

# **Rules and reality: quantifying the practice of apprenticeship in early modern Europe<sup>1</sup>**

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## Abstract:

This paper uses recently digitised samples of apprentices and masters in London and Bristol to quantify the practice of apprenticeship in the late 17<sup>th</sup> century. Apprenticeship appears much more fluid than is traditionally understood. Many apprentices did not complete their terms of indenture; late arrival and early departure from the master's household was widespread. Other apprentices appear to have been absent temporarily, returning to the master shortly before the end of their indenture. Regression analysis indicates that the patterns of presence and absence are broadly reflective of the resources and outside opportunities available to apprentices.

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Early modern apprenticeship has been characterized as rigid, inflexible and inefficiently regulated. In many ways, the terms of debate remain those set by Adam Smith when he attacked the 'corporation spirit' of towns and cities for hindering competition and raising prices. Smith focused his ire on apprenticeship, which formed the cornerstone of the exclusive privileges of urban masters. At its simplest, apprenticeship involves the exchange of labour and sometimes money for training given on the job. In early modern Europe, apprenticeship was often highly regulated, with rules on who could enter service, how long they must serve, what they could do during their terms, and how many apprentices a master might take. According to Smith, English apprenticeships in particular were too long, they tended to make the young lazy, they hindered outsiders from using their own abilities, and above all they were a conspiracy to raise wages and prices to the benefit of masters.<sup>2</sup> Smith's views on the rent-seeking and self-interested orientation of corporate apprenticeship have many adherents.<sup>3</sup>

Apprenticeship does have its defenders, who emphasize that it was a critical avenue for skill formation in early modern Europe: it is the historical antecedent of industrial apprenticeship and present day firm-based training schemes, it socialised youths into the urban world, and it provided a means to facilitate and manage migration, facilitating the flow of labour from agriculture into manufacturing and services. The craft training supplied through apprenticeship has been identified as a conduit for technological change in premodern Europe.<sup>4</sup> The most optimistic view of apprenticeship is probably best expressed in the idea that, for most, service 'provided stability for a child, a secure future, with guaranteed employment and limited competition'.<sup>5</sup> However, even among those who have sought to rehabilitate corporate apprenticeship, Smith's view that this premodern institution worked in the manner envisaged in law and custom often survives.<sup>6</sup> Whether the outcome was socially beneficial or not, the working assumption in most of the literature has been that apprenticeship contracts were stable and largely

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<sup>2</sup> Smith, *Wealth of Nations*, Book 1, Chapter X, part II.

<sup>3</sup> George, *London Life*, pp. 225-86; Hay, *Masters*, pp. 1-8, 62-99; Ogilvie, 'Guilds', pp. 302-14; Ogilvie, 'Social Capital', pars. 16-19; Hickson & Thompson, 'New theory', pp. 140-1. For later developments: Hay, *Masters*; Steinberg, 'Unfree labor'.

<sup>4</sup> Epstein, 'Craft Guilds, Apprenticeship', pp. 688-93; Humphries, 'English Apprenticeship'; Gustaffson, 'Rise', p. 21; De Munck & Soly, 'Learning'; Rule, *Experience*, pp. 95-123.

<sup>5</sup> Lane, *Apprenticeship*, p. 2.

<sup>6</sup> For a more cautious view, see: Davids, 'Apprenticeship'.

effective: the most recent debate has been about the effects of these long terms of service, not whether they were enforced in the first place.<sup>7</sup>

In this paper, we seek to assess the extent to which the reality of premodern apprenticeship mirrored the ideal set out in law and corporate regulation. Apprenticeship presents many of the standard analytical problems familiar to students of premodern institutions. We have more evidence about the laws, ordinances and customs that notionally set the rules of the game than we do about the practice of apprenticeship itself. We lack almost any evidence of the direct costs and benefits of the training and labour exchanges involved in service, let alone any indications of the longer-term benefits that apprentices may have gained from their experience and qualifications. We even know very little about apprentices' and masters' behaviour between the two relatively easily observed moments of indenturing and freedom: to what extent were the expectations of a full term of service met? Or, as Steven Kaplan put it: 'at what point and why does an aspiring apprentice abandon the trajectory?'<sup>8</sup> It is this last issue that we concern ourselves with here. A small but fascinating literature on apprentices' who failed to complete their terms exists, but beyond scattered texts and legal records, evidence has largely been unavailable about what happened to apprentices during their terms.<sup>9</sup> To address this, we have created two samples of apprentices and masters in London and Bristol in the 1690s for which we can observe the persistence of apprenticeship – essentially, the proportion of apprentices who were living with their masters at different stages in their terms of service.

