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# JUST AND REASONABLE TREATMENT: RACIAL DIFFERENCES IN THE TERMS OF PAUPER APPRENTICESHIP IN ANTEBELLUM MARYLAND

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## ABSTRACT

This paper investigates the economics of pauper apprenticeship in antebellum Maryland and several results emerge. Contrary to some earlier interpretations, the system did not arbitrarily indent poor children. Court officials negotiated contracts that reflected an apprentice's productivity; officials did not offer one-size-fits-all contracts to minimize the costs of indenting indigent children. Black and white children received comparable compensation during the term of the indenture, but blacks were promised and received substantially less education than whites. It was in the provision of education that Maryland's system discriminated against blacks and undermined their ability to achieve long-run economic independence.

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***Just and Reasonable Treatment:***

***Racial Differences in the Terms of Pauper Apprenticeship in Antebellum Maryland***

In the eighteenth and nineteenth centuries, thousands of orphan and indigent children throughout the United States were bound by county magistrates to be raised and trained in an occupation by someone other than their parents (Herndon and Murray 2002). Unlike indentured servants and craft apprentices, who were bound by themselves or their parents and negotiated their own terms, pauper apprentices had little influence over the terms of their service. Pauper apprentices were bound out by county magistrates whose principal objective was not necessarily to maximize the discounted value of a child's future earnings or utility, but rather to keep the child off the dole.

Orphan and pauper apprentices were bound until they reached their majority to be taught a trade so that they would become independent adults. Some pauper apprentices were bound to masters who promised to instruct them in a skilled trade. For these indigent children, pauper apprenticeship resembled craft apprenticeship. Young men and women emerged from these indentures with the skills and education necessary to pursue a craft or trade. For others, American pauper apprenticeship resembled English servitude-in-husbandry. Bound as farm laborers or house servants, these children received little education and were prepared for nothing more than a life of menial labor.

Pauper apprenticeship was popular and durable but, given the involuntary nature of pauper apprenticeship and the broad powers given county magistrates to remove indigent children from

their homes and place them with local masters, historians have tended to view the system as potentially arbitrary and exploitive. Evidence from antebellum Maryland reveals that the system was designed to maintain the status quo, but it does not appear to have been especially exploitive. Young children were not taken from poor households and single mothers and involuntarily apprenticed in large numbers. Most apprentices, whether craft or pauper apprentices, were in their teens when they were placed with a master. Poor black children were more likely than whites to be apprenticed, but this is consistent with the long-standing belief among historians that more blacks than whites lived in poverty (see Berlin 1974). One purpose of the system was to keep indigent children off the dole, so poor children, regardless of race, were the principal candidates for apprenticeship. High rates of black poverty may be indicative of pervasive racial discrimination, but it is not obvious *a priori* whether differential rates of pauper apprenticeship was a cause or a consequence.

The empirical results reported here suggest that it was both. Black children and youth were apprenticed at higher rates than whites and at younger ages. In this, the system did not necessarily perpetuate a racialized social order. Other features did. Black children were apprenticed into less-skilled trades and received significantly less education. On the other hand, black children received wages and freedom dues comparable to those received by whites. Although the evidence illuminates the operation of the system, it does not fully settle the question of whether it was used to subordinate free blacks. Maryland's legislators neither envisioned nor constructed a system that would treat all children equally. It was designed to treat them equitably consistent with contemporary notions of fairness, which was that indigent and orphan children were to receive the same types and amounts of skill training and education that they would have received absent the misfortune of losing a parent or being born into extreme poverty. The notion that the system would encourage upward

socioeconomic mobility was simply anathema to nineteenth-century Americans. Instead, it promised to maintain a child's current station.

**Pauper Apprenticeship in Maryland**

In 1793, Maryland enacted a law requiring county Orphans' Courts to bind out any orphan child whose estate was insufficient to provide for his or her support to a craftsman until the child attained his or her majority (Kilty 1799). During the period of the indenture masters were expected to provide apprentices with food, drink, lodging, clothing, and washing, as well as training and education consistent with the child's status. The act also directed the Orphans' Courts or its agents (county justices of the peace and trustees of the poor) to bind illegitimate and indigent children to a master who would provide them with necessaries, training, and an appropriate education. If the parents were living and could be brought before the court, their wishes as to whom the child should be bound were to be respected so far as it seemed "just and reasonable"(Kilty 1818). Indeed, magistrates regularly recorded in the indentures that an orphan or pauper child was bound with the consent of his or her father or mother.

In establishing this system, Maryland was drawing on a legacy dating back to the English Statute of Artificers and Apprentices (1562), which codified the apprenticeship system and supplemented the poor law by directing justices to bind out unemployed and indigent children as apprentices in husbandry until they came of age (Hicks 1989, pp. 53-56). The 1793 act consolidated several colonial statutes in that all orphans without estate, bastards, and indigent children were to be bound out to a master who would educate them and teach them a trade. Whereas apprenticeship had once represented a mechanism providing boys with skill training, by the beginning of the

nineteenth century it had largely reverted to its English roots where magistrates exchanged the maintenance of youth for their unskilled labor on farms, in factories, or in the masters' homes. The system had, in many regards, reverted to apprenticeship in husbandry (Whitman 2002, 1-2).

Orphan and indigent children were a concern for Maryland lawmakers dating back to the earliest days of the colony, but in the late eighteenth and early nineteenth centuries a new social concern appeared – a growing population of free blacks. While some viewed manumission as the ultimate act of human charity, others viewed it as a serious threat to the existing social order and sought ways to curtail or, at least, to control it. Laws were passed throughout the colonial and early Federal period in Maryland and elsewhere to control various aspects of the lives of this burgeoning population of free blacks, and the Orphans' Courts were brought into the effort (Wright 1971; Whitman book). An 1808 amendment extended the 1793 act by directing justices of the peace, trustees of the poor, sheriffs, and Orphans' Court justices to bind out as apprentices the "children of lazy, indolent and worthless free negroes [sic]" (Kilty 1808, Chapter LIV). A supplementary law of 1818 extended the law to mulattoes, and eliminated the education requirement for African-American apprentices (Kilty 1818, Chapter CLXXXIX). In lieu of education, masters could pay an apprentice $30 at the expiration of the indenture. Section 2 of an 1826 act concerning the arrest and expulsion of vagrant free black and mulatto adults again directed magistrates to bind out indigent African-American children consistent with the 1793 law and its amendments (Maryland General Assembly 1826, Chapter 161).

Zipf (2002) discusses comparable laws passed in North Carolina during this period, contending that they were designed by a white patriarchy to further entrench its social and political power. She finds that free black children were apprenticed at much higher rates than white children.

After 1830, even as apprenticeship was on the decline throughout most of North America, the numbers and rates of free black pauper apprenticeship sharply increased in North Carolina. To Zipf, pauper apprenticeship was a form of coercive socialization subject to wanton and indiscriminate abuse of poor children, and a system that deprived single white women and free blacks of their rights as parents.

In this Zipf follows previous writers like Rorabaugh (1986) and Quimby (1985) who compare black pauper apprenticeship as a way station between freedom and slavery and argue that it "provided for an alternative form of social control for young blacks that ... reassured anxious white opinion by maintaining white supremacy" (Rorabaugh 1986, 189-90). Similarly Hicks (1989, pp. 109-110) argues that later amendments to the 1793 act placed black children at a disadvantage because the migration of whites left farmers and planters without sufficient labor. Facing this shortage, politically powerful farmers pressured magistrates to indiscriminately indent black children. Daniels (2001), on the other hand, contends that historians have infused masters, and the white elite generally, with more power than they really had. She contends that servitude and apprenticeship did not evolve into slavery or anything remotely close to it, and apprentices and "servants should not be deprived of the agency they possessed in negotiating within the institution of servitude" (Daniels 2001, p. 223).

