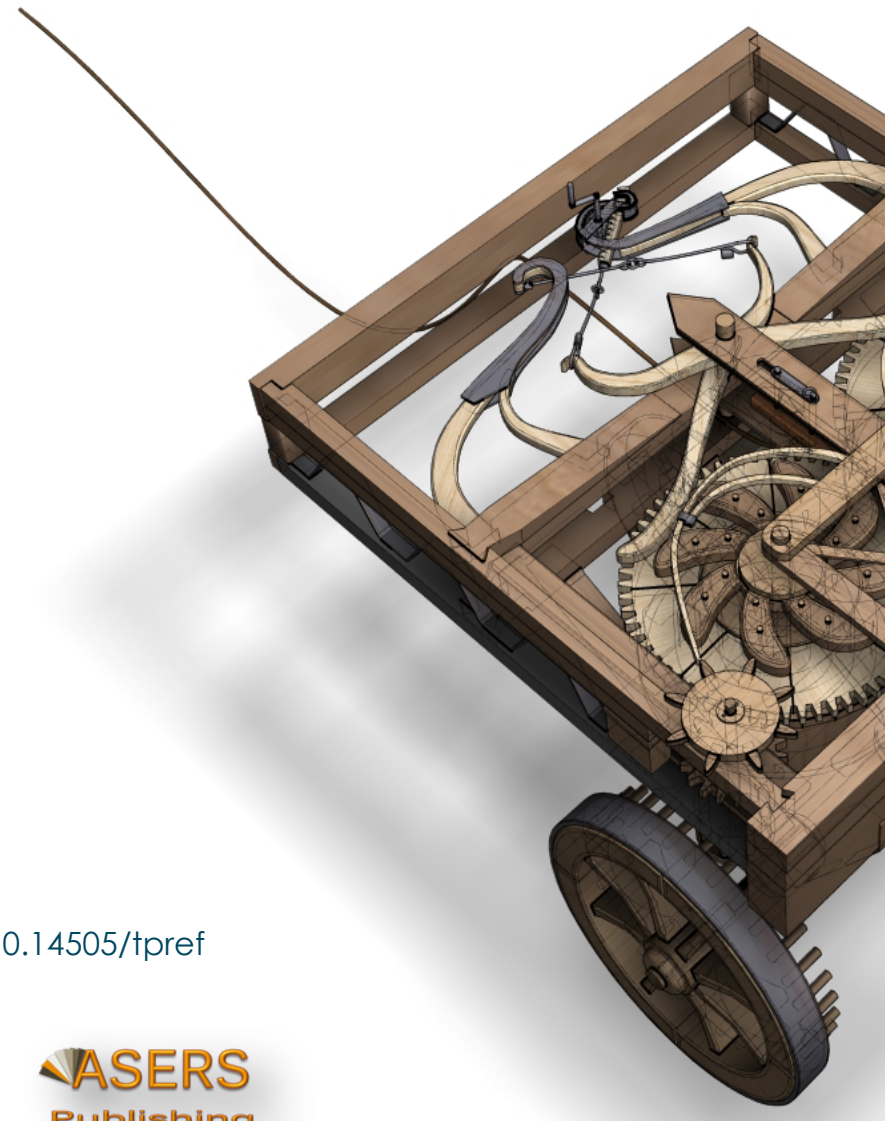
Theoretical and Practical Research in Economic Fields



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Integrating LGBTI Inclusivity and Innovative Capacity in India: Analyzing the Effects of Globalization

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Abstract: Globalization can have enormous effects if LGBTI people are well blended into the pool of resources and tapped efficiently. This research investigates LGBTI inclusivity and the effects of globalization on economic development since the 2009 legalization verdict favoring homosexuality. The theoretical prospects are trifold: trade liberalization and labor market de-regulation; Becker's theory of discrimination; and Heckscher-Ohlin-Samuelson postulate, along with a diagrammatic representation showcasing the impact of LGBTI inclusivity in the labor market. An OLS approach in conjunction to the ECI_{Trade} and $ECI_{Technology}$ has been employed to examine the integration of LGBTI individuals into the Indian economy considering capital stock, domestic credit, employment, population and human capital as default controls to the model and year dummies have been incorporated at a later stage of modelling to highlight the precision level. The study found that LGBTI inclusivity is positively correlated with India's ECI_{Trade} and $ECI_{Technology}$ value, increasing it approximately by 6.3% and 15.4%. Further, a number of robustness checks show that even after accounting for macroeconomic variables as default controls, the positive association continues to persist. The LGBTI inclusivity increases the ECI_{Trade} value by 13.2% and $ECI_{Technology}$ value by 24.4%, respectively. Consequently, the authors emphasized on the economic ramifications of inclusivity in relation to wage gaps, discrimination, and the development of human capital and have tried to exemplify the integration of LGBTI individuals in EPZs, trade and technological advancement, and skill development to justify the default conceptualized postulates in support of inclusivity.

Keywords: LGBTI inclusivity; Economic Complexity Index; globalization effects; wage gaps; indian facets.

JEL Classification: C53; E24; F15; F16; F63; J16; J24; J31; J82; K38; O30.

Introduction

The existence of significant and long-lasting disparities in economic prosperity across the country seems to be one of the most fascinating issues that researchers are grappling with (Knowles 2002). The LGBTI community's social exclusion, which leads to bigotry and hinders their ability to fully participate in a society that values equal opportunities and dignity, is a significant infringement on fundamental freedoms. They encounter a combination of acceptance and repulsion during occasions of faith, while also facing explicit prejudice in society as a whole (EPW, 2013).

LGBTI inclusion is something that evokes profound feelings in many countries. There is an increasing curiosity in understanding how innovations in technology and trade can impact the empowerment of individuals with diverse sexual orientations, gender identities, and expressions, as well as sexual characteristics (SOGIESC). While national legislation pertaining to job opportunities, social security, and various LGBTI issues has dominated

much of the current debate, the (World Bank and WTO 2020) have recognized the potential socioeconomic benefits of these discussions. There are two important considerations: the possibility of increased equity in trade incentive distribution, and the potential to promote progressive socioeconomic, cultural, and constitutional goals. Given the intricate connection between globalization and SOGIESC inclusivity, it is important to investigate the influence of trade practices and technological advancement on LGBTI communities. It is of the utmost importance to establish appropriate laws that encourage equity and fairness in this regard (Bos 2023).

The authors examine LGBTI people in relation to globalization drivers - trade and technology - and then connects them to significant economic development prospects. They highlight the prospects of trade and technology, significantly contributing to the fact that LGBTI integration into innovative capacity will add to the ultimate spectrum of development in the Indian economy as a whole.

1. Research Background

It is significant to safeguard LGBTI's entitlement to social assistance, access to financial services, academic and career development prospects, safe housing, and gainful work (Badgett, Waaldijk, and Rodgers 2019). Fostering consciousness about LGBTI experiences among law enforcement, the general public, and communities is essential to their eventual mainstreaming. Advocacy for LGBTI people will enable them to actively participate in all constitutional settings. Democratic and legal mechanisms in India must protect LGBTI people from infringements of human rights (Borloz 2023).