Our data allow us to reconsider many standard assumptions about how apprenticeships started, how many apprentices stayed with their master, what proportion went to serve other masters, and which apprentices became freemen. As we show, rule and reality diverged in such a way as to indicate frequent and consistent evasion of the formal institutions of apprenticeship, despite their enactment in statute law and the supervision of guild and civic officials. We also find that apprentices' decisions about whether or not to complete their terms were broadly consistent with their access to resources and opportunities. Hidden within the superficially rigid rules of apprenticeship was a plural and flexible training institution, supplying skills according to demand and adapting the terms of service to the needs

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<sup>7</sup> See: Ogilvie, 'Guilds'; Epstein, 'Craft guilds: a discussion', pp. 160-2, 165-7; Ogilvie, 'Rehabilitating'. Non-completion is central to recent work on North America: Hamilton, 'Enforcement'; idem, 'Decline'; Elbaum, 'Why apprenticeship persisted'.

<sup>8</sup> Kaplan, 'Reconsidering', p. 212.

<sup>9</sup> Griffiths, *Youth*, pp. 330-5; Ben-Amos, 'Failure'; Steidl, 'Silk Weaver', pp. 145-150; Rappaport, *Worlds*, pp. 232-34

of individuals. The formal rules and the rents they implied for masters still mattered. But they shaped only one of several possible outcomes of apprenticeship.

Apprenticeship varied in its details from city to city across Europe. In England a distinctive national character had been given to apprenticeship through the Statute of Artificers in 1563.<sup>10</sup> This applied London's existing customs throughout the country as part of an attempt to regulate urban and rural labour. The institution of apprenticeship defined by the Statute included a longer period of service – a minimum of seven years – than in many other countries.<sup>11</sup> The practice of the trades and crafts it covered was limited to those who had served an apprenticeship, but notionally the qualification was portable and service did not limit a master to working in a specific place, although some corporate towns, including London and Bristol, did seek to exclude those apprenticed elsewhere, and one of the key benefits of a completed apprenticeship was settlement and the entitlement to poor relief it brought. There were also some restrictions on access to apprenticeship, intended to exclude the poor and rural labourers from entering service; these were seemingly rarely applied. Some details of service – particularly the distribution of the costs of board and clothing, fees to be paid to the master, living conditions, and the exact term – were negotiated between the master and the apprentice and his friends or family, but the lineaments of service were well defined.<sup>12</sup> The formal completion of an apprenticeship in England was therefore notionally more valuable than in most of Europe – as it permitted an individual to practice a trade throughout the nation – and also more onerous, in taking so long to achieve. By contrast, elsewhere in Europe, the specific terms of service appear to have generally varied more between individuals, trades and cities.<sup>13</sup> That said, it is important to emphasise that apprenticeship in England shared many of the standard features found across Europe: the apprentice was subjected to the quasi-paternal authority of his master; his work was supplied in exchange for training; he usually lived in his master's household; his manners, entertainment and freedom to marry were limited; and he normally received no wage.<sup>14</sup>

# I

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<sup>10</sup> Ben-Amos, *Adolescence*; Snell, 'Apprenticeship system'; Brooks, 'Apprenticeship'; Lane, *Apprenticeship*; Dunlop and Denman, *English Apprenticeship*.

<sup>11</sup> On terms: Reith, 'Apprentices', pp. 182-3.

<sup>12</sup> On negotiation: Stabel, 'Social mobility', pp. 160-1; Kaplan, 'L'Apprentissage'.

<sup>13</sup> Reith, 'Apprentices', pp. 182-4; De Munck, *Technologies*, pp. 59-68.

<sup>14</sup> For Europe, see: Kaplan, 'L'Apprentissage'; Nicholas, 'Child'; Epstein, 'Craft Guilds'; Farr, *Artisans*; De Munck & Soly, *Learning*. On wages for apprentices: Reith, 'Apprentices'. As most English apprentices in this period were male, the generic apprentice is taken to be male here.