Nevertheless, it is indisputable that magistrates did not treat all children equally, and Herndon and Murray (2002, p. 25) contend that the entire structure was permeated with distinctions based on sex, race, age, and socioeconomic background. Indeed, the law directed masters to train and educate their orphan and pauper apprentices in a manner consistent with their status. Some magistrates, for example, determined that some children would not receive any education or literacy

training, while some children were taught to read. Some were taught to read and write; others were taught to read, write, and cast up accounts; and still others were taught to read, write, and "cypher to the rule of three."[1] The law never contemplated that all children would be treated equally. It contemplated that they would be treated fairly, which implied treatment consistent with their expected station in life had they not been orphaned or unlucky or both. Pauper apprenticeship was not constructed as a mechanism to help children rise above their station. It was, in this way, a conservative institution.

Whitman (2002), Russo and Russo (2002) and Zipf (2002) document sharp gender differences in apprenticeship terms and Table 1 reports racial differences in treatment for male youth and children in two Maryland counties. The table groups apprentices by race, age cohort, date, and county. Thus, the first entry (0.08%) reports the percentage of all white children in Anne Arundel County under five years of age who were working under an indenture contract in 1840. Note that these are not the percentages of children bound in a given year, they are the percentages of all children previously bound and still serving their apprenticeship relative to the county population in a cohort, a county, and racial group.

The table suggests several tentative conclusions. First, crying babes were not snatched from the arms of distraught mothers, as very few children under five years old were bound out. It appears that so long as the parents could provide the barest maintenance for an infant or young child, Maryland's magistrates left them in the home. Pauper children, unless they were mired in extreme

[1] The ability to cast up accounts originally meant basic bookkeeping consistent with owning one's own business, but evolved into knowing the four basic mathematical functions. Cyphering to rule of three implied more extensive mathematical training in that it included an ability to manipulate ratios. It was called the "rule of three" because students were given three facts and had to determine a fourth. An example would be: If a family consumes a dozen eggs per fortnight, how many dozen will it consume in a year? The answer would be stated as 26 is to 52 as 1 is to 2, and written as 26:52::1:2.

poverty, were not bound until they could contribute something toward their own maintenance. Fogel and Engerman (1974a, 1974b) estimate that slaves on plantations became sufficiently productive to pay their own way at about age eight and the increase in bindings after age eight or ten in nineteenth-century Maryland is consistent with their finding. At older ages, the system became more racialized, as the proportion of free black children serving under indenture was generally two to four times or more that of whites. At the same time, however, the statistics reported in Table 1 demonstrate the danger of drawing sweeping conclusions about trends in the treatment of free black children. Although Herndon and Murray (2002, p. 25) contend that the system was "increasingly directed to harness the labor of people of color" and Zipf (2002) contends that it to provided a measure of control over what whites believed was a potentially disruptive group, the data from Anne Arundel and Frederick counties provides contradictory evidence. Between 1840 and 1860 the proportion of free black boys between 15 and 20 years serving an apprenticeship doubled in Anne Arundel County; in Frederick County it declined by 72 percent. Other than the fact that older boys were more likely to be apprenticed than younger ones and blacks were more likely to be apprenticed than whites, no clear pattern emerges in this sample. More work needs to be done before we can draw generalizations about how racial differences in treatment evolved through time. In reviewing the evidence, the only thing that seems clear is that there was significant variation from state to state, even from county to county within a state, in the use of pauper apprenticeship. The system expanded and became more racialized in some places; it contracted and became less so in others. We now turn to a more detailed treatment of the terms under which white and black children were bound out in six Maryland counties to see if there were any discernible commonalities across time and space.

**The Economics of Craft and Pauper Apprenticeship**

Hamilton (1996) contends that the market for apprentices in North America was competitive. There were no unions, no craft guilds, and no formal certification or licensing procedures creating significant barriers to becoming a master or an apprentice. Thus to the extent that markets were competitive, apprentice compensation mirrored productivity. But apprentice contracts were long-term contracts, over the life of which the apprentice's productivity changed. A five-year-old boy, for example, probably added relatively little toward the output of a blacksmith's shop because he had developed neither the skills nor the strength to withstand the daily rigors of the work. He may have stoked the fire or pumped the bellows, but he was not fashioning hot iron with hammer and anvil. The same boy at sixteen, on the other hand, could put in a full day's work. Despite the relative unproductiveness of youngsters, masters could be induced to take in the five-year-old so long as discounted sum of wage payments and freedom dues paid during the term of the indenture were equal to or less than the discounted value of the stream of output produced less training and maintenance costs.

Equilibrium in the apprentice market can be stated mathematically as:

$$\sum_{t=1}^{T} \frac{Wages_t}{(1+r)^t} + \frac{FreedomDues_T}{(1+r)^T} = \sum_{t=1}^{T} \frac{ValueofOutput_t}{(1+r)^t} - \sum_{t=1}^{T} \frac{Maintenance Costs_t}{(1+r)^t}$$

where T is the length of the contract and r is the relevant discount rate.

The first term on the left-hand side is the stream of future wage payments promised by the master to the apprentice. Promises of wages were extremely rare in rural counties, and relatively

uncommon in urban counties. Children bound to engage in farm labor rarely received cash payments from their masters, though some negotiated to be released from their apprenticeship for a week or two during the harvest to hire themselves out as day laborers to earn some cash. Boys and youth bound to craftsmen and manufacturers in Baltimore were more likely than boys elsewhere to receive regular cash payments. When wages were promised, they tended to increase with the length of service and were generally paid only late in an apprenticeship, typically after the age of 16 or 17.

The second left-hand side term -- freedom dues -- represents a sort of severance pay or nonvested pension (Grubb 1997, p. 44). Nearly every apprenticeship agreement included the promise of a terminal payment at the end of the contract. It was common for dues to be paid in-kind, often in the form of clothing, typically as one or two complete suits of clothes. It was less common, but not unheard of, for carpenters' coopers', and cabinetmakers' apprentices to be given saws, hammers, and planes. Some blacksmiths' and bricklayers' apprentices also received tools at the expiration of their contracts. Freedom dues, however, were most commonly paid in cash or clothing.

For years, economists argued that freedom dues were paid to reduce the incidence of runaways; historians argue that they kept recently released servants and apprentices from becoming charges on the county dole. Grubb (2000) argues that neither explanation gets at the heart of the issue, which is contractual incompleteness. Contracts with end payments will not necessarily deter running away, especially when most of the payment from master to servant occurs at contract inception, as was the case with indentured servants who received their transatlantic passage prior to starting work. Indeed, the promise of a large payment at the end of the contract period created incentives for the master, not the apprentice, to breach the contract (Grubb 1997, p. 44). But unlike indentured servants, pauper apprentices did not receive the largest part of their compensation at the

beginning of the contract or at the end, but during the contract term. As is discussed below, they were given food, clothing, shelter, job training, and sometimes, formal education. So what purpose did freedom dues serve in the case of pauper apprentices?

Grubb (2000) argues that freedom dues became compulsory because, operating under an incomplete contract, masters faced incentives to act strategically in the final days or months of the contract. Incomplete contracts were efficient because there were simply too many margins over which to negotiate and substitute. Apprentices could shirk or labor diligently depending on the master's provision of basic consumption goods and vice versa. But this incompleteness left open the possibility of hold-up or other types of strategic behavior by the master.

The flow of daily consumables (food, water, shelter) was less prone to hold-up than the flow of semi-durables (apparel, shoes, etc.), especially late in the contract. By withholding food, masters reduced labor performance and both parties suffered. But by withholding semi-durables late in the contract, masters increased their utility at the expense of their servants and apprentices. Apprentices could not easily determine whether the master's withholding of clothes was deliberate strategic behavior aimed at transferring wealth or whether the master was shopping around to maximize the quantity or quality of clothes for a given contractually agreed-upon nominal expenditure. Thus, the servant would not be able to accurately adjust his or her productivity based on the master's actions. Reputational sanctions were too weak a mechanism to mitigate strategic behavior by the master so the law mandated the payment of freedom dues (Grubb 2000, pp. 55-57).

The first term on the right-hand side is relatively self-explanatory. Apprentices were expected to work and contribute to the output of the master's shop or farm. Masters built expectations of the future stream of marginal revenue product based on experience and on the

apprentice's characteristics (only some of which made their way into the historical record). In economic terminology, this term is the discounted value of the future stream of an apprentice's expected marginal revenue product.

