6

Patentees and Married Women's Property Rights Laws

"So great a favourite is the female sex of the laws"
– Sir William Blackstone (1765)

"This is law, but where is the justice of it?"
– Ernestine Rose (1851)

The previous chapter showed that women patented few inventions in the antebellum period, but the growth rate of female patenting toward the end of the nineteenth century was rapid and exceeded that of male inventors. Suggestions about the factors that might explain the paucity of documented patents credited to women have ranged from the cultural to the economic. Nineteenth-century feminists attributed patterns of female patenting partly to the legal status of married women. According to Matilda Joslyn Gage, a prominent suffragist, "It is scarcely thirty years since the first State protected a married woman in the use of her own brain property. Under these conditions, legally incapable of holding property . . . that woman has not been an inventor to an equal extent with man is not so much a subject of surprise as that she should have invented at all."[1] Although such declarations were partly motivated by political rhetoric, they do warrant further investigation. In an era when relatively few women remained single, their status and economic welfare were significantly affected by laws regarding married women's rights.[2] Under nineteenth-century common law, a married woman

[1] Matilda Joslyn Gage, "Woman as an Inventor," *North American Review*, vol. 136 (318) 1883: 488–89. "Nor is woman by law recognized as possessing full right to the use and control of her own powers. In not a single State of the Union is a married woman held to possess a right to her earnings within the family; and in not one-half of them has she a right to their control in business entered upon outside of the household. Should such a woman be successful in obtaining a patent, what then? Would she be free to do as she pleased with it? Not at all. She would hold no right, title, or power over this work of her own brain. She would possess no legal right to contract, or to license any one to use her invention. Neither, should her right be infringed, could she sue the offender," p. 488. "How does the law recognize women? . . . It is only a little over a quarter of a century since the first state in this Union protected a married woman in the use of her own brain property. Is it any wonder then, that woman is not equal with man as an inventor," *The Woman Inventor*, vol. 1 (1) 1891.

[2] According to Lee Chambers-Schiller, *Liberty, A Better Husband: Single Women in America*, New Haven, Conn.: Yale University Press, 1984, the numbers of unmarried women were very

was bound by the rules of coverture, which vested her legal rights in her husband. As such, he controlled any property she acquired before or after marriage, as well as her earnings. Married women were prohibited from entering into contracts, or engaging in trade on their own account, as "sole traders."

Reforms in many dimensions were effected at the state level after 1830, and enlarged the ability of married women to own separate property, to trade or engage in businesses on their own account, and to keep the earnings from their labor. Legal historians contend that the Married Women's Acts did not result in significant improvement in the economic status of women. However, if women were motivated by potential profits, it might be expected that their efforts would respond to changes in the legal system that expanded their property rights, and offered greater access to potential income from their participation in the market. This claim was implicitly supported by feminists of the period who attributed the relatively low numbers of inventions created by women to deficiencies in the legal system. Higher inventiveness also might result from laws permitting women to engage in business or professions. Previous chapters showed that many inventions were trade-related, in which case greater job experience would tend to promote inventive activity. The relationship might incorporate both demand and supply factors, where participation in a profession enhanced the ability to perceive demand and further promoted the skills required for invention. Moreover, commercial exploitation of patent property depended on the right to contract and to sue, in order to produce the invented article, to assign the patented invention, or to prosecute infringers. In short, legal reforms were likely to affect women's behavior by altering the economic costs and benefits associated with their involvement in commercial activity.

The results also provide insights into the maximization process that informed household behavior. A finding that married women were responsive to policies that granted them rights to property or earnings separately from their husbands would be consistent with a model in which individual, rather than household, utility was maximized. Conversely, the result that improvements in legal status were unrelated to behavior satisfies at least the necessary condition for a model in which household utility is jointly maximized. More generally, studies of the effect of changes in laws are especially important to our overall understanding of the role of institutions in the period of nascent industrialization. One would like to know whether legal reforms influenced market participation in general, and how different the paths of industrialization and economic growth might have been, had the set of opportunities available to women been expanded earlier. The focus on

low in the eighteenth century, and increased slightly thereafter: 7.3 percent of women born between 1845 and 1849 never married; 8.0 percent born between 1845 and 1849; 8.9 percent between 1855 and 1859; and 11 percent over 1865–1875 (p. 3).

a narrower aspect of this problem – the relationship between patenting and married women's property rights laws – sheds some light on the larger issues of the effects of legal reforms on the role of women in the market economy.

LEGAL STATUS OF NINETEENTH-CENTURY WOMEN

For much of the nineteenth century, married women were subject to the "disability of coverture," which vested their rights in their husbands. According to a standard eighteenth-century legal reference, "by marriage, the husband and wife are one person in law; that is, the very being or legal existence of the woman is suspended during the marriage."[3] If women were granted the right to control their own property, other authorities argued, it would lead to an independence that threatened the institutions of marriage and the family. The court opined in *Cole v. Van Riper*, 44 Ill. 58 (1867): "It is simply impossible that a married woman should be able to control and enjoy her property as if she were sole, without practically leaving her at liberty to annul the marriage." Married women were explicitly excluded from many occupations on similar grounds. When the U.S. Supreme Court denied Mrs. Myra Bradwell's 1872 appeal to be admitted to the Illinois bar as a practising attorney, Justice Bradley felt compelled to add a separate concurrence to point out that "the family institution is repugnant to the idea of a woman adopting a distinct and independent career from that of her husband . . . the paramount destiny and mission of woman are to fulfil the noble and benign offices of wife and mother. This is the law of the Creator."[4]

A market economy is based on the security of contracts, yet, during this critical period when the American system evolved from farm-based

[3] Sir William Blackstone, *Commentaries on the Laws of England*, vol. 1, New York: W. E. Dean Publishers, 1836: p. 355. The epigraph refers to p. 366: "even the disabilities which the wife lies under are for the most part intended for her protection and benefit: so great a favourite is the female sex of the laws."

