

Chatham House and Vivid Economics

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Evidence for Action

Gender equality and economic growth

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DRAFT FOR PEER REVIEW

Executive Summary

Gender equality is a critical component of societal progress. It reflects basic rights that do not need any economic justification. This is reflected in the explicit inclusion of gender-related development objectives in the Millennium Development Goals (MDGs). Yet it is also the case that gender equality has broad and positive implications for economic and social development. A significant reduction in maternal mortality remains elusive and the MDG that specifically aims to promote gender equality and empower women will not be achieved at current rates of progress, especially in Africa and South East Asia. To deliver the MDGs, including MDG3 (Promote Gender Equality and Empower Women) and its supporting targets, it is also critical to raise the level of debate and achieve visibility for gender equality through strong factual evidence, as well as effective communication.

The report sets out the available evidence on how greater gender equality in the developing world could enhance economic growth – using DFID’s eight key factors for economic growth as a framework for prioritising and organising the evidence. These factors – human capital, physical capital, the rule of law, competitive markets, macroeconomic stability, infrastructure, openness to trade and investment and increased agricultural productivity – can be thought of as the most important conditions which are likely to ensure that strong economic performance will be established itself and endure within any given country. It also sets out how the achievement of the MDGs relating to gender equality will help secure achievement of the other MDGs and presents a menu of strategic policy options.

A. Gender equality can have significant impacts on growth

This research finds critical evidence linking improving gender equality to many key factors for economic growth, drawn from a huge literature on the links between gender and development objectives. Gender equality can contribute significantly to economic growth through increasing the stock of human capital, physical capital, market competitiveness and agricultural productivity.

1. Gender equality will enhance human capital

More educated women can undertake and encourage higher value economic activity. Countries are rarely wealthy if they have poor gender equality in education. With the exceptions of resource-rich Oman, Bahrain and Saudi Arabia, no country has achieved both GDP per capita of over \$10,000 and a ratio of girls to boys in primary education of less than 90 per cent. Economic growth since 1960 would probably have been appreciably higher in Sub-Saharan Africa, Middle East and North Africa and Latin America had those regions matched levels of gender equality in education in East Asia and the Pacific. Estimates of the loss of growth due to gender inequality in education range from 0.38 per cent per annum in Sub-Saharan Africa to 0.81 per cent per annum in South Asia. This accounts for between 11 and 41 per cent of the growth difference between these regions and East Asia and the Pacific (Klasen and Lamanna, 2008).

Economic growth, with increasing demand for skilled labour, can also have a positive effect on gender equality, including educational opportunities. In the right circumstances, virtuous circles can be created i.e. less gender inequality in education can lead to economic growth than can lead to less gender inequality. But improving gender equality in education will only be effective in promoting growth in countries with social and cultural institutions allow women to take advantage of being more educated.

More educated girls and women are likely to have fewer children. The fertility decline associated with greater gender equality can have profound economic impacts. A fall in fertility leads to a lower dependency ratio and tends to increase per capita output, providing a ‘demographic dividend’. This may have accounted for as much as one third of the strong economic growth rate in East Asia since the late 1970s. However, a decline in fertility will typically only materialise where lower fertility is desired and where cultural and informational barriers to family planning are navigable. Further a ‘demographic dividend’ will only follow a fertility decline if other conditions for growth are in place. Declines in fertility in Latin America failed to lead to a ‘demographic dividend’, due to growth being hindered by macroeconomic and political instability

and by lack of follow-up in raising educational standards.

2. Gender equality fosters higher labour productivity

Improving gender equality can make labour markets more competitive. Gender inequality in education has fallen in most developing regions. Yet, as gaps in inequality in education have narrowed, the importance of gender inequality in employment has increased. Narrowing the education gap further will not bring benefits if the additional educated women are not able to access productive employment. The loss of economic growth in Middle East and North Africa (MENA) in the 1990s from gender inequality in employment was around four times as large as that from inequality in education.

Product markets are more competitive if all would-be entrepreneurs can use their talents. Discriminatory laws and social norms are a barrier to female entrepreneurship in some developing countries. Where women are treated differently to men with respect to access to institutions, property rights, taxation, and access to credit, their ability to start a business is inhibited. While these barriers to female entrepreneurship and self-employment undoubtedly exist, the understanding of how they impede economic development, and how they can be best removed, could be very much improved.

3. Enhanced gender equality attracts investment in physical capital

The incentive to undertake any investment is determined by the expected rate of return on the investment. A more productive workforce, through greater equality in employment and education, increases expected rates of return, which in turn attracts investment and promotes growth. New investment not only increases growth directly, it is also necessary for economies to adopt higher-productivity technologies such as those used by manufacturers in East Asia.

In addition, a more equal distribution of income – through improving women's wage rates – can lead to higher formal savings, which can be channelled through the financial sector to make financial capital available for companies to make new investments. In many developing countries access to international capital markets will be limited making the domestic pool of savings the most important source of funds for new capital investments. Studies of the ratio of female to male earnings and the female share of manufacturing employment have identified a significant positive effect on household savings rates from female income.

There is also some evidence that women make more productive investments than their male counterparts, although this remains contested.

4. Gender discrimination is inefficient and lowers agricultural productivity

Gender discrimination can act as a barrier to improving agricultural productivity. Unequal distributions of resources, including credit extension, labour and fertilizer, create inefficiencies such as significantly lower yields and subsequently lower profits which, evidence suggests, significantly reduce incomes in some countries. This is especially true for those countries such as in sub-Saharan Africa where agriculture represents a large proportion of the total economy and where a high number of women participate in the sector.

Social institutions which prioritise the head of the household mean that plots owned by the household head are farmed more intensively than similar plots owned by other household members of both genders. The implication of this is that status within the household rather than gender specifically is another important factor in the allocation of agricultural resources.

5. There are possible linkages between gender and the other key factors for growth, but the evidence is inconclusive.

Rule of law Improving gender equality appears to lower the level of corruption. In particular, a higher share of women in the labour force and as members of parliament may lead to less corruption. Estimates suggest that an increase of 25 percentage points in the proportion of female parliamentarians is associated with a one point improvement in an index of corruption (with that index ranging from 0 to 6); and, an increase of about 13 percentage points in women's share of the labour force is associated with a one point

improvement in the International Country Risk Guide (ICRG) corruption rating.

Macroeconomic stability There is evidence that enhanced female political participation can lead to a different role for government, with most studies suggesting that extension of female suffrage leads to the adoption of more redistributive policies and policies with a greater social insurance element. The links between government adoption of such policies and economic growth remains contested.

Provision of infrastructure More political representation for women is associated with provision of a different mix of public goods. Studies undertaken in India have found that female village council heads invest more in infrastructure that is directly relevant to the needs of their own gender than their male counterparts. It has yet to be established whether this infrastructure is typically more or less conducive to promoting economic growth; it is likely to be context specific.

Openness to trade and investment Trading opportunities will be enhanced by greater human and physical capital, thus improvements in these characteristics through gender equality will boost the potential for trade and economic growth. For example, enhancing the productivity of women through tertiary and secondary schooling will increase business opportunities and this may encourage foreign direct investment in export oriented sectors. There is also substantial localised evidence that women face barriers in small scale border trade, but no estimates of the impact of this on economic growth. These barriers are similar to those vis-à-vis women’s entry into entrepreneurship: a lack of access to resources such as land or collateral for loans can prevent women from harnessing profitable trading opportunities.

It should be noted that wage inequality may increase competitiveness in labour-intensive export industries in the short term. In the garment sectors of Cambodia and Bangladesh, for instance, women are favoured for low-skilled jobs because they will often accept lower wages, are assumed to have natural predispositions to garment work and tend to be less likely to strike. However, it is important to bear in mind the wider economic benefits of wage equality, as outlined above, for instance, through potentially higher savings rates. Greater wage equality can also have positive impacts on the MDGs given that women are more likely to spend money on health and education.

Table A: Summary of findings: Gender equality and economic growth

Key factor	Transmission mechanism	Evidence
Human capital	More educated girls and women can undertake higher value economic activity	Context specific. Appears strongest in countries with an export focused manufacturing base and few cultural barriers. Secondary and tertiary education particularly beneficial
	Greater control for women in the domestic sphere (household resources and family size) augments the human capital of the next generation	Women are more likely to spend household income on children. Large family size may not always adversely impact education; strongest evidence is due to effect of pre-school children on older siblings’ education
	Greater access to family planning leads to declining fertility and a demographic dividend	Significant impact so long as other preconditions for growth in place
	Better maternal health increases the number of women who can participate in the labour force	Little impact on economic growth on the basis of currently available data – more specific studies required
Competitive markets	Improving gender equality can make labour markets more competitive	Growing in importance over time. Often inequality in employment has larger effect on growth than inequality in education.
	Increasing the entrepreneurial opportunities for women increases the competitiveness of product markets	Well-documented evidence on legal barriers in some countries, but no empirical link made with growth
Physical capital	Higher household savings rates through more female employment and equal distribution of income allowing greater investment	Evidence focused in semi-industrialised countries
	Rising gender equality may boost the profitability of investment	Small impact as higher skilled women raise productivity faster than wages go up, boosting rates of return

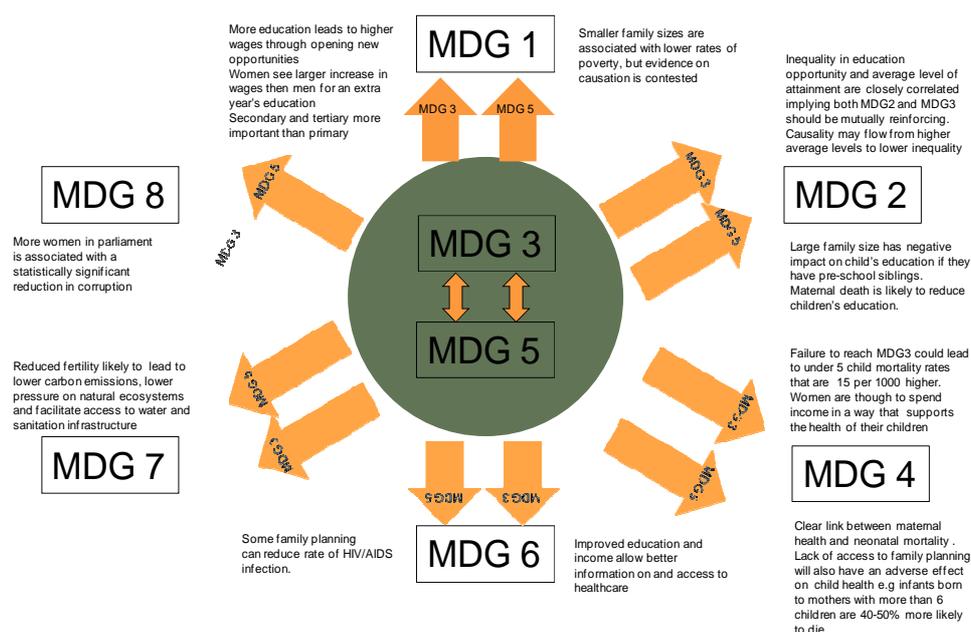
	Women make more productive investments than men	Mixed evidence. Women may focus on using profits to purchase household goods rather than re-invest into business, especially during child-bearing years.
Rule of law	Precise transmission mechanism unclear	Small but significant relationship between rising female participation and lower levels of corruption
Infrastructure	Women prioritise different public goods to men	Unclear whether alternative priorities generate higher growth
Agricultural productivity	Discrimination means resources are not allocated efficiently across household plots	Household income in Africa could increase by up to 25 per cent; conditional upon cultural context.
Openness to trade	Discrimination prevents women engaging in trade.	Significant localized evidence but no attempt to assess overall impact.
Macroeconomic stability	Female suffrage leads to different role of government in economic sphere	Limited evidence to suggest that women prefer redistributive policies and possibly lower deficits. Link to growth not yet established.

Source: Vivid Economics based on references in the text

B. Gender equality will enhance the delivery of MDGs beyond MDG 3 and MDG 5

Progress on gender equality is central to achieving many wider development goals. There are close inter-relationship between progress on MDGs 3 (gender equality) and 5 (maternal health) and many of the other MDGs.

Figure A: Relationship between MDG 3 & 5 to other MDGs



1. Greater education and employment opportunities for women (MDG 3) will help in alleviating poverty and hunger (MDG 1).

While children who receive more education are likely to earn more, girls typically benefit from extra education more than boys (Psacharopoulos, 2002). In many developing countries, this benefit seems stronger for secondary and tertiary education than primary education. Women will also receive higher wages from entering the formal sector over the agricultural sector, implying that the expansion of these opportunities for women will further alleviate poverty (Kingdon and Söderbom, 2007). Differences in gender equality are also closely related to differences in childhood nutrition: it is estimated that increasing gender equality in South Asia would reduce the under 3 underweight rate by 13 percentage points Smith et al (2003).

2. More educated women, as well as those in employment, are more likely to use maternal health care and antenatal health care services, thus reducing child mortality rates (MDG 4).

It is estimated that under-5 mortality rates could be as much as 15 per 1000 higher on average in countries that fail to reach their MDG 3 targets (Abu-Ghadia and Klasen, 2004).

3. Progress on maternal health and improving access to family planning (MDG 5) will also have spillover benefits to the other MDGs, most clearly, through helping to substantially reduce child mortality rates (MDG 4).

Children whose mothers die in childbirth are much less likely to survive themselves. It is estimated that that 30 to 58 per cent of neonatal deaths are due to obstetric complications (Lawn et al., 2005). Likewise ensuring that there is no unmet need for family planning services would also have a significant impact on child mortality: it is estimated that as many as 9 per cent of under 5 deaths in the developing world could be averted by increasing inter-birth intervals. Increasing provision of maternal care services and improving access to family planning are both 'highly cost effective interventions' using thresholds developed by the World Health Organisation (WHO) (Singh et al., 2009).

4. Lowering fertility rates would have a range of further development benefits.

Although causality is sometimes contested, studies have suggested that smaller family sizes can help reduce household poverty (MDG 1) (Eastwood and Lipton, 1999). It can help ensure that children attend school rather than looking after younger siblings (MDG 2) (Foster and Roy, 1997). Reducing population pressure may also promote environmental sustainability (MDG 7) (IPCC, 2000, Hunter, 2001).

C. Implications for policymakers

1. Understanding context-specific rather than general conditions can maximize the economic impact of gender-related investments

Many of the causal pathways discussed in this paper are highly sensitive to context, whether at the level of the nation (overall economic climate, legal system), society (cultural norms) or household (number of dependents, income). For instance, gender equality in educational opportunity will not lead to a significant boost to formal economic growth unless there is a cultural environment where women can participate in the labour force. Lack of family planning is less associated with poverty in societies countries where there is greater extended family and social support. The 'demographic dividend' effect is only observed in countries with benign macroeconomic conditions. Policies based on such evidence should be developed with an awareness that their effectiveness is contingent on other factors which may or may not be present in the target country or population.

Increasing the number of women in secondary and tertiary education is likely to be more conducive to growth than focussing only on primary education. Again, this effect is particularly strong in middle income countries. In countries where at least 10 per cent of females have secondary education, an increase of one percentage point in the share of adult women with secondary school education may increase per capita income growth by 0.3 percentage points (Dollar and Gati, 1999).

Providing greater access to family planning, by reducing the number of unwanted pregnancies, can further increase the cost effectiveness of maternal care provision. One study has estimated that for every dollar spent on providing modern contraceptives, \$1.40 would be saved in medical care costs. However, the lowest income countries would benefit disproportionately from these savings (Singh et al., 2009).

2. There are clear links between the achievement of gender-related MDGs and other global development objectives.

Promoting gender equality of educational and employment opportunity will in many cases yield a significant return for women in terms of higher lifetime earnings (and higher than the increase that a man would see for a similar increase in education access), helping to reduce the incidence of poverty (MDG1), (Kingdon and Söderbom, 2007).

Unsurprisingly, maternal mortality and morbidity are very closely linked with (neo-natal) infant mortality rates. High fertility rates are also associated with high infant mortality rates (Lawn et al., 2005). It is therefore not surprising that the evidence shows that improved access to maternal health services, which yield healthcare benefits to both mother and child, represents a 'very cost effective' intervention using the WHO's criteria, a conclusion that would be further reinforced by reducing unwanted pregnancies by meeting the unmet demand for family planning.

3. Growth diagnostics can be used to identify current constraints and highlight the most effective gender-related investment and partnership opportunities

An understanding of the ways in which promoting gender equality may or may not affect economic growth can inform decision makers on *when* promoting gender equality will lead to a significant growth dividend. Only when growth is held back by factors (such as low human capital) that have strong linkages to greater gender equality will the promotion of gender equality facilitate economic growth. For instance, promoting gender equality is likely to increase the level of human capital within an economy, help make labour markets more competitive and, in the right circumstances, boost agricultural productivity. If growth is being constrained by some of these factors then promoting gender equality may well play a very significant role in promoting growth.

4. The impact of investments in gender equality will be greater under certain conditions.

Further factors determining the efficacy of gender equality in delivering economic growth depend on which aspects of gender equality are considered.

The goals of MDG3 in terms of promoting gender equality in education and in employment opportunity are most likely to lead to a growth dividend in a defined set of circumstances summarised below:

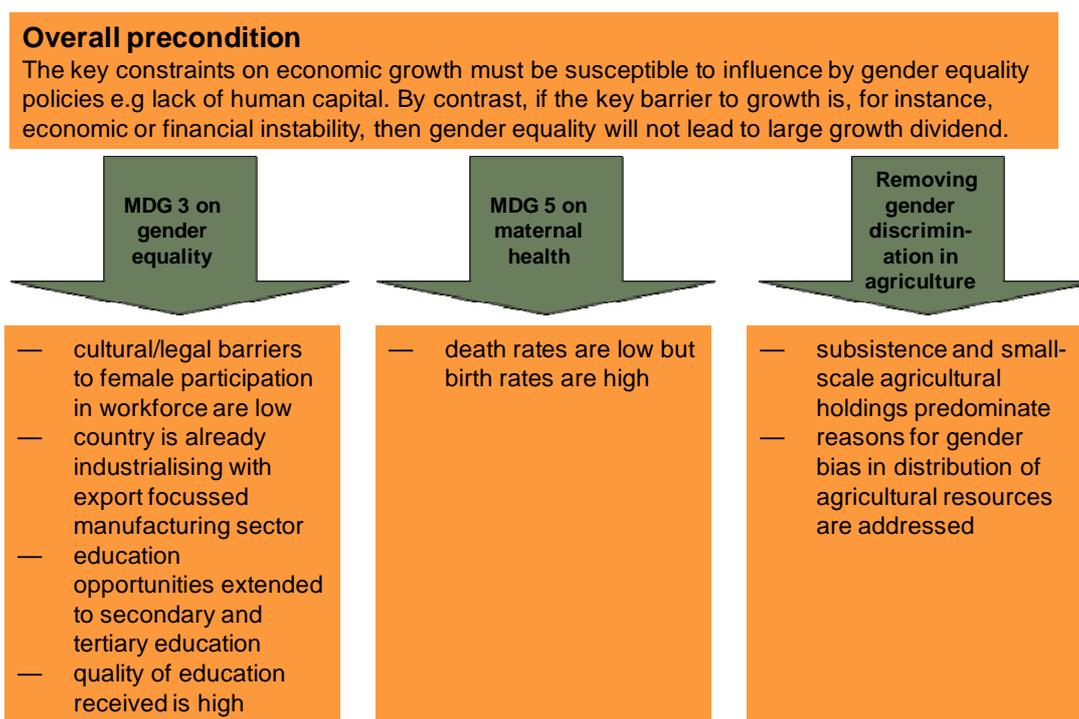
- where cultural or legal barriers to female empowerment are already relatively low or conducive to being overcome by education;
- the country is already industrialising and, it appears, especially if it has a strong export-focussed manufacturing sector;
- when gender equality of educational opportunities are extended to secondary and tertiary education; and
- where the quality of education received by girls is sufficiently high.

