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Stephan Klasen and Anna Minasyan

## Gender Inequality and Growth in Europe

Gender inequality in Europe used to be seen primarily as an issue of equality and justice. Discussions on the still substantial gender pay gap, gaps in employment rates, under-representation in senior management and corporate boards, and disparities in political representation have often been framed as equality issues. There is, of course, nothing wrong with such a perspective, particularly if it can be shown that one's gender significantly affects one's economic and political opportunities and thus violates equality of opportunities.

In recent years, however, the potential economic costs of gender gaps have received greater attention. In particular, EU policy initiatives, including the Lisbon Strategy and the 2020 goals, aimed to reduce gender gaps in employment, and called, inter alia, for enhanced and improved childcare options to improve the compatibility of work and family for women.<sup>1</sup> Interestingly, in academic policy circles concerned with *developing* countries, such debates on the efficiency costs of gender inequality had started earlier.<sup>2</sup> There, the initial focus was on gender gaps in education, which tended to be much larger in develop-

ing countries than in Europe, but attention subsequently turned to gender gaps in employment.<sup>3</sup>

In this paper, we will briefly review the existing literature on the growth impacts of gender gaps and assess its relevance for the European situation. We will show that gender gaps in education in Europe are unlikely to play an important role for economic performance, but that gender gaps in employment appear to impose a significant efficiency cost in European countries where the gaps are large, which is particularly the case in Southern Europe as well as in Ireland. We also briefly discuss policy issues emanating from our findings.

### Theoretical linkages between gender inequality and growth<sup>4</sup>

There have been a number of theoretical and empirical studies examining the impact of gender inequality on economic performance, particularly focusing on the impact of gender inequality in education, employment and earnings on aggregate economic performance. We briefly summarise the most important insights here.<sup>5</sup>

There are three arguments that suggest that particular gender gaps could actually promote economic performance. The first goes back to Becker, essentially arguing that there are (static) efficiency gains to a sexual division of labour, whereby each gender specialises in the tasks in which they have a comparative advantage, which Becker sees for women in home production.<sup>6</sup> Whatever the merits of the argument, it is likely to have become less relevant as fertility has fallen and household production

1 See e.g. A. Gehringer, S. Klasen: Labor Force Participation of Women in the EU – What Role do Family Policies Play?, in: Labour, 24 November 2016; European Commission: Implementation of the Barcelona objectives concerning childcare facilities for pre-school-age children, Commission Staff Working Document Accompanying the Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, SEC(2008) 2524, 2008.

2 See e.g. A. Hill, E. King: Women's Education and Economic Well-being, in: Feminist Economics, Vol. 1, No. 2, 1995, pp. 21-46; D. Dol-lar, R. Gatti: Gender Inequality, Income and Growth: Are Good Times good for Women?, mimeo, Washington 1999, World Bank; S. Klasen: Does gender inequality reduce growth and development?, Policy Research Report on Gender and Development, Working Paper Series, No. 7, Washington 1999, World Bank; S. Klasen: Low Schooling for Girls, Slower Growth for All? Cross-Country Evidence on the Effect of Gender Inequality in Education on Economic Development, in: World Bank Economic Review, Vol. 16, No. 3, 2002, pp. 345-373; and World Bank: Engendering Development, A World Bank Policy Research Report, 2001.

3 See e.g. S. Klasen, F. Lamanna: The impact of gender inequality in education and employment on economic growth: new evidence for a panel of countries, in: Feminist Economics, Vol. 15, No. 3, 2009, pp. 91-132; B. Esteve-Volart: Gender Discrimination and Growth: Theory and Evidence from India. mimeo, 2009, York University; and World Bank: World Development Report 2012: Gender equality and development, 2011.

4 This section draws on S. Klasen: Gender, Institutions, and Economic Development: Findings and Open Research and Policy Issues, Pathfinding paper for Economic Development and Institutions Project, 2016.

5 See, for example, S. Klasen: Low Schooling ..., op. cit.; and S. Klasen: Gender and Pro-poor Growth, in: L. Menkoff (ed.): Pro-poor Growth: Evidence and Policies, Berlin 2006, Duncker & Humblot. For more detailed reviews, see also J. Stotsky: Gender and Its Relevance to Macroeconomic Policy: A Survey, IMF Working Paper, WP/06/233, 2006.