[4] *Bradwell v. Illinois*, 83 U.S. 130 (1872). The Supreme Court of Illinois pointed out that American laws were drawn from the British doctrines, and "female attorneys at law were unknown in England, and a proposition that a woman should enter the courts of Westminster Hall in that capacity, or as a barrister, would have created hardly less astonishment than one that she should ascend the bench of bishops, or be elected to a seat in the House of Commons." Justice Bradley's concurrence (in which he was joined by Justices Swayne and Field) went further by chivalrously declaring that "The natural and proper timidity and delicacy which belongs to the female sex evidently unfits it for many of the occupations of civil life The paramount destiny and mission of woman are to fulfil the noble and benign offices of wife and mother. This is the law of the Creator. And the rules of civil society must be adapted to the general constitution of things, and cannot be based upon exceptional cases." Interestingly, Chief Justice Salmon P. Chase (who had joined Bradley, Field, and Swayne in their dissent to the Slaughterhouse opinion, 83 U.S. 36; 1872) was the only dissenter here. Chase, who was seriously ill at the time and died shortly after, had strongly supported the abolitionist movement, and promoted the passage of married women's property legislation while he was governor of Ohio.

production toward industrial capitalism, the majority of women could not enter into viable commercial contracts once they were subject to a contract of marriage.[5] Single women benefited from the same property rights as men, but a married woman could neither devise nor sell her property, sue nor be sued. She could not file for bankruptcy, and her husband was liable for any debts incurred; conversely, the claims of her husband's creditors extended to her property.[6] For most women, property was earned in the course of marriage, and not simply inherited; yet married women had no right to any wages or income they earned, leading to economic dependence on the husband even if the wife were involved in non-household production. Prior to the changes in the law, the disabilities of married women extended to their rights to benefit from the sale, purchase, or commercialization of their patented inventions. Some exceptions to the doctrine of marital disability were available through equity courts. Colonial common law inherited the feudal bias of English common law, but early equity courts modified feudal laws based on status to take into account fundamental needs of commercial exchange, such as the defense of property rights and contracts. However, solutions at equity were limited to a small class of the population, mainly the daughters of wealthy parents who established separate trusts through the courts to ensure the protection of settlements and bequests.[7]

The reasons for reforms in women's economic rights are important because of their implications for the direction of causality between patenting and changes in the law. Legislation in the 1830s and 1840s did not address the issue of women's participation in market exchange nor women's right to hold income or property on their own account. Rather, the intent of these laws was to secure the property of a married woman from her husband's creditors in order to protect family income during the economic downturn of the late 1830s.[8] Control remained with the husband, and courts interpreted the legislation narrowly to ensure that ownership did not signify independence from the family. Mississippi's 1839 law, one of the first that was passed, typified this class of legislation, for it merely protected slave holdings of

[5] According to Joel Prentiss Bishop, *Commentaries on the Law of Married Women*, Boston: Little, Brown & Co., 1873–1875, p. 41, "Being under the power of her husband, she can have no will of her own, and by reason of this lack of freedom of will she cannot contract."

[6] See, for example, John F. Kelly, *A Treatise on the Law of Contracts of Married Women*, Jersey City, N.J.: D. Linn & Co, 1882.

[7] For instance, less than 2 percent of affianced couples in South Carolina employed marriage settlements between 1785 and 1810. Marlynn Salmon, "Women and Property in South Carolina: The Evidence from Marriage Settlements, 1730–1830," *William and Mary Quarterly*, vol. 39 (4) 1982: 655–85; also see Salmon, *Women and the Law of Property in Early America*, Chapel Hill: University of North Carolina Press, 1986.

[8] See Richard Chused, "Married Women's Property Law: 1800–1850," *Georgetown Law Journal*, vol. 71 (2) 1983: 1359–1425; and Norma Basch, *In the Eyes of the Law: Married Women's Property Rights in Nineteenth Century New York*, Ithaca, N.Y.: Cornell University Press, 1982, p. 207.

white married women from seizure by creditors. Southern states especially may have been more concerned with guarding the rights of debtors rather than the rights of women.[9] In short, one might regard the first wave of married women's laws in the 1830s and early 1840s as a species of bankruptcy legislation. These laws created commercial uncertainty, however, because the potential for fraud by debtor households toward creditors increased.[10] This problem was ultimately resolved by granting wives the further right to control their separate estates. As *Small v. Small*, 129 Pa. 336 (1889) noted, the legislature "saw that a married woman's coverture stood in the way of a full, free and expeditious transaction of affairs . . . that in order to make contracts with her legal and binding it was necessary for every mechanic and every tradesman to have knowledge of the most intricate questions of law; and that to recover even the smallest account against her required the services of a skillful lawyer. These were the mischiefs they undertook to remedy."

Laws that subsequently granted women access to their earnings and promoted their participation in commercial activity evolved from expansions in the scope of the earlier and specific legislation. Some researchers contend that married women's property laws comprised a minor part of codification or efforts to revise and simplify the law of property in general, in order to make access more democratic. The statutory reforms also have been related to an emerging view in the mid-nineteenth century of a separate domestic sphere for women that accompanied their increased responsibility within the family. Others focus on the efforts of prominent feminists, and argue that a turning point was reached because of a July 1848 women's rights convention in Seneca Falls, New York, which lobbied for improvements in the legal standing of married women. However, by this time New York had already passed its legislation of March 1848, that extended separate property rights

[9] For instance, in Maryland, "the policy of the (pre-1860) legislation . . . was, not to take from the husband the ownership which the common law gave him; but to protect from his creditors what came to him from her, leaving the ownership with him as before" (Bishop, *Commentaries*, vol. 2, p. 521; see also John F. Kelly, *A Treatise on the Law of Contracts of Married Women*, Jersey City, N.J.: D Linn & Co, 1882, p. 526; and Susan Lebsock, "Radical Reconstruction and the Property Rights of Southern Women," *Journal of Southern History*, vol. 43 (2) 1977: 195–216, p. 207.) One may speculate that downturns prior to the panic of 1837 did not lead to such widespread debtor protection laws because they were different in character, agrarian-based, and more localized in effect.

