THE IMPACT OF GLOBALISATION ON FEMALE LABOUR FORCE PARTICIPATION IN OECD COUNTRIES: AN EMPIRICAL ANALYSIS

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Abstract

This paper empirically investigates the relationship between female labour force participation and globalisation in OECD countries. It emphasizes the multifaceted aspect of globalisation and its segregation into three major components namely- economic, social and political. The dataset used for this study has been compiled from larger datasets provided by the KOF Economic Institute and World Bank. A panel dataset of 37 OECD countries over 25 years (1993-2017) is being used. The paper presents economic arguments for the behaviour of variables chosen for the study along with the need to study these variables separately to understand female labour force participation trends.

JEL Classification: C51, F66
Keywords: Globalization, Female Labour Force participation, OECD

1. INTRODUCTION

The increase in women's participation in the labour force and the acceleration in globalisation in the past few decades has compelled us to study and establish a relationship between the two. This study tries to discern if this increase in women's labour force participation can be attributed to rising international interconnectedness.

It is imperative to study the female population in isolation since a significant amount of gender discrimination and inequalities exist in all parts of the world. One of the most important components of understanding the trends in female labour economics is to understand the political and social climate along with the economic climate. However, more often than not, only economic variables are factored in a study undertaken to analyse Female Labour Force Participation (FLFP). To incorporate all aspects of globalisation, we have chosen three KOF Globalisation Indexes as a way to quantify globalisation. These indexes are relatively newer and therefore do not have a lot of literature indicating directional changes. This paper explores the relation of these indexes vis-à-vis the FLFP. Along with these indexes, we have selected Gross Domestic Product (GDP) and Total Fertility Rate (TFR) as independent variables to get a more comprehensive picture of the preferences and factors that affect employment choices.

We have selected a panel dataset consisting of 37 OECD countries over 25 years from 1993 to 2017. The premise behind the choice of this dataset is the existence of healthy trade agreements and relations among the countries. Furthermore, we found a lot of literature discussing the impact of globalisation in developing countries but not so much on high-income countries. Economic theory suggests that preferences are diverse across economic levels. Therefore, it seems reasonable to understand the pattern of the female labour market in high-income countries too.

The theoretical framework for this investigation is discussed in the following section. The literature on the subject is discussed in Section 3. The econometric model and estimation methods utilised in this study are described in Section 4. Section 5 gives a full explanation of the dataset for econometric estimation that was generated from multiple data sources. Section 6 includes estimates, findings and interpretations based on various estimating

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approaches. Section 7 concludes by connecting some of the findings of our paper with the theoretical difficulties raised in Section 2.

2. THEORETICAL FRAMEWORK

This study emphasises the multifaceted aspects of globalisation and the impact it has on female labour force participation. Globalisation has mostly been interpreted in terms of Economic Globalisation, which is the integration of global financial, product and labour markets. However, this definition seems very limited which pushes us to explore other viable components of globalisation along with the impact of trade and foreign direct investment. The analysis of this study follows a multidimensional view towards understanding the impact of globalisation on labour, particularly the female labour force.

The definition that has been taken into account describes globalisation as the process of creating networks of connections among actors at intra-continental or multi-continental distances, mediated through a variety of flows including people, information and ideas, capital and goods. Globalisation is a process that erodes national boundaries, integrates national economies, cultures, technologies and governance, and produces complex relations of mutual interdependence (Gygli et al. 2019). Our study will include three components of globalisation which are *economic, social and political globalisation.*

Human capital development has been reaping the benefits of globalisation. It has been claimed that globalisation has positively impacted the development of human capital in OECD countries. However, how such benefits have impacted the labour force is yet to be explored.

