Economics Bulletin

Volume 37, Issue 3

Women's empowerment and economic growth: Albany, NY, 1760-1860

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Abstract

To what extent was women's empowerment related to economic growth in the nineteenth-century US? Drawing on connections suggested by development economics, growth theory, and economic history, we look for potential causal connections between women's empowerment and economic growth in Albany, NY, in the century before the Civil War, using evidence from our samples of Albany deed records. Measures of women's control of assets (participation in the real estate market) and women's human capital (signature literacy) suggest modest improvements in the status of women over this period. However, the evidence is largely inconclusive with respect to possible connections between women's empowerment and economic growth. We find two results of note. One, an abrupt increase in women's market participation as buyers of real estate, in the decade after passage of New York's Married Women's Property Act (1848). And two, a reduction of women's illiteracy following the onset of economic growth. Although more research will be required to draw firm conclusions, we suspect that our results reflect channels of causation running from a broader process of socio-economic change to both women's empowerment and economic growth in nineteenth-century New York.

For helpful comments on earlier versions, we thank two anonymous referees, as well as David Carr and the other participants of Session 8D at the annual meeting of the Midwest Economics Association (March, 2015). We also thank our research assistants at Central Michigan University for their help collecting the primary data.
Citation: Catherine L. McDevitt and James R. Irwin, (2017) "Women's empowerment and economic growth: Albany, NY, 1760-1860", *Economics Bulletin*, Volume 37, Issue 3, pages 2041-2052
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Submitted: June 27, 2015. **Published:** August 31, 2017.

1. Introduction

Potential connections between gender equality and economic development feature prominently in recent research (Doepke & Tertilt 2014, Duflo 2012, Langer et al. 2015). Attention to the potential for broader gains from improvements in the status of women extends beyond academia. News headlines such as “Empowering Women And Girls Is The Key To Ending Poverty ...” (Howard 2015) and “The Economic Benefits of Educating Women” (Matsui 2013), suggest that opinion shapers and policy makers also have recognized empowerment of women as a potential driver of economic growth. As the United Nations Development Programme (2015) puts it, "gender inequality remains a major barrier to human development." However, much remains to be learned about both the direction and magnitude of the relationships between gender equity and economic growth.

So far, explorations of women's empowerment as a cause of economic growth have largely been the province of development economics (Duflo 2012, Kabeer 2016, and references there). In the literatures of growth theory (e.g., Galor & Weil 1996) and economic history (e.g., Geddes & Lueck 2002), improvements in the status of women (and girls) are presented as effects and not causes of the onset of sustained growth in per capita incomes. Gender equity emerges as something like a normal good, increasingly consumed as incomes rise. Eventually respect for women and education of girls become factors which contribute to economic growth, directly by increasing human capital or indirectly via demographic transition.

This paper, with an economic history perspective, uses archival evidence to explore women's empowerment in relation to the emergence of economic growth in the northeastern United States. We focus on Albany, NY, in the century before the Civil War, most notable perhaps as the eastern terminus of the Erie Canal. In this period, New York experienced the onset of ‘modern’ economic growth -- per capita income growing in excess of one percent annually. Was this also a time of women’s empowerment? If yes, to what extent was women’s empowerment a cause or consequence of economic growth? We explore these issues with reference to two dimensions of socio-economic status, control of assets and human capital, using evidence from deeds in Albany in the years 1760 to 1860. We look at participation in real estate markets for indicators of women’s control of assets. We look at literacy (signature literacy) as an indicator of human capital. In this preliminary investigation, our methods are quite simple, focusing on the relative timing of women's empowerment and economic growth to identify possible causal connections.

