerment, and the labor market participation rate. The values the metric takes range from 0, where women and men fare equally (low inequality), to 1, where one gender fares as poorly as possible in all measured dimensions. The values are calculated using the association-sensitive inequality measure proposed by Seth (2009)—i.e., the index is based on the general mean of means of different orders.

We also use the gender development index (GDI), which measures parity in male and female achievements in three basic dimensions of human development: health, education, and command over economic resources. Contrary to the GII, the GDI values range from 0 to 1, with a GDI value close to 1 indicating high gender parity, meaning that females and males have similar levels of human development, and a value less than 1 indicating higher gender disparity, with lower female development relative to male. The GII and GDI data are from UNDP (n.d.).

Descriptive statistics of the variables presented in the table show that ranging from 0.098 (Belarus, in 2019) to 0.838 (Haiti, in 2016), the typical country in the study had a GII value of 0.453. Conversely, the GDI value for the typical country in our study stands at 0.924, ranging from 0.457 (Yemen, in 2021) to 1.00 (in multiple countries). Although the GII and GDI measure gender-related inequalities and development levels and are inversely correlated (−0.643), they are not linearly associated. A decrease in one does not necessarily result in a proportional increase in the other, as they are computed based on different components.

To better understand variation in the corresponding values, we also present the descriptive statistics of the respective variables by the regional location (Appendix A Table A1) and the 2022 World Bank's GDI classification (Appendix A Table A2) of the countries in our study.[4] A cursory view of the values in the respective tables indicates that, on average, gender inequality is highest in Sub-Saharan Africa (0.565) and South Asia (0.505) and lowest in Europe and Central Asia (0.241). Meanwhile, Latin America and the Caribbean have the highest GDI (0.978), followed by Europe and Central Asia (0.967). A cross-tabulation of the regional and GDI classifications of the countries in our study reveals that, in 2022, 15 (38.5%) Sub-Saharan African countries, 8 (66.7%) Arab States, and 5 (55.6%) South Asian countries fall into category 5 (countries with low equality in HDI achievements between women and men, with their GDI being more than 10% from gender parity). In contrast, more than 50% of European, Central Asia, Latin America, and the Caribbean fall into category 1 (countries with high equality in HDI achievements between women and men, with their GDI values deviating less than 2.5% from gender parity). These observations indicate that while gender-based disparity prevails across all regions, countries with high disparity are more likely to be found in specific regions, implying that regional factors may significantly influence gender (in)equality.

Included in our control variables are per capita income (PCI), mean years of schooling (MYS), and institutional quality (IQ). Ranging from USD 715.98 to USD 40,284.00, the typical country in the sample has an average annual per capita income of USD 9016.30, 7.26 mean years of schooling, and a relatively low institutional quality index of 0.003 computed as the geometric mean of the governance indicators (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption) by aggregating and normalizing the data (Kaufmann et al. 2010). Data on MYS and PCI are sourced from the UNDP (n.d.).

Higher PCI generally indicates better economic conditions, which can lead to improved access to healthcare, education, and employment opportunities for women, thereby reducing gender inequality. Higher educational attainment for women is hypothesized to be associated with greater empowerment and reduced gender inequality. Better institutional qualities, such as effective governance, rule of law, and control of corruption, typically support policies and environments that promote gender equality. Thus, PCI, MYS, and

institutional quality are, a priori, expected to have negative coefficients in the GII regression and positive coefficients when the dependent variable measures gender development.

During the reference period of our study, the average cultural globalization index for a typical country was 43.76, while the average economic globalization index was 56.64. This indicates that the countries in our study generally experienced a higher degree of economic globalization than cultural globalization. Data on both dimensions are sourced from Gygli et al. (2019). Increased economic globalization can lead to more job opportunities and economic participation for women, which helps reduce gender inequality. Hence, we expect a negative coefficient for economic globalization in the GII regression. Greater cultural globalization can facilitate the spread of ideas and norms that support gender equality, reducing traditional gender biases and inequalities.

Turning to our main variables of interest, gender-related aid, we find that ranging from a minimum of USD 400,000 (in 2022, constant prices) to USD 2.32 billion, the typical country in our study during the reference period (2009–2022) received, on average, USD 213.6 million in total aid targeting gender equality and women's empowerment. Of this amount, USD 26.83 million is extended as principal gender-related aid (PGRA), and a larger amount, USD 185.67 million, is disbursed as significant gender-related aid (SGRA).

According to OECD (2016), aid activities targeting gender equality and women's empowerment can be classified as principal and significant aid. Principal gender-related aid refers to aid financing activities designed explicitly to promote gender equality and women's empowerment as their main purpose, for which gender equality is the primary objective. Such activities include projects implemented in various countries to enhance women's access to education, female participation in political processes, or address gender-based violence. Significant gender-related aid, on the other hand, includes activities that address gender equality and women's empowerment as an important but secondary objective (OECD 2016). While these activities have other primary goals, they also incorporate elements that promote gender equality. For example, an agricultural development project might include components that ensure women farmers have equal access to resources and training. While the primary aim is agricultural development, as the projects may contribute significantly to gender equality, they can be defined as gender-related aid.

Both activities are essential in advancing gender equality, with the principal activities driving direct and focused efforts and significant activities ensuring that gender considerations are integrated into broader development initiatives. The breakdown reveals that a disproportionally larger share of the gender-related aid extended to the recipient countries involves significant rather than principal activities.

Potential variations also exist in the projects funded as principal and/or significant activities, such as the total gender-related aid extended to the recipients and their dependence on the overall official development assistance (ODA) inflows. Regardless of the total amount of gender-related aid a country receives, differences in the activities financed by the components may also affect the effectiveness of gender-related aid in promoting gender equality. Therefore, we present the total ODA (TODA), aggregate gender-related aid (TGRA), and its breakdown into the principal and significant GRA in Table 2.

The results in Table 2 show a comprehensive overview of gender-related aid across the countries in our study. First, apart from a few exceptions like Nepal, Ethiopia, Burkina Faso, Nigeria, and Timor-Leste, where the values exceed 40%, the share of total gender-related aid (TGRA) in the average annual ODA inflows to most countries in our study is relatively low (generally in the low to mid-30% range). This implies that gender-related aid constitutes a relatively small portion of overall aid. Second, principal gender-related aid (PGRA), which has gender equality as its primary objective and funds activities explicitly designed to promote gender equality and women's empowerment, represents a relatively meager share of TGRA. For example, in Zambia, which has the highest share, PGRA accounts for 26.4% of TGRA. In Mali, Tanzania, and Liberia, the corresponding share stands at 21.3%, 20.6%, and 20.4%, respectively.

Table 2. Total Gender-Related Aid Disbursements by Recipient Countries in Millions of USD (2009–2022).

Recipient	Total Official Development Assistance (TODA)	Amount (Proportion)		
		Total Gender Related Aid (TGRA)	Significant Gender Related Aid (SGRA)	Principal Gender Related Aid (PGRA)
Afghanistan	55,055.28	21,162.19 (0.384)	18,294.95 (0.865)	1975.34 (0.093)
Albania	4030.69	830.86 (0.206)	771.51 (0.929)	61.53 (0.074)
Algeria	3024.55	753.83 (0.249)	715.86 (0.95)	42.95 (0.057)
Angola	2242.31	1048.85 (0.468)	856.99 (0.817)	193.81 (0.185)
Argentina	1260.75	217.03 (0.172)	199.87 (0.921)	17.15 (0.079)
Armenia	3124.80	519.65 (0.166)	480.05 (0.924)	35.48 (0.068)
Azerbaijan	2152.75	266.88 (0.124)	244.21 (0.915)	19.55 (0.073)
Bangladesh	23,558.79	12,972.16 (0.551)	10,940.18 (0.843)	1347.26 (0.104)
Barbados	10.38	0.62 (0.06)	0.57 (0.92)	0.05 (0.08)
Belarus	1567.48	254.01 (0.162)	235.15 (0.926)	18.17 (0.072)
Belize	167.45	26.65 (0.159)	21.88 (0.821)	4.4 (0.165)
Benin	4908.28	1989.09 (0.405)	1679.4 (0.844)	313.13 (0.157)
Bhutan	585.65	168.45 (0.288)	158.53 (0.941)	5.22 (0.031)
Bolivia	5022.83	2346.55 (0.467)	1922.46 (0.819)	424.39 (0.181)
Bosnia	6006.19	943.55 (0.157)	849.88 (0.901)	92.44 (0.098)
Botswana	1574.09	400.71 (0.255)	377.4 (0.942)	23.28 (0.058)
Brazil	11,967.38	2270.98 (0.19)	2081.47 (0.917)	184.81 (0.081)
Burkina Faso	7291.83	3435.01 (0.471)	3059.19 (0.891)	391.2 (0.114)
Burundi	3245.95	1811.03 (0.558)	1569.64 (0.867)	247.71 (0.137)
Cabo Verde	649.05	107.88 (0.166)	99.5 (0.922)	8.54 (0.079)
Cambodia	8048.41	3280.2 (0.408)	2848.75 (0.868)	452.68 (0.138)
Cameroon	6381.05	1452.76 (0.228)	1371.13 (0.944)	121.18 (0.083)
Chad	1133.02	527.62 (0.466)	543.75 (1.031)	64.63 (0.122)
Chile	1243.88	251.66 (0.202)	244.45 (0.971)	7.98 (0.032)
China	19,745.19	2182.22 (0.111)	2103.92 (0.964)	87.06 (0.04)
Colombia	15,543.32	5763.97 (0.371)	4397.14 (0.763)	1276.77 (0.222)
Congo	2469.70	256.18 (0.104)	235.25 (0.918)	19.56 (0.076)
Costa Rica	1205.24	117.81 (0.098)	104.39 (0.886)	12.74 (0.108)
Croatia	325.57	20.35 (0.062)	18.87 (0.928)	1.47 (0.072)
Cuba	3422.26	388.54 (0.114)	348.96 (0.898)	39.46 (0.102)
Côte d'Ivoire	6832.31	966.99 (0.142)	769.77 (0.796)	209.28 (0.216)
Dominican Republic	18,003.93	8371.61 (0.465)	6632.8 (0.792)	1455.99 (0.174)
Countries	3055.67	1402.99 (0.459)	1286.86 (0.917)	115.81 (0.083)
Ecuador	3325.99	1081.13 (0.325)	992.31 (0.918)	82.3 (0.076)
Egypt	18,271.24	3192.45 (0.175)	2859.21 (0.896)	342.07 (0.107)
El Salvador	3500.51	1150.59 (0.329)	996.62 (0.866)	194.36 (0.169)
	688.59	203.83 (0.296)	163.84 (0.804)	39.18 (0.192)
Ethiopia	25,103.07	12,132.87 (0.483)	10,137.56 (0.836)	1926.89 (0.159)
Fiji	1469.07	516.29 (0.351)	431.96 (0.837)	82.33 (0.159)
Gabon	1102.48	162.37 (0.147)	157.17 (0.968)	4.81 (0.03)
	662.51	142.78 (0.216)	129.39 (0.906)	12.84 (0.09)
Georgia	7673.92	2025.2 (0.264)	1895.55 (0.936)	89.09 (0.044)
Ghana	10,646.00	4402.71 (0.414)	3778.92 (0.858)	617.64 (0.14)
Guatemala	4241.77	2183.31 (0.515)	1619.49 (0.742)	579.07 (0.265)
Guinea	701.34	292.09 (0.416)	246.81 (0.845)	43.33 (0.148)
Guinea-Bissau	200.44	88.24 (0.44)	76.46 (0.866)	12.65 (0.143)
Guyana	143.1	34.91 (0.244)	34.23 (0.981)	0.88 (0.025)
Haiti	9380.00	2960.34 (0.316)	2758.57 (0.932)	240.58 (0.081)
Honduras	3963.62	1609.5 (0.406)	1483.49 (0.922)	139.08 (0.086)
India	43,280.91	13,998.82 (0.323)	13,429.11 (0.959)	574.97 (0.041)
Indonesia	27,647.82	7548.27 (0.273)	7146.24 (0.947)	868.74 (0.115)
Iran	1658.74	151.14 (0.091)	197.64 (1.308)	10.23 (0.068)
Iraq	21,867.33	5352.86 (0.245)	4330.08 (0.809)	549.33 (0.103)

