CHAPTER 6

Globalization's impact on gender equality: What's happened and what's needed

The world is becoming more and more integrated. What started with greater trade openness is translating into growing global economic integration and interdependence, as transnational movements of people and capital accelerate and information becomes ever more accessible. Technological developments are rapidly changing the way people learn, work, and communicate. And the world population is concentrating in medium and large cities.

The new forces associated with globalization—understood as the combination of economic integration, technological diffusion, and greater access to information—have operated through markets, formal institutions, and informal institutions to lift some of the constraints to greater gender equality.

First, trade openness and the diffusion of new information and communication technologies (ICTs) have translated into more jobs and stronger connections to markets for many women, increasing their access to economic opportunities. In some countries and sectors, women's wages have also increased relative to those of men.

Second, gender inequality has more costs in an integrated world. It can diminish countries' ability to compete internationally—particularly for countries with export potential in goods and services with high female employment. And given growing global awareness of women's rights, continued gender inequality can also hurt a country's international standing. These factors strengthen the incentives for policy action toward gender equality around the world.

Third, greater access to information has allowed many in developing countries to learn about life and mores in other parts of the world, including those pertaining to the role of women, possibly affecting attitudes and behaviors. A shift toward more egalitarian gender roles and norms has also been facilitated and, in some cases, reinforced by women's economic empowerment.

But in the absence of public policy, globalization alone cannot and will not reduce gender inequality. Despite significant increases in agency and in access to economic opportunities for many women in many countries, the rising tide has not lifted everybody. Those often left behind are women for whom the existing constraints are most binding. That is why public action aimed at closing existing gender gaps in endowments, agency, and access to economic opportunities is necessary for countries to fully capitalize on the potential of globalization as a force for development and greater gender equality.

This chapter discusses the evidence on the impacts of economic integration, technical change, and access to information on gender inequality. It examines the literature and, where knowledge gaps exist, draws on new work commissioned for this Report. This new work focuses on gender equality in trade,[1] technological change and diffusion,[2] and access to information.[3] Existing evidence is strongest on the impact of trade and technology on labor market outcomes. And it is weakest, at least in the economic literature, on the impact of new trends on gender roles and norms, so that discussion is more tentative and speculative.

THE WORLD IS BECOMING MORE INTEGRATED—RECENT TRENDS AND FACTS

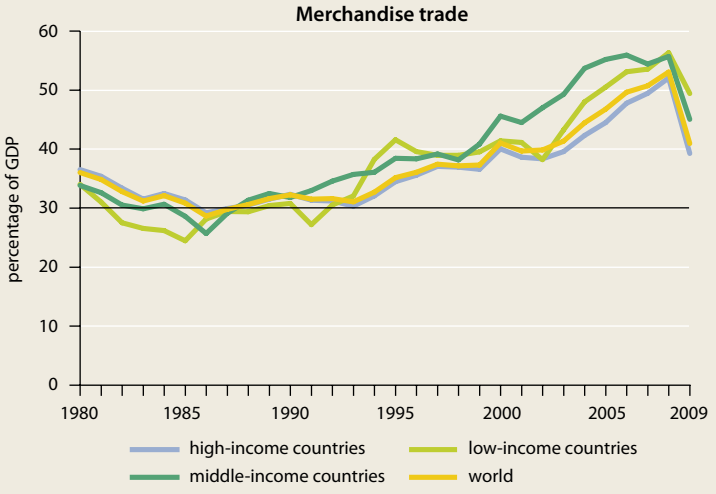
The world has witnessed an enormous economic transformation over the past three decades, fostered by growing global flows of goods and services, technology, and information. These changes have transformed the way domestic and global markets and institutions function—and have thus changed the economic landscape for individuals, households, firms, and governments. A few numbers illustrate the magnitude of these changes.

Merchandise trade in the low- and middle-income countries rose from 31 percent of gross domestic product (GDP) in 1993 to 57 percent in 2008, reflecting both larger North-South and South-South flows (figure 6.1).[4] Significant increases in trade openness occurred in all regions, particularly in South Asia, where merchandise trade rose from 16 percent of GDP to 41 percent, and in East Asia, where it rose from 35 percent to 52 percent. Changes in foreign direct investment (FDI) have also been significant, with flows increasing from 0.5 percent of GDP in 1980 to 4 percent in 2007, followed by a decline during the recent financial crisis.

As goods, services, capital, and people flow across countries faster than ever before, information and knowledge have become global commodities. Technological change crosses borders embedded in traded goods, accelerating its adoption and adaptation. And although technology transfers tend to happen first in exports and imports, they quickly spread beyond them as firms interact and workers change jobs.[5] Similarly, ideas and skills move from one country to another as the share of skilled migrants in the pool of international migrants increases—from about 25 percent in 1990 to 36 percent in 2000.

Thanks to the spread of cell phones and the Internet, more men and women are gaining access to information—global, domestic, and local. In 1998, only 20 percent of people in developed countries and about 1 percent in the developing world had a cell phone subscription. By 2009, these shares had climbed to 100 percent and 57 percent. Internet access and use have also grown. In high-income countries, Internet users increased from 12 percent of the population in 1998 to 64 percent in 2009, and from near 0 to 17.5 percent in developing countries (figure 6.2).[6]

FIGURE 6.1 *Global trade has grown rapidly since 1990*



Source: World Development Indicators.

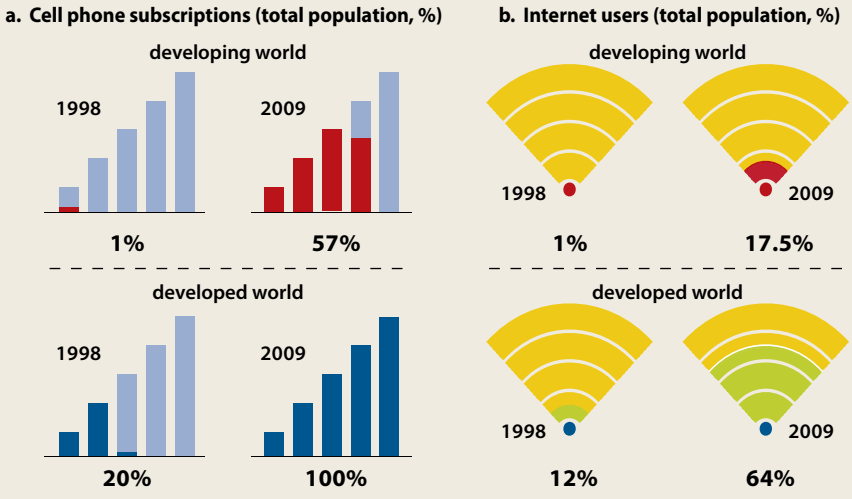
These changes have taken place against (and possibly contributed to) the backdrop of rising economic growth in most areas of the world, particularly in some developing countries—even with the recent food, fuel, and financial crises. Until the second half of the 20th century, no country had sustained annual per capita income growth averaging 5 percent or more over 15 years. But since then, more than 35 countries have accomplished that feat, three-quarters of them in the developing world.[7]

TRADE OPENNESS AND ICTS HAVE INCREASED WOMEN'S ACCESS TO ECONOMIC OPPORTUNITIES

Over the past 25 years, trade openness and the spread of information and communication technologies have expanded economic opportunities.

The demand for female workers in the export and ICT-enabled sectors has increased, and as women have filled these new jobs, the gender distribution of employment across sectors and across countries has changed. Women have moved out of agriculture and into manufacturing and particularly services. These changes have taken place across all countries, but female (and male) employment in the manufacturing and services has grown faster in developing than

FIGURE 6.2 *Cell phone and Internet access has increased significantly in both developed and developing countries*



Source: International Telecommunications Union 2010.

developed countries, reflecting broader changes in the global distribution of production and labor. In developing countries, the shares of female manufacturing and service employment in global female employment increased from 6 and 17 percent respectively in 1987 to 7 and 24 percent in 2007. In contrast, in developed countries the share of female manufacturing employment in global female employment fell from 12 percent in 1987 to 6 in 2007, while the share of female service employment rose from 44 to 46 percent over the same period (figure 6.3).[8] Changes in male employment shares were qualitatively similar but different in magnitude.

At the same time, improvements in ICT technology have allowed women (and men) around the world to access markets in growing numbers by lowering information barriers and reducing the transaction costs associated with market work. Because time and mobility constraints are more severe for women than men, women stand to benefit more from these developments (chapters 4 and 5).

Greater access to economic opportunities and, in some cases, higher returns to economic activity provide stronger incentives to accumulate human capital, particularly for women, and are likely to increase investments in the skills of girls and young women—tomorrow's workers (box 6.1).