We believe that the rise in women's labour force participation coincides with trade liberalisation in many countries. By empirical analysis, we seek to find how much has the opening up of the economy affected female labour force participation. Intuitively speaking, we can divide our arguments into two parts, One part is the conservative approach and the other being a rather optimistic one. The former has its reservation as to the magnitude in which globalisation has impacted women and predicts a negative relationship between economic globalisation and FLFP. Conversely, the latter suggests that increased economic globalisation is a harbinger of GDP growth, consequently increasing the general level of income which would lead to an increase in wage. As a result, the opportunity cost of leisure for women becomes very high and can lead to a trade-off, thus increasing their participation in the labour force.

Social and political variables underpin the structure of an economy. Therefore, it is reasonable to study all these components separately to derive the results of the impact of these three pillars (economic, social and political) individually to gain insight into the interplay of various globalisation factors. We believe that international interactions of whatever nature (economic or social) would lead to the diffusion of ideas and norms. The more they engage in this activity, the more are they likely to absorb the ideas of various societies. This intuition is based on the same logic as the voting rights revolution. The idea of cultural freedom has proven to be contagious in the past. Although the impact of these variables is rather ambivalent, the precedence suggests that *social globalisation* is likely to have a positive impact on women's labour force participation.

To study the relationship between fertility and FLFP, we take into account the time allocation model (Becker 1965) which recognises that women not only arbitrate between leisure and labour but between leisure, labour (supplied in the market to buy goods and services) and home production of goods and services. Taking care of young children falls into the last category. Traditionally, mothers have been considered to have low labour force attachment, suggesting a fall in the FLFP rate around childbirth.

We have used GDP per capita as a proxy to analyse the growth of the country. Literature suggests an increase in income levels can lead to major decision changes for substituting between work and leisure for women as it is believed that low-income countries have higher female labour force participation due to their greater involvement in subsistence activities.

After doing a basic correlation analysis, we found a weak positive correlation of FLFP with economic globalisation. We found a weak negative correlation between FLFP and political globalisation and a positive correlation with social globalisation.

Due to the paucity of data, we were not able to control for variables such as health and education that would act as a proxy for welfare. However, this does not in any way undermine our study since we are primarily focusing on how social, political and economic globalisation influence labour force participation by women.

3. LITERATURE REVIEW

Globalisation has had wide-ranging economic, social, and political implications on the world. Following the onset of the industrial age and the expansion of international trade, it became rather intriguing to analyse the repercussions via empirical evaluation. It has been found that globalisation has promoted competition and standards among countries which has, in turn, resulted in higher product quality. However, there has been little discussion about the impact of globalisation on human capital in terms of labour force participation.

Economic theories and empirical studies largely support the beneficial effects of economic integration on economic growth (Sachs et al 1995). When looking at different stages of development, a rise in trade has a direct and significant impact on economic growth (Dowrik and Golley 2004). The theory of comparative advantage suggests that an economy can produce certain goods at a lower opportunity cost than its trading counterparts, hence pushing for gains of trade. However, demographics of this have not been discussed thoroughly in relation to what all globalisation has changed. Bussmann argues *"Social tensions, reflected in street protests and poll results, force politicians to slow down economic reforms. A challenge for policymakers is to avoid a ''backlash of globalisation' (Rodrik 1997) by striking a balance between economic integration and social disintegration, while also assisting people who must absorb the distributive costs of economic interdependence. Globalisation will leave some people winners and others losers."* (Bussmann 2009)

Although it has been claimed in many studies that trade liberalisation has improved the macroeconomic health of the country in addition to raising income standards, the distribution of this income might not have been equitable. There are several ways in which political, social and economic globalisation can impact women. For starters, more international exposure to sectors with a high female concentration or new opportunities created for them as a result of globalisation-induced changes in labour requirements would affect female demand relative to male demand (Knowles, Lorgelly and Owen 2002; Sauré and Zoabi 2014). Intuitively speaking, globalisation is a carrier of superior technology not only by exports, imports or FDI but also by exchange of ideas, removal of cultural barriers and impact on political economy. As more capital-intensive technology is introduced into industrial processes as a result of globalisation, new career prospects for women emerge as physical strength becomes less important (Juhn et al. 2014). However, this can be counterproductive. Female participation in the labour force would fall if the associated technologies are complementary to males, as females in developing nations lag in education (Gaddis and Pieters 2016).