Our data consist of samples of apprentices and masters in the cities of London and Bristol in the late seventeenth-century. These cities offer useful starting points for an examination of apprenticeship. Apprentices in England were highly mobile, travelling long distances to enter into service with masters with whom they had no kin or geographical connection, and training in occupations very different to that practiced by their father.<sup>15</sup> Both were large cities that served as focal points for migratory systems in which apprentices played a major part. London was by far England's largest city, with a population of around half a million in 1700. As Wrigley observed, the level of migration needed to sustain the capital's growth in this period meant that one in six of England's population would have lived in the city at some time.<sup>16</sup> Apprentices were one of the major categories of migrants, and in the later seventeenth century records survive of around 2,700 youths – or 6.5% of English teenage males – from across the country entering an indenture in the city each year.<sup>17</sup> Bristol's field of recruitment was smaller, befitting the third largest English city with a population of around 20,000 in 1700.<sup>18</sup> Annually, around 250 youths became apprentices in Bristol between 1686 and 1696, largely from the city and its neighbouring counties. While distinctive in some ways, particularly in its orientation to the Atlantic trade, Bristol is reasonably representative of a second-tier English city in this period.

For London, the main part of the data that we use in this project is a sample of apprentices and their masters in the 1680s and 1690s. The sample was constructed by integrating four sources. First, a set of London Livery Company Apprenticeship lists that contains 17,868 apprentices indentured to masters in 48 City Companies in the period 1685-1695. These records include the names of masters and apprentices, and information about the geographical and social origin of apprentices.<sup>19</sup> Second, the London Poll Tax Database for 1692 which includes the names of around 13,000 heads of households in London, the parish where they lived, and often their occupation or company.<sup>20</sup> Third, the Index to the Duty on Births, Marriages and Death Assessments (a tax on vital events in families and a poll tax on bachelors and childless widowers), which identifies those named in detailed manuscript listings of the

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<sup>15</sup> Leunig, Minns, & Wallis, 'How fluid were labour markets'.

<sup>16</sup> Wrigley, 'Simple Model'.

<sup>17</sup> The average number of *recorded* apprentices per year in London, 1676-1700, was 2,740 (Beier and Finlay suggest a total of c.4,000 apprentices per year: 'Introduction', p. 15). Wrigley et al's population and age distributions give an estimate of 41,925 male 17 year olds in 1686: Wrigley, *Population History*, pp. 614-15. In the second and third quarter of the seventeenth century, the equivalent percentages are 3.3% and 3.8%.

<sup>18</sup> Sacks, *Widening Gate*, p. 353; Corfield, *Impact of English Towns*, p.15; Yarborough, 'Geographical', pp. 113-30.

<sup>19</sup> Webb, *London Livery*.

<sup>20</sup> Alexander, 'Poll Tax database', Centre for Metropolitan History, University of London. See: Arkell, 'Poll taxes'; Alexander, 'Economic'.

inhabitants of London. The listings are organised by household, including servants and lodgers, and survive for around 110,000 individuals from 93 London parishes in 1695.<sup>21</sup> Fourth, the Association Oath Rolls (1696), which lists signatories to an Oath of Loyalty to William III circulated in 1696 in response to suspected Jacobite plots. Most males over the age of twenty appear to have subscribed, and in London the signatories are organised by Livery Company, giving a sample of 21,970 active Company members in 1696.<sup>22</sup>

We linked the sources as follows. First, householders with occupations named in the Poll Tax listings were linked by name and parish to householders listed in the indexes to the Duty on Burials, Marriages and Death Assessments from 1695. This produced a sample of household heads with parish *and* occupational information. To reduce weak links, we used the Association Oath Rolls to exclude householders who shared their name with another member of the same company. Using name and occupation or company, we then linked our sample of householders with the masters of our sample of apprentices. Finally, we used the manuscript listings for the Marriage Duty Assessments to see which apprentices were still living with their masters in 1695.<sup>23</sup> Each stage in the linkage was made using at least two distinct characteristics.<sup>24</sup> We were unable to link merchants in London in the same way, as they were categorised differently in the 1692 Poll Tax. We have, however, included a sample drawn from the merchants identified by Perry Gauci.<sup>25</sup>

Our analysis for Bristol was based on similar materials and methods, but was made much simpler by the existence of a complete published Marriage Duty Assessment listing for the city in 1696.<sup>26</sup> We linked this to the population of apprentices indentured in the city during the ten years prior to 1696.<sup>27</sup> Matching was simpler and stronger because of the presence of masters' wives' names in the apprenticeship register. The matching exercise identified 1,091 apprentice and master pairs in London and 2,230 in Bristol, where linkage was much less complex and therefore more productive. Roughly 60 percent of the

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<sup>21</sup> 6 & 7 Wm. & M., c. 6. Glass, *London inhabitants*; London Metropolitan Archive (hereafter LMA), COL/CHD/LA/04/02/003-004.