Female workers wanted

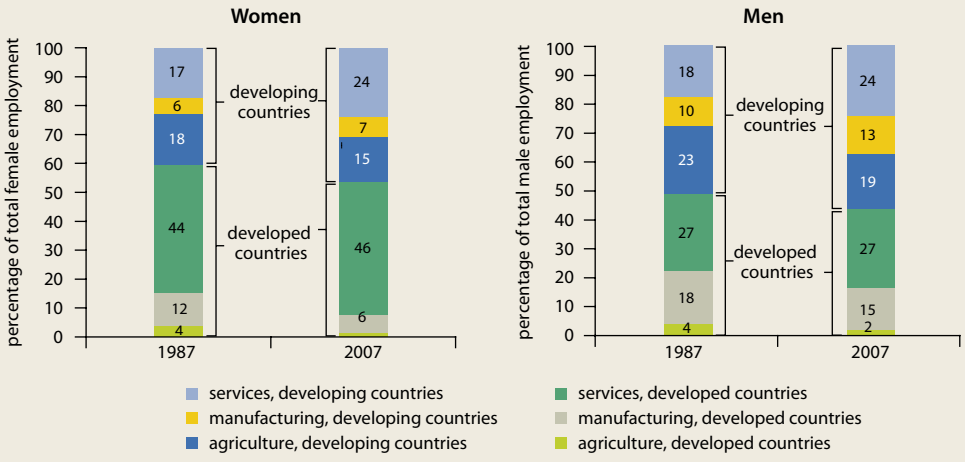
The early years of trade liberalization were mainly characterized by the move of textile and information technology manufacturing from developed to developing countries.[9] New employment in manufacturing often consisted of labor-intensive assembly line jobs, and the initial gains in manufacturing employment were greatest in countries with abundant unskilled labor and a comparative advantage in producing basic manufactures.

This shift in geographic location of production promoted female labor force participation and the feminization of employment in manufacturing in developing countries—particularly in Asia and Central America.[10] In the Republic of Korea, the share of women employed in manufacturing grew from 6 percent in 1970 to around 30 percent in the 1980s and early 1990s. The importance of manufacturing as an employer of female labor in the Republic of Korea has since declined (to 14 percent in 2007), but the sector still employs 10 times more women today than in the 1960s. Similarly, in Mexico, female employment in manufacturing grew from 12 percent in 1960 to 17 percent in 2008, with 10 times more women in 2008 than in 1960.[11]

In the past 15 years, the spread of ICTs has expanded trade in services and has, to a lesser extent, promoted the growth of ICT sectors in

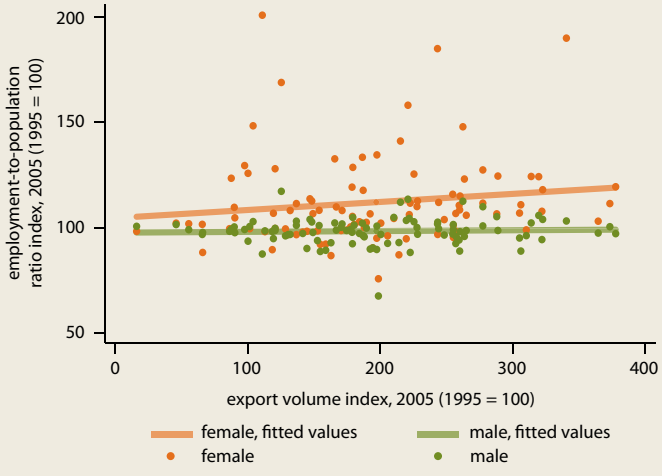
FIGURE 6.3 *Economic opportunities have changed*

FIGURE 6.3a *Female (and male) employment in the manufacturing and service sectors has grown faster in developing countries, reflecting the broader changes in the global distribution of production and labor*



Source: WDR 2012 team estimates based on LABORSTA International Labor Organization.

FIGURE 6.3b *. . . and increases in female employment levels (but not male) between 1995 and 2005 were correlated with increases in international trade*



Source: WDR 2012 team estimates based on World Development Indicators.

developing countries. As a result employment shifted from manufacturing, where jobs could be automated, to services. In the process, demand for nimble fingers on the assembly line gave way to demand for computer literacy as the tasks became more sophisticated and direct interaction with clients and customers more common.

As technology advanced, low-skilled women in light manufacturing were often displaced by men. In Malaysia, women made up to 80 percent of manufacturing workers in the first phase

BOX 6.1 *A job today or a better job tomorrow—The impact of increased access to economic opportunities on women's human capital*

Globalization's impact is not limited to today's female workers—stronger economic incentives to accumulate skills could also foster higher labor force participation among young women in the years to come. Whether and how much expected economic returns to education affect schooling decisions have received much attention in the literature over the past few decades, particularly in developing countries, where compulsory education laws either do not exist or are enforced poorly and where a large part of the young population does not go to school. But families and individuals do respond to higher economic returns by increasing their investments in education,[a] and the prospect of higher returns matters more for girls (chapter 3).

In this context, increased employment opportunities in export-oriented sectors and ICT-related jobs are expected to strengthen existing incentives for investments in education. In India, the emergence of jobs linked to information-technology-enabled service centers (mainly call centers) increased the number of children enrolled in school by 5.7 percent. English-language schools accounted for all of this change, consistent with the idea that new job opportunities were linked to specific skills, such as speaking English.[b] South Africa provides similar evidence.[c]

Because female workers have benefited disproportionately more than men from the changes brought about by trade openness and technological change, girls and young women should have stronger incentives to go to school than boys and young men. For example, in rural India business process outsourcing recruiting and placement services increased employment among young girls, with no effect for older women or for men of any age. Girls ages 5–15 in villages that received the recruiting services were 3–5 percentage points more likely to be in school than comparable girls in other villages. There was no change for boys.[d]

a. Foster and Rosenzweig 1996; Jensen 2010b.
b. Oster and Millet 2010.
c. Levinsohn 2004.
d. Jensen 2010a

of globalization, but by 1987 that percentage had fallen to 67 percent and has since continued to decline.[12] In Latin America, too, low-skilled female workers in light manufacturing, particularly electronics, lost their jobs as various aspects of production became automated.[13]

New ICT-enabled jobs in services—particularly information processing in banking, insurance, printing, and publishing—were mainly taken up by women, but not the same women who lost their manufacturing jobs, because the new jobs required a different set of skills, including keyboarding, English, and sometimes French. Female employment in data entry and processing was initially highest in Barbados, Jamaica, and the Philippines.[14] Later, ICT-related jobs were concentrated in software, call centers, and geographical information systems, and clustered in Malaysia and India, particularly in Delhi and Mumbai, where call centers employ more than 1 million people, most of them women.[15]

In both manufacturing and service exports, growth in female employment was faster than ever before and faster than in other sectors. And although exports in many countries initially accounted for a small fraction of total female employment, their importance grew over time as a result of rapid employment growth.

Global agriculture has also changed. The export share of traditional crops has declined, while the share of nontraditional and high-value-added exports—such as horticulture, floriculture, protein-rich meats, and processed foods—has grown rapidly. Their expansion—driven by advances in refrigeration, lower transport costs, and the growth of supermarkets as dominant buyers in global value chains—has created a wide range of jobs.[16]

But the feminization of employment through exports appears to be less common in agricultural economies. Growth in traditional agricultural exports has benefited men more than women because women are less likely to work on commercial crops and are crowded out of traditionally female-intensive crops when these crops become commercial.[17] In contrast, nontraditional and high-value-added exports have stimulated higher female employment in export production, although the impacts vary by country and product.[18] In Chile and South Africa, new female employment was mainly temporary and seasonal,[19] while in Colombia and Kenya, women were more often hired as permanent workers in the flower industry.[20]

Higher female employment in exports has often (but not always) been accompanied by wage gains. Transnational and exporting companies may be able to pay higher wages than locally owned firms and firms producing for the domestic market. They also may be better able to insulate their workers from economic cycles—and their workers may be better protected by labor legislation and are more likely to be unionized and thus eligible for benefits.[21] That is why female wages are frequently higher[22] and the gender wage gap is lower in exports than in other sectors, even after controlling for worker characteristics. Evidence from China shows that female workers receive higher wages in the new export-oriented industries than in the older state industries.[23] In Mexico, over 1990–95 a

higher export orientation was associated with a narrowing of the gender wage gap.[24] And in Bangladesh and Morocco, wage discrimination against women in textile exports was lower than in other manufacturing in the early stages of liberalization, and it declined even further over time.[25]

In some places, however, greater openness has had little impact on the gender wage gap, and in others, the gains have been only temporary.[26] In the Republic of Korea, greater openness had little impact or even widened the gender gap. And data from Mexico and Honduras suggest that wages in recently established export processing zones tend to be higher than local wages but over time the differences narrow.[27] In the developed world, the impact of higher trade openness on women and men has been extensively debated (box 6.2).

Brain or brawn?

ICTs have transformed the organization of economic activity over the past quarter century, increasing the demand for and the returns to brain (cognitive) and nonroutine skills relative to brawn (manual) and routine skills (box 6.3).[28] In the United States, for example, brain tasks increased and brawn tasks declined between 1950 and 2005.[29] Driving this shift were changes in the composition of the economy's occupational structure, such as the rise in the number of doctors per 100 workers and the fall in the number of production line operators per 100 workers. Changes in specific occupations, such as the growing use of robotics for production line operators, also contributed to the shift. As with growing trade in goods and services, these shifts have boosted demand for female workers.

These changes are captured in figure 6.4, where circles represent different occupations. Circles become bigger or smaller between 1950 and 2005 depending on whether the number of people employed in that occupation increased (lawyers and judges) or decreased (farmers) during the period. Similarly, movements from left to right or right to left represent changes in the brain requirements of a particular occupation, whereas movements up and down capture changes in the brawn requirements—where requirements are measured on a scale of 0 to 100. As brain requirements increase and brawn requirements decrease between 1950 and 2005, most circles shift downward and to the right.