So far, the discourse has revolved around the changes in the demand for female employment pertaining to globalisation. Focusing on supply-side impacts shows, however, that liberalisation of trade and investment may modify male income and thus, household income. Consequently, this triggers changes in the female labour supply (Gaddis and Pieters 2016). As a result of globalisation, more women have greater opportunities for income-generating jobs. Increased work choices provide more methods to escape unequal relationships and a greater variety of opportunities for the application of their skills and labour. Households are one of the first places where the benefits of enhanced employment opportunities for women are reflected. Women's position and relative power improve as households grow increasingly reliant on female income (Gray, Kittilson and Sandholtz 2006). There is additional evidence that economic changes connected with globalisation may also provide the seeds for cultural changes that enhance women's status. In an impressive study of public attitudes toward gender roles in seventy nations, Inglehart and Norris (2003) argue that economic growth is only a part of the

story; substantial changes in social norms, beliefs, and values are also necessary to bolster women's roles in society and politics. They find that industrial and post-industrial nations are more likely to support gender equality than agrarian nations. More supportive attitudes toward women's equality then provide fertile soil for the formulation of concrete policies that help women to gain equal rights and opportunities. All these factors cumulatively lead to enhanced political and social roles.

The relationship between women's labour force participation and TFR is a topic that has received a lot of attention in the literature of demography and economics. This is one of the variables this study controls for[1]. According to Bowen and Finegan (1969), an increase in TFR can have opposite effects on FLFP, one being a positive influence and the other being negative. In the context of our dataset, the relationship between TFR and FLFP has given rise to an alternative 'societal response' hypothesis stating a positive relationship between FLFP and TFR. Due to the institutional changes in OECD countries since the 1980s, women have been able to combine work and childcare more efficiently. Studies have found that societal level responses such as changing perspectives towards working mothers, rise in availability of childcare and implementation of paid parental leaves have resulted in a change in the relationship between FLFP and TFR from negative to positive in the 1980s (Ahn and Mira 2002; Brewster and Rindfuss 2000).

4. ECONOMETRIC MODEL AND ESTIMATION METHODS

The analysis examines the impact of globalisation on female labour force participation in 37 OECD countries.

The econometric model used in this study has been expressed in equation (1). Here, 'i' refers to the number of cross-sectional subjects in the panel dataset and 't' refers to the time dimension of the panel dataset.

$$\mathbf{FLFP} = \beta_0 + \beta_1 \mathbf{KOFEcGI}_{it} + \beta_2 \mathbf{KOFSoGI}_{it} + \beta_3 \mathbf{KOFPoGI}_{it} + \beta_4 \mathbf{GDP}_{it} + \beta_5 \mathbf{TFR}_{it} \quad (1)$$

i= 1,2,.....37
t=1,2,.....25

Here, β_1, β_2, β_3, β_4, β_5 represent the regression coefficients of the model given in equation (1). The explanatory variables chosen along with data sources are mentioned in Table 2. We have assumed that all the variables are strictly exogenous for the simplification of model estimation.

The estimation methods which have been used in this study are Pooled OLS estimation, Fixed Effects estimation and Random Effects. Intuitively speaking, given the data set of OECD countries, we believe using pooled OLS will not provide for the suspected heterogeneity among the countries. We are dealing with a short panel (N>T) and we strongly believe that individual or cross-sectional units in our sample are not random drawings. Therefore, we believe that the Fixed Effects method would be the right estimation technique. Moreover, "even if it is assumed that the underlying model is pooled or random, the fixed effects estimators are always consistent" (Gujarati and Gunasekar 2017).

The econometric model given in equation (1) has been estimated by all three estimation methods. The decision regarding the most appropriate estimation method(s) has been made based on the F-test, Hausman test, and Breusch-Pagan Lagrange Multiplier test.

