

Measuring Gender (In)Equality:

Introducing the Gender, Institutions and Development Data Base (GID)

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Abstract:

Efforts to establish, test and analyse hypotheses regarding cross-country variations in women's economic status are hampered by the lack of a readily accessible and easily used information resource on the various dimensions of gender inequality. Addressing this gap, this paper introduces the Gender, Institutions and Development data base (GID) of the OECD Development Centre. The GID constitutes an important improvement upon existing sources, notably because it incorporates institutional variables related to norms, laws, codes of conduct, customs, and family traditions that heretofore have been neglected in quantitative comparative studies. To illustrate the utility of the GID, the paper models the determinants of women's participation in the labour force – an indicator of gender equality as well as an important ingredient for long-run economic growth – and demonstrates that the economic role of women hinges critically on variations in discriminatory social institutions.

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1. Introduction

The promotion of gender equality and empowerment of women is among the eight Millennium Development Goals to which the international community has committed itself. While significant improvements towards reaching this goal have already been achieved – e.g. an impressive increase in girl's school enrolment world-wide over the last five to ten years – the situation of women remains unsatisfactory. Generally speaking, in the developing world, women are still largely denied access to the formal labour market and do not have equal opportunities to qualify for higher employment. They are consequently less likely to occupy administrative or managerial positions and lag significantly behind in terms of career development and earnings increases (consult, for example, Tables 25 through 30 in UNDP 2005).

Gender equality is a development goal in its own right and – as research has shown – has instrumental value for the long-term growth prospects of countries (see, for example, Klasen 2002; World Bank 2001). The success with which developing countries integrate more skilled female workers into the labour force determines in part their level of competitiveness in the global economy. To better understand the main obstacles constraining the economic role of women is important for the design of gender policies that promote gender equality for its intrinsic and instrumental values.

There are two conflicting views linking women's status and the level of development. The first argues that rising incomes (or economic development more generally) will close the gender differential; Forsythe et al. (2000) call this the *modernisation-neoclassical approach*. On this view, increasing competition will drive out discriminatory practices, at least in the medium to long run (Becker 1985; O'Neill and Polachek 1993). Opposed to this is the view that enduring patriarchal institutions will prevent gender equality even in the face of economic advancement (Marchand and Parpart 1995, Parpart 1993). By constraining women's participation in the labour force and/or access to resources, gender inequality is cemented and will not easily be changed in

the course of development (Morrisson and Jütting 2005). The example of Saudi Arabia -- a country with quite high average income but very poor gender equality -- supports this interpretation.

Whether discrimination will be eroded or endure as the economy grows is of critical importance to policy-makers, aid agencies and social movements as they choose strategies to address gender inequality: should they promote growth or attack the proximate causes of inequality? For analysts, a necessary first step is to identify and analyse empirical regularities linking levels of development, the degree of discrimination and other factors explaining the economic well-being of women across societies. As a contribution to this effort, this paper introduces the Gender, Institutions and Development (GID) data base, a new analytical tool that systematically documents the “endless variety and monotonous similarity” (as feminist theorist Gayle Rubin famously wrote in 1975) of gender discrimination. The GID has been compiled from a variety of sources (not all of them well-known to economists) and is an important extension to existing compilations. Commonly-used data sets produced by international organisations miss an important dimension of determinants of gender inequality by neglecting the institutional setting that constrains the economic role of women in many countries. This paper demonstrates that this broader framework, including social institutions, adds critically to our understanding of the role of women in developing countries and that conversely, ignoring traditions, customs and explicit or implicit laws limits the usefulness of policy actions aimed at improving the situation of women.

The structure of the paper is as follows: the following section discusses in detail the construction of the new data base and provides a conceptual framework, while section 3 presents some highlights of the GID data, including an overview of variations in gender inequality across regions and income levels. Section 4 uses bivariate and multivariate statistical models to analyse the GID data on social institutions and women's participation in the labour force. Section 5 concludes.

2. Construction of the New Data Base

2.1 Motivation and Aim of the GID Data Base

The Gender, Institutions and Development (GID) data base adds to and improves on existing compilations (e.g. World Bank GenderStats, UNDP GDI and GEM gender statistics). Construction of the GID data base follows a clear conceptual framework that differentiates between outcome and input variables: the former measure the extent to which women suffer discrimination (e.g. women's participation in the labour force) and the latter encompass underlying reasons for this discrimination. Moreover, the GID, unlike previous data bases, includes information on social institutions that help determine the status of women. Finally, the process of compilation and the potential uses of the GID data base are open and transparent, unlike other data bases that cover sensitive social institutions (e.g. CPIA Indicators of the World Bank¹), to which access is more restricted. Researchers can use the variables in the GID data base to analyse various dimensions of gender inequality or create indices based on a selection of the variables (as Jütting and Morrisson 2005 did with a preliminary version of the data base).

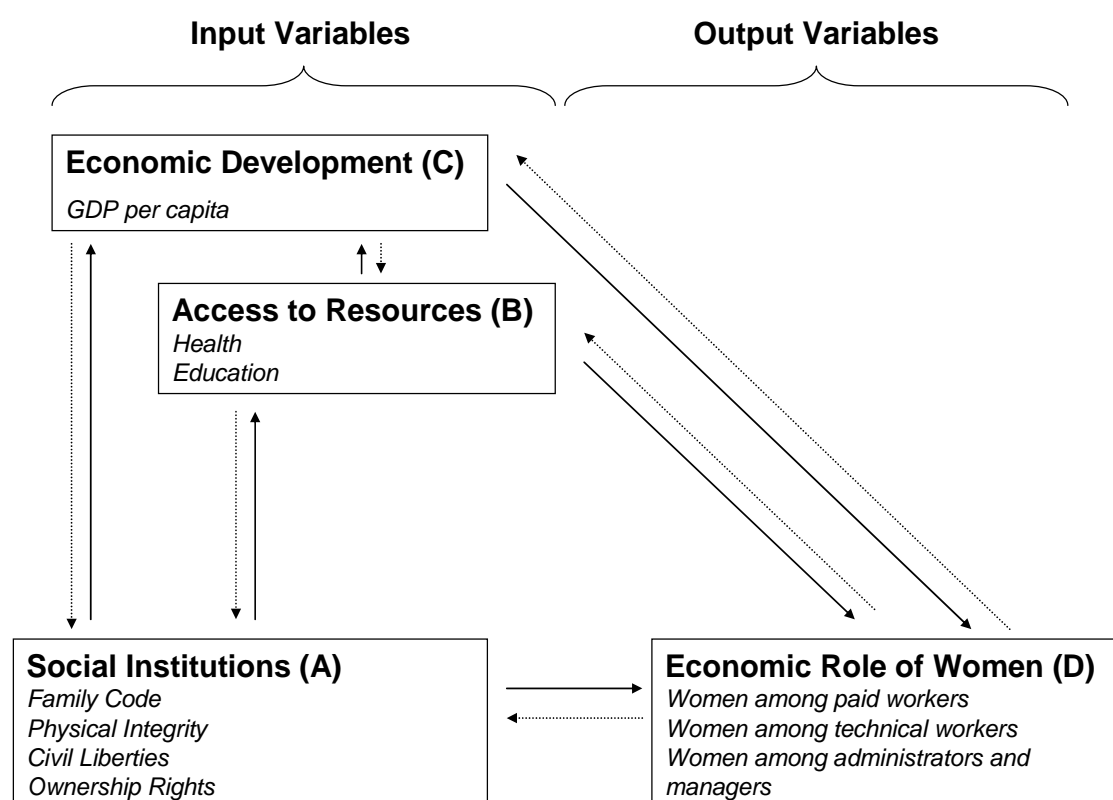
Consider a simple framework of gender discrimination, illustrated in Figure 1. We hypothesise that the economic role of women (Block D) depends on various social institutions (Block A), women's access to resources (Block B) and the overall income level of a country (Block C). Interactions among these four blocks are illustrated by the dotted and solid arrows, which signify the direction and in some sense the temporal relationship among variables; e.g. family traditions related to marriage instantaneously influence the economic role of women while an increased presence of women in paid professions will