Earlier study evidence suggests that the omission of LGBTI subgroups from the economy exerts an influence on discrepancies in Gross Domestic Product (GDP) per capita (Duflo 2012). Numerous research studies have demonstrated that gender disparities in autonomy and welfare as a whole, such as in domains like educational attainment, healthcare, and career prospects, have a detrimental impact on economic development (Badgett *et al.* 2014).

Trade has the potential to significantly improve LGBTI people's participation throughout the economy, minimize inequalities, and expand their prospects for developing knowledge and expertise (Rocha and Piermartini 2023). Considering the economic advantages, the inclusion of LGBTI individuals in trade negotiations will likely result in substantial development, greater efficiency, and greater income for the economy. Researchers are examining how trade specifically affects the LGBTI community compared to cisgender individuals to fully understand its impact on gender parity (World Bank and WTO 2020). In a hypothetical case about the incorporation of LGBTI individuals into international trade, one can observe the beneficial consequences of development. This involves an upsurge in employment opportunities, greater financial security, enhanced standards of living, and improved health for the LGBTI community. Its overall inclusion will lead to better economic circumstances as it broadens the resources at hand and elevates the efficient use of economic resources. However, cis-gendered disaggregated data, coupled with the restricted accessibility of goods and services, impairs the engagement of the LGBTI community and, as a result, affects the economic independence of LGBTI individuals (Rocha and Piermartini 2023).

The LGBTI rarely share the same advantages of technological advances and innovation as cis-gendered individuals. This gender disparity hinders progress towards gender equality and autonomy for LGBTI individuals (UN Women 2019). It also prohibits the LGBTI community from collaborating as both producers and consumers of technological equipment that caters to their particular needs. To provide a clear understanding of the issue at hand, a gender-responsive approach must be implemented (UN Women 2019). This framework demonstrates how crucial it is to recognize and promote an understanding of gender inequalities. Its goal is to ensure that LGBTI people's issues and experiences are effectively and fairly considered when developing new products or services. It also highlights the need to examine gender conventions, positions, and interactions across the course of the innovation cycle. This strategy aims to ensure that LGBTI individuals play an integral role in all phases of the innovation cycle by creating a platform where they can share resources and knowledge and quickly expand innovative methods. LGBTI must inspire themselves to formulate their concrete goals and make an unwavering commitment at the organizational level to embracing a gender-responsive approach to innovation (UN Women 2019). This entails developing breakthroughs that cater to the needs of LGBTI individuals as recipients and monitoring the influence of these advances on the responsiveness of gender via the implementation of data-driven methodology. Furthermore, one must empower themselves with the authority to spearhead outreach efforts, employ innovative strategies, mentor other LGBTI personnel and community members, and create LGBTI-friendly products and services that address the unfulfilled needs stemming from the group's overall deprivation. When it comes to responding to growing issues and safeguarding the LGBTI community, LGBTI empowerment and technology are inextricably linked, enhancing creative ability in the economy as a whole.

The proposed study will utilize current data and research to gain insights into the correlation between globalization and LGBTI inclusion. It seeks to discover how trade might contribute to the progress of disadvantaged groups (Korinek, E. Moïsé, and J. Tange 2021). In order to build a robust and equitable future, it is essential to make significant investments in technological progress, trade, and research (Vu 2022). There is an immediate need for novel solutions to global problems, including international trade. Regrettably, the LGBTI community has come across hurdles in accessing and utilizing technological advancements. When breakthroughs serve as the primary catalyst for change, their impact amplifies. Examining the impact of technological advances and trade on the LGBTI community, this study addresses how their engagement in innovative skills may strengthen economic resources that contribute to increased development.

2. Materials and Methods

2.1. Data Repository

We analysed economic variables, including GDP per capita (PPP), employment, human capital, population, and capital stock data from 2009 to 2022, to determine the relationship between Indian ECI_{Trade} and / or $ECI_{Technology}$ and the rights of LGBTI people. We used the Economic Complexity Index (Data Wheel 2023; Simoes and Hidalgo 2011), World Development Indicators (World Bank 2024), the GILRHO Index (Badgett, Waaldijk, and Rodgers 2019), and the Human Capital Index (Davis, 2024). The table below summarises the variables undertaken for the study. (In each column, the formal name of the variable is listed in bold letters; the short name of the variable used for this study is listed in brackets; the source of data and timeline are also mentioned in Table 1.)

Table 1. Variables and Data Origin

VARIABLES	DATA ORIGINS
GILRHO Index (LGBTI) The William Institute 2009-2022	In GILRHO, nations are assigned index scores for eight types of regulations every year. These groups include 'decriminalization, anti-discrimination legislation, and couple recognition'. The scoring methodology enables a maximum of 8 points, with a 1⁄2 score allocated if the appropriate regulation pertains to or is applied exclusively to some areas of a nation (Badgett, Waaldijk, and Rodgers 2019)
Economic Complexity Index Trade Value (ECI Trade) / Economic Complexity Index Technology Value (ECI Technology) Observatory of Economic Complexity 2009-2022	An indicator of the economy's competence, the Economic Complexity Index (ECI) is derived from data correlating regions with the events that occur within them. It has been established that the ECI is capable of foreseeing significant socioeconomic outcomes, such as income distribution, economic expansion, income disparity, and emissions of greenhouse gases in an economy (Simoes and Hidalgo 2011).
Real GDP per capita (GDP) World Bank, 2009-2022	GDP per capita based on Purchasing Power Parity (PPP). It is the GDP converted to international dollars using purchasing power parity rates (World Bank 2024).
Total Labor Force (Employment) World Bank 2009-2022	Labor force comprises people ages 15 and older who supply labor for the production of goods and services during a specified period. It includes people who are currently employed and people who are unemployed but seeking work as well as first-time job-seekers (World Bank 2024).
Gross Capital Formation (% of GDP) (Capital Stock) World Bank, 2009-2022	It consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories (World Bank 2024).
Total Population (Population) World Bank, 2009-2022	It is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates (World Bank 2024).
Human Capital (Human Capital) FRED Economic Data, 2009-2022	Index of human capital per person, measured in terms of years of learning and economic benefits (Davis 2024).
Domestic Credit to Private Sector (% of GDP) (Domestic Credit) World Bank 2009-2022	It refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises (World Bank 2024).

Source: Author

2.2. Material Incorporated

'Economic Complexity' is a measurement that gauges the level of proficiency within a society, as reflected in the range of products it produces. The calculation of a nation's economic complexity relies on the range of exports that it creates and their availability across nations. This considers the intricate nature of all nations that are capable of producing these exports (Data Wheel 2023; Simoes and Hidalgo 2011).

An assessment of economies' export baskets, measuring their level of diversification and complexity. Countries with a wide range of productive expertise, especially in heavy niches, create a variety of advanced merchandise. The complicated nature of what a nation exports is a strong indicator of its present economic levels. When a nation's export complexities exceed the benchmarks for its GDP level, it indicates a likely path towards greater prosperity in the future. ECI is a valuable indicator of progress in the economy (Data Wheel 2023; Simoes and Hidalgo 2011).