F-Test (Pooled OLS v/s Fixed Effects)
H_0: Both Pooled OLS and Fixed Effects methods give consistent estimators.
H_1: Fixed Effects method gives consistent estimators.

Hausman Test (Fixed Effects v/s Random Effects)
H_0: Both Fixed Effects and Random Effects methods give consistent estimators.
H_1: Fixed Effects method gives consistent estimators

Breusch- Pagan Lagrange Multiplier test (Pooled OLS v/s Random Effects)
H_0: Both Pooled OLS and Random Effects methods give consistent estimators.
H_1: Random Effects method gives consistent estimators.

Table 1: *Estimation Method Tests*

	F-Test	Breusch-Pagan Lagrange Multiplier test	Hausman Test	Appropriate Estimation Method
statistic	22.625	6577.5	69.032	
P-value		< 2.2e-16	1.629e-13	
	Null Rejected	Null Rejected	Null Rejected	Fixed Effects

Source: Authors' calculation

5. THE DATA

This study uses a panel dataset that has been compiled from larger datasets provided by the World Bank and KOF Swiss Economic Institute. The compiled dataset includes data on 37 OECD members (Australia, Austria, Belgium, Canada, Chile, Colombia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea Republic, Lithuania, Latvia, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States). The data is from the years 1993 to 2017.

The description of the data on the dependent and independent variables is given in the following table.

Table 2: *Data Description*

Variable	Classification	Abbreviation	Source
Female labour force participation rate (% of female population ages 15+)	Dependent	FLFP	World Bank
Economic Globalisation (KOF index)	Independent	KOFEcGI	KOF Swiss Economic Institute.
Social Globalisation KOF index)	Independent	KOFSoGI	KOF Swiss Economic Institute.
Political Globalisation (KOF index)	Independent	KOFPoGI	KOF Swiss Economic Institute.
GDP at Constant 2010 prices (US Dollar)	Independent	GDP	World Bank
Total Fertility Rate (Absolute Number)	Independent	TFR	World Bank

Our first explanatory variable is KOF *Economic Globalisation*, which has two components: KOF Trade and KOF Financial Globalisation, second is KOF *Social Globalisation* that consists of three main components: KOF Interpersonal Globalisation, KOF Informational Globalisation, KOF Cultural Globalisation and third is KOF *Political Globalisation*. These indexes are further divided into *de jure* and *de facto* components (see Appendix 3).

We have taken the composite index value for this study. The fourth explanatory variable is GDP per capita (constant 2010 US Dollar) and the fifth is the *total fertility rate.*

The Organisation for Economic Co-operation and Development (OECD) is an intergovernmental economic organisation, founded to stimulate economic progress and world trade. It is only reasonable to test the effects of different attributes of globalisation on most 'globalised' countries of the world. Given healthy trade relations among OECD countries, it comparatively controls for heterogeneity.

According to the World Bank, 34 out of the 37 OECD members are classified as 'OECD High-Income' Countries. 26 countries belong to Europe, 3 countries to America, 3 to Asia and 2 to Oceania.

Table 3: *Descriptive Statistics of the compiled dataset*

Variable	Mean	Standard Deviation	Median	Minimum	Maximum
Female labour force participation rate (% of female population ages 15+)	51.30	8.09954	52.16	23.05	73.74
Economic Globalisation (KOF index)	71.32	12.44486	73.10	30.60	93.60
Social Globalisation (KOF index)	77.34	10.35913	79.80	40.80	92.30
Political Globalisation (KOF index)	84.73	12.27894	89.18	34.57	98.59
GDP at Constant 2010 prices (US Dollar)	33784	-	33573	4713	111968
Total Fertility Rate (Absolute Numbers)	1.691	0.4097596	1.614	1.052	3.182

Source: Authors' calculation

6. ESTIMATION RESULTS AND INTERPRETATION

In this section, the results based on the Pooled OLS, Fixed Effects and Random Effects (Swamy-Arora) estimation methods are presented. Based on the results of our tests namely: the F-test, Hausman test, and the Breusch-Pagan Lagrange Multiplier test, correct estimation method(s) are determined. Later, this section discusses the results based on the chosen appropriate method(s).