[10] Some twelve thousand lawsuits between 1800 and 1995 relate to married women. A search of cases by time period indicates that 40 percent of married women's cases before 1830 involved fraud and creditors, compared to 21.8 percent between 1830 and 1879, and 5 percent after 1920. South Carolina's 1744 "Act Concerning Feme Covert Sole Traders" illustrates the expansion of married women's rights to counter such problems: "whereas feme coverts in this province who are sole traders do sometimes contract debts in this province, with design to defraud the persons with whom they contract such debts, by sheltering and defending themselves from any suit brought against them by reason of their coverture," the colony therefore granted married sole traders the right to sue and correspondingly be sued.

to all married women.[11] Indeed, three years before feminists gathered for the Seneca Falls Convention, and long before the passage of earnings laws, the New York legislature enacted an 1845 statute that explicitly "secured to every married woman who shall receive a patent for her own invention, the right to hold and enjoy the same, and all the proceeds, benefits, and profits as her separate property . . . as if unmarried."[12] Although no single explanation will suffice, the consensus from these studies appears to be that the laws were changed by forces besides the increase in women's nonhousehold production. This conclusion is reinforced by the finding that "massive industrial unemployment, particularly in the 1870s and 1890s, led many to question women's right to labor," which implies that legal reforms during this period were unlikely to have been caused by labor market pressures.[13]

Table 6.1 shows that statutory action progressed sequentially in terms of three broad categories between 1830 and 1890. First, many jurisdictions passed laws enabling married women to retain separate estates and property; second, laws of the 1860s and 1870s granted such women the right to keep their earned income; finally, the third wave of legislation permitted wives to engage in business on the same basis as single women or as "sole traders." However, distinct regional differences were evident. One can detect a "frontier effect," for example, in the finding that by 1890 all midwestern and 82 percent of the western states had approved separate estates for women.[14] Moreover, 91 percent of western states had dissolved trading restrictions, and 73 percent passed earnings acts by this period. A number of western and midwestern states, including Kansas, Nevada, and Oregon, protected women's property rights in their constitutions. Community property states

[11] The 1848 N.Y. Statute extended separate property rights to all married women. The Act of 1860 stated that "A married woman may bargain, sell, assign and transfer her separate personal property, and carry on any trade or business, and perform any labor or service on her sole and separate account, and the earnings of any married woman, from her trade, business, labor or services, shall be her sole and separate property." This statute was the model for similar legislation in a number of other states.

[12] See Kelly, p. 456. Up to this period, only ten patents had been granted to women residing in New York. Connecticut (1856) and West Virginia (1868) passed similar legislation.

[13] Claudia Goldin, *Understanding the Gender Gap: An Economic History of American Women*, New York: Oxford University Press, 1990, p. 53.

[14] Mari J. Matsuda, "The West and the Legal Status of Women: Explanations of Frontier Feminism," *Journal of the West*, vol. 24 (1) 1985: 47–56, argues that the "frontier effect" was because of a number of factors including the relative scarcity of women. This notion is reinforced by the record on women's suffrage, which several Western states granted in the nineteenth century: Wyoming, 1869; Utah, 1870; Washington, 1883; Colorado, 1896; Idaho, 1896. Washington state's decision was overturned by the Supreme Court, and later revoked in 1889. When the legislation was finally approved in 1910, the vote carried in every county, ending with a two to one majority. California, Arizona, Kansas, Oregon, Montana, and Nevada also allowed women the vote between 1910 and 1915. See Mari Jo Buhle and Paul Buhle (eds.), *The Concise History of Woman Suffrage*, Urbana: University of Illinois Press, 1978.

Table 6.1. *State Laws Regarding Married Women's Economic Rights, by Year of Enactment*

State	Property Laws	Earnings Laws	Sole Trader Laws
Northeast			
Connecticut	1856 (patents)	1877	1877
Maine	1844	1857	1844
Massachusetts	1845	1874	1860
New Hampshire	1867	–	1876
New Jersey	1852	1874	1874
New York	1845 (patents)	1860	1860
Pennsylvania	1848	1872	–
Rhode Island	1848	1874	–
Vermont	1881	–	1881
South			
Alabama	1867	–	–
Arkansas	1873	1873	1868
Delaware	1875	1873	–
District of Columbia	1869	–	1869
Florida	–	–	–
Georgia	1873	–	–
Kentucky	–	1873	1873
Louisiana	–	–	1894
Maryland	1860	1860	1860
Mississippi	1871	1871	1871
North Carolina	1868	1873	–
Oklahoma	–	–	–
South Carolina	1870	–	1870
Tennessee	1870	–	–
Texas	–	–	–
Virginia	1878	–	–
West Virginia	1868 (patents)	1893	1893
Midwest			
Dakotas	1877	1877	1877
Illinois	1861	1861	1874
Indiana	1879	1879	–
Iowa	1873	1870	1873
Kansas	1868	1868	1868
Michigan	1855	–	–
Minnesota	1869	–	1874
Missouri	1879	1879	–
Nebraska	1881	1881	1881
Ohio	1861	1861	–
Wisconsin	1850	1872	–

(*continued*)

Table 6.1 *(continued)*

State	Property Laws	Earnings Laws	Sole Trader Laws
West			
Arizona	1871	–	1871
California	1872	1872	1872
Colorado	1874	1874	1874
Idaho	1887	–	1887
Montana	1872	1874	1874
Nevada	1873	1873	1873
New Mexico	–	–	–
Oregon	–	1880	1880
Utah	1895	1895	1895
Washington	1889	1889	1889
Wyoming	1876	1876	1876