2. Women's Empowerment and Economic Development, Growth and History

Duflo (2012) draws on a range of development economics research to explore causal connections -- in both directions -- between women's empowerment and economic development. Asking "can economic development cause women's empowerment?" Duflo (*ibid:* 1053-63) highlights theoretical and empirical evidence that development reduces gender inequality, discussing various channels of causation.[1] Although concluding that "economic development alone is insufficient" to achieve gender equity (*ibid:* 1076), Duflo forcefully argues that economic growth

[1] Of particular interest for early US growth, Duflo (2012) points to an increase in parents' incentives to invest in daughters' human capital when economic growth includes diversification that expands women's work opportunities. In the early nineteenth century, young women played a major role in the labor force of the emerging manufacturing sector in the northeastern US (Goldin and Sokoloff, 1982, 1984). The expansion of women's opportunities in early US industrialization may have promoted gender equality, along the lines suggested by Duflo.

can cause some substantial narrowing of gender gaps in developing countries.[2]

An alternative view is offered by Kabeer (2016: 306-316). Referring to cross-country studies such as Gaddis and Klasen (2014), she highlights "the weak and inconsistent impact of economic growth on gender equality" (Kabeer 2016: 316). Kabeer argues that the implications of growth for gender equality depend on the specifics of the growth process, the role of the state, and cultural norms (see also Boserup 1970: 15-16). However, even if Kabeer is less sanguine than Duflo about the effects of growth, both provide a basis for looking for evidence of gender empowerment after the emergence of US economic growth.

Turning to the other side of the "empowerment-development nexus," Duflo (2012: 1051) explores causation from women's empowerment to economic growth (see also Bandiera and Natraj 2013). Drawing on micro-level studies, Duflo discusses how reducing "the gender gap in education, in political participation, and employment opportunities" fosters economic growth. Emphasizing the importance of mothers' decisions for children's welfare and human capital, Duflo's discussion points to a lag of several decades between empowerment and growth.[3] However, a shorter time-frame is suggested by Klasen and Lamanna's (2009) discussion of how gender inequality in employment retards economic growth -- women's talents are wasted when their work opportunities are restricted, so expanding opportunities could have immediate pay-offs.

Although generally optimistic about the effects on growth, Duflo (2012: 1074-75) cautions that empowering women is not "free lunch for development policy" and she reminds "that trade-offs remain unavoidable." Moreover, she points to disappointing results from a number of microfinance projects for counterexamples to any presumption that an "allocation of resources toward women, rather than men, would always be efficiency enhancing" (*ibid:* 1075). Similarly, Doepke and Tertilt's (2014) theoretical work raises doubts about the generality of effects of gender equality on economic growth. They suggest that "the effectiveness of empowerment policies depends on the stage of development" (*ibid*: 36). In Doepke and Tertilt's model, targeting transfers to women can promote economic growth, but not until after human capital has emerged as "a key driver of growth" (*ibid*: 36).[4] So, on both empirical and theoretical grounds, the contribution of women's empowerment to economic growth needs to be considered on a case by case basis.

Development economics research suggests causal links in both directions between reductions in gender inequality and economic growth. In contrast, theoretical and historical research on modern economic growth features causation that runs from economic growth to increased levels of income to women's empowerment. Various growth theory models identify chains of causation from growth of technology to growth of per capita income, with various mechanisms hypothesized then to increase the supply of and/or demand for human capital (Galor 2012, Diebolt and Perrin 2014, and references there). These theories seek to explain two elements of modern economic growth that are of particular relevance to women's empowerment: low fertility and high levels of education. Low fertility tends to empower, freeing up women's time and effort from bearing and rearing children, for a broader range of opportunities and roles.

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[2] See Eswaran (2014: 336) for an affirmation of Duflo's conclusion that economic growth alone is not enough to bring about gender equity.

[3] Duflo (2012: 1068-70) identifies effects of empowerment on growth that run through the choices of mothers to increase investment in their children's human capital, in terms of nutrition, health, and education.

[4] In Doepke and Tertilt's (2014) model, a transfer from husband to wife increases children's human capital but reduces physical capital accumulation via a reduction in savings. That latter effect may not be relevant for the nineteenth-century US, which had access to British capital markets.

The emergence of mass education and literacy also tends to empower. Most simply, starting from lower levels of learning and literacy, the spread of formal education represented a greater advance for women than men. Moreover, learning inherently can be empowering, if reducing ignorance and isolation undermines gender-based systems of power. At this stage, causation starts also to run from women's empowerment to economic growth. Reduced fertility is a key factor in the shift from "quantity" to "quality" of children and the associated human capital accumulation (Diebolt and Perrin 2013). And mass education, of boys and girls, is a key source of human capital formation for a skilled and adaptable labor force, and for an environment consistent with a high level and growth of technology (Goldin and Katz 2008: 40-41).