The component of MDG5 (on maternal health and family planning) with the strongest link to higher economic growth is through access to family planning services which can reduce fertility rates and allow countries to exploit a 'demographic dividend'. Countries that currently have reasonably low death rates but where high birth rates have not yet fallen will be best able to exploit this opportunity.

Discriminatory agricultural practices are not adequately captured by any of the gender equality indicators of the MDGs. For policies in this area to be effective at boosting growth, they will need to be tailored to the cultural and environmental context i.e. to take account of the possibility that current agricultural practices may reflect prioritisation of resources towards the head of the household (who typically happens to be male) rather than to the man per se.

The diagram below summarises the key conclusions as to which countries are most likely to receive a significant boost in economic growth/output from pursuing gender equality policies.

Figure B: Key preconditions for (different aspects) of gender equality to promote growth



5. Partnership with businesses can help stimulate investment in gender equality along global supply chains.

Today, businesses that invest in gender equality in their supply chains tend to be driven by social responsibility not economic gain. Perceived economic advantages, where they exist, are based on product differentiation rather than fundamental productivity and efficiency gains. Firms do not see their gender-related activities as driven by competitive pressure. As a consequence, while a systematic approach is taken by many large firms to counter gender-based discrimination in the workforce, pro-gender equality investments (such as accelerated training for women) are sporadic and ad hoc.

Yet the impact of enhanced gender equality on firm productivity and profitability is not often assessed. Analysis is needed to test the impact on corporate performance of, for example, greater female participation in the workforce and equality of educational opportunity. In short, we need to clarify how the benefits identified in this paper of investing in gender equality at the macro-economic level translate into a better performance for individual firms and their suppliers.

D. Recommendations for policymakers

1. **Increase targeted investments in gender equality.** These can increase economic growth and contribute to the achievement of the MDGs, including those that are not explicitly gender related. National governments and development organisation should be considering gender equality as part of their policy toolkit to deliver growth in the same way that they consider, for instance, infrastructure development or microeconomic reform. Within the MDGS, increased investment in MDG3 should be used as a particularly important component of strategies to meet MDG1 (on eradicating poverty and hunger) and MDG4 on reducing child mortality while investments in MDG5 should be seen as an integral component of strategies to meet MDG4.
2. **Target gender-equality investments to leverage the greatest development benefits** through identifying the key drivers and constraints on growth as related to gender equality at national and sub-national level: the strength of these links will determine the impact of different types of gender-

equality investment. For example:

- Gender equality investments in promoting education and employment opportunities (i.e. those associated with meeting MDG3) will deliver the largest economic growth benefits in cases where there are low cultural barriers to female participation in economic life, in countries that are already industrialising and where the quality of education received by women is of sufficiently high quality.
- Investments in family planning (MDG5) are most likely to lead to significant economic growth where countries have low death rates but high birth rates.
- Investments in promoting gender equality in agriculture will see the largest economic benefits in countries where subsistence and small scale agricultural holdings predominate.

These investments will not lead to significantly greater economic growth or activity if other barriers to growth which do not have an obvious gender dimension (e.g. shortage of infrastructure, macroeconomic instability) are not the key constraints on growth.

3. **Support the development and implementation of integrated strategies to strengthen gender equality both in education and employment to maximise effect on women's incomes in developing countries.**

Women can maximize benefits from equal access to education if they can capitalise on their skills in the labour market. As equality in education is improving in most countries, inequality in employment opportunity is becoming the greater drag on growth. For instance, while the gender gap in education in Sub-Saharan Africa has fallen by two-fifths, inequality in employment has remained constant. Likewise in MENA the size of the education gap has more than halved, but the gender gap in employment has fallen by only around half as much.

Integrated strategies for education and employment have the potential to create virtuous circles: girls who receive greater education and can exploit these skills to gain employment will see increases in household income; if they retain control of this income it is more likely that a greater proportion will be spent on their children's health and education.

A focus on employment opportunities appears to be particularly important in MENA. This region has experienced significantly lower growth than East Asia and Pacific: estimates suggest that 4 times of much of this gap is a result of lack of employment opportunities as it is a lack of education opportunities.

4. **Expand investment in secondary and tertiary female education, especially in middle-income countries.**

Although many countries have seen an expansion in primary education for girls and women in recent years, more investments should be targeted at secondary and tertiary levels of education. Increasing education opportunity for women at these levels is more likely to have a greater impact on growth at the country level, especially in middle income countries. For instance, at a country level, it has been estimated that, where at least 10 per cent of females have secondary education, an increase of one percentage point in the share of adult women with secondary school education increases per capita income growth by 0.3 percentage points (Dollar and Gati, 1999). At an individual level, women typically see larger increases in wages for an additional year's schooling than men, and this effect appears particularly strong if girls complete secondary education. This recommendation is consistent with earlier evidence that DFID has collected on the importance of secondary and tertiary education.

5. **Invest in creating the right conditions for gender equality to lead to growth.** Where conditions in countries do not enable gender equality investments to generate economic growth, efforts should be focused on removing the barriers to the functioning of these transmission mechanisms. If these barriers can be successfully removed, it is more likely that national governments, and individuals within those countries, will take the lead on promoting gender equality for reasons of national-interest rather than because of extended pressure. For example, in Cambodia and Bangladesh, families have bucked conventional trends by focussing resources on educating girls recognising the income benefits they will receive from more educated girls entering into employment in the textiles sector. The key conditions under which different aspects greater gender equality are likely to promote economic growth are discussed above.

6. **Accelerate access to comprehensive, culturally sensitive, family planning services and improving maternal health.** The evidence shows that these are highly cost effective medical interventions in themselves. Further, by reducing the unmet need for family planning, smaller family sizes can facilitate a reduction in household poverty and help ensure that children attend school rather than look after younger siblings or going to work. One study has estimated that for every dollar spent on providing modern contraceptives, \$1.40 would be saved in medical care costs. Through reducing population pressure, it may enhance efforts to promote environmental sustainability. Greater investment in maternal health will also realise spillover benefits: children with healthy mothers are both more likely to survive their infant years and then acquire formal schooling.
7. **Develop high profile partnerships with emerging economies especially those who are increasingly involved in development cooperation with poorer countries to promote gender equality as a way of accelerating their economic development models.** The evidence that gender equality enhances growth is most visible in industrialising, export oriented economies, especially in South Asia. Such an approach can provide opportunities for joint leadership to low income countries that are increasingly seeking to emulate the models of fast growing emerging economies.
8. **Establish a high level panel with senior business figures to build and strengthen the commercial case for gender equality.** A mini-survey conducted with major global businesses suggests that companies are not yet persuaded that gender equality is good for their bottom line. However, there is an increasing appreciation of gender equality as a component of future consumer demand and skilled labour development. Identifying how the macro-economic benefits of gender equality could flow to individual firms and their suppliers might stimulate private investment in gender equality along supply chains, especially in employment and training opportunities for women. The findings of this panel should be published in different formats including assessment tools for businesses as well as leaflets for engagement with national and local businesses. Businesses at different level – global, national and local – can be cultivated in this manner as effective advocates for gender equality.
9. **Work with businesses and NGOs to promote collaborative and innovative initiatives.** Part of the reason why women are targeted in microfinance schemes is a perception that they will make more productive investment decisions than men, even though the evidence for this is mixed. In micro-finance schemes, the client base is disproportionately focussed on women. For instance, in 2009 almost 97% of Grameen Bank's 8 million borrowers were women. Innovative practices have shown the value of harnessing women's creative power – for example, Shea butter women's cooperatives in Africa have opened up access to credit and enabled women to pool resources to make large scale investments to increase income generation and improve quality of life through investing in labour saving technology, community infrastructure and women's education in areas of literacy and business skills.
10. **Support further research on transmission mechanisms.** The impact of key dimensions to gender equality on economic development is not clear in the existing literature – for example, the impact of improved maternal health on economic growth while the cultural/country specific relationships between gender equality in education and growth are only beginning to be unpicked. In other cases, some of the literature, although robust, is quite dated e.g. on the links between population pressure and environmental impacts. More research could reveal additional avenues for delivering gender equality and associated development impacts and provide a firmer evidence base for constructing policy.

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1 Introduction

Gender equality is a critical component of societal progress. It reflects basic rights that do not need any economic justification. The importance of gender equality for development is reflected in the explicit inclusion of gender development objectives in the Millennium Development Goals (MDGs) (See box 1 below), agreed by heads of states at the United Nations Millennium Summit in 2000. Yet it is also the case that gender equality has broad and positive implications for economic and social development. It is well-understood today that educating girls is one of the most cost-effective development investments (World Bank, 2008).

Ten years on, in September 2010, the international community will collectively review progress since 2000 against the eight agreed MDGs at a high level Summit in New York. Progress has been slow on the MDGs that are most reliant on improvements in gender equality. A significant reduction in maternal mortality remains elusive and the MDG that specifically aims to promote gender equality and empower women will not be achieved at current rates of progress, especially in Africa and South East Asia.

The Millennium Project Task Force on gender in 2005 outlined a compelling case for the central role of gender equality in development. Their reports – and the work of other leading institutions on gender-related issues – have contributed to strengthening the focus on the normative dimensions of gender mainstreaming in public policy in many developing countries. To deliver the MDGs, including MDG 3 and its supporting targets, it is also critical to raise the level of debate and bring visibility on gender equality through stronger data and facts, as well as effective communication.

With the financial support of the United Kingdom Department for International Development, Chatham House and Vivid Economics have reviewed the evidence on how greater gender equality in the developing world can enhance economic performance and boost progress towards the achievement of the UN's Millennium Development Goals (MDGs). The economics review has focussed mainly on existing quantitative peer-reviewed evidence. A survey with a small number of transnational companies with large operations or supply chains in developing countries was conducted to gauge the business perspectives on gender inequality. This research is designed to complement the findings by the Institute for Development Studies (IDS) on women's empowerment, also commissioned by DFID.

In chapter 2 of this report, DFID's eight key factors for economic growth, detailed in its 2008 paper *Growth: Building Jobs and Prosperity in Developing Countries*, are used as a framework for prioritising and organising the evidence, as well as defining the scope of this analysis. These factors — human capital, physical capital, the rule of law, competitive markets, macroeconomic stability, infrastructure, openness to trade and investment and increased agricultural productivity — can be thought of as the most important conditions which are likely to ensure that strong economic performance will establish itself and endure within any given country.

There is strong evidence across the world that gender equality can be a key component of any growth strategy, drawn from an extensive literature on the links between gender and development objectives. The aspects of gender equality which receive most attention in the report are MDGs 3 and 5: to 'promote gender equality and empower women' and to 'improve maternal health'. MDG 3 encompasses targets to eliminate gender disparities in education, increase the share of women in wage employment in the non-agricultural sector, and raise the proportion of seats held by women in national parliaments. MDG 5 includes targets to reduce the maternal mortality rate and improve access to reproductive health through family planning and obstetric and antenatal care. This provides a focus to the report and links it into internationally established priorities. However there are many aspects of gender inequality not captured by these formalised targets, such as violence towards women and legal discrimination.

There are complex benefits associated with greater gender equality which may not be captured by a discussion limited to economic growth. The secondary focus of the report, presented in chapter three, is therefore to examine how greater gender equality might further progress on the Millennium Development Goals. In undertaking this part of the assessment, the likely cost effectiveness or impact on various measures of economic performance are covered where relevant.

Greater gender equality does not necessarily lead to an instantaneous improvement in other development objectives. Many of the benefits arise at some point in the future i.e. with a lag. For instance, the benefits of educating girls are reaped, in the first instance, when they are adult women, in the form of greater opportunities and higher incomes. Further, as women are often primary care-givers to children any advantages given to them will have a strong intergenerational effect, appearing in the better education and health which their children enjoy. The lagged impact of these benefits is noted, as appropriate, throughout the report.

Box 1 Millennium Development Goals

A summary of the UN's Millennium Development Goals is presented below with the main targets within each goal. Further more detailed and specific targets are not set out here, for which the reader is referred to the UN Millennium Development Goals website.

MDG 1: Eradicate Extreme Poverty and Hunger. Halve, between 1990 and 2015 (i) the proportion of people whose income is less than one dollar a day; and (ii) the proportion of people who suffer from hunger. Achieve full and productive employment and decent work for all, including women and young people

MDG 2: Achieve Universal Primary Education. Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling.

MDG 3: Promote Gender Equality and Empower Women. Eliminate gender disparity in primary and secondary education in all levels of education no later than 2015.

MDG 4: Reduce Child Mortality. Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate.

MDG 5: Improve Maternal Health. Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio. Achieve universal access to reproductive health by 2015.

MDG 6: Combat HIV/AIDS, Malaria and Other Diseases. Have halted by 2015 and begun to reverse the spread of HIV/AIDS, as well as the incidence of malaria and tuberculosis. Achieve universal access to treatment for HIV/AIDS for all those who need it by 2010.

MDG 7: Ensure Environmental Sustainability. Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources. Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss. Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation. By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers

MDG 8: Develop a Global Partnership for Development. Address the special needs of least developed countries, landlocked countries and small island developing states. Develop further an open, rule-based, predictable, non-discriminatory trading and financial system. Deal comprehensively with developing countries' debt. In cooperation with the private sector, provide access to affordable essential drugs and make available benefits of new technologies, especially information and communications.

Source: UN Millennium Development Goals website

2 How does gender equality promote economic growth?

Gender equality can affect economic performance through a number of pathways. This section uses DFID's eight key factors for growth (described in the introduction) as a template and examines the evidence on the links between each of these factors and gender equality. These eight factors — human capital, physical capital, the rule of law, competitive markets, macroeconomic stability, infrastructure, openness to trade and investment and increased agricultural productivity — can be thought of as the most important conditions which are likely to ensure that strong economic performance will establish itself and endure within any given country.

2.1 Gender equality increases the stock of human capital

A major way that gender equality can contribute to economic growth is through increasing the stock of human capital. Human capital is defined as the skills, knowledge and physical capabilities which allow the labour force to be economically productive. Human capital has a quantity dimension — such as the number of workers — and a quality dimension — such as the productive skills that an individual worker has.

There are four major channels through which gender equality can increase the stock of human capital:

- more educated women can undertake higher value economic activity;
- as women are primary care-givers to children, the human capital of the next generation is enhanced where women have more control over the household allocation of resources and family size;
- greater access to family planning leads to declining fertility and a 'demographic dividend' (where the ratio of working age to dependents in the population is high, increasing per capita output); and,
- reduced maternal mortality increases the number of women who can participate in the labour force and provide care-giving within the household.

The evidence on each of these is examined in turn.

2.1.1 Gender equality in education will increase human capital

More educated girls and women can undertake higher value economic activity. Increasing the educational opportunities for women allows for greater accumulation of skills and expertise within the labour force and so raises the growth potential of the economy. In this section the pattern of evidence relating gender equality in education and economic growth is presented and, where possible, the causal relationship between the two elucidated.¹²

Gender inequality in education has been falling since 1980. See Figure 1 for a snapshot of gender equality in education and GDP across the world over three decades. It shows how the historical pattern between GDP per capita³, and gender equality in education, measured as the female primary school enrolment rate as a percentage of the male enrolment rate, across 122 countries has evolved over time.⁴ In 1980 there were 30 countries where the primary school enrolment rate for girls was less than 70 per cent of that for boys (and a ratio of 50 per cent or less in 5 of these); in 2005 this was the case only in Afghanistan (59 per cent), Guinea-Bissau (67 per cent), Chad (68 per cent) and the Central African Republic (69 per cent). In addition, the number of countries where primary school enrolment rates are higher for girls than for boys increased from 8 to 19 over the same period. Figure 1 does not in itself provide any evidence of a causal

¹ There is a link between this section and section 3.1 where it is shown that women's earnings increase as they receive more education. If women are paid higher wages when they are more highly educated, then it is likely that this is because they are producing more valuable outputs in the formal job sector. Aggregating this microeconomic evidence to the national economy would lead to an expectation that lower gender inequality in education would lead to economic growth.

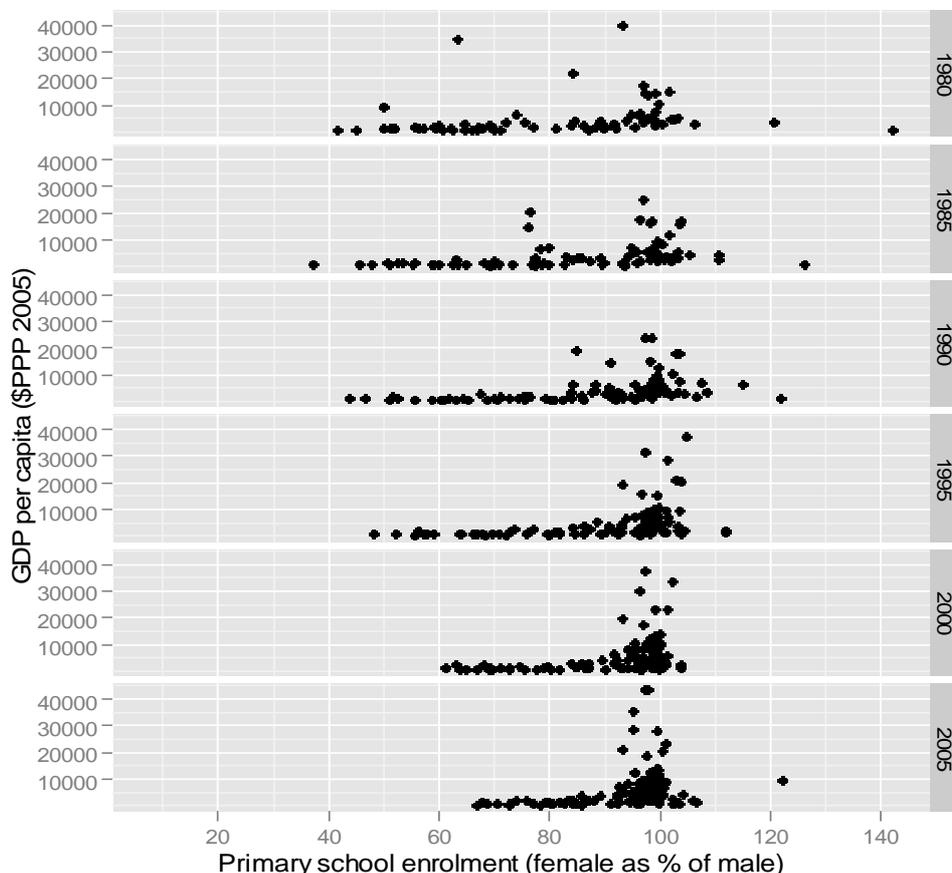
² It is not just the quantity of education that is important but also the quality of that education. However, while there is considerable research into the differences of the quantity of education received by males and females, we have found no evidence suggesting a difference in its quality between the genders. Therefore, although important, this aspect is not covered further.

³ Measured in 2005 purchasing power parity adjusted dollars.

⁴ Countries in the OECD Gender, Institutions and Development Database. 17

relationship in either direction between gender equality and economic growth, and of course gender equality may affect growth with a lag.

Figure 1 It is rare to observe a country with high GDP per capita and high gender inequality in education



Source: Vivid Economics using OECD data

Countries with high gender inequality in education tend to be poor, while higher income countries tend to have higher gender equality. With the exception of oil-rich Oman, Bahrain and Saudi Arabia in the earlier years of the sample, no country has been observed with both GDP per capita of over \$10,000 and gender equality in education (on this measure) of less than 90 per cent (see figure 2).