<sup>22</sup> Webb, *Association Oath*.

<sup>23</sup> LMA, COL/CHD/LA/04/01/1-110.

<sup>24</sup> To overcome the problem of variant spellings we employed the Double Metaphone algorithm developed by Gill Newton to code names, and then manually sifted for good matches.

<sup>25</sup> Gauci, *Politics of Trade*, pp. 19-24.

<sup>26</sup> Ralph and Williams, *Inhabitants of Bristol*.

<sup>27</sup> Bristol Record Office (hereafter BRO), 04353/2.

London sample were resident within the city walls, broadly in proportion to the distribution of the metropolitan population at this time.

The linked database we have created includes a range of apprentice and master characteristics for both cities. Several characteristics are common to both samples: apprentices' county of origin, the distance they had to travel to be apprenticed,<sup>28</sup> and the occupation of their fathers.<sup>29</sup> We also have information about masters in both cities – the size of their household, whether another apprentice was present on the tax date, and a crude indication of their wealth from an internal tax threshold (having £600 in personal estate or an income of £50 p.a.). There are also some important differences in the characteristics recorded in the data on the two cities. For London, we know whether the apprentice's father was deceased, whether he was a citizen of the City of London, and we have constructed an indicator whether he belonged to the same company as his son's master. On the master's side, the London data also reveal whether the master lived within the City walls, or in a suburban parish, where the city's companies (guilds) tended to be weaker.<sup>30</sup> We also have different information about the master's trade for Bristol and London. For London, we know the parent's occupation, but only the master's company. Although technically centred on particular crafts, London's companies included freemen practising a range of occupations. Smaller and newer companies, for example spectaclemakers, tended to be more homogenous, while the larger, older and more powerful companies, such as those in the 'Great Twelve', had more varied memberships. For Bristol, both the parent and the master's occupation is recorded. This is much more specific than in London, and also allows us to say whether the master and father had the same occupation. The Bristol data also identifies 60 pauper apprentices, although only 20 can be linked to an identified master.

One limitation of our analysis is that the linking process used means that our samples are not wholly representative of the full variety of apprenticeship situations. In London, only living masters who had been independent householders for at least three years are captured, biasing our sample towards the more successful and prosperous. Quakers are also excluded, as they generally refused to take the Association Oath. For Bristol, our sample is more comprehensive, but it is still likely to miss cases where masters had died between the date the indenture was made and 1696.

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<sup>28</sup> Estimated from the distance between the county town and London or Bristol.

<sup>29</sup> We used E.A. Wrigley's P.S.T occupational coding scheme when grouping fathers' occupations.

<sup>30</sup> Berlin, 'Broken'; Ward, *Metropolitan communities*.

In addition, it is important to draw attention to a key assumption in what follows: that apprentices lived with their masters while they were in service. Clearly a few apprentices may have been lodging elsewhere. But in this period apprentices still usually lived in their masters' households.<sup>31</sup> In Bristol in this period, three indentures were recorded with a note stating that the apprentice or their mother was to find them lodging, suggesting this was still a sufficiently unusual practice to need formalising. Moreover, there is no reason to suspect lodging habits varied over apprentices' terms in a way that might explain the pattern of presence and absence we found. Further evidence of the significance of residence is given in the discussion of freedoms below.

A further consideration is that our data is drawn primarily from the 1690s. Our sample of apprentices crosses 1688, the year of the Glorious Revolution. Most were indentured in the subsequent period of political tension that affected the city and country deeply.<sup>32</sup> This was also a period of economic difficulties. The Nine Years War (1688-97) depressed trade and shipping. By 1695, Bristol alone had lost 202 ships to the French. English exports to Spain and the Mediterranean were a quarter of their level in the mid-1680s.<sup>33</sup> The taxation needed to fight William II's continental campaigns put ever greater pressures on manufacturing and trade, with a series of new poll taxes and excise duties to fuel the ballooning national debt.<sup>34</sup> The deterioration of the coinage caused by clipping would lead to a recoinage in 1696 and economic crisis through shortage of coin, but had created uncertainty around the specie before then.<sup>35</sup> Together war, recoinage and bad harvests conspired to produce high food prices, peaking in 1698, and lower real wages.<sup>36</sup> It is plausible that the conditions in this decade had a role in shaping selection into apprenticeship. It is less clear, however, that social and economic changes will have a large effect on the decision to remain in apprenticeship among youths and families who had already begun invested considerable time and resources in obtaining training. It also seems that the institutional system of corporate apprenticeship continued to function much as it had over the previous century.<sup>37</sup>

## II

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<sup>31</sup> Wallis, 'Apprenticeship', p. 842; De Munck and Soly, 'Learning', p. 21; Steidl, 'Silk weaver', p. 147.