The key for current purposes is that growth theory, informed by economic history, points to women's empowerment as a result of economic growth, and not a cause, until incomes have advanced substantially (consistent with Doepke and Tertilt's model, above). Economic history research on education and economic growth largely points to the same causal direction and timing. Notably, our current knowledge is still reflected in Schofield's (1973: 454) conclusion that "the reduction in illiteracy in nineteenth-century England" (after 1850) was a "change brought about by economic growth" and not "one of the causes" (see also Mitch 2005). However, looking beyond England -- the first to industrialize -- to 'follower' economies, we find causation from literacy to early economic growth. High levels of literacy facilitated the adoption of innovations from England, fostering "catch-up" growth in Prussia after the early nineteenth century (Becker, Hornung, and Woessmann 2011) and in Sweden after the mid-nineteenth century (Sandberg 1979; see also Nilsson, Pettersson, and Svensson 1999). Relative to England, the US was a follower economy, so perhaps similar mechanisms were at work in the emergence of US economic growth. That remains to be seen because the nexus between literacy, education, and economic growth in the early nineteenth-century US is largely unexplored.[5] Scholars have studied the emergence of mass primary education in the first half of the nineteenth century (e.g., Shammas 2015, Go and Lindert 2010, Beadie 2010, Soltow and Stevens 1981, Kaestle and Vinovskis 1980, Fishlow 1966). But that literature tends to focus on the 1820s and later, and it does not address the origins of US economic growth. It remains to be seen whether literacy was a factor promoting catch-up growth within the US. If it was, increased female literacy could emerge as a dimension of female empowerment that contributed to early US economic growth.

3. The Onset of Economic Growth in New York

The timing and nature of the onset of US economic growth have long been a matter of debate.[6] Gallman's (1960) breakthrough work on US "Commodity Output, 1839-1899" demonstrated that economic growth was underway in the late 1830s; but just when and how growth started remains to be seen, largely because the empirical record of US growth and structure before 1840 is quite sparse (Rhode and Sutch 2006). There is consensus that the 1830s and later featured 'modern' economic growth (over 1% annual growth of per capita income). Disagreement centers on just when 'modern' rates emerged. The weight of current research favors Weiss's (1992) view that the 1830s were the first decade of modern growth for the nation, following a gradual acceleration in the 1820s (Rhode and Sutch 2006). However, some see a longer and more uneven onset of economic growth. The earliest timing currently in play is found in the work of Lindert and

[5] Goldin and Katz (2008) offer a compelling discussion of the interaction of education and economic growth for the twentieth-century US; data limitations may prevent a comparable study for earlier periods.

[6] See Engerman and Gallman (1983) for an overview of key issues, empirical and theoretical. See Weiss (1992: 19-20) for a useful recap of debate, and also Sylla (2011: 81-83).

Williamson (2013). Arguing that the Revolutionary War and independence had dramatically reduced per capita income, Lindert and Williamson have economic growth emerging in the 1790s, with recovery to pre-revolutionary income levels after 1815 (see also Sylla 2011: 82).

We do not have geographically precise evidence on economic growth for Albany or New York more generally. But the available research suggests that the onset of economic growth in New York could also date back as early as the 1790s. Lindert and Williamson (2013: 750) and Rosenbloom and Weiss (2014: 53) construct estimates of per capita income or product for benchmark years for the Middle Atlantic region (NY, PA, NJ and DE). Rosenbloom and Weiss (2014: 53) estimate per capita income growth of almost 2% per year for the 1790s, growth that restored the region's per capita income to the pre-revolutionary level. Lindert and Williamson's (2013: 752-55) narrative is consistent with that result for the 1790s, and their estimates (*ibid:* 750) have annual per capita income growth in excess of 1.5% for the period 1800 to 1840. However, a later acceleration of growth is suggested by evidence on the timing of growth in manufacturing (Sokoloff 1986: 724) and in industrial output (Davis 2004: 1197); those point to the 1820s for an acceleration of economic growth. Pending more research enabling more precise dating, we conclude that the onset of economic growth in New York came sometime in the four decades after 1790 -- rather a large window in time.