These scatter plots demonstrate a positive correlation between gender equality and economic progress but more substantive assertions, regarding causality or the magnitude of the impacts, require econometric analysis. A number of studies have attempted to estimate the causal relationship with the best examples being Dollar and Gati (1999), Seguino (2000), Klasen (2002) and Klasen and Lamanna (2008).

Taken together, these econometric studies indicate that increasing educational opportunities for females can lead to higher economic growth. The results using the largest sample, including the most recent data, are presented in Klasen and Lamanna (2008). The headline results from that study are presented in Table 1. They suggest the economic growth since 1960 in Sub-Saharan Africa (SSA), the Middle East and North Africa (MENA) and Latin America would have been appreciably higher if those regions had the same levels of gender equality in education seen in East Asia and the Pacific (EAP). Estimates of the loss of growth due to gender inequality in education range from 0.38 per cent per annum in Sub-Saharan Africa to 0.81 per cent per annum in South Asia, and that this accounts for between 11 and 41 per cent of the growth difference between these regions and East Asia and the Pacific.

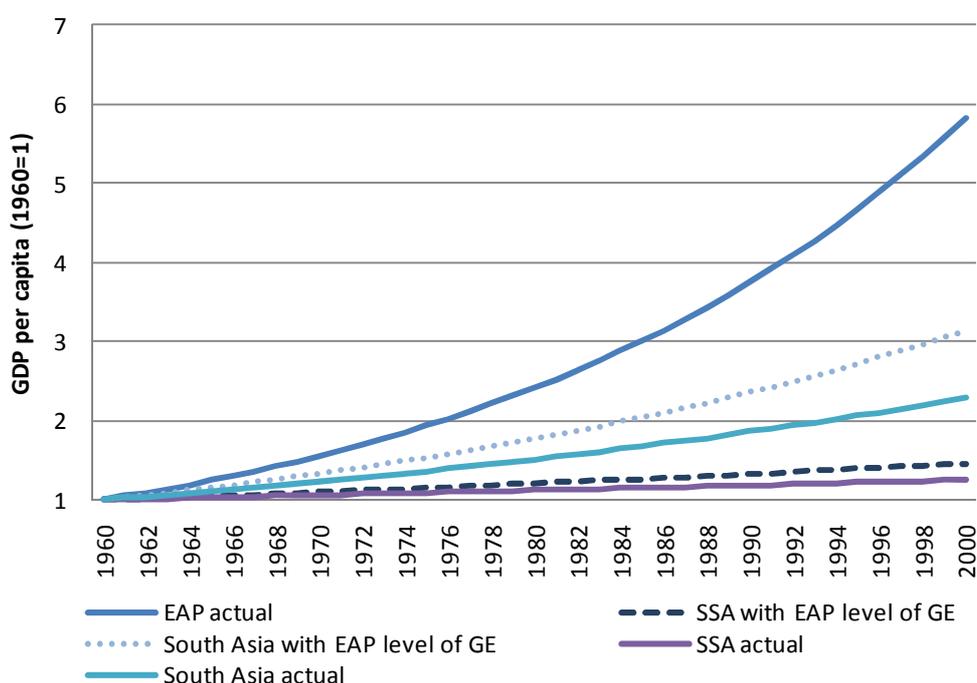
Table 1 Gender equality may account for 40 per cent of the growth gap between East Asia and the Pacific (EAP) and other regions according to some estimates

		Sub-Saharan Africa	South Asia	Middle East and North Africa
(A)	Annual average growth rate of GDP per capita (1960 to 2000 in \$PPP, % p.a.)	0.57	2.09	2.24
(B)	Difference between growth in region and the 4.05% in EAP (% p.a.)	3.48	1.96	1.81
(C)	Predicted additional growth (range) if gender equality was as in EAP	0.38-0.46	0.81-0.97	0.41-0.70
(ie C as a % of B)	Percentage of the growth difference accounted for by gender equality	11-13	41-49	23-39

Source: Klasen and Lamanna (2008)

Extrapolating the additional growth that might have been achieved, greater female education could have led to GDP per capita in Sub-Saharan Africa being 16 per cent higher than it was in 2000, while in South Asia it could have been 37 per cent higher. Figure 2 takes the estimates from table 1 and compares the counterfactual growth outcomes in Sub-Saharan Africa and in South Asia with the actual outcomes observed in those regions and in East Asia and Pacific.

Figure 2 Less gender inequality in education since 1960 would have resulted in higher GDP in both Sub-Saharan Africa and, especially, South Asia



Source: Vivid Economics calculations from Klasen and Lamanna (2008)

Although these results are more sophisticated than simple correlation analysis, they should be treated with care. The box below provides more detail on these issues. Three implications follow from this:

the true causal relationship of gender equality in education on growth may be lower than the estimates in table 1;

in the right circumstances, virtuous circles can be created i.e. less gender inequality in education can lead to economic growth that can lead to even less gender inequality

it is not universally true that reducing gender inequality in education will lead to growth. Rather, improving gender equality of education is a channel which is only effective at promoting growth in countries where social and cultural institutions are themselves conducive to growth and employment equality also increases.

Box 2 Econometric analysis of the relationship between gender equality in education and economic growth

The results of Klasen and Lamanna are generated using ordinary least squares (OLS) estimation. The OLS technique uses differences between and within countries to gauge the effect of one variable)⁵Two key problems with OLS estimation are that:

It does not distinguish forward from reverse causality i.e. greater gender equality in education promoting economic growth from greater economic growth promoting gender equality in education;

The results can be misleading if there is something not included in the estimation which affects both of the variables.

In terms of forward and reverse causality, economic growth has a positive effect on gender equality. All aspects of gender inequality, including educational opportunities, tend to improve when a country's GDP per capita rises above \$2,000 per annum (Dollar and Gati, 1999). This is likely due to opportunity and incentives: there are more opportunities for educated people in wealthier economies, and so it is in these places that the incentive to educate girls is higher.

This reverse causality has two implications. First, it implies that the true causal impact of gender equality in education on growth will be lower than the estimates in table 1. Secondly, it also implies that that, in the right circumstances, virtuous circles can be created i.e. less gender inequality in education can lead to economic growth that can then lead to less gender inequality. This is supported by the findings of Dollar and Gati (1999) who find that the causality can run in both directions.

The second possible problem with results such as those in Table 1 are that they may fail to take account of factors that might affect both gender inequality in education and economic growth. For instance, Dollar and Gati (1999) find that gender inequality, in education and in other dimensions, can largely be explained by the characteristics of a country, such as religion, civil liberties and other social and cultural institutions. They find that high female attainment in secondary education is associated with the Protestant and Shinto religions, good civil liberties and being in Latin America. Low achievement is associated with the Muslim and Hindu religions. If these factors also influence economic growth then the relationship between gender inequality in education and economic growth reported in table 1 will be misstated.

Attempting to adjust for such social and cultural differences suggests a more nuanced view of the relationship between gender inequality in education and economic growth. Klasen and Lamanna (2008) use an alternative technique to try and account for this problem. This method bases its results only on the differences observed over time within individual countries, and does not use the cross-country comparisons. This means that effects which differ across countries but are unchanging over time, perhaps including social institutions, are not biasing the results. This method also takes into account, to some extent, the lag in the impact of changes in gender equality on economic growth. Using this approach, they find that the estimated impact of gender inequality in education on economic growth is smaller and statistically insignificant (although they find that a key reason for this is the inclusion of Sub-Saharan Africa and Latin America in the 1990s and that the result becomes significant again if these data points are

⁵ Here the female:male ratio of the number of years of schooling for those aged 15 and above on economic growth.

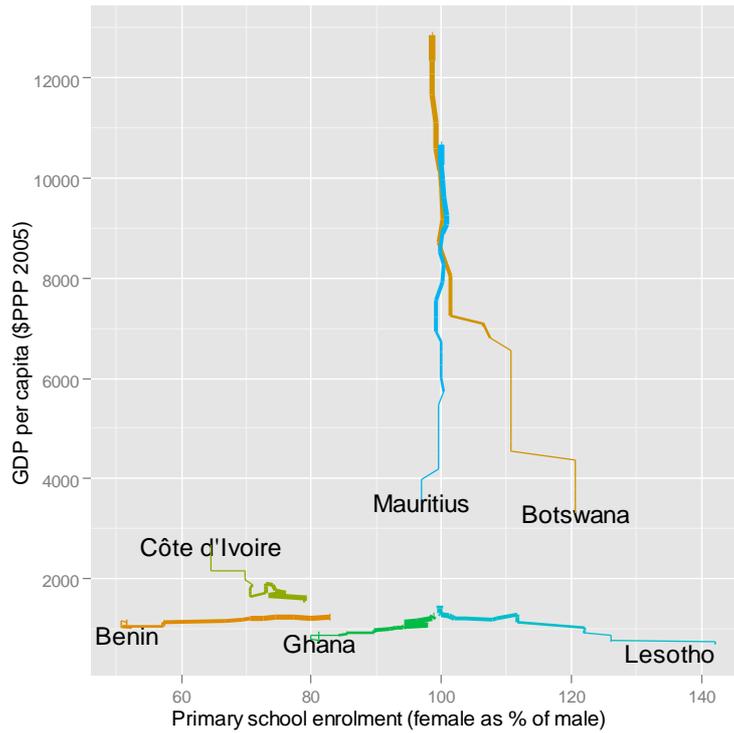
removed). Krueger and Lindahl (2001) also find that the impact of education and growth depends upon conditions in individual countries.

The econometric analysis, such as that shown in table 1, shows that reducing gender inequality can lead to growth in some circumstances but not in others. Examples of this diversity in the relationship between gender equality and growth in different countries are shown in figures 3 to 7.⁶ These figures show how one measure of gender inequality in education, namely, inequality in current enrolment rates, and GDP per capita has changed over the last three decades. Some countries have experienced strong economic growth with consistently low levels of gender inequality in (primary) education: Mauritius, Botswana, Chile, Sri Lanka and Thailand are examples of this. In other countries, large decreases in gender inequality in (primary) education have not been associated with economic growth; for example, Algeria, Côte d'Ivoire, Saudi Arabia and Papua New Guinea. However, in many countries, such as Ghana, India, China and Pakistan, there was economic growth and a decrease in gender inequality in education.⁷ In these charts the line becomes thicker over time, so the thin end of the line represents the beginning of the period and the thick end the latter part.

Figure 3 The relationship between gender equality in education and economic growth appears weak in Sub-Saharan Africa

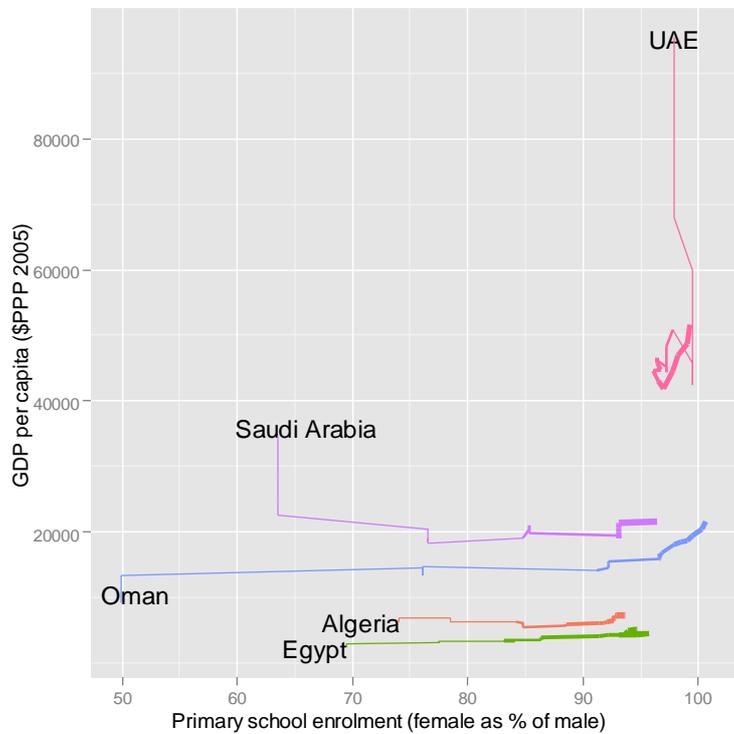
⁶ The data is not available for all years for all countries and so the start and end years vary for each country but are generally 1980 and 2009 respectively.

⁷ These charts cannot be used to infer causality: they only demonstrate the existence, or otherwise, of correlation between the two variables stated. Nonetheless, the diversity of the experience demonstrated and, in particular, the fact that some countries have seen stagnant GDP over a long period of time despite persistent improvements in this measure of gender equality of education while, at the same time, other countries have seen rapid increases in GDP without any obvious improvement in gender equality of educational opportunity is further suggestive of the context-specific nature of the relationship demonstrated by the econometric analysis.



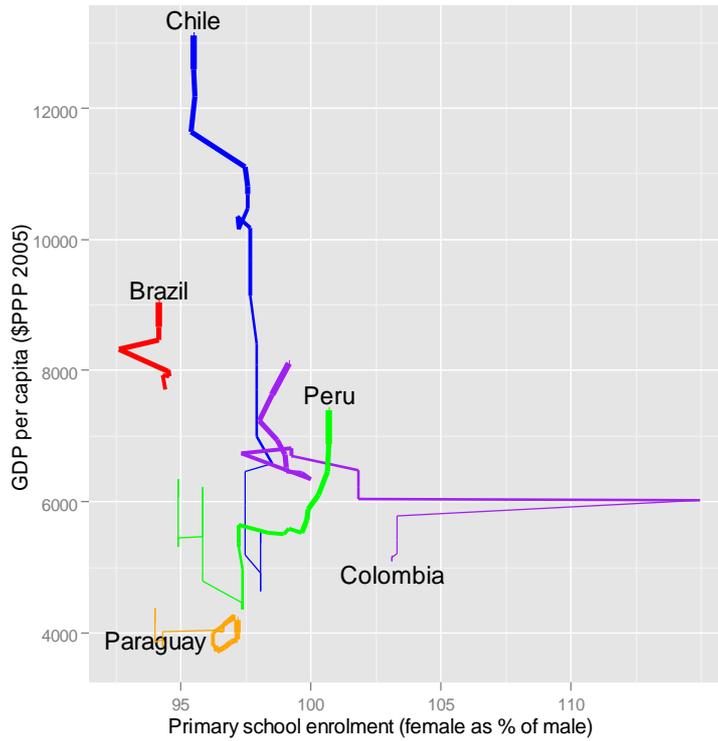
Source: Vivid Economics using OECD data

Figure 4 Decreasing gender inequality in education has not been associated with strong economic growth in many countries in MENA



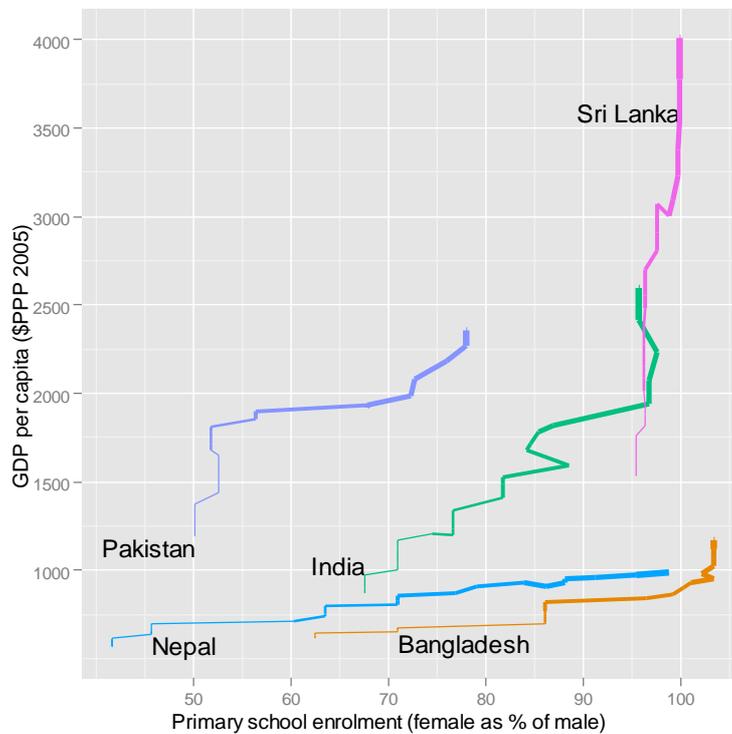
Source: Vivid Economics using OECD data

Figure 5 Most Latin American countries have low gender inequality in education



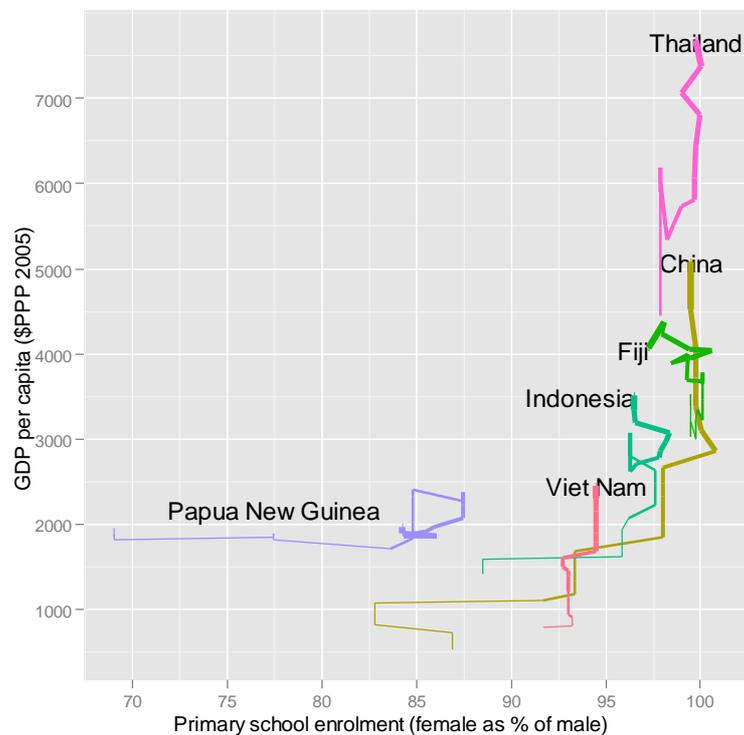
Source: Vivid Economics using OECD data

Figure 6 South Asian countries have seen decreasing gender inequality in education as well as economic growth



Source: Vivid Economics using OECD data

Figure 7 Countries in East Asia combine high growth and gender equality



Source: Vivid Economics using OECD data

Box 3 The Role of the Garment Sectors in Cambodia and Bangladesh

Cambodia and Bangladesh have traditionally ranked low in terms of gender equality. Yet, in both countries, the garment industry has for the first time provided significant opportunities for women to move from informal labour to wage employment.

Women in the garment sector (who constitute 80 to 90 percent of the sector's labour force in Bangladesh and over 90% in Cambodia) have benefited greatly from income growth. Given that the bulk of such workers are from disadvantaged rural communities and that women account for a disproportionate share of people living in poverty, increasing their income not only impacts their lives but also benefits the wider economy and their families. Remittances are estimated to contribute directly to sustaining over one million Cambodians. And significantly, money received in remittances from women garment workers are predominantly used for family maintenance and education of sons and daughters and of siblings improving the competitiveness of labour markets and the likelihood of a 'demographic dividend'.

Evidence in both Cambodia and Bangladesh suggests that families are breaking the trend of educating boys above girls, as they believe that the girls will now be better able to obtain jobs in the city and in turn, remit money home. Bangladesh's progress has been so marked in this regard that concerns are now emerging that boys might be 'left behind'.

Despite this, numbers of male students in higher education, which is required for more skilled and senior positions, continue to dwarf those of women. And while the sector has clearly provided important employment opportunities for women in both countries, female representation in management is low due to the limited number of sufficiently qualified women. It remains to be seen whether a

lag in educational improvements will be translated to better representation in management. There are, however, some positive signs; particularly with regard to entrepreneurship in Bangladesh where 38% of self-employed women are former garment workers.