Maintenance costs, the second term on the right-hand side, took several forms. Maryland's 1793 apprenticeship act required masters to provide apprentices with "good and sufficient cloathing, meat, drink, washing, and lodging," as well as training and, generally, some education (Kilty 1793, Chapter XLV). Economists believe that all parties to a contract maximize across several margins, and that was the case for apprentice contracts. Except for a small number of cases of Baltimore masters who paid their apprentice's parents in return for having the boy continue living at home, all masters were expected to provide their apprentices with basic maintenance. Of course, these margins were still negotiable. Masters could provide more or less food, drink or clothing in accordance with implicit understandings, informal agreements, or according to their own discretion. Masters who failed to meet generally accepted standards of treatment could be, and were, sued by their apprentices or by county magistrates who believed that their responsibilities to pauper apprentices continued long after they had negotiated an indenture and delivered the boy. The law directed justices to make annual inquiries into the condition of orphan apprentices and Carr (1977, p. 46) believes that the courts took their responsibilities toward these children seriously. In addition to maintenance costs, masters were expected to provide apprentices with sufficient job training to allow them to practice a craft or trade at the end of the indenture. Training a boy in a skill represented an opportunity cost to the master in that at least part of the time spent teaching was time not doing.

One of the larger costs to the master, perhaps the largest, was providing an apprentice with an education. Not only would formal instruction involve a direct outlay to a school or a tutor, the

opportunity cost of the boy's time lost to schooling could be substantial. It is not surprising, then, that education was apparently the most negotiable margin. Some indentures included agreements to provide a boy with a certain number of months or weeks of school. Further, some of these indentures specified whether the schooling was to be day school, night school, Catholic school, or schooling in German. Some contracts included agreements to teach the boy to read; others agreed to reading and writing; and others to some variant of the 3R's.

In his study of German indentured servants, Grubb (1992b) interpreted agreements to teach servants to read and write to mean that the masters themselves or, perhaps, their wives would provide literacy training directly instead of sending the servants to school. It is likely that Maryland masters also took on much of the literacy training, especially in rural areas without easy access to a school. Some contracts included an agreement to teach a boy to read and write, but included the curious phrase "so far as he is able to learn." Did this phraseology provide an escape clause for masters who did not take their educational responsibilities seriously? Did it imply an ex ante expectation that the boy was unteachable? The contracts themselves do not provide any clues. Additional research needs to be done before we can answer these questions, but the inclusion of such phraseology suggests implicit and informal adjustments at the margin between masters and apprentices.[2]

As previously noted, apprenticeship agreements were relational contracts, which arise when complete state-contingent contracts are uneconomic and structure relationships that establish expectations in general terms (Milgrom and Roberts 1992, pp. 132, 330-31). Employment

[2] John Murray (private correspondence, December 2002) admits that the exact meaning of this phrase eludes him as well.

agreements are classic relational contracts. Employees agree to use their minds and their muscles to perform vaguely defined tasks. The employer agrees to compensate the worker, but retains residual decision making authority because it is generally efficient to have a single decision maker, because the employer provides the physical capital, and because the employer has a reputational investment to protect. Courts, therefore, gave broad latitude to masters to determine the meaning of such things as sufficient maintenance, adequate training, and the meaning of literacy consistent with the pursuit of a given trade. If an apprentice felt a master was not abiding by the agreement, the law gave him the right to seek the court's intervention, a right apprentices were not reluctant to invoke.[3]

There were good economic reasons for why relational contracts with a host of vague promises predominated in the apprentice market. Apprenticeship was plagued by incomplete information on both sides. When bargaining over skill training, term length, educational benefits, and freedom dues, masters and the apprentice's guardians had to form expectations about the boy's expected stream of future productivity and costs. Masters could not directly observe a boy's work habits, except after taking him in, nor could they accurately assess the boy's personality, his aptitude for the job, or his basic moral character. Similarly, boys and guardians could not always accurately assess a craftsman's occupational competence or his ability to pass those skills along to others. At a more fundamental level, masters and boys might be linked for a decade or more and they could not determine ex ante whether they would enjoy each other's company. This is consistent with Whitman's (2002, pp. 31-33) finding that runaways did not ebb and flow with changes in economic or political conditions. Running away was uncommon, but when it happened it was adolescents who

[3] Daniels (2001) documents apprentices and servants suing masters who did not provide adequate skill training, basic education, sufficient maintenance, or who imposed severe punishments.

ran. It seems likely that the cause was an occupational or personality mismatch between master and apprentice.

Economic theory holds that there are two methods of decreasing the likelihood of a mismatch: signaling and screening. Signaling theory holds that so long as high-productivity workers can credibly signal their capabilities, employers can offer workers contracts that align compensation with productivity rather than one-size-fits-all contracts (Spence 1973, Ehrenberg and Smith 2001). The issue is whether a credible signaling equilibrium can be achieved. An equilibrium depends on two conditions. First, the signal must be sufficiently costly that low-productivity workers are unwilling or unable to attain it. Second, the signal should accurately and consistently indicate higher productivity. Hamilton (1996) develops a signaling model for the Montreal apprentice market, part of which was the inclusion of a probationary indenture. About one-third of indentures included probationary periods that averaged about 12 weeks during which apprentices and masters generated observable signals about abilities, intelligence, and temperament. At the end of the probationary period, masters and boys decided if the relationship would continue. But probationary periods still provided a noisy signal. Fifteen percent of all contracts were annulled, most within the first three years.

There were few probationary periods recorded in the Orphans' Court records of six Maryland counties and even fewer annulments. It seems unlikely that masters and apprentices were better matched in Maryland than Montreal, particularly given the predominance of pauper children in the Maryland sample. Annulments may have been granted by an authority other than the Orphans' Court, which seems improbable, or it may have been that the court was not as diligent in recording annulments as indentures, though this too seem improbable given the detailed nature of the records.

The most likely explanation is that many masters who took on pauper apprentices did so less from purely economic motives than from a sense of community responsibility to the indigent and simply made the best of the situation. Secondarily, many pauper apprentices were bound to farmers where, given the range of unskilled and rudimentary tasks inherent in agriculture, the costs of a mismatch to the master were lower than in highly skilled or technical occupations. Furthermore, Grubb's (1997, 2000) explanation implies that runaway apprentices, unlike runaway indentured servants, imposed relatively small costs on the master. Thus, not much effort was made to retrieve runaway apprentices.

Screening is the second method for minimizing mismatches, and it assumes that one party to a negotiation has greater information about his or her actual and potential productivity than the other so that one side has private information not known to the other (Milgrom and Roberts 1992, p. 157). Screening refers to actions taken by a party without private information in order to separate different types of the informed party. Typically, the uninformed party offers a menu of alternatives to the informed parties and the informed parties' choices reveal their private information. A classic screening situation is one where employers wish to reduce costly labor turnover. One method is to offer employees below-market compensation early in the employment relationship and above-market compensation late in the relationship. A positively sloped age-wage profile screens out workers with a proclivity to move, because it is more attractive to workers who intend to stay with the firm for an extended period.

On their face, apprentice indentures offered a comparatively flat to slightly negatively sloped age-wage profile. In-kind payments (maintenance costs) rose as boys matured (15 years olds ate more than 5 year olds), but young boys typically produced less than they received in maintenance,

whereas teenagers were potentially more productive. Masters could compensate for the perverse incentives created by this implicit wage structure through several methods: by delaying substantial skill training until late in the indenture; by delaying the provision of schooling or literacy training until late in the indenture; or by offering a large share of the total compensation package until late in the indenture.[4] Boys willing to accept any or all of these conditions signaled their willingness to remain; those with a predisposition to desert would not accept these conditions and were screened out.