Perhaps the key point that emerges from attention to the empirical research on early US economic growth is that the simple paths of growth theory can be difficult to discern in the actual unfolding of economic history (or is it perhaps that growth theory should pay more attention to historical evidence, and less to stylized facts?).

4. The Data

Our primary evidence comes from samples of deeds from New York's Albany County and City in the hundred years before the Civil War. The deeds are mostly records of land sales, along with a wide range of other deeds related to property and debt. Typescripts of Albany deeds are available online, and with some work they yield evidence of women's access to assets and education. The data typically found in these archival records include: name, sex and marital status of the parties to the deed; the price and various attributes of the property involved; the deed date, and the signature or mark of the party or parties of the first part (the seller, in a sale).

The deeds offer a perspective on women's literacy because of the particulars of marriage law. Until 1848 and the passage of the Married Woman's Property Act in New York, a married woman had little scope for independent legal action, because of the common law doctrine of coverture. The wife was a "*feme covert*," with limited legal capacity, her legal identity largely subsumed within her husband's. Upon marriage, a woman lost control of her real property (and ownership of her personal property) to her husband (Shammas 1994: 9-11). Of primary concern for measuring empowerment, the sale of land belonging to either the husband or the wife required the consent of both. The practical result is that about one half of land sales had a husband and wife as the seller. The plurality of sales with "women sellers" were sales by single women (often widows), but a non-trivial share were sales in which a single woman was just one of the parties of the first part to a deed of sale; for example, when a daughter was among some number of heirs jointly selling inherited land.

5. Participation in Real Estate Markets

The first dimension of women's status we consider is control of capital, looking at women's participation in Albany real estate markets. With an eye toward potential causes of economic growth, increased participation by women in markets has the potential to increase investment and economic growth (e.g., Duflo 2012: 1068-70). Alternatively, economic growth may have resulted in women's empowerment (e.g., Fernandez 2014: 38), empowerment which could show up as increased participation in land markets.

We look at women's market participation as buyers and sellers in our sample of real estate sales from Albany in the period 1762-1860. Two indicators have women as sellers of land. Women's share of sellers is the proportion of trades which included a woman acting independently as seller of land; women's share of land-sold is the proportion of land-traded (by value) that had women-sellers. The comparable indicators of women's participation in buying land are the share of trades with a woman (or women) buyer, and women buyers' share of the value of land-traded. A woman is deemed to have acted independently if she was single or if she was a wife acting without her husband (rarely found until after 1848's Married Women's Property Act).

Looking at the record of 1,314 real estate sales in Albany, NY, women's participation in the real estate market was quite limited (see Table 1). For the period as a whole (1762-1860), women were sellers in only 10% of the deeds, and they accounted for just 12% of the land traded. Similarly, women were buyers in less than 6% of trades, accounting for only 7% of the land (by value). However, women's participation in the Albany real estate market tended to increase over time. Comparing the years 1810-60 to the years 1762-1809, women's share of sellers tripled (see Table 1), from under 4% to over 11%; and women-sellers share of land-traded jumped even more dramatically, from under 3% to over 12%. Women's participation as land-buyers also clearly rose: women's share of buyers more than doubled (from 2.5% to 6.3%) and their share of land-traded jumped, from just 1.3% to over 7%. In sum, women's participation in Albany real-estate markets rose in the century before the Civil War, which is suggestive of some empowerment of women.

Looking at decadal-average measures of women's participation in the real estate market, no simple pattern is evident (see Table 1). Women's participation was generally greater in the decades after 1810 than in those before, but there was considerable variation from decade to decade, especially in the case of women's share of buyers. Simple regression techniques indicate a statistically significant rise in women's participation over time, which is not surprising in view of the decadal averages.

The real-estate participation evidence is suggestive of some empowerment of women after about 1810. However, with the four decades from 1790s to 1820s as candidates for the onset of modern economic growth in Albany, that empowerment could have come before, during, or after the onset of growth. And even if the timing of growth were pinned down, the causal nexus (if any) would remain to be determined. So at this stage, the market-participation evidence is largely inconclusive -- with one exception.