Table 2. *Cont.*

Recipient	Total Official Development Assistance (TODA)	Amount (Proportion)		
		Total Gender Related Aid (TGRA)	Significant Gender Related Aid (SGRA)	Principal Gender Related Aid (PGRA)
Jamaica	1204.28	249.98 (0.208)	232.64 (0.931)	17.42 (0.07)
Jordan	21,128.80	5522.94 (0.261)	4372.13 (0.792)	908.3 (0.164)
Kazakhstan	1199.70	112.96 (0.094)	102.22 (0.905)	9.81 (0.087)
Kenya	22,251.43	8379.22 (0.377)	6748.24 (0.805)	1650.31 (0.197)
Kyrgyzstan	2499.82	825.56 (0.33)	806.13 (0.976)	26.05 (0.032)
Lao PD	4044.10	1474.06 (0.364)	1325.37 (0.899)	150.61 (0.102)
Lebanon	9732.46	3067.14 (0.315)	3645.24 (1.188)	237.72 (0.078)
Lesotho	1635.39	254.77 (0.156)	218.08 (0.856)	44.32 (0.174)
Liberia	5479.44	2215.08 (0.404)	1716.76 (0.775)	466.09 (0.21)
Libya	2607.01	563.65 (0.216)	574.5 (1.019)	39.97 (0.071)
Madagascar	4363.11	1631.77 (0.374)	1472.71 (0.903)	193.24 (0.118)
Malawi	8710.00	4453.29 (0.511)	3546.33 (0.796)	883.24 (0.198)
Malaysia	1512.26	66.75 (0.044)	60.67 (0.909)	6.25 (0.094)
Maldives	217.71	54.32 (0.249)	47.49 (0.874)	6.71 (0.124)
Mali	11,215.43	5495.64 (0.49)	4239.22 (0.771)	1168.9 (0.213)
Mauritania	1864.76	573.41 (0.307)	539.68 (0.941)	72.52 (0.126)
Mauritius	1573.65	447.9 (0.285)	426.92 (0.953)	21.99 (0.049)
Mexico	9500.39	1659.75 (0.175)	1576.56 (0.95)	74.7 (0.045)
Moldova	3766.00	1036.44 (0.275)	851.63 (0.822)	186.16 (0.18)
Mongolia	3504.12	899.04 (0.257)	869.07 (0.967)	32.01 (0.036)
Montenegro	1729.01	234.66 (0.136)	210.81 (0.898)	20.29 (0.086)
Morocco	21,388.32	4232.89 (0.198)	3819.15 (0.902)	412.32 (0.097)
Mozambique	18,165.56	6961 (0.383)	5900.46 (0.848)	1042.61 (0.15)
Myanmar	8346.52	3999.68 (0.479)	3412.61 (0.853)	446.84 (0.112)
Namibia	2918.25	891.05 (0.305)	814.62 (0.914)	75.28 (0.084)
Nepal	7575.87	4582.32 (0.605)	3954.47 (0.863)	671.19 (0.146)
Nicaragua	3429.88	1384.12 (0.404)	1168.72 (0.844)	235.14 (0.17)
Niger	7361.92	3018.12 (0.41)	2649.72 (0.878)	386.05 (0.128)
Nigeria	16,343.31	7926.9 (0.485)	6559.13 (0.827)	1225.92 (0.155)
North Macedonia	3056.41	461.92 (0.151)	406.16 (0.879)	56.27 (0.122)
Oman	17.62	1.84 (0.105)	0.73 (0.394)	1.12 (0.606)
Pakistan	22,489.46	8789.5 (0.391)	7361.33 (0.838)	1297.85 (0.148)
Panama	746.96	112.17 (0.15)	86.53 (0.771)	25.33 (0.226)
Papua New Guinea	7018.43	3488.14 (0.497)	3201.79 (0.918)	274.24 (0.079)
Paraguay	1671.38	521.48 (0.312)	460.5 (0.883)	61.3 (0.118)
Peru	6887.68	2346.23 (0.341)	2105.99 (0.898)	239.29 (0.102)
Philippines	12,795.58	4378.41 (0.342)	4162.63 (0.951)	210.21 (0.048)
Rwanda	7917.61	4260.77 (0.538)	3736.44 (0.877)	508.71 (0.119)
Saint Lucia	94.5	30.24 (0.32)	26.38 (0.872)	3.86 (0.128)
Samoa	217.51	64.26 (0.295)	58.48 (0.91)	5.2 (0.081)
Senegal	9441.13	3543.26 (0.375)	3091.95 (0.873)	428.8 (0.121)
Serbia	10,670.98	1388.05 (0.13)	1260.23 (0.908)	130.45 (0.094)
Sierra Leone	4528.91	1520.57 (0.336)	1440.04 (0.947)	223.78 (0.147)
South Africa	16,458.81	2691.37 (0.164)	2399.57 (0.892)	287.85 (0.107)
Sri Lanka	5874.42	1476.85 (0.251)	1326.96 (0.899)	109.39 (0.074)
Sudan	10,258.61	3170.17 (0.309)	2543.62 (0.802)	412.4 (0.13)
Suriname	417.56	74.47 (0.178)	73.05 (0.981)	1.34 (0.018)
Syrian Arab Republic	13,471.01	4540.34 (0.337)	2854.14 (0.629)	267.49 (0.059)
Tajikistan	2222.89	841.39 (0.379)	747.59 (0.889)	85.63 (0.102)
Tanzania	20,564.44	9023.48 (0.439)	7093.84 (0.786)	1961.62 (0.217)
Thailand	4568.79	718.15 (0.157)	659.74 (0.919)	25.72 (0.036)
Timor-Leste	2682.89	1264.3 (0.471)	1017.62 (0.805)	244.76 (0.194)
Togo	2226.18	482.45 (0.217)	439.38 (0.911)	45.13 (0.094)
Tonga	212.1	49.77 (0.235)	37.35 (0.75)	6.54 (0.131)

Table 2. *Cont.*

Recipient	Total Official Development Assistance (TODA)	Amount (Proportion)		
		Total Gender Related Aid (TGRA)	Significant Gender Related Aid (SGRA)	Principal Gender Related Aid (PGRA)
Trinidad and Tobago	10.00	1.69 (0.169)	1.33 (0.79)	0.16 (0.094)
Tunisia	12,795.19	2570.86 (0.201)	2343.16 (0.911)	222.9 (0.087)
Türkiye	37,685.97	7943.58 (0.211)	7204.01 (0.907)	527.23 (0.066)
Uganda	16,696.49	6729.15 (0.403)	5529.79 (0.822)	1063.09 (0.158)
Ukraine	14,506.45	2909.53 (0.201)	2675.88 (0.92)	230.24 (0.079)
Uruguay	358.84	41.27 (0.115)	32.6 (0.79)	8.73 (0.212)
Uzbekistan	3682.34	758.11 (0.206)	747.75 (0.986)	10.64 (0.014)
Venezuela	1023.65	208.52 (0.204)	255.85 (1.227)	13.48 (0.065)
Viet Nam	25,244.95	4582.38 (0.182)	4366.08 (0.953)	218.46 (0.048)
Yemen	5755.10	2300.8 (0.4)	3669.86 (1.595)	341.14 (0.148)
Zambia	10,131.08	4022.68 (0.397)	2919.56 (0.726)	1100.64 (0.274)
Zimbabwe	7540.31	3619.24 (0.48)	3218.86 (0.889)	536.83 (0.148)
Total	917,595.20	298,880.4 (0.326)	259,747.4 (0.869)	37,581.17 (0.126)

Figures in parenthesis are share of respective columns in TODA, and TGRA.