The Economic Complexity Index (ECI) ranks India as the 42nd most intricate homeland. The Indian economy has experienced significant expansion and advancement over the past decade, moving up ten spots in the ECI ranking (Data Wheel 2023). This indicates a greater level of complexity and improvement in the country's economic landscape. India's efforts to expand its export opportunities have contributed to its evolving complexity. In the future, India has the potential to capitalize on multiple chances to expand its production and diversify its offerings, leveraging its current expertise. The complexity of India's GDP level surpasses typical observations. Given the circumstances, we anticipate significant growth in the economy. According to the growth projections, India is expected to experience an average yearly growth rate of 5.2% over the next ten years, placing it in the most prosperous decile among nations worldwide (Data Wheel 2023).

2.3. Methods Employed

Panel data from the year 2009 to the year 2022 has been undertaken for analyses in this study, wherein two development indicators, namely, ECI_{Trade} $ECI_{Technology}$, have been observed in association with LGBTI Inclusion to know the influence of the LGBTI on the Indian economy. The dataset used for the LGBTI Inclusion, the GILRHO Index, has been developed by (Badgett, Waaldijk, and Rodgers 2019) and dataset for ECI has been considered by (Data Wheel 2023). Further, the development indicators have been considered by (World Bank 2024; Davis 2024). The data has been analyzed using EViews 12.

The objective is to assess the overall impact of LGBTI inclusion on the globalization of India, taking into consideration other relevant factors. An analysis is conducted on various economic factors in India from 2009–2022, including GDP per capita, employment, capital stock, population, domestic credit to the private sector, and human capital. The general effect of LGBTI integration on ECI_{Trade} and $ECI_{Technology}$ has been evaluated using a regression approach. The primary goal of the methodology is to establish a substantial relationship between LGBTI inclusion and macroeconomic conditions within the context of the rise of globalization. This is achieved through the use of graphical and statistical frameworks for estimating the expansion of the economy. A correlational analysis has been discovered between ECI_{Trade} and $ECI_{Technology}$ in relation to the GILRHO scores for India.

In addition, the authors include default controls that contribute to the expansion of our model to obtain a broader comprehension of the residual relationship that exists between inclusion and advancement, assuming all other factors remain constant. The analysis implements the OLS method and the authors have summarized the stacked models in Table 2 of the main text, details of which can further be extracted from *Tables A.1 and A.2 of the Appendix*.

For several models, Table 2 displays the predicted regression coefficient relating to the LGBTI Inclusion and ECI_{Trade}, or $ECI_{Technology}$. Rows A – C show the correlation between the LGBTI inclusion and ECI_{Trade} (column 3) or $ECI_{Technology}$ (column 4), depending on whether the control variables from column 2 are included in the model.

A thorough analysis of estimation techniques is presented in the Appendix. As a baseline model, an OLS Regression Model has been developed wherein globalization indicators (ECI_{Trade} and $ECI_{Technology}$ (Data Wheel 2023)) have been regressed over the GILRHO Index (Badgett, Waaldijk, and Rodgers 2019)) ("OLS" – Column 1 – Tables A.1 and A.2). A further estimation has been developed in consideration of macroeconomic variables to the existing framework as controls to the model, namely, 'Real GDP per Capita' (World Bank 2024), 'Total Labor Force' (World Bank 2024), 'Gross Capital Formation as a % of GDP' (World Bank 2024), 'Total Population' (World Bank 2024), 'Human Capital' (Davis 2024), 'Domestic Credit to Private Sector as a % of GDP' (World Bank 2024) ("Base + Index" – Colum 2 – Tables A.1 and A.2). In the final framework, year dummies were

instilled as a last step in the model ("Base + Index + Year" – Column 3 – Tables A.1 and A.2). This approach lets us evaluate LGBTI inclusivity and economic complexity models in solitude and in a full model with all explanatory factors. Each framework has been constructed in consideration of the statistical significance of 1%, 5%, and 10%.

3. Conceptual Framework

Globalization can have enormous effects if LGBTI people are well blended into the pool of resources and tapped efficiently. The effects of globalization on the community can be acquired from the remains of trade theories to gain a perspective on their inclusivity and enhance the innovative capacity of an economy. From a neoclassical viewpoint, a gender-based wage gap hinders trade liberalization. Three significant grounds for debate to overcome these obstacles are as follows:

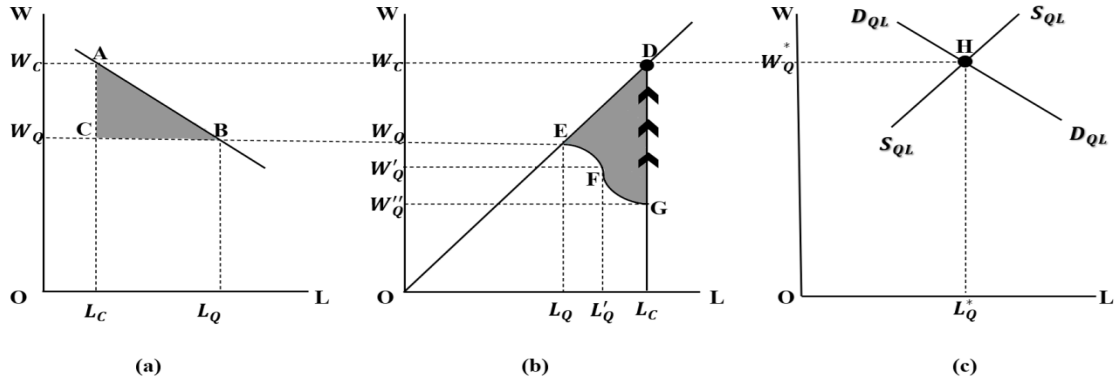
First, the repercussions of '***Trade Liberalization and Labor Market Deregulation'*** are likely to be major for the LGBTI community in comparison to the cisgender population (Dix-Carneiro 2014). When it pertains to this matter, trade associations increase wage rates above the point of equilibrium by inhibiting the supply of labor (Dix-Carneiro 2014). This eventually helps only a small number of people who hold influence over the market for labor. As a result of workforce reform, unions as well as employers have encountered greater challenges in restricting the supply of labor, which has led to their incapacity to sustain disproportionately high salaries (Dix-Carneiro 2014). Thus, there could be a significant increase in the overall level of employment for individuals who are not a component of the prevalent labor community, such as the LGBTI community. This would result in an *expansion of job prospects* for this specific section of the population. Therefore, it can be concluded that employment prospects for LGBTI individuals who come across public injustice would be considerably enhanced if unions were not creating ineffectiveness in employment markets (Çağatay 2005). Thus, it is apparent that an amalgamation of policies and legislation to stimulate employment and trade liberalization is expected to have beneficial consequences for the LGBTI community. It is important to recognize that achieving equitable socioeconomic status in the labor market is probably not going to happen by undermining the sway of cis-gendered labourers and wealth. On the contrary, it can be achieved by making sure LGBTI employees have equal exposure to resources and possibilities as cis-gendered personnel.

Second, according to ***Gary Becker's Theory of Discrimination***, disparities in wages between various categories of employees become less feasible as rivalry intensifies (Becker 1957). Organizations that engage in discriminatory practices face consequences as they opt not to hire competent employees at cheaper rates. When firms choose to hire personnel from a prejudiced group, they can gain an edge over rivals who remain involved in discriminatory hiring procedures (Becker 1957). However, just like an economist would indicate, as a growing number of companies try to capitalize on this economic edge, the wage rates of every staff member will eventually converge.