Table 1: **Women's Participation in the Albany Real Estate Market**

		Sellers		**Buyers**	
	number	Women's share		Women's share	
		of trades	of value	of trades	of value
1762-1860	1314	9.8%	11.6%	5.6%	6.8%
1762-1809	255	3.7%	2.4%	2.5%	1.3%
1810-1860	1059	11.2%	12.4%	6.3%	7.3%
1762-74	66	6.0%	5.9%	1.5%	0.4%
1775-89	73	2.7%	0.7%	1.4%	0.1%
1790-99	55	3.6%	6.2%	5.5%	7.1%
1800-09	60	3.3%	1.5%	1.7%	0.9%
1810-19	92	17.4%	16.9%	8.7%	6.3%
1820-29	109	12.8%	17.6%	4.6%	2.6%
1830-39	207	8.2%	15.6%	1.4%	1.4%
1840-48	187	12.3%	12.3%	4.3%	3.2%
1849-60	464	10.6%	9.4%	9.3%	11.7%

Source: random samples of Albany sale deeds (see text). Notes: for the 1840s we restrict attention to 1840-48 to exclude possible effects of the 1848 married women's property act (see text). Note: In part, the high value of women's share of sellers in 1810-19 reflects sales by Elizabeth Hamilton, widow of Alexander, who made 5 of the 16 women's sales. Without Hamilton's sales, the women's share was 12.6% (still much above the values in earlier decades).

The one potentially conclusive result is the abrupt jump in women's role as buyers after 1848. Perhaps that jump was the result of New York's famous Married Women's Property Act of 1848 (MWPA), which vested married women with legal standing to buy (or sell) real estate on their own. Indeed, there was a marked increase in participation by wives as buyers (acting without their husbands): in the years until 1849, wives accounted for only 4 of the 30 women buying; wives accounted for 9 out of the 43 women buying in the years 1849-60. However, those wives were a distinct minority of the women buyers after 1849, so it remains to be determined the extent to which marital law reform caused the surge in women's buying.

In any case, New York's MWPA was a form of women's empowerment, and perhaps it resulted from economic growth, along the lines suggested by Geddes and Lueck (2002), Doepke and Tertilt (2009), or Fernandez (2014). Those papers present mechanisms through which economic growth results in expansion of women's economic and political rights. At this early stage of analysis, that possible link from economic growth to women's economic rights emerges as the most noteworthy finding from our evidence on women's market-participation.

6. Signature Illiteracy Rates

Our second dimension of women's empowerment is human capital, for which we proxy with rates of illiteracy. We employ a simple and oft-used measure of illiteracy: the use of a mark, instead of a signature (by a party of the first part in a deed). Widely used in historical research, signature literacy measures tend to fall in the middle between measures of reading literacy and writing literacy (Lockridge 1974: 7-12, Grubb 1990: 42). Signature rates have been a mainstay

of research on literacy and education, from Martin's (1894) history of Massachusetts' public schools, to Cogneau and Moradi's (2014) exploration of Ghana and Togo in the twentieth century. For our study, we use the full range of deeds from Albany County (although mostly deeds of sale, there are a wide range of others, such as quit-claim deeds, mortgages, gifts, and leases).[7] Somewhat ironically, these deeds provide evidence on married women's literacy because of the common law doctrine of coverture, which limited women's legal capacity.

Table 2 presents our results on illiteracy rates of Albany women and men for the century before the Civil War. Probably the most striking finding is the much greater rate of measured illiteracy among women than men. For the period as a whole, women's illiteracy rate was more than triple that of men (18% compared to 5%, see Table 2).[8] Looking decade to decade, the gender gap in illiteracy varied, but women's illiteracy rates consistently were much higher than men's. The proportion of women using a mark was at least double that of men, and more often triple or more. Presumably, the gender literacy gap reflected some mix of family and social factors, such as child-rearing practices and schooling opportunities. In any case, the persistently higher illiteracy of women serves as a stark reminder of the gender inequities of the early nineteenth century, and of the substantial scope for women's empowerment.

Table 2: Albany Signature Illiteracy Rates by Decade

	Women	**illiteracy**	**Men**	**illiteracy**
1762-1860	1078	18%	1501	5.1%
1762-83	*24**	*18%*	107	6.3%
1784-99	42	20%	108	8.8%
1800s	49	26%	75	2.7%
1810s	110	23%	127	8.2%
1820s	136	23%	169	5.9%
1830s	224	20%	287	5.8%
1840s	116	19%	163	2.0%
1850-60	378	13%	465	3.8%

**Sample size too small for useful results.* Source: signatures or marks by Parties of the First Part in random samples of Albany Deeds (see text).