The descriptive statistics of the compiled dataset and the results of the F-test, Hausman test, and the Breusch- Pagan Lagrange Multiplier test are presented in Table 1. The results from equation 1 by different estimation methods are given in Table 4 to Table 6.

Table 4: *Pooled OLS*

Independent Variables	Estimates
Intercept	28.272 (10.9459)
KOFEcGI	-0.24153 (-10.2945)
KOFPoGI	-0.25191 (-14.3940)
KOFSoGI	0.77531 (22.4277)
GDP	-0.000014595 (-1.1251)
TFR	1.2484 (2.4613)
R^2 adjusted	0.48015

Source: Authors' calculation

( ) – t values

Table 5: *Fixed effects (within) model*

Independent Variables	Estimates	Standard Error
KOFEcGI	-0.099572*** (-5.4718)	0.018197
KOFPoGI	-0.039922* (-2.1081)	0.018937
KOFSoGI	8 0.15873*** (7.2636)	0.021852
GDP	0.00033171*** (17.9705)	0.000018458
TFR	-0.12888 (-0.2680)	0.48096
R^2 adjusted	0.47322	

Source: Authors' calculation

( ) – t values

Table 6: *Random Effects OLS*

Independent Variables	Estimates
Intercept	38.40096877 (22.0091)
KOFEcGI	-0.09908234 (-5.3881)
KOFPoGI	-0.05312783 (-2.8153)
KOFSoGI	0.18587230 (8.4404)
GDP	-0.000014595 (0.00029589)
TFR	0.06166779 (0.1278)
R^2 adjusted	0.4695

Source: Authors' calculation

As found in Section 3 and on the basis of statistical tests, it can be inferred 5that the Fixed Effects estimation method is the most appropriate method for this study. Therefore, this supports our intuition regarding the choice of the estimation method. Hence, the estimation results given in Table 5 are all that are required for statistical inference and interpretation.

It can be seen that there exists an inverse relationship between economic globalisation and female labour force participation. The coefficient value suggests that a one-unit increase in KOFEcGI will lead to an average decrease in FLFP by 0.09 units. This result is supported by various studies that suggested a decline in FLFP as a result of an increase in trade amongst nations. Trade and financial globalisation being a component of economic globalisation substantiate the negative sign of the coefficient, thereby suggesting either the trade opportunities have been 'crowding out' women or there is less participation due to an increase in household income as a result of the substitution of work with leisure.

The coefficient of political globalisation suggests a negative relationship between political globalisation and FLFP with an average decrease of 0.03 units of female labour force participation with every one unit increase in political globalisation. It is a rather volatile variable, dependent on treaties, communication and bilateral agreements. Global politics, realistically speaking, does not factor in women empowerment or development of all sections of society. Hence, a negative sign seems plausible.

The coefficient of social globalisation suggests a positive relationship with the dependent variable. With every one unit increase in social globalisation, there is, on average, a 0.15 unit increase in FLFP. The sign of this coefficient is *a priori.* We have mentioned earlier in the paper that the socialisation effect leads to enhanced roles of women in all spheres including the labour force.

GDP coefficients suggest a positive relationship between GDP per capita and FLFP. However, the coefficient value is very low with a one-unit increase in GDP per capita leading to an average increase of 0.0003 units. The explanations in terms of the effect of GDP are rather ambivalent and we believe it depends mostly on the data set chosen, the status of

the countries, and work-leisure preferences of women.