Third, ***Heckscher – Ohlin – Samuelson Model*** asserts, if emerging economies excel in producing goods that heavily rely on untrained labor, liberalizing trade might lessen the disparity in pay between workers with skills and those without (Mikić 1998). In addition, if less developed nations were willing to open up to trade, the "gender wage gaps"; would likely shrink, especially considering the larger percentage of unskilled labourers who identify as LGBTI. Therefore, increasing participation in trade, regardless of the circumstances, would likely reduce pay gaps between genders by making it prohibitively costly for organizations to discriminate (Çağatay 2005).

Panel (a) depicts the case of the mainstream labor market, the L_C quantity of Cis-gendered labor is employed at the W_C wage rate, and point A highlights the employment scenario for the Cis-gendered labor market. Now, as *trade liberalizes and the labor market de-regulates*, the inclusivity of queer labor in the market will widen the resource pool of the available workforce. When Queer Labor enters the market, they agree to work at a lower wage rate, which will be cost-saving to the employers, and they mutually agree to hire a greater number of Queer Labor for their produce. Therefore, as the queer labor workforce is employed, the L_Q quantity of queer labor is employed at the W_Q wage rate, as highlighted by point B. The effect of such a reform in labor market is highlighted by ***Area ABC*** (Figure 1).

Figure 1. LGBTI Inclusivity and Globalization



Source: Author

Note: For Ease of Diagrammatical Analysis, the author has used the word 'Queer' interchangeably for 'LGBTI'.

Where (a), W_C is the wage of Cis-gendered people, W_Q is the wage of Queer people, L_C is the quantity of Cis-gendered labor, and L_Q is the quantity of Queer labor.

Now, when an individual employer practices the hiring of queer labor in the market, as depicted by point E in Panel (b), it results as a cost advantage to the firm in terms of lessened wages, which further induces the fellow employers to hire the pool of queer labor resulting in a lower wage rate $W_Q^{'}$ for $L_Q^{'}$ quantity of labor, as depicted by point F. This drill continues as long as the employers are in a position to hire unskilled labor for returns of productivity in the market, here, until point G at $W_Q^{''}$ for $L_Q^{''}$ quantity of labor. The ***EFG Curve*** highlights the effect of the *theory of discrimination*. It is clear that the inclusion of queer labor benefits both employers and queer labor in the market, up to point G, where firms can compromise on specialization and expertise without compromising productivity.

The scenario at G swiftly changes the employment pattern in the market; that is, it induces the unemployed queer labor to indulge in skill development courses, and the employed queer tend to enhance their productivity with facilities such as on-the-job training, skill development programs, and other ways of being an efficient resource at work in order to attain employment security.

Beyond point G, the firm restricts the hiring of queer labor to maintain the quality of production; that is, the job roles require specialization and minimum educational attainment to uplift the pool of human capital in the market. This barrier tends to act as a motivator for queer labourers in and outside the workforce to upgrade their skills and literacy with respect to the requirements of their employers. Thus, increased literacy levels, training programs, and specialization eliminate the roadblock of unskilled queer labor, ultimately fostering competitiveness between Cis-gendered and Queer employees in the market.

Thus, as *human capitalization vis-à-vis capability theory* comes into play, the resource base of the queer population in the economy is more inclined towards designated job roles than easy money by way of conventional sources of livelihood. This increased capacity of queer labor eventually merges with the cis-population, and gradually the wage rate of both cis-gendered and queer labor is at par, as depicted by point **D**. The ***Area DEG*** in figure (b) highlights the *Heckscher-Ohlin-Samuelson postulation*.

Therefore, it has been established in Panel (c) that L_Q^* quantity of queer labor is employed at W_Q^* wage rate which highlights the equilibrium point of *Queer Labor Market* in the economy at point H. This will ultimately encourage the employers to support LGBTI inclusivity for enhanced globalisation at a macroeconomic glance.

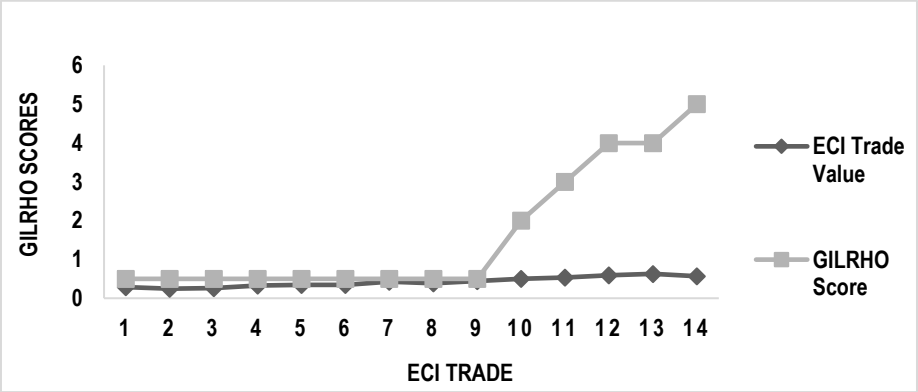
4. Research Results

4.1. Graphical Analysis

As an easy overview of the association between LGBTI inclusivity and Globalization, Figures 2 and 3 depict the values of the GILRHO Scores against different metrics of Globalization from 2009-2022. The Y-axis depicts the GILRHO Scores, with values varying between -0.50 and 5.00, and the X-axis reflects the globalization measurements, either ECI_{Trade} or the $ECI_{Technology}$ (varying between 0 and 1).

ECI_{Trade} and GILRHO for India

Figure 2. ECI Trade Compared to GILRHO Scores in India, 2009-2022



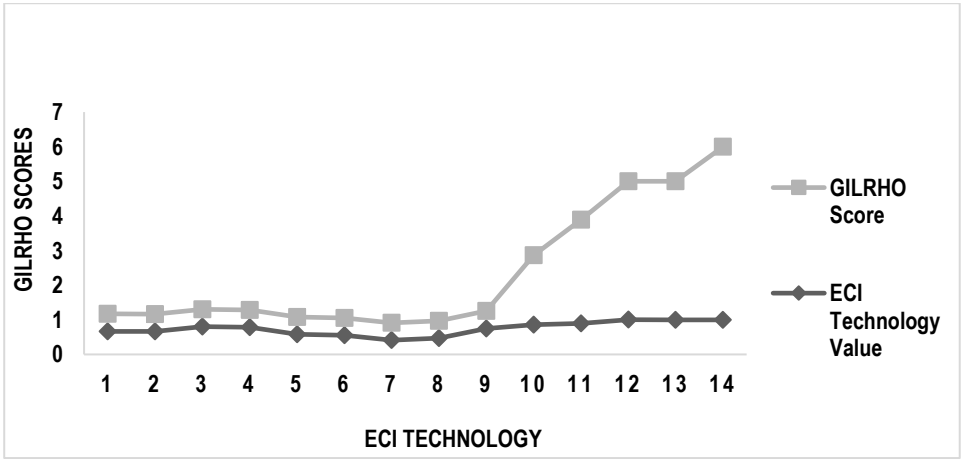
Source: Author

In Figure 2, in the year 2009, the leftmost point that appears on the GILRHO Scores graph had an ECI_{Trade}value of 0.289 in the and a score of 0.5 for GILRHO. The value of the GILRHO remained unchanged from 2010-2017. The dynamics transformed when homosexuality was decriminalized by Supreme Court of India in September 2018. Since then, the decision has been regarded as a major step forward for LGBTI rights in India. The GILRHO Score in 2018 was 2, and the ECI_{Trade} was 0.504 as demonstrated by the point on the graph. With the increase in LGBTI inclusivity since then, the GILRHO Score rose at a rate of approximately double than what it was before decriminalization. According to the graph, the value of GILRHO Scores in 2022 was 5, while the ECI_{Trade}value was 0.566.