¹ The "Country Policy and Institutional Assessment" (CPIA) mechanism is used by the World Bank to annually rate government policy and institutional performance of borrowing countries. Although the World Bank has started to disclose countries' relative ratings (i.e. a country's ranking), nominal ratings are still kept secret.

only gradually have an impact on social institutions (this is indicated by a dotted, rather than a solid line).

Our main focus is on the solid circuit, which describes four channels through which social institutions influence the economic role of women. (1) Social institutions directly affect women's economic roles (this is the link from A to D in Figure 1): a higher degree of civil liberties, for example, allows women to participate in the labour market. Social institutions also have indirect effects on how fully a woman can participate in the economic life of a country; we distinguish two such indirect channels. (2) Thus, social institutions can have an effect by influencing women's access to resources, as greater physical integrity, for example, improves women's health and consequently their chances in the labour market. This is the link from A to B to D. (3) Social institutions can also directly affect a country's economic development (A to C), with positive repercussions on women's labour force participation (C to D): e.g. ownership rights of women can foster entrepreneurial behaviour that promotes growth. (4) Finally, social institutions can also affect women's economic role more indirectly via economic development (and thus the economic role of women) by improving access to resources such as health and education (A to B to C to D, or A to C to B to D): education, for example, fosters a country's human-capital accumulation, which in turn increases economic development (B to C), but girls' access to education is conditioned in the first instance by social institutions.

Fig 1.: Indicators affecting the economic role of women



Source: Own Illustration.

2.2 Data Sources and Selection

For variables measuring access to resources, economic development and the economic role of women, we rely on well-known data bases provided by the World Bank, the International Labour Organisation and the World Health Organisation. For aggregate indices we report two well-known UNDP indicators, the Gender Empowerment Measure (GEM) and the Gender Development Index (GDI). Measurement of the social institutions, however, poses the biggest challenge as they are not well documented or systematically reported by international organisations. Nevertheless, in order to construct a sensible and comprehensive data base on social institutions, we collected data and information from a variety of sources, including Amnesty International, BRIDGE (a research and information service of the Institute for Development Studies specialised in gender and development),

WIDNET (the Women in Development Network), AFROL (a news agency that concentrates on Africa) and a study commissioned by the French Parliament (Lang 1998). Whenever possible, we compare and contrast observations from various sources to cross-check the validity and reliability of information. The information from AFROL proved to be especially valuable as it concerns sensitive issues such as genital mutilation, questions of parental authority as well as women's access to property, inheritance, and freedom of movement and dress. Gender profiles of various donor organisations (e.g., the Canadian International Development Agency) were also drawn upon to complete the data base.

All world regions and levels of average income are well-represented among the economies in the final database. There are 162 economies in the data base, though the number for which measures of social institutions are available is always lower. Thus information on female genital mutilation is available for 123 economies; information on the male right of repudiation is available for 117. (More details about what these measures mean is provided below). With a few exceptions, economies with fewer than 1 million inhabitants are not included.

Given the GID's focus on gender-related differences rather than the absolute values of a particular indicator, many variables are measured in terms of ratios. Thus the GID includes the female/male ratio of school enrolment rather than the percentage of female students enrolled. Measures of qualitative variables, including most of the social-institutions variables, vary as a rule between 0 (better) to 1 (worse).

2.2.1 Women's economic participation

Our conceptual framework requires some kind of outcome variable that measures women's participation in the economy. While there are potentially many candidates, we have opted to focus on the degree to which women in a given country participate in paid labour outside of the home. The selection of this variable embodies an implicit normative assumption: that women in a

country are “better off” the higher the rate of female participation in paid work. This normative interpretation is consistent with what we have referred to as the “modernisation” theory of gender discrimination, the most eloquent expression of which was enunciated by Nobel laureate Sir W. Arthur Lewis in 1955:

In the process [of economic growth] woman gains freedom from drudgery, is emancipated from the seclusion of the household, and gains at least the chance to be a full human being, exercising her mind and her talents in the same way as men. It is open to men to debate whether economic progress is good for men or not, but for women to debate the desirability of economic growth is to debate whether women should have the chance to cease to be beasts of burden and to join the human race.

Furthermore, women’s labour force participation was the cornerstone of the pioneering study of women and development, Esther Boserup’s *Woman’s Role in Economic Development* (1970). Naturally, this measure elides consideration of discrimination against women within labour markets, sexual harassment in the workplace, or other related issues: we do not imply that just because women enter the labour market, they have achieved economic equality with men.

What is the right way to measure women’s participation in the labour market? A commonly-used measure of the degree of women’s participation in the economy is the “percentage of women among the active population”; this can nevertheless be misleading as it aggregates employment situations that might differ considerably across economies, regions or ethnic groups. In most of Africa and South Asia, for example, economically active women are predominantly family workers. Although many women consequently do not work outside of the household or only work part-time, the proxy considers them as belonging to an economy’s economically active population. This proxy similarly fails to account for still larger differences in women’s decision-making autonomy. Clearly, there is a big difference between a woman who owns the crop that she sells on the market and one who works instead under the authority of her husband. The former will generate an individual income that is at her disposal, while in the latter case the income earner is her

husband. The importance of an individual income to the economic role of women is illustrated in a recent study by Kabeer and Mahmud (2004). The authors report findings of interviews with female workers in the garment manufacturing in Bangladesh who stress that having an independent income increased their self reliance, reduced their dependence on household income and helped them develop greater decision-making autonomy. The “percentage of women among the active population” does not draw this distinction.

Conscious of these problems, we propose a general measure of the degree of economic activity of women, supplemented by three more specific indicators. We use the variable recorded by the International Labour Organisation and the United Nations Statistical Division, namely, “the female share of the paid non-agricultural labour force.” This variable captures the prevalence of salaried women with personal incomes that may enhance their financial independence. The supplemental specific indicators cover “the percentage of women in professional and technical positions” and “the percentage of women among administrative workers and managers”. Finally, we also include an indicator measuring the difference between female and male wages. For conciseness, we will sometimes refer to “women’s participation” or “women’s economic participation” to refer to the percentage of women in the non-agricultural paid labour force.

2.2.2 Institutional variables

Institutional variables are at the core of the GID data base’s value-added. According to our conceptual framework, institutional variables have direct and indirect impacts on the economic role of women. In order to give a broad overview of important traditions, laws, cultural norms, and religious practices affecting the economic status of women, we distinguish among the following social institutions: (i) the prevailing family code; (ii) women’s physical integrity; (iii) women’s civil liberties; and (iv) women’s ownership rights.