Because the market for apprentices was competitive, masters and apprentices (or their fathers or guardians) were able to offer an array variable contract terms to attract suitable matches. For example, F. Marston took on four apprentices into his Baltimore glass factory between April and September 1835. A 17-year-old boy apprenticed by his father, was promised 6 months schooling and no freedom dues. A 16-year-old apprenticed by his father was promised three months schooling and one suit as freedom dues; a second 16-year-old apprenticed by his mother was promised three months schooling, one suit as freedom dues, plus $20 per annum in clothing allowance in lieu of having the master supply the apparel. A 15-year-old apprenticed by an unspecified guardian was promised literacy training (3Rs) and $25 in freedom dues. Clearly, there were several negotiable margins, and masters tailored contracts to attract labor and screen applicants.

What about pauper apprentices? Could they or their guardians negotiate across margins as effectively? Murray and Herndon (2002) are skeptical. They characterize the pauper apprentice market as a pseudo-market. Although masters sought labor on profitable terms, a boy generally

[4] Of those boys who were promised wages during their indenture, payments invariably rose with age and experience. Indeed, wages were seemingly well below competitive levels in the first year or two of the contract.

entered this exchange involuntarily and was subject to the vagaries of labor negotiations between a self-interested master and a magistrate whose loyalty was divided between his own interests, the boy's interests, and the taxpayers' interests. Compared to parents, magistrates faced muted incentives to ensure that a boy would be paid the full value of his marginal product.

Such an interpretation is consistent with a textbook characterization of a single-mindedly self-interested economic man but, as previously noted, Carr (1977) points out that it may misrepresent the actions of county justices. Magistrates operated *in loco parentis*, and many negotiated indentures comparable to those negotiated by those with familial and personal connections to an apprentice. In July 1830, for example, R. Dutton took on two apprentice cabinetmakers. A 16-year-old apprenticed by two of Baltimore's justices was promised literacy training (3Rs) and $20 in freedom dues. An 11-year-old apprenticed in the same month by his father was promised nine months of schooling and a freedom suit (about $25). In this instance the justices may have negotiated a more lucrative contract than the father. It seems unlikely that a student could learn reading, writing and arithmetic in just 9 months, and $20 payable in 5 years is worth more than $25 payable in 10, given any reasonable discount rate.

A single example, however, does not prove that county magistrates spent much time or expended much energy in placing indigent children, but Table 2 suggests that magistrates negotiated and did not rid themselves of boys with minimum effort. The table provides statistics on contract terms negotiated by family members and county magistrates in six Maryland counties between 1822 and 1860. Parents were more likely to negotiate a specific term of schooling, but when they did they actually negotiated fewer months, on average, than justices who negotiated specific terms. Magistrates, on the other hand, were significantly more likely to include literacy and numeracy

training (i.e., 3R's). This difference may have reflected a parent's better knowledge of a boy's current level of literacy and their desire to augment or maintain it. It may also reflect a higher level of literacy among boys from intact households. Despite the magistrates' greater insistence on a master's responsibility to provide their charges with a basic education, they were also far more willing than parents to trade education for a cash stipend at the expiration of the indenture. This reflects the larger proportion of free black children bound out by magistrates than by parents. Parents were more likely to negotiate release time at harvest so that their boys could earn some money during peak labor demand periods. In negotiating freedom dues, magistrates were more likely to contract for freedom suits and cash, though differences in the amount of cash agreed to by parents and magistrates, when they negotiated for cash, were insignificant. Thus the evidence is mixed. It is not clear whether parents negotiated better deals than magistrates. What is clear, however, is that the market functioned as we would expect. Boys of differing productivity received different terms. An issue that this data can also address is the extent to which race influenced the choice of contract terms. The next section discusses the data and empirical methodology, we then turn to empirical tests of the differences.

**Racial Differences in Wages and Freedom Dues**

To investigate the operation of the market for apprentices, we estimate the following specification:

$$(\text{Real Discounted Compensation})_{jw} = \alpha_{0k} + X_{jk}\beta_k + Y_{jk}\gamma_k + e_{jk}$$

where the left-hand side represents all direct cash and in-kind payments made during or at the end of the indenture, excluding clothing, food, and lodging. Further, j indexes individual boys and youth, k indexes race, so that $X_{jw}$ represents a vector of variables that proxy for the expected productivity

of white boys and youth, $Y_{jw}$ represents a vector of variables that proxy for expected costs of training and educating white boys and youth, and $e_{jw}$ is the error term. The estimating equation is estimated using ordinary least squares (OLS) and Tobit procedures because there are a nontrivial number of observations where apprentices were promised neither wages nor freedom dues (i.e., real discounted compensation = 0).[5]

The apprentice indentures provide information on the principal left-hand variables, namely, promised wage payments, promised freedom dues, and the contract term. Table 3 reports summary statistics for the information commonly found in an apprenticeship indenture. Indentures recorded the name of the apprentice and his parent, guardian or the county magistrate(s), and the master. They recorded the apprentice's current age and the age at which he or she would be released from the indenture. They recorded the occupation in which the apprentice would be trained, whether the apprentice would receive any schooling or literacy training and, if so, how much. If the apprentice was to attend school, indentures recorded the agreed-upon number of months of schooling and whether it was night or day school. If the apprentice was promised literacy training, the indenture recorded the skills the apprentice was expected to master, such as reading, writing and cyphering or the 'casting up' of accounts. Some apprentices were promised release time, up to two weeks, during the harvest to work on their own account. Indentures were also very specific in the agreed-upon freedom dues. Some apprentices were promised clothing; others tools; still others, a cash payment in lieu of clothes, tools, or schooling. Finally, every indenture included a clause instructing the master to clothe, feed, and house the apprentice in an acceptable manner and most included a

[5] The occurrence of a large number of zeros in the dependent variable does not result from classic 'censoring' where every observation below some critical value is assigned a common value. These are simply zeros, no censoring is occurring.

clause instructing apprentices to avoid gambling, drinking, and fornication.

The discount rate was assumed constant at 6 percent per annum. Bodenhorn (2000) found that nominal interest rates throughout the antebellum era fluctuated around six percent between 1820 and 1860. All values were converted to constant dollars using the Benzason Philadelphia wholesale price index (U.S. Bureau of the Census 1976, Series E 97-111). There is no published price index for antebellum Maryland, but price levels and movements from neighboring Pennsylvania should be broadly indicative of long-run price movements in Maryland.

While we have variables that correspond to those given on the left-hand side of equation 1, we do not observe the actual (or expected) marginal product or the actual costs borne by the master in supporting, training, and educating an apprentice. We must rely on proxies that reflect the expected productivity and costs associated with a given apprentice. Those variables that should reflect on the expected productivity of an apprentice include the apprentice's age; an occupational index; whether the boy was apprenticed by a father, other family member, or county magistrate; and the county population, as well as the rate of population growth over the current decade. Variables that proxy for expected costs include the number of siblings apprenticed to a single master at one time; the quantity or type of education promised; release time at harvest; and whether freedom dues included a freedom suit, tools, or a lump-sum payment in lieu of providing an education. Table 3 provides summary statistics for each of these variables, plus a time trend and dummy variables for the county of indenture and the quarter in which the indenture was signed.

An apprentice's age is included because we would expect older boys to be more productive than younger boys in many trades, particularly those involving potentially heavy labor (blacksmiths, bricklayers, brickmakers, butchers, and so forth). But the age advantage may decline as the boy

passes a certain age because the boy will not achieve a proficiency early enough in the term of the indenture to fully compensate the master for maintenance outlays. While a just-indented 19-year-old, for example, may have the strength and stamina needed to put in a hard day's work in a cabinetmakers shop, he was unlikely to become as accomplished a craftsman in two years as a 15-year-old would become in six. Thus the 15-year-old may be promised more compensation than the 19-year-old.

A second proxy for expected productivity is an occupational skill index based on the widely used socioeconomic index constructed by Otis Duncan (Reiss, et al. 1961, Appendix B). Training in more highly skilled trades was more likely to increase the value of an apprentice's labor faster and to a greater extent than training in low-skill occupations, such as farming and house servants. Masters in skilled trades could, therefore, expect to receive more revenues from an apprentice late in the apprenticeship and offer higher wages or dues in return.