It can thus be affirmed that an increase in GILRHO Scores in India tends to have increased levels of $\boldsymbol{ECI_{Trade}}$ ***value***, thus raising the economic development of both the LGBTI from a micro-level approach and the Indian economy from a macro-level approach vis-à-vis Globalization simultaneously**.**

$\boldsymbol{ECI_{Technology}}$ and GILRHO for India

Figure 3. ECI Technology Compared to GILRHO Scores in India, 2009-2022



Source: Author

In Figure 3, in the year 2009, the leftmost point that appears on the GILRHO Scores graph had an $ECI_{Technology}$value of 0.669 and a score of 0.5 for GILRHO. The value of the GILRHO remained unchanged from 2009-2017. However, the decision of 2018, has been regarded as a major step forward for LGBTI rights in India. The GILRHO Score in 2018 was 2, and the $ECI_{Technology}$ was 0.860 as demonstrated by the point on the graph. With the increase in LGBTI inclusivity since then, the GILRHO Score rose at a rate of approximately double than what it was before decriminalization. According to the graph, the value of GILRHO Scores in 2022 was 5, while the $ECI_{Technology}$value was 0.996.

It can thus be affirmed that an increase in GILRHO Scores in India tends to have increased levels of $\boldsymbol{ECI_{Technology}}$ ***value***, thus raising the economic development of both the LGBTI from a micro-level approach and the Indian economy from a macro-level approach vis-à-vis Globalization simultaneously.

4.2. Statistical Analysis. The Model

Relationship between ECI_{Trade} and LGBTI Inclusion:

The authors established a certain framework to investigate the association between the LGBTI Inclusion and globalization:

$$ECI_{Trade_i} = \alpha + \beta\, LGBTI_i + \gamma\, X_i + \varepsilon_i$$

where ECI_{Trade_i} is the Economic Complexity Index for Trade, a developmental indicator for nation i (i = 1, India, in this case). LGBTI stands for the LGBTI Inclusion (GILRHO) developed by (Badgett, Waaldijk, and Rodgers 2019). β estimates the anticipated impact of Inclusion on ECI_{Trade}. X represents the fundamental control parameters of GDP per capita, capital stock, domestic credit, employment, population, human capital. ε is the error term. Regression approaches may incorporate India's long-term ECI_{Trade} – LGBTI Inclusivity connection, which seems to be improving. This research examined factors from 2009 to 2022. The selection of variables is influenced by (Vu 2022; Badgett *et al.* 2014).

The results reveal a favourable correlation between LGBTI Inclusion and the country's ECI_{Trade}. For several models, Table 2 displays the predicted regression coefficient relating to the LGBTI Inclusion and ECI_{Trade}, or $ECI_{Technology}$. Rows A – C show the correlation between the LGBTI inclusion and ECI_{Trade} (column 3) or $ECI_{Technology}$ (column 4), depending on whether the control variables from column 2 are included in the model.

LGBTI inclusion boosts India's ECI_{Trade} value roughly by 0.3586. The mean ECI_{Trade} value in India from 2009-2022 was 0.4211; therefore, the influence of LGBTI Inclusion was 6.3% of the average. This seems to indicate a link between ECI_{Trade} and LGBTI inclusivity.

The favourable relationship persists after controlling for GDP per capita, capital stock, domestic credit, employment, population, human capital, which economists use to estimate ECI_{Trade}. Considering them enhances the LGBTI inclusivity impact on one component: Row B of Table 2 demonstrates that India's ECI_{Trade} improves by 1.093 for LGBTI inclusivity, or 10% of the average and 13.2% of initial influence. Table 2, column C, shows that when year dummies are included in the framework, the association increases to about 16.19% of the mean ECI_{Trade}, or 2.040 at the 10% threshold of significance. Thus, it can be asserted that with the **Strategic Modernization Framework** coming into play, LGBTI inclusivity boosts the trade of the Indian economy, thereby significantly contributing to the development process.

Table 2. Influence of LGBTI Inclusion on Globalization Indicators

	(1) Variable Effect	(2) Control Variables	(3) Influence on ECI_{Trade} in India, (2009-2022)	(4) Influence on $ECI_{Technology}$ in India, (2009-2022)
(A)	LGBTI Inclusion	None	0. 3586***	0.591***
(B)	LGBTI Inclusion	Basic macroeconomic variables (GDP per capita, Capital Stock, Domestic Credit, Employment, Population, Human Capital)	1.4516*	0.8351*
(C)	LGBTI Inclusion	Basic macroeconomic variables (GDP per capita, Capital Stock, Domestic Credit, Employment, Population, Human Capital) plus year fixed effect	2.0402*	0.8405*

*** Statistically Significant at 1% level
** Statistically Significant at 5% level
* Statistically Significant at 10% level

Source: Author

Relationship between $ECI_{Technology}$ and LGBTI Inclusion:

The authors established a certain framework to investigate the association between the LGBTI Inclusion and Globalization:

$$ECI_{Technology_i} = \alpha + \beta\, LGBTI_i + \gamma\, X_i + \varepsilon_i$$

where $ECI_{Technology_i}$ is the Economic Complexity Index for Technology, a developmental indicator for nation i (i = 1, India, in this case). LGBTI stands for the LGBTI Inclusion (GILRHO) developed by (Badgett, Waaldijk, and Rodgers 2019). β estimates the anticipated impact of Inclusion on $ECI_{Technology}$. X represents the fundamental control parameters of GDP per capita, capital stock, domestic credit to private sector, employment, population, human capital. ε is the error term. Regression approaches may incorporate India's long-term $ECI_{Technology}$ – LGBTI Inclusivity connection, which seems to be improving. This research examined factors from 2009 to 2022. The selection of variables is influenced by (Vu 2022; Badgett *et al.* 2014).

Based on the results, we can conclude that the LGBTI inclusivity is positively correlated with India's $ECI_{Technology}$ value. Each inclusion prospect is associated with an increase of approximately 0.591 in India's $ECI_{Technology}$ value (as presented in row A, column 4 of Table 2). In order to place this figure in context, the average $ECI_{Technology}$ value in India from 2009 to 2022 was 0.7453, so the LGBTI inclusion impact is equivalent to a 15.4% change in $ECI_{Technology}$. Since the shift in $ECI_{Technology}$ cannot be easily translated into a more instinctive metric, increased protections for LGBTI people in the Indian economy have been linked to higher levels of LGBTI healthcare, schooling, and earnings.