6 G. Becker: A treatise on the family, Chicago 1981, University of Chicago Press.

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has become much less time-consuming. A second argument was recently made by Tertilt and Doepke, who argue that higher women's earnings or transfers might actually reduce growth, as it might reduce investment in physical capital or land.<sup>7</sup> This would not hold if human capital was relatively more important, which is likely to be the case in Europe. A third argument relates to the role of pay gaps, in association with low gender gaps in education and earnings (see below). As suggested by Seguino, high gender pay gaps might become a competitive advantage for countries, particularly in export-oriented manufacturing (and the associated foreign direct investment to develop the sector).<sup>8</sup> Seguino saw particular relevance for this argument in the case of semi-industrialising developing and emerging economies. In high-wage Europe, comparatively lower wages are unlikely to be a significant source of comparative advantage for European industries in today's globalised world.

On the other hand, there are a substantial number of papers arguing the reverse, i.e. that gender gaps reduce economic performance. Regarding gender inequality in education, the theoretical literature suggests as a first argument that such gender inequality reduces the average amount of human capital in a society and thus harms economic performance. It does so by artificially restricting the pool of talent from which to draw for education, thereby excluding highly qualified girls (and taking less qualified boys instead).<sup>9</sup> Moreover, if there are declining marginal returns to education, this would, in the presence of gender differences in education, imply that the marginal return of educating females is higher than that of males; this effect would be exacerbated if males and females are imperfect substitutes.<sup>10</sup>

A second argument suggesting that gender gaps in education reduce economic performance relates to the externalities of female education. Promoting female education is known to reduce fertility levels, reduce child mortality levels and promote the education of the next generation. Each factor in turn has a positive impact on economic

growth.<sup>11</sup> Some models emphasise the potential for vicious cycles, with larger gender gaps in education or pay reproducing themselves across generations, leading to low-income poverty traps.<sup>12</sup> But there is also an important timing issue involved here. Reducing gender gaps in education will lead to reduced fertility levels, which will, after some 20 years, lead to a favourable demographic constellation, which Bloom and Williamson refer to as a "demographic gift".<sup>13</sup> For a period of several decades, the working age population will grow much faster than overall population, thus lowering dependency rates, generating positive repercussions for per capita economic growth.<sup>14</sup>

A third argument relates to international competitiveness and complements the argument made by Seguino above.<sup>15</sup> Many East Asian countries have become competitive on world markets through the use of female-intensive export-oriented manufacturing industries, a strategy that is now finding followers in South Asia and individual countries across the developing world.<sup>16</sup> In order for such competitive export industries to emerge and grow, women need to be educated, and there must be no barriers to their employment in such sectors. Gender inequality in education and employment would reduce the ability of countries to capitalise on these opportunities.<sup>17</sup>

Regarding gender gaps in employment, there are a number of closely related arguments. First, there is the argument that such gaps impose distortions on the economy, as do gender gaps in education. They artificially reduce the pool of talent from which employers can draw from, thereby reducing the average ability of the workforce.<sup>18</sup> Such distortions not only affect salaried employees; similar arguments could be made for the self-employed in

7 M. Tertilt, M. Doepke: Does female empowerment promote economic development?, NBER Working Paper No. 19888, National Bureau of Economic Research, 2014.

8 S. Seguino: Gender Inequality and Economic Growth: A Cross-Country Analysis, in: *World Development*, Vol. 28, No. 1, 2000, pp. 1211-1230.

9 See e.g. D. Dollar and R. Gatti, op. cit.; and M. Teignier, D. Cuberes: Aggregate costs of gender gaps in the labor market: A quantitative exercise, in: *Journal of Human Capital*, Vol. 10, No. 1, 2016, pp. 1-32.

10 World Bank: *Engendering Development ...*, op. cit.; and S. Knowles, P. Lorgelly, D. Owen: Are Educational Gender Gaps a Brake on Economic Development? Some Cross-Country Empirical Evidence, in: *Oxford Economic Papers*, Vol. 54, No. 1, 2002, pp. 118-149.

11 World Bank: *Engendering Development ...*, op. cit.; and E. King, S. Klasen, M. Porter: *Women and Development*, in: B. Lomborg (ed.): *Global Crises, Global Solutions*, 2nd edition, Cambridge 2009, Cambridge University Press.

12 See e.g. O. Galor, D. Weil: The Gender Gap, Fertility, and Growth, in: *American Economic Review*, Vol. 86, No. 3, 1996, pp. 374-387; and N. Lagerlöf: Gender Equality and Long-Run Growth, in: *Journal of Economic Growth*, Vol. 8, No. 4, 2003, pp. 403-426.