Wage employment in the garment industry has also in some cases provided Bangladeshi & Cambodian women with better access to services such as maternity leave, family planning and health care. While Bangladesh's compliance with labour laws remains restricted, Cambodia's garment sector has made great strides: women are now entitled to 90 days maternity leave and an hour of breast-feeding during working hours, while any factory employing 100 workers or more must provide an operational daycare centre, or pay the women for the cost of providing daycare. Although compliance rates remain relatively high, the vulnerability of the sector to the recent financial crisis is threatening to reverse some of these developments, raising questions about long-term prospects for women's involvement in the labour-force, poverty reduction and economic development.

The garment sectors of Cambodia and Bangladesh provide a complex snapshot of the relationship between gender equality and economic growth. While the selection of women in the labour force is inherently unequal (being able to pay them less, assumptions of natural predispositions to garment work, and a reduced likelihood of striking are often cited as reasons for employing women) the shift of millions of women into the formal sector has reaped tremendous benefits for not only the women themselves but also their families. It has encouraged wide-spread progress in education, better access to health and improved decision-making power. But crucially it could offer enough of a step-change to see advancements in attitudes toward women and their roles within society more widely.

Sources: Afsar (2003); Paul-Majumder and Begum (2000); World Bank (2008); Kabeer and Mahmud (2004); ILO/BFO (2005); Bauer A. and Thant M. (eds) (2010).

The relationship between female education and growth is context specific – as illustrated by the diversity of experience in figures 3 to 7 as well as the associated literature. As explained further below, Field et al (2010) find a similar result in relation to training. Less gender inequality in education does not necessarily promote growth. For policy, it is therefore important to understand which characteristics predispose a country to being able to turn gender equality in education into growth.

The relationship between gender inequality in education and growth is stronger in middle income countries (Dollar and Gati, 1999). In the poorest countries, the factors holding back economic growth are more likely to be lack of physical capital or poor infrastructure than insufficient human capital. Figure 2 supports the statistical analysis of Dollar and Gati (1999) as Klasen and Lammana (2008) estimate a greater growth dividend from improving gender equality in education in South Asia and in MENA than in Sub-Saharan Africa. Evidence on the impact of education on female wages in formal and agricultural jobs in Pakistan, presented in table 5 later in this report, supports this view: education does not increase female wages in agricultural jobs but does so in formal sector jobs.

Economies where gender equality in education and economic growth have the strongest relationship are often those where export-led industrialisation with a focus on low-wage manufacturing has been important. Sri Lanka, Bangladesh and China are all examples of this. Such manufacturing industries, often in the textiles and garments sector, are likely an important destination for women once they have acquired more education (World Bank, 2001). However, the beneficial impact of more educated female workers on economic growth may be even stronger in cases where gender equality in education is combined with gender inequality in wages. Seguino (2000) finds that GDP growth is positively related to gender wage inequality.

Gender equality in educational opportunity will not lead to growth unless there is a cultural environment where women can participate in the labour force. Economic opportunities for more educated women need to be combined with reduced inequality in employment. As an example of this, increases in the rate of female education in the 1990s in the MENA region has not resulted in economic growth probably because the participation rate of women has not increased (Klasen and Lamanna, 2008).

These figures suggest that gender equality in education has a larger impact on economic growth in South Asia than in Sub-Saharan Africa, MENA or Latin America. The particular characteristics of South Asian countries which make this the case are not yet known.

Increasing the number of women in secondary and tertiary education is likely to be more conducive to growth than focussing only on primary education. Again, this effect is particularly strong in middle income countries. In countries where at least 10 per cent of females have secondary education, an increase of one percentage point in the share of adult women with secondary school education increases per capita income growth by 0.3 percentage points (Dollar and Gati, 1999). This is corroborated by the more general findings on the links between education and economic growth referred to in the DFID Growth Policy paper (DFID, 2008).

2.1.2 Empowering women in the domestic sphere leads to greater human capital accumulation in the next generation

Women contribute proportionally more to the accumulation of human capital in the next generation due to their role as primary care-givers to children. Almost all over the world women directly contribute more to the rearing of children than men and have a primary responsibility in the household for children's health, nutrition and well-being. The question here is how this contribution to human capital formation would be altered in light of greater gender equality, rather than to estimate this undoubtedly enormous impact as a whole (Kabeer, 2003).

Women are more likely to spend money on health and education. Gender equality could improve child health if it leads to women having more bargaining power within the home, bringing clear and direct benefits for the future stock of human capital in an economy. Abu-Ghadia and Klasen (2004) estimate that countries which fail to meet MDG 3 could have on average, by 2015 on current trends: a prevalence of underweight children under the age of five which is 25 percentage points higher; and, an under-five mortality rate which is 15 per 1000 higher. This is likely due to the increase in women's bargaining power at

home through employment, which in turn leads to greater investment in the health and education of their children. A study of the PROGRESA programme in rural Mexico (Bobonis, 2008) found that when women received payments from the programme, a higher proportion of the income was spent on health and education of children than when similar increases in household income were achieved through increases in agricultural income (presumed to flow mainly to the male member of the household). Similarly, Thomas (1997) found in a study on families in Brazil additional income to women had a statistically significant greater impact on child survival and nutrition relative than income received by men.

Women with lower fertility appear to devote more resources to their children's education, although the evidence is nuanced. Intuitively, it might be expected that family size impacts negatively on child health and education, due to there being lower per capita consumption and fewer resources to invest in each child. However, a 2005 review of the links between reproductive health and poverty commented that: 'while research on developed countries generally indicates that family size has a negative impact on child well-being, research in developing countries is less conclusive (Green and Merrick, 2005).' Much of the evidence is nuanced and context-dependent.

Studies in Bangladesh, Ghana and Congo have found that large family size has a negative effect on children's educational enrolment or attainment. For example, Foster and Roy (1997) found in Bangladesh that provision of family planning services to women at age 16 led to a 12 to 15 per cent increase in schooling for their children. All three studies found that the existence of pre-school children in particular in the household has a significant negative effect on schooling, as older children may be withdrawn from school to help with childcare (Foster and Roy, 1997; Lloyd and Gage-Brandon, 1994; Shapiro and Tambasche, 2001).

However, counteracting factors are found by some studies. A large family may mean that remittances by older children can contribute to investment in younger children (Gomes, 1984). In addition, parents may place more value on education if there is an increased need for cash income (Lloyd and Gage-Brandon, 1994). Studies with mixed findings include Maralani (2004), which noted that the effect of large family size on school enrolment in Indonesia differs by maternal age, with a positive effect amongst older mothers and a negative one amongst younger mothers, as well as between urban and rural areas. The reasons for this are unclear and could encompass a wide array of social changes.

Maternal ill health impacts on children's health, well-being and educational opportunities. Children who have lost their mothers are more likely to die themselves; the evidence on this linkage is reviewed in Section 3.3.2. In addition, studies in Tanzania and Indonesia have shown that a lack of maternal care also affects the health of surviving children, finding that children who have lost their mother are more likely to be stunted or malnourished (Ainsworth and Semali, 2000; Gertler et al., 2003). Jayachandran and Lleras-Muné (2009) found that a dramatic reduction in maternal mortality in Sri Lanka between 1946-1953 appears to have led to a small but detectable increase in girls' schooling: for every extra year of female life expectancy, literacy increased by 0.7 percentage points and years of education increased by 0.11 years, although it is not clear that a similar effect would follow in cases where the improvement in maternal mortality was less significant.

2.1.3 The fertility decline associated with greater gender equality can have profound economic impacts

Women who have control over their fertility tend to opt for smaller families. Fertility policies have had dramatic impact in much of developing world, particularly Latin America and Asia. Between 1960 and 2000, the average fertility in developing countries fell from 6 to 3 births per woman. However, the poorest countries, particularly in Sub-Saharan Africa, still have high fertility and a high unmet need for family planning.

More educated women are likely to have fewer children. UN statistics clearly show that in all developing regions more educated women tend to have fewer children. In Sub-Saharan Africa, Latin America and Western Asia, women with a secondary or higher education have on average 3 fewer children than women with no education (UN, 2003). Abu-Ghadda and Klasen (2004) estimate that countries which fail to achieve the required level of progress on MDG 3 could have, by 2015, 0.1 to 0.4 more children per woman.

The primary channel through which family planning is thought to impact on economic growth is through demographic change. There is considerable disagreement over whether and how absolute population size impacts on growth (Birdsall et al., 2001; Bloom and Canning, 2008; Ahlburg, 2002). In the past, scant evidence that rapid population growth has a negative effect on income growth lead to view that demographic factors were not important. A later revisionist approach suggested that age structure was the most important demographic factor affecting economic performance.

A fall in fertility leads to a lower dependency ratio which increases per capita output. Demographic transition creates a temporary period of 40 to 50 years when the ratio of the working age population to dependents is higher, increasing per capita output. East Asia has seen the world's most dramatic drop in the dependency ratio since the late 1970s, largely as a result of China's one child policy: as much as one-third of its strong economic growth rate over this period is attributed to this 'demographic dividend' (Bloom and Canning, 2008). The lack of a demographic transition is also linked to poor economic performance in Africa, with high dependency ratios likely to depress growth rates 'for decades' even if fertility were immediately dropped to the replacement level (Bloom and Sachs, 1998).

A fertility decline will typically only materialise where lower fertility is desired and where cultural and informational barriers to family planning are not significant. An estimated 38% of women of reproductive age who are married or in union in the developing world are not using any method of contraception (UN, 2009). Opinion is divided over whether large families are a rational and deliberate response to poverty, lack of social security and high infant mortality, with some authors arguing that income and social development are the main drivers of low fertility (Bloom and Sachs, 1998). However, this is strongly disputed by other authors, who argue that most couples will opt for fewer children given the choice (Cleland et al., 2006). Causes of unmet need for family planning include informational barriers (concerns about safety, not knowing use to use or access contraception, underestimating risk of pregnancy) and cultural barriers (religion, husband's objections), with physical access a rarer problem (Collumbien et al., 2004; Cleland, 2006).

A 'demographic dividend' will only follow a fertility decline if other conditions for growth are in place. Over the period 1965 to 1990, the demographics of Latin America resembled those of East Asia. However, it does not seem to have reaped a 'demographic dividend'. Bloom and Canning (2008) attribute this to '*episodes of high inflation and political instability, and aspects of trade policy and labor relations*' which '*appear to have prevented many Latin American countries from exploiting their demographic window of opportunity*'.

Demographic transition eventually poses economic challenges in the form of an aging population. No developing country has yet played out the full consequences of having a high proportion of old-age dependents in the population, placing strains on health and pension provision. In China, the ratio of old-age dependents to those of working age is projected to increase between four and six times between 2004 and 2050 (Lutz et al, 2007). The ultimate consequences of this are unclear and will depend on how countries invest the economic surplus of their low dependency ratio years.

There is less direct evidence that women who have smaller families will find it easier to engage in formal employment. The dependency ratio in the 'demographic dividend' literature does not take into account the fact that women caring for children are less able to work and may themselves be dependents. Intuitively, smaller family sizes should allow women time to engage in work or other non-domestic activities, and there are some studies which demonstrate this link. Padmadas et al. (2004) found that in Andhra Pradesh, women's reproductive span was a quarter of length that it was in the 1960s, as a result of women opting for sterilization, partly to allow themselves opportunities for work and social activities. However, economic impacts were not estimated. The extent to which women with smaller families will opt to work may also depend on their potential earnings and their perceived economic necessity, related to their husband's earnings (Hausmann and Szekely, 2001).

2.1.4 *Improving maternal health could have a small positive impact on economic output*

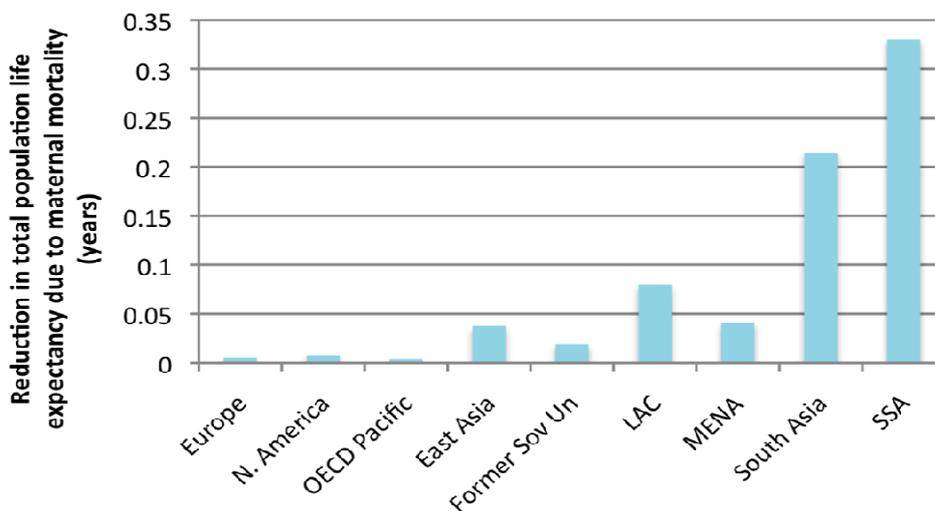
Better maternal health increases human capital. Healthy women are better equipped, mentally and physically, to contribute to productive activities, either in the formal or informal economy. In addition, they

will be better able to gain skills and experience which increase their productivity and earning power, which prolonged absence from sickness would prevent them from doing.

The large literature on health and economic performance typically finds a positive link between better health and economic growth. In such studies health is proxied by life expectancy or adult survival rates and regressed with other variables against economic growth. For example, using the results of several studies, Bloom et al. (2004) estimated an increase in life expectancy of five years typically adds 0.06 to 0.58 percentage points to growth in per capita income. Other studies have found similar results. The impact of maternal ill health on life expectancy can be estimated to be used in conjunction with such results.

Although maternal ill health has a noticeable impact on life expectancy in some countries, the resulting estimated direct impact of improving maternal health on economic growth is small. Figure 8 shows the degree to which total population life expectancy would be increased if maternal mortality were reduced to zero in different regions of the world⁸. Maternal mortality has a noticeable impact on life expectancy in some countries, averaging at a third of a year off life expectancy in Sub-Saharan Africa. However, according to the growth rate estimates mentioned above, the improvement in health which this would represent would translate into only a small expected increase in growth rates for most countries (e.g. 0.02 percentage points for a mid-point estimate for Sub-Saharan Africa).

Figure 8 Maternal mortality subtracts a third of a year from life expectancy in Sub-Saharan Africa



Source: Vivid Economics calculations using UN demographic statistics. LAC = Latin America and Caribbean; MENA = Middle East and North Africa; SSA = Sub-Saharan Africa

More evidence is required to make the economic argument for promoting maternal health as forceful as the moral argument. There is a general lack of evidence on the economic impacts of poor maternal health specifically (Wilhelmson and Gerdtham, 2006)⁹, and economic arguments could be stronger if this gap were addressed. For instance, the estimates above based on evidence relating to general population health rather than specifically to maternal health may be misleading, as they do not capture any differential impacts of maternal death e.g. the potentially significant adverse impacts of maternal mortality on children’s health and education (Sections 3.2.2 and 3.3.2).

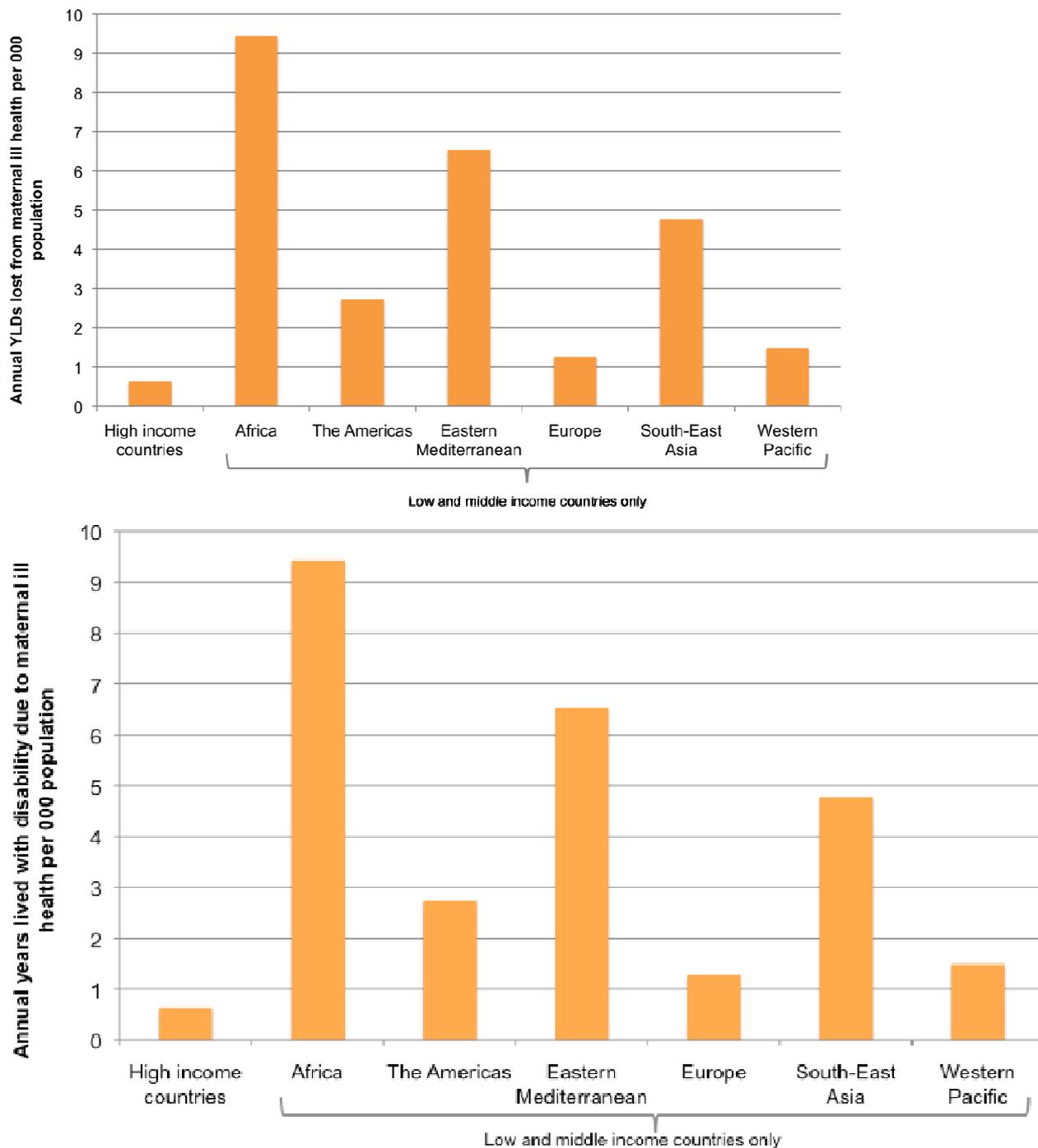
In addition, maternal morbidity imposes a heavy economic cost in many parts of the world, particularly

⁸ The lowest maternal mortality ratio for any of these regions is 11.9 for OECD Pacific.

⁹ There are estimates of lost productivity due to maternal ill health in four African countries, reviewed in Islam and Gerdtham (2006). These have not been included here due to concerns over the methodology. Similarly, USAID (USAID, 2001) has argued that the combined impact of maternal mortality and the associated increased probability of newborns dying has a combined annual economic impact in lost productivity (equivalent to a one-off reduction in economic output) of \$15 billion. However, it is not clear how this figure has been derived.

in Africa, but this impact has not been measured. WHO Global Burden of Disease data suggests that maternal conditions account for almost a quarter of years lived with disability (YLDs) for women in the 15-59 age group in Africa, or roughly 9 years for every thousand population (Figure 9). Morbidity in the Eastern Mediterranean and South-East Asian regions is also high. However, it is not clear how this translates into lost working life.