The statistically significant relationship continues to hold regardless of how analysts consider the effects of GDP per capita, capital stock, domestic credit, employment, population, human capital on $ECI_{Technology}$ projections. Taking them into consideration increases the significance of a single inclusion factor: Row B of Table 2 shows that for every prospect, India's $ECI_{Technology}$ value increases by 24.4% with respect to LGBTI inclusion. In addition, it is seen in Table 2, row C, that the association has risen to almost 9.5% of the average $ECI_{Technology}$ value at a level of significance of 10% after introducing year dummies to the model.

5. Discussions

Based on statistics from 2009 to 2022, both the $ECI_{Technology}$ and the ECI_{Trade} of India have increased over time. It is evident that with rise in each LGBTI inclusion over the period, both $ECI_{Technology}$ and the ECI_{Trade} values have increased favorably depicting a strong positive association between Rights for Sexual Minorities and Economic Development Indicators in India. To be precise, each addition of LGBTI inclusion factor in the Indian Economy tends to increase the ECI_{Trade} approximately by 13.2% and $ECI_{Technology}$ approximately by 24.4%.

Therefore, it is evident from the regression models that LGBTI Inclusivity is positively correlated to Globalization of the Indian Economy.

5.1. Economic Concerns for LGBTI Inclusivity

i) SOGIESC Based Wage Gaps: Studies have shown that in economies with a strong emphasis on technological progress and international trade, there is a relationship between gender disparities in wages in the manufacturing sector and expanded economic growth (Seguino 2000). The rapid rate of growth corresponding to the boom in global trade might appear at the cost of gender parity in job markets. A potential consequence is that global trade and investment reforms may lead different economies to slash the pay of LGBTI individuals to remain viable and lure foreign investment. Indeed, the policy-driven elevation in working conditions in (Export Processing Zones) EPZs and the lowering of employment standards in these areas are concerning, particularly given the expectation that LGBTI individuals will constitute a significant portion of the working population in these situations.

ii) SOGIESC Discrimination in the Trade and Technology Outcomes: Another aspect to consider is the examination of prejudice and bias based on SOGIESC within the framework of the 'Theory of Unequal Exchange' (Chandra 1986), which includes the P-S version (Nayyar 2000; Busse and Spielmann 2006). There is an observable relationship between the discrepancies in wages based on SOGIESC and the trade conditions. In economies such as India, there is a relationship between the degree to which LGBTI-based voids exist in the manufacturing industry as well as the Terms of Trade (ToT) with technologically advanced trade partners. More precisely, as these discrepancies increase, the Terms of Trade (ToT) associated with manufacturing decrease. Therefore, it indicates that while wage differentials determined by SOGIESC may boost India's innovation, they could also foster an upward trend in LGBTI personnel and influence the economy's Terms of Trade (ToT).

The exploration of SOGIESC interactions and imbalances has played an integral part in establishing the global economic system. The Prebisch-Singer Hypothesis (Cuddington, Ludema, and Jayasuriya 2002) emphasizes that inequality explains the obstacles faced by economically disadvantaged people who benefit from global trade. This theory has received consideration in light of current internationalization discussions and has discovered variations in trade, development, and economic growth. Addressing SOGIESC inequalities in

employment sectors ought to constitute an essential focus in the formulation of policies, not merely to encourage equitable treatment but also to boost the economic advantages generated by trade and technological advancements.

iii) SOGIESC Based Skills: There is insufficient evidence to support the notion that increased globalization has a significant impact on reducing wage disparities based on SOGIESC. Following closer inspection, it becomes evident that the diminution of the pay discrepancy based on SOGIESC has often occurred through the lowering of wages for cis-gendered people. This method is considered unacceptable. Additionally, the idea that increased economic rivalry might reduce the SOGIESC pay gap does not appear to hold in the majority of instances.

5.2. Economic Implications of LGBTI Inclusivity

The decrease in inequality in wages could have been a consequence of the disproportional decline in employment opportunities for unskilled individuals and low-paid LGBTI workers (Card and Dinardo 2001; Black and Brainerd 2004; Bhagwati 2021; Berik 2000). The perceived inflexibility of disparities in wages can be attributable to the adverse effects of capital mobility on the negotiating leverage of LGBTI employees. Various factors, including professional and economic inequality, academic achievement and skill appropriation, and the ability of employees to organize themselves, determine pay discrepancies in acquisition. Over time, specific distinctions are becoming less apparent, such as the discrepancy in educational attainment being more substantial among cis-gendered individuals.

It is anticipated that the patterns of inequality will lead to a reduction in pay and revenue imbalances. It is essential to have a thorough comprehension of the distinctions between acquiring abilities and having the capacity to become organized as employees. In addition, Becker (Becker 1957) supports the idea by highlighting the importance of skill development for SOGIESC individuals. He suggests that engaging in trade could potentially reduce wage bias for LGBTI individuals. However, the extent to which their earnings strengthen will ultimately depend on developing the skills of LGBTI individuals, enabling them to effectively compete with the cisgender population in increasingly competitive markets.

According to (Raquel and Wendy 2002) certain technologies used in export-oriented sectors may complement the skillsets of LGBTI individuals. Organizations often perceive LGBTI individuals as versatile, proficient, conforming, and receptive to authority. The study (UN Inter-Agency Network on Women and Gender Equality Task Force on Gender and Trade 2004) outlines competencies that are more effectively suited for a "Just in Time" group or "Total Quality Control." According to (Marzia, Susan, and Rachel 1998), a surge in market demand for expertise would result in higher earnings for LGBTI individuals in comparison to cisgender people. The increased demand for capabilities will end up resulting in an upsurge in the pay of LGBTI individuals when compared to the cis-population.

It is important to point out that the global economy frequently encounters greater joblessness for LGBTI individuals. This insight aligns with the projection that pay discrepancies will not instinctively reduce with expanded trade and technological progress. When LGBTI individuals enter the workforce, an imbalance in the income disparity between workers and investors often triggers their entry, leading to greater levels of layoffs. This also impacts the fair allocation of resources, as in multiple cases, the rate of integrating LGBTI individuals into the workforce surpasses the rate of employment, thereby sustaining wage inequality as determined by SOGIESC.

Conclusions and Further Research

If we effectively integrate LGBTI people into the pool of resources, globalization can have enormous effects. Various factors, such as connectivity, technological breakthroughs, and political, humanitarian, and ecological shifts, drive the expansion of globalization. The social exclusion of the LGBTI community, leading to bigotry and hindering their ability to fully participate in a society that values equal opportunities and dignity, is a significant infringement on fundamental freedoms. LGBTI inclusion is something that evokes profound feelings in economies. Fostering consciousness about LGBTI experiences among law enforcement, the general public, and communities is essential to their eventual mainstreaming. An economy can trace globalization through trade and technological advancements. Examining the impact of technological advances and trade on the LGBTI community, this study addresses how their engagement in innovative skills may strengthen economic resources that contribute to increased development.

The effects of globalization on the community can be acquired from the remains of trade theories to gain a perspective on their inclusivity and enhance the innovative capacity of an economy. From a neoclassical viewpoint, a SOGIESC-based wage gap hinders development. LGBTI inclusivity has been associated with three

significant concepts, such as trade liberalization and labor market de-regulation, Becker's theory of discrimination, and Heckscher-Ohlin-Samuelson's postulate, along with a diagrammatic representation showcasing the impact of LGBTI inclusivity on the labor market, thereby enhancing the resource pool of the economy.