13 D. Bloom, J. Williamson: Demographic Transition and Economic Miracles in Emerging Asia, in: *The World Bank Economic Review*, Vol. 12, No. 3, 1998, pp. 419-455.

14 For a full exposition of these arguments, see D. Bloom, J. Williamson, op. cit.; and S. Klasen: *Low Schooling ...*, op. cit.

15 S. Seguino, op. cit.

16 See e.g. S. Seguino, op. cit.; and S. Seguino: Accounting for Gender in Asian Economic Growth, in: *Feminist Economics*, Vol. 6, No. 3, 2000, pp. 27-58. S. Klasen: *Gender and Pro-poor ...*, op. cit., reviews the literature and also notes that such strategies have now been extended with some success to countries such as Tunisia, Bangladesh, China and Vietnam.

17 World Bank: *Engendering ...*, op. cit.; and M. Busse, C. Spielmann: Gender Inequality and Trade, in: *Review of International Economics*, Vol. 14, No. 3, 2006, pp. 362-279.

18 See e.g. B. Esteve-Volart, op. cit.; and M. Teignier, D. Cuberes, op. cit.

agricultural and non-agricultural sectors, where unequal access to critical inputs, technologies and resources will reduce the average productivity of these ventures, thereby reducing economic growth.<sup>19</sup>

A second and closely related argument suggests that gender inequality in employment can reduce economic growth via demographic effects. A model by Cavalcanti and Tavares suggests that gender inequality in employment lowers economic growth due to reduced female participation in the labour market as well as higher fertility levels.<sup>20</sup>

Seguino presents a third argument: her results on the impact of gender gaps in pay on international competitiveness imply that gender gaps in employment access also reduce economic growth, as they deprive countries of the use of (relatively cheap) female labour as a competitive advantage in an export-oriented growth strategy.<sup>21</sup>

A fourth argument relates to the importance of female employment and earnings for their bargaining power within families, countering the claim by Tertilt and Doepke that was discussed above.<sup>22</sup> There is a sizable literature that demonstrates that the earnings females receive from employment increase their bargaining power in the home.<sup>23</sup> In addition to the specific benefits accruing to the women concerned, their greater bargaining power can also have a range of macroeconomic growth-enhancing effects. These could include higher savings, as women and men differ in their savings behaviour,<sup>24</sup> more productive investments on account of women's access to and repayment of credit,<sup>25</sup> and higher investments in the health and education of their children, thus promoting the human capi-

tal of the next generation and therefore future economic growth.<sup>26</sup>

A fifth argument relates to governance. There is a growing body of literature, still rather speculative and suggestive at this point, that has collated evidence that female workers, on average, appear to be less prone to corruption and nepotism than men.<sup>27</sup> If these findings prove to be robust, greater female employment might be beneficial for economic performance in this sense as well.<sup>28</sup>

There is a related theoretical literature that examines the impact of gender discrimination in pay on economic performance. Here, the theoretical literature is quite divided. On the one hand, studies by Galor and Weil as well as Cavalcanti and Tavares suggest that large gender pay gaps will reduce economic growth.<sup>29</sup> Such gender pay gaps reduce female employment, increase fertility and lower economic growth through these participation and demographic effects. In contrast, Blecker and Seguino highlight a different mechanism, leading to contrasting results.<sup>30</sup> Their suggestion, described above, was that high gender pay gaps and associated low female wages increase the competitiveness of export-oriented industrialising economies and thus boost the growth performance of these countries. The most important difference of this study, in contrast to the models considered above, is that it focuses more on short-term demand-induced growth effects, while the other models are long-term growth models, where growth is driven by supply constraints. Clearly, both effects can be relevant, depending on the time horizon considered.

It is important to point out that it is theoretically not easy to isolate whether specific effects are being caused by gender gaps in education, employment or pay. In fact, in most of the models considered above, gender gaps in one dimension tend to lead to gender gaps in other di-

19 See M. Blackden, S. Canagarajah, S. Klasen, D. Lawson: Gender and Growth in Africa: Evidence and Issues, in: G. Mavrotas, A. Shorrocks (eds.): *Advancing Development: Core Themes in Global Development*, London 2007, Palgrave Macmillan.

20 T.V. Cavalcanti, J. Tavares: The output costs of gender discrimination: A model-based macroeconomic estimate, mimeo, University of Lisbon, 2007.