BOX 6.2 *The impact of globalization on men (and women) in developed countries*

Greater economic integration has also had an impact on workers in the developed world. It has benefited skilled workers, sometimes at the expense of unskilled ones. It has increased the demand for skilled workers, relative to that for unskilled ones. And this shift has translated into greater wage inequality in the United States and greater unemployment among the unskilled in Europe, where labor market regulations prevented the wages of the unskilled from falling.[a]

Impacts were larger among men than among women because men were concentrated in the industries and occupations most affected by foreign competition and the relocation of production to the developing world. Higher trade openness accounts for 12–33 percent of the employment losses in manufacturing and for about 20 percent of the rise in the skill premiums during the 1980s and 1990s in the United States.[b] Technological change also accounts for an important share of the increase in skill premiums. Evidence of trade's impact on women's wages and employment is more mixed.[c]

Trade liberalization and foreign direct investment leading to the offshoring of medium- and high-skill jobs may have also raised job insecurity. Workers in the United Kingdom in sectors with high foreign investment are more likely to report greater economic insecurity.[d] And U.S. workers in service activities and occupations that are potentially tradable report both greater insecurity and a stronger desire for a strong government safety net.[e]

In some cases, the impact of these changes reaches beyond the economic sphere. The notion of men as the main breadwinners has been challenged by the greater economic opportunities for women and the job destruction in male-dominated sectors; these changes have often led to adjustment in the power balance in families.

a. Freeman 1994; Wood 1995.
b. Baily and Lawrence 2004; Bivens 2004; Bivens 2006; Harrison, McLaren, and McMillan 2010; Lawrence 2008.
c. Black and Brainerd 2004; Wood 1991.
d. Scheve and Slaughter 2004.
e. Anderson and Gascon 2007.

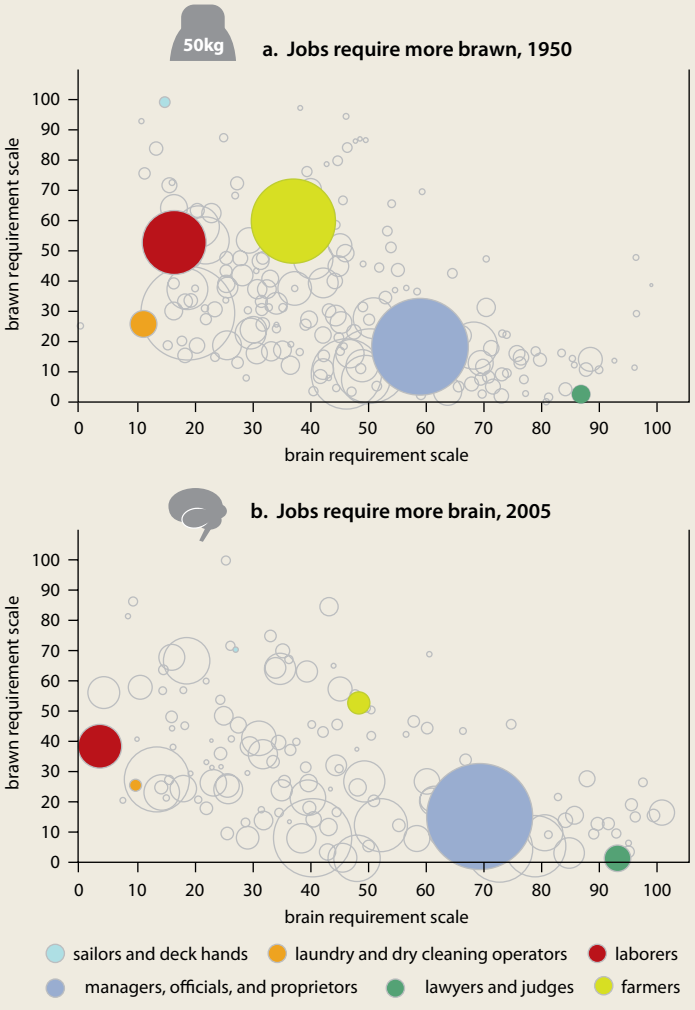
BOX 6.3 *Occupational tasks and skill requirements—Getting the terms right*

The work performed in a particular occupation can be broken down to tasks, each characterized by its intellectual or physical requirements and by how amenable it is to standardization. The discussion here uses the word pairs "cognitive/manual" and "brain/brawn" interchangeably to capture whether a task is primarily intellectual or physical. Similarly, tasks amenable to standardization are referred to as routine and those that are not as nonroutine. These choices reflect the terminology used in the literature on the impact of technological change on occupational skills requirements.

Both manual and routine cognitive tasks are well defined in the sense that they are easily programmable and can be performed by computers at economically feasible cost—a feature that makes them amenable to substitution for computer capital.[a] Nonroutine and cognitive tasks, by contrast, are not well defined or programmable and, as things currently stand, cannot be easily performed by computers.

a. Levy and Murnane 1992.

FIGURE 6.4 *The United States experienced a dramatic increase in brain requirements and a decline in brawn requirements between 1950 and 2005*



Source: Rendall 2010.

Similar evidence of the impact of ICT and computers on the demand for brain versus brawn is also available for other developed countries.[30]

Traditionally, men have been more likely to be employed in sectors and occupations with stronger physical requirements than women (men have an advantage in brawn). So computers, by deemphasizing physical skills, should favor women, even if women have no advantage over men in using a computer or acquiring computer skills. Evidence from the United States and Germany supports this idea. Sustained increases in the demand for brain versus brawn associated with ICT and the computerization of the workplace explain most of the observed rise in demand for female workers, female labor force participation, and female employment in these countries over the past few decades.[31] In addition, increases in the returns to brain relative to brawn can account for a large fraction of the reduction in the gender wage gap in both countries since the 1970s and 1980s.[32]

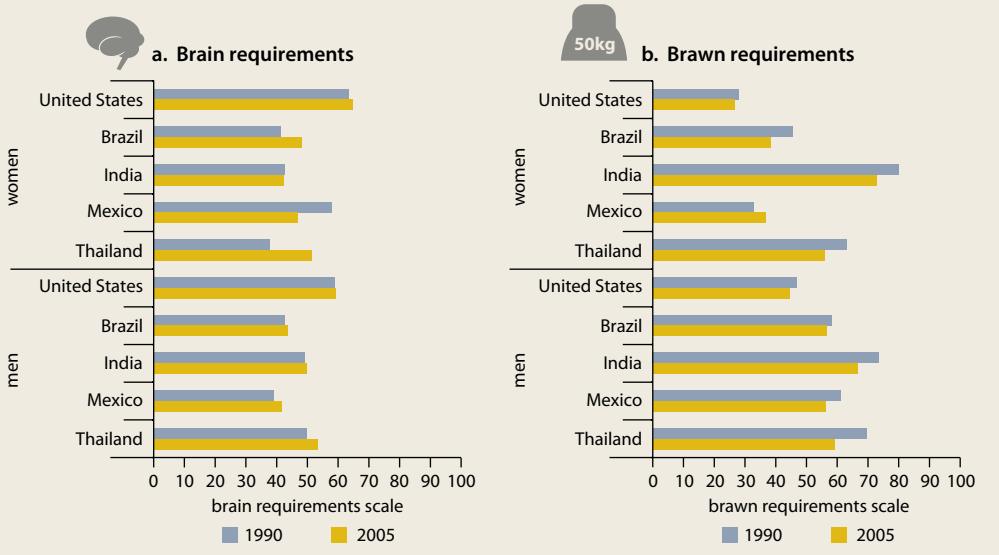
To the extent that economic integration and particularly foreign direct investment promote the move of technological change from the developed to the developing world and facilitate its adoption and adaptation, the relative demand for—and the returns to—brain should increase similarly in developing countries.

The data on this question are very limited,[33] but new work for this Report provides supporting evidence from Brazil, India, Mexico, and Thailand during 1990–2005.[34] In all four countries, brawn requirements were significantly higher and brain requirements significantly lower in 1990 than those in the United States in 1950. But differences then diminished, as brain requirements increased and brawn requirements decreased for both men and women—driven mainly by the decline in the relative importance of agricultural employment and the associated changes in the occupational structure of the economy.

In Brazil, Mexico, and Thailand, women were in occupations with lower brawn requirements than men at the beginning of the period, while in India brawn requirements were similar for women and men because of women's heavy presence in agriculture. In Brazil, India, and Thailand, brain requirements increased faster for women than for men. In Mexico, by contrast, the expansion of low-skill female *maquila* employment meant that brain requirements declined and brawn requirements increased slightly among women (figure 6.5).[35]

> "The world is getting computerized and without knowledge of computers you will be left behind. So I have started to learn how to use a computer now."
>
> *Young woman, Bhutan*

FIGURE 6.5 ***Men and especially women in Brazil, India, Mexico, and Thailand have experienced an increase in brain requirements and a decline in brawn requirements over the past 15 years***



Source: Rendall 2011.