Figure 9 Maternal morbidity imposes a heavy burden of disease in Africa and other parts of the world



Source: WHO and Vivid Economics calculations

2.2 Gender equality makes markets more competitive

2.2.1 Improving gender equality can make labour markets more competitive

Improving gender equality will make labour markets work better. If women do not have equal access to the labour market, then the skills force of the labour pool will be lower than it needs to be. If firms are not able or willing to employ the most productive workers then output, and growth in output, will be lower than it could be.

As gaps in inequality in education have narrowed, the importance of gender inequality in employment has increased. Table 2 shows that gender inequality in education has reduced faster than inequality in employment in most developing regions. While the gender gap in education in Sub-Saharan Africa has fallen by two-fifths, inequality in employment has remained constant. In MENA the size of the education gap has more than halved, but the gender gap in employment has fallen by only around half as much. As educated women take up the opportunities available to them, the additional benefit of narrowing the education gap further becomes smaller as additional educated women are not able to access productive employment. Thus it would be expected that gender gaps in employment would become a larger drag on growth as the education gap narrows. The statistical analysis of Klasen and Lamanna (2008), presented in Table 3, provides empirical support for this. Gender gaps in employment seem to be able to explain a larger proportion of the growth differential between regions over time.

Reducing gender inequality in employment would have a large impact on growth in MENA and South Asia. Table 3 shows that the loss of economic growth in MENA in the 1990s from gender inequality in employment was around four times as large as that from inequality in education.

Table 2 Gender inequality in education has reduced faster than that in employment across many regions

	1960	1970	1980	1990	2000
Inequality in education (ratio female:male years of schooling of those aged 15+)					
East Asia and Pacific	0.59	0.67	0.70	0.76	0.74
South Asia	0.29	0.37	0.43	0.54	0.60
Sub-Saharan Africa	0.48	0.52	0.60	0.62	0.70
Middle East and North Africa	0.37	0.41	0.47	0.58	0.73
Eastern Europe and Central Asia	0.82	0.85	0.83	0.91	0.86
Latin America and Caribbean	0.90	0.89	0.94	0.96	0.96
OECD	0.91	0.92	0.93	0.93	0.94
Inequality in employment (ratio female:male economic activity rate, as defined by the ILO¹⁰)					
East Asia and Pacific	0.45	0.52	0.61	0.66	0.70
South Asia	0.52	0.53	0.53	0.55	0.59
Sub-Saharan Africa	0.75	0.75	0.75	0.75	0.75
Middle East and North Africa	0.24	0.27	0.31	0.34	0.41
Eastern Europe and Central Asia	0.67	0.73	0.79	0.81	0.84
Latin America and Caribbean	0.30	0.34	0.41	0.49	0.56

¹⁰ http://laborsta.ilo.org/definition_E.html.

OECD 0.41 0.50 0.62 0.73 0.77

Source: Barro and Lee (2000) and Klasen and Lamanna (2008)

Table 3 Gender equality in education and employment, taken together, can explain most of the difference in growth rates between East Asia and the Pacific (EAP) and each of MENA and South Asia

Predicted additional growth if gender equality was same as EAP (% p.a.)	1960s	1970s	1980s	1990s
Middle East and North Africa (MENA)				
from inequality in education	0.18	0.29	0.27	0.24
from inequality in employment	0.75	0.86	0.96	1.06
% of gap with EAP explained	175	78	45	84
South Asia				
from inequality in education	0.25	0.22	0.29	0.32
from inequality in employment	-0.17	0.09	0.34	0.45
% of gap with EAP explained	4	8	332	97

Source: Klasen and Lamanna (2008) and Vivid Economics calculations

Microeconomic evidence from India further suggests that gender gaps in employment cause large losses in economic output. Gender gaps in employment and managerial positions have a significant effect on the growth rates of India's states (Esteve-Volart, 2004). Increasing the ratio of female to male managers by 10 per cent could lead to a 2 per cent increase in per capita output, while a similar increase in the ratio of total workers could increase per capita output by 8 per cent. These differences result from a distortion in the allocation of talent to managerial and unskilled positions: if women cannot access managerial positions but do have access to unskilled jobs then the wage rate for unskilled workers is lower than it would be with no discrimination. In turn, this entices less competent men to switch from being unskilled workers to entrepreneurs (a subset of managerial positions will be those managing their own businesses) thereby reducing the average talent of managers and slowing economic growth.

Discrimination appears to persist with economic growth in India's states, highlighting the importance of entrenched cultural practices in holding back labour market participation. Esteve-Volart (2004) finds that richer states in India tend to have lower ratios of female-to-male participation in the labour force than poorer states¹¹, suggesting that, at least in India, discriminatory social norms persist even as the country develops. The effects of gender discrimination on growth are stronger in the non-agricultural sector. Targeted policies which change social norms and perceptions of women's capabilities are suggested as a response to these observations.

2.2.2 Product markets are more competitive if all would-be entrepreneurs can use their talents

Discriminatory laws and social norms are a barrier to female entrepreneurship in some developing countries. Female entrepreneurs in developing countries may find that they are treated differentially to men with respect to access to institutions, property rights, taxation, access to credit and their ability to start a business. For example, in the Democratic Republic of Congo, women cannot purchase property, sign contracts or incorporate businesses without their husband's authorization; while in Cameroon, Togo, Sudan and Rwanda, husbands can prevent their wives from working (World Bank, 2010).

As well as discriminatory laws, childcare responsibilities impede female entrepreneurship. According to ILO labour market statistics, in developing countries, of those women that work, the proportion employed

¹¹ This result is not broken down by profession.

in the formal sector is the same as for men (57 per cent). However, 28 per cent of working women are self-employed, compared to 34 per cent per cent of men, with the remainder unpaid workers in family enterprises (Sinha et al, 2007).¹² It is possible that childcare and domestic expectations help explain this difference. A study of female entrepreneurs in Latin America found that, while 50 per cent of micro-enterprise owners were female, only 12 per cent of firms with 11+ employees were female-owned (Bruhn, 2009); childcare and household obligations were the only factors cited significantly more by female entrepreneurs as obstacles to firm operation and growth than by males.

The likelihood of improving rates of female entrepreneurship will depend on social norms. Field et al (2010) find that upper caste Hindu women benefitted from training in basic financial literacy and business skills — measured in terms of the likelihood of taking out a loan — in a way that Muslim women and lower caste Hindu women did not. They argue that this is because lower caste Hindu women were already aware of entrepreneurial opportunities and so received little benefit from the training while Muslim women faced too many other social strictures to be able to exploit their training: ‘the training helped women whose businesses had been held down by social restrictions but women subject to extreme restrictions had too little agency to easily change their aspirations or activities.’ This is analogous to the findings on improving rates of female education: the economic impact of either depends on whether social norms are sufficiently permissive.

However, there is little research linking these restrictions to overall economic performance. For example, while it is understood that inability to secure rights to even modest properties, and therefore use them as collateral for loans, can act as a barrier to entrepreneurship and investment in poor countries (de Soto, 2001; Besley, 1995), there is no evidence of how this may impede growth by preventing female entrepreneurs specifically. While these barriers to female entrepreneurship and self-employment undoubtedly exist, the understanding of how they impede economic development could be very much improved.

2.3 Gender equality may increase investment in physical capital

There are three different ways in which greater gender equality could lead to greater investment in more and better physical capital: by increasing the productivity of the workforce making investment in new technologies more attractive; by increasing domestic savings rates and hence the funds available to finance new investment; and through women making more productive investment decisions than their male counterparts. The evidence on each of these transmission mechanisms is considered below.

2.3.1 A higher productivity workforce attracts investment

Gender inequality in education and employment will reduce the return on new investment. As discussed above, improving gender equality in education and employment can lead to economic growth if it increases the skills and expertise of the labour force. There are also indirect effects. The incentive to undertake physical investments is determined by the expected rate of return made on the investment. In turn, this will be a function of the size of the existing capital stock, the productivity of the labour force, and the technology with which inputs are combined into outputs. Gender inequality in education and employment lowers the average productivity of the labour force, thereby limiting economic growth by lowering the return on new investment. This is shown in Table 4 below. Although this effect is relatively small, it is statistically significant. Moreover, new investment not only increases growth directly, it is also necessary for economies to adopt higher-productivity technologies such as those used by manufacturers in East Asia.

¹² These figures are an average based on a cross-section of 91 different developing countries. Evidence from Millennium Development Goals Report (UN, 2009a) shows considerably diversity across developing country regions, with 65 per cent of employed women in Latin America and Caribbean in the wage and salaried sector compared with only 16 per cent in Oceania. It is not possible to assess the extent to which the two sources are consistent.

Table 4 Gender equality in education has an indirect impact on growth through increasing investment in physical capital

	Predicted additional growth if gender equality was as in East Asia (% p.a.)	SSA	South Asia	MENA
Direct effect	0.22	0.45	0.33	
Indirect effect via investment	0.07	0.14	0.07	
Indirect effect via population growth	0.10	0.29	0.17	
Indirect effect via labour force growth	-0.01	-0.04	-0.02	

Source: Klasen and Lamanna (2008)

Box 4 Exploring business perspectives on gender equality

In order to highlight current business perspectives on gender equality, twenty major international businesses were invited to participate in a survey as part of this project. Ten responded positively, though due to time constraints only five interviews were held in time to contribute to this paper. The parent companies of these five firms had combined annual sales of over \$550 billion in 2009. In total they manage a global network of over 100,000 first tier suppliers.

The survey focuses on evidence and examples of business practices - both in firms' operations in the developing world and how they work with suppliers. The lessons from this limited survey shed light on current trends as well as the potential barriers to progress. These could be extended and tested through further research.

All five companies had specific policies on equality, such as those promoted by the Ethical Trading Initiative (although this may explain why they agreed to participate in the first place). In their view these commitments, introduced in the last ten to fifteen years, have helped to integrate ethical principles into business practice, including addressing discrimination in the workplace. In some - though of course not all - cases, these discrimination issues are gender-specific or have an important gender dimension.

Three of the five firms have already gone a step beyond anti-discrimination measures to invest in pro-women or pro-gender equality projects. The companies stressed that these projects were ad hoc rather than systematic and comprehensive, although each was able to give concrete examples where they believe a significant impact on a local community or workforce has been achieved. For example, a leading UK supermarket claims to be the first private sector company in Ghana to offer paternity leave, a health clinic and a crèche; over 50% of its management team in that country are female.

There were a number of critical preconditions before any of the five firms would consider investing in gender-focused activities. They agreed that local cultural differences could be a significant challenge to successfully implementing gender-related activities. One firm, a different leading supermarket, said explicitly that a clear legal framework was a key condition before a project could be implemented. Another focused on internal constraints: understanding of the local environment (and hence where to target and deliver investment) and limited budgets for relevant activities.

The firms mentioned two potential factors in developing a stronger business case for pursuing gender equality:

- *Product differentiation*: A leading beauty brand explicitly uses pro-women in marketing its products, indicating that there is consumer interest. The other four companies, however, took a contrasting view: that consumers were, in general, unlikely to pay more for products which had a positive impact on women. One firm said that their detailed consumer surveys had confirmed this perception.
- *Productivity improvements*: All five firms confirmed that if there was clear evidence that stronger gender equality would boost productivity and profitability, they would be much more inclined to invest. None of them, however, felt that evidence to date has demonstrated a robust business case.

In addition, none of the five companies felt that pressure from shareholders and investors had become a significant driver. Until firms perceive that there is a stronger business case for gender equality, driven by competitive pressure to lead, it is likely to be treated primarily as a social responsibility issue.

At least one of the firms collects data on its suppliers, including statistics on female participation, as part of their anti-discrimination activities. This could be the starting point for a deeper, firm level analysis of the impact on gender equality on the bottom line - and therefore the place to start constructing a positive narrative for businesses based on profit in addition to social awareness.

There is one positive aspect of the perception that gender equality is not a competitive issue: firms are willing to work with their competitors on anti-discrimination projects in developing countries – indeed one firm saw this as the future of activities in this area. This is precisely because it is not considered a business advantage to go further than their competitors.

Recommendation: work with stakeholders in emerging markets (from governments, global and local businesses, NGOs, cooperatives) to promote gender equality as a way of accelerating their economic development models.

2.3.2 *A higher domestic savings rate makes more funds available for investment*

Improving women's incomes can lead to a higher domestic formal savings rate. A study of 20 semi-industrialised countries found that both the ratio of female to male earnings and the female share of manufacturing employment had a significant positive effect on domestic savings rates (Seguino and Floro, 2003). This could indicate a higher female propensity to save which may cause domestic savings rates to rise if income is redistributed from men to women. For example, in one set of results, Seguino and Floro found that an increase of one percentage point in the female share of the wage bill raised the aggregate savings rate by 0.25% of GDP. Given that most countries in the study had a the female share of the wage bill in the region of 15-40%, the achievement of parity could have a corresponding large effect on the aggregate savings rate. Such macro-level studies are unable to provide detail on explanations, which could include greater longevity or more cautious expectations over future income. Data for less developed countries is unavailable.

A higher domestic savings rate can be channelled through the financial sector, especially established micro-banks, to make financial capital available for companies to make new investments. It is likely that in many developing countries access to international capital markets will be limited making the domestic pool of savings the most important sources of funds for new capital investments.¹³

The likelihood of gender equality leading to higher domestic savings is likely to be country and culturespecific. The link between gender equality and savings in any country would also be likely to depend on interest rates, expectations of future taxation, prevalence of informal savings programmes (such as credit unions) and cultural expectations (for example, if women are expected to help finance their weddings or younger siblings' education) (Seguino and Floro, 2003). Goetz and Gupta (1996) show that in Bangladesh women may be discouraged from saving due to a fear that they will lose control of those assets to men. In addition, if women opt for informal savings programmes which do not make funds available for investing in businesses, a higher propensity to save will not lead to greater investment in physical capital.

There is no evidence that women have formal restrictions to savings products. The literature on financial services tends to address women's access to formal credit arrangements rather than savings products. While there is some limited evidence that women in some countries find it more difficult to obtain credit, this is unlikely to be the case with savings, which are actively sought by banks. Lack of financial infrastructure in rural areas, lower incomes and control of household resources by male relatives are more likely to be barriers to saving by women in developing countries.

¹³ While there is a positive linkage from higher female income to higher savings rates to greater investment to faster growth needs, there is also evidence, set out below, that gender wage inequality may make export sectors in an economy more competitive.

2.3.3 Women may make more productive investments

Part of the reason why women are targeted in microfinance schemes is a belief that they will make more productive investment decisions than men. Microfinance organisations aim to increase growth in the informal sector of developing economies through providing finance for small-scale (often non-agricultural) entrepreneurial activities. In micro-finance schemes, the client base is disproportionately focussed on women. For instance, in 2009 almost 97% of Grameen Bank's 8 million borrowers were women.¹⁴ This is partly due to the established empowerment benefits it brings women (Amim, Becker and Bayes, 1998)¹⁵. However, it is also due to a view that women will make more productive use of the finance provided.

Most studies agree that women make different investment decisions to men. For instance, Pitt and Khandar (1998) show that every 100 taka borrowed by women from microfinance organisations in Bangladesh led to an increase in household consumption by 18 taka, while the increase was only 11 taka if borrowed by a man. They also find that providing credit to women increased the probability of children being enrolled at school more than providing credit to men. They suggest that these findings may result from the fact that providing credit to a woman opens up more production opportunities than if the finance was provided to a man, and hence has a larger impact on household income. Replicated across all households this would have an impact on overall levels of economic activity in the economy. Repayment rates among women are also higher (de Mel et al, 2008).

It is more ambiguous whether or not the investment decisions made by women are supportive of growth. Others have suggested that women may only use the credit to achieve a modest improvement in household earnings so that they can improve their family's welfare, while men may place greater focus on exploiting business expansion opportunities. Consistent with this, Matienzo (1993) and de Mel et al (2008) report higher rates of return for male-owned businesses supported by micro-finance than for women-owned businesses. Kevane and Wydick (2001), examining microfinance schemes in Guatemala, find that during their childbearing years, female entrepreneurs supported by microfinance are unable to generate as much employment in their businesses as their male counterparts, but when women pass their mid-thirties, these differences largely disappear.

When women do not make (as) productive investment decisions as men, this may be because of discrimination within the household. de Mel et al (2008) demonstrate that their findings that women make less productive and profitable investments than men is consistent with the idea that women may be vulnerable to having their investment 'captured' by the male member of the household. As a result of trying to prevent such capture, women may invest in equipment rather than working capital or inventory even if it yields very little or no return.¹⁶

2.4 Gender inequality reduces agricultural productivity

There is clear evidence that female-owned plots are less productive, and that reducing the inequality in the allocation of resources within the household could increase incomes for agricultural households. In countries where small-scale agriculture is important, this could have an appreciable impact on the level of economic output and, possibly, on growth.

In most countries the distribution of physical and human capital relative to agriculture favours men. Differences in rights and responsibilities within the household lead to inequitable distribution of resources which reduces agricultural productivity. Compared to agricultural plots managed by men, women's plots typically:

- Have significantly lower yields;
- Have lower inputs of labour;

14 http://www.grameen-info.org/index.php?option=com_content&task=view&id=632&Itemid=664 Accessed 7th June 2010

15 Although this is contested by some authors, see Mallick (2002).

16 The de Mel et al (2008) study is based on a randomised experiment in which participants were provided with grants rather than loans.

- Use fertilizer less intensively; and,
- Achieve lower profits.

This discrimination is inefficient. As increasing the amount of resources devoted to a plot results in smaller and smaller increases in output (law of diminishing marginal returns), more output would be acquired through applying resources equally across all plots managed by a household.

There is good evidence that achieving gender equality could increase agricultural profits and yields. Goldstein and Udry (2008) find that, in Ghana, differences in profitability between men's and women's plots can be explained by the longer fallow periods on men's plots. If all plots were left fallow for an equal period then the median change in profits per household would increase by 25 per cent. They calculate that, given the share of such agriculture in the Ghanaian economy, this could increase Ghanaian GDP by one per cent; although this would be a one-off gain and would not affect growth. Similarly, Udry (1996) finds that in Africa female managed plots are farmed less intensively and a reallocation of resources within the household could increase output by six per cent. Alderman et al (1995) estimate that household output in Burkina Faso could be increased by 10 to 20 per cent by reallocating existing resources more efficiently between plots; gender discrimination is a major source of this inefficiency.

The reasons for discriminatory resource allocation vary across countries. The policies to make agricultural productivity an effective transmission mechanism need to be tailored to the cultural and environmental context for gender equality to lift growth. For instance, in the case of Burkina Faso, the documented gendered pattern in agricultural production can be accounted for entirely by the social institution which places an obligation on the head of the household and the fact that the household head is usually a man. Kanzianga and Wahhaj (2010) finds that in Burkina Faso plots owned by the head of the household are farmed more intensively than similar plots owned by other household members of both genders.¹⁷ This implies that status within the household rather than gender *per se* is the most important factor in the allocation of household resources; household heads are subject to social norms which require them to spend more of the earnings from his (or her) plots on household public goods. Consequently, improving a woman's status within the household might not result in aggregate agricultural productivity gains.

Box 5 Shea Butter

The Shea tree grows in a 3 million km² belt across Sub-Saharan Africa. Both the harvesting and processing of shea nuts into butter is a labour intensive, but lucrative, process carried out exclusively by women.