In all other countries, the share of PGRA in TGRA is in the low teens, indicating that the majority of TGRA finances activities that address gender equality and women's empowerment as important but secondary objectives (i.e., SGRA). For instance, in Guyana, Mongolia, and Gabon, PGRA accounts for two to five percent of TGRA, respectively. This observation highlights that while aid funding activities that address gender equality and women's empowerment as important are present, the primary focus of gender-related aid extended to many of the countries often lies elsewhere.

5.2. Does Gender-Related Aid Reduce Gender Inequality?

Table 3 presents estimation results from the panel fixed-effects model, in which we control for the unobserved heterogeneities associated with the data's cross-sectional data (between countries) and time-series (over time) dimensions.[5] The results are derived using one-year lagged values of gender-related aid, allowing for the assessment of delayed impacts. To help differentiate between the immediate and lagged effects of gender-related aid, providing a more comprehensive understanding of how such aid influences gender (in)equality over time, we also obtain results using contemporaneous values of gender-related aid. However, for brevity, we limit our discussion to results obtained from the lagged values of gender-related aid. Column (a) shows the results from the specification, which includes the control variables and total gender-related aid (TGRA). Column (b) presents the results from the specification that includes only the significant component of gender-related aid (SGRA). In contrast, column (c) includes only the principal gender-related aid (PGRA) component. Column (d) displays the results from the specification, which includes the SGRA and PGRA components. Finally, column (e) considers the interaction effect between SGRA and PGRA.

The various specifications in the table provide a comprehensive understanding of the impact of gender-related aid. Column (a) includes only TGRA, which offers an overview of the overall effect of gender-related aid. Columns (b) and (c) help isolate the individual impacts of significant and principal aid components, respectively. Column (d) provides insights into how each component contributes to gender (in)equality when considered together. The interaction effect in column (e) examines whether the two components reinforce each other, potentially revealing synergy or offsetting effects. This is particularly important given the theoretical underpinning that some members of society may not support gender parity. Understanding these dynamics may also help inform, for example, whether aid principally focused on gender and women's empowerment enhances or

diminishes the overall effectiveness of gender-related aid that may have other goals as its primary objective. The approach allows us to account for the complex interplay between aid interventions, local contexts, and gender inequality outcomes, offering valuable insights for policymakers and aid organizations.

Table 3. The Effects of Gender-Related Aid on Gender Inequality, Results from Panel Fixed-Effects Estimation (Lagged Gender Related Aid Variables).

	Dependent Variable: Gender Inequality Index				
Variables	**(a)**	**(b)**	**(c)**	**(d)**	**(e)**
Mean years of school (log)	−0.236 ***	−0.231 ***	−0.254 ***	−0.230 ***	−0.221 ***
	(0.0262)	(0.0263)	(0.0264)	(0.0263)	(0.0263)
Per capita Income (log)	−0.110 ***	−0.114 ***	−0.105 ***	−0.114 ***	−0.112 ***
	(0.0161)	(0.0162)	(0.0164)	(0.0162)	(0.0161)
Institutional Quality Index	−3.765 *	−3.770 *	−3.732 *	−3.612 *	−4.084 **
	(2.077)	(2.074)	(2.108)	(2.076)	(2.073)
Cultural Globalization (log)	−0.0278	−0.0243	−0.0344	−0.0252	−0.0258
	(0.0290)	(0.0290)	(0.0294)	(0.0290)	(0.0289)
Economic Globalization (log)	−0.443 ***	−0.449 ***	−0.499 ***	−0.447 ***	−0.426 ***
	(0.0768)	(0.0765)	(0.0772)	(0.0765)	(0.0765)
Lagged TGRA (log)	−0.0260 ***				
	(0.00411)				
Lagged SGRA (log)		−0.0255 ***		−0.0242 ***	−0.0190 ***
		(0.00387)		(0.00400)	(0.00429)
Lagged PGRA (log)			−0.00689 ***	−0.00310	0.0089 **
			(0.00244)	(0.00248)	−0.0045
Lagged SGRA#PGRA (log)					−0.00366 ***
					(0.00113)
Constant	2.566 ***	2.595 ***	2.706 ***	2.587 ***	2.468 ***
	(0.275)	(0.274)	(0.278)	(0.274)	(0.276)
Observations	1274	1274	1273	1273	1273
No. of Countries	118	118	118	118	118
St. Dev.(Country)	0.275	0.274	0.271	0.275	0.279
St. Dev.(Errors)	0.0682	0.0681	0.0692	0.0681	0.0679
Rho (ICC)	0.942	0.942	0.939	0.942	0.944
R-Squared (within)	0.272	0.274	0.251	0.275	0.281
Log-Likelihood	1678	1680	1659	1679	1685
Psuedo R-Square	0.682	0.681	0.62	0.68	0.691
F-Statistic	71.63 ***	72.37 ***	64.32 ***	62.09 ***	56.07 ***
Country Fixed-Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The panel fixed-effects model estimation results in the table exhibit a robust performance. The standard deviation of the unobserved country-specific effects ($\sigma_u = 0.942$) is substantially larger than the idiosyncratic error term ($\sigma_\epsilon = 0.275$), indicating significant variability across countries. The intra-class correlation coefficient ($\rho = 0.939$) reveals that 94% of the total variance in the dependent variable is attributable to country-specific effects rather than within-country changes over time. The log-likelihood value of −1813.75 and the highly significant F-statistic of 125.43 ($p < 0.001$) confirm that including fixed effects improves the model's overall fit to the data, compared to a pooled model without country-specific effects.

The estimated coefficients of our variables of interest, the total gender-related aid (TGRA) and its components (SGRA and PGRA), and each control variable, except the cultural globalization index, are statistically significant and have the *a priori* expected signs. Focusing on the results in column (a), the coefficient of TGRA (0.026) indicates that a 1% increase in total gender-related aid is associated with a 0.026% decrease in gender inequality. Highlighting the importance of targeted aid in promoting gender equality, the positive

coefficient suggests that increased gender-related aid contributes to a statistically significant reduction in gender inequality, albeit modestly.

For the control variables, with a coefficient of −0.11 for per capita income, ceteris paribus, we observe that a 1% increase in per capita income is associated with a 0.11% decrease in gender inequality. Rising income levels generally provide more resources and opportunities for improving women's status, thus reducing gender inequality. The coefficient of the mean years of schooling (−0.236) indicates that a corresponding 1% increase in mean years of schooling is associated with a 0.236% decrease in gender inequality. As gender-related aid empowers women with knowledge and skills, leading to better economic and social outcomes, this finding confirms that education is a crucial driver of gender parity. The coefficient of economic globalization (−0.443) suggests that a 1% increase is associated with a 0.443% decrease in gender inequality, on average. Liberal economic integration can enhance opportunities for women in the labor market and improve their economic status, thus reducing gender disparities. Lastly, the coefficient of the institutional quality, the only variable that enters the model in levels, is −0.3765, indicating that a 1% increase in institutional quality is associated with a 0.037% fall in gender inequality, on average, which implies that by promoting equitable policies and ensuring the implementation of laws, effective institutions support gender equality.[6]

Results in the remaining columns (b) to (e) of the table enable us to address questions of policy relevance associated with the implementation of activities that address gender equality and women's empowerment as an essential but secondary objective (SGRA) or the principal focus (PGRA). Results in columns (b) and (c) indicate that gender-related aid financing activities that address gender equality and women's empowerment are important, but the objective (SGRA) or their principal goal (PGRA) have a statistically significant negative effect on gender inequality in the recipient countries. However, while a 1% increase in SGRA is associated with a 0.255% decline in GII, a proportionate increase in PGRA yields a significant but much lower decline in GII (0.007%).

The results in columns (d) and (e) present the effects of significant gender-related aid (SGRA) and principal gender-related aid (PGRA) on gender inequality, with and without controlling for their interaction effects. When both components enter the specifications without controlling their potential interaction (column d), SGRA maintains its statistically significant effect on reducing gender inequality, while PGRA loses its statistical significance. The result shows that the impact of PGRA on gender inequality is not distinguishable in the presence of SGRA, potentially implying that SGRA's effects overshadow those of PGRA in this specification.

When we account for their interaction effect (column e), SGRA and PGRA exhibit statistically significant negative and positive effects on gender inequality, respectively.[7] However, the interaction effect between SGRA and PGRA is statistically significant and negative. The negative interaction effect suggests that while each type of aid may influence gender inequality differently, their combined effect is greater than the sum of their individual effects. The findings indicate a complementary relationship: principal aid activities focused on advancing gender parity (PGRA) become more effective when combined with aid activities promoting gender parity as a significant but secondary objective (SGRA). This highlights the importance of coordinating activities funded especially by PGRA with that of SGRA to maximize the overall impact on gender equality.