<sup>32</sup> De Krey, *Fractured society*; Hoppit, *Land of Liberty?*

<sup>33</sup> Jones, *War and Economy*, pp. 130-1, 159; Rose, *England*, pp. 126-8

<sup>34</sup> Brewer, *Sinews*, pp. 89, 95-100, 114

<sup>35</sup> Rose, *England*, pp. 137-40; Horsefield, *British Monetary Experiments*, pp. 14-17; Jones, *War and the Economy*, pp. 20-21

<sup>36</sup> Clark, 'Price History', pp. 41-124; Clay, *Economic Expansion*, I, 52.

<sup>37</sup> Walker, 'Guild control'; Schwarz, *London*, pp. 210-11; Berlin, 'Guilds in decline?'.



Legally and ritually, an apprentice's service began when they signed or marked their indenture, which was then inspected and recorded by civic or guild officials in corporate towns like London and Bristol, and they took their oath to serve their master.<sup>38</sup> Once indentured, apprentices were legally tied into a seven or eight year term of service. If they made it to the end, they would on average have spent more than a quarter of their life as apprentices. But what happened in between, and how many apprentices did complete their terms? There has long been uncertainty around these questions. Across Europe, a relatively small proportion of apprentices became citizens or freemen, but this is a poor indicator for completion as the benefits of the freedom were most valuable to those with the assets and ability to establish an independent business. Ben-Amos, Steidl, Wallis and others have drawn attention to other evidence that many apprentices did not complete their terms.<sup>39</sup> Even so, the most recent survey of European apprenticeship suggests that 'the overwhelming majority of the apprentices *did* serve out their contract'.<sup>40</sup>

The reality of apprenticeship in England appears to have been much less settled. Figures 1 and 2 give rolling 10-month averages for the proportion of apprentices present in their masters' households in London and Bristol over their terms of service. These are indenture cohorts in which each observation month represents the behaviour of a different group of apprentices. For example, the proportion present in the first month of year 5 in London is calculated from the cohort of apprentices bound between January 1690 and November 1690 who were still present in May 1695. These are snapshots of the stock of apprentices, and do not say anything about changes in the composition of the stock over time. In addition, it is important to note that there are three types of apprentice absence that contribute to our calculated rate of presence. Some apprentices were present at some point in their indenture, but were absent temporarily when the household was surveyed. Others who had been present at some point had since left the master's household on a permanent basis. While some apprentices may never have actually been resident with their master, despite agreeing terms. The rolling averages will be lower than the actual proportion of apprentices who were present at some stage in their term of service, as we are unable to formally distinguish among the three reasons for absence in the single cross-section.

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<sup>38</sup> Hanawalt, *Growing Up*, pp. 139-40. In London company registration usually occurred on the same day as binding. The indentures for 72 London apprentices in our sample survive; 67 bear the same date as the entry in the company records: 3 differed by one day, one by four days, and one by three months: LMA, CLRO COL/CHD/FR/02. In Bristol, indentures were sealed at the city's Tolzey Court, held in the guildhall.

<sup>39</sup> See: Wallis, 'Apprenticeship', pp. 838-9.

<sup>40</sup> De Munck and Soly, 'Learning', p. 10. Authors' italics.

In both London and Bristol we find a clear picture of staged decline over apprentices' terms. In both cities, large numbers of apprentices left their original master's household before their contract was completed and most departures occurred in the first half of the term. In London, the proportion of apprentices resident with their masters peaked at around 70% between the sixth and twenty-fourth month of service, it then declined sharply, to a trough of below 40% in year four. There are small upturns in years five and six, which we will explore in more detail later, before a final decline at the end of the sixth year of service. The two steep falls at the end of year seven and eight reflect the mix of seven and eight year terms in our sample. In Bristol, we find broadly similar patterns. The main difference is that Bristol apprenticeships appear to have been slightly more compressed than in London, starting later and tailing off slightly earlier.<sup>41</sup>

While the dominant impression of Figures 1 and 2 is the decline in presence over time, it is also clear that the start of apprenticeship was less clear-cut than might be expected. For some apprentices, their service was preceded by a trial period, a customary practice to ensure that they and their master were well-suited.<sup>42</sup> As can be seen in Table 1, trials were common in London, where 42% of apprentices were present in the six months before they were bound, and somewhat less so in Bristol, where only 16% of apprentices were present before being indentured. The smaller size of the city and its local recruitment market may help explain this: residence was less necessary for a trial period. These trials were not overly long though, and none exceeded six months.