Changes in the supply of and returns to brain and brawn have also narrowed the gender wage gap in these countries, although the impacts vary more widely. In Brazil and India, these changes account for a large part of the observed decline in wage differences between men and women during 1990–2005. In Mexico, where the gender wage gap increased slightly, the rise in the returns to brain mitigated the widening of the gap. In Thailand, changes in the supply of and returns to brain and brawn cannot explain changes in the gender wage gap—primarily because men and women are distributed fairly evenly across sectors and occupations.[36]

More connected and better informed—ICTs have increased women's access to markets

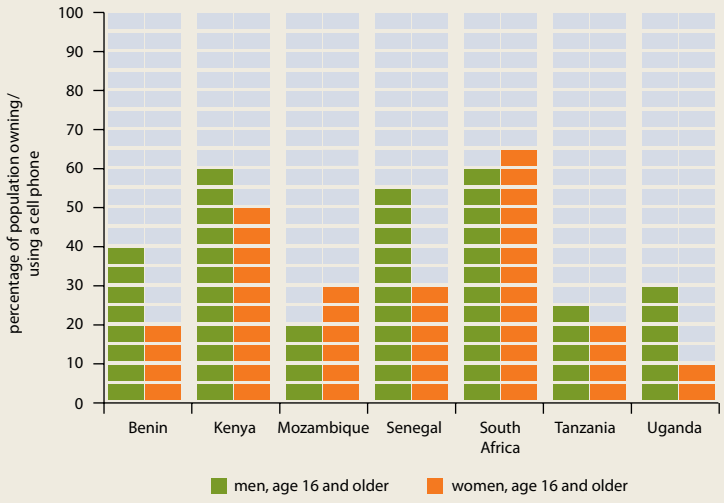
ICTs can improve access to markets and increase participation in market work by reducing transaction costs associated with time and mobility constraints. They facilitate the gathering and transmission of price and other information and increase the flexibility in where and when economic activities can occur. Because women often face more restrictions than men in their mobility and available time (chapters 4 and 5), they stand to benefit more from these developments.

The focus here is on cell phones and the Internet because they are the two most commonly available ICTs outside the workplace and their coverage is expected to continue to rise rapidly.

Mobile phone access, very high in developed countries, has grown substantially in the recent past in the developing world, and the gap between the two is closing fast. Within countries, gender differences in cell phone access and use are almost imperceptible in high- and middle-income countries, especially among young people, but gender differences are still large in low-income countries, where a woman is 21 percent less likely than a man to own a mobile phone. This figure increases to 23 percent in Africa (figure 6.6), 24 percent in the Middle East, and 37 percent in South Asia.[37]

In contrast, the differences in Internet access and use between developed and developing countries are still very large, and gender gaps are significant in some countries. Among countries with data, Internet use ranges from 90 percent of the population in Iceland to 10 percent in Honduras and Nicaragua. In addition, gender gaps are substantial within some developed and

FIGURE 6.6 *In Africa, women are less likely than men to own or use a cell phone*



Source: www.ResearchICTafrica.net.

developing countries and appear to be uncorrelated with the overall levels of access in the country—in Luxembourg, Serbia, Switzerland, and Turkey, differences in access to Internet between men and women exceed 10 percentage points (figure 6.7).

So, mobile phones should have had a much more transformative impact than the Internet in developing countries so far. The evidence on both aggregate and gender-disaggregated impacts of cell phones on labor market participation and access to economic opportunities in these countries is surprisingly sparse, however, with most information coming from case studies, many of them in Africa and South Asia.

Cell phone access and use can alleviate time and mobility constraints for women by increasing the ability to coordinate their family and work lives, reducing the cost of money transfers, and cutting down the physical labor or travel required to discover information (including avoiding fruitless trips to get supplies or meet customers).[38] In Senegal, female fishmongers report that access to cell phones facilitates communication with their clients and suppliers, reducing travel time and costs, and with their families while they are away from home.[39] Similarly, 41 percent of women interviewed in Bolivia, the Arab Republic of Egypt, India, and Kenya declared that owning a mobile phone had increased their income and their access to economic opportunities. The impacts were significantly higher among female entrepreneurs: female business owners reported that they were 2.5 times more likely than nonbusiness owners to use their mobile phone to earn income, and they were significantly more interested than other women in receiving services such as notifications of money transfers on their phones (63 percent versus 41 percent).[40] Finally, while the focus here is on access to economic opportunities, the impact of mobile phones is broader (box 6.4 and chapter 7).

> "Everybody uses cell phones, even market women and all. For example, when their goods come, the person will just call them."
>
> *Young woman, Liberia*

In many cases, women, particularly rural women, were willing to reduce expenditures on other items to have access to a mobile phone, suggesting that the perceived benefits outweighed the costs, which averaged 3.5 percent of household income among those surveyed. Thirty-four percent of women in rural Bolivia, Egypt, India, and Kenya reallocated resources away from other items to pay for a phone subscription, compared with 20 percent among all women surveyed and 12 percent among women who do paid work.

Closing the gender gap in cell phone access would bring the benefits of mobile phones to an additional 300 million women in low- and middle-income countries. And it could also generate up to $13 billion in incremental revenue to mobile operators, given that women represent two-thirds of the untapped market for mobile growth.[41]

The picture is quite different for the Internet. Low private access in the developing world, especially in rural areas, has severely limited its impact on access to economic opportunities—beyond the impact of ICTs on outsourcing and service export employment discussed earlier. Governments and development agencies have set up village "telecenters" for public use, generally as a fee for service, to increase access to basic ICT services among underserved populations. These centers generally offer computers linked to the Internet and are available for word processing and graphics work, faxes, e-mail, photocopying, and phone lines. They may also feature

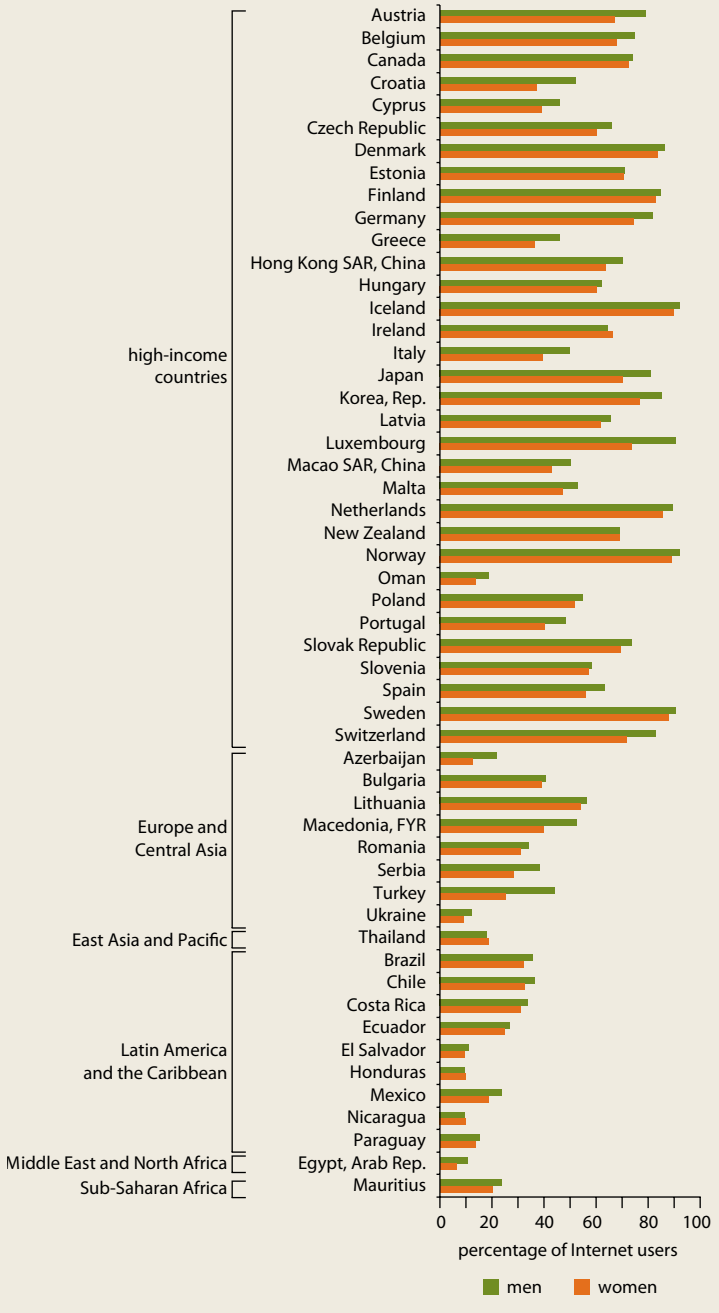
training on the equipment, and some incorporate radio broadcasts or video resources.