21 S. Seguino: *Gender Inequality ...*, op. cit.; and S. Seguino: *Accounting ...*, op. cit.

22 M. Tertilt, M. Doepke, op. cit.

23 See e.g. A. Sen: *Gender and Cooperative Conflict*, in: I. Tinker (ed.): *Persistent Inequalities – Women and World Development*, New York 1990, Oxford University Press, pp. 123-149; D. Thomas: *Intrahousehold resource allocation: An inferential approach*, in: *Journal of Human Resources*, Vol. 25, No. 4, 1990, pp. 635-664; L. Haddad, J. Hoddinott, H. Alderman: *Intrahousehold Resource Allocation in Developing Countries*, Baltimore 1997, Johns Hopkins Press; World Bank: *Engendering ...*, op. cit.; S. Klasen, C. Wink: *A Turning Point in Gender Bias in Mortality? An Update on the Number of Missing Women*, in: *Population and Development Review*, Vol. 28, No. 2, 2002, pp. 285-312; E. King et al., op. cit.

24 S. Seguino, M.S. Floro: *Does gender have any effect on aggregate saving?*, in: *International Review of Applied Economics*, Vol. 17, No. 2, 2003, pp. 147-166.

25 See J. Stotsky, op. cit.

26 See e.g. D. Thomas, op. cit.; World Bank: *Engendering ...*, op. cit.

27 See World Bank: *Engendering ...*, op. cit.; A. Swamy, O. Azfar, S. Knack, Y. Lee: *Gender and Corruption*, in: *Journal of Development Economics*, Vol. 64, No. 1, 2001, pp. 25-55; B. Branisa, S. Klasen, M. Ziegler: *Gender Inequality in Social Institutions and Gendered Development Outcomes*, in: *World Development*, Vol. 45, 2013, pp. 252-268.

28 See a related discussion in E. King et al., op. cit., about the growth and welfare effects of women as policy-makers. The "causes" of these differences in behaviour may well be related to different socialisation of girls and boys, a subject that leads beyond the scope of this paper.

29 O. Galor, D. Weil, op. cit.; and T.V. Cavalcanti, J. Tavares, op. cit.

30 R. Blecker, S. Seguino: *Macroeconomic effects of reducing gender wage inequality in an export oriented, semi-industrialized economy*, in: *Review of Development Economics*, Vol. 6, No. 1, 2002, pp. 103-119.

mensions, with the causality running in both directions.<sup>31</sup> They do not measure the same thing, however, and thus it is important to investigate them separately. For one, it might be the case that the two issues are largely driven by institutional factors that separately govern education and employment access and do not therefore greatly depend on each other. For example, one might think of an education policy that strives to achieve universal education and thus reduce gender gaps, while at the same time significant barriers to employment for females continue to exist in the labour market. This might be particularly relevant to the situation in the Middle East and North Africa, but it also applies to recent developments in South Asia, where education gaps have narrowed but employment gaps remain wide.<sup>32</sup> Moreover, the externalities of female education and female employment are not all the same. For example, female education is likely to lead to both lower fertility rates and reduced child mortality rates of their offspring, while the effect of female employment on these measures is likely to be much smaller and more indirect (working mainly through greater female bargaining power; indeed, there may also be opposite effects, including that the absence of women in the home might in some cases negatively impact on the quality of childcare). Conversely, the governance externality applies primarily to female employment, not to female education.

### Empirical findings

Given these many, and partly conflicting, arguments, an empirical investigation of these effects is warranted. A particularly large body of literature has developed that examines the impact of gender gaps in education on economic performance. Most of that literature relies on cross-country cross-section and panel regressions, while some studies have used sub-national data or time series techniques for single countries. Early literature by Barro and Lee pointed to a negative effect of female education on growth (while male education has a positive effect).<sup>33</sup> Studies replicating this research (using male and female initial years of education, without controlling for regional or country fixed effects) mostly come to the same con-

clusion, as shown in the systematic review by Minasyan et al.<sup>34</sup> Further scrutiny of these results, however, showed that they were related to the use of initial-year schooling variables (in a pure cross-section), the failure to control for unmeasured regional effects, and multicollinearity among the education variables.<sup>35</sup>

Most subsequent studies point to a negative effect from gender gaps. For example, both King and Hill as well as Knowles et al. use a Solow-growth framework and find that gender gaps in education significantly reduce GDP levels.<sup>36</sup> Dollar and Gatti, Forbes, Yamarik and Ghosh, Appiah and McMahon, and Klasen investigate the impact of gender gaps on economic growth and all find that gender gaps in education have a negative impact on subsequent economic growth.<sup>37</sup> By now there are 52 studies that have investigated the impact of gender gaps on economic growth (or on levels of GDP per capita), 32 of which use cross-country data, with the others relying on sub-national and single-country time series data. Of course, the quality of the econometric approaches differs and ranges from simple correlation analyses with few covariates to fixed-effects panel models with a large set of control variables and IV techniques to control for endogeneity. As discussed in a systematic review of these studies by Minasyan et al., the vast majority (75%) of the regressions in these studies that investigate the impact of the gender gap in education show that it reduces growth, including most of the studies with the greatest econometric rigour.<sup>38</sup> Based on this assessment, the balance of evidence clearly favours the view that gender inequality in education appears to lead to lower economic growth.