In addition to age and an occupational control, the other controls for expected productivity include a series of dummy variables indicating by whom a boy was indentured. A boy apprenticed by his father may have had higher expected productivity because boys living in intact households were healthier, better clothed and fed, more disciplined, or better educated when they arrived at the apprenticeship. Moreover, as previously mentioned, a father's and son's interests may have been more closely aligned than a magistrate's and a pauper child's, so that a father may have negotiated more generous compensation. Separate dummy variables are included for each of the different magistrate's with the responsibility to bind orphan and pauper children to determine if different types of magistrates negotiated different terms.

Finally, the regressions include annual county populations interpolated from the federal

censuses, as well as the average annual rate of county population growth. These are included to capture potential changes in the demand for skilled craftsmen. Changes in population may have worked to the benefit or detriment of skilled craftsmen. A larger and faster growing population would typically imply an increasing demand for most of the goods and services supplies by craftsmen and artisans. But if industrialization was increasing with population, as it was in Baltimore, factory production may have displaced craftsmen as the principal suppliers of many manufactured goods. Similarly, the demand for farm labor in urbanizing, rapidly growing Baltimore County was probably lower and declining relative to less populated, slower growing rural counties.

When a master took in an apprentice he faced several costs, including an agreement to provide food, meat, drink, clothing, washing and lodging over the term of the indenture. Because we have little information on the costs of these items, indentures that made unusual arrangements for any of these features (usually clothing, sometimes lodging) were dropped. Education, whether formal schooling or a promise to provide basic literacy training, was probably the largest financial liability (other than maintenance) taken on by masters. Payments for schooling or tutoring involved a direct outlay as well as an opportunity cost for time lost from work. Basic literacy training provided by the master involved an opportunity cost in that both the master's and the boy's attentions were on something other than work. But education was a double-edged sword. On one hand, it represented a direct or indirect outlay. On the other, literacy represented an investment in general human capital and may have raised an apprentice's productivity in many trades; it may have been essential to others, such as printing or bookkeeping.

Two additional costs included release time during the harvest and the form of freedom dues. About 5 percent of all apprentices were promised time off during the harvest, the cost of which was

time lost in the master's shop. The average apprentice was granted about 3 days off per year, but those who actually negotiated harvest time generally were typically released for 14 days. Finally, masters could pay freedom dues in cash, in-kind, or in some combination. Dummy variables are included in the regressions if all or part of the terminal payment was paid in clothing, tools, or if the masters promised an additional payment in lieu of education in addition to the regular freedom dues.

The summary statistics in Table 3 reveal some apparent racial disparities. Although black and white apprentices were promised nearly the same freedom dues, on average, blacks were almost 3 years younger at the time of the indenture, which implies that they served about three years longer as apprentices. Blacks were more likely than whites to be apprenticed along with a sibling to the same master; they were apprenticed into lower status occupations; received far less schooling and other literacy training than whites, but were more likely to receive an additional stipend at the end of the indenture in lieu of an education. Blacks were less likely to receive time off during the harvest; they were far less likely to be apprenticed by their fathers or another family member; were more likely than whites to be apprenticed in Anne Arundel, Somerset, and Talbot counties, but less likely to be apprenticed in Baltimore and Frederick counties. Finally, blacks were more likely to be paid their freedom dues in apparel than whites. The system appears to have been racialized.

Table 4 reports OLS estimates of the basic model for the white subsample, the black subsample, and the entire sample. Table 5 reports the Tobit estimates. Most of the coefficients take on the expected sign and many are statistically significant. The regressions are also reasonably well specified, explaining about 22 percent of the overall variance.

In both the OLS and Tobit regressions, pay increased at a decreasing rate with age. Pay reached a maximum, holding all else constant, when a boy was indented between age 16 and 18. Ex

ante, we would expect older boys to have been more attractive to masters. They were likely to have already completed their education, they had passed through early adolescence, and were physically mature enough to put in a hard day's work. Pay increased with the value of the occupational index, but not significantly so. An intriguing result is that white fathers and other relatives negotiated lower freedom dues than county magistrates. The Orphans' Courts and Baltimore's House of Refuge negotiated somewhat more than justices of the peace (the excluded category), but the differences are barely significant at normal levels.

Why would fathers and other kin negotiate for lower freedom dues, ceteris paribus? Neither the indentures nor the regression provide much insight, so we are left to speculate. Perhaps fathers had less experience in negotiating indentures than magistrates, were less well informed about current market conditions, and received much harder terms from masters than experienced magistrates. Even the patriarch of the largest family would negotiate no more than a half-dozen indentures in as many years. Magistrates negotiated that many in a single day in Baltimore or in a month in some of the outlying counties, so they were much more attuned to changes in the market. Only further research will reveal the underlying explanation for this difference.

County population and population growth had a significant influence on apprentice agreements, but influenced the contracts for whites and blacks differently. Whites apprenticed in larger and more rapidly growing economies received less pay and freedom dues. Black children and youth received less pay in more populous counties, but more pay in faster growing counties. The latter effect is driven by conditions in Baltimore, where both the white and black population grew rapidly between 1800 and 1860. The city's expanding economy provided employment and apprenticeship opportunities that slow-growing counties did not. Finally, there was a modest

upward trend in the real value of dues paid in the antebellum era.

Although release time at harvest and keeping siblings together were expected to impose costs on masters, neither diminished an apprentice's compensation. The interesting result is that the provision of education or literacy training was associated with higher pay. Children who were promised either a specified term of schooling or a variant of the 3R's also received significantly more in wages and freedom dues. This suggests two possibilities: (1) education raised productivity, implying that general and specific human capital were complements in most production functions; or (2) guardians of boys with a higher expected productivity negotiated more education and higher wages and dues for their charges, thereby extracting more of the rents these boys were likely to generate. Finally, boys who were received in-kind transfers in full or in partial payment of their freedom dues negotiated for larger effective payments than those who negotiated cash payments. Economic theory suggests that this would occur because generalized purchasing power typically raises utility more than in-kind transfers. To ensure that they reached a target utility level, apprentices or their guardians made masters promise greater in-kind payments than masters offering a cash payoff.

The issue is whether there were racial differences in contract terms. It is straightforward to test whether the coefficients in the white and black equations in Table 4 are the same. The resulting test statistic ($F_{(24,2748)}$) is just 0.38. The critical value is approximately 1.50 for 5 percent significance. We cannot reject the hypothesis that the coefficient vectors are the same for the two races. This is confirmed by the statistically insignificant coefficient on the Black dummy variable in the full-sample regression. Similarly, the black dummy variable in Table 5 is insignificant. After controlling for a number of personal and locational characteristics and for a number of margins over which

contracts could be negotiated, black apprentices did not receive significantly lower wages and dues than white apprentices. Nevertheless, we know that blacks and whites received different terms, mostly in the amount and type of education promised in the indenture. It is to differences in educational promises that we now turn.

**Racial Differences in Education**

Using data from the same sample used to estimate the earnings equations, we can estimate the determinants of education. Table 6 reports the results of probit regressions where the dependent variable equals 1 if the indenture promised educational training of any amount or type. The dependent variables include the apprentice's age and its square; a time trend; the occupational status index; a dummy variable for each of the principal types of guardians; the number of siblings indented at the same time to the same master; a series of county dummy variables; and the log of the real discounted value of wages and freedom dues.

The regressions are well specified, explaining between one-quarter and one-third of the overall variance in the data. Table 6 reports the marginal effects rather than the regression coefficients to facilitate interpretation of the results. It is apparent that educational promises, unlike wages and freedom dues, were racialized. The marginal effects for many of the independent variables (hence, the underlying coefficients) in the black subsample are generally very different from those in the white sample. If, for example, age increased by one standard deviation, the likelihood that a white apprentice would receive schooling increased by nearly 30 percent. The marginal effect for blacks was effectively nil.