More striking is the slow arrival of many apprentices. Although for all official purposes the date at which service began was the date of the indenture, in practice the start of apprenticeship as a period of resident work and training appears to have frequently occurred much later. In London, only around two-thirds of apprentices were actually present in the household in the first year after the date of their indentures. When we look more closely at this period in Table 1 we find that the proportion of apprentices present is actually rising over the year, from 58% present in the first six months to 68% present in the second half of the first year. In Bristol the lag between indenture and arrival is even more stark. Few apprentices were with their master in the months immediately after the formal date of their binding, and the proportion present only rises above 50% a year after their terms of service had technically begun. This does not appear to have been the result of young apprentices continuing to live

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<sup>41</sup> Bristol apprenticeships were for seven years, with only three exceptions bound for eight years in this period.

<sup>42</sup> Dunlop and Denman, *Apprenticeship*, p. 162.

with their parents while they began work.<sup>43</sup> In a few cases, they may have been at school.<sup>44</sup> But for most, it seems likely that the legal and effective dates of contracts were different: apprentices had to be present in person to enter indentures, but most took their oaths and then went away again, only joining their masters' household months or even years later. Further evidence for this is in a few cases where apprentices appear to be indentured twice, suggesting that their initial indenture was never implemented. As a result, even when they completed, most apprentices' actual term of service was substantially lower than the statutory minimum.

Behind the aggregate patterns in Figures 1 and 2 lies considerable variety in how apprenticeship functioned within different groups and trades, variety of a kind not captured in the formal rules or the standard accounts of service. One aspect of this is the presence of subtle differences between local and migrant apprentices in the two cities. In London, migrants' earlier arrival appears to have translated into slightly longer effective terms, as they left around the same time as London-born apprentices (Figure 3). Overall levels of presence are similar, and the main difference between them though comes after the term is completed, and is discussed below. Bristol (Figure 4) seems, if anything, to show the opposite: locals' effective terms are longer than migrants, who are absent particularly toward the end of the term.

However, it is when we look at apprentices' presence by occupation that we find the most striking differences between modes of apprenticeship. We can do this most accurately for Bristol, where we know the occupation rather than the guild of the master. Figure 5 shows the proportions of apprentices present for several distinct groups of trades. The most dramatic divergence from the city average presented in Figure 2 is among merchant and sea-faring apprentices (Figure 5a). Apprentices in these trades were expected to travel on behalf of their master. Merchants' apprentices in particular jealously guarded their right to act as a factor overseas as this was often the main foundation of their later independent trading. This characteristic of apprenticeship was on occasion determined formally. For example, the timing of absence was set out in the contract for seafarer apprentice Thomas Garrard, whose master agreed that 'at the end of three first years [he was] to go to sea'.<sup>45</sup> The extent to which these apprentices were absent from the household is nevertheless unexpected: absence appears to

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<sup>43</sup> If this was the case, we would expect to find more migrants with their master in the first year. This was not the case.

<sup>44</sup> Ben-Amos, *Adolescence*, pp. 112, 173; Guildhall Library (hereafter GL), MS 5257/5, f. 131.

<sup>45</sup> BRO, 04353/2, f. 243. Grassby, *Business community*, pp. 195-6; Gauci, *Politics*, pp. 71-3

have consumed much of their period of service, with relatively low peaks of presence in the first and last years of the term giving the figure a bimodal distribution.

While service in other trades bore closer resemblance to the collective norm, the occupational breakdown reveals two characteristics of apprenticeship that are largely obscured in the overall average. First, the rise in presence in year six in Figures 3 and 4 appears to be the product of a much more distinctive pattern of decline in the second half of the term followed by a marked resurgence in the year or so before completion.<sup>46</sup> This pattern is visible among the cluster of general manufacturing trades, the building and the food trades (Figures 5b, 5c, 5d). Among coopers and soapmakers (Figure 5e), two trades that were relatively closely linked to the city's port and industrial focus, nearly all apprentices remained with their masters in the first half of their term. Yet even among this group there was a marked dip in years four and five, before many – particularly among locals – seem to have reappeared. Second, the differences between local and migrant apprentices varied between trades. As the numbers are small, figure 5 does not show this divide, and for some, such as building apprentices,<sup>47</sup> the pattern looks random and there is little reason to think that the two groups behaved differently. But in several others it seems that migrants were less likely to remain, especially in the final years of service. This pattern is clearest in the general manufacturing trades.<sup>48</sup> These are all crafts practised widely in the region as well as the city, and here we see a clear divergence between the two groups of apprentices in the last years of the terms of service. Local-born apprentices were likely to return and complete, with 63 percent being present in years 6 and 7, versus 50 percent in years 4 and 5. Among migrants, presence actually declined in the last two years of expected service, with only 54 percent in years 6 and 7, and 77 percent present in years 4 and 5. Similarly, among coopers and soapmakers, the increase in presence in year 6 and 7 was 30% lower for migrants.