There are fewer empirical studies on the impact of gender gaps in employment and pay on economic growth. A recent study by Teignier and Cuberes is based on calibrating a macroeconomic model to data from different regions; it shows that restrictions on women from entering the labour market or working as self-employed can lead to particularly large growth penalties in the Middle East and

31 The one exception is again the two short-term structuralist models of Blecker and Seguino, where large gender gaps in pay, implicitly combined with no gender gaps in education and employment, can deliver the income-enhancing effects. See R. Blecker, S. Seguino, *op. cit.*

32 See I. Gaddis, S. Klasen: Economic development, structural change, and women's labour force participation rate: A re-examination of the feminization U-hypothesis, in: *Journal of Population Economics*, Vol. 27, No. 3, 2014, pp. 639-681; S. Klasen, J. Pieters: What explains the stagnation of female labor force participation in urban India?, in: *World Bank Economic Review*, Vol. 29, No. 3, 2015, pp. 449-478.

33 R. Barro, J.-W. Lee: Sources of Economic Growth, Carnegie-Rochester Conference Series on Public Policy, Vol. 40, 1994, pp. 1-46.

34 A. Minasyan, J. Zenker, S. Klasen, S. Vollmer: The impact of gender inequality in education on economic growth: A systematic review of the evidence, mimeo, 2016, University of Göttingen.

35 See P. Lorgelly, D. Owen: The Effect of Female and Male Schooling on Economic Growth in the Barro-Lee Model, in: *Empirical Economics*, Vol. 24, No. 3, 1999, pp. 537-557; and S. Klasen: Low Schooling ..., *op. cit.*

36 A. Hill, E. King, *op. cit.*; and S. Knowles et al., *op. cit.*

37 D. Dollar, R. Gatti, *op. cit.*; K. Forbes: A Reassessment of the Relationship between Inequality and Growth, in: *American Economic Review*, Vol. 90, No. 4, 2000, pp. 869-887; S. Yamarik, S. Ghosh: Is Female Education Productive? A Reassessment, mimeo, Medford 2003, Tufts University; E. Appiah, W. McMahon: The Social Outcomes of Education and Feedbacks on Growth in Africa, in: *Journal of Development Studies*, Vol. 38, No. 4, 2002, pp. 27-68; and S. Klasen: Low Schooling ..., *op. cit.*

38 A. Minasyan et al., *op. cit.*

North Africa (MENA), as well as in South Asia.<sup>39</sup> Econometric studies are quite rare, which is largely related to the data and econometric issues discussed above. Klasen found that increases in female labour force participation and formal sector employment were associated with higher growth in a cross-country context.<sup>40</sup> Differences in female participation and employment might have accounted for another 0.3 percentage points in the growth difference between the MENA region and East Asia and the Pacific. However, these findings have to be treated with caution, as they may suffer from reverse causality. In particular, it might be the case that high growth draws women into the labour force (rather than that increasing female participation promotes economic growth).<sup>41</sup> There are no easy ways to correct for this econometrically, as there are unlikely to be valid instruments that can be used. Also, there are questions about the international comparability of data on labour force participation and formal sector employment rates.<sup>42</sup> To the extent that the problems of comparability affect levels but not trends over time, these problems might be avoided in a fixed effects panel setting. Lastly, there is the question of collinearity between gender gaps in education and employment, which can lead to misleading conclusions. In regressions that only consider the effect of gender gaps in education, they might implicitly also measure the impacts of gender gaps in employment, particularly if the two are highly correlated. So the robust effect of educational gender gaps discussed above may be related to gender gaps in employment.

At the same time, such a high level of correlation between education and employment gaps might also make it difficult to separately identify the effects when both are included in a regression (due to the multicollinearity problem). Also, it will be difficult to assess which of the two is the causal driver of the other, given the close and plausible theoretical and empirical linkage.