Family Code

The family code is the complex of formal and informal laws, customs, and traditions that constrain women's economic participation. A social institution of special relevance is that of early marriage: where very young women are married, parents (fathers) and not young women themselves have the power to make important decisions about marriage and household formation; moreover, within households, the substantially older husbands have disproportionate authority and decision-making power. The percentage of women married before the age of 20 and the mean age of marriage are given by the United Nations (2004). Related variables include whether a marriage can be unilaterally terminated by a husband's repudiation of his wife (who has little or no recourse), and whether parental authority is granted equally to men and women. Information on repudiation and authority is documented by Lang (1998).

The value of the repudiation variable for a society ranges between 0 and 1, depending on whether repudiation is a legally binding practice and the proportional of the population that is affected (i.e. the proportion of a population subject to Islamic law or *sharia*). Recent modifications in the legal code of some societies have not been taken into consideration for reasons of data comparability: first, because other variables date from years before the family-code reforms, and second, as we are interested in the long-term effects of discriminatory social institutions, the *status quo ante* is of special importance. Most notably, we still rate Algeria and Morocco with a value of 1 (i.e. Islamic law is legally binding for the entire population) although these countries have abandoned the application of the *sharia* in 2005.

Parental authority is coded 1 for a society where fathers, as a rule, have complete control over their offspring and 0 where they evenly share authority with their children's mothers. Full authority of the father means that only he can seek passports for his children or take educational decisions on their behalf, and that following a divorce he will always be given custody (except in some cases for infants and very young children). This variable can take on

values between 0 and 1 depending on the extent of pro-patriarchal discrimination.

The family code also embraces inheritance practices, coded between 0 and 1 depending on the degree to which regulation is in favour of male heirs: a value of 0 indicates that bequests are equally shared between male and female offspring. Finally, we consider the prevalence of polygamy, to which values were assigned on a case-by-case basis in the absence of any comprehensive overviews. Special attention was paid to the extent of legal or customary acceptance of polygamy and to the proportion of populations subject to such law or custom. Our polygamy variable is therefore not an estimate of the percentage of polygamous households, but rather an indicator of the acceptance of polygamy within a society.

Physical Integrity

Physical integrity is captured by two variables: the extent of female genital mutilation and the existence of legislation punishing acts of violence against women. Although our principal sources for female genital mutilation (e.g. Amnesty International, WHO, UNDP) are prone to estimation errors, they are generally not biased by differences in definitions across national authorities. In the case of large variations between the data, we tried to consider the most reliable source (e.g. according to date of publication, number of references, and potential bias of institution²).

Despite much interest in the prevalence of violence against women by multilateral institutions (e.g. WHO, UNIFEM) and NGOs alike, there is unfortunately no comprehensive and reliable source for this indicator. We consequently focused our attention on how three distinct areas of violence against women are penalised through national legislation and calculated the average value of our coded indices. In the case of violence against women,

² Non-governmental organisations that specifically fight for the abolishment of female genital mutilation may sometimes over-report its prevalence as an advocacy strategy.

we quantify information provided by UNIFEM (2003) on the existence of laws against (i) domestic violence, (ii) sexual assault or rape, and (iii) sexual harassment as follows: 0 if specific legislation is in place, 0.25 if legislation is in place but of general nature, 0.5 if specific legislation is being planned, drafted or reviewed, and 0.75 if this planned legislation is of general nature; 1 captures the absence of any legislation concerning violence against women. Thus Ecuador's value of 0.17 for legislation governing violence against women, for example, is calculated as follows: the country has specific legislation in place against domestic violence ($1/3 \times 0$) as well as general legislation against sexual assault or rape ($1/3 \times 0.25$) and sexual harassment ($1/3 \times 0.25$); the average of these three sub-indices is $(1/3) \times 0 + (1/3) \times 0.25 + (1/3) \times 0.25 = 0.17$.

Civil Liberties

We group four variables under civil liberties: the percentage of members of parliament who are female; the percentage of government ministers who are female; women's freedom to leave the house; the requirement that women wear a veil in public. Information on the female proportion of parliaments and cabinets is taken from the World Bank's Gender Statistics and the UNDP's (2005) Human Development Report. Whether women are free to leave the house or are required to wear a veil in public are mostly coded based on Lang (1998). For freedom of movement, our indicators capture various degrees of oppression ranging from 0 = no restriction to 1 = total dependence on male authority. In the case of Saudi Arabia, for example, a value of 0.7 for freedom of movement signifies that women are allowed to leave the house without a male member of the household, but nevertheless suffer other restrictions on personal freedom (e.g. women cannot obtain a driver's license). Regarding the veil, either women have an obligation to wear it or they do not and thus this variable is coded as 0 or 1. Some of these restrictions may only apply to certain minority groups in the population, in which case the value of the indicator is adjusted depending on the relative size of the group subject to these social institutions.

Ownership Rights

Three variables are used to indicate the quality of women's ownership rights: women's access to bank loans, their right to acquire and own land, and their right to own property other than land. Variations between 0 and 1 indicate the extent of restrictions or the size of the female population for which the restrictions are relevant; as before, 1 signifies complete discrimination against women. Some restrictions may only be relevant for a woman in a specific stage of her life. In Chinese Taipei, for example, women generally have free access to bank loans and property. However, certain restrictions apply after a woman gets married as it is usually the husband who takes decisions related to property and asset ownership. Sources for our indicators include Lang (1998), BRIDGE, the Asian Development Bank, the Canadian International Development Agency, and AFROL.

2.2.3 Variables measuring command over and access to resources

In economies where women have better access to education, health care, or birth control, women will presumably find more and better jobs; their participation in the economy is greater. We consider the following measures of access to resources in the data set:

Education

The GID includes four indicators of female access to education: the female-to-male enrolment ratio in primary, secondary and tertiary education as well as the female-to-male literacy ratio. (The literacy ratio can be considered as an outcome variable of differences in access to education.) For each of these four variables, a value of 1 indicates female-male parity.

Health

Various indicators are included to present disparities in the access to health care. The life expectancy ratio primarily measures differences in the access to health services over the entire lifetime of an individual. In the 15 most developed countries, women typically outlive their male counterparts: in the

presence of reasonably equal access to health care, women enjoy longevity advantages that are biological in nature. A life-expectancy ratio of 1.08 (women live on average 8 percent longer than men), the average of all OECD countries, is consequently taken as a benchmark figure (UNDP 2002). Discrimination in access to health care can also be illustrated by cross-country differences in sex ratios (the number of women per man) as well as by comparing, within a country, the sex ratio at birth to the sex ratio at the age of 15.

The sex ratio indicators are particularly relevant to the issue of “missing women” (Sen 1992): where girls are less valued than boys, fewer girls survive to adulthood (because of sex-selective abortions, female infanticide, or discrimination against girls in intra-household allocation of food and medicines) and the sex ratios are correspondingly lower. Maternal mortality, meanwhile, is a more basic measure of access to health care *per se*.