Notes: The table includes those acts that granted separate control over property to married women (Property), the rights to their earnings without need of the husband's consent (Earnings), and the ability to engage in contracts and business without need of the husband's consent (Sole Trader). The table does not include legislation based on restrictions such as the right to trade only if abandoned by the husband, or if the husband were incapacitated or irresponsible, nor does it include legislation that was merely granted to afford relief from creditors. Married women's property right acts that were legislated primarily as debt relief include: Alabama, 1846, 1848; Arkansas, 1835, 1846; Florida, 1845; Georgia, 1868; Indiana, 1852; Kentucky, 1846; Maine, 1840, 1847; Maryland, 1841; Missouri, 1849; New York, 1849; North Carolina, 1849; Ohio, 1846; Oregon, 1857; South Carolina, 1868; Tennessee, 1825; Texas, 1845; Vermont, 1847; West Virginia, 1868. Kelly notes that debt relief legislation did not create a truly separate estate for women because control was still vested in the husband. Other acts that incorporated caveats such as the requirement that husbands were irresponsible, imprisoned or incapacitated, or appointed as trustees of their wives, include: Alabama, 1849; Arkansas, 1875; Connecticut, 1849, 1853, 1875; Delaware, 1865, 1873; Florida, 1881; Georgia, 1873; Idaho (no year mentioned); Illinois, 1874; Indiana, 1853, 1857, 1861; Kentucky, 1843, 1873; Louisiana, 1866; Maine, 1821; Massachusetts, 1835; Michigan, 1846; Minnesota, 1866; Mississippi, 1839; Missouri, 1865; Nebraska, 1881; New Hampshire, 1842, 1846; North Carolina, 1868, 1872, 1873; Ohio, 1868; Oregon, 1857; Pennsylvania, 1718, 1855, 1872; Rhode Island, 1880; Tennessee, 1835, 1858; Texas, 1865; Vermont, 1862, 1881; Virginia, 1876, 1877; West Virginia, 1868; Wisconsin, 1850, 1878. The 1845 act of New York (Chap. 11), the 1856 Act of Connecticut, and the 1868 Act of West Virginia explicitly accorded women the right to "hold a patent for an invention, as if she were unmarried" (W.Va. Code of 1868, Sec. 4).
Sources: Wells, *Separate Property*; Kelly, *Treatise*; Bishop, *Commentaries*, 2 vols.

such as California, Texas and Arizona inherited a civil law tradition that nominally granted joint ownership to husbands and wives.[15] In California and other southwestern areas, a married woman who carried on a business was considered to have the same rights as a single woman. This can be compared to the 71 percent of the southern states that had separate estates laws,

[15] Community property states were Arizona, California, Idaho, Louisiana, Nevada, New Mexico, Texas, and Washington.

the 47 percent that had sole trader laws, and the 41 percent that passed earnings laws. Southern states also tended to interpret the statutes more conservatively; for instance, Alabama and Virginia passed statutes whose ambit was severely limited to special cases. Florida and Texas passed no effective women's rights legislation in the nineteenth century, and in 1887 South Carolina went out of its way to formally bar married women from business partnerships.[16]

Legal historians have for the most part asserted that the consequences of married women's legislation were minimal. They argue that the antebellum property rights reforms increased the responsibility of women for the welfare of their families, without improving their economic status or their standing in the labor market.[17] For example, earnings laws were initially narrowly circumscribed in scope, with the main intention of protecting women who were burdened with profligate and irresponsible husbands. Courts also typically interpreted the statutes as exempting any work that was conducted in the home or for the benefit of the family, because they feared the transformation of the family relationship into a market relationship.[18] More generally, "the married women's acts themselves did not legitimate any radical shifts in the economic status of women."[19] A study of the New York statutes similarly opines that "full legal equality for married women loomed as a threat to the entire economic structure. Consequently the changes created by the statutes were either limited or illusory."[20] These assertions were not,

[16] Indeed, in many Southern states reforms occurred in the twentieth century. According to Susan Lebsock, "Radical Reconstruction and the Property Rights of Southern Women," *Journal of Southern History*, vol. 43(2) 1977: 195–216, p. 215, "major statutory changes in the married women's property laws in Alabama, Mississippi, Florida, Louisiana and Texas awaited the 1880s and beyond." Although Georgia passed separate estates legislation in 1873, it declared at the same time that the general contracts of married women were void. It was not until 1943 that Georgia allowed women the right to separate earnings. John C. Wells, *A Treatise on the Separate Property of Married Women*, Cincinnati: R Clarke & Co, 1878, p. 15, points out: "The first movement of the Florida legislature . . . was the ungracious extending of the criminal code so as to provide that a married woman may be convicted of the crime of arson, by burning her husband's property . . . it seems that here the whole business of legislating for married women stopped." Southern courts reinforced this tendency; as *Allen-West v. Grumbles*, 161 F. Cas. 461 (1908) acknowledged: "the Supreme Court of Arkansas has constantly and rigidly held to the rule of the common law in construing the married women's statute."

[17] See Elizabeth Warbasse, *The Changing Legal Rights of Married Women, 1800–1861*, New York: Garland, 1987; Basch, *In the Eyes*; and Chused, "Married Women's Property Law."

[18] Amy Dru Stanley, "Conjugal Bonds and Wage Labor: Rights of Contract in the Age of Emancipation," *Journal of American History*, vol. 75 (2) 1988: 471–99; and Reva B. Siegel, "The Modernization of Marital Status Law: Adjudicating Wives' Rights to Earnings, 1860–1930," *Georgetown Law Journal*, vol. 82 (7) 1994: 2127–211; Reva B. Siegel, "Home as Work: The First Woman's Rights Claims Concerning Wives' Household Labor, 1850–1880," *Yale Law Journal*, vol. 103(5) 1994: 1073–1217.

[19] Richard Chused, "Married Women's Property Law," p. 1362.

[20] Norma Basch, *In the Eyes*, p. 4.

however, tested for consistency with the evidence. Furthermore, quite apart from encompassing issues such as the economic status of women, the narrower question remains as to whether the existence of laws protecting individual property served as an incentive for women to alter their patenting behavior.

PATENTING AND CHANGES IN THE LAW

The previous chapters showed that the United States patent system is administered at the federal level, and places no restrictions on the race, gender, or citizenship of inventors eligible to hold patent property. Appropriate federal legal and property rights institutions functioned as "enabling factors," which are prerequisites for market expansion. Their absence would have retarded participation in the market economy; however, the presence of such institutions was not sufficient for inducing economic progress. For instance, states have domain over allied rights such as the ability to contract to convey the patent, to sue for compensation or deterrence in the event of infringement, and retain income or profits from commercialization of the invention. State holdings on torts, contracts, and other legal doctrines can strengthen or unravel property rights even if the latter are protected by the Constitution. Thus, the progress of women's property rights (broadly defined) was necessarily affected by policies at the state level. The Civil War heralded significant changes in women's property rights that increased the potential profits from their commercial efforts. The same period also marked a dramatic increase in their patenting activity. Some have argued that the timing was not coincidental, but causal. If so, the changes in the married women's laws would have stimulated an increase in women's investments in inventive activity and promoted greater efforts to obtain patent property.