The lack of systematic evaluation again makes it difficult to assess whether these centers contribute much to business, particularly for female entrepreneurs in the local community, but anecdotal evidence suggests some positive impacts.[42] In Cameroon, 50 percent of female entrepreneurs in textiles reported using these centers for both professional and social uses and extolled their usefulness for business-related communication.[43] But given high set-up and maintenance costs for telecenters, more conclusive evidence is needed on their impact on (women's) labor force participation and access to economic opportunities. In other places, groups of female entrepreneurs have used the Internet to have more direct access to domestic and international markets. In Morocco, home-based female weavers use the Internet to sell rugs and other textiles and to keep a larger share of their profits than traditional middle-man-based systems.[44]

In high-income countries, by contrast, ICTs allow people to work from different locations and on different schedules—in other words, to work in more flexible ways, lowering the transaction costs in market work. Telecommuting (or telework) is fueled by increased access to home computing systems, complementary telecommunication devices, and cheaper implementation costs associated with lower-priced equipment and broadband services. In the United States, 26 percent of workers used telework fully or regularly in 2009. In the European Union, telework almost doubled in 2000–05 to reach 9 percent of all workers. This trend appears to reflect broad practices. Data from the Netherlands suggest that the proportion of companies employing teleworkers doubled from 2003 to 2007.[45]

To the extent that time constraints are more binding for women, particularly those in families with children (chapter 5), telework can have big gender impacts. Seven percent of working women in Europe report that they telework regularly, compared with 12 percent of men. These differences reflect the fact that telework is more common in sectors where male employment is dominant. However, it is women who have experienced faster growth in telework in the past few years in almost every European country for which data is available, suggesting a stronger willingness or desire among women to take advantage of more flexible work arrangements (figure 6.8).

FIGURE 6.7 ***Differences in Internet access and use between developed and developing countries are still very large, and gender gaps are significant in some developed and developing countries***



Source: World Telecommunication/ICT Indicators database.

Home-based telework is much more limited in other developing regions. Even in dynamic cities such as Mumbai and Kuala Lumpur, the incidence of telework is 0.4–1.0 percent of em-

BOX 6.4 *Leveraging mobile and ICT technology to improve access to services*

Mobile phones, the Internet, and more traditional communication technologies, such as radio, are providing new platforms to disseminate information and increase access to services among those in remote or underserved areas and among those with lower mobility. Because women are overrepresented in these groups, they tend to benefit disproportionately from these initiatives—even when the initiatives are not targeted to women.

Most experiments have been in banking, health, and education. A few examples follow. Mobile phone technology provides access to financial services, such as processing money transfers and small payments, and promotes savings (M-PESA in Kenya). Text messaging provides women and health workers valuable information about pre- and postnatal care, nutrition (Text4Baby in the United States and the Russian Federation, Rapid SMS in Rwanda), and ongoing treatments. Some projects allow for interactions with users, including the customization of services (Wawanet in Peru). And some health services have been combined with other tools to promote savings to pay for the cost of prenatal care and delivery (Mamabika, in coordination with M-PESA, in Kenya). Mobile phones and the Internet also promote literacy (Mobilink and United Nations Educational, Scientific, and Cultural Organization in Pakistan) and facilitate access to distance education, particularly higher and vocational education (Community Nurses in Kenya).

Beyond access to services, mobile phones and the Internet allow women to be more connected to each other and their communities (Project Zumbido in Mexico, Tostan and UNICEF in Senegal) and to have a stronger social and political voice (Mobili-ise in Kosovo).

Most of these initiatives are fairly new and have not yet been evaluated. Moving forward, it will be important to learn more about what works and what does not in each context and to continue experimenting to fully capitalize on the potential power of new technologies.

Sources: Franklin and others 2006; GSMA Development Fund 2010; Kanwar and Taplin 2001; Lester and others 2010; Melhem, Morrell, and Tandon 2009.

ployment in ICT-enabled jobs. This low level may reflect both women's preference for institution-based teleworking and managers' concerns. In Malaysia, ICT firm managers reported that face-to-face interaction with their employees was essential, and in India, managers also expressed a preference for direct monitoring and supervision of workers.[46]

ADAPT OR MISS THE BOAT

Trade openness, technological diffusion, and access to information have fundamentally changed the way countries interact and compete with each other in the global economy. Because gender (and other) inequality has more costs in a globalized world, these changes could translate into stronger incentives for both firms and governments to move toward gender equality. Specifically in countries with a comparative advantage in female goods, gender differences in access to market work and persistent employment segregation by gender could severely undermine the country's capacity to compete internationally and ultimately hamper economic growth.

Added to this economic reality is growing international pressure for countries to grant and enforce formal rights for women. International action in this area has translated into agreements sponsored by international organizations, primarily the International Labour Organization (ILO) and the United Nations (UN), followed by strong international pressure on countries to formally adhere to these agreements either directly or indirectly as part of broader trade and other economic agreements.

The evidence (albeit limited) discussed in the following section suggests that this combination of home-grown and international pressure for greater gender equality, fostered by globalization, has contributed to the progress of the past few decades.

The rising costs of (gender) discrimination in a global world

Economic theory says that greater competition in product markets should reduce discrimination in factor (labor, capital, and land) markets.[47] In other words, stronger competitive pressures from greater economic integration should force employers to reduce costly gender (and other) discrimination.[48] This idea is supported by data from the United States in the 1980s, where increased competition through trade contributed to the relative improvement in female wages in concentrated industries, suggesting that trade benefited women by reducing firms' ability to discriminate—although there are concerns that this decline also reflects changes in the composition of employment in favor of more skilled female workers (at the expense of less skilled ones).[49]

It is not simply the overall level of trade that matters for how trade openness affects gender equality: the comparative advantage of countries is equally important.[50] New work for this Report shows that countries with a comparative advantage in female- or brain-intensive industries (figure 6.9)—ones employing a large share of female workers—face higher costs from gender discrimination when they open to trade. The reverse holds for countries with a disadvantage in the production of such goods. In addition, the

status of women should affect not just trade volumes but also trade patterns in the short run.[51]

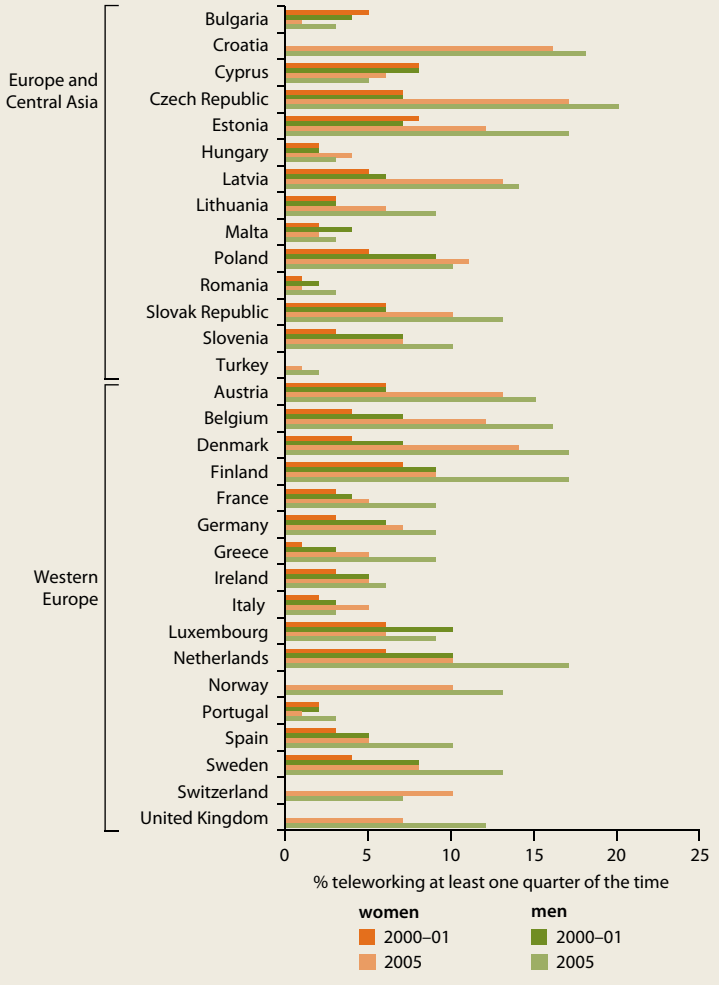
Indeed, gender equality appears to be higher in countries with larger export shares in female-intensive goods and vice versa. Countries with higher female labor force participation, lower fertility, and higher educational attainment have larger export shares in sectors intensive in female labor. Specifically, moving from low equality (bottom quarter of the distribution for any of the three selected indicators) to high equality (top quarter) increases the global export share of sectors with high shares of female employment (female-intensive sectors) by 1–2 percentage points more than that of sectors with low shares of female employment (non-female-intensive sectors).[52] This effect holds after accounting for gender equality and trade as a two-way relationship.

Furthermore, countries with a comparative advantage in the production of female-labor-intensive goods have lower fertility rates and, to a lesser extent, higher female labor force participation and educational attainment. For instance, moving from low female-intensity in exports (bottom quarter of the distribution) to high intensity (top quarter) lowers fertility by as much as 0.21 births per woman, or about 10 percent of the global total fertility rate.[53] As before, the effect is measured after controlling for reverse causality between gender equality and trade.

The new research undertaken for this Report focused specifically on the relationship between trade and labor force participation, but other analysts have examined the role that wages play as a source of comparative advantage based on low costs of production, and have argued that in some sectors and countries low wages (particularly among women) have allowed export-oriented industries to remain competitive.[54] Yet, while it is true that wages in export firms in developing countries are frequently lower than those paid by firms in developed countries, they are often higher than the wages offered by other job opportunities in the local labor market (see discussion in concluding section).