Access to Birth Control

Contraceptive prevalence (i.e. the percentage of married women currently using contraception) and the total fertility rate (i.e. average number of births per woman) are included in the GID, in part because they proxy for important obstacles for women to enter the labour market. Empirical evidence suggests that it is more complicated for mothers to become a wage earner if they are also expected to be the primary care-giver for their children. Where contraceptives are less widely available, and conversely where women on average bear more children, these obstacles to women’s economic participation are correspondingly more salient. Of course there are exceptions to this general rule. Although not beneficial for a professional career, children are not necessarily impediments either. In many African countries, women with several children still manage to run their own little retail business in the streets; a practice which is socially accepted by both the community and the family. As a general rule, however, the use of family planning (as measured by access to birth control and total fertility rate) can be expected to have a positive impact on the economic participation of women.

2.2.4 *Economic development*

One theory of gender discrimination maintains that the economic circumstances of women will improve with higher levels of economic development. In terms of the framework sketched out in Figure 1, this could occur because women gain access to greater resources as per capita income climbs (block C to block B), and improved access to resources opens more possibilities for women to participate in the paid labour force (block B to block D). Alternatively, with the creation of a more formalised, rules-based system of governance, traditional social institutions might lose importance (block C to block A), which might ease institutional constraints upon women's decision-making (block A to block D). As shorthand indicators of the level of economic development (and its rate of change), the GID includes GDP per capita and GDP per capita growth for the years for which values of other variables are available (from the World Bank's *World Development Indicators 2005*).

2.2.5 *Aggregate indices*

Aggregate indices of gender discrimination such as the UNDP's (2005) Gender-related Development Index (GDI) and the Gender Empowerment Measure (GEM) have already received considerable attention, and are included in the GID data base. The GDI is an unweighted average of three types of gender differences: life expectancy at birth, gross school enrolment and literacy rates, and earned income. The GEM is an unweighted average of variables reflecting women's position in society: the percentage of women in parliament, the male/female ratio among administrators, managers and professional and technical workers, and the female/male per capita income ratio, which is calculated from female and male shares of earned income.

3. The GID Data Base – Some Descriptive Evidence

3.1 Regional Variation of Social Institutions

Table 1 provides a regional overview of gender inequality based on items in the GID data base. Table 1 illustrates that, compared to other regions of the world, women in sub-Saharan Africa (SSA), South Asia (SA), and Middle East/North Africa (MENA) marry at an earlier age, often younger than twenty. They generally enjoy fewer rights than their husbands and suffer from unfavourable regulations and traditions regarding inheritance and parental authority. Furthermore, they sometimes find themselves as only one female partner among several wives in countries where polygamy is practiced and accepted by society. Women often have no or only restricted access to credit, land and property and their civil liberties are abridged.

At the same time, women in these three regions have less access to human-capital-producing resources such as health care and education, indicated by the comparatively lower female/male ratios of school enrolment, literacy rates, and life expectancy. The female-to-male life expectancy ratio in these three regions falls below the 1.08 OECD benchmark. As indicated by the comparatively low contraceptive prevalence and high fertility rates, women finally have less access to birth control in these regions; accordingly, women's participation in the labour market is lower. The values for women among paid workers and the ratios of females in professional and administrative positions are significantly lower than in East Asia and the Pacific (EAP), Latin America and the Caribbean (LAC), Europe and Central Asia (ECA) and the OECD countries.

Tab. 1.: Gender Inequality in Various Regions of the World

	Region n=	SA 7	SSA 43	MENA 18	EAP 21	LAC 23	ECA 28	OECD 30
Social Institutions (A)								
Physical Integrity	Violence (leg.)	0.50	0.66	0.65	0.55	0.41	0.53	0.31
	n=	7	43	17	20	23	28	30
	Genital Mutilation	0.01	0.37	0.17	0.03	0.00	0.00	0.00
	n=	5	37	16	13	19	12	30
	PI Indicator*	0.19	0.50	0.40	0.26	0.19	0.23	0.16
	n=	5	37	16	13	19	12	30
Family Code	Married 15-19	0.29	0.28	0.13	0.08	0.18	0.08	0.03
	n=	6	39	17	18	23	27	30
	Polygamy	0.56	0.72	0.78	0.09	0.02	0.00	0.00
	n=	5	31	16	13	19	12	30
	Parental Authority	0.90	0.75	0.78	0.21	0.00	0.03	0.00
	n=	5	31	16	13	19	12	30
	Inheritance	0.70	0.72	0.91	0.17	0.00	0.02	0.00
	n=	5	31	16	13	19	12	30
	FC Indicator*	0.61	0.62	0.66	0.14	0.05	0.03	0.01
	n=	5	31	16	13	19	12	30
Ownership Rights	Land	0.72	0.76	0.46	0.13	0.05	0.10	0.02
	n=	5	31	16	13	19	12	30
	Loans	0.44	0.49	0.14	0.13	0.07	0.06	0.00
	n=	5	31	16	13	19	12	30
	Patrimony	0.42	0.52	0.21	0.08	0.01	0.03	0.00
	n=	5	31	16	13	19	12	30
	OR Indicator*	0.53	0.59	0.27	0.11	0.04	0.06	0.01
	n=	5	31	16	13	19	12	30
Civil Liberties	Veil	0.40	0.12	0.54	0.00	0.00	0.06	0.02
	n=	5	31	16	13	19	12	30
	Movement	0.38	0.06	0.18	0.00	0.00	0.00	0.00
	n=	5	31	16	13	19	12	30
	CL Indicator*	0.39	0.09	0.36	0.00	0.00	0.03	0.01
	n=	5	31	16	13	19	12	30
Access to Resources (B)								
Education	Literacy	0.58	0.71	0.78	0.91	0.98	0.97	0.98
	n=	7	43	17	17	23	26	14
	Enrolment (prim)	0.86	0.89	0.95	0.98	1.00	0.99	1.00
	n=	7	43	18	20	23	28	30
	Enrolment (sec)	0.79	0.80	0.94	0.99	1.08	0.99	1.01
	n=	7	43	18	20	23	28	30
	Enrolment (ter)	0.52	0.52	1.12	1.02	1.31	1.19	1.19
	n=	7	43	18	20	23	28	30
Health Care	Life Expectancy	1.03	1.04	1.05	1.06	1.08	1.12	1.08
	n=	7	43	18	20	23	28	30
Birth Control	Contraceptive Pr.	36.94	21.31	46.67	58.59	59.86	58.77	72.35
	n=	7	40	17	19	20	25	26
	Fertility Rate	3.62	5.18	3.33	2.68	2.77	1.61	1.62
	n=	7	43	18	20	23	28	30
Level of Development (C)								
Income Level	GDP pc	2,572	2,883	9,554	12,367	7,474	8665	27934
	n=	5	40	14	17	22	26	30
Women's Economic Role (D)								
Labour Force Participation	Women among paid workers	19.32	27.60	20.31	41.83	41.27	46.82	45.43
	n=	7	43	18	20	23	27	30
	Administrative Workers	6.60	13.74	10.83	21.77	32.22	31.33	26.46
	n=	5	27	12	13	18	15	28
	Technical and Profess. Workers	30.25	29.88	31.25	45.00	47.33	59.13	48.82
	n=	4	17	12	13	18	15	28