Although men dominate the trading and wholesale market for exports of shea nuts, women trade at the local level - representing 91 and 88 per cent of shea traders in the markets of Zitenga, Burkina Faso and Diepani, Benin respectively (FAO, 1999). Continued access to shea and to trade opportunities is becoming more crucial than ever for rural African women. The growing number of single income, female headed households - as a result of AIDS-related deaths or the rise in seasonal urban migration of the male labour force (CIA, 2010) - makes the shea trade and subsequently, female financial independence, increasingly indispensable.

Access to capital is a major hurdle for women's participation in processing and capacity building (FAO, 1999), and the formation of women's groups or cooperatives has had significant impacts on access to credit and investment. Through improving access to markets and investing pooled resources at the community level the cooperatives are geared towards improving efficiency and raising standards of living. One such organization in Ghana reported increased profit earnings with the formation of the cooperative from \$0.02 per kilogram to \$0.10 per kilogram (IPS, 2008). Moreover, in allowing women to contribute a larger percentage of domestic income streams, they enjoy increased status at the household and, by extension, the community level.

Investments made by various shea cooperatives include labour saving devices such as mechanical grinding mills and oil extractors that improve production efficiency; community infrastructure in the form of water wells and pipes, medical clinics and schools; educational courses on literacy and business to foster entrepreneurial and managerial

¹⁷ Note that the intensity with which a plot is farmed refers to the intensity with which inputs are applied; for example, fertiliser, labour inputs and access to machinery. This is separate to the length of time that a plot is left fallow; there is an optimal length of time to leave a plot fallow but credit, or other, constraints may mean that some plots have fallow periods which are too short. Thus these results from Ghana and Burkina Faso are not necessarily inconsistent, although in any case it may be expected that practices differ across the two countries.

skills; and IT training which affords access to market price data, new markets and a plethora of information on new initiatives, labour laws and best farming practices (IICD, 2010).¹⁸

Looking beyond financial gain, shea projects and cooperatives have produced substantial social benefits by providing a forum for the cultivation/expansion of social initiatives such as health care, nutrition and voting rights (The Shea Project, 2008). Traditionally, women in rural Africa tend to have very little formal education and as such are excluded from traditional employment. Education projects play a significant role in teaching women about the shea market and production standards. In a similar vein, access to technology has opened up new markets and increased awareness of this unique industry. The development of entrepreneurial skills and female ownership of shea business is crucial for gender development in these regions.

The shea trade has attracted support from a number of external donors and NGOs, raising the profile of women and their shea projects. The government in Burkina Faso for example established a coordinating committee to manage the growing number of shea projects in the region¹⁹. This committee, a direct result of the shea trade, enjoys a high profile putting rural African women starkly on the political agenda (Harsch, 2001).

2.5 There is less evidence on the impact of gender equality on other key factors

2.5.1 Impact of gender inequality on the rule of law

Improving gender equality is associated with lower levels of corruption. Swamy et al (2000) look at the relationship between corruption and various measures of female engagement in public and economic activities and find that:

- an increase of 25 percentage points in the proportion of female MPs is associated with a one point improvement in an index of corruption (with that index ranging from 0 to 6); and,
- an increase of about 13 percentage points in women's share of the labour force is associated with a one point improvement in the International Country Risk Guide corruption rating.

The finding on the relationship between the proportion of female MPs and corruption should, however, be treated with a degree of caution. To achieve the 25 percentage point improvement stated by the authors would imply an increase in the proportion of women MPs by more than 3.5 times.²⁰ To extrapolate the relationship between the two variables to predict what would happen in the event that one of the variables changed by such a large magnitude reduces the robustness of the conclusion.

In contrast, the finding on the impact of the share of women in the labour force is more robust. This is corroborated by a study from Georgia which shows that owners and managers of enterprises are more likely to be involved in self-reported bribe-giving if they are male.

The precise transmission mechanisms are not identified, nor has the possible magnitude of this impact on economic growth been researched. With regard to transmission mechanisms, the authors explicitly state: '*... the gender differences we observe may be attributable to socialization, or to differences in access to networks of corruption, or in knowledge of how to engage in corrupt practices, or to other factors. We do not attempt to identify these underlying factors, but rather to document several statistically robust relationships that point towards a gender differential in the incidence of corruption.*'

2.5.2 Impact of gender inequality on the provision of infrastructure

More political representation for women is associated with provision of a different mix of public goods. Chattopadhy and Duflo (2004) show that, in India, having a woman as the head of a village council affects the type of public goods provided: leaders invest more in infrastructure that is directly relevant to the needs of their own gender. For example, in West Bengal, women are more concerned about, and spend more money on, drinking water and roads than other public goods, while in Rajasthan women are concerned more than men about drinking water but less often about roads. In both cases, the expenditure

¹⁸ The Zantiébougou Women Shea Butter Producers Cooperative (COPROZAKAN) was trained by the International Institute for Communication and Development (IICD) to use computers.

¹⁹ The committee is headed by Ms. Giserle Guigma, the minister of Women's Advancement.

²⁰ The mean percentage of women in parliament for the countries used to undertake the analysis is 9.7 and the standard deviation is only 8.2

by women-headed villages reflected this..

However, no studies have examined whether this alternative mix of public goods is better at promoting growth. If the provision of female-relevant public goods is inefficiently low due to discrimination or social institutions, then increasing the number of women in influential positions could lead to additional growth. This is likely to be country specific.

2.5.3 Impact of gender inequality on openness to trade and investment

There is substantial localised evidence that women face barriers in small scale border trade, but no estimates of the impact of this on economic growth. For example, women face greater delays at border crossings and may be subject to cultural restrictions meaning they cannot travel alone (Shaw, 2010). These barriers are similar to the range of barriers women face to enter entrepreneurship: a lack of access to resources such as land or collateral for loans can prevent women from harnessing profitable trading opportunities. However, there are no reliable estimates of the impact of these barriers on economic growth, or on the extent to which trade would be expected to increase if these barriers were removed.

Trading opportunities will be enhanced by greater human and physical capital, and improvements in these characteristics through gender equality can enhance the potential of trade to lead to economic growth. For example, enhancing the productivity of women through tertiary and secondary schooling will increase the rate of return on capital and could encourage foreign direct investment in export oriented sectors.

Wage inequality may increase competitiveness in labour-intensive export industries in the short-term. Many countries, particularly in East Asia, have achieved sustained increases in GDP through a focus on exports of labour-intensive manufactured goods. Women make up a large proportion of the workforce in many labour-intensive manufacturing industries such as cut flowers, textiles and garments (Çağatay, 2001). Gender wage inequality is associated with increased exports of, labour-intensive goods (Busse and Spielmann, 2006; Seguino, 2000). Where education inequality is reduced, making female workers more productive, but the wage gap persists, the profitability of such industries will be increased. This will lead to greater job opportunities for women, but there may be associated negative impacts due to women spending less time on household activities and the withdrawal of children from school to do household duties in place of the employed woman.

2.5.4 Impact of gender inequality on macroeconomic stability

Increased female political participation may lead governments to adopt more redistributive policies. Studies, primarily undertaken in the developed world, suggest that expansion of the female franchise is associated with increases in government programmes with a redistributive or social insurance element. For instance Abrams and Settle (1999) found that expanding the female franchise in different cantons of Switzerland was associated with more redistributive policies and higher overall government spending, but lower government consumption spending. Lott and Kenny (1999) find broadly consistent results from the US.

One paper has suggested that greater female participation is associated with lower government budget deficits. Krogstrup and Wälti (2007) find that expansion of suffrage in Swiss cantons reduced budget deficits by a small but statistically significant amount. They attribute this to the higher life expectancy of women as well as women having greater concern about the potentially negative impacts of debt accumulation on future generations. However, this finding has yet to be corroborated by other studies and may be driven by the specifics of the Swiss data set.²¹

Evidence on the links between gender equality and macroeconomic stability is still at an embryonic stage and even where links have been suggested, the impact on economic growth is ambiguous. More research is required on understanding whether female political participation might have an impact on

²¹ Specifically, one of the two cantons that introduced female suffrage first had by far the largest budget deficit and so may have been under pressure to reduce the deficit anyway. By contrast, the two cantons that introduced female suffrage last had the lowest budget deficits.

macroeconomic stability. For instance, studies examining the impact of expansion of female parliamentary representatives (as opposed to female suffrage) are lacking, while there are also no studies looking at the impact of gender equality on other macroeconomic factors such as inflation rates or monetary policy. Studies with a developing world focus are also missing. Further, in cases where a link has been suggested, it is still unclear whether the impact of greater female participation is necessarily supportive of economic growth, e.g. there is considerable ongoing debate as to whether increasing the role of women in government will have a positive or negative impact on economic growth (Tanzi and Schuknecht, 1997).

2.6 Summary

Table 5 overleaf summarises the evidence and key message on each of the key factors for growth, and associated transmission mechanisms, discussed above. It shows that there is some relationship between gender equality and seven of these eight factors.

There is a strong link between gender equality and some of these factors. The links appear to be strongest in the case of human capital accumulation, improving the competitiveness of (labour) markets and improving agricultural productivity. In many countries, the link to physical capital accumulation will also be important although this evidence is only available for semi-industrialised countries. In the case of human capital accumulation, the increase in employment opportunities provided to more educated girls and the improved access to family planning allowing countries to exploit a ‘demographic dividend’ appear to be the most important.

However, even in many of these cases, the arguments for why gender equality will promote economic growth are more subtle and nuanced than may first appear. In the case of increasing human capital accumulation through girls receiving more education opportunities, the evidence suggests that this will only have a significant impact on growth in cases where there are also employment opportunities for women, (potentially) where countries have a significant export-focussed manufacturing sector and if the country has already reached middle-income status. Improving gender equality in secondary and tertiary education also seems more important than ensuring universal primary education. Likewise, in the case of agricultural productivity, policies aimed at exploiting this transmission mechanism will need to be tailored to the cultural and environmental context if gender equality is to lift growth.

Gender equality may, on some occasions, impede economic growth. While education and employment opportunity equality will often have a positive impact on growth, gender wage equality may reduce growth. Gender wage inequality is associated with increased exports of, labour-intensive goods (Busse and Spielmann, 2006; Seguino, 2000) which have been a major source of growth for many developing countries in recent years.

For other factors, more evidence is required. In many cases, there is evidence that gender inequality can restrict a country’s performance against a factor but where the impact of this reduced progress on economic output or growth has not been assessed. These include improving the competitiveness of markets by removing barriers to entrepreneurial activities, increasing flows of trade by removing (often similar) barriers and reducing levels of corruption (although the effect here is expected to be small). In the case of infrastructure provision, it is unclear, and context specific, whether the different priorities that women have on infrastructure would promote or impede economic growth. Likewise, while it seems likely that women may have different macroeconomic priorities to men, again it is unknown whether this is conducive to growth.

Table 5 Summary of evidence on transmission mechanisms

Key factor	Transmission mechanism	Evidence
Human capital	More educated girls and women can undertake higher value economic activity	Context specific. Appears strongest in countries with an export focused manufacturing base and few cultural barriers. Secondary and tertiary education particularly beneficial
	Greater control for women in the domestic sphere (household resources and family size) augments the human capital of the next generation	Women are more likely to spend household income on children. Large family size may not always adversely impact education; strongest evidence is due to effect of pre-school children on older siblings' education
	Greater access to family planning leads to declining fertility and a demographic dividend	Significant impact so long as other preconditions for growth in place
	Better maternal health increases the number of women who can participate in the labour force	Little impact on economic growth on the basis of currently available data – more specific studies required
Competitive markets	Improving gender equality can make labour markets more competitive	Growing in importance over time. Often inequality in employment has larger effect on growth than inequality in education.
	Increasing the entrepreneurial opportunities for women increases the competitiveness of product markets	Well-documented evidence on legal barriers in some countries, but no empirical link made with growth
Physical capital	Higher household savings rates through more female employment and equal distribution of income allowing greater investment	Evidence focused in semi-industrialised countries
	Rising gender equality may boost the profitability of investment	Small impact as higher skilled women raise productivity faster than wages go up, boosting rates of return
	Women make more productive investments than men	Mixed evidence. Women may focus on using profits to purchase household goods rather than re-invest into business, especially during child-bearing years.
Rule of law	Precise transmission mechanism unclear	Small but significant relationship between rising female participation and lower levels of corruption
Infrastructure Rule of law	Women prioritise different public goods to men Precise transmission mechanism unclear	Unclear whether alternative priorities generate higher growth Small but significant relationship between rising female participation and lower levels of corruption
Agricultural productivity	Discrimination means resources are not allocated efficiently across household plots	Household income in Africa could increase by up to 25 per cent; conditional upon cultural context.
Openness to trade	Discrimination prevents women engaging in trade.	Significant localized evidence but no attempt to assess overall impact.
Macroeconomic stability	Female suffrage leads to different role of government in economic sphere	Limited evidence to suggest that women prefer redistributive policies and possibly lower deficits. Link to growth not yet established.

Source: Vivid Economics based on sources referenced in the text

3 How does gender equality help attain the MDGs?

This section examines the potential repercussions which greater gender equality could have on the achievement on the Millennium Development Goals not explicitly related to gender equality. There is evidence that gender equality has a relationship with all of the other MDGs (see Figure 11 below)²². The focus of this analysis is on aspects of gender equality captured by the indicators in MDG 3 and MDG 5 namely:

The ratio of boys to girls in education;

The share of women in wage employment in the non-agricultural sector;

The proportion of seats held by women in national parliaments;

The maternal mortality ratio;

The proportion of births attended by skilled health personnel;

The contraceptive prevalence rate;

The adolescent birth rate;

Antenatal care coverage; and

Unmet need for family planning

In taking this approach it needs to be recognised that improving gender equality can be relevant to the MDGs in ways other than through these five indicators.

3.1 MDG 1: Eradicate Extreme Poverty and Hunger

3.1.1 *Increasing female education and employment can reduce poverty by increasing incomes*

Increasing the amount of education received by women could increase incomes and help to eradicate poverty. Education can increase the level and the growth rate of income regardless of the gender of those receiving the education. However, because women are generally less educated than men, there is greater scope for increases in income through the education of females, particularly in developing countries. Psacharopoulos (2002) reviews the global evidence on the rate of return to education and concludes that, on average across all studies, an additional year of schooling increases wages by 10 per cent and that the average return for women is slightly higher than that for men.²³ This result will, of course, differ across countries and in different contexts even within countries.

The relationship between earnings, employment and education is different in Africa and some other developing country regions. In developed economies the rate of return is often higher for primary education than for other levels and lower, but still positive, for secondary and tertiary education. In many developing countries, particularly in Africa, the reverse is true. The early years of schooling have a small impact on wages and productivity, and the additional return from a further year of education increases as the total number of years of schooling increase.

Rapid expansion of basic education in Africa has not increased incomes. The evidence from returns to education from increased schooling in Africa suggests the need for a more nuanced picture of how increasing educational opportunities for women may reduce poverty. More schooling leads to higher wages primarily because it allows people to make life-choice decisions that are associated with higher incomes e.g. move into the labour market, move out of the agricultural sector, or move into a skilled job. Once someone is in a particular job or sector, the amount of education they have had has little impact on their

²² Although for MDG8 'Developing a global partnership for development', there is only a small amount of evidence.

²³ The rate of return to education is the incremental increase in earnings that would be expected if a worker completed an additional year of schooling. These estimates are derived from regressions which typically control for other factors, such as age and work experience, that also affect earnings. The rate of return is conditional on all these other factors: it is how much earnings of an individual worker would be expected to increase if she received another year of schooling, holding all her other characteristics constant.

wages until they have more than around 10 years of schooling. A few extra years of primary education will not affect life opportunities and will have less impact on poverty. Consequently, the rapid expansion of compulsory educational opportunities in Africa has not resulted in sustained increases in incomes or economic growth and the rate of return to education in this context is actually quite low (Knight et al, 1992; Bigsten et al, 2000). A further contributory factor may be that the quality of primary education in Africa is too low for it to have a significant impact on incomes and growth, although there is limited data to quantify the extent of this (Hanushek and Wößmann, 2007).

Consequently, to get the largest boost in aggregate lifetime earnings, it may be better to focus resources into giving secondary and tertiary qualifications to women who already have primary schooling than into expanding the number of women who receive basic education. For women who have opportunities to enter into skilled jobs in the formal sector, such as those in urban areas with a manufacturing industry, the impact on her wage of giving her secondary or tertiary schooling when she already has basic education will be greater than the increment she would get if she had no schooling and was given basic education only. For unskilled workers the benefits from work experience may be higher than that from formal education; from the narrow perspective of lifetime earnings, these workers may be better off with additional years in the labour market rather than schooling unless they are going to receive more than around 10 years of schooling.

Women may see larger increases in earnings from additional education than men, so long as they secure employment in the formal sector. Kingdon and Söderbom (2007) find that the earnings premium from education is higher for women than for men in both wage and self-employment. For example, table 6 shows that if a woman who has completed middle school is given a year of secondary education, her expected wage would increase by 39.5 per cent; a similar man would expect an increase of only 2.7 per cent. Completing primary school increases the expected earnings of a woman by a total of 39 per cent and of a man by 9.5 per cent. In contrast, educating women does not have a positive impact on their earnings in agriculture.²⁴

Table 6 Education increases wages for Pakistani women in wage employment but lowers wages for those in agriculture

Increase in earnings from an additional year of schooling if that year is... (%)	Young Men (waged)	Young Women (waged)	Young Men (agriculture)	Young Women (agriculture)
Primary (5 years)	1.9*	7.8*	4.5	-15.4
Middle (3 years)	2.6*	2.0	6.9	-50.7
Secondary (2 years)	2.7*	39.5*	13.3	-22.4
Higher secondary (2 years)	5.8*	2.3	14.3	-43.2
Tertiary (any further)	9.0*	9.5	-1.5	-70.8

Source: Kingdon and Söderbom (2007); those results which are statistically significant are marked with an asterix.

Increasing the share of women in the non-agricultural sector will also enhance poverty reduction by increasing the return women receive from education. The findings of Kingdon and Söderbom (2007) support this. Women experience higher returns in the formal wage sector than in the agricultural sector, and so reducing gender inequality in employment will increase the incentive for females to acquire education and result in them having higher incomes.

²⁴ The strongly negative rates of return seen for young women employed in agriculture may be caused by a number of reasons. It is possible that it reflects a 'selection bias' i.e. that women who return to agricultural work after receiving education are typically low productivity workers. It may also reflect difficulties in measuring rural employment.

In many cases, investment in physical capital would likely have a greater poverty reduction impact than investment in education. Without a sufficient stock of capital, increases in education cannot be used productively and so do not contribute to growth in GDP or earnings. The results of Bigsten et al (2000), shown in table 7, show that firms in Africa achieve much higher returns from deploying additional physical capital²⁵ than by employing more educated workers. This suggests that workers' productivity, and therefore their wages, would increase by more if greater physical, rather than human, capital was employed.

Table 7 In Sub-Saharan Africa the rate of return on physical capital greatly exceeds that of human capital

Rate of return (%)	Cameroon	Ghana	Kenya	Zambia	Zimbabwe
Impact on individual earnings (% increase in earnings for each additional year)					
Primary school	2	3	4	7	7
Secondary school	6	6	12	16	19
Post-secondary education	12	12	20	25	31
Average	8	9	10	16	16
Impact on firm value-added (rate of return %)					
Physical capital	17	27	22	10	34
Human capital	4	4	3	1	2

Source: Bigsten et al (2000)

3.1.2 Increased gender equality will also improve childhood nutrition

As well as reducing poverty, greater gender equality would lead to women having a higher status in the home, which in turn would have a positive effect on the nutrition of children. Smith et al (2003) conclude that gender inequality makes the greatest contribution to regional differences in child nutrition, with children having better nutritional status in regions where there is less gender inequality. In South Asia, they estimate that gender equality would reduce the under-three child underweight rate by around 13 percentage points, while the corresponding decrease in Sub-Saharan Africa would be 3 percentage points.