The tables presented here show the association between per capita patenting (at the state level) and the different women's rights acts that were instituted in a particular state. Ideally one would want to compare the patenting record of married women patentees to unmarried patentees within the region, in terms of changes before and after the laws. The chapter on women inventors included data from city directories that were too limited and biased to yield reliable conclusions, but the figures seemed sufficiently distinct to warrant speculation that location-specific factors such as legal status might indeed account for some of the differences. Moreover, western and midwestern states were among the first to eliminate restrictions on the rights of women, and these frontier states were also prominent in per capita patenting.

Table 6.2 relates average per capita patenting by women to the timing of legal reforms. The results support the view that legal reforms caused women to increase their investments in inventive activity. Average per capita patenting did increase over time in states that had yet to pass any women's

Table 6.2. *Average per Capita Patenting by Women in Relation to Legal Reforms (weighted by female population)*

	1860s	1870s	1880s	1890s
Married Women's Property Rights				
Yet to Pass Law	6.0	16.1	36.2	53.1
	(31)	(13)	(9)	(9)
Passed in Current Decade	11.1	22.4	48.1	–
	(9)	(18)	(4)	(0)
Law Passed Before	28.5	59.1	54.9	80.0
	(9)	(18)	(37)	(40)
Sole Trader Laws				
Yet to Pass Law	9.9	24.2	34.1	48.8
	(43)	(25)	(20)	(20)
Passed in Current Decade	40.0	39.3	50.1	–
	(5)	(18)	(5)	(0)
Law Passed Before	3.2	100.4	72.3	103.7
	(1)	(6)	(25)	(29)
Earnings Laws				
Yet to Pass Law	12.4	18.9	29.6	44.6
	(43)	(23)	(20)	(20)
Passed in Current Decade	24.1	47.7	52.6	–
	(5)	(20)	(3)	(0)
Law Passed Before	3.2	65.0	63.1	91.0
	(1)	(6)	(27)	(29)
National Average	15.5	43.3	52.1	75.9

Notes: States that passed laws in the 1890s decade are included in the first category. Per capita patenting figures are weighted by population. The number of states in each category is included in parentheses. The 1890s patenting rates comprise those for the period up to March 1895, inflated by a factor of 1.9355.

rights laws but, in all instances where more than one state was involved, areas that had recently granted such rights experienced higher patenting rates. States that had previously enacted married women's statutes sustained rates of patenting that surpassed both of the other categories. However, the patterns are dominated by a strong upward trend, and might also reflect other features specific to a particular region. The table does not control for an array of variables that might affect the relationship between passage of married women's laws and female commercial activity. For instance, other laws might have been passed, or judicial decisions and cultural attitudes might have prevailed, that modified the married women's property laws, including changes in "marriage bars" or social sanctions against women inventors. Commercially developed areas that were rich in factors conducive to patenting, such as higher literacy rates and access to capital, might also have been more likely to pass laws protecting women's economic rights.

Systematic time series do not exist for these variables across states, but the level of urbanization (defined in terms of the presence or absence of cities within a county) is likely to be a good proxy.

Chapter 5 showed that women's patenting was affected by the degree of urbanization, but the direction of influence was unexpected: in the period before property rights laws were passed, women in rural areas (counties without a town of more than 25,000 residents) achieved higher patenting rates than women in urban and metropolitan regions. Moreover, even after adjusting for population, the distribution of women's patenting was far more concentrated in rural areas than was the case for male patentees, especially in the Midwest and West. The implication is that the typical urban advantages – access to education, information, social networks, financial capital – were not critical to female inventive activity. However, Table 6.3 shows that patenting in metropolitan counties (containing a city of over 100,000 residents) increased significantly after changes in laws granting property rights to women, and to a far greater extent than in rural areas. This increase might have occurred because concern about property rights was stronger in more developed markets, or perhaps because the property rights laws facilitated women's access to the advantages in urban areas that had promoted men's patenting.

Similarly, in rural and urban areas the passage of sole trader laws is associated with increases in patenting that are roughly comparable to the effects of the property laws. An exception occurs in metropolitan areas, where laws that granted women the right to independent businesses and contracts lead to higher patenting rates than is the case for property rights laws. For example, metropolitan areas in states that had legislated property rights laws in the 1870s experienced patenting rates of 2.9, whereas patenting in areas that had already passed property rights laws amounted to 42.4 per million women. The comparable figures for metropolitan counties in states that legislated sole trader laws in the 1870s were 13.6 in the current decade and 76.0 in states that had previously passed such laws. The higher rates in metropolitan areas after the passage of sole trader laws possibly reflect the greater potential for commercial activity and higher market demand in populous counties.

The rural/metropolitan differences also shed some light on the relationship between law and culture and, in particular, on the view that laws merely reflect prevailing norms or attitudes. Some scholars might feel that married women's laws were a function of cultural changes that were also favorable to inventive or commercial activity by women. That is, both the observed increase in patenting and changes in the laws towards married women could have been caused by changes in the omitted cultural variable. However, the results in Table 6.3 do not provide strong support for this proposition. If cultural norms indeed influenced both legal change and patenting, they could perhaps explain the divergence between rural and

Table 6.3. *Per Capita Patenting, Legal Reforms and Urbanization, 1790–1895*

	Married Women's Property Laws			
	1860s	1870s	1880s	1890s
Rural				
Yet to pass law	5.0	7.2	23.5	23.9
Passed in current decade	6.3	14.7	36.5	–
Law passed before	9.1	19.2	21.2	29.2
Total	7.6	17.7	21.4	28.9
Urban				
Yet to pass law	0.1	0.2	0.4	6.6
Passed in current decade	1.7	2.4	4.8	–
Law passed before	4.4	6.5	6.3	13.5
Total	2.8	5.3	5.9	13.0
Metropolitan				
Yet to pass law	1.0	1.8	2.7	3.3
Passed in current decade	3.5	2.9	0.0	–
Law passed before	17.3	42.4	40.8	52.9
Total	10.5	32.6	38.3	49.5

	Sole Trader Laws			
	1860s	1870s	1880s	1890s
Rural				
Yet to pass law	6.3	14.1	17.8	25.1
Passed in current decade	10.2	23.7	38.2	–
Law passed before	3.2	20.3	24.7	32.5
Total	7.6	17.7	21.4	28.9
Urban				
Yet to pass law	0.9	3.0	3.6	9.8
Passed in current decade	6.5	3.0	4.5	–
Law passed before	0.0	10.5	8.6	16.4
Total	2.8	5.3	5.9	13.0
Metropolitan				
Yet to pass law	3.9	12.7	17.7	20.3
Passed in current decade	23.5	13.6	0.0	–
Law passed before	0.0	76.0	60.5	78.9
Total	10.5	32.6	38.3	49.5

Notes: Rural refers to a location with fewer than twenty-five thousand inhabitants; urban, between twenty-five thousand and one hundred thousand; metropolitan, one hundred thousand and above. The figures are computed by dividing the number of patents within that urbanization category by total female state population. The 1890 patenting rates comprise those for the period up to March of 1895, inflated by a factor of 1.9355.