The total fertility rate is the only estimate that came out to be insignificant. One unit increase in the total fertility rate will lead to a decline in FLFP by an average of 0.12 units. We have still included this variable as childbearing is considered the primary duty of women according to various societal norms and a major determinant of employment decisions. According to the literature on OECD countries which suggest there might be a positive relationship due to institutional changes, the sign is not a priori. However, since it is statistically insignificant, we will not go further into determining if institutional changes have led to a positive influence if at all it exists.

The model is free from the problem of perfect multicollinearity as indicated by finding the Variance Inflation Factors (VIFs). All of them were less than 4.[1] However, we faced a problem of heteroscedasticity which was solved by using White's robust standard errors (see Appendix 1). However, after correcting for heteroscedasticity, KOFPoGI is rendered insignificant to this model. Given its ambivalent nature, the result seems plausible. The model also faces the problem of autocorrelation, which can be corrected by the use of Instrumental Variables. However, that is beyond the purview of this paper.

7. CONCLUSION

We started this study to provide empirical proof that social, economic and political factors impact women's labour force participation rate. Concluding the results mentioned in the previous section, economic globalisation seems to have a significantly negative impact on FLFP. Social globalisation has a positive impact and statistically significant impact on FLFP. However, political globalisation, when corrected for heteroscedasticity, has a positive but statistically insignificant impact.

This study throws light on the fact that high-income countries have different results when compared to developing countries with regards to women's labour force participation. Many factors such as work-leisure preferences, household income, working conditions, etc. will play a role in determining it. We find it imperative to shed some light on the fact that social globalisation is one of the important determinants affecting women's labour force participation rate. The Social Globalisation Index comprises international tourism, transfers, international voice traffic, migration, patent applications, international students and high technology exports. This factor impacts the cultural environment of a country and thus, positively impacts FLFP.

One aspect that remains unexplored in this paper is the impact of the fertility rate. Given our chosen dataset: OECD countries, the literature on the relation of FLFP with TFR is ambivalent and is subject to institutional policies and age structure. Unlike high population countries, we cannot readily conclude a negative relationship between the two. However, here in our paper, we do find such a relationship. TFR in the past has had a dual impact in some cases. Hence, a detailed analysis is required on the subject which, as mentioned earlier, is beyond the scope of this paper.

Although independent variables support significant effects, the coefficient values are much lower than we expected. This model can further be developed by using Instrumental Variables. The model also assumes exogeneity for practical purposes. Endogeneity and simultaneity have to be judged to get efficient estimators. Due to the paucity of data available (in a continuous interval) we could not control for a few variables. The estimators will have more precise values once controlled for.