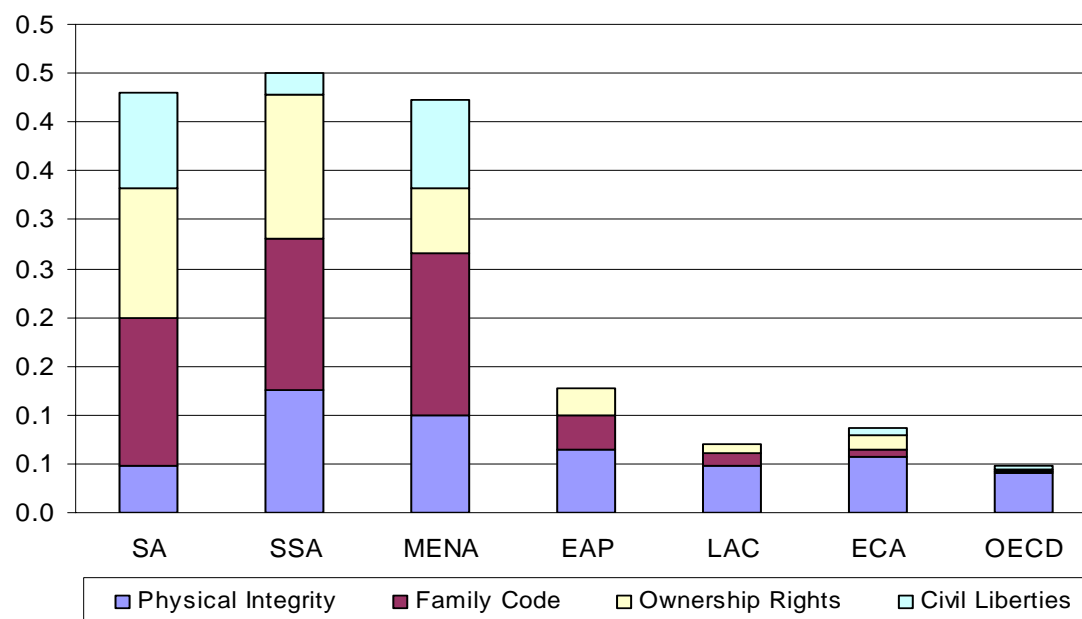
* Indicators are calculated for each sub-group (i.e. physical integrity=PI, family code=FC, ownership rights=OR, civil liberties=CL) taking the average of the single components where available.

Source: Own compilation. Data: World Bank, ILO, WHO, UNDP.

Figure 2 illustrates the striking difference between SA, SSA, and MENA on the one hand and EAP, LAC, ECA, and OECD countries on the other using the average values for each of the four sub-indices of the social institutions indicators.³ Recall that our indices range from zero (no discrimination) to one (high discrimination), so higher bars in Figure 2 indicate more discrimination. Although the values for EAP, LAC, ECA and OECD countries are generally low, this is not to say that women in these regions do not face discrimination. In some Latin American countries, for example, women can find access to land and capital difficult; however, they are not systematically excluded as is the case in countries with high discrimination values. Except for rare exceptions (e.g. among immigrant populations) women in LAC also do not suffer from genital mutilation, but violence against them is reported frequently. At the same time, not all countries in SSA, SA, or the MENA regions are marked by the presence of discriminatory social institutions: Mauritius, Israel, and Sri Lanka can be cited as notable exceptions.

³ The diagram compares the average values of physical integrity (genital mutilation, violence against women), family code (early marriage, polygamy, parental authority, inheritance), ownership rights (land, loans, patrimony), and civil liberties (freedom of movement, veil). We will refer to the sum of the four sub-indices as the “social institutions indicator”.

Fig 2.: Regional Indices of Discrimination against Women



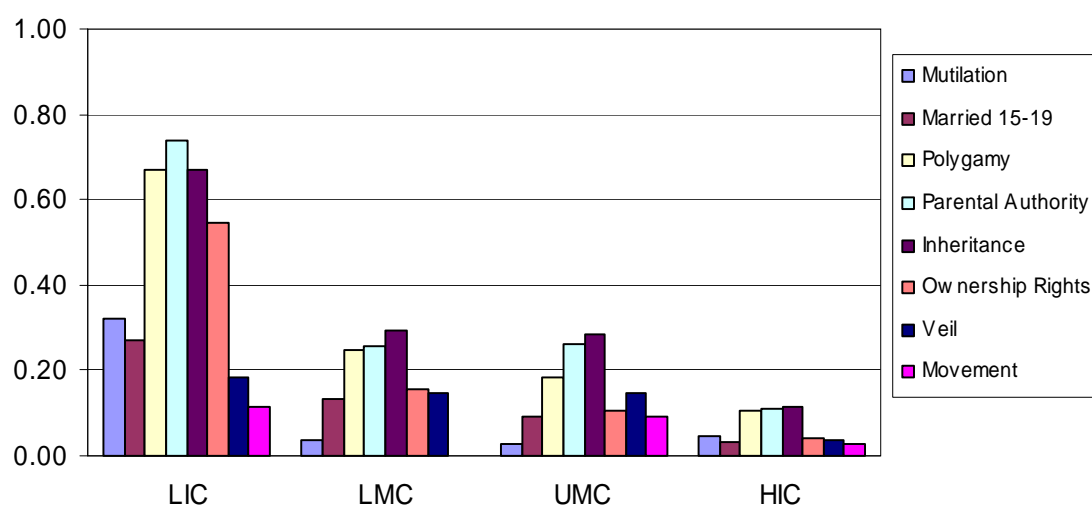
Source: Own Illustration. Scale: 0=no discrimination; 1=maximum level of discrimination.

3.2 Variation of Social Institutions According to Income

Following the logic of the “modernisation theory” of gender discrimination (in which gender discrimination will gradually vanish as countries develop economically), perhaps the regional differences in gender discrimination noted above are explained by the level of economic development in each region rather than institutional differences *per se*. That is, the presence of discriminatory social institutions in SSA, SA, and MENA could be explained by the over-representation of very poor countries in these regions.

A rapid glance at Figure 3, which illustrates various dimensions of gender inequality according to each country’s income category, lends support to this hypothesis. As we might expect, low-income countries (LIC) score worse in terms of the prevalence of female genital mutilation, early marriages and restrictions in ownership rights, civil liberties and parental authority. Evidently, the economic development of a country is associated with the extent of discrimination through social institutions.

Fig 3.: Gender Inequality According to Income Group



Source: Own Illustration. Data: various sources as described in the text.

Nevertheless, income level alone cannot explain all variation in gender discrimination. A closer look at Fig. 3 suggests that, beyond a certain income level, discrimination has little relationship with economic development. Values for lower-middle (LMC) and upper-middle income countries (UMC) are practically the same and are sometimes even better in the LMCs, thus indicating that discrimination persists although a country has advanced economically. Countries where high income per capita co-exists with discriminatory social institutions include Saudi Arabia and Oman; Madagascar, conversely, is a case of a country where low income does not preclude relatively lower levels of discriminatory institutions.

4. Explanatory Power of the GID

The regional and income-based summary statistics presented in Section 3 suggest that social institutions are substantially more discriminatory against women in some parts of the world (and that those discriminatory institutions are accompanied by unequal access to resources and economic participation); the summary statistics also showed a strong association between discriminatory institutions and low incomes (though there is no clear evidence of a monotonic inverse relationship between income and

discriminatory institutions across the whole sample). The question posed in this section is whether discriminatory social institutions can indeed explain cross-country variations in the economic participation of women.