That the nature of comparative advantage matters in understanding how trade openness affects gender equality has implications for policy. Since 1970, the share of female labor embedded in exports in developing countries has increased by about 10 percent, and most countries should expect further increases as ICTs continue to spread. Moreover, industries with high shares of female employment tend to be more labor intensive than those with low shares and to account for most export-related employment. So, without actions to eliminate existing barriers to access to markets, countries with a comparative advantage in female-intensive goods will lose ground to their competitors in global markets.

FIGURE 6.8 *Telework has grown rapidly in recent years, particularly among female workers*



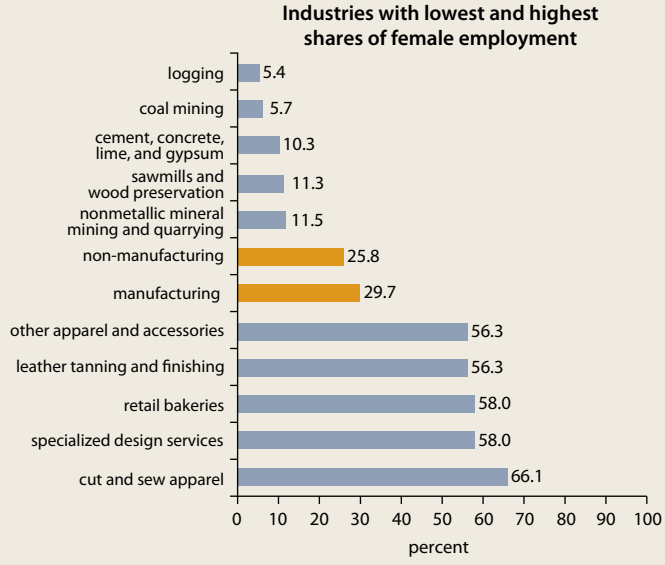
Source: WDR 2012 team estimates based on European Working Conditions Survey 2000, 2001, and 2005.

Note: No data are available for Norway, Switzerland, Turkey, and the United Kingdom in 2000–01.

Peer pressure and international carrots and sticks

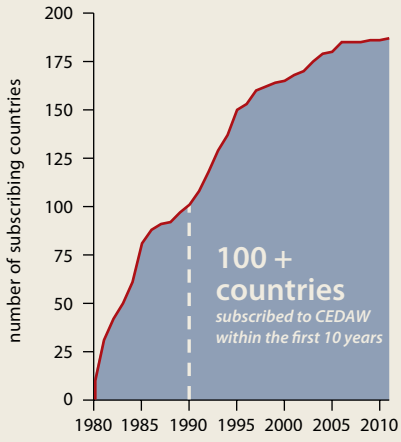
Since the 1960s, concerns about gender equality and systematic discrimination against women

FIGURE 6.9 *The share of female employment varies significantly across industries*



Source: Do, Levchenko, and Raddatz 2011.

FIGURE 6.10 *The number of countries that have ratified CEDAW has risen in all regions to reach 187, of 193, in 2011*



Source: CEDAW.

have gained momentum internationally, leading to both the drafting of a number of self-standing international treaties and conventions and the inclusion of nondiscriminatory clauses in several broader-purpose economic agreements. These conventions and agreements have also fostered legislative action toward higher gender equality around the world.

The most prominent among the international treaties is the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), adopted in 1979 by the UN General Assembly. As of August 2011, 187 countries (of a total of 193 UN member nations) were parties to the convention (figure 6.10). The countries that had not yet become party at that time were the Islamic Republic of Iran, Palau, Somalia, South Sudan, Sudan, Tonga, and the United States. The ILO conventions C.100 (equal remuneration for equal work) and C.111 (elimination of discrimination on employment and occupation) have also been widely ratified around the world.

These treaties and conventions have become the primary international vehicle for monitoring and advocating for nondiscrimination, and their ratification has spurred progress toward granting formal rights in several areas of women's lives, in large part by facilitating legislation either where it did not exist or where existing laws were discriminatory and needed to be overturned.[55] Some evidence also shows that participation in CEDAW has improved women's literacy levels, labor force participation rates, and parliamentary representation—and in some cases has reduced absolute gender inequalities.[56] But legal reform, however necessary to ensure full equality for women, is often not sufficient in the absence of adequate enforcement (chapter 4), so efforts to ensure de facto reform should continue.

Trade and other economic agreements have provided a second channel for international pressure to elicit domestic action on gender equality. These documents often include antidiscriminatory and social clauses, linking a country's access to the economic benefits in the agreement to adherence to certain minimum standards. This is the case in trade agreements, such as the North American Agreement on Labor Cooperation in the North American Free Trade Agreement, and agreements regulating member accession to economic zones, such as the European Union. For enforcement, these agreements have an ad-

vantage over international conventions in that economic considerations and, in some cases, the threat of potential sanctions may motivate otherwise reluctant countries to accept and implement some minimum standards. For example, countries more open to trade also have better economic rights for women and a lower incidence of forced labor.[57]

Pressure from media and consumers in developed countries can also lead multinational firms to offer better working conditions to their workers in developing countries. For instance, both wages and nonwage working conditions (such as hours worked, accidents, contractual characteristics, work environment, and other benefits) among formal workers (most of them women) in the export textile and apparel industries in Cambodia, El Salvador, and Indonesia were found to be at or above the average in the rest of the economy.[58] Similarly, antisweatshop campaigns in Indonesia led to large wage increases in foreign-owned and export firms, with some costs to the firms in the form of reduced investment, falling profits, and increased probability of closure for smaller plants, but no significant impact on employment.[59]

Important challenges remain in working conditions for those outside formal employment (box 6.5). In the end, a combination of different strategies—including social clauses in trade agreements, corporate codes of conduct, and the ILO's "decent work" approach—is needed. Social clauses put the onus for workers' rights on the governments of exporting countries rather than on the companies that dominate global production systems. Codes of conduct put the burden on corporations, but they are usually voluntary and may not address the behavior of subcontractors and others involved in the production of export goods. Finally, the ILO aims to engage with governments, firms, and workers, but its only tools are dialogue and persuasion.[60] So a combination of all three may be the most desirable.

BOX 6.5 ***Globalization and working conditions—Some progress, but more needs to be done***

In the public's mind, increasing global economic integration and moving production to developing countries have been associated with low wages, long hours, and poor working conditions. Public opinion in developed countries generally connects globalization with sweatshops where child labor is common and workers are denied the most basic rights. Frequently, it is argued that women are especially hurt by this process. The fact that workers willingly take this type of job is usually explained by the lack of better options and the destruction of their traditional ways of life caused by globalization.

In reality, the impact of trade liberalization on working conditions varies across firms, sectors, and countries. In some cases, trade openness and economic integration have led to the adoption of higher work standards, particularly for formal workers. For example, wages and nonwage working conditions for formal workers in the export textile and apparel industries in Cambodia, El Salvador, and Indonesia matched or exceeded the economy's average.[a] Increased trade openness also appears to be correlated with better economic rights for women and lower incidence of forced labor.[b]

In other cases, however, low wages and poor working conditions are part of a broader strategy to keep costs low. This is particularly true for workers operating under subcontracting arrangements with local firms where there is no control over working conditions—and may be especially detrimental to women, who are overrepresented in the informal sector.[c] In India, Pakistan, the Philippines, Sri Lanka, and Thailand, subcontracted workers suffered from precarious job security, an almost total absence of benefits, and a general impossibility to organize and fight for their rights. Yet in many cases, subcontracted work was the only possible paid employment that women could take that meshed with family responsibilities or social norms.[d]

a. Robertson and others 2009.
b. Neumayer and De Soysa 2007.
c. Carr and Chen 2004.
d. Balakrishnan 2002.

GLOBALIZATION COULD ALSO PROMOTE MORE EGALITARIAN GENDER ROLES AND NORMS

The changes unleashed by globalization—especially the greater access to economic opportunities and information among women—could also influence existing gender roles and norms, ultimately promoting more egalitarian views. The evidence on this effect is more limited and tentative than that in previous sections but sufficiently suggestive (we think) to merit some discussion here, in the spirit of spurring further work on these issues.

Women turned income earners may be able to leverage their new position to change gender roles in their households by influencing the allocation of time and resources among household members, shifting relative power within the households, and more broadly exercising stronger agency. In fact, women appear to gain more control over their income by working in export-oriented activities, although the impact on well-being and agency is more positive for women working in manufacturing and away from their male relatives than for those working in agriculture. Women in factories feel their status has improved.[61] They are more likely to

marry and have their first baby later than other women of similar socioeconomic status and to have better quality housing and access to modern infrastructure.[62] They also report greater self-esteem and decision-making capacity, with benefits extending to other family members.[63] In contrast, women in agriculture have not experienced significant changes in decision-making capacity or agency as a result of commercialization and higher export orientation, even when typical "women's crops" are promoted.[64]

> **"I would like to be better [than my mother]. In their time, there was no education and they were not aware of the world around them. Nowadays, we have access to the Internet and other media. We can improve our lives and do better things."**
>
> *Young woman, Sudan*

Beyond the economic sphere, increased access to information, primarily through higher exposure to television and the Internet, has also exposed many in developing countries to the roles women play in other parts of the world, which may affect gender roles and outcomes (chapter 4). For instance, in Brazil, a country where soap opera watching is ubiquitous and cuts across social classes, the presence of the Globo signal (a television channel that offers many popular Brazilian soap operas) has led to lower fertility, measured as the number of live births for women ages 15–49.[65] The effect is about one-tenth that of being married—and comparable to the effect of an increase of 1 doctor or nurse per 1,000 people or of two additional years of education. In other words, it is significant.