5.3. Country-Specific Effects

The observation that both components of gender-related aid extended to promote gender equality and empower women as a primary (PGRA) and secondary (SGRA) objective have statistically significant positive and negative effects on the dependent variable, while their interaction effect is significant and negative, depicting the complementarity role of SGRA to PGRA, makes us ponder the country-specific effects of the respective components. Specifically, given the high degree of disparity in gender development across countries in different regions and the amount of gender-related aid extended to the recipients, we em-

ploy the mixed-effects random coefficient (on the gender-related aid) model to re-estimate the five specifications we previously examined. In addition to providing us with a robustness check for our results obtained from the panel fixed-effects estimation, the mixed-effects random coefficient estimation would enable us to obtain the country-specific marginal effects of a proportional percent increase in the respective aid components, evaluated at the observed country-specific average annual values of PGRA (SGRA) and the mean of the control variables.[8]

Table 4 presents estimation results obtained from the random coefficient mixed-effects specification. With slight variation in the estimated coefficients of the variables in the model, compared to those reported in Table 3, the mixed-effects random coefficient model provides a robust fit to the data. For example, with an AIC of −2790.64, a BIC of −2702.33, and a log-likelihood value of −1412.89 presented in column (e) of the table, and a standard deviation of 0.348 for the random intercepts and 0.061 and 0.0166 for the random slopes, the model highlights the presence of considerable differences in baseline levels and effects across countries. The intra-correlation coefficient (ICC) value of 0.97 indicates that 97% of the total variance in gender inequality is attributable to differences between countries. The pseudo-R-squared value is 0.72, showing that when both the fixed and random effects are considered, 72% of the variance is explained. A likelihood ratio test yields a chi-square value of 435.9 ($p < 0.001$), confirming that including random effects significantly improves model fit.

Table 4. The Effects of Gender-Related Aid on Gender Inequality, Results from Random Coefficients Mixed-Effects Estimation (Lagged Gender Related Aid Variables).

	Dependent Variable: Gender Inequality Index (GII)				
Variables	**(a)**	**(b)**	**(c)**	**(d)**	**(e)**
Mean years of school (log)	0.226 ***	−0.227 ***	−0.224 ***	−0.229 ***	−0.226 ***
	(0.0244)	(0.0243)	(0.0240)	(0.0242)	(0.0242)
Per capita Income (log)	−0.0965 ***	−0.110 ***	−0.105 ***	−0.101 ***	−0.0999 ***
	(0.0153)	(0.0158)	(0.0154)	(0.0155)	(0.0155)
Institutional Quality Index	−3.135 *	−2.954 *	−3.054 *	−2.983 *	−3.159 *
	(1.790)	(1.770)	(1.834)	(1.790)	(1.787)
Cultural Globalization (log)	−0.0414	−0.0352	−0.0168	−0.0329	−0.0351
	(0.0265)	(0.0266)	(0.0276)	(0.0265)	(0.0264)
Economic Globalization (log)	−0.439 ***	−0.440 ***	−0.467 ***	−0.430 ***	−0.421 ***
	(0.0691)	(0.0687)	(0.0714)	(0.0686)	(0.0685)
Lagged TGRA (log)	−0.0237 ***				
	(0.00816)				
Lagged SGRA (log)		−0.0235 ***		−0.0207 ***	−0.0135 *
		(0.00806)		(0.00720)	(0.00802)
Lagged PGRA (log)			−0.00719 *	−0.000718	0.0133 *
			(0.00427)	(0.00289)	(0.00684)
Lagged SGRA#PGRA (log)					−0.00382 **
					(0.00170)
Constant	2.445 ***	2.534 ***	2.435 ***	2.405 ***	2.330 ***
	(0.257)	(0.258)	(0.259)	(0.255)	(0.256)
Random-Effects Parameters:					
St. Dev (Region)	−1.792 ***	−1.837 ***	−1.831 ***	−1.883 ***	−1.911 ***
	(0.346)	(0.349)	(0.328)	(0.357)	(0.361)
St. Dev.(Country)	−2.657 ***	−2.656 ***	−3.423 ***	−2.816 ***	−2.791 ***
	(0.102)	(0.105)	(0.137)	(0.126)	(0.125)
St. Dev. (Coeff.)	−0.974 ***	−1.027 ***	−1.518 ***	−4.064 ***	−4.096 ***
	(0.105)	(0.102)	(0.0764)	(0.214)	(0.236)
St. Dev. (Coeff.)				−1.042 ***	−1.054 ***
				(0.103)	(0.104)
St. Dev.(Error)	−2.813 ***	−2.817 ***	−2.738 ***	−2.835 ***	−2.839 ***
	(0.0223)	(0.0225)	(0.0223)	(0.0243)	(0.0244)
AIC	−2772.09	−2772.09	−2664.98	−2787.64	−2790.33
BIC	−2710.30	−2710.30	−2603.20	−2705.27	−2702.81
Psuedo R-Square	0.697	0.701	0.656	0.705	0.723
Log-Likelihood	1398	1398	1344	1410	1412
Wald Chi-Square	433.9 ***	446.4 ***	422.6 ***	428.6 ***	435.9 ***
Observations	1273	1273	1272	1272	1272

See Notes on Table 3.

Indicating the robustness of our observations, all the control variables, except the cultural globalization index, maintain their sign, significance, and coefficient sizes across all specifications with one major difference: the coefficient of PGRA in the specification where the interaction term is accounted for increases to 0.0113, compared to the corresponding value from the fixed-effects regression model, where it was 0.0088. Given that the mixed-effects random intercept and random coefficients model allows the effect of the variable to vary across countries within each region, the observed increase in the magnitude of the coefficient should not be surprising.[9]

Table 5 presents the country-specific marginal effects of the gender SGRA and PGRA on GII, obtained from the specification that permits the interaction term, evaluated at the mean of the control variables, and observed values of the respective gender-related aid components. The values provide valuable insights that inform policymakers on the relative effectiveness of the respective aid components in influencing gender (in) equality in each of the countries included in our study.

Table 5. Country-Specific Effects of a Percent Increase in Gender-Related Aid on GII.

Recipient	Significant TRA	Principal TRA
Afghanistan	overall	−0.01764 (0.00514) ***
Angola	−0.02876 (0.00422) ***	−0.0063 (0.00266) ***
Albania	−0.02369 (0.00398) ***	−0.00544 (0.00258) *
Argentina	−0.01899 (0.0043) ***	−0.00101 (0.00256)
Armenia	−0.02217 (0.00403) ***	−0.00391 (0.00249)
Azerbaijan	−0.01845 (0.00436) ***	−0.0016 (0.00252) ***
Burundi	−0.02945 (0.0043) ***	−0.00857 (0.003) ***
Benin	−0.03015 (0.00439) ***	−0.00875 (0.00303) ***
Burkina Faso	−0.03101 (0.0045) ***	−0.01068 (0.00341) ***
Bangladesh	−0.0359 (0.00539) ***	−0.01516 (0.00448) ***
Bosnia and Herzegovina	−0.02593 (0.00402) ***	−0.00631 (0.00266) **
Belarus	−0.01931 (0.00426) ***	−0.00127 (0.00254) ***
Belize	−0.00855 (0.00628) ***	0.00683 (0.00395) *
Bolivia	−0.03168 (0.00461) ***	−0.0094 (0.00315) ***
Brazil	−0.02754 (0.00411) ***	−0.00879 (0.00304) ***
Bhutan	−0.01295 (0.00529) **	−0.00049 (0.0026)
Botswana	−0.02023 (0.00417) ***	−0.00147 (0.00252)
Chile	−0.01824 (0.00439) ***	−0.00113 (0.00255)
China	−0.02499 (0.00399) ***	−0.0095 (0.00317) ***
CotedIvore	−0.02895 (0.00424) ***	−0.00544 (0.00258) **
Cameroon	−0.02633 (0.00403) ***	−0.00738 (0.00281) ***
DR. of the Congo	−0.03594 (0.00539) ***	−0.01387 (0.00415) ***
Congo	−0.01931 (0.00426) ***	−0.00099 (0.00256)
Colombia	−0.03503 (0.00521) ***	−0.01112 (0.00351) ***
Cabo Verde	−0.01616 (0.0047) ***	0.00002 (0.00265)
Costa Rica	−0.01759 (0.00448) ***	0.00145 (0.00285)
Cuba	−0.02275 (0.004) ***	−0.00261 (0.00248)
Dominican Republic	−0.02508 (0.00399) ***	−0.00564 (0.00259) **
Algeria	−0.02312 (0.00399) ***	−0.00541 (0.00257) *
Ecuador	−0.02568 (0.00401) ***	−0.00694 (0.00274) **
Egypt	−0.03033 (0.00441) ***	−0.01009 (0.00329) ***
Ethiopia	−0.03692 (0.0056) ***	−0.01532 (0.00452) ***
Fiji	−0.02507 (0.00399) ***	−0.00354 (0.00248)
Gabon	−0.01448 (0.00499) ***	0.00109 (0.00279)
Georgia	−0.02555 (0.004) ***	−0.00812 (0.00292) ***
Ghana	−0.0329 (0.00481) ***	−0.0118 (0.00366) ***
Guinea	−0.02893 (0.00424) ***	−0.00694 (0.00274) ***
Gambia	−0.01878 (0.00432) ***	0.00105 (0.00279)
Guinea-Bissau	−0.02318 (0.00399) ***	−0.00194 (0.0025)
Guatemala	−0.03265 (0.00476) ***	−0.00851 (0.00299) ***
Guyana	−0.01379 (0.00512) ***	0.00091 (0.00277)