3.1.3 Direct evidence on the impact of improved reproductive health on poverty is less strong

The evidence that better maternal health has a direct poverty reduction impact is scarce. As this topic is covered in other sections detailing the impacts of poor maternal health on economic growth (Section 2.1.4) and on children's health and education (Sections 3.2.2 and 3.3.2), the rest of this section addresses links between family planning and poverty reduction.

Some studies are unequivocal that lower fertility rates reduce poverty. In a study of 59 countries Eastwood and Lipton (1999) estimated that if the birth rate had decreased by five per 1000 population in the 1980s, the proportion of people living in poverty would have fallen by a third. Retardation of economic growth and distributional effects were found to have equal weight in keeping poverty rates high. It might be reasonably argued that a greater number of children will lead to lower household earnings (due to women's reduced ability to work), lower per capita consumption and lower investment in the health and education of each child (see Section 2.1.2), contributing to inter-generational poverty.

Others have argued that lack of family planning is only associated with poverty, that causation is difficult to prove and highly context-dependent. Causal channels are difficult to establish because of the degree of

²⁵ Physical capital means buildings, land, plant and machinery used by firms.

simultaneous causality between poverty, fertility and other household-level variables, and relationships may be associative. A review of the link between reproductive health and poverty reduction by Greene and Merrick (2005) found a general agreement that it is dependent on external factors: the link will be stronger in countries with higher returns to labour, at a later stage of their demographic transition, with little state provision of child services, or where families are more 'nuclear' and self-reliant with little extended family support

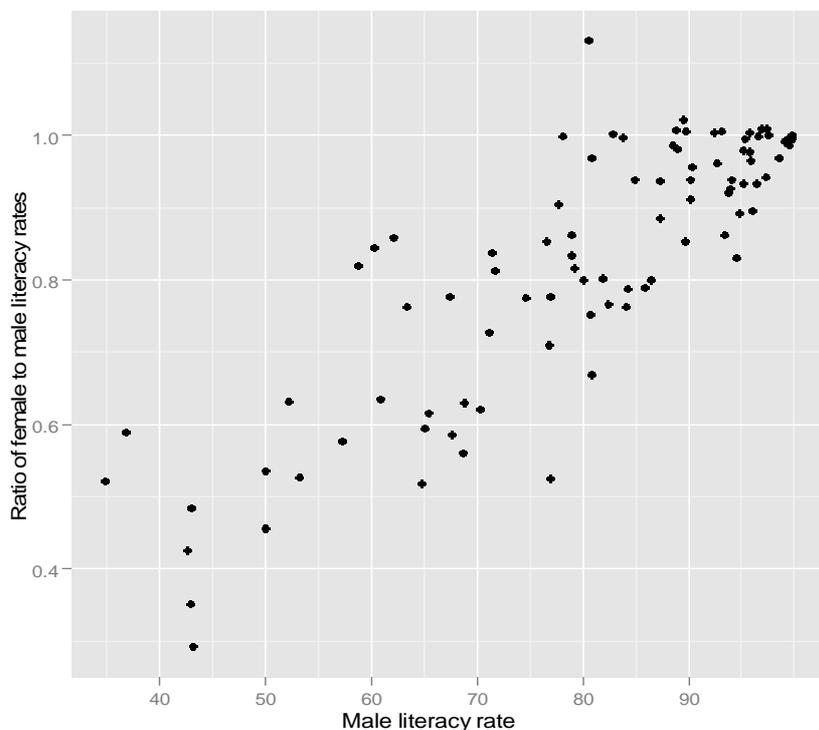
Within countries, there is strong evidence of correlation between household poverty and childbearing. On average, the poorest fifth of women in developing countries have a fertility rate twice that of the wealthiest fifth (Gwatkin et al., 2004). The association may be partly due to larger families being a rational response to poverty and lack of social security; however, this is strongly disputed by some authors who argue that most couples will opt for fewer children given the choice (Cleland et al., 2006).

3.2 MDG 2: Achieve Universal Primary Education

3.2.1 *Achieving universal education and reducing gender inequality in education are mutually reinforcing*

Inequality in education is greater in countries with low average levels of education. Achieving MDGs 2 and 3 appears to be mutually reinforcing. Figure 9 shows that improving the overall level of education (MDG 2) is associated with reducing inequality in education (MDG 3). This suggests that tackling MDG 2 and MDG 3 in tandem will be an effective strategy as they are mutually reinforcing. In countries where there is a low male literacy rate there is not only a low female literacy rate: the female literacy gap is larger in these countries. One possible reason for this is that when there are few employment opportunities, there is less desire to increase competition for that employment by also educating women: this suggests a policy of promoting general increases in education and expanding formal sector employment opportunities for all workers may be the best way to both promote gender equality (and economic growth).

Figure 10 The lower the literacy rate of males, the larger the gap between male and female literacy rates



Source: OECD data

3.2.2 *Better reproductive health can improve children's educational outcomes in some circumstances*

While intuitively self-evident that better maternal health should improve children's live chances, the evidence linking it to children's educational outcomes is currently weak. There are three main routes through which improved maternal health could affect children's education: smaller family sizes allowing more resources per child; maternal labour (either in the home or in earning extra income) allowing children to attend school; and better child health improving educational abilities.

Large family size is most likely to have a negative impact on a child's education if he or she has pre-school age siblings. Evidence on the links between family size and education were reviewed in Section 2.1.2. While some studies find that family size has a negative effect on children's educational enrolment or attainment, others find the relationship less clear-cut, due to, for example, the additional household income which older siblings can provide. The most important factor appears to be the presence of pre-school children, which studies agree can lead to older children being withdrawn from school. Girls appear more likely to have their education curtailed than boys in some studies.

Lower fertility rates lead to greater societal resources for children's education. The effects on children's education of higher fertility extend outside the home – a country with an expanding number of young people needs to spend an increasing amount on education merely in order to maintain quality. This effect has been noted by several authors (Cleland et al., 2006; Bloom and Sachs, 1998) but remains unquantified.

There is some evidence that maternal death can reduce children's years of schooling. Studies in Mexico and Indonesia have found that after a parent's death children have less chance of school enrolment and are more likely to drop out of school (Gertler et al, 2003). A mother's death specifically appeared to be significantly linked to delayed school entry in both countries and drop-out rates in Mexico alone. This could indicate that early years care from mothers is particularly important to ensure school enrolment.

3.3 MDG 4: Reduce Child Mortality

3.3.1 *Gender equality in education and other areas would reduce maternal and child mortality rates*

As already discussed in the section on the links between gender equality and economic growth through human capital (section 2.1.2) Abu-Ghadia and Klasen (2004) estimate that countries which fail to meet MDG 3 could have on average, by 2015: a prevalence of underweight children under the age of five which is 25 percentage points higher; and, an under-five mortality rate which is 15 per 1000 higher.

This is corroborated by a variety of medical studies. For instance, one study found 'a strong relationship between the level of female literacy and education, and maternal and infant mortality' (McAlister and Baskett, 2006). Women with more education are more likely to use maternal health services and antenatal care, and the same is likely also true for women in employment (Kirrin et al, 2007).

3.3.2 *Improved reproductive health could substantially reduce child mortality rates*

There is a clear link between maternal health and neonatal mortality. Obstructed labour and malpresentation are the two greatest risk factors for neonatal death; it is estimated that 30 to 58 per cent of neonatal deaths are due to obstetric complications (Lawn et al., 2005). Antenatal health problems such as poor nutrition, hypertension, anaemia and malaria also contribute significantly to the risk of neonatal death. Low birthweight babies from undernourished mothers account for 60-80 per cent of neonatal deaths (Lawn et al., 2005).

Children whose mothers die in childbirth are less likely to survive. A study in Nepal showed that infants of mothers who died during childbirth were six times more likely to die in the first week of life, 12 times more likely to die between one week and one month, and 52 times more likely to die between one and six months (Katz et al., 2003). Studies in Bangladesh have found that girls are more likely to die than boys following an adult death (specifically, 40 and 100 per cent more likely to die following maternal death at ages up to 1 year and 5 years respectively; 22% more likely to die following adult death at any age) (Roy et al., 2001; Strong, 1992).

Averting neo-natal deaths through better maternal care provision is a highly cost effective medical intervention. One study suggests that providing all pregnant women with the currently unmet need for

maternal and newborn health services in the developing world could save 6 million maternal Disability Adjusted Life Years (DALYs)²⁶ and 35 million newborn DALYs. The cost of saving a healthy year of life would range between USD 122 in Asia and USD 320 in Latin America and the Caribbean (Singh et al., 2009). This makes it a 'very cost-effective' intervention in all of these regions using the thresholds developed by the World Health Organisation.²⁷

While there is plenty of evidence on the links between maternal and neonatal mortality, there is less on the impact on older children's health and well-being of maternal death. One study (Gertler et al., 2003), reports that studies in Indonesia and Mexico had found that maternal death is a strong predictor of child mortality (while paternal death was less so in Mexico and not at all in Indonesia).

Lack of access to family planning also has an adverse effect on child health. Women who have borne many children can suffer from nutritional depletion which puts their babies at risk. Infants born to mothers who have had more than six children are 40-50 per cent more likely to die (Lawn et al., 2005), while conceptions taking place less than 18 months after the last birth are at a 40 per cent greater risk of low birth weight and prematurity (Zhu et al., 1999). It is estimated that 9 per cent of under-5 deaths could be averted by increasing inter-birth intervals (Cleland et al., 2006). Children in larger families in developing countries are more likely to be shorter, particularly if the family has surpassed its desired size (Desai, 1995). In addition, mothers who are unintentionally pregnant are less likely to seek antenatal care, and their children are less likely to be well-nourished and immunized (Acharya, 2004).

Providing greater access to family planning, by reducing the number of unwanted pregnancies, can further increase the cost effectiveness of maternal care provision. One study has estimated that for every dollar spent on providing modern contraceptives, \$1.40 would be saved in medical care costs. The lowest income countries would benefit disproportionately from these savings (Singh et al., 2009).

3.4 MDG 6: Combat HIV/AIDS, Malaria and Other Diseases

3.4.1 *Gender inequality is a barrier to combating HIV/AIDS and other diseases*

Empowered women are better able to protect their health. HIV/AIDS, malaria and respiratory infections are some of the leading causes of female death in low income countries (WHO, 2009). Women may lack information or resources to protect their health due to lack of education, low incomes, unequal control of resources in the household and restrictions on their mobility (Sen et al., 2007). It follows therefore that improved gender equality in income and education will allow women to be both more informed about disease prevention and to access healthcare for themselves and their children, as well as less likely to put themselves at risk of contracting HIV through commercial sex work.

In some countries many of the factors which make women vulnerable to HIV infection are cultural and may not be addressed directly through improved female education and income. These include socially accepted infidelity by men, expectations of early sexual activity by girls and aversion to use of condoms (WHO, 2003).

Gender inequality increases the risk that women contract HIV. In South Africa, Dunkle et al (2004) find that, after adjusting for other risk factors, women subject to gender-based violence and low levels of control in their relationships were at increased risk from HIV infection. Increasing women's access to education has also been cited as an important tool in stopping the spread of HIV/AIDS (Türmen, 2003).

The incidental impact of family planning programmes on HIV infection rates should not be overstated. Family planning has clear overlaps with the prevention of sexually transmitted disease, particularly HIV/AIDS. However, barrier methods are a relatively uncommon family planning method in developing countries compared to sterilisation or IUDs (UN, 2009b).

²⁶ DALYs are a measure of overall disease burden taking into account both years of life lost and the equivalent years of 'healthy' life lost by virtue of being in states of poor health or disability.

²⁷ The thresholds are determined by reference to a country or region's GDP per capita. An intervention is classified as very cost effective if it is lower than the GDP per capita (in 2005 international dollars). An intervention with a cost effectiveness of less than \$1,695 would be classified as very cost effective in any region of the world. See http://www.who.int/choice/costs/CER_levels/en/index.html

3.5 MDG 7: Ensure Environmental Sustainability

3.5.1 *The greatest environmental impact of improved gender equality is likely to be through fertility decline*

Reduced pressure on the environment from reductions in population growth may be offset by changing consumption patterns. Choice over family planning allows fertility to decline: other things being equal, a population which is smaller *relative to what it would otherwise have been* (there will not be an absolute decline for some decades in most developing countries) requires less energy and food; this has clear implications for the MDG 7 objectives of slowing biodiversity loss, reducing CO₂ emissions and providing drinking water and sanitation.

Lower fertility rates will reduce greenhouse gas emissions growth. Integrated assessment climate models which vary population clearly show the impact of high population on global CO₂ emissions: amongst the scenarios in the IPCC's *Special Report on Emissions Scenarios*, the scenario with slowest economic growth, but greatest population growth, stands out (along with the high economic growth, intensive fossil fuel use scenario) as having CO₂ emissions in 2100 which are between 2 and 7 times greater than the other scenarios (IPCC, 2000)

High fertility rates make it more difficult to extend water and sanitation infrastructure. In particular, urban population growth can outpace investment in water and sanitation infrastructure, causing insanitary conditions which can contribute to the spread of disease (Hunter, 2001). In order to meet the MDG 7 target of halving the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015, Africa needed to extend access to these services to 30% of its rural population between 2001 and 2015, by far the most of any region (UNFPA, 2003). With an average population growth rate of 2.5% over that period, over fourteen years the amount of resources per capita to invest in water infrastructure would be 30% lower than if the population had been stable, likely to have significantly impeded progress.

While population is a key determinant of food demand, the impact of population growth on land use change and biodiversity loss can be complex. While population growth can drive conversion of natural ecosystems to agricultural land, factors such as distribution of land and international trade patterns may be stronger drivers in some contexts, while population growth can also stimulate improved land management and intensification (Hunter, 2001). Deforestation is closely linked to the increase of populations engaged in subsistence agriculture, but delinked from population growth when it is driven more by commercial considerations or when the productivity of land and labour are able to be increased (Marcoux, 2000). Pressure on fish stocks is unlikely to be affected primarily by population given that, on present trends, consumers in developing countries will eat more animal protein as they get richer even if population remains constant (OECD-FAO, 2008)

3.6 MDG 8: Develop a Global Partnership for Development

3.6.1 *The links between gender equality and developing a global partnership for development are mainly indirect*

Gender equality will address the needs of developing countries through its impact on economic growth and on the other MDGs. The links between increasing the political and economic engagement by women and the level of corruption was discussed in the analysis of growth conditions. There is a clear, if quite weak, statistical relationship between female engagement and lower levels of corruption, which will help to meet target 2 (develop further an open, rule-based, predictable, non-discriminatory trading and financial system).

3.7 Summary

Figure 11 overleaf summarises the evidence and key message on each MDG reviewed above. It shows that in all cases there is a link between improving performance against the indicators in MDG 3 and MDG 5 and improving performance against the range of other MDG indicators.

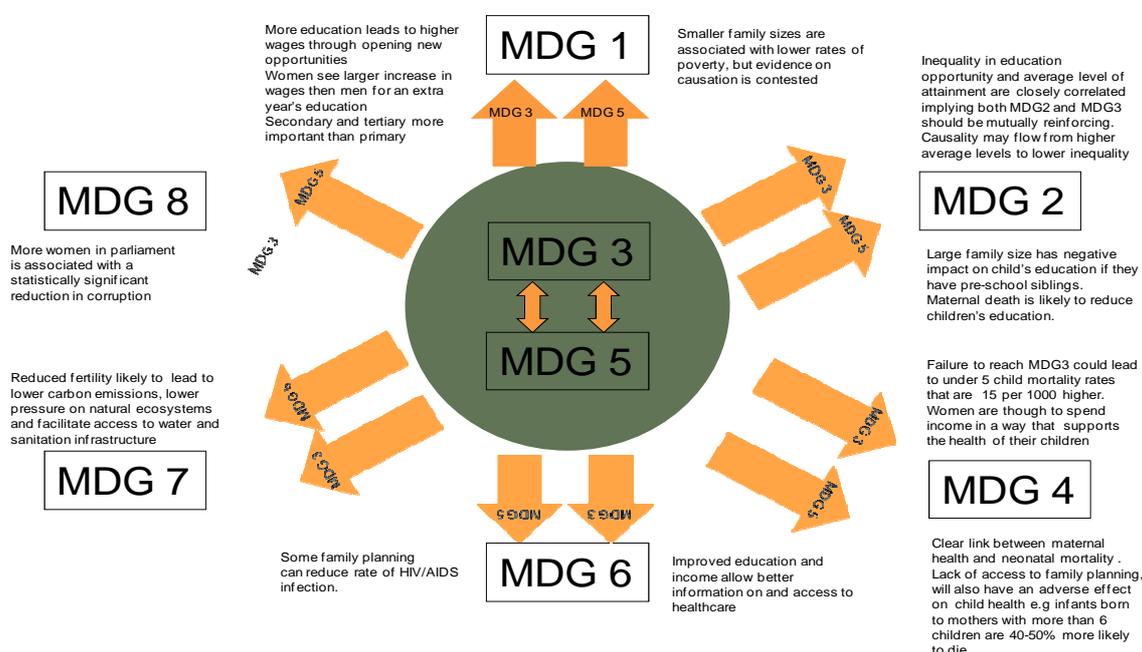
There are a number of cases where these links appear to be particularly strong.

In terms of MDG 3, the linkages appear to be strongest with MDG 1 and MDG 4. Promoting gender

equality of educational opportunity will in many cases yield a significant return for women in terms of higher lifetime earnings (and higher than the increase that a man would see for a similar increase in education access), helping to reduce the incidence of poverty (MDG 1). Likewise, if countries fail to meet their targets on MDG 3, it is estimated that under 5 child mortality rates could be as much as 15 per 1000 higher on average than otherwise.

In terms of MDG 5, the links are arguably strongest with MDG 4. Unsurprisingly, maternal mortality and morbidity are very closely linked with (neo-natal) infant mortality rates. High fertility rates are also associated with infant mortality rates. It is therefore not surprising that the evidence shows that improved access to maternal health services, which yield healthcare benefits to both mother and child, represents a ‘very cost effective’ intervention using the WHO’s criteria, a conclusion that would be further reinforced by reducing unwanted pregnancies by meeting the unmet demand for family planning.

Figure 11 Summary of evidence on the links between gender equality and MDGs



Source: Vivid Economics based on sources referenced in the text

4 Implications for policy and further research

The report explores the evidence base around the instrumental benefit of promoting gender equality in terms of, primarily, its impact on economic growth, as well as attaining the Millennium Development Goals.

4.1 There is a strong business case for investing in gender equality.

One of the key routes through which gender equality impacts on economic growth is human capital. More educated girls and women can undertake higher value economic activity. Women are primary care-givers to children, and if they have more control over resources this increases spending on children and accumulation of human capital in the next generation. More educated girls and women are likely to have fewer children leading, society-wide, to a fertility decline and its associated 'demographic dividend'.

Gender inequality in labour markets restricts economic output if there are instances where female workers could be more productive than incumbent men. Legal barriers to female entrepreneurship exist in several countries, although evidence on the resulting economic impact is lacking.

Some evidence suggests that enhanced gender equality increases levels in investment in a country. A more productive workforce, through greater equality in employment and education, increases expected rates of return and attracts investment. In addition, a more equal distribution of income may lead to a higher domestic savings rates in some countries.

Gender discrimination can act as a barrier to improving agricultural productivity. Unequal distributions of resources, particularly labour and fertilizer, create inefficiencies which, evidence suggests, significantly reduce incomes in some countries, particularly in Sub-Saharan Africa.