On the other hand, if an apprentice of either race was apprenticed into a higher-status

occupation, they were more likely to receive some education, implying a positive correlation between general and specific human capital in more highly esteemed occupations. Economic independence required basic literacy and numeracy and occupational training in trades more likely to generate economic independence was bundled with education. Evaluated at the mean, a one standard deviation increase in occupational status increased the likelihood that a white apprentice negotiated an education promise by 5 percent; it increased the probability that a black apprentice negotiated a  promise by just 2 percent. Even if a black and a white was apprenticed into similar occupations, blacks were less likely to receive an education which would have reduced their effectiveness in many occupations.

Thus, to the extent that education complemented skill training, by denying blacks an education, the system undermined black occupational advancement. This result is, of course, consistent with the 1818 law allowing, but not requiring, masters to pay black apprentices $30 in freedom dues in lieu of an education. In this, Maryland was more enlightened than Virginia, which prohibited educating free blacks at all, and many Maryland masters still promised to educate their black charges even after the law excused them from doing so (Guild 1969).

Just as fathers negotiated lower wages and freedom dues than magistrates, white fathers were also 21 percent less likely than county justices of the peace to negotiate an education for their sons. Black fathers were 3 percent less likely. Related guardians other than fathers were also less likely to include an education clause in an apprentice indenture. Why would family members demand significantly less education for their children than Orphans' Courts demanded for pauper children? There are at least three potential answers. First, children from intact households may have already received some or most of their desired education prior to entering into an apprenticeship. When

fathers and relatives negotiated educational agreements, they sought to maintain or enhance prior achievement rather than capture new skills. Pauper and orphan children, on the other hand, may have been less likely to have basic literacy skills, so magistrates felt obliged to include an educational requirement. Second, as previously discussed, because fathers were less experienced negotiators or less informed parties to a negotiation, they may not have pressed for as much as more experienced bargainers. Third, some parents may not have understood the value of or placed much emphasis on education.

White boys bound with a sibling to the same master were also less likely to receive an education. Courts often attempted to maintain whatever semblance of family they could within the institution of pauper apprenticeship, so it was not uncommon to find brothers and sisters bound to the same master. Certainly not every sibling was expected to be equally productive, indeed it is easy to envision some degree of bundling taking place where a master would have agreed to take on a potentially unproductive child only if he could have a potentially more productive one. Such transactions imposed costs on masters, who were reluctant to further increase their costs by offering a jointly-bound sibling an education.

There were also differences in treatment across counties. Compared to Baltimore (the excluded category), Anne Arundel children of either race were less likely to receive an education, as were children in Somerset and Talbot counties. In Frederick County, on the other hand, white children were about 16% more likely than Baltimore children to receive an education, but black children were about 4 percent less likely. County-level differences could arise from a number of factors, including proximity to schools. Baltimore was a large city with a number of public and private schools; Frederick was a modest town with few schools. The cost of schooling and educating

youth in Baltimore and Frederick was lower than in less urban environments and masters were more willing to provide it.

Finally, it appears that, so far as education is concerned, Maryland's system of pauper apprenticeship was racialized. After controlling for a number of other factors that clearly influenced the provision of an education, black children were 51 percent less likely to receive education or literacy training in any quantity or quality. White magistrates and white masters maintained control over a growing black population by consistently denying them basic literacy and numeracy. Without a basic ability to read and write, blacks were effectively excluded from a number of relatively high-status occupations that required basic literacy (printing, bookkeeping, and so forth). More importantly, by denying blacks basic literacy and numeracy, white magistrates effectively barred blacks from independent production even in rudimentary crafts. Blacksmiths and carpenters needed to calculate ratios, sign contracts, and keep and settle accounts to do their jobs effectively. By denying them an education, white magistrates and masters effectively kept blacks dependent and poor.

**Concluding Remarks**

The evidence on pauper apprenticeship in antebellum Maryland points toward a conservative, racialized system designed to maintain the status quo. Black children were routinely denied access to high-skill, high-esteem, and high-paying trades. They were partly compensated for the lack of skill training to the extent that magistrates negotiated higher freedom dues than fathers and other kin. By denying them access to better occupations, however, magistrates perpetuated a cycle of poverty, or near-poverty, and dependency among the state's free blacks. A more insidious aspect of the

system was how it undermined potential black progress by denying black apprentices access to literacy and numeracy training, the bedrock of economic independence in a market-oriented social order.

Data on apprenticeships alone misses an important piece of the puzzle. Pauper apprenticeship was designed to provide maintenance, training, and education to children and youth whose parents could not provide these things. It may have been, and probably was, the case that poverty rates were higher among free blacks than whites. If so, we should observe higher rates of pauper apprenticeship among blacks. And this may have occurred without the apprenticeship system *per se* becoming more racialized. Relatively high poverty rates among blacks may reflect a deeper socioeconomic racism that is reflected in, but not attributable to, the system of pauper apprenticeship. Resolving this requires a more comprehensive study of the economic condition of free African-Americans in antebellum Maryland and elsewhere.

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Table 1: Bound Pauper and Orphan Apprentices by Race, Cohort, County, and Year

| | Age Cohort | | | |
|---|---|---|---|---|
| | 1#x<5[a] | 5#x<10 | 10#x<15 | 15#x<20 |
| | **Panel A: Anne Arundel County** | | | |
| 1840 Whites | 0.08% | 0.21% | 2.50% | 5.73% |
| 1840 Blacks[b] | 0.00 | 1.89 | 5.44 | 11.11 |
| 1850 Whites | 0.42 | 3.28 | 3.68 | 5.33 |
| 1850 Blacks | 0.37 | 6.27 | 8.23 | 16.05 |
| 1860 Whites[c] | 0.69 | 2.20 | 5.31 | 5.48 |
| 1860 Blacks[c] | 0.00 | 7.06 | 8.56 | 19.42 |
| | **Panel B: Frederick County** | | | |
| 1840 Whites | 0.00% | 0.25% | 1.12% | 2.55% |
| 1840 Blacks[b] | 0.39 | 3.82 | 7.65 | 13.10 |
| 1850 Whites | 0.00 | 0.17 | 0.55 | 1.42 |
| 1850 Blacks | 0.00 | 0.84 | 5.19 | 11.26 |
| 1860 Whites | 0.00 | 0.04 | 0.38 | 0.41 |
| 1860 Blacks | 0.00 | 0.59 | 3.18 | 3.66 |

Notes: [a] 1840 census reports cohort as "under 5," which is a combination of "under 1" and "1 & under 5" reported in 1850 and 1860. [b] 1840 census reports black cohorts as "Under 10," and "10 & under 24." It was assumed that the distribution of blacks by cohort was the same as the white distribution to generate comparable cohorts. [C] Anne Arundel 1860 numbers are for 1858. Population by cohort and race for 1858 was interpolated from continuously compounded growth rate of population by age and race between 1850 and 1860 census benchmarks. Percentages were calculated by determining age of all previously bound apprentices in given census year. In 1840, for example, age of each previously bound apprentice was calculated as 1840-year bound+age. Apprentices were then matched to their respective census cohorts to determine total number of apprentices and percentages of youth in each cohort for each census year.

Sources: Anne Arundel County, Register of Wills (Indentures), 1822-1858; Frederick County, Register of Wills (Indentures), 1827-1860; U.S. Department of State, Sixth Census, *Compendium of the Enumeration of the Inhabitants and Statistics of the United States* (Washington, D.C.: Thomas Allen, 1841); U.S. Census Office, Seventh Census, *The Seventh Census of the United States: 1850* (Washington, D.C.: Robert Armstrong, 1853); U.S. Census Office, Eighth Census, *Population of the United States in 1860* (Washington, D.C.: GPO, 1864).