Sources: See the text and footnotes.

metropolitan patenting behavior in terms of cultural differences between rural and metropolitan areas; but it seems unlikely that attitudes in urban and metropolitan areas would differ sufficiently to account for patenting rates in urban counties that lagged behind both rural areas and metropolitan centers. Moreover, adverse views about married women's market participation were still in evidence even in the twentieth century, suggesting that cultural factors may have lagged behind women's commercial activity and legal change.[21]

The experience of women patentees also allows us to consider a number of additional issues, such as whether laws were associated with higher patenting rates after controlling for other factors; the differences between community property states and common law jurisdictions; and whether legal reforms were correlated with greater investments in inventive activity and the likelihood of trade in patent rights. Table 6.4 examines factors that influenced variation in the log of per capita patenting at the state level within each decade. The regressions, which are weighted by state population, show a statistically significant relationship between patenting by women inventors and legal changes affecting their property rights. A necessary condition for proving causality is that legal reforms preceded increases in patenting rates. The dummy variables *Prelaw* and *Postlaw*, respectively, represent states that had yet to pass married women's legislation, and those that had enacted laws previously. The omitted category refers to states that passed laws in the current period. Regressions 1 and 2, which are unweighted, show a statistically significant association between per capita patenting rates by women inventors and legal changes affecting their property rights, even after controlling for the strong upward trend. The negative and significant coefficients on *Prelaw*, combined with positive coefficients on the *Postlaw* dummy, imply that per capita patenting was lower in states that had not yet passed any laws, then increased markedly afterwards.

The analysis also examines the experience of the southern states (excluding the District of Columbia) and community property states (Regression 2.) Southern states recorded lower per capita patenting rates than other areas, and the difference persists even after controlling for time trends and changes in the law. Community property laws have been claimed to function in the same way as legal systems based on marital disability, because control of the common property was invariably vested in the husband.[22] The results support this interpretation, for they indicate that community property

[21] See Claudia Goldin, "Marriage Bars: Discrimination against Married Women Workers from the 1920s to the 1950s," in Patrice Higonnet, David S. Landes, and Henry Rosovsky (eds.), *Favorites of Fortune: Technology, Growth, and Economic Development Since the Industrial Revolution*, Cambridge, Mass.: Harvard University Press, 1991.

[22] See Donna C. Schuele, "Community Property Law and the Politics of Married Women's Rights in Nineteenth Century California," *Western Legal History* vol. 7(2) 1994: 244–81; and Lebsock, "Radical Reconstruction."

Table 6.4. *Regressions of Patenting in Relation to Legal Reforms (Dependent Variable: Log of Patenting Per Capita Within State, by Decade)*

	(1) (unweighted) Property Laws	(2) (unweighted) Property Laws	(3) (weighted) Property Laws
Constant	−2.35***	−1.80***	0.93**
	(3.86)	(2.71)	(2.05)
Time Trend			
1870s Decade	3.17***	3.27***	2.42***
	(4.00)	(4.13)	(4.36)
1880s Decade	3.34***	3.61***	2.71***
	(3.74)	(4.00)	(4.61)
1890s Decade	3.85***	4.17***	2.97***
	(4.26)	(4.54)	(5.17)
Legal Reforms			
Prelaw	−1.87***	−1.91***	−2.48***
	(2.34)	(2.40)	(3.94)
Postlaw	1.82***	1.36*	0.65
	(2.67)	(1.89)	(1.29)
Region			
South		−1.01*	−2.35***
		(1.82)	(6.30)
Community Property States		−0.85	0.45
		(1.16)	(0.64)
N	223	223	223
R^2	0.31	0.36	0.52

* significant at 7 percent level
** significant at 5 percent level
*** significant at 1 percent level

Notes: The regressions exclude the District of Columbia, in which the Patent Office was located. The female population weights comprise the decadal midpoint, computed by exponential interpolation. Community property states in the nineteenth century were: Arizona, California, Idaho, Louisiana, Nevada, New Mexico, Texas, and Washington.

Sources: See the text and footnotes.

jurisdictions had no special advantage in promoting patenting. Legal reforms clearly did not account for all of the variation in patenting at the state level over time, but it is difficult to control for regional factors because they are correlated with the changes in the laws. The issue of causation would be more effectively approached by considering the record for individual states within each region. In any event, the results are consistent with the view that the married women's property rights laws encouraged women's patenting activity.

The third regression is weighted by female population at the state level. A comparison of the weighted and unweighted regressions highlights the experience of the frontier states, where typically the female population was small. Per capita patenting was higher in the East North Central and western states after legal reform, contributing to the significantly positive coefficient on the *Postlaw* dummy in the unweighted regressions. However, when the state-level observations are adjusted for population, as in the weighted regression, the western states are overwhelmed by areas where population was larger and per capita patenting rates were lower. As a result, even though the *Prelaw* dummy remains significantly negative, the smaller weighting of the frontier states causes that *Postaw* dummy to become only marginally significant.

The effects from the earnings acts and sole trader legislation – which typically passed after the property acts – are dominated by the strong trends evident in the later periods. These statutes were associated with increases in patenting during, and after, the decade in which they were passed. Regressions which simultaneously control for property rights legislation show no additional influence from earnings and sole trader laws on per capita patenting. After including regional effects, the sole trader law is marginally significant, whereas the earnings acts are not. Judicial decisions restricted the earnings legislation to apply only to married women's labor that was not performed within the home, or for the benefit of the family, broadly defined. The results imply that courts rendered these laws ineffective by excluding occupations such as millinery outwork and assistance in the husband's trade or business.