Similarly, evidence from rural India suggests that gender attitudes among villagers changed with cable television.[66] Women with access to cable were less likely than others to express a son preference or to report that it is acceptable for a husband to beat his wife. Behaviors traditionally associated with women's status also changed—women reported more autonomy (able to go outside without permission and to participate in household decision making) and lower fertility. As in the Brazil study, the impacts are quite large. For example, cable television decreased the differences in attitudes and behaviors between urban and rural areas by 45–70 percent. The effects appeared quickly, with observable impacts in the first year following cable's introduction.

Interestingly, and somewhat contrary to standard notions about gender roles and women's agency in the household, the evidence discussed here suggests that under some circumstances exposure to information can induce large and fast change. This finding is consistent with work on the broader impact of media exposure, which typically finds that such exposure leads to significant and rapid changes in behavior such as contraceptive use, pregnancy, and latrine building, as well as the perception of the status of one's village.[67]

Access to economic opportunities has also brought change in the public sphere. In Bangladesh, the employment of hundreds of thousands of women in the ready-made garment industry feminized the urban public space, creating more gender-equitable norms for women's public mobility and access to public institutions.[68] In the process, Bangladeshi women had to redefine and negotiate the terms of *purdah*, typically reinterpreting it as a state of mind in contrast to its customary expression as physical absence from the public space, modest clothing, and quiet demeanor.[69]

The impact of ICTs and access to information on gender norms and, more broadly, gender in the public sphere is more mixed. The spread of ICTs has empowered women socially and politically by increasing access to networks (box 6.4 and chapter 8). For instance, activist networks in Africa and Latin America have used the Internet to increase public awareness about questions of gender inequality.[70] But the network structure also allows women to become actors without fundamentally changing their local conditions or their role in their households, bypassing constraints rather than confronting them—in other words, the transformative power of technology is manifest in a parallel universe.[71] The tension between immobile personal circumstances and greater awareness and public presence could provide fertile terrain for further change. But such change will require a critical mass of women with access to the Internet and other information sources.[72]

OLD PROBLEMS, EMERGING RISKS

The rising tide of globalization has not lifted everybody. Gender differences in endowments, time use patterns, access to productive inputs, and agency have muted positive impacts for some and, at times, added to inequalities between men and women and among women.

Even among those who have benefited from higher access to economic opportunities, old patterns of employment segregation by gender can emerge. Signs of defeminization of (formal) employment in some countries, industries, and occupations—combined with increased informality—suggest that some of the gains may not be sustainable.

Public action to close gender gaps in agency, endowments, and access to economic opportunities is thus necessary for countries to fully capitalize on the potential of globalization as a force for development and greater gender equality.

When "old" gaps meet new trends, disadvantaged women are left farther behind

Women caught at the intersection of "old" gender gaps (in endowments, time availability, access to productive resources, and agency) and the new forces unleashed by globalization risk falling farther behind both men and women who have managed to benefit from trade openness, technological change, and access to information.

First, gender differences in education have limited women's access to new employment opportunities. In agriculture, besides having a positive impact on productivity (chapter 5), education affects farmers' capacity to adopt improved seed varieties and fertilizer[73] and, more broadly, to comply with output standards and other important factors that determine access to the nontraditional and high-value export sector. Because of lower education levels, female producers experience more constraints in accessing international markets than male producers in Samoa and in Mozambique and other Sub-Saharan countries.[74] Insufficient education and skills have also impeded access to export and ICT-enabled jobs in the service sector.

Education sorting along gender lines has also limited female presence in occupations directly related to ICTs, such as computer programmers, engineers, system analysts, and designers (chapter 3).[75] Data from the Organisation for Economic Co-operation and Development (OECD) suggest that women represent a small percentage of all ICT-related employment and, within the sector, are underrepresented in managerial, scientific, and professional positions and overrepresented in office and secretarial occupations.[76] These differences are important because ICT skills are among the driving forces for technological development, and growth and employment in these areas is expected to rise over time.

Second, gender differences in care responsibilities can prevent women from seizing new agricultural and wage opportunities in the export sector if no other household members can take on their duties. That is particularly true when new opportunities arise in large farms or the formal sector, where a premium is placed on longer work hours and a fixed schedule. Studies of the cut flower industry in Ecuador, export processing zones in Guatemala, nontraditional and high-value exports in Kenya, and rural-urban linkages in Malaysia all point to the presence of other female members in the household as a determinant of women's participation in new opportunities created by trade.[77] These other female household members may be mothers or elder daughters available to take on household duties relinquished by women who go out to work. Very little is known about their circumstances and the price they pay for the reallocation of housework and care in the household.[78]

Third, women's weaker property rights in land and limited access to productive inputs also constrain their capacity to benefit from trade openness. This problem has been particularly perverse in Africa, where natural resources and agricultural products account for a large fraction of exports.[79] In Senegal, only 1 of 59 french bean farmers (export crop) is a woman[80]

> **"There is tailoring and embroidery work, but people will find the best jobs by having computer skills, and that is still not provided to women."**
>
> *Adult woman, Afghanistan*

while in Meru, Kenya, more than 90 percent of export contracts were issued to male household members.[81]

Fourth, conservative gender norms for mobility and women's role in the economic sphere can disproportionately affect women's access to technology (including ICTs) and more broadly to information. At home, men often regulate the family radio, mobile phone, or television, controlling when and how other family members can use them.[82] At work, men may determine that operating a plow or a computer is not something women should be allowed to learn. Even technology programs that target women can be co-opted by men once their utility and profitability are established—so women who do gain access to the technology do not see its economic benefits.[83]

Given that the number of private Internet connections in developing countries is still low, women's access to ICTs and information is also affected by the geographic location of public Internet centers. When Internet centers are a long way from residential communities or in unsafe neighborhoods, women are less likely to frequent them. Beyond safety, women's access can also be inhibited when services are offered in settings and institutions that women are unlikely to visit or when men and women are expected to share the same space. In a 2000 study, 72 percent of Arab female Internet users declared that home was their preferred place of access.[84]

Are gains for women sustainable? Segregation in new industries and occupations

Signs of defeminization of employment in some sectors and occupations, together with concerns about growing informality among women employed in export-oriented sectors, have raised concerns about whether the segregation observed in nonexport sectors is emerging in new industries and occupations.

Production in export sectors has changed in the past few decades in two ways. First, firms have recapitalized to adopt production systems based on generalized rather than specialized equipment, shifting comparative advantages in export-oriented manufacturing from labor-intensive to capital-intensive technology. Second, firms have reorganized production to be more flexible, by lowering costs, shortening lead times, and differentiating product lines.[85] Fostered by intensified competitive pressures and facilitated by the spread of ICTs, these changes have contributed to the defeminization and informalization of employment in export-oriented sectors.

In many cases, recapitalization has reduced employment opportunities for unskilled, primarily female, workers. Men are perceived to have the education and skills to manage new generalized technologies, while women are pushed to smaller subcontracting firms. It is not clear, however, what prevents women from benefiting from upgrading and shifting production toward skill-intensive goods because gender educational gaps are quickly narrowing in many countries. One possible explanation is that significant differences still exist between men and women in the content of their education and their nonformal skills, including sector-specific experience and access to on-the-job training.[86]

The struggle for greater flexibility in production has made informal working arrangements more common, affecting women disproportionately.[87] In India, the decline in women's share of industrial employment (from 21.3 percent in 1989–90 to 17.5 percent in 1994–95) despite high export growth was associated with an increase in subcontracting to home-based workers or small manufacturers that work on a piece-rate basis.[88] Although more flexible working alternatives may allow women to better balance work and home responsibilities, the advantages of such arrangements need to be assessed against their potential negative impact on wages and other benefits.[89]

Greater flexibility has in some cases also led to higher turnover and job instability. In Turkey, where women benefited from the gender gap in net job creation in the export sectors, female employment was more volatile than men's.[90] Similarly, in Colombia, workers employed in less protected sectors have shorter job tenure and are less likely to find work in the formal sector, but these differences are only temporary and not affected by gender.[91]

Perhaps most worrisome about these trends is the realization that old patterns of employment segregation by gender can quickly emerge in these new industries and occupations. So, what initially seemed to be a break from established gender roles in the labor market ends up proving in some cases to be a short-lived deviation. Moreover, the segregation of women seems

to arise as (exporting) firms move up the value chain through recapitalization and retooling of workers, both normally associated with higher productivity and better wages.

IS THE GLASS HALF FULL OR HALF EMPTY? THE NEED FOR PUBLIC ACTION

What, then, are we to conclude from the discussion in this chapter? The evidence suggests that employment in the export sector represents an attractive option for a large number of women in the developing world.[92] These jobs enable women to contribute to household income, increase their economic empowerment within the household, and allow for greater social participation. They sometimes also offer access to government and community-support programs, which would otherwise be inaccessible.[93] So, even where there are negative work attributes, there are also many positives, and women may still prefer this work to the alternatives.