Klasen and Lamanna study the impact of initial gender gaps in education and labour force participation on subsequent growth using a cross-country fixed effects panel framework.<sup>43</sup> They find that both gender gaps in education and labour force participation negatively affect growth, although the results are not always significant when both variables are included, presumably due to multicollinearity. In reduced samples that focus on particular regions,

39 M. Teignier, D. Cuberes, *op. cit.*

40 S. Klasen: *Does gender ...*, *op. cit.*

41 But note that economic growth has not generally pulled women into the labour force. See discussion below and I. Gaddis, S. Klasen, *op. cit.* Reverse causality might thus be less serious than presumed.

42 See I. Gaddis, S. Klasen, *op. cit.*

43 S. Klasen, F. Lamanna, *op. cit.*

however, the results are significant and indicate particularly sizable growth costs of gender gaps in South Asia and the Middle East. In the latter, the employment gap is more important, while in South Asia, the reverse is the case. In this sense, they are highly consistent with Teignier and Cuberes.<sup>44</sup>

At the sub-national level, Esteve-Volart has found significant negative effects of gender gaps in employment and managerial positions on the economic growth of India's states using panel data and controlling for endogeneity using instrumental variables.<sup>45</sup>

There are some papers by Seguino that support the contention that the combination of low gender gaps in education and employment with large gender gaps in pay (and resulting low female wages) were a contributing factor to the growth experience of export-oriented middle income countries.<sup>46</sup> Supporting this empirical claim is a paper by Busse and Spielman, which finds for a sample of 23 developing countries that a combination of low gender gaps in education and employment and large gender gaps in pay helped promote exports.<sup>47</sup> Unfortunately, Seguino's analysis is based on a small sample of semi-industrialised countries, and the measures of gender wage gaps are rather crude; in fact, Schober and Winter-Ebmer show that the results disappear or even reverse if more robust measures of gender wage gaps are used,<sup>48</sup> so that these findings cannot be considered robust at this stage.<sup>49</sup>

### Gender gaps and growth in Europe

To what extent are these findings relevant to Europe? Clearly, gender gaps in education are hardly relevant in Europe. There are basically no gender gaps in primary and secondary education (due to free, compulsory schooling laws) in the EU, while at the tertiary level, gender gaps actually favour females, as shown in Figure 1. Thus, if anything, more attention needs to be given to boys to ensure that they profit equally from educational opportunities in Europe. This is not only the case when considering enrolments but also for educational outcomes. For example, as the 2015 PISA results show (again), boys make up a

44 M. Teignier, D. Cuberes, *op. cit.*

45 B. Esteve-Volart, *op. cit.*

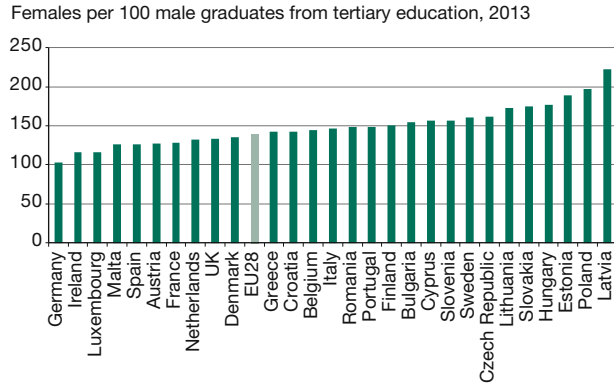
46 See S. Seguino: *Gender Inequality ...*, *op. cit.*; and S. Seguino: *Accounting ...*, *op. cit.*

47 M. Busse, C. Spielman, *op. cit.*

48 T. Schober, R. Winter-Ebmer: *Gender wage inequality and economic growth: Is there really a puzzle? A comment*, in: *World Development*, Vol. 39, No. 8, 2011, pp. 1476-1484.

49 In the case of these papers, the focus on semi-industrialised, export-oriented countries was intended. But this can therefore not address the question whether there is a more general relationship between pay gaps and growth in developing countries that do not belong to this small group.