Table 6.5 examines whether women increased their commitment to inventive activity after the laws changed. As stated before, a professional approach to invention is often linked with multiple patenting, and the attempt to extract profits and income from one's discoveries. Multiple patenting also helps to identify whether changes in the laws influenced women to increase and sustain their commitments to inventive activity. According to the regression results, the earnings and separate estates legislation seem to have been unrelated to the number of patents each woman filed. Thus, the property rights laws may have affected whether women in a state engaged in patenting at all, but not whether they chose to increase their investments in inventive activity. A relationship does exist between sole trader laws and the number of patents filed, but the exact nature of the link is unclear. One possibility is that women who were granted the right to secure contracts or to own businesses had a greater incentive to obtain multiple patents. More typically, women inventors of valuable patents formed businesses to exploit their inventions.

Two cases illustrate how the laws protected the property, both tangible and intangible, of women attempting to profit from patent rights. Mrs. Bonesteel, the defendant in *Voorhees v. Bonesteel*, 83 U.S. 16 (1872), owned an interest

Table 6.5. *Regressions of Total Career Patents in Relation to Legal Reforms (Dependent Variable: Log of Number of Patents per Person)*

	(1) **Property Laws**	(2) **Sole Trader Laws**
Constant	0.31	0.30
	(4.65)	(4.69)
Region		
New England	0.27	0.26
	(5.60)	(6.00)
Middle Atlantic	0.24	0.25
	(6.36)	(6.66)
West North Central	0.06	0.07
	(1.23)	(1.44)
East North Central	0.03	0.06
	(0.70)	(1.42)
West	0.01	−0.01
	(0.16)	(0.12)
Time Trend		
1870–1874	0.08	0.08
	(1.39)	(1.45)
1875–1879	−0.03	−0.04
	(0.50)	(0.68)
1880–1884	−0.07	−0.08
	(1.40)	(1.61)
1885–1889	−0.13	−0.14
	(2.67)	(2.95)
1890–1894	−0.16	−0.17
	(3.28)	(3.55)
Log (Per Capita Patenting)	0.02	0.02
	(4.42)	(3.87)
Patent Assigned	−0.16	−0.16
	(3.92)	(3.95)
Industry		
Industrial Machines	0.27	0.27
	(8.46)	(8.47)
Household Machines	0.09	0.09
	(2.26)	(2.27)
Apparel and Textiles	0.15	(0.15)
	(5.42)	(5.38)
Legal Reforms		
Property Rights Laws	0.02	–
	(0.58)	–
Sole Trader Laws	–	0.07
	–	(2.75)
	N = 4000	N = 4000
	$R^2 = 0.1$	$R^2 = 0.1$

Sources: See the text and footnotes. Assignments refer to patents sold at time of issue. Patents were categorized in terms of industry of final use.

in a patent license for making pavements. She also owned 1,145 shares in the Nicholson Pavement Company, which was formed to exploit the patent in Brooklyn. Her husband's creditors tried to attach the property to pay for his debts. After ascertaining that no fraud was involved, the courts protected the rights of Sophia Bonesteel, pointing out that the statutes permitted married women the rights to separate property and allowed them to retain the profits from mercantile business. However, as late as 1883, litigants in a New York case attempted to build a defense against a charge of violation of patent property, based on the grounds of marital disability. In *Fetter v. Newhall*, 17 F. Cas. 841 (1883), the defendant infringed a patent for drive screws, and tried to overturn the case by arguing that Mary Fetter, a married woman, had no right to assign the patent to the Fetter Drive Screw Company, nor to sue for infringement, for "at common law a patent-right granted or assigned to a married woman would be such personal property that her husband could, by virtue of his marital right, reduce it to possession and make it his own." Judge Wheeler refused this plea in deciding for the plaintiff and issued an injunction: "The laws of congress, however, of which patents are creatures, give the right to a patent to the inventor, whether sui juris or under disability, and to the assigns of the inventor. . . . This is the whole requirement. A married woman, and infant, or a person under guardianship, might be an inventor, or the assignee of an inventor . . . but . . . *the ability to make the instrument, or the aids to the disability, must be found in the laws of the states where all such rights are regulated*. The laws of New York free married women from disability to make such instruments, and make their property distinctly their own. . . . She could make the instrument in writing by the laws of the state, and when she had made it, it fulfilled the requirements of the laws of the United States. Thus the drive screw company took by her assignment what she attempted to assign to them; and she could sue in her own name in this forum, for infringement of her rights."

In short, the poor record for antebellum patenting by women appears to have been partially because of legal limitations on the rights of women to own property, and (to a lesser extent) trade on their own account. One would expect that women who gained business or work experience would find greater opportunities of detecting and satisfying market demand, as well as skills that might enhance their inventive abilities. When these legal constraints were removed or relaxed, inventive activity surged because women directed their efforts to devise and promote patented inventions with the objective of obtaining "fair compensation." Women inventors thus appear to have benefited from legal reforms that were directed to different ends than the protection of women who wished to pursue the profits that they expected to gain from inventive activity.

Lawsuits reinforce the suggestion that legal reforms enabled and encouraged married women, patentees and nonpatentees alike, to increase their commercial activity through several conduits. First, the maintenance of

separate property and income afforded a measure of independence and control that mitigated uncertainty about the future.[23] Second, the ability to enter into partnerships, sign contracts, or to sue and be sued decreased the riskiness of independent ventures. It is significant that creditors, ever wary of "female pirates" who avoided liability behind the shelter of coverture, required the assurance of the statutes before providing funding. For instance, Mrs. Jennie Bornstein obtained a loan from Ellis Silberstein, a pawnbroker, and became a shopkeeper in Philadelphia in accordance with the 1872 statutes: "After making the necessary inquiry and satisfying himself that her purpose was commendable, and that, under the law, her separate earnings were secured to herself, so that they could not be taken and applied to her husband's debts, [Ellis Silberstein] loaned her $1500, with which she, in good faith, purchased a stock of goods and embarked in business on her own account." Silberstein's testimony in the case stressed the importance of the laws: "I asked her before I gave her the money if she had made application to the court. I said to her I knew she was not entitled under the law to her separate earnings unless she was a feme sole trader. . . . I saw the lawyer, Mr. Moyer, before I loaned the money, to see if it was all right. He said yes, he had drawn up the papers. Her husband had nothing to do with it. I would not have given him the money."[24] In contrast, decisions such as *De Graum v. Jones*, 23 Fla. 83 (1887), declaring that "a married woman has no contractual capacity and cannot bind herself personally," indubitably tended to deter women who wished to market and benefit from their inventions.