Arguably, there were signs of women's empowerment by the 1850s, the end of our period. Women's measured illiteracy dropped to just 13% in the 1850s, considerably below the rate in the preceding five decades (the rate averaged 20% for the period 1800-1849 as a whole). However, it is worth noting that women's illiteracy remained well above men's (13% versus 4% in the 1850s), so the empowerment of women in terms of literacy did not close the gender literacy gap.

Our results do not allow us to say much about the course of literacy for Albany women as a whole, because being a party to a deed was the province of the middle and upper classes. That, said, the prevalence of marking among well-to-do women is strong evidence that universal literacy was not achieved in Albany before the Civil War. Because economic growth was

[7] See Auwers (1980: 206) and Perlmann and Shirley (1991: 63) on deeds as a source for signature literacy evidence.
[8] The illiteracy rates in Table 2 represent a marked improvement on seventeenth-century patterns. With methods similar to ours, Kilpatrick (1912: 298) finds that 21% of men and 55% of women used marks in the period 1654-74.

definitely underway by 1830 (see above), we can conclude that mass literacy in Albany came well *after* the onset of economic growth. But of greater interest here, the decline of signature-illiteracy among women deed-makers after 1850 points to some expansion of women's capabilities and opportunities. We have evidence of women's empowerment, which could prove to be a result of income gains from economic growth in the preceding decades.

More research would be required for a more precise timeline, but our literacy evidence is consistent with causal links running from economic growth to women's empowerment, and not the other way. The onset of economic growth came some time before the 1830s. The decline in women's illiteracy in the 1850s reflected changes in girls' learning some decades before. The associated increases in female human capital might plausibly be connected to subsequent economic growth as early as the 1840s, consistent with the notion of a "virtuous circle" of economic growth and female empowerment (Duflo 2012: 1053). But if so, the circle was set in motion by economic growth, followed by improvements in gender equity.

7. Conclusion

Pending more precision on the timing of the emergence of economic growth in Albany, at first glance our evidence is largely inconclusive with respect to possible connections between women's empowerment and economic growth in Albany NY in the century before the Civil War. Certainly, both in terms of market-participation and human capital, our research confirms that women's socio-economic status was subordinate to men's during the century before the Civil War. And although we find evidence of some improvements in women's status, we have not uncovered any dramatic increases in women's empowerment to connect to early economic growth (whether as cause or effect).

We do find expansion of women's roles in real estate markets after circa 1810, and perhaps that was a reflection of a broader mobilization of women's talents and productive capacities that contributed to the emergence of economic growth. However, causal connections -- and directions -- remain to be determined. Our findings on human capital also are largely inconclusive. The modest reduction in women's illiteracy rates by the 1850s could emerge as an example of women's empowerment *resulting* from economic growth. But again the causal links remain to be demonstrated. We can offer one negative result -- we find *no* evidence to suggest that improvements in literacy (of either gender) played a role in the emergence of economic growth. On that count, our research corroborates Schofield's (1973) view that reduced illiteracy was a *consequence*, and not a cause, of early economic growth.

We find some modest improvements in the socio-economic status of women in Albany in the century before the Civil War. However, it would be a mistake to forget that on the eve of the War, women were distinctly less literate than men, and their independent participation in Albany real estate markets was limited. Building on these early results may provide new insights on causal relationships between female empowerment and economic development, and the potential role of policy in promoting both economic growth and gender equality. In the context of early America, no doubt there were some opportunities for economic growth without challenging old gender conventions. But it seems likely that taking advantage of women's potential contributions was a particularly promising -- and low cost -- means to economic growth. And over time, we expect economic growth and structural change helped shake up gender conventions, which in turn may well have promoted subsequent economic growth.

References

Auwers, L. (1980) “Reading the marks of the past: Exploring female literacy in colonial Windsor, Connecticut” *Historical Methods* **13**, 204-214.

Bandiera, O. and A. Natraj (2013) "Does gender inequality hinder development and economic growth? evidence and policy implications" *The World Bank Research Observer* **28**, 2-21.