Table 5. *Cont.*

Recipient	Significant TRA	Principal TRA
Honduras	−0.027 (0.00407) ***	−0.00815 (0.00293) ***
Croatia	−0.00888 (0.0062)	−0.00005 (0.00265)
Haiti	−0.02863 (0.00421) ***	−0.01061 (0.0034) ***
Indonesia	−0.03375 (0.00496) ***	−0.0136 (0.00409) ***
India	−0.03273 (0.00478) ***	−0.01596 (0.00469) ***
Iran	−0.01688 (0.00458) ***	0.00092 (0.00277)
Iraq	−0.0315 (0.00458) ***	−0.01106 (0.00349) ***
Jamaica	−0.01749 (0.00449) ***	−0.00148 (0.00252)
Jordan	−0.03347 (0.00491) ***	−0.01128 (0.00354) ***
Kazakhstan	−0.01562 (0.00479) ***	0.00169 (0.00288)
Kenya	−0.03632 (0.00547) ***	−0.01398 (0.00418) ***
Kyrgyzstan	−0.0208 (0.00412) ***	−0.00581 (0.00261) **
Cambodia	−0.03192 (0.00464) ***	−0.01053 (0.00338) ***
Lao PDR	−0.02763 (0.00412) ***	−0.00763 (0.00284) ***
Lebanon	−0.02732 (0.0041) ***	−0.00965 (0.0032) ***
Liberia	−0.03177 (0.00462) ***	−0.00885 (0.00305) ***
Libya	−0.02211 (0.00403) ***	−0.00307 (0.00247)
Saint Lucia	−0.0161 (0.00471) ***	0.00507 (0.00354)
Sri Lanka	−0.02639 (0.00404) ***	−0.00786 (0.00288) ***
Lesotho	−0.02155 (0.00406) ***	−0.00099 (0.00256)
Morocco	−0.03068 (0.00446) ***	−0.01161 (0.00362) ***
Moldova	−0.02578 (0.00401) ***	−0.00574 (0.0026) **
Madagascar	−0.02798 (0.00415) ***	−0.00813 (0.00292) ***
Maldives	−0.01162 (0.00557) **	0.00369 (0.00325)
Mexico	−0.02495 (0.00399) ***	−0.0072 (0.00278) ***
North Macedonia	−0.02238 (0.00402) ***	−0.0033 (0.00247)
Mali	−0.03506 (0.00521) ***	−0.01205 (0.00372) ***
Myanmar	−0.03426 (0.00506) ***	−0.01362 (0.00409) ***
Montenegro	−0.01543 (0.00482) ***	0.00098 (0.00278)
Mongolia	−0.0205 (0.00414) ***	−0.00603 (0.00263) **
Mozambique	−0.0348 (0.00516) ***	−0.01339 (0.00404) ***
Mauritania	−0.02403 (0.00398) ***	−0.00431 (0.0025) *
Mauritius	−0.01318 (0.00525) ***	0.00056 (0.00272)
Malawi	−0.03394 (0.005) **	−0.01153 (0.0036) **
Malaysia	−0.01515 (0.00487) ***	0.00416 (0.00334)
Namibia	−0.02422 (0.00398) ***	−0.00595 (0.00263) **
Niger	−0.03096 (0.0045) ***	−0.00967 (0.0032) ***
Nigeria	−0.03535 (0.00527) ***	−0.01362 (0.00409) ***
Nicaragua	−0.02962 (0.00432) ***	−0.00751 (0.00283) ***
Nepal	−0.03296 (0.00482) ***	−0.01202 (0.00371) ***
Oman	−0.01345 (0.00519) ***	0.01075 (0.00496) **
Pakistan	−0.03542 (0.00529) ***	−0.01421 (0.00424) ***
Panama	−0.01408 (0.00507) ***	0.00283 (0.00308)
Peru	−0.02944 (0.0043) ***	−0.00969 (0.00321) ***
Philippines	−0.02884 (0.00423) ***	−0.01102 (0.00348) ***
Papua New Guinea	−0.02959 (0.00432) ***	−0.01119 (0.00352) ***
Paraguay	−0.0245 (0.00398) ***	−0.00379 (0.00248)
Rwanda	−0.03174 (0.00462) ***	−0.01173 (0.00364) ***
Sudan	−0.03086 (0.00448) ***	−0.00951 (0.00317) ***
Senegal	−0.03141 (0.00456) ***	−0.01098 (0.00348) ***
Sierra Leone	−0.02834 (0.00418) ***	−0.00819 (0.00293) ***
El Salvador	−0.02853 (0.0042) ***	−0.00679 (0.00272) ***
Serbia	−0.02548 (0.004) ***	−0.00761 (0.00284) ***
Suriname	−0.00866 (0.00625)	0.00275 (0.00307)
Eswatini	−0.02488 (0.00399) ***	−0.00257 (0.00248) ***
Syrian Arab Republic	−0.02679 (0.00406) ***	−0.00806 (0.00291) ***
Chad	−0.02873 (0.00422) ***	−0.00952 (0.00317) ***
Togo	−0.02206 (0.00403) ***	−0.00358 (0.00248)

Table 5. *Cont.*

Recipient	Significant TRA	Principal TRA
Thailand	−0.02144 (0.00407) ***	−0.00419 (0.0025) *
Tajikistan	−0.0249 (0.00399) ***	−0.0058 (0.00261) **
Timor-Leste	−0.02926 (0.00428) ***	−0.00702 (0.00275) **
Tonga	−0.02069 (0.00413) ***	0.00076 (0.00275) **
Trinidad and Tobago	−0.00954 (0.00604)	0.01014 (0.00479) **
Tunisia	−0.02774 (0.00413) ***	−0.00912 (0.0031) ***
Türkiye	−0.03058 (0.00444) ***	−0.01237 (0.00379) ***
Tanzania	−0.03649 (0.00551) ***	−0.01423 (0.00424) ***
Uganda	−0.03472 (0.00515) ***	−0.01314 (0.00397) ***
Ukraine	−0.02808 (0.00416) ***	−0.00989 (0.00325) ***
Uruguay	−0.01802 (0.00442) ***	0.00452 (0.00342)
Uzbekistan	−0.01688 (0.00458) ***	−0.00323 (0.00247)
Venezuela	−0.01796 (0.00442) ***	0.00145 (0.00285)
Viet Nam	−0.02866 (0.00421) ***	−0.01233 (0.00378) ***
Samoa	−0.01976 (0.00421) ***	−0.00219 (0.00249)
Yemen	−0.0299 (0.00435) ***	−0.01075 (0.00343) ***
South Africa	−0.03005 (0.00437) ***	−0.00975 (0.00322) ***
Zambia	−0.03464 (0.00513) ***	−0.01084 (0.00344) ***
Zimbabwe	−0.03235 (0.00471) ***	−0.01127 (0.00354) ***

See Notes in Table 3.

The results indicate that significant gender-related aid (SGRA), which accounts for the lion's share of gender-related aid, significantly reduces gender inequality in 115 of the 118 countries in our study. The observed country-specific effects vary from as low as 0.0085 (Belize) and 0.012 (Moldova and Bhutan) to 0.037 (Afghanistan) and 0.036 (Ethiopia, Tanzania, Bangladesh, and Pakistan). The widespread effectiveness suggests that SGRA, despite being secondary in focus, is consistently impactful in different contexts. On the other hand, principal gender-related aid (PGRA), which explicitly targets gender equality and women's empowerment, shows statistically significant effects in only 85 out of 118 countries, with the observed effects ranging from as low as 0.0041 (Thailand) to 0.005 (Mauritania and Algeria) to 0.0176 (Afghanistan) and 0.015 (in India, Ethiopia, Bangladesh, and Rwanda). In 82 of the 118 countries, both SGRA and PGRA have significant negative effects on gender inequality.[10] However, in 33 countries, only SGRA has a significant impact, while PGRA does not show statistically discernible effects.

A plausible explanation for these findings is that by integrating gender considerations into broader development projects, SGRA may have been more adaptable and contextually relevant across different countries. The projects may leverage existing infrastructure and systems, making gender equality initiatives more feasible and acceptable within varying socio-political environments. Conversely, PGRA, with its explicit focus on gender equality, might face greater resistance or implementation challenges in some countries due to cultural, social, or political barriers that are less flexible or more deeply entrenched.

While our study provides important insights into the effectiveness of gender-related aid in reducing gender inequality, it is essential to acknowledge potential biases and data limitations to present a fair account of our findings. One potential bias is that our study focuses on 118 countries for which a detailed breakdown of the gender-related aid data is available. This selection may introduce bias by excluding countries that are not aid recipients, but efforts to address gender inequality are in place. Another potential bias is the simultaneity between gender inequality and aid allocation (more aid going to countries with higher gender inequality), confounding the causal interpretation of our results. However, we mitigate this bias by employing fixed-effects models that enable us to control the unobserved heterogeneity and using lagged values of aid inflows.

More importantly, our analysis is based on data from 2009 to 2022 due to the unavailability of a detailed breakdown of the gender-related aid data. While the period provides a substantial frame for analysis, it may not fully capture trends and effects of gender-

related aid. While results from alternative specifications we provide enhance the robustness and credibility of our observations, it is important to note the potential limitations to the inferences and policy recommendations we provide.

6. Conclusions and Policy Implications

We address the effectiveness of aid activities targeting gender equality and women's empowerment in mitigating gender inequality, a significant barrier to development that impacts economic growth, social cohesion, and human development. We develop a theoretical model that underlies our empirical specification. The theoretical model posits that while gender development (GDI) can enhance a country's welfare, it may face resistance from stakeholders who benefit from existing gender disparities. This dual impact is critical in formulating a measure for understanding the overall effectiveness of gender-related aid.