Figure 1  
Gender gaps in education in Europe



Source: Eurostat.

significantly larger share of poorly performing pupils in nearly all OECD countries.<sup>50</sup>

In contrast, gender gaps in labour force participation and employment (to the detriment of females) remain substantial in Europe. As shown in Table 1, the gender gap in participation is still above ten percentage points in the EU, with particularly large gaps in older age groups. Thus, the literature examining the growth costs of gender gaps is most relevant for Europe. The study by Teignier and Cuberes, using a calibrated macro model, suggests that the aggregate income loss for restricting female access to the labour market and to self-employment is about 15% for OECD countries.<sup>51</sup>

One can also use the data from Klasen and Lamanna to estimate the growth impact of gender gaps in the female labour force participation rates in Europe.<sup>52</sup> Using this data, one can particularly study how different trends in gender gaps in the female labour force participation rates across Europe affected growth between 1970 and 2000. Figure 2 shows these ratios for a set of European countries. What is noteworthy is the substantial heterogeneity in participation ratios in 1970, ranging from a low of less than 0.3 in Portugal to a high of 0.7 in Finland, the top performer at the time. Similarly noteworthy is the pace of change, which also differs dramatically. Although the ratios increase in all countries listed, they do so at a very slow pace in Germany, Ireland and Finland, while increasing much faster in Portugal, Sweden and Spain. The re-

50 OECD: PISA 2015 Results (Volume I): Excellence and Equity in Education, Paris 2016, OECD Publishing.  
51 M. Teignier, D. Cuberes, op. cit.  
52 S. Klasen, F. Lamanna, op. cit.

Table 1  
Developments in labour force participation in Europe

Age group	2000		GPG	2008		GDP	2013		GPG
	LFP in %	Wo-		LFP in %	Wo-		LFP in %	Wo-	
	Men	men	Men	men	Men	men			
EU27									
15-64	77.1	60.1	17.0	77.9	63.7	14.2	78.1	66.1	12.0
15-24	48.8	41.8	7.0	47.8	40.7	7.1	45.0	39.4	5.6
25-39	93.1	75.2	17.9	92.5	77.6	14.9	91.6	78.7	12.9
40-59	85.9	65.4	20.5	87.2	71.4	15.8	88.4	75.6	12.8
60-64	32.8	16.5	16.3	40.7	23.0	17.7	45.5	29.5	16.0
EU15									
15-64	78.2	59.9	18.3	79.4	65.2	14.2	79.0	67.5	11.5
15-24	50.9	44.1	6.8	51.4	44.9	6.5	47.3	42.8	4.5
25-39	93.2	74.6	18.6	92.8	78.2	14.6	91.6	79.5	12.1
40-59	87.0	64.1	22.9	88.6	72.2	16.4	89.3	76.0	13.3
60-64	33.0	15.5	17.5	42.1	24.6	17.5	47.4	32.7	14.7

Note: LFP = labour force participation, GPG = Gender participation gap (LFP men - LFP women).

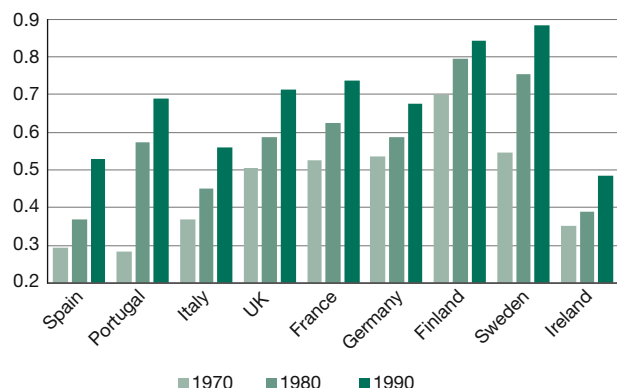
Source: A. Gehringer, S. Klasen: Labor Force Participation of Women in the EU – What Role do Family Policies Play?, in: Labour, 24 November 2016; and own elaborations based on Eurostat aggregated LFS statistics. The figures refer to unweighted averages of the countries included in the groups.

maining countries (France, the UK and Italy) exhibit a relatively modest pace of improvement.

One can combine these levels and trends with the regression results on the growth impacts reported in Klasen and Lamanna,<sup>53</sup> which are reported in Figure 3 for the same sample of EU countries.<sup>54</sup> The growth costs are annual per capita growth costs of the country relative to the best performer in the ratio of female-male participation rates in that decade, which for the 1970s and 1980s is Finland and for the 1990s is Sweden. The results show substantial growth costs, topping out around 0.8 percentage points per capita per year in Ireland in the 1980s and 1990s, in Spain in the 1970s and 1980s, and in Portugal in the 1970s. Cumulated over a decade, this amounts to an 8.3 percentage point loss of output – and totals 17.3 percentage points over two decades, which is similar to estimates produced by Teignier and Cuberes.<sup>55</sup> For the UK, France and Germany, the cumulative costs are more moderate but still amount to about four per cent per decade.