For London, we can only subdivide apprentices by company. Even this, though, reveals striking differences that echo the findings from Bristol. As figures 6a and 6b show, the proportion of apprentices present with masters in the larger, less cohesive, and more mercantile companies of the Great 12 falls

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<sup>46</sup> The resurgence does not appear to be a cohort effect, due to demographic or economic factors. First, the timing of the bump is similar in London and Bristol despite the observation point being different by a year. Second, the difference between local and migrant resurgence suggests that endogenous rather than exogenous factors are driving the pattern.

<sup>47</sup> This group includes apprentices in the following trades: house-carpenter, tiler and plasterer, tiler, plumber.

<sup>48</sup> This group consists of apprentices in the following trades: cordwainer, weaver, blacksmith, pewterer, currier, serge-weaver, clothworker, pinmaker, silkweaver, brazier, serge-maker, carpenter, glover, turner, smith, culter, dyer, basketmaker.

away much more dramatically than in the smaller more homogenous companies outside that group. The late rise in presence at the end of the term is also much more marked outside the Great 12. Institutional capacity may also matter here, as larger companies' size limited their ability to control apprenticeship and employment. In the two London companies for which we have the most apprentices, the vintners (6c) and the apothecaries (6d), there were quite different patterns. We find high rates of return at the end of their terms among the relatively well regulated apothecaries, compared to little if any divergence from the strong downward trend in proportion present among vintners' apprentices, whose masters tended to recruit large numbers of apprentices, presumably in anticipation of this high rate of departure.<sup>49</sup>

One point in service where the rules of apprenticeship did work roughly as intended was at the end. For those who made it to the close of their contracted term of service, the end of apprenticeship remained a firm break in both Bristol and London. Even if we consider just those apprentices who persisted into the later years of their term, only around one in five remained with their masters after the seven years was past. Some of the other apprentices may have moved out, perhaps to marry, but continued to work for the same master. Nonetheless, it seems that for most apprentices employment ended with the end of the contract.<sup>50</sup> It is unlikely that the proportion of apprentices who continued in employment with the same master was high enough to provide masters with the reasons (information about employees' skills) for taking on apprentices that are sometimes suggested for modern firms, or apprentices with a reason (such as higher earnings after completion at their training firm) to keep them in service up to that point.<sup>51</sup> Apprenticeship in these cities did not normally form a stage in an ongoing direct employment relationship.

The one partial exception to this is migrant apprentices in London, a quarter of whom were still with their master in the ninth year. The proportion present in the tenth year declines again, suggesting that departure was only deferred temporarily. This may indicate a greater reliance among migrants on masters' for an initial position as a journeyman, as their own networks were weaker than local apprentices. It could also be that migrant apprentices were more likely to have to make up time lost through absences at the end of their contract: travel time would have multiplied the impact of

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<sup>49</sup> Wallis, 'Medicines', p. 146. Between 1600 and 1750, London vintners who took any apprentices trained an average of 4.7 over their career.

<sup>50</sup> Cf. Levene, 'Honesty', p. 192.

<sup>51</sup> Acemoglu and Pischke, 'Beyond Becker'; Smits and Stromback, *Economics*.

temporary departures for sickness, family or holiday. This is observed occasionally in agreements by masters to resume training apprentices who have absented themselves.

If anything, apprentices were more likely to trim months off their contracts than extend them beyond their term. Their slow arrival at the beginning of their service was repeated in reverse at the end. The proportion of apprentices present begins to fall away at the beginning of their seventh year, or even earlier, in both cities. It is not uncommon to find agreements for early completion, sometimes in exchange for a gift or fee, set out in guild records, and this features in a number of petitions for the freedom in London.<sup>52</sup> However, our data suggest that masters were allowing a far larger proportion of apprentices to be absent during their final months of contracted service than official records would indicate.