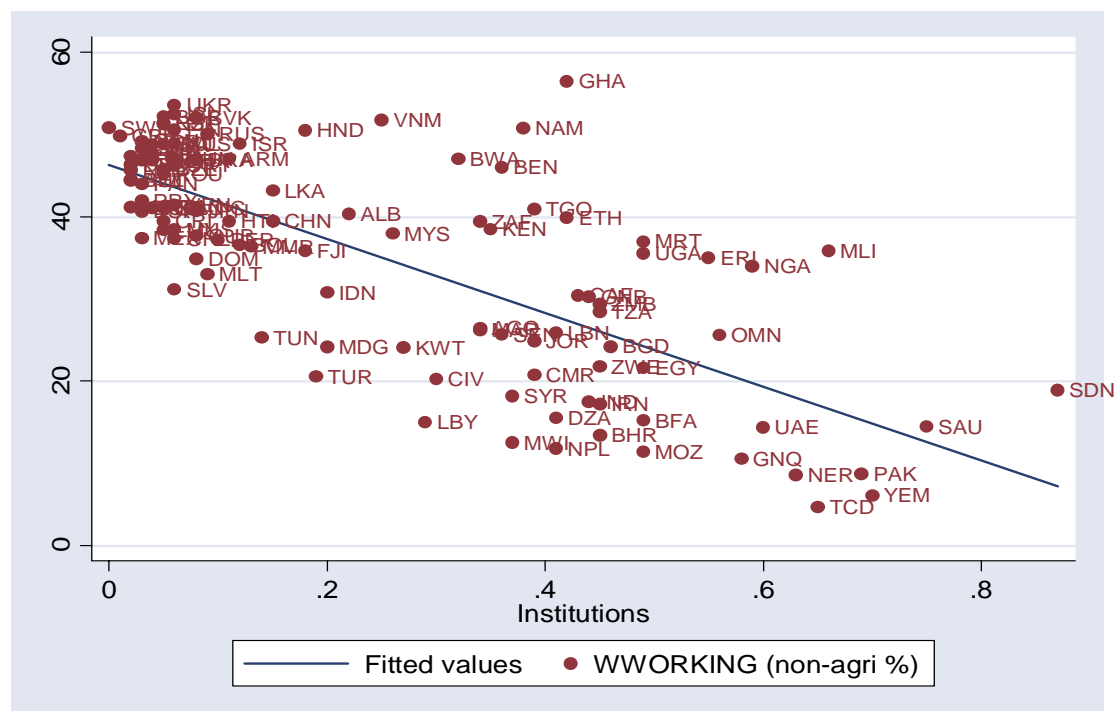
4.1 Direct and Indirect Channels of Social Institutions

As outlined in our theoretical framework (Fig. 1), we distinguish two main channels in which discriminating social institutions can have a detrimental effect on the economic role of women: by directly preventing women from participating in the paid labour market (A to D), and by restricting women's access to resources and thereby indirectly lowering their labour force participation (A to B to D). The following section presents some initial evidence regarding these two channels.

4.1.1 Direct impact channels of social institutions

The relevance of social institutions for women's economic participation is clearly emphasised in Fig. 4, which plots a society's "social institutions indicator" (the average of four indicators introduced in Figure 2: physical integrity, family code, ownership rights and civil liberties) against women as a share of paid workers in the non-agricultural labour-force. The negative relationship between the two variables suggests that the presence of more discriminatory institutions is associated with lower rates of economic participation.

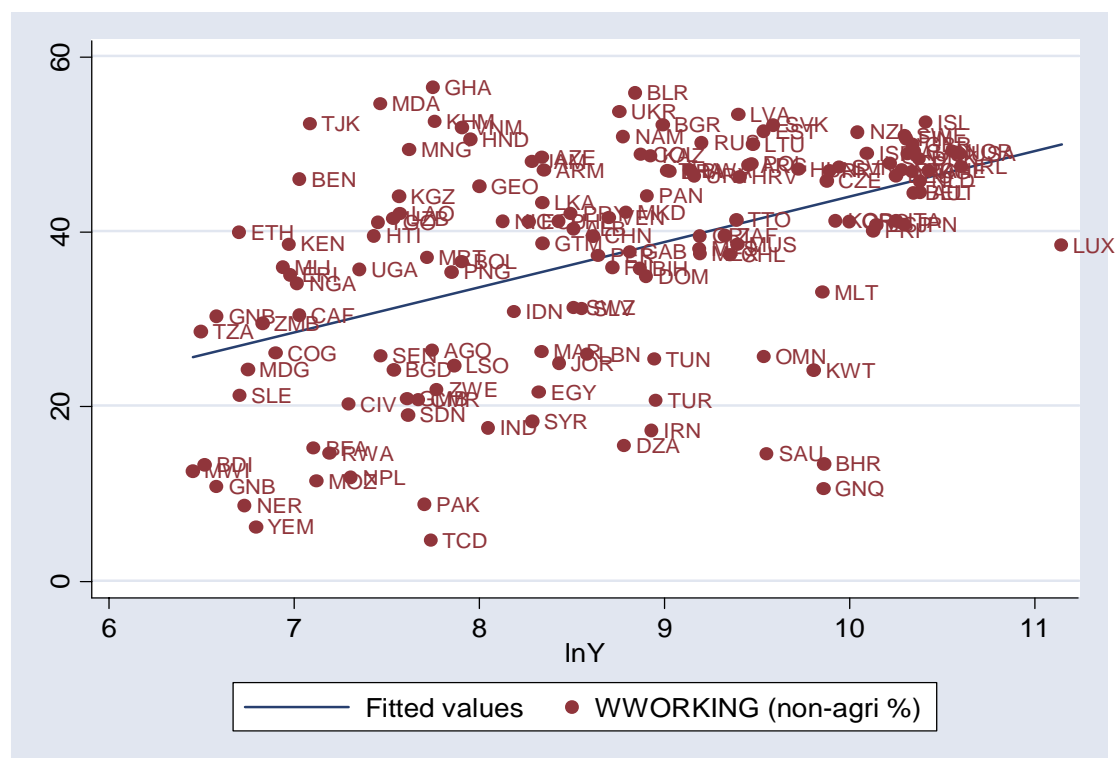
Fig 4.: Social Institutions and Women's Participation in the Labour Market



Source: Own Calculations.

Fig. 5 plots the women's participation in paid non-agricultural work against log GDP per capita. While there is a positive slope to the best-fit line, suggesting that indeed higher income per capita is associated with greater economic participation by women, the relationship is not terribly evident. Especially for the lower-income countries, Fig. 5 displays a cloud of countries without any clear correlation between the two variables.

Fig 5.: Economic Development and Women's Participation in the Labour Market



Source: Own Illustration.

The “social institutions indicator” used in Fig. 4 is a relatively highly-aggregated measure of gender discrimination. In order to explore the relationship between specific social institutions and women's labour force participation we assess the variations in a country's family code, which among other effects has an influence on the average age at which women get married. (Moreover, marriage data are well-documented and reliable.)

Early marriages -- a sign of patriarchal control over the decisions that affect young women' lives -- are particularly common in sub-Saharan Africa, where the average age of women at marriage is 21.23 years. The value is particularly low in Chad, Mali, Mozambique, and Niger where women on average get married at the age of 18. Roughly half of all women in these countries have already been married at least once before the age 20. The percentage of women participating in the paid non-agricultural labour market is generally higher in countries where women get married relatively later.