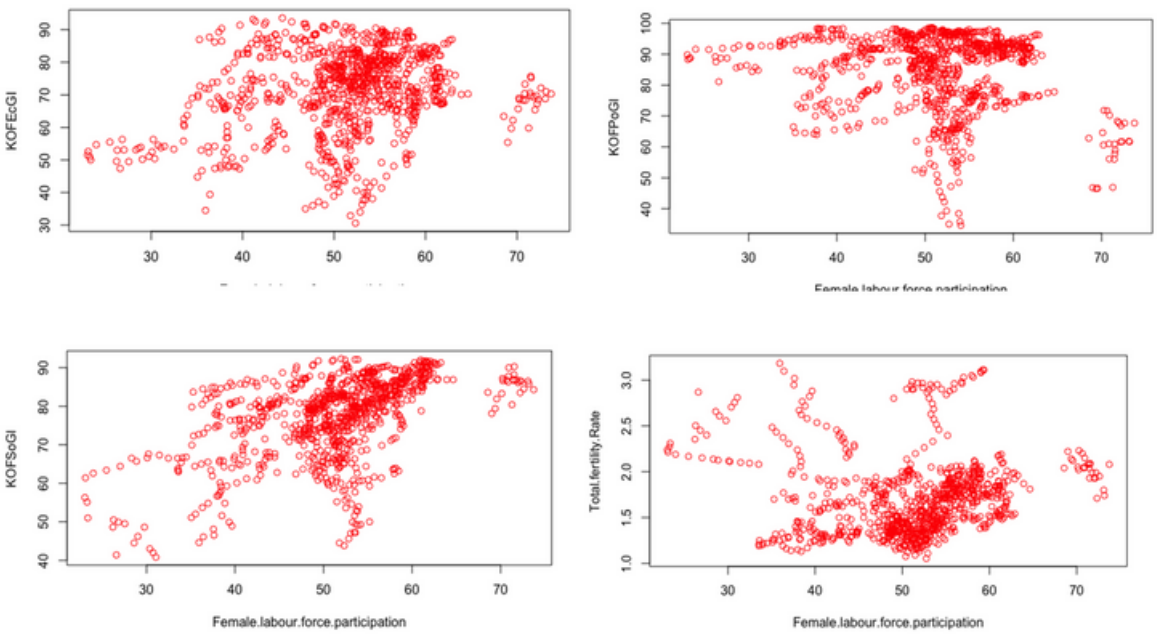
APPENDIX

A.1 Robust Standard Errors: Correction for Heteroscedasticity

Independent Variable	Estimate	Robust Standard Error
KOFEcGI	-0.099572 (-1.9233)	0.051770
KOFPoGI	-0.039922 (-0.9587)	0.041643
KOFSoGI	0.15873* (2.3122)	0.068646
GDP	0.00033171*** (5.5692)	0.000059561
TFR	-0.12888 (-0.0785)	1.6420

( ) – t statistic

A.2. Scatter plot of Female Labour Force Participation and the different explanatory variables as given in Equation 4



Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' '

A.3. Structure of the KOF Globalisation Index

Globalisation Index, de facto	Weights	Globalisation Index, de jure	Weights
Economic Globalisation, de facto	***33.3***	***Economic Globalisation, de jure***	***33.3***
Trade Globalisation, de facto	*50.0*	*Trade Globalisation, de jure*	*50.0*
Trade in goods	40.9	Trade regulations	32.5
Trade in services	45.0	Trade taxes	34.5
Trade partner diversification	14.1	Tariffs	33.0
Financial Globalisation, de facto	*50.0*	*Financial Globalisation, de jure*	*50.0*
Foreign direct investment	27.5	Investment restrictions	21.7
Portfolio investment	13.3	Capital account openness 1	39.1
International debt	27.2	Capital account openness 2	39.2
International reserves	2.4		
International income payments	29.6		
Social Globalisation, de facto	***33.3***	***Social Globalisation, de jure***	***33.3***
Interpersonal Globalisation, de facto	*33.3*	*Interpersonal Globalisation, de jure*	*33.3*
International voice traffic	22.9	Telephone subscriptions	38.2
Transfers	27.6	Freedom to visit	31.2
International tourism	28.1	International airports	30.6
Migration	21.4		
Informational Globalisation, de facto	*33.3*	*Informational Globalisation, de jure*	*33.3*
Patent applications	35.1	Television	25.2
International students	31.2	Internet user	31.9
High technology exports	33.7	Press freedom	13.2
		Internet bandwidth	29.7
Cultural Globalisation, de facto	*33.3*	*Cultural Globalisation, de jure*	*33.3*
Trade in cultural goods	22.6	Gender parity	31.1
Trademark applications	13.3	Expenditure on education	30.9
Trade in personal services	25.6	Civil freedom	38.0
McDonald's restaurant	23.2		
IKEA stores	15.3		
Political Globalisation, de facto	***33.3***	***Political Globalisation, de jure***	***33.3***
Embassies	35.7	International organisations	37.0
UN peace keeping missions	27.3	International treaties	33.0
International NGOs	37.0	Number of partners in investment treaties	30.0

Notes: Weights in percent. Weights for the individual variables are time variant. Depicted are the weights for the year 2015. Overall indices for each aggregation level are calculated by the average of the respective de facto and de jure indices.

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