For example, women in Indonesia perceive employment in large-scale export-oriented factories as prestigious, because it pays higher wages and offers better working conditions than jobs in the domestic nonexport sector and local services. Although educated women aspire to nonmanual service employment (such as teaching and tourism), employment in large export-oriented factories seems to offer the best short-term alternative.[94] Similarly, despite the problems faced by female agricultural workers in global production, especially those with flexible and informal work, many still express a preference for this kind of work over the alternatives.[95]

But persistent gender differences in endowments, time availability, access to productive inputs and agency, and pervasive employment segregation by gender, mean that not all women have fully benefited from the economic opportunities brought about by globalization. And even among women who did benefit, remaining gaps, primarily in wages and working conditions, still need to be closed.

CHAPTER SUMMARY *Globalization has the potential to contribute to greater gender equality*

WHAT WE SEE

The forces unleashed by trade openness, technological change and diffusion, and increased access to information have lifted some of the constraints to greater equality. Not everyone has benefited, however, and it is often women, for whom existing constraints are most binding, who are left behind.

WHY WE SEE THIS

Increased access to economic opportunities

Trade openness and the spread of information and communication technologies (ICTs) have increased women's access to economic opportunities and in some cases increased their wages relative to men's. Growth in export and ICT-enabled sectors, together with a decline in the importance of physical strength and a rise in the importance of cognitive skills, has increased the demand for female labor. ICT has also increased access to markets among female farmers and entrepreneurs by easing time and mobility constraints.

Stronger incentives for action

Several factors associated with a more global world strengthen the incentives for action toward greater gender equality. Gender inequality is more costly in an integrated world because it diminishes a country's ability to compete internationally—particularly if the country specializes in female-intensive goods and services. International peer pressure has also led more countries than ever to ratify treaties against discrimination, while growing media exposure and consumers' demands for better treatment of workers has pushed multinationals toward fairer wages and better working conditions for women.

Shifting gender roles and norms

Increased access to information, primarily through wider exposure to television and the Internet, allows countries to learn about life and social mores in other places—knowledge that can change perceptions and ultimately promote adoption of more egalitarian attitudes. And increased economic empowerment for women can reinforce this process by promoting changes in gender roles and allowing newly empowered women to influence time allocation, shift relative power within the household, and exercise agency more broadly.

WHAT THIS MEANS FOR POLICY

In the absence of public policy, globalization alone cannot and will not make gender inequality go away. Despite significant increases in agency and in access to economic opportunities for many women in many countries, large gaps remain in some areas. Public action aimed at closing existing gender gaps in endowments, agency, and access to economic opportunities is therefore necessary for countries to fully capitalize on the potential of globalization as a force for development and greater gender equality.

As long as these differences persist, globalization alone cannot—and will not—make gender inequality go away. Public action to close gender gaps is therefore critical for countries to fully capitalize on the potential of globalization as a force for development and greater gender equality. Such action is also urgent in light of the rising costs of gender inequality in a globalized world.

NOTES

1. Aguayo-Téllez 2011; Do, Levchenko, and Raddatz 2011.
2. Jacobsen 2011; Rendall 2011.
3. Sassen 2011.
4. World Bank 2010.
5. Aguayo-Téllez, Muendler, and Poole 2010.
6. ITU 2010.
7. Stern, Dethier, and Rogers 2005.
8. This calculation includes data for 51 countries. The developed countries included are Australia; Austria; The Bahamas; Barbados; Belgium; Canada; Cyprus; Denmark; Finland; France; Greece; Hong Kong SAR, China; Hungary; Ireland; Israel; Italy; Japan; Korea, Rep.; Luxembourg; Netherlands; New Zealand; Norway; Portugal; Puerto Rico; San Marino; Singapore; Spain; Sweden; Switzerland; Trinidad and Tobago; United Kingdom; and the United States. The developing countries included are Bangladesh; Botswana; Brazil; Chile; Costa Rica; Egypt, Arab Rep.; El Salvador; Guatemala; Indonesia; Malaysia; Pakistan; Panama; Peru; Philippines; Romania; Sri Lanka; Thailand; Turkey; and Venezuela, RB.
9. Fontana 2009.
10. Baden and Joekes 1993; Pearson 1999; Standing 1999; Wood 1991.
11. Wood and Mayer 2001.
12. Mitter 2000.
13. Nanda 2000.
14. Mitter 2000; Pearson 1998.
15. Mitter 2000.
16. Barrientos, Kabeer, and Hossain 2004.
17. von Braun, Johm, and Puetz 1994; Wold 1997.
18. Arizpe and Aranda 1981; Barndt 1999; Barrientos and others 1999; Barrón 1994; Collins 1993; Dolan and Sorby 2003; Thrupp, Bergeron, and Waters 1995.
19. Barrientos and others 1999; Barrientos and Kritzinger 2003.
20. Dolan and Sorby 2003; Thrupp, Bergeron, and Waters 1995.
21. ILO 2002.
22. Davin 2001; Fernández-Kelly 1983; Kabeer 2000; Lim 1990.
23. Davin 2001.
24. Artecona and Cunningham 2002; Berik 2000; Ghiara 1999.
25. Bhattacharya 1999; Belghazi 1997, cited in Joekes 1999a.
26. Berik, van der Meulen Rodgers, and Zveglich, Jr. 2003; Seguino 1997; Seguino 2000.
27. Fussell 2000; Ver Beek 2001.
28. Borghans and ter Weel 2004; DiNardo and Pischke 1997; Entorf, Gollac, and Kramarz 1999; Krueger 1993; Lee and Kim 2004.
29. Rendall 2010.
30. Black and Spitz-Oener 2010. A related strand of the literature has focused on the impact of technological change (and particularly skill-biased technological change) on the demand for skills, where skills are generally measured in terms of workers' levels of education. Both ideas are complementary in the sense that ICT and the computerization of the workplace have changed the nature of work and in the process altered both the relative importance of the various tasks that constitute an occupation and the kind of skills required to perform such occupation.
31. Black and Spitz-Oener 2010; Rendall 2010; Weinberg 2000.
32. Bacolod and Blum 2010; Black and Spitz-Oener 2010.
33. Liu, Tsou, and Hammit 2004; Ng 2006.
34. Rendall 2011.
35. Ibid.
36. Ibid.
37. GSMA Development Fund 2010.
38. Comfort and Dada 2009; Kyomuhendo 2009; Munyua 2009; GSMA Development Fund 2010.
39. Sane and Traore 2009.
40. GSMA Development Fund 2010.
41. Ibid.
42. Melhem, Morrell, and Tandon 2009; Ng and Mitter 2005.
43. Yitamben and Tchinda 2009.
44. Schaefer Davis 2005.
45. Data from Statistics Netherlands 2009. http://www.cbs.nl/en-GB/menu/home/default.htm.
46. Mitter 2000; Ng 2001.
47. Becker 1957.
48. Bhagwati 2004.
49. Black and Brainerd 2004; Kongar 2007.
50. Do, Levchenko, and Raddatz 2011; van Stavaren and others 2007.
51. Do, Levchenko, and Raddatz 2011.
52. Ibid.
53. Ibid.
54. Seguino 1997; Seguino 2000.
55. Byrnes and Freeman 2011.
56. Gray, Kittilson, and Sandholtz 2006.
57. Neumayer and De Soysa 2007.
58. Robertson and others 2009.

59. Harrison and Scorse 2010.
60. Barrientos 2007.
61. Hewett, Amin, and Sen. 2001; Kabeer 1997; Kabeer 2000; Zohir 1998.
62. Hewett, Amin, and Sen. 2001.
63. Kusago and Barham 2001; Zohir 1998.
64. Elson, Evers, and Gideon. 1996; Katz 1995; von Braun and Kennedy 1994.
65. La Ferrara, Chong, and Duryea 2008.
66. Jensen and Oster 2007.
67. Johnson 2001; Kane and others 1998; Pace 1993; Rogers and others 1999; Valente and others 1994.
68. Hossain 2011.
69. Feldman 2009; Kabeer 2000.
70. Adams 2006; Friedman 2005.
71. Sassen 2011.
72. Ibid.
73. Kumar 1994; Saito, Mekonnen, and Spurling 1994.
74. Carr 2004; Tran-Nguyen and Beviglia-Zampetti 2004.
75. Hafkin and Taggart 2001.
76. OECD 2007.
77. Katz 1995; Kusago 2000; McCulloch and Ota 2002; Newman 2001.
78. Fontana 2009.
79. Joekes 1999b; Porter and Phillips-Howard 1997; von Bülow and Sørensen 1993.
80. Maertens and Swinnen 2009.
81. Dolan 2001.
82. Gill and others 2010.
83. Ashby and others 2011; Cecchini and Scott 2003; Cecelski 2000.
84. Hafkin and Taggart 2001.
85. Barrientos, Kabeer, and Hossain 2004.
86. Ibid.
87. Barrientos and Barrientos 2002; Carr and Chen 2004; Standing 1999.
88. Ghosh 2002.
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90. Özler 2007.
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