There is a small set of countries where the rate of female non-agricultural labour-force participation is low despite the fact that women marry at a relatively later age (e.g. Algeria, Bahrain, Libya); there are likewise cases where very early marriage ages do not appear to preclude high rates of labour-force participation (e.g. Ghana, Madagascar, Belarus). Nevertheless, the general trend is clearly positive.

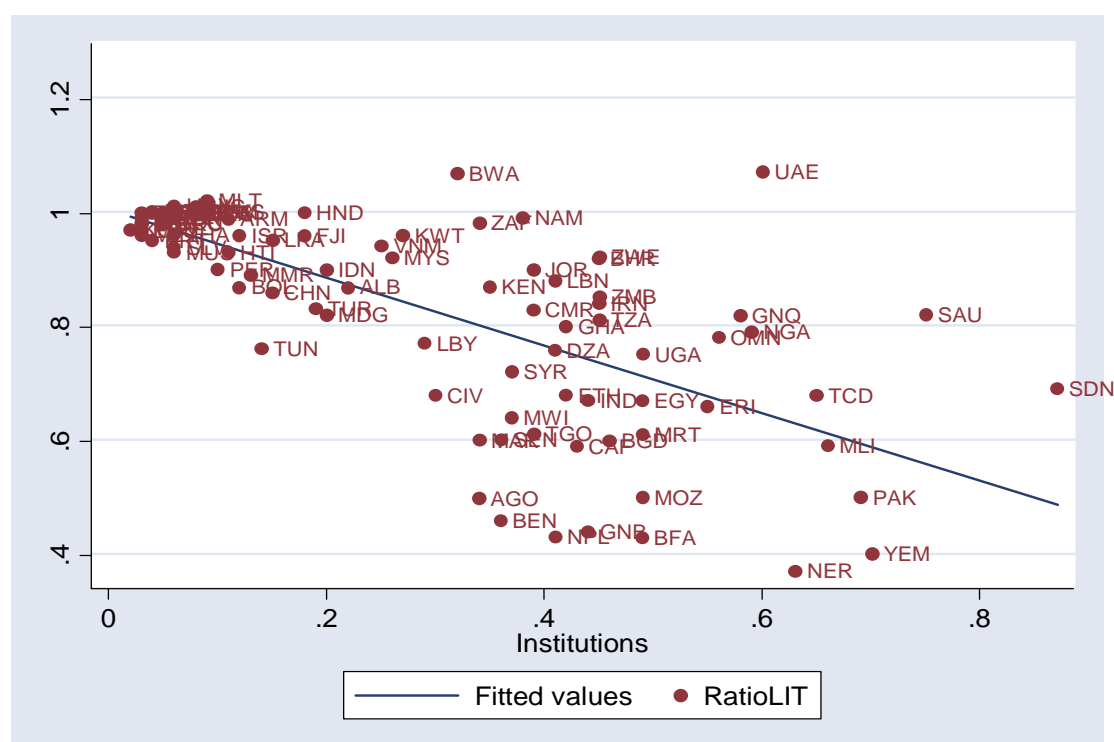
4.1.2 Indirect impact channels of social institutions

We also find empirical support for our hypothesis that social institutions have an influence on the economic role of women through indirect impact channels, i.e. by affecting women's access to resources (health, education, and birth control). This mechanism has already been widely discussed in the literature (e.g. World Bank 2001; Klasen 2002).

Consider access to adequate education. Several indicators included in the GID data base measure the quality of such access, including female enrolment rates in primary, secondary, and tertiary education. In fact, the UN's current initiative to significantly improve women's empowerment in the framework of the Millennium Development Goals specifically focuses on enrolment rates.

While being an indisputable prerequisite for educational attainment, we nevertheless believe that enrolment rates *per se* do not necessarily capture whether women can benefit from adequate educational resources as their success may be undermined by institutional constraints. A focus on a very basic outcome variable of educational attainment, namely literacy rates, demonstrates that discriminatory social institutions can mitigate the impact of reasonably high enrolment rates on the educational attainment of women: thus Fig. 6 plots the social-institutions indicator against the female-to-male literacy ratio, illustrating a clear negative relationship between discrimination and parity in literacy (albeit one marked by substantial heteroscedasticity).

Fig 6.: Social Institutions and Educational Attainment



Source: Own Illustration.

4.2 Econometric Analysis of the Impact of Social Institutions

To summarise, there is a clear relationship between discriminatory social institutions and women's economic participation, one that appears even more robust than that between women's participation and a country's level of economic development. We furthermore provided initial indication of the various channels through which social institutions affect women's labour force participation and distinguished a direct channel from one which primarily operates via women's access to resources such as education or health care. In this section we complement these bivariate results with multivariate regression analysis to further isolate the effect of social institutions and illustrate the utility of the GID data base.

4.2.1 Regression analysis using single variables

In order to analyse the significance of social institutions for the economic role of women, we first consider each variable's separate impact on women's participation in the paid non-agricultural labour force. As indicated in the results summarised in Table 2, all of the social institutions from the GID data base, taken singly, have a statistically significant effect on women's labour force participation while the sign of each coefficient corresponds to our underlying theoretical hypothesis: discriminatory social institutions are associated with lower rates of labour-force participation. (The estimated coefficient on the average marriage age has a positive sign because this is the sole variable in which higher values signify lower discrimination). Explanatory variables in bold-face indicate simple arithmetic averages of the disaggregated variables in that category: thus "Physical Integrity" is the average value of the genital-mutilation and violence-against-women indicators.

Comparing the dimensions of discriminatory institutions, the family code has significant explanatory power with an R-squared of 0.55. This may arise because the family code combines a comparatively larger number of socio-institutional variables than other aggregate indices do. Within the family code category, those institutions that illustrate male domination are of particular importance (i.e. inheritance rights, acceptance of polygamy, and regulations of parental authority). Institutions related to physical integrity, ownership rights, and civil liberties also explain a satisfactory portion of the variation between countries in terms of female labour-force participation (i.e. R-squared values of around 0.30).

Tab. 2.: Single Variable Regression

	Women among paid workers in non-agricultural professions (in percent of total)			
	Estimated Coefficient	Estimated Constant	Number of observations	R-squared
Family Code	-29,67 (11.82)**	45,03 (39.95)**	116	0,55
Age Marriage (Avg.)	1,83 (6.02)**	-6,42 -0,89	149	0,20
Ever married (15-19)	-55,24 (8.18)**	45,00 (32.77)**	150	0,31
Repudiation	-23,21 (8.14)**	39,80 (36.73)**	116	0,37
Inheritance	-20,52 (10.21)**	43,30 (37.86)**	116	0,48
Parental Authority	-19,98 (9.76)**	43,29 (36.70)**	116	0,46
Polygamy	-20,94 (9.90)**	42,91 (37.52)**	116	0,46
Physical Integrity	-33,61 (7.17)**	45,75 (25.53)**	122	0,30
Female Genital Mutilation	-19,17 (4.72)**	37,72 (30.59)**	122	0,16
Violence against women (leg.)	-24,24 (6.37)**	48,69 (21.95)**	157	0,21
Ownership Rights	-23,17 (6.79)**	41,47 (31.39)**	116	0,29
Land	-18,61 (7.18)**	41,92 (31.79)**	116	0,31
Loans	-19,20 (4.90)**	39,66 (29.29)**	116	0,17
Patrimony	-22,44 (6.20)**	40,23 (31.70)**	116	0,25
Civil Liberties	-34,92 (7.66)**	39,12 (36.29)**	116	0,34
Veil	-26,44 (7.81)**	39,30 (36.44)**	116	0,35
Freedom to move	-34,23 (5.59)**	37,78 (33.34)**	116	0,22

*Absolute value of t statistics in parentheses; * significant at 5%; ** significant at 1%*
Source: Own Calculation.