The author showcased the importance of LGBTI inclusion to the economic ripple effect by comparing the GILRHO Index and the Economic Complexity Index for Trade and Technology (ECI_{Trade} $ECI_{Technology}$) values as two different regression models with other economic variables from 2009 to 2022. The goal was to find out how globalization drivers affected LGBTI inclusion in India, which could lead to important economic growth in the coming years by recognizing them as important contributors to the economy.

India's ECI_{Trade} $ECI_{Technology}$ had a sustained growth pattern from 2009 to 2022, as anticipated. The contemporaneous rise in LGBTI inclusion, ECI_{Trade} $ECI_{Technology}$ throughout the period convincingly indicates the positive association contributing to the economic prosperity in India. This indicates that with the adoption of a progressive policy regime concerning LGBTI empowerment, the drive to inclusiveness will eventually impact the economic well-being of the community as a whole. The authors have emphasized the economic ramifications of inclusivity in relation to wage gaps, discrimination, and the development of human capital. The authors exemplified the integration of LGBTI individuals to justify the default regime of conceptualized postulates in support of inclusivity. Further, a suggested policy framework has also been recommended in synchronization with the economic implications outlined in the study.

Recommended Policy Framework

Inclusivity of LGBTI in Export Processing Zones (EPZs): Global financial institutions are supporting developing nations in establishing EPZs as a component of export growth tactics (McCallum and Jamie K 2011). During periods of economic distress that pose an imminent risk to economically weakened nations, EPZs impart an immediate route to foreign marketplaces and global chains of production (Sukthankar and Gopalakrishnan 2012). In addition, they provide an effective solution for the absorption of excess labor. Business entities acknowledge the positive aspects of EPZs and diligently endorse their growth. They benefit from minimal taxation and tariff stipulations, as well as relaxed employment rules that enhance managerial authority in the work environment (Sukthankar and Gopalakrishnan 2012).

Policy inducing the inclusivity of LGBTI in Indian EPZs shall have an adverse effect on the economic scenario. GOI must ensure that labor laws, particularly for EPZs, incorporate LGBTI individuals as a significant workforce component, fostering favorable conditions for SOGIESC empowerment.

Inclusivity of LGBTI and Globalization Reforms: Globalization can enhance the economic engagement of the LGBTI community, reduce disparity, and improve their ability to acquire competencies and training. The emergence of new patterns of global commerce, such as the increasing prominence of amenities, the rise of Global Value Chains (GVCs), and the emerging digital economy, presents substantial economic prospects for the LGBTI community (World Bank and WTO 2020). However, to fully reap these benefits, nations must enact policy reforms that tackle discrimination against LGBTI individuals. At the same time, they should focus on developing the valuable workforce that these individuals possess.

Policy inducing the inclusivity of LGBTI in globalization reforms tends to enhance the Terms of Trade (ToT), access to participate in GVCs, etc. The Government of India (GOI) must guarantee that LGBTI individuals have access to these amenities and receive the appropriate level of exploitation, recognizing them as a significant economic resource.

Inclusivity of LGBTI to the pool of Human Capital: Investing in developing skills, health, schooling, and social infrastructure is crucial to boosting productivity. By strategically allocating resources across different areas, governments may encourage the LGBTI community to set themselves free from the downward spiral of intergenerational poverty, which often affects them substantially (Gajjalapurna and Irshad 2023). The acquisition of skills has a significant impact on workforce efficiency, but it goes far beyond just academic achievement. Individuals in the LGBTI community who possess lower fundamental competencies are more prone to experiencing negative health consequences and reduced participation in civic endeavours (World Economic Forum 2022). In addition, spending on educational and health infrastructure helps to create job prospects and enhance individual development. Enhanced social structures and increased accessibility to expertise can greatly boost revenue potential (Gajjalapurna and Irshad 2023). This, in turn, can empower the LGBTI community with greater influence over decisions, which is crucial for the well-being of both the community as a whole and society at large (World Economic Forum 2022).

Policy inducing the inclusivity of LGBTI as Human capital to the Indian Economy tends to be the key driving force to integrate them in the economic activities in the nation. Investing in Health and Educational

Attainment by GOI via flagship programs targeting LGBTI exclusively is the ultimate influence that is needed in order to anticipate the increased levels of LGBTI Employment, Life Expectancy of LGBTI and better standard of living of the community as a whole.

Limitations of the Study

First, this research only looks at the Indian scenario for the rights of LGBTI individuals and economic development from 2009–2022, hence its findings may or may not be applicable to economies beyond India.

Second, it may not be acceptable to explicitly establish if there is a link of causation between the LGBTI inclusivity and Economic Complexity Index with economic variables, but the data analysis does show a potential favorable relationship between the two.

Third, the methods used allowed only passive evaluation of economic development and globalized integration. LGBTI individuals in India may be less stigmatized than their entitlements under the law convey. Opinions evaluate rights, yet the cultural or institutionalized marginalization LGBTI people face may not mirror their beliefs. ECI_{Trade} $ECI_{Technology}$ omits discrepancies; therefore, expanding the economy will not improve LGBTI individuals' standard of living.

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Credit Authorship Contribution Statement

Kanika Chawla: Conceptualization; Investigation; Methodology; Software; Formal Analysis; Writing – Original Draft; Visualization
K. Nilavathy: Project Administration; Supervision; Data Curation; Validation; Writing – Review and Editing

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-Assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

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Appendix

This study employs a comprehensive database of economic variables that India can use over time to analyse the relationship between LGBTI rights and economic development. The authors have examined various economic indicators, such as GDP per capita (PPP), employment, human capital, population, domestic credit and capital stock data from 2009 to 2022, to assess the correlation between Indian economic progress and the rights of LGBTI individuals. Various indicators such as the World Development Indicators (World Bank 2024), the GILRHO Index (Badgett, Waaldijk, and Rodgers 2019), the Human Capital Index (Davis, 2024) and ECI_{Trade} or $ECI_{Technology}$ (Data Wheel 2023) have been utilized in the study. Over a period, we can observe the impact of variations in the indices. The data assist in accounting for time-invariant effects, eliminating the possibility of bias due to omitted variables.

The study utilizes an Ordinary Least Squares Approach to account for heterogeneity, employing the EViews 12 software. This strategy considers unobservable components that can impact economic development but remain constant over the years. The time frame for the data series is sufficiently narrow to consider indistinct features as constant over time. Furthermore, the estimated projections are free of clustering standard errors, which helps mitigate possible discrepancies caused by a serial correlation in the dependent variables. Estimates also aim to be closer to true values.

Here are the complete models estimated in Tables A.1 and A.2. To analyse the potential connections between LGBTI rights and economic development, we conducted a series of nested models. We began with a baseline model that examined economic development outcomes, using OLS Approach to assess the impact of the GILRHO Index on ECI_{Trade} or $ECI_{Technology}$ as shown in Row A – Table 2 in the main text and Column 2 – Tables A.1 and A.2 in Appendix.

In the next model, we incorporate the important economic control variables, such as the logarithm of GDP per capita (PPP), domestic credit, employment, population, and capital stock. Using the OLS approach, we can analyse the impact of these variables on the coefficient for LGBT+ rights. The models obtained emphasize the fundamental *macroeconomic impact of LGBTI inclusivity*, as shown in Row B – Table 2 in the main text and Column 3 – Tables A.1 and A.2 in Appendix.