Table 2: Comparison of Contract Terms Negotiated by Family Members and County Magistrates
(percent of all contracts containing specified feature)

| Contract Term | Boys Indented by Parents and Family | Boys Indented by County Magistrates | Z-statistic for Differences in Means |
|---|---|---|---|
| Schooling (incidence) | 33.8% | 11.2% | 12.6* |
| (Average number of months) | (7.1 months) | (8.4 months) | -6.6* |
| Reading only | 0.6 | 0.9 | -0.8 |
| Read and write | 1.0 | 0.9 | 0.2 |
| 3Rs | 15.0 | 32.3 | -10.5* |
| Dues in lieu of school | 1.0 | 5.5 | -7.2* |
| Time off at harvest | 6.2 | 2.3 | 4.3* |
| Freedom suit | 35.9 | 50.2 | -7.1* |
| Freedom tools | 3.5 | 0.9 | 3.9* |
| Cash dues (incidence) | 40.7 | 62.4 | -10.7* |
| (Average value of cash dues) | ($27.58) | ($28.13) | -0.8 |
| Number of registrants | 819 | 1,954 | |

Notes: * implies statistically significant differences at 1% level
Sources: Ann Arundel County, Register of Wills (Indentures), 1822-1858; Baltimore County, Register of Wills (Indentures), 1825, 1830, 1835, 1845, 1851, 1855, 1860; Frederick County, Register of Wills (Indentures), 1827-1860; Prince George's County, Register of Wills (Indentures), 1845-1852; Somerset County, Register of Wills (Indentures), 1853-1860; Talbot County, Register of Wills (Indentures), 1853-1860.

Table 3: Summary Statistics for Maryland's Male Apprentices, 1822-1860
(standard errors in parentheses)

| Variable Name | Entire Sample (n=2772) | White Sample (n=1955) | Black Sample (n=817) |
|---|---|---|---|
| Freedom Dues | 27.74 | 28.72 | 25.39 |
| | (44.19) | (50.11) | (24.70) |
| Log (Dues) | 2.52 | 2.46 | 2.67 |
| | (2.13) | (2.26) | (1.75) |
| Age | 12.88 | 13.73 | 10.84 |
| | (4.34) | (4.05) | (4.33) |
| Year | 42.78 | 41.11 | 46.76 |
| | (10.83) | (10.65) | (10.21) |
| Siblings | 0.19 | 0.14 | 0.32 |
| | (0.73) | (0.61) | (0.94) |
| Occupation Index/100 | 0.139 | 0.163 | 0.083 |
| | (0.102) | (0.107) | (0.058) |
| School (mos) | 1.37 | 1.91 | 0.07 |
| | (3.57) | (4.11) | (0.74) |
| Reading | 0.01 | 0.01 | 0.02 |
| | (0.09) | (0.07) | (0.13) |
| Read/Write | 0.01 | 0.01 | 0.02 |
| | (0.10) | (0.08) | (0.13) |
| Three-R's | 0.27 | 0.37 | 0.04 |
| | (0.44) | (0.48) | (0.20) |
| Harvest (weeks) | 0.41 | 0.58 | 0.02 |
| | (2.31) | (2.71) | (0.51) |
| Suit as dues | 0.46 | 0.42 | 0.56 |
| | (0.50) | (0.49) | (0.50) |
| Tools as dues | 0.02 | 0.02 | 0.01 |
| | (0.13) | (0.14) | (0.09) |
| Dues in lieu of School | 0.04 | 0.01 | 0.12 |
| | (0.20) | (0.10) | (0.32) |
| Quarter 1 | 0.29 | 0.29 | 0.30 |
| | (0.46) | (0.45) | (0.46) |
| Quarter 2 | 0.27 | 0.27 | 0.29 |
| | (0.45) | (0.44) | (0.45) |
| Quarter 3 | 0.21 | 0.22 | 0.19 |
| | (0.41) | (0.41) | (0.39) |
| Quarter 4 | 0.22 | 0.22 | 0.22 |
| | (0.42) | (0.42) | (0.42) |
| Bound by father | 0.24 | 0.30 | 0.11 |
| | (0.43) | (0.46) | (0.31) |
| Bound by other family | 0.05 | 0.06 | 0.04 |
| | (0.22) | (0.23) | (0.19) |
| Bound by Justice of Peace | 0.45 | 0.41 | 0.57 |
| | (0.50) | (0.49) | (0.50) |
| Bound by Orphan's Court | 0.21 | 0.18 | 0.28 |
| | (0.41) | (0.38) | (0.45) |

Table 3: Continued

| | | | |
|---|---|---|---|
| Bound by Trustees of Poor | 0.02<br>(0.15) | 0.03<br>(0.18) | 0.01<br>(0.08) |
| Bound by House of Refuge | 0.02<br>(0.13) | 0.03<br>(0.16) | --<br>– |
| County Population (Thousands) | 151.68<br>(126.61) | 159.00<br>(125.21) | 134.14<br>(128.28) |
| Population Growth | 0.01<br>(0.02) | 0.01<br>(0.02) | 0.00<br>(0.02) |
| Anne Arundel | 0.29<br>(0.45) | 0.25<br>(0.43) | 0.40<br>(0.49) |
| Baltimore | 0.38<br>(0.48) | 0.43<br>(0.49) | 0.25<br>(0.44) |
| Frederick | 0.25<br>(0.43) | 0.28<br>(0.45) | 0.18<br>(0.38) |
| Prince George's | 0.01<br>(0.08) | 0.00<br>(0.06) | 0.01<br>(0.12) |
| Somerset | 0.05<br>(0.21) | 0.03<br>(0.16) | 0.10<br>(0.30) |
| Talbot | 0.03<br>(0.17) | 0.02<br>(0.13) | 0.05<br>(0.22) |

Notes: Log (Dues) is the real discounted value of freedom dues and wages paid over the term of the apprenticeship. Values were discounted using a constant 6% interest rate. Bodenhorn (2000) shows that interest rates over the antebellum era fluctuated around a relatively constant 6% nominal interest rate. Dues were converted to constant dollars using the Benzason Index (U.S. Census Bureau 1976, Series E 97-111) and year indenture recorded. Year is year indenture signed less 1800. Thus 42.78 in the first column implies that the mean indenture was recorded about 10 September 1842. Siblings equals number of siblings indented to the same master at the same time. SEI Index is based on Duncan Index (Reiss, et al. 1961 ). School equals the number of months master promised to send apprentice to school during term of indenture. Suit as dues equals one if all or part of an apprentice's freedom dues were to be paid in-kind in clothing. Tools equals one if part of an apprentice's freedom dues were to be paid in tools. Dues in lieu of school equals one if apprentice was to be paid a cash payment at the termination of the apprenticeship in lieu of sending that apprentice to school. Harvest equals the number of weeks an apprentice was released to work during harvest for his own benefit. Bound by other family members includes mothers, brothers, uncles, grandfathers, grandmothers, and stepfathers. County population in 1,000's. County-level population growth rates reported in percent, interpolated from decadal census values (U.S. Census Office 1872).

Sources: Anne Arundel County, Register of Wills (Indentures), 1822-1858; Baltimore County, Register of Wills (Indentures), 1825, 1830, 1835, 1845, 1851, 1855, 1860; Frederick County, Register of Wills (Indentures), 1827-1860; Prince George's, Register of Wills (Indentures), 1845-1852; Somerset, Register of Wills (Indentures), 1853-1859; Talbot, Register of Wills (Indentures), 1853-1860.

Table 4: Determinants of Freedom Dues for Black and White Apprentices; Ordinary Least Squares Estimates (dependent variable is natural log of real discounted value of wages and freedom dues)