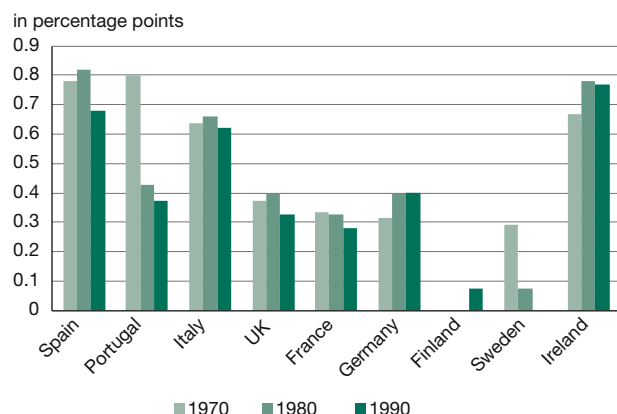
53 Ibid.  
54 In particular, the estimates are based on the coefficient of the ratio of labour force participation rates reported in regression 16.  
55 M. Teignier, D. Cuberes, op. cit.

**Figure 2**  
**Female-male participation ratios, ages 15-64**



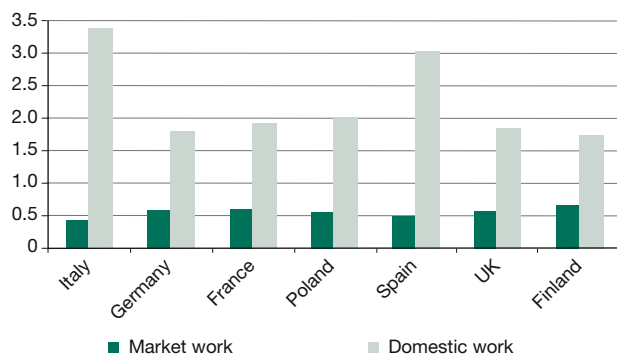
Source: ILO Laborsta database.

**Figure 3**  
**Annual growth costs of gender participation gaps**



Source: Own calculations based on regression 16 in S. Klasen, F. Lamanna: The impact of gender inequality in education and employment on economic growth: new evidence for a panel of countries, in: *Feminist Economics*, Vol. 15, No. 3, 2009, pp. 91-132.

**Figure 4**  
**Female-male ratios of time use in market work versus domestic work, selected EU countries, 2000-2010**



Source: Harmonised European Time Use Survey, Men and Women aged 20-74.

One has to treat these estimates with some caution. They are based on a number of assumptions about the suitability of the particular statistical model estimated and the homogeneity of parameters across countries and over time. Thus, they should be seen as rough estimates rather than precise forecasts. But as such, they suggest that the growth costs of gender inequality in Europe are non-negligible.

**Conclusions**

This short paper has discussed mechanisms through which gender inequality can affect economic growth. A range of plausible mechanisms suggest that gender inequality in education and employment is associated with lower economic growth. The effects are sizable and meaningful. In Europe, only the gender gaps in labour force participation are relevant for economic growth, and different estimates suggest sizable impacts of gender gaps in this dimension in European countries. These are estimates of aggregate effect. It would be interesting in future work to test the quantitative relevance of the different channels mentioned in the theoretical literature above. The model-based estimates by Teignier and Cuberes suggest that the distortion effect of barriers to female employment and self-employment can alone account for sizable growth effects, but the other channels have not been investigated to date.<sup>56</sup> This is clearly a useful avenue for further research.

This paper has not focused on the drivers of gender gaps in labour force participation rates in the EU. There is a sizable body of literature investigating this, including the other papers in this Forum. Clearly, one determinant of female labour force participation is the ability to combine work with family duties, which still fall predominantly on women. As shown by Gehringer and Klasen, family policies can have a significant effect here, including on the ability of women to work full-time or part-time.<sup>57</sup> Other policy areas are the high marginal taxation of secondary earners, as practiced in several EU countries, which particularly discourages female participation,<sup>58</sup> as well as the unequal distribution of household and care burdens within families.<sup>59</sup> As shown in Figure 4, the gender gaps in domestic work are sizable across the EU, but they are particularly large in Italy and Spain. Thus, policy work on several fronts may be required to reduce gender gaps in labour force participation rates and thereby capture the associated growth benefits.

56 Ibid.  
 57 A. Gehringer, S. Klasen, op. cit.  
 58 See A. Alesina, A. Ichino, L. Karabarbounis: Gender Based Taxation and the Division of Family Chores, mimeo, 2009.  
 59 See e.g. World Bank: World Development ... , op. cit.