Employing the panel fixed-effects regression approach that permits controlling for both the country-specific and time-specific factors on a comprehensive dataset covering 118 countries spanning from 2009 to 2022, we obtain robust and reliable estimates of the effects of our main variable of interest, aid activities targeting gender equality as a principal objective (PRGA), and aid activities that address gender equality and women's empowerment as an important but secondary objective (SGRA) on the gender inequality index. Our results reveal that aid integrating gender considerations into broader development projects has statistically significant effects on gender inequality levels in 115 countries, whereas the PGRA has statistically significant effects only in 85 of the 118 countries in our study. Examining the effects of both components simultaneously, we find that while SGRA maintains its significance in all specifications, PGRA does so only when we account for its interaction effect. The observation suggests the complex dynamics between the aid types, highlighting the need for strategic integration and coordination of projects financed by both types of gender-related aid to enhance their effectiveness.

Our findings have notable policy implications. First, given the differences in the effectiveness of SGRA and PGRA across countries, policymakers should focus on developing country-specific strategies that align with local needs and conditions. This could involve establishing a "Gender Aid Effectiveness Index" for each recipient country, incorporating cultural norms, existing legal frameworks, and past aid outcomes. Implementing mandatory pre-aid assessment protocols involving local stakeholders, gender experts, and government officials would ensure that the aid program meets each country's unique context. Additionally, creating a centralized database of successful country-specific gender aid initiatives accessible to all donor organizations would inform future strategy development and promote best practices.

Second, increasing the integration of activities addressing gender equality into broader development aid projects is crucial. Our study demonstrates that SGRA, which integrates gender considerations into broader development projects, has a more consistent impact on reducing gender inequality. This approach involves leveraging existing infrastructure and systems to make gender equality initiatives more feasible and acceptable within the different socio-political environments. Thus, policymakers should prioritize funding for projects incorporating gender equality as a significant objective, even if it is not the primary focus. To facilitate this integration, developing a "Gender Integration Toolkit" that provides practical guidelines on incorporating gender considerations into various sectors like agriculture, infrastructure, health, and education may be necessary. To this end, establishing cross-sector working groups within aid organizations across all development projects and gleaning lessons from micro-level observations of what worked best in countries such as Ethiopia, Rwanda, Ghana, and Bangladesh, where the observed effects of both SGRA are quite large, or the effects of both SGRA and PGRA are statistically significant, is paramount.[11]

Third, considering the varying responsiveness of gender inequality to gender-related aid inflows in different countries, policymakers should tailor their strategies to the specific contexts of each country. To this end, developing a "Gender Aid Responsiveness Scale" would allow the categorization of countries based on their historical responsiveness to

gender-related aid. Gender-related aid could be increased by a specific percentage (e.g., 20%) over the next five years for highly responsive countries. Conversely, for less responsive countries, allocating a portion of aid (e.g., 10%) to preliminary programs focused on awareness-raising and capacity-building before implementing larger gender-focused initiatives would help create a more conducive environment for future interventions.

Fourth, to address the barriers limiting the effectiveness of aid activities targeting gender equality as a principal objective (PGRA), a comprehensive study of countries where PGRA is less effective is essential. This would help identify specific cultural, institutional, or economic barriers based on which country-specific "PGRA Enhancement Plans" with clear timelines and measurable objectives could be developed. Allocating a specific percentage of PGRA funds to local capacity building and institutional strengthening may also create a more supportive environment for gender-focused interventions.

Finally, implementing a robust system for continuous monitoring and evaluation is essential. To this end, establishing a standardized "Gender Aid Impact Assessment" framework for use across all recipient countries, with annual reporting requirements, may provide consistent data for analysis. Creating a centralized, open-access database for gender-related aid outcomes, updated quarterly, may also facilitate real-time strategy adjustments. Furthermore, implementing a "Gender Aid Learning Network" connecting practitioners across countries would enable regular sharing of best practices and lessons learned, fostering a culture of continuous improvement in gender-related aid effectiveness.

Author Contributions: Conceptualization, B.T.; methodology, B.T.; software, B.T.; validation, E.K.S. and B.F.; formal analysis, B.T.; investigation, E.K.S., and B.F.; formal analysis, B.T.; resources, E.K.S. and B.F.; data curation, B.T.; writing—original draft preparation, B.T.; writing—review and editing, E.K.S. and B.F.; visualization, B.T. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Informed Consent Statement: All authors have read and agreed to the published version of the manuscript.

Data Availability Statement: The original contributions presented in the study are included in the article. Further inquiries can be directed to the corresponding author.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Descriptive Statistics of the Variables in the Empirical Model by Regional Location of the Countries in the Study.

Variables		Arab States (AS)	Europe and Pacific (EAP)	Europe and Central Asia (ECA)	Latin America and Caribbean (LAC)	South Asia (SA)	Sub-Saharan Africa (SSA)	All Regions
Gender Inequality Index (GII)	overall	0.419	0.241	0.417	0.504	0.565	0.454
		(0.144)	(0.129)	(0.0867)	(0.0802)	(0.102)	(0.0789)	(0.145)
Gender Development Index (GDI)		0.844	0.957	0.967	0.978	0.865	0.902	0.926
		(0.109)	(0.0423)	(0.0357)	(0.0298)	(0.0936)	(0.0573)	(0.0758)
DAC Aid: Total (Millions, USD)		974.4	747.4	507.6	312.5	1406.1	627.6	656.6
		(805.3)	(725.7)	(745.0)	(360.3)	(1587.2)	(556.8)	(795.5)
Total Gender-Related Aid (TGRA)		244.9	203.0	102.7	95.75	555.8	249.9	213.9
		(215.9)	(206.3)	(180.7)	(126.4)	(613.5)	(249.2)	(290.0)
Principal GRA (PGRA)		26.23	18.30	7.688	13.47	52.62	41.15	26.90
		(28.59)	(22.90)	(14.20)	(26.19)	(60.00)	(51.00)	(41.24)
Significant GRA (SGRA)		220.3	186.5	93.70	82.54	488.7	208.2	185.9
		(189.5)	(201.3)	(170.9)	(107.1)	(549.8)	(203.9)	(254.8)
Mean Years of Schooling		6.681	7.633	10.96	8.325	5.914	5.274	7.254
		(2.145)	(2.209)	(1.254)	(1.607)	(2.767)	(2.378)	(2.851)
Per capita Income, PPP		10,392.2	9339.0	13,308.6	12,909.4	7777.2	4295.6	8995.1
		(6650.1)	(5419.0)	(5735.6)	(6300.2)	(4878.9)	(4372.8)	(6584.6)
Institutional Quality Index		0.00123	0.00323	0.00297	0.00588	0.00233	0.00322	0.00347
		(0.00159)	(0.00364)	(0.00269)	(0.00874)	(0.00312)	(0.00535)	(0.00560)
Economic Globalization Index		38.37	48.98	53.00	54.74	39.54	33.25	43.71
		(16.37)	(16.68)	(13.64)	(10.48)	(11.65)	(12.46)	(16.04)
Cultural Globalization Index		57.70	58.47	64.54	61.47	49.48	50.69	56.62
		(10.57)	(10.47)	(7.756)	(7.562)	(8.012)	(6.805)	(9.852)
Number of Observations		144	170	208	297	114	464	1397

Figures in parentheses are standard deviations.

Table A2. Descriptive Statistics of the Variables in the Empirical Model by Gender Development Groups (Absolute Deviation of GDI from Parity).

Variables	Gender Development Index Categories (2022): Absolute Deviation of GDI Values from Gender Parity |GDI-1|					Total
	High Equality Category-1 (0–2.50)	Medium-High Category-2 (2.5–5.00)	Medium Category-3 (5.00–7.50)	Medium-Low Category-4 (7.50–10.00)	Low Equality Category-5 (>10.00)	
Gender Inequality Index (GII)	0.366 (0.118)	0.326 (0.101)	0.505 (0.107)	0.480 (0.112)	0.589 (0.0889)	0.453 (0.145)
Gender Development Index (GDI)	0.985 (0.0153)	0.968 (0.0225)	0.924 (0.0239)	0.903 (0.0314)	0.827 (0.0766)	0.924 (0.0739)
DAC Aid: Total (Millions, USD)	361.7 (489.3)	379.9 (408.1)	855.1 (743.9)	622.5 (721.1)	1044.8 (1097.7)	655.9 (795.1)
Total Gender-Related Aid (TGRA)	76.35 (126.1)	93.11 (111.0)	300.7 (230.2)	282.6 (389.3)	362.3 (393.9)	213.6 (289.9)
Principal GRA (PGRA)	7.542 (21.23)	8.619 (10.84)	44.06 (47.74)	35.73 (51.47)	44.62 (46.44)	26.86 (41.22)
Significant GRA (SGRA)	68.64 (111.5)	84.70 (105.5)	260.5 (209.0)	241.2 (331.0)	312.0 (349.6)	185.7 (254.7)
Mean Years of Schooling	9.207 (1.800)	9.085 (2.108)	6.109 (2.207)	6.499 (2.854)	4.914 (2.408)	7.259 (2.853)
Per capita Income, PPP	14,407.8 (5672.5)	11,624.8 (4840.1)	6225.9 (6479.1)	4501.2 (2116.6)	4715.3 (3709.7)	9016.3 (6603.7)
Institutional Quality Index	0.00628 (0.00689)	0.00529 (0.00819)	0.00212 (0.00201)	0.000747 (0.000936)	0.00103 (0.00113)	0.00348 (0.00560)
Economic Globalization Index	61.86 (8.328)	63.53 (8.405)	54.91 (8.245)	46.86 (3.387)	50.85 (8.469)	56.64 (9.874)
Cultural Globalization Index	55.30 (10.83)	54.52 (11.17)	41.10 (12.20)	26.88 (7.525)	31.02 (13.30)	43.76 (16.07)
Number of Observations	421	220	294	129	335	1399

Figures in parentheses are standard deviations.