[23] Evidence of women attempting to attain financial and economic independence under the married women's laws is abundant: for separate bank accounts, see *Fullam v. Rose*, 160 Pa. 47 (1894), and *Hinkle v. Landis*, 131 Pa. 573 (1890). In *Stickney v. Stickney*, 131 U.S. 227 (1889), Mrs. Stickney's "repeated and express directions to invest the moneys for her benefit in her own name" were permissible only because of the separate estates laws of the District of Columbia. Profits from Mrs. F. B. Conway's Brooklyn Theatre were to be shared equally between husband and wife according to a contract they drew up with each other, *Scott v. Conway*, 58 N.Y. 619 (1874). Earnings from nursing were held as a wife's separate property in *Wren v. Wren*, 100 Ca. 276 (1893). Jane Anderson supported her twelve children from her separate earnings as a seamstress. Her claim that "she became and was entitled, under the Act of May 4, 1855, to all the rights and privileges of a feme sole trader" was supported by the courts, *Ellison v. Anderson*, 110 Pa. 486 (1885). In March 1881, Louisa Spering "presented her petition to the Court of Common Pleas of said county, under the Act of 3d April, 1872, entitled 'An Act securing to married women their separate earnings' . . . [to] be under her control independently of her husband." Despite her husband's insolvency later on, her business was able to expand to an establishment worth $14,000, *Spering v. Laughlin*, 113 Pa. 209 (1886).

[24] (*Orr & Lindsley v. Bornstein*, 124 Pa. 311 (1889) Sup. Ct. of PA.) Similarly, in the New Jersey case, *Aldridge v. Muirhead*, 101 U.S. 397 (1879), the Supreme Court pointed out that the loan would never have been made "had it not been supposed that the money was to be used for the benefit of Mrs. Aldridge. . . . The wife and her separate estate furnished the only security the parties supposed they had for the money which was loaned."

CONCLUSION

Married women increased their participation in commercial activity in general during the past century, but it was not clear whether these patterns were affected by the removal of legal restraints on their market-related economic activity. Some scholars support the view that married women's property rights laws exerted an independent influence and induced greater female participation in the market economy. A contemporary observer even equated the impact of these reforms to that of the abolition of slavery.[25] Others argue that the law merely provided an index of cultural change and such attitudes evolved over the course of the nineteenth century, affecting both the law and women's propensity to venture beyond traditional spheres. Legal historians have generally concluded that reforms in married women's property and sole trading rights were ineffectual because the laws failed to improve the economic status of women. The issue is obviously complex and unlikely to be settled definitely, both for conceptual reasons and because of the paucity of relevant data. However, the experience of nineteenth-century women inventors does seem to have been influenced by legal reforms.

Women inventors faced greater obstacles than men, but their patenting appears to have been motivated by similar influences; their efforts responded to market incentives and many attempted to gain income from their inventions. An important distinction exists when one compares patenting by men and women according to the degree of urbanization, for women in rural counties were far more likely to patent relative to women in cities, than their male counterparts. Indeed, before legal reforms, per capita patenting in rural areas exceeded both urban and metropolitan centers. Female patentees in western states were responsible for significantly higher per capita patenting rates, a result that coincided with more liberal laws toward women in the frontier areas.

Did legislation matter? Or did reforms that granted women separate property rights, the ability to act as sole traders, and the capacity to retain earnings from their nonhousehold labor prove to be merely nominal changes in irrelevant statutes? This chapter explored the possibility of a causal relationship between changes in married women's laws and patenting at the state level by considering per capita patenting rates before and after. When legal reforms protected their individual property rights, inventive activity surged because women were directing their efforts to devise and promote patented inventions with the objective of obtaining "fair compensation." Patenting in metropolitan areas in particular rose dramatically after the passage of legislation that granted women the rights to separate property and to

[25] "Excepting the abolition of slavery, no laws have wrought such a revolution in society, or whose influence in the future will be so deep and so far reaching," Jonathan Smith, *The Married Women's Statutes, and Their Results Upon Divorce and Society*, Clinton, Mass.: Clinton Printing Co., 1884, p. 29.

conduct business as sole traders. These patterns suggest that women initially had limited access to urban advantages that encouraged patenting by men, but property rights laws either removed those constraints or accompanied improvements in access. Thus, contrary to the view of a number of legal historians, statutory changes were influential because they provided incentives to which women responded by increasing their inventive activity. Women inventors were concerned about the extent and security of their separate claims on household income, rather than with the overall welfare of the household irrespective of their individual well-being.

In general, the experience of women patentees supports the arguments of economists who emphasize the role of institutions such as legal and property rights systems in eliciting and encouraging economic growth. Women were sensitive to the opportunities and incentives that legal and patent institutions offered, and the rules and standards to which they were subjected significantly affected their behavior. Patent grants to all true inventors were carefully protected at the federal level, but the efforts of women inventors were deterred by state restrictions on usufruct. Women responded to the reforms in state laws regarding married women's property and sole trader status that removed restrictions on their ability to take advantage of patent rights that allowed them to hold property and engage in commercial activity. The earnings acts confirm the importance of enforcement mechanisms because, although they might have had broader influence, such laws were nullified by judicial decisions. An assessment of changes in married women's property rights laws not only adds to our understanding of women's inventive activity; it also illustrates the impact of an inclusive patent system that was open to women and other under-appreciated classes of society. Patent institutions that gave women (and other disadvantaged groups) property rights to their technological ideas induced them to make potentially valuable contributions to the market for inventions. The issue of the impact of nineteenth-century legal reforms in these and other dimensions thus deserves further attention from students of democracy, because it raises fundamental questions about the long-term consequences of arbitrarily excluding groups from participation in the market economy.