Beadie, N. (2010) *Education and the Creation of Capital in the Early American Republic*, Cambridge University Press: New York.

Becker, S. O., E. Hornung and L. Woessmann (2011) “Education and catch-up in the Industrial Revolution” *American Economic Journal: Macroeconomics* **3**, 92-126.

Boserup, E. (1970 [1998 reprint]) *Woman’s Role in Economic Development*, Earthscan: London.

Cogneau, D. and A. Moradi (2014) "Borders that divide: Education and religion in Ghana and Togo since colonial times" *The Journal of Economic History* **74**, 694-729.

Davis, J. H. (2004) “An annual index of US industrial production, 1790-1915” *The Quarterly Journal of Economics* **119**, 1177-1215.

Diebolt, C. and F. Perrin (2013) “From Stagnation to Sustained Growth: The Role of Female Empowerment” *The American Economic Review* **103**, 545-549.

_____ (2014) “Growth Theories” Working Papers 02-14, Association Française de Cliométrie.

Doepke, M. and M. Tertilt (2009) “Women's Liberation: What's in It for Men?” *The Quarterly Journal of Economics* **124**, 1541-91.

_____ (2014) “Does Female Empowerment Promote Economic Development?” NBER Working paper number 19888.

Duflo, Esther (2012) “Women Empowerment and Economic Development” *Journal of Economic Literature* **50**, 1051-1079.

Engerman, S. and R. E. Gallman (1983) “US Economic Growth, 1783–1860” *Research in Economic History* **8**, 1-46.

Eswaran, M. (2014) *Why Gender Matters in Economics,* Oxford University Press: Princeton.

Fernández, R. (2014) "Women’s Rights and Development" *Journal of Economic Growth* **19**, 37-80.

Fishlow, A. (1966) "The American common school revival: Fact or fancy?" in *Industrialization in Two Systems: Essays in Honor of Alexander Gerschenkron* by Henry Rosovsky, Ed., John Wiley & Sons: New York.

Gallman, R. E. (1960) “Commodity Output, 1839-1899” in *Trends in the American Economy in the Nineteenth Century*, NBER, Princeton University Press: Princeton, 13-72.

Gaddis, I. and S. Klasen. (2014) "Economic development, structural change, and women’s labor force participation" *Journal of Population Economics* **27**, 639-681.

Galor, O. (2012) "The Demographic Transition: Causes and Consequences" *Cliometrica* **6**, 1-28.

Galor, O. and D. Weil (1996) “The Gender Gap, Fertility, and Growth” *American Economic Review* **86**, 374–87.

Geddes, R. and D. Lueck (2002) “The Gains from Self-Ownership and the Expansion of Women's Rights” *American Economic Review* **92**, 1079-92.

Go, S. and P. Lindert (2010) "The uneven rise of American public schools to 1850" *The Journal of Economic History* **70**, 1-26.

Goldin, C., and L. Katz (2008) *The Race between Education and Technology.* Harvard University Press: Cambridge MA.

Goldin, C., and K. Sokoloff (1982) “Women, Children, and Industrialization in the Early Republic: Evidence from the Manufacturing Censuses” *The Journal of Economic History* **42**, 741-74.

_____ (1984) “The Relative Productivity Hypothesis of Industrialization: The American Case, 1820 to 1850" *The Quarterly Journal of Economics* **99**, 461-87.

Graff, H. J. (1981) "Literacy, Jobs, and Industrialization: The Nineteenth Century" in *Literacy and Social Development in the West* by H. J. Graff, Ed., Cambridge University Press: New York, 232-60.

Grubb, F. W. (1990) “Growth of literacy in colonial America: Longitudinal patterns, economic models, and the direction of future research” *Social Science History* **14**, 451-482.

Howard, J. (2015) “Empowering Women And Girls Is The Key To Ending Poverty, And Here Are Numbers To Prove It” *Huffington Post*, January 23 (updated 01/28/2015).

Kabeer, N. (2016) “Feminist Economics, Gender Equality, Economic Growth, and Women’s Agency: the ‘Endless Variety’ and ‘Monotonous Similarity’ of Patriarchal Constraints” *Feminist Economics* **22**, 295-321.