Table A3. The Effects of Gender-Related Aid on Gender Development Index, Random Coefficients Mixed-Effects Model (Lagged Gender-Related Aid Variables).

	Dependent Variable: Gender Development Index				
Variables	**(a)**	**(b)**	**(c)**	**(d)**	**(e)**
Mean Years of School (log)	0.0368 *** −0.00767	0.0382 *** −0.0077	0.0380 *** −0.0076	0.0379 *** −0.0077	0.0378 *** −0.0077
Per capita Income (log)	0.0506 *** −0.0047	0.0504 *** −0.0047	0.0502 *** −0.0047	0.0502 *** −0.0047	0.0502 *** −0.0047
Institutional Quality Index	1.087 * (0.607)	1.067 * (0.608)	1.114 * (0.609)	1.114 * (0.609)	1.109 * (0.611)
Cultural Globalization (log)	−0.0084 −0.0084	−0.0081 −0.0085	−0.0076 −0.0085	−0.0076 −0.0085	−0.0076 −0.0085
Economic Globalization (log)	0.0665 *** (0.0225)	0.0706 *** (0.0224)	0.0710 *** (0.0223)	0.0709 *** (0.0224)	0.0706 *** (0.0225)
Lagged TGRA (log)	0.00216 * (0.00120)				
Lagged SGRA (log)		0.00512 *** (0.00113)		0.00785 *** (0.00117)	0.00275 ** −0.0013
Lagged PGRA (log)			0.00138 * −0.000754	0.00107 (0.000728)	0.001126 (0.00162)
Lagged SGRA#PGRA (log)					0.0214 *** −0.00334
Constant	−0.837 *** (0.0805)	−0.848 *** (0.0804)	−0.849 *** (0.0802)	−0.848 *** (0.0805)	−0.847 *** (0.0812)
Observations	1274	1274	1273	1273	1273
St. Dev.(Country)	0.0732	0.0730	0.0730	0.0730	0.0731
St. Dev.(Errors)	0.0200	0.0200	0.0200	0.0200	0.0200
Rho (ICC)	0.931	0.930	0.930	0.930	0.930
Log-Likelihood	3244	3242	3240	3240	3240
F-Statistic	40.85 ***	40.24 ***	40.64 ***	34.80 ***	30.43 ***
Country Fixed-Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes

See Notes in Table 3.

Notes

[1] Using a measure of Gender Inequality Index (GII) (instead of GEM), Equation (1) can also be presented as $U_{it} = \alpha(1 - GII_{it}) - \beta(GII_{it}) + \gamma_{it}$, with $\alpha(1-\text{GII})$ representing the potential for utility gain from a fall in gender inequality levels and $\beta(GII_{it})$ indicating the disutility from any existing or rising levels of gender inequality. In this alternative specification, utility is maximized with a fall in GII, reflecting the goal of reduced gender inequality.

[2] Our model provides a theoretical framework for understanding the impact of gender equality on societal utility while offering practical guidelines for implementing initiatives sensitive to society's diverse perspectives on gender equality in several ways: inclusive policymaking, targeted communication, and compensatory measures.

[3] Sweden stands as a beacon of progressive cultural norms toward gender roles. Its societal attitudes support extensive parental leave, equal pay policies, and high female workforce participation, demonstrating the transformative role of cultural norms in advancing gender equality (Grönlund and Magnusson 2013).

[4] In addition to providing a comprehensive summary of data distribution and facilitating an understanding of central tendencies, variations, and potential biases, the across different GDI classifications-based presentation aids in identifying patterns and disparities influencing the relationship between gender-related aid and gender inequality.

[5] By controlling for the cross-sectional dimension, we account for time-invariant characteristics unique to each country, including geographical factors, cultural aspects, and institutional frameworks characterized by slow changes. This helps to isolate the effects of our variable of interest from the unobserved factors. Controlling for the time dimension enables us to account for global trends and events (e.g., economic cycles, international policies, or technological advancements) that might influence all countries in the study.

[6] The institutional quality index is not log-transformed because it is derived as the geometric mean of its components and is normalized to lie between 0 and 1.

[7] Although the coefficient of PGRA is positive, its partial derivative, evaluated at the mean of the variables in the model, is negative and significant.

[8] We also estimate the panel fixed-effects regression using the Gender Development Index (GDI), a measure of gender parity, as our dependent variable to assess the robustness of our findings. The results in Appendix A Table A3 indicate that our main variables of interest, including the total gender-related aid and its components, and all the control variables have a positive and statistically significant impact on the GDI. The consistency across different specifications reinforces the validity of our conclusions.

[9] The coefficient of an interaction term obtained from the mixed effects random coefficients and random intercept model might be larger than a fixed effects panel regression model due to differences in how the variability and correlation within the data are handled. Mixed effects models include random intercepts and slopes, capturing both within-group and between-group variability, often resulting in larger coefficient estimates for interaction terms. These models use partial pooling, allowing for more comprehensive estimates by accounting for unobserved heterogeneity. In contrast, fixed effects models control for unobserved heterogeneity by focusing only on within-group variation, which can underestimate interaction effects and result in smaller coefficients. Thus, mixed effects models may yield larger interaction term coefficients as they incorporate and account for more variability in the data (Snijders and Bosker 2012).

[10] The positive achievements in Bangladesh can be attributed to several projects aimed at reducing gender inequality and empowering women: The BRAC Gender Quality Action Learning (GQAL) program, which addresses structural inequalities and promotes women's self-employment and economic opportunities (Oxfam 2022; Hafiza et al. 2015); Initiatives by USAID aimed at reducing maternal mortality rates, increasing school enrollment parity, and supporting women's labor force participation, particularly in the ready-made garment sector (USAID 2023). Microfinance programs by the Grameen Bank and BRAC have provided women with credit, enabling them to start businesses and improve their socio-economic status (de la Brière et al. 2003; Akhter and Cheng 2020). Similarly, in Rwanda, numerous initiatives have been implemented to address gender inequality and empower women, especially after the 1994 genocide. These include Women for Women International, which began its programs in 1997, empowering over 75,000 women through skills training and business development (Women for Women 2022); The Gacaca courts, active from 2001 to 2012, which enabled significant female involvement in community-based justice (Inclusive Security 2021; Rugege 2016). The 2003 constitution established a 30% quota for women in government, enhancing political empowerment (Inclusive Security 2021; Abbott et al. 2018). Various microfinance initiatives provide financial support and training for women, aiding their economic status (Al Jazeera 2021). The 2023 National Gender Standards, supported by the Rwanda Standards Board, UNDP, and UN Women, promote inclusivity and equity across sectors (UNDP 2023).

[11] Ethiopia has benefited from various gender-related aid projects aimed at reducing inequality. UNICEF's initiatives have improved educational, health, and economic opportunities for women and girls while addressing harmful practices (UNICEF 2020). USAID has focused on empowering women through equal access to education, health, and economic opportunities, as well as addressing gender-based violence and enhancing women's rights (USAID n.d.). Additionally, Ethiopia's participation in the Global Financing for Gender Equality program has led to more effective use of resources for gender equality commitments (UN Women 2014).

References

Abbott, Pamela, Roger Mugisha, and Roger Sapsford. 2018. Women, land, and empowerment in Rwanda. *Journal of International Development* 30: 1006–22. [CrossRef]

Akhter, Jesmin, and Kun Cheng. 2020. Sustainable empowerment initiatives among rural women through microcredit borrowings in Bangladesh. *Sustainability* 12: 2275. [CrossRef]

Al Jazeera. 2021. Rwanda's Progress in Women's Empowerment through Microfinance. Available online: https://www.aljazeera.com (accessed on 20 May 2024).

Arora, Rashmi Umesh. 2012. Gender inequality, economic development, and globalization: A state-level analysis of India. *The Journal of Developing Areas* 46: 147–64. [CrossRef]

Bali Swain, Ranjula, Supriya Garikipati, and Fan Yang Wallentin. 2020. Does foreign aid improve gender performance in recipient countries? *Journal of International Development* 32: 1171–93. [CrossRef]

Bendavid, Eran, and Jay Bhattacharya. 2014. The relationship of health aid to population health improvements. *JAMA Internal Medicine* 174: 881–87. [CrossRef]

Besley, Timothy, and Torsten Persson. 2011. *Pillars of Prosperity: The Political Economics of Development Clusters*. Princeton: Princeton University Press.

Burnet, Jennie E. 2008. Gender balance and the meanings of women in governance in post-genocide Rwanda. *African Affairs* 107: 361–86. [CrossRef]

Burnside, Craig, and David Dollar. 2000. Aid, policies, and growth. *American Economic Review* 90: 847–68. [CrossRef]

Chirowa, Frank, Stephen Atwood, and Marc Van der Putten. 2013. Gender inequality, health expenditure and maternal mortality in sub-Saharan Africa: A secondary data analysis. *African Journal of Primary Health Care & Family Medicine* 5: 471.

Collier, Paul, and David Dollar. 2004. Development effectiveness: What have we learned? *The Economic Journal* 114: F244–F271. [CrossRef]

de la Brière, Bénédicte, Kelly Hallman, and Agnes Quisumbing. 2003. Resource allocation and empowerment of women in rural Bangladesh. In *Household Decisions, Gender, and Development: A Synthesis of Recent Research*. Edited by Agnes R. Quisumbing and John F. Maluccio. Washington: International Food Policy Research Institute, pp. 89–94. Available online: http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/129660 (accessed on 12 May 2024).

De Renzio, Paolo, and Sarah Mulley. 2006. *Promoting Mutual Accountability in Aid Relationships: Addressing the Power Imbalance between Donors and Recipients Is Necessary to Promote Real Partnerships*. London: Overseas Development Institute. Available online: http://www.odi.org.uk/resources/download/1367.pdf (accessed on 9 May 2024).