4.2.2 Multi-variable regression and regressions using composite indicators

Table 4 presents results of regression analysis of the female share of non-agricultural paid labour. Column 1 shows a significant positive effect of the (log of) income per capita on women's labour-force participation, but the

significance of per capita income can disappear when additional regressors are added. In the next three models, therefore, we regress women's labour-force participation on log income and an indicator of gender discrimination: the UNDP's GDI index (column 2); the UNDP's GEM index (column 3); and our social institutions indicator. Both of the UNDP indicators have positive and statistically significant estimated coefficients, meaning that improvements in women's status are associated with higher rates of female labour-force participation. However, in the models of columns 2 and 3, the estimated coefficient on log income per capita becomes negative, and insignificant in the GEM model. In the model in column 4, our social institutions indicator has a statistically significant and negative estimated coefficient (recall that higher values of the index mean more discrimination), and per capita income is not significant. The models in columns 2 through 4 illustrate that the effect of higher income per capita on women's economic participation is not statistically robust (clearly calling into question the modernisation theory of gender discrimination); they also illustrate that the social institutions indicator has the best-measured (in terms of t-statistics) effect on women's labour-force participation, and explains a larger share of the variation (in terms of R-squared statistics) in the dependent variable than do the UNDP indicators. When all four sub-indices of social institutions are included in a regression (column 5), only family code and civil liberties are statistically significant. The absence of significance for some of these variables might arise because of correlation among the institutional variables (Table 3).

Tab. 3.: Correlation Table of Institutional Variables

	Family Code	Physical Integrity	Ownership Right	Civil Liberties
Family Code	1.000	-	-	-
Physical Integrity	0.6437	1.000	-	-
Ownership Rights	0.5473	0.3196	1.000	-
Civil Liberties	0.7562	0.5122	0.3942	1.000

Source: Own calculation.

In columns 6 through 8, we include indicators of both social institutions and access to resources. Column 6 includes log income, the social-institutions

indicator, and the ratio of female to male literacy rates: log income is significant (and negative, again), but both the literacy ratio and institutions are significant and have the expected signs. In part to explore the robustness of the effect of access to resources, column 7 replaces the literacy ratio from model 6 with the UNDP's GDI index: here, the estimated coefficient on the institutions index is significant and negative, but the coefficient on the GDI index is not. In model 8, we include one resource-access variable (the literacy ratio) and one institutional variable (the family code sub-index), together with log income. The estimated coefficients on both the literacy ratio and the family code are significant and with the expected signs for women's labour-force participation. In column 9, we add the remaining institutional sub-indices to the model of column 8 and another resource-access variable, the life expectancy ratio; the effect of the literacy ratio remains significant, while, as in the model of column 5, both family code and civil liberties sub-indices of social institutions have significant depressive effects upon women's labour force participation.

Most of the models in Table 4 were re-estimated with a series of regional dummy variables; these results are not qualitatively different from those in Table 3 and are not reported here. The principal finding is that once social institutions are controlled for, regional dummies do not have significant estimated coefficients. Thus, while we have observed in Section 3 that some regions have significantly higher prevalence of discriminatory institutions (e.g., Middle East and North Africa, South Asia, and Sub-Saharan Africa), these multivariate results suggest that it is indeed these institutions and not some un-measured regional effect that accounts for the differences in women's labour-force participation.

Taken as a whole, the exploratory regression analysis reported in this section suggests that variables measuring social institutions are associated with women's labour force participation in a statistically-significant way. These associations are at least as robust, if not more so, than the relationships between women's economic participation and more conventionally-used

measures of women's access to resources (such as those used in the Human Development Indices); the social institutions variables also account for similar or larger shares of cross-country variation (as measured by R-squared values) than do human-development measures. More generally, these results illustrate the efficacy of the new GID data base introduced in this paper.

Tab. 4.: Multi-Variable Regression and Regressions Using Composite Indicators

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Women as a share of paid workers in the non-agricultural sector (%)								
Log Income	5.207 (6.52)**	-7.08 (3.61)**	1.368 -0.73	0.274 -0.3	1.121 -1.17	-2.48 (2.11)*	-1.14 -0.5	-2.204 -1.87	-1.652 -1.32
Family Code					-21.784 (4.63)**			-19.263 (4.57)**	-12.11 (2.20)*
Physical Integrity					-2.078 -0.38				-1.117 -0.2
Civil Liberties					-16.414 (3.61)**				-14.006 (2.98)**
Ownership Rights					2.3 -0.53				2.686 -0.59
Social Institutions				-43.678 (8.35)**		-30.073 (4.73)**	-40.796 (6.13)**		
Literacy Ratio						31.657 (3.69)**		30.754 (3.48)**	27.086 (3.11)**
Life-expectancy Ratio									56.973 -1.74
GDI		83.799 (6.82)**					11.652 -0.7		
GEM			26.646 (2.46)*						
Constant	-8.067 -1.16	40.339 (4.17)**	15.783 -1.2	43.961 (4.88)**	34.569 (3.67)**	36.679 (3.64)**	47.53 (4.45)**	33.987 (3.44)**	-29.701 -0.83
Observations	144	134	64	111	111	95	109	95	95
R-squared	0.23	0.43	0.32	0.54	0.6	0.55	0.55	0.55	0.6

*Absolute value of t statistics in parentheses: * significant at 5%; ** significant at 1%*

Source: Own calculations.

5. Conclusions

This paper presents the Gender, Institutions and Development (GID) data base, a new analytical tool to measure gender (in)equality, compiled to shed light on the increasingly important area of the impact of institutions on development outcomes. To that end, the GID data base includes frequently-consulted variables such as female access to education, health, and birth control; but it also compiles, for the first time in an easily usable fashion, measures of discriminatory social institutions, including the degree of women's freedom related to physical integrity, civil liberties, ownership rights and the family code. The GID data base is organised following a conceptual framework linking "outcome" variables like women's rate of participation in the labour force to input variables such as the institutional framework, women's access to resources, and the level of economic development. The paper demonstrates the usefulness of the GID data base by means of an analysis of the determinants of cross-country variations in women's labour-force participation. The results of the econometric analysis suggest that the quantitative significance of institutional factors overrides more commonly used variables such as income per capita. This finding supports the interpretation that one cannot necessarily expect an improvement of the economic role women as incomes rise and that policy measures – like the recent reforms to the family code in Morocco – have to be implemented that address institutional bottlenecks.⁴

⁴ The interaction of state policy, women's well-being and pre-existing social institutions is analysed with reference to China, India and Korea in Das Gupta et al. (2004).

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