Next, we include the year dummies in the model to account for other obscured components that might impact economic development and change over time. We can examine different mechanisms linking LGBTI rights to economic development, both independently and within a comprehensive model that incorporates all the explanatory variables. The models obtained emphasize the fundamental microeconomic impact of LGBTI inclusivity in the Indian economy, Row C – Table 2 in the main text and Column 4 – Tables A.1 and A.2 in Appendix. We estimate these models for both ECI_{Trade} and $ECI_{Technology}$. The text reports statistical significance at the 1%, 5% and 10% levels.

The elaboration of the tables are as follows:

Table A.1: We can see the baseline controls for the main model in Column 2. In Column 3, the OLS method shows the controls for ECI_{Trade} and the year effects are depicted in Column 4.

Table A.2: Adopts the OLS method to account for the heterogeneity in $ECI_{Technology}$. We stack the baseline controls with alternative models, then estimate them further.

Determining the direction of causation from these regression models is not possible. There is a potential correlation between the expansion of LGBTI rights and economic development. Additionally, as India continues to progress economically, there may be an increased possibility of recognizing the rights of LGBTI individuals. The endogeneity problem could potentially influence the coefficient estimates on LGBTI rights, thereby compromising the accuracy of measuring the true causal impact of these rights on economic development. Therefore, we interpret the effects measured by the coefficients as correlations rather than causal relationships

Table I3. A.1: ECI Trade Value in India, 2009-2022

Dependent Variable: ECI Trade			
	OLS	**Base + Index**	**Base + Index + Year**
GDP Per Capita		3.8758* (1.5619)	1.6019** (0.6346)
LGBTI Inclusion	0.0547*** (0.0082)	0.0654* (0.0114)	1.7539** (0.1029)
Capital Stock		-0.0093* (0.0041)	0.0391 (0.0174)
Domestic Credit		-0.0136* (0.0031)	-0.0954** (0.0137)
Employment		-22.0454* (4.7268)	35.3408* (48.1825)
Population		37.1211* (6.3740)	18.6970** (4.8069)
Human Capital		-7.1404* (2.1110)	-4.9412** (1.5036)
Constant	0.3586*** (0.0210)	1.4516* (0.2179)	2.0402* (0.2421)
Adjusted R^2	0.90	0.99	0.99
N	14	14	14
Year Dummies	No	No	Yes

Table 4. A.2. ECI Technology Value in India, 2009-2022

Dependent Variable: ECI Technology			
	OLS	**Base + Index**	**Base + Index + Year**
GDP Per Capita		1.2111 (0.7165)	1.6811* (0.2212)
LGBTI Inclusion	0.0957*** (0.0197)	0.2211* (0.0596)	0.0389* (0.0014)_
Capital Stock		0.0331* (0.0151)	0.0029* (0.0003)
Domestic Credit		0.0227 (0.0159)	0.0016 (0.0004)
Employment		-4.7431* (2.1131)	-6.9325* (0.6155)
Population		5.225 (2.6266)	7.1984* (0.6574)
Human Capital		-1.3304 (0.9244)	-1.6523* (0.2343)
Constant	0.5914*** (0.0449)	0.8351* (0.7903)	0.8405* (0.2505)
Adjusted R^2	0.96	0.99	0.99
N	14	14	14
Year Dummies	No	No	Yes

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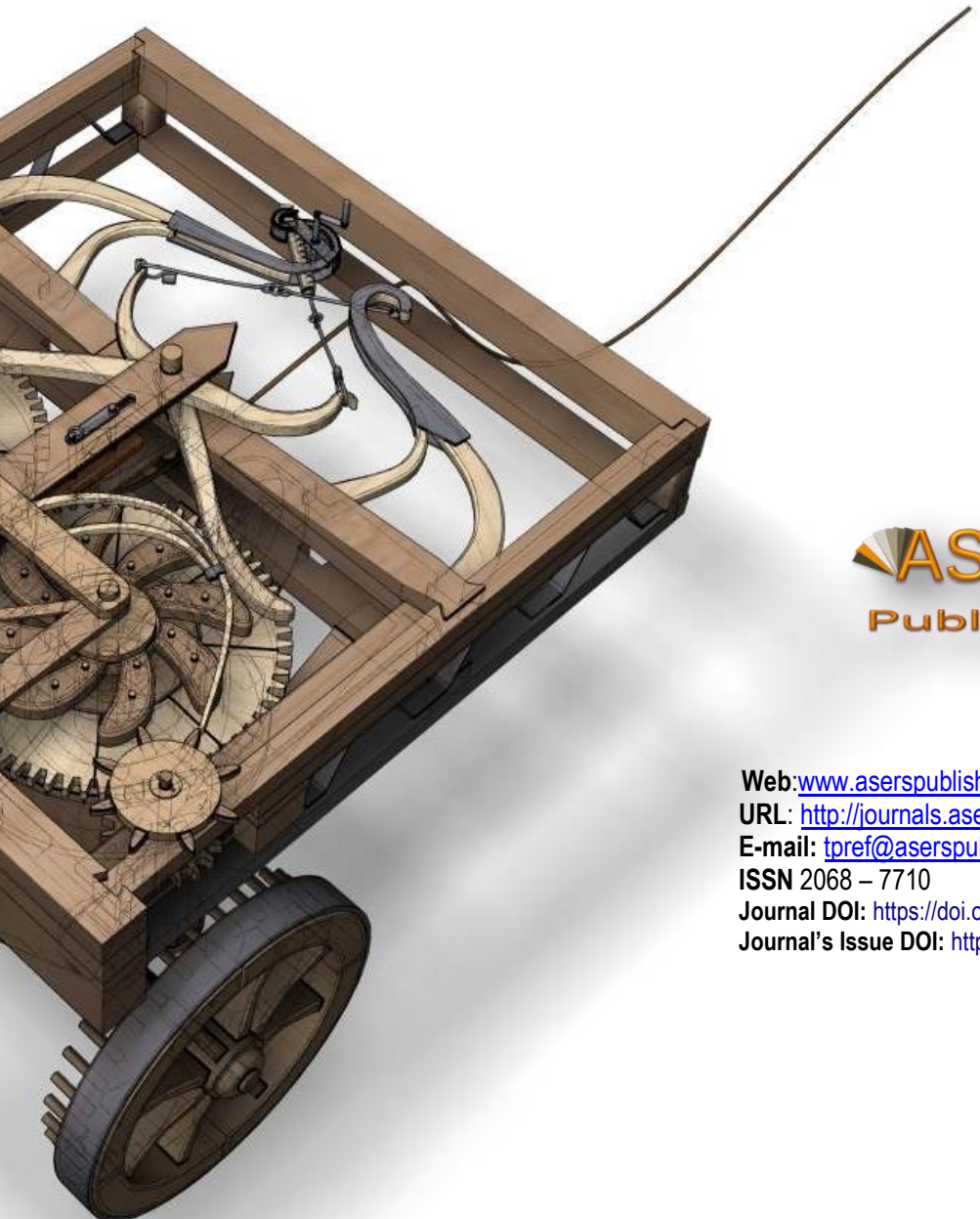

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