For other factors, more evidence is required. In many cases, there is evidence that gender inequality can restrict a country's performance against a factor but where the impact of this reduced progress on economic output or growth has not been assessed. In general, although processes of economic growth rely on too many factors for there to be a straightforward relationship between promoting gender equality and higher rates of economic growth or more economic activity. Nonetheless, overall, the evidence suggests that there are some clear cases where, if other preconditions hold, greater gender equality can lead to stronger economic performance.

That said, gender equality may, on some occasions, impede economic growth. While education and employment opportunity equality will often have a positive impact on growth, gender wage equality may reduce growth. Gender wage inequality is associated with increased exports of, labour-intensive goods (Busse and Spielmann, 2006; Seguino, 2000) which have been a major source of growth for many developing countries in recent years.

4.2 Maximising economic impact of gender-related investments will require clear understanding of context-specific, rather than general, conditions.

Gender equality in educational opportunity will not lead to growth unless there is a cultural environment where women can participate in the labour force. Economic opportunities for more educated women need to be combined with reduced inequality in employment. As an example of this, increases in the rate of female education in the 1990s in the MENA region has not resulted in economic growth probably because the participation rate of women has not increased (Klasen and Lamanna, 2008).

Increasing the number of women in secondary and tertiary education is likely to be more conducive to growth than focussing only on primary education. Again, this effect is particularly strong in middle income countries. In countries where at least 10 per cent of females have secondary education, an increase of one percentage point in the share of adult women with secondary school education increases per capita income growth by 0.3 percentage points (Dollar and Gati, 1999). This is corroborated by the more general findings on the links between education and economic growth referred to in the DFID Growth Policy paper (DFID, 2008).

Providing greater access to family planning, by reducing the number of unwanted pregnancies, can further increase the cost effectiveness of maternal care provision. One study has estimated that for every dollar

spent on providing modern contraceptives, \$1.40 would be saved in medical care costs. The lowest income countries would benefit disproportionately from these savings (Singh et al., 2009).

4.3 Using growth diagnostics to identify most effective gender-related investment and partnership opportunities

In recent years, increasing attention has been placed on the concept of 'growth diagnostics' (see DFID (2008)). This approach recognises that there are likely to be many policies adopted, or other changes made, that might promote economic growth but that the biggest growth benefit will be achieved by prioritising those policies/changes that address the most important (or 'binding') constraint on growth. With an understanding of the ways in which promoting gender equality does, and does not, affect economic growth, this idea can be applied to begin to consider *when* promoting gender equality will lead to a significant growth dividend.

Only when growth is held back by factors (such as low human and physical capital) that have strong linkages to greater gender equality will the promotion of gender equality facilitate economic growth. For instance, that promoting gender equality is likely to increase the level of human capital within an economy, help make labour markets more competitive and, in the right circumstances, boost agricultural productivity. If growth is being constrained by some of these factors then promoting gender equality may well have a significant instrumental benefit in promoting growth. By contrast, if the most important factor holding back economic growth is, for instance, a lack of macroeconomic stability, given the findings above that there are no obvious links between gender equality and macroeconomic stability, it is unlikely that policies that promote gender equality will have a significant growth impact

4.4 Conditions under which the impact of investments in gender equality can be maximised.

Further factors determining the efficacy of promoting gender equality as a means of delivering economic growth depend on which aspects of gender equality are considered. It is helpful to group the aspects of gender equality that may promote economic growth into three categories: those broadly captured by the goals of MDG 3; those broadly captured by the goals of MDG 5; and those that are not adequately captured either by MDG 3 or MDG 5.

The goals of MDG 3 in terms of promoting gender equality in education and in employment opportunity are most likely to lead to a growth dividend in a defined set of circumstances. These can be summarised as follows:

- **Cultural or legal barriers to female empowerment are already relatively low.** Economic opportunities for more educated women need to be combined with reduced inequality in employment. As an example of this, increases in the rate of female education in the 1990s in the MENA region has not resulted in economic growth probably because the participation rate of women has not increased (Klasen and Lamanna, 2008). Evidence from India demonstrates how entrenched social norms can discriminate against women in the labour market even when the economy develops (Esteve-Volart, 2004).
- **The country is already industrialising and, it appears, especially if it has a strong export-focused manufacturing sector.** Sri Lanka, Bangladesh and China are all examples of countries that have combined increasing education opportunities for women with higher economic growth. They share in common an export-focussed manufacturing industry, often in the textiles and garments sector, which is likely an important destination for women once they have acquired more education. This is consistent with the findings from, for instance, Dollar and Gati (1999) who show that promoting gender equality in education appears to have a larger impact on growth in middle income countries than in the least developed countries.
- **When gender equality of educational opportunities are extended to secondary and tertiary education.** In middle-income countries where at least 10 per cent of females have secondary education, an increase of one percentage point in the share of adult women with secondary school education increases per capita income growth by 0.3 percentage points (Dollar and Gati, 1999). This is

corroborated by the more general findings on the links between education and economic growth referred to in the DFID Growth Policy paper (DFID, 2008).

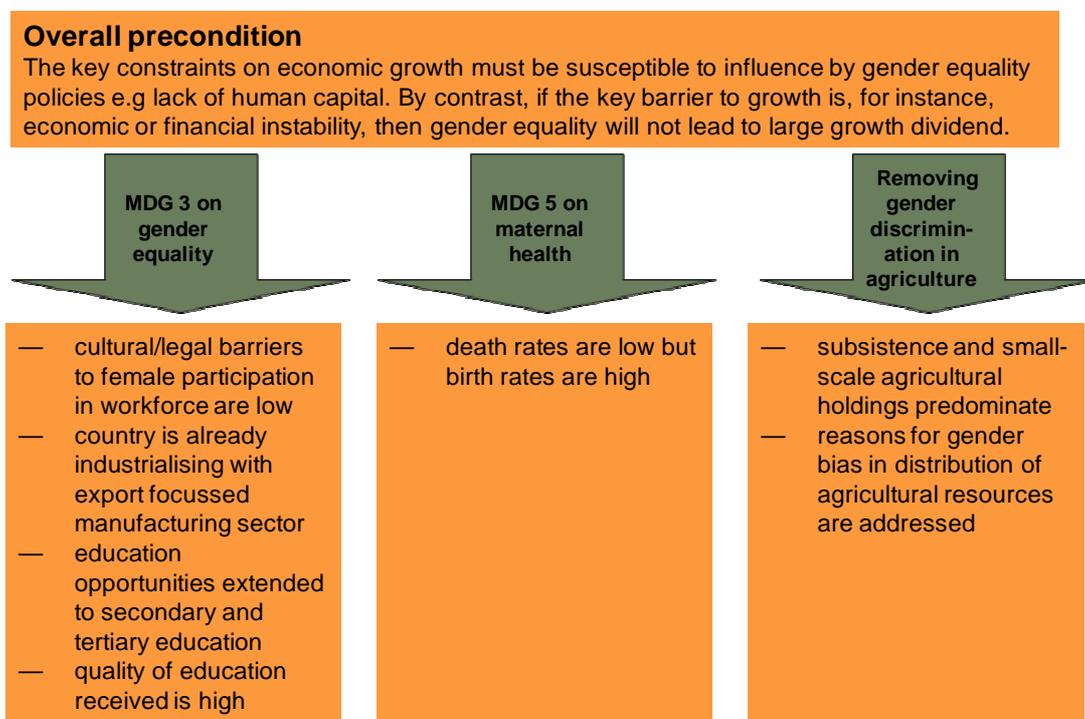
- **The quality of education received by girls is sufficiently high.** As DFID’s existing policy already recognises (DFID, 2010), the average number of years of schooling is only one important parameter. It must also be of sufficiently high quality to equip girls with the skills to undertake high value-added activity.
- **There also appears to be a particularly strong link between gender equality in education and economic growth in South Asia.** At present the reasons for this, and the extent to which it may be captured by some of the factors listed above, is not clear.

The component of MDG 5 where there is the strongest evidence of a link to higher economic growth is through access to family planning services which can reduce fertility rates and allow countries to exploit a ‘demographic dividend’. Countries that currently have reasonably low death rates but where birth rates remain high will be best able to exploit this opportunity.²⁸

Discriminatory agricultural practices are not adequately captured by any of the gender equality indicators of the MDGs. Despite this, it is a potentially important way in which greater gender equality may boost economic growth or output. It is most likely to be important in developing countries where subsistence/small scale agricultural holdings predominate. For policies in this area to be effective at boosting growth, they will need to be tailored to the cultural and environmental context i.e. to take account of the possibility that current agricultural practices may reflect prioritisation of resources towards the head of the household (who typically happens to be male) rather than to the man *per se*.

The diagram below summarises the key conclusions as to which countries are most likely to receive a significant boost in economic growth/output from pursuing gender equality policies.

Figure 12 The conditions in which greater gender equality can be expected to lead to greater economic growth can be identified



Source: Vivid Economics

²⁸ That is, countries currently at Stage II of the Demographic Transition Model.

4.5 Partnership with businesses can help catalyse investment in gender equality along global supply chains.

Today, businesses that invest in gender equality in their supply chains tend to be driven by social responsibility not economic gain. Perceived economic advantages, where they exist, are based on product differentiation rather than fundamental productivity and efficiency gains. Firms do not see their gender-related activities as driven by competitive pressure. As a consequence, while a systematic approach is taken by many large firms to counter gender-based discrimination in the workforce, pro-gender equality investments (such as accelerated training for women) are by contrast, sporadic and ad hoc.

Yet the impact of enhanced gender equality on a firm's productivity and profitability is not often evaluated. Analysis is needed to test the impact on corporate performance of, for example, greater female participation in the workforce and equality of educational opportunity. In short, we urgently need to understand whether the benefits identified in this paper of investing in gender equality at the macro-economic level might translate into an opportunity for individual firms and their suppliers.

Box 6 Recommendations for policymakers

- 1. Increase targeted investments in gender equality.** These can increase economic growth and contribute to the achievement of the MDGs, including those that are not explicitly gender related. National governments and development organisation should be considering gender equality as part of their policy toolkit to deliver growth in the same way that they consider, for instance, infrastructure development or microeconomic reform. Within the MDGS, increased investment in MDG3 should be used as a particularly important component of strategies to meet MDG1 (on eradicating poverty and hunger) and MDG4 on reducing child mortality while investments in MDG5 should be seen as an integral component of strategies to meet MDG4.
- 2. Target gender-equality investments to leverage the greatest development benefits** through identifying the key drivers and constraints on growth as related to gender equality at national and sub-national level: the strength of these links will determine the impact of different types of gender-equality investment. For example:
 - Gender equality investments in promoting education and employment opportunities (i.e. those associated with meeting MDG3) will deliver the largest economic growth benefits in cases where there are low cultural barriers to female participation in economic life, in countries that are already industrialising and where the quality of education received by women is of sufficiently high quality.
 - Investments in family planning (MDG5) are most likely to lead to significant economic growth where countries have low death rates but high birth rates.
 - Investments in promoting gender equality in agriculture will see the largest economic benefits in countries where subsistence and small scale agricultural holdings predominate.These investments will not lead to significantly greater economic growth or activity if other barriers to growth which do not have an obvious gender dimension (e.g. shortage of infrastructure, macroeconomic instability) are not the key constraints on growth.
- 3. Support the development and implementation of integrated strategies to strengthen gender equality both in education and employment to maximise effect on women's incomes in developing countries.** Women can maximize benefits from equal access to education if they can capitalise on their skills in the labour market. As equality in education is improving in most countries, inequality in employment opportunity is becoming the greater drag on growth. For instance, while the gender gap in education in Sub-Saharan Africa has fallen by two-fifths, inequality in employment has remained constant. Likewise in MENA the size of the education gap has more than halved, but the gender gap in employment has fallen by only around half as much.

Integrated strategies for education and employment have the potential to create virtuous circles: girls who receive greater education and can exploit these skills to gain employment will see increases in household income; if they retain control of this income it is more likely that a greater proportion will be spent on their children's health and education.

A focus on employment opportunities appears to be particularly important in MENA. This region has experienced significantly lower growth than East Asia and Pacific: estimates suggest that 4 times as much of this gap is a result of lack of employment opportunities as it is a lack of education opportunities.

4. **Expand investment in secondary and tertiary female education, especially in middle-income countries.** Although many countries have seen an expansion in primary education for girls and women in recent years, more investments should be targeted at secondary and tertiary levels of education. Increasing education opportunity for women at these levels is more likely to have a greater impact on growth at the country level, especially in middle income countries. For instance, at a country level, it has been estimated that, where at least 10 per cent of females have secondary education, an increase of one percentage point in the share of adult women with secondary school education increases per capita income growth by 0.3 percentage points (Dollar and Gati, 1999). At an individual level, women typically see larger increases in wages for an additional year's schooling than men, and this effect appears particularly strong if girls complete secondary education. This recommendation is consistent with earlier evidence that DFID has collected on the importance of secondary and tertiary education.
5. **Invest in creating the right conditions for gender equality to lead to growth.** Where conditions in countries do not enable gender equality investments to generate economic growth, efforts should be focused on removing the barriers to the functioning of these transmission mechanisms. If these barriers can be successfully removed, it is more likely that national governments, and individuals within those countries, will take the lead on promoting gender equality for reasons of national-interest rather than because of extended pressure. For example, in Cambodia and Bangladesh, families have bucked conventional trends by focussing resources on educating girls recognising the income benefits they will receive from more educated girls entering into employment in the textiles sector. The key conditions under which different aspects greater gender equality are likely to promote economic growth are discussed above.
6. **Accelerate access to comprehensive, culturally sensitive, family planning services and improving maternal health.** The evidence shows that these are highly cost effective medical interventions in themselves. Further, by reducing the unmet need for family planning, smaller family sizes can facilitate a reduction in household poverty and help ensure that children attend school rather than look after younger siblings or going to work. One study has estimated that for every dollar spent on providing modern contraceptives, \$1.40 would be saved in medical care costs. Through reducing population pressure, it may enhance efforts to promote environmental sustainability. Greater investment in maternal health will also realise spillover benefits: children with healthy mothers are both more likely to survive their infant years and then acquire formal schooling.
7. **Develop high profile partnerships with emerging economies especially those who are increasingly involved in development cooperation with poorer countries to promote gender equality as a way of accelerating their economic development models.** The evidence that gender equality enhances growth is most visible in industrialising, export oriented economies, especially in South Asia. Such an approach can provide opportunities for joint leadership to low income countries that are increasingly seeking to emulate the models of fast growing emerging economies.
8. **Establish a high level panel with senior business figures to build and strengthen the commercial case for gender equality.** A mini-survey conducted with major global businesses suggests that companies are not yet persuaded that gender equality is good for their bottom line. However, there is an increasing appreciation of gender equality as a component of future consumer demand and skilled labour development. Identifying how the macro-economic benefits of gender equality could flow to individual firms and their suppliers might stimulate private investment in gender equality along supply chains, especially in employment and training opportunities for women. The findings of this panel should be

published in different formats including assessment tools for businesses as well as leaflets for engagement with national and local businesses. Businesses at different level – global, national and local – can be cultivated in this manner as effective advocates for gender equality.

9. **Work with businesses and NGOs to promote collaborative and innovative initiatives.** Part of the reason why women are targeted in microfinance schemes is a perception that they will make more productive investment decisions than men, even though the evidence for this is mixed. In micro-finance schemes, the client base is disproportionately focussed on women. For instance, in 2009 almost 97% of Grameen Bank's 8 million borrowers were women. Innovative practices have shown the value of harnessing women's creative power – for example, Shea butter women's cooperatives in Africa have opened up access to credit and enabled women to pool resources to make large scale investments to increase income generation and improve quality of life through investing in labour saving technology, community infrastructure and women's education in areas of literacy and business skills.
10. **Support further research on transmission mechanisms.** The impact of key dimensions to gender equality on economic development is not clear in the existing literature – for example, the impact of improved maternal health on economic growth while the cultural/country specific relationships between gender equality in education and growth are only beginning to be unpicked. In other cases, some of the literature, although robust, is quite dated e.g. on the links between population pressure and environmental impacts. More research could reveal additional avenues for delivering gender equality and associated development impacts and provide a firmer evidence base for constructing policy.

Annex 1: Data gaps

The causal impact of gender inequality in education at the aggregate level has not been robustly and fully established. Recent econometric developments, for example in accounting for the dynamic properties of data across countries and over time, could be exploited to ascertain to what extent the observed correlation is in fact a causal relationship (in either direction).

While inconclusive, the current evidence suggests that the impact of gender inequality in education and employment on growth is closely linked to country-specific factors, such as cultural and social institutions. Given the apparent differences across countries of the efficacy in which gender equality assists economic growth, it would be valuable to build an understanding of which factors are critical, the mechanism through which they operate, and if policy interventions are effective at overcoming them. For example, why do reductions in gender inequality in South Asia appear to have a larger impact on growth?

In general the impact of gaps in employment is understood less well than that of gaps in education, particularly at the microeconomic level. Studies at the level of individual firms and workers would be useful to engender an understanding of the forces governing women's choices about careers and workforce participation.

The literature on gender and each of international trade and entrepreneurship contains a plethora of evidence of the barriers that women face in each area of economic activity; however, there is little research on estimating what the impact would be if these barriers were removed.

The links between greater female political participation, the economic role of the state and the links to economic growth are currently not well understood. In particular, understanding how greater female representation in parliament, one of the MDG 3 targets, as opposed to extension of the franchise to women does not appear to have been investigated. Most existing studies also have a developed world focus.

The economic impacts of maternal ill health are not well understood. While the WHO has undertaken a review of the literature this issue (Wilhelmson and Gerdtham, 2006), this was limited to studies dealing with general population health. There is very little evidence on the economic impacts of maternal ill health specifically. There are two important observations to make about this lack of evidence:

Recourse to the general health literature cannot examine the differential economic impacts of improving the health/life expectancy of mothers compared to the general population; for example, the implications for their children; or the fact that they may be less likely to work.

Evidence on the economic impacts, and impacts on child welfare, of maternal morbidity (as opposed to mortality) and conditions such as obstetric fistula is particularly lacking. While data on years lived with disability exist for maternal conditions, it is unclear how they translate to lost working life and income.

Evidence on the impacts of improved reproductive health on poverty reduction, children's education and the health of older children could also be stronger. Much of the evidence on the effects of family size on education is by now fairly old, and more attention could be given to untangling causation within contradictory results.

Most of the discussion on the environmental effects of population growth appears to date from the 1990s or earlier, and this is clearly an area of study which has received little attention over the past ten years.

Annex 2: Business survey questions

- 1 What sector is your company in and what is your position?
- 2 What kind of operations do you have in developing countries? (check all that apply)
 - a. Regional offices
 - i. Retail/distribution outlets in developing countries
 - ii. Manufacturing
 1. Food
 2. Textiles
 3. Electronics
 4. Other (please specify)
 - iii. Agricultural production
 - b. Sourcing through intermediaries (vendors/traders)
- 3 Have you implemented a formal gender-related policy (or equivalent diversity/anti-discrimination policy)?
 - c. If yes, is this policy also implemented at the local/regional level?
 - d. If no, are you implementing some activities to promote gender equality?
- 4 What measures are used for the integration of gender considerations at the following levels:
 - a. Company Head Quarters
 - b. Regional offices
 - c. Subsidiaries
- 5 Can you provide an example of any projects that you run that are specifically gender focussed?
- 6 Have gender considerations changed the way you operate? In what way?
- 7 What are some strategic lessons learned from implementing a gender-related policy/activities. What would identify as the current barriers/hurdles?
- 8 Do you consider gender equality issues as part of investment decision making (e.g. as a proxy for good management, or enhanced productivity) i.e. in addition to anti-discrimination policies
- 9 Would you be prepared to invest in gender-focussed projects e.g. training programmes for women or general support for female education. Why?
- 10 Do you collect data on female participation in your workforce /suppliers that could be used over time to evaluate the performance impact of more/less female involvement?

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