Kaestle, C. F. and M. A. Vinovskis (1980) *Education and Social Change in Nineteenth Century Massachusetts*, Cambridge University Press: New York.

Kilpatrick, W. H. (1912) *The Dutch Schools of New Netherland and Colonial New York*, US Bureau of Education, Bulletin No. 12, Government Printing Office: Washington, D.C.

Klasen, S. and F. Lamanna (2009) "The impact of gender inequality in education and employment on economic growth: new evidence for a panel of countries" *Feminist Economics* **15**, 91-132.

Langer, A., A. Meleis, F. M. Knaul, R. Atun, M. Aran, H. Arreola-Ornelas, Z. A. Bhutta, A. Binagwaho, R. Bonita, J. M. Caglia, and M. Claeson (2015) "Women and health: the key for sustainable development" *The Lancet* **386**, 1165-1210.

Lindert, P. H. and J. G. Williamson (2013) "American Incomes before and after the Revolution" *The Journal of Economic History* **73**, 725-765.

Lockridge, K. A. (1974) *Literacy in colonial New* England, Norton: New York.

Martin, G. H. (1894) *The evolution of the Massachusetts public school system: A historical sketc*h, D. Appleton and Company: New York.

Matsui, K. (2013) "The Economic Benefits of Educating Women" Bloomberg BusinessWeek, March 7, http://www.businessweek.com/articles/2013-03-07/the-economic-benefits-of-educating-women (accessed 2014 June).

Mitch, D. (2005) "Education and Economic Growth in Historical Perspective" *EH.Net Encyclopedia*, edited by Robert Whaples http://eh.net/encyclopedia/education-and-economic-growth-in-historical-perspective/ (assessed 2015 May).

Nilsson, A., L. Pettersson and P. Svensson (1999) "Agrarian transition and literacy: The case of nineteenth century Sweden" *European Review of Economic History* **3**, 79-96.

Perlmann, J. and D. Shirley (1991) "When did New England women acquire literacy?" *The William and Mary Quarterly* **48**, 50-67.

Rhode, P. W. and R. Sutch (2006) "Estimates of National Product before 1929" in *Historical Statistics of the United States, Earliest Times to the Present: Millennial Edition* by S. B. Carter et al., Eds., Cambridge University Press: New York, Ca 3-12 to 3-20.

Rosenbloom, J. L. and T. Weiss (2014) "Economic growth in the Mid-Atlantic region: Conjectural estimates for 1720 to 1800" *Explorations in Economic History* **51**, 41-59.

Sandberg, L. G. (1979) "The case of the impoverished sophisticate: human capital and Swedish economic growth before World War I" *The Journal of Economic History* **39**, 225-241.

Schofield, R. S. (1973) "Dimensions of illiteracy, 1750–1850" *Explorations in Economic History* **10**, 437-454.

Shammas, C. (1994) "Re-Assessing the Married Women's Property Acts" *Journal of Women's History* **6**, 9-30.

_____ (2015) "Did Democracy Give the United States an Edge in Primary Schooling?" *Social Science History* **39**, 315-338.

Sokoloff, K. L. (1986) "Productivity growth in manufacturing during early industrialization: evidence from the American Northeast, 1820-1860" in *Long-term factors in American economic growth* by S. Engerman and R. Gallman, Eds., University of Chicago Press, Chicago, 679-736.

Soltow, L. and E. Stevens (1981) *The rise of literacy and the common school in the United States: A socioeconomic analysis to 1870*, University of Chicago Press: Chicago.

Sylla, R. E. (2011) "Financial Foundations: Public Credit, the National Bank, and Securities Markets" in *Founding Choices: American Economic Policy in the 1790s* by D. A. Irwin and R. E. Sylla, Eds., University of Chicago Press/NBER: Chicago, 59-88.

United Nations Development Programme (2015) "Gender Inequality Index (GII)," Human Development Reports, http://hdr.undp.org/en/content/gender-inequality-index-gii (accessed 2015 May).

Weiss, T. J. (1992) "US Labor Force Estimates and Economic Growth, 1800-1860" in *American Economic Growth and Standards of Living before the Civil War* by R. W. Gallman and J. Wallis, Eds., University of Chicago Press: Chicago, 19-78.