Deininger, Klaus, Hari K. Nagarajan, and Sudhir K. Singh. 2020. Women's political leadership and economic empowerment: Evidence from public works in India. *Journal of Comparative Economics* 48: 277–91. [CrossRef]

Dreher, Axel, Kai Gehring, and Stephan Klasen. 2015. Gesture politics or real commitment? Gender inequality and the allocation of aid. *World Development* 70: 464–80. [CrossRef]

Duflo, Esther. 2012. Women empowerment and economic development. *Journal of Economic Literature* 50: 1051–79. [CrossRef]

Farhall, Kate, and Lauren Rickards. 2021. The "gender agenda" in agriculture for development and its (lack of) alignment with feminist scholarship. *Frontiers in Sustainable Food Systems* 5: 573424. [CrossRef]

Gerard, Kelly, and Joshua McDonnell. 2023. Valuing women's empowerment: Tracking funding in Southeast Asia. *Review of International Political Economy* 31: 1022–47. [CrossRef]

Grown, Caren, Geeta Rao Gupta, Aslihan Kes, and Projet Objectifs du millénaire. 2005. *Taking Action: Achieving Gender Equality and Empowering Women*. UN Millennium Project Task Force on Education and Gender Equality. London: Earthscan. Available online: https://unesdoc.unesco.org/ark:/48223/pf0000139350.locale=en (accessed on 25 May 2024).

Grown, Caren, Tony Addison, and Finn Tarp. 2016. Aid for gender equality and development: Lessons and challenges. *Journal of International Development* 28: 311–19. [CrossRef]

Grönlund, Anne, and Charlotta Magnusson. 2013. Devaluation, crowding or skill specificity? Exploring the mechanisms behind the lower wages in female professions. *Social Science Research* 42: 1006–17. [CrossRef]

Gygli, Savina, Florian Haelg, Niklas Potrafke, and Jan-Egbert Sturm. 2019. The KOF Globalisation Index—Revisited. *The Review of International Organizations* 14: 543–74. [CrossRef]

Hafiza, Sheepa, Mohammed Kamruzzaman, and Hasne Ara Begum. 2015. Addressing multiple dimensions of gender inequality: The experience of the BRAC Gender Quality Action Learning (GQAL) programme in Bangladesh. *Gender & Development* 23: 333–46. [CrossRef]

Hawken, Angela, and Gerardo L. Munck. 2013. Cross-national indices with gender-differentiated data: What do they measure? How valid are they? *Social Indicators Research* 111: 801–38. [CrossRef]

Inclusive Security. 2021. How Women Helped Rebuild Rwanda. Available online: https://www.inclusivesecurity.org (accessed on 15 May 2024).

Inglehart, Ronald, and Pippa Norris. 2003. *Rising Tide: Gender Equality and Cultural Change around the World*. Cambridge: Cambridge University Press.

Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi. 2010. *The Worldwide Governance Indicators: Methodology and Analytical Issues*. World Bank Policy Research Working Paper No. 5430. Washington, DC: World Bank. Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1682130 (accessed on 9 May 2024).

Kim, Jinyoung, Jong-Wha Lee, and Kwanho Shin. 2016. *Impact of Gender Inequality on the Republic of Korea's Long-Term Economic Growth: An Application of the Theoretical Model of Gender Inequality and Economic Growth*. ADB Economics Working Paper Series No. 473. Mandaluyong: Asian Development Bank.

Langer, Ana, Afaf Meleis, Felicia M. Knaul, Rifat Atun, Meltem Aran, Hector Arreola-Ornelas, Zulfiqar A. Bhutta, Agnes Binagwaho, Ruth Bonita, Jacquelyn M. Caglia, and et al. 2015. Women and Health: The Key for Sustainable Development. *The Lancet* 386: 1165–210. [CrossRef]

Lwamba, Etienne, Shannon Shisler, Will Ridlehoover, Meital Kupfer, Nkululeko Tshabalala, Promise Nduku, Laurenz Langer, Sean Grant, Ada Sonnenfeld, Daniela Anda, and et al. 2022. Strengthening women's empowerment and gender equality in fragile contexts towards peaceful and inclusive societies: A systematic review and meta-analysis. *Campbell Systematic Reviews* 18: e1214. [CrossRef]

Minasyan, Anna, and Gabriella Montinola. 2022. Gendered Aid and Women's Rights. Available online: https://ssrn.com/abstract=4433969 (accessed on 16 May 2024).

Nissanke, Machiko. 2008. Donor-recipient relationships in the aid effectiveness debate. In *Aid Relationships in Asia: Exploring Ownership in Japanese and Nordic Aid*. London: Palgrave Macmillan UK, pp. 22–40.

Nussbaum, Martha C. 2000. *Women and Human Development: The Capabilities Approach*. Cambridge: Cambridge University Press.

OECD. 2016. Gender Equality and Women's Empowerment in Development Cooperation: Guidance Note. Available online: https://www.oecd.org/dac/gender-development/GEWE_in_dev_coop_guidance.pdf (accessed on 12 May 2024).

OECD. 2020. *Aid Focused on Gender Equality and Women's Empowerment 2020. Organization for Economic Co-Operation and Development*. Available online: https://www.oecd.org/development/gender-development/Aid-Focussed-on-Gender-Equality-and-Women-s-Empowerment-2020.pdf (accessed on 20 May 2024).

OECD. 2024. *Creditor Reporting System: Aid Activities Targeting Gender Equality*. Paris: OECD International Development Statistics (Database). [CrossRef]

Onditi, Francis, and Josephine Odera. 2017. Gender equality as a means to women empowerment? Consensus, challenges, and prospects for post-2015 development agenda in Africa. *African Geographical Review* 36: 146–67. [CrossRef]

Oxfam. 2022. Addressing Multiple Dimensions of Gender Inequality: The Experience of the BRAC Gender Quality Action Learning (GQAL) Program in Bangladesh. Available online: https://policy-practice.oxfam.org (accessed on 20 May 2024).

Permanyer, Iñaki. 2011. Assessing the robustness of composite indices rankings. *Review of Income and Wealth* 57: 306–26. [CrossRef]

Pickbourn, Lynda, and Léonce Ndikumana. 2016. The impact of the sectoral allocation of foreign aid on gender inequality. *Journal of International Development* 28: 396–411. [CrossRef]

Rugege, Sam. 2016. Women's empowerment in Rwanda: The respective roles of courts and policy. *African Journal of International and Comparative Law* 24: 476–93. [CrossRef]

Seth, S. 2009. *Inequality, Interactions, and Human Development*. OPHI Working Paper No. 23. Oxford: University of Oxford. Available online: https://ophi.org.uk/wp-content/uploads/ophi-wp-23.pdf (accessed on 12 May 2024).

Snijders, Tom A. B., and Roel Bosker. 2012. *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling*, 2nd ed. Newcastle upon Tyne: Sage.

Song, Jisun, and Eun Mee Kim. 2013. A critical review of gender in South Korea's official development assistance. *Asian Journal of Women's Studies* 19: 72–96. [CrossRef]

Stromquist, Nelly P. 1997. Gender-sensitive educational strategies and their implementation. *International Journal of Educational Development* 17: 205–14. [CrossRef]

Su, Fang-Ying, and Wan-Ying Yang. 2023. Gender-focused or gender mainstreaming programs? The gender dimension of international aid. *Journal of International Development* 35: 1874–91. [CrossRef]

Tsikata, Dzodzi. 2016. Gender, land tenure, and agrarian production systems in Sub-Saharan Africa. *Agrarian South: Journal of Political Economy* 5: 1–19. [CrossRef]

UNDP. 2023. Rwanda Leads the Way in Gender Equality with the First National Gender Standards in Africa. Available online: https://www.undp.org (accessed on 13 May 2024).

UNDP. n.d. Documentation and Downloads. Human Development Reports. Available online: https://hdr.undp.org/data-center/documentation-and-downloads (accessed on 6 May 2024).

UNICEF. 2020. Gender Equality and Women Empowerment in Ethiopia. Available online: https://www.unicef.org/ethiopia/reports/gender-equality-and-women-empowerment-ethiopia (accessed on 13 May 2024).

UNICEF Ethiopia. 2018. UNICEF Ethiopia Education Advocacy Brief. Available online: https://www.unicef.org/ethiopia/reports/unicef-ethiopia-education-advocacy-brief (accessed on 13 May 2024).

UN Women. 2014. Bridging the Gap: Financing Gender Equality. Available online: https://gender-financing.unwomen.org/en/resources/b/r/i/bridging-the-gap-financing-gender-equality (accessed on 9 May 2024).

USAID. 2023. Bangladesh: Achievements in Gender Equality and Women's Empowerment. Available online: https://www.usaid.gov/bangladesh/gender-equality (accessed on 11 May 2024).

USAID. n.d. Empowering Women through Equal Access to Education, Health, and Economic Opportunities. Available online: https://www.usaid.gov (accessed on 27 June 2024).

Women for Women. 2022. Rwanda: A Success Story of Women's Empowerment. Available online: https://womenforwomen.org.uk (accessed on 11 May 2024).

World Bank. 2018. Gender Equality and Women Empowerment in Bangladesh. Available online: https://www.worldbank.org/en/news/feature/201 (accessed on 11 May 2024).
World Bank. 2022. Annual Review of Development Effectiveness 2022: Pursuing Effective and Inclusive Development. Available online: https://documents1.worldbank.org/curated/en/099503011032311205/pdf/IDU09e9110ff0456004aed08a580ded5f758bbd1.pdf (accessed on 9 May 2024).

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.