| Independent Variables | White Coefficients (t-stat) | Blacks Coefficients (t-stat) | Full Sample Coefficients (t-stat) |
|---|---|---|---|
| Age | 0.177*** | 0.127** | 0.147*** |
| | (2.97) | (2.20) | (3.48) |
| Age squared | -0.004* | -0.004 | -0.004** |
| | (-1.75) | (-1.37) | (-2.11) |
| Siblings | 0.102 | -0.077 | -0.005 |
| | (1.25) | (-1.30) | (-0.09) |
| Occupation Index | 0.347 | 1.618 | 0.442 |
| | (0.74) | (1.59) | (1.07) |
| School specified | 0.071*** | 0.058 | 0.065*** |
| | (5.29) | (0.76) | (5.28) |
| Reading only | 1.083* | 0.727 | 0.993** |
| | (1.75) | (1.58) | (2.53) |
| Read/write | 0.088 | 0.962** | 0.613* |
| | (0.16) | (2.15) | (1.62) |
| 3-R's | 0.574*** | 0.550* | 0.577*** |
| | (4.73) | (1.88) | (5.51) |
| Dues in lieu of school | 0.929** | 1.053*** | 0.954*** |
| | (2.07) | (5.85) | (5.04) |
| Harvest Time | 0.025 | 0.061 | 0.025 |
| | (1.42) | (0.55) | (1.48) |
| Freedom suit | 1.324*** | 1.201*** | 1.228*** |
| | (13.30) | (10.07) | (15.80) |
| Tools | 1.023*** | 0.926 | 1.062*** |
| | (3.15) | (1.42) | (3.74) |
| Bound by father | -0.823*** | -0.109 | -0.718*** |
| | (-6.77) | (-0.58) | (-7.11) |
| Bound by other family member | -1.205*** | -1.381*** | -1.268*** |
| | (-5.72) | (-4.65) | (-7.34) |
| Orphan's Court | 0.225* | 0.214* | 0.189* |
| | (1.63) | (1.66) | (1.91) |
| Trustees of Poor | -0.379 | 0.354 | -0.388 |
| | (-1.36) | (0.50) | (-1.57) |
| House of Refuge | 0.431 | — | 0.755** |
| | (1.20) | | (2.33) |
| Population | -0.002*** | -0.004*** | -0.003*** |
| | (-3.88) | (-6.25) | (-6.33) |
| Population growth | -7.504** | 6.74* | -1.338 |
| | (-2.03) | (1.75) | (-0.48) |
| Time trend | 0.054*** | 0.033*** | 0.047*** |
| | (10.16) | (5.59) | (11.62) |
| Black | — | — | -0.068 |
| | | | (-0.68) |
| Constant | 0.487 | 1.140*** | 0.873*** |
| | (1.35) | (3.49) | (3.43) |

Table 4: continued

| | | | |
|---|---|---|---|
| Observations | 1,955 | 817 | 2,722 |
| F-statistic | 23.79*** | 11.49*** | 31.45*** |
| Adj R2 | 0.22 | 0.22 | 0.22 |

Notes: All regressions include unreported quarter dummies. Time trend is year indentured minus 1840.

Sources: see Table 3.

Table 5: Determinants of Freedom Dues for Black and White Apprentices; Tobit Estimates
(dependent variable is natural log of real discounted value of wages and freedom dues)

| Independent Variables | White Coefficients (t-stat) | Blacks Coefficients (t-stat) | Full Sample Coefficients (t-stat) |
|---|---|---|---|
| Age | 0.186*** | 0.128** | 0.152*** |
| | (2.89) | (2.15) | (3.35) |
| Age squared | -0.005* | -0.004 | -0.004** |
| | (-1.73) | (-1.36) | (-2.08) |
| Siblings | 0.116 | -0.085 | -0.006 |
| | (1.31) | (-1.36) | (-0.10) |
| Occupation Index | 0.366 | 1.694 | 0.463 |
| | (0.71) | (1.61) | (1.04) |
| School specified | 0.078*** | 0.061 | 0.070*** |
| | (5.35) | (0.77) | (5.33) |
| Reading only | 1.196* | 0.751 | 1.069** |
| | (1.78) | (1.58) | (2.54) |
| Read/write | 0.090 | 1.006** | 0.658* |
| | (0.15) | (2.18) | (1.62) |
| 3-R's | 0.636*** | 0.575* | 0.628*** |
| | (4.82) | (1.90) | (5.57) |
| Dues in lieu of school | 0.971** | 1.073*** | 0.984*** |
| | (2.00) | (5.77) | (4.85) |
| Harvest Time | 0.028 | 0.061 | 0.027 |
| | (1.43) | (0.53) | (1.49) |
| Freedom suit | 1.433*** | 1.244*** | 1.309*** |
| | (13.24) | (10.09) | (15.67) |
| Tools | 1.120*** | 0.958 | 1.148*** |
| | (3.18) | (1.42) | (3.77) |
| Bound by father | -0.908*** | -0.135 | -0.790*** |
| | (-6.86) | (-0.69) | (-7.26) |
| Bound by other family member | -1.332*** | -1.474*** | -1.388*** |
| | (-5.77) | (-4.77) | (-7.42) |
| Orphan's Court | 0.254* | 0.225* | 0.209** |
| | (1.70) | (1.69) | (1.97) |
| Trustees of Poor | -0.400 | 0.373 | -0.411 |
| | (-1.33) | (0.51) | (-1.55) |
| House of Refuge | 0.346 | — | 0.706** |
| | (0.89) | | (2.03) |
| Population | -0.002*** | -0.004*** | -0.003*** |
| | (-3.88) | (-6.23) | (-6.25) |
| Population growth | -8.203** | 6.853* | -1.517 |
| | (-2.04) | (1.72) | (-0.51) |
| Time trend | 0.058*** | 0.034*** | 0.049*** |
| | (9.99) | (5.50) | (11.36) |
| Black | — | — | -0.067 |
| | | | (-0.62) |
| Constant | 0.324 | 1.106*** | 0.774*** |
| | (0.83) | (3.28) | (2.83) |

Table 5: continued

| | | | |
|---|---|---|---|
| Log-likelihood | -4186.14 | -1537.61 | -5789.52 |
| Pseudo R2 | 0.054 | 0.067 | 0.054 |

Notes: Regressions include unreported quarter dummies. In the White sample there are 169 left-censored observations; in the Black sample there are 38; and 207 in the full sample. Time trend is defined as year of indenture minus 1840. * signifies significance at 10%; ** at 5%; *** at 1% for two-tailed tests.
Sources: see Table 3.

Table 6: Determinants of Education Clauses in Apprentice Indentures, Probit Estimates
(dependent variable =1 if indenture specified any form of education,
table reports marginal effects rather than coefficient estimates)

| Independent Variables | Whites dF/dx (z-stat) | Blacks dF/dx (z-stat) | Full Sample dF/dx (z-stat) |
|---|---|---|---|
| Age | 0.103*** | 0.001 | 0.095*** |
| | (6.13) | (0.11) | (6.00) |
| Age Squared | -0.004*** | 0.000 | -0.004*** |
| | (-6.33) | (0.17) | (-6.06) |
| Time Trend | -0.013*** | -0.004*** | -0.014*** |
| | (-9.82) | (-6.05) | (-11.05) |
| Occupation Index | 0.517*** | 0.341*** | 0.663*** |
| | (4.13) | (4.20) | (5.29) |
| Bound by Father | -0.213*** | -0.030* | -0.219*** |
| | (-6.90) | (-1.94) | (-7.79) |
| Bound by Other Family | -0.084 | -0.003 | -0.103** |
| | (-1.54) | (-0.11) | (-2.02) |
| Orphans Court | 0.211*** | -0.045*** | 0.149*** |
| | (6.35) | (-2.78) | (4.29) |
| Trustees of Poor | 0.329*** | 0.175 | 0.459*** |
| | (4.55) | (1.56) | (4.80) |
| House of Refuge | 0.348*** | — | 0.537*** |
| | (6.07) | | (5.87) |
| Siblings | -0.091*** | -0.011 | -0.094*** |
| | (-3.16) | (-0.84) | (-3.40) |
| Anne Arundel | -0.295*** | -0.085*** | -0.293*** |
| | (-8.35) | (-4.70) | (-9.70) |
| Frederick | 0.164*** | -0.037*** | 0.107*** |
| | (5.59) | (-2.82) | (3.56) |
| Somerset | -0.315*** | — | -0.298*** |
| | (-3.52) | | (-4.28) |
| Talbot | -0.344*** | -0.016 | -0.260*** |
| | (-3.44) | (-0.51) | (-3.44) |
| Black | — | — | -0.510*** |
| | | | (-19.01) |
| Log (NPV Real Dues) | -0.0004** | -0.00001 | -0.0006** |
| | (-1.97) | (-0.33) | (-2.47) |
| Log likelihood | -981.27 | -163.84 | -1177.09 |
| Observations | 1,955 | 738 | 2,754 |
| Pseudo R2 | 0.24 | 0.28 | 0.38 |

Notes and Sources: See Table 3.