Apprenticeship in England was in practice often quite different to the settled relationship between master and apprentice envisaged in law and much of the literature. One implication of our findings are that, as well as many who left service, a far larger proportion of apprentices spent a period outside their master's household than has normally been assumed, even in settled services and manufacturing occupations where this lacked the obvious justification possessed by seafarers and merchants. This suggests that apprentices were involved in a diverse and mobile market for training and labour, which we discuss further below. Another implication is that effective terms were shorter than the law prescribed, revealing the importance of informal norms that circumvented the terms of the official regulations. Finally, it would seem that apprenticeship contracts were ended early as often as they were completed: this was simply not a rigidly enforced contract.

### III

The most telling characteristic of apprenticeship revealed by figures 3 to 6 is the very large numbers of apprentices who were not living with their masters at various points during their contracted period of service. On average, one in two apprentices that we would expect to find were missing. There are several alternative explanations for apprentices' absences. Perhaps ten percent of apprentices died during their term: migration from the relatively healthy countryside into large towns in particular carried a high risk to health.<sup>53</sup> Some apprentices decided to leave their trade, or were ejected from service for

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<sup>52</sup> LMA, COL/CA/05/02, s.v. Baron, 1690; Batty, n.d.; Chase, c. 1688; Corbett, c. 1670;

<sup>53</sup> Schwarz, 'London Apprentices', pp. 18-22.

disorder or crime.<sup>54</sup> While runaways inevitably tend to dominate in most sources, which are largely derived from legal disputes, where apprentices lacked the necessary aptitude, inclination and good relationship with their master, departures might well be beneficial for both apprentices and masters. If mutually agreed, they needed no external authorization to end the contract and this could occur without any external record being made. The remainder continued to train or work in the same trade. Among these apprentices were some who had permanently left their master, either legally or illicitly, while others were working on his account outside his household, and sometimes outside the city.

Although almost invisible in the rules and prescriptive literature, absences and early departures were a major feature of the practice of premodern apprenticeship. They appear occasionally in court records and apprentice autobiographies. As an apprentice shipwright, Phineas Pett spent time away from his master assisting two other master shipwrights.<sup>55</sup> On arriving in London, the shoemaker's apprentice Benjamin Bangs moved around, searching out 'good workmen' and later the 'best Workmen' to work for in order 'to become a Master' of his business.<sup>56</sup> Both Roger Lowe and William Stout finished their training as grocers running separate shops on behalf of their master.<sup>57</sup> We also find masters hiring out their apprentices for wages.<sup>58</sup> Apprentices also left their masters in search of new skills. The apprentice surgeon George Benson, for example, was permitted by his master to 'travell for his better experience in his profession' in exchange for a fee.<sup>59</sup>

Alongside these legitimate movements were apprentices bound by masters and then passed on surreptitiously to others whether within or outside their company – a regular subject of complaint at company and city levels as it challenged their control of the trade, limits on numbers of apprentices within workshops, and bars on apprentices receiving wages.<sup>60</sup> Such 'colourable' service was of constant concern to the urban authorities. When Thomas Blee's former master petitioned against him being granted the freedom of London it was this he targeted, accusing Blee of leaving him and being 'turned

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<sup>54</sup> Griffiths, *Youth*, pp. 299-313, 324-341; Ben-Amos, *Adolescence*, pp. 103-8.

<sup>55</sup> Ben-Amos, *Adolescence*, pp. XXX.

<sup>56</sup> Hobson, *Memoirs*, pp. 12-13.

<sup>57</sup> Winstansley, *Diary of Roger Lowe*, p. 41; Marshall, *Autobiography of William Stout*, p. 25

<sup>58</sup> Ben-Amos, *Adolescence*, pp. 127-8. BRO, MS 08018, Ordinances for City companies, f. 56; Bird, *Laws respecting masters*, pp. 35-36; GL, MS 5257/5, f. 170; Gregg and Boswell, *Stationers' Company*, pp. 61-2.

<sup>59</sup> GL, MS 5257/3, f. 45. See also, GL, MS 5257/4, f. 41.

<sup>60</sup> GL, MS 5257/3, f. 39; 5257/5, f. 239; LMA, Repertories of the Court of Aldermen, 61/258b, 63/171; 63/373, 64/73, 66/209, 66/291; BRO, J/Tol/2/1, pp. 506, 504, 497-6, 470, 439. Apprentices were barred from receiving wages in London, see: LMA, Repertories, 65/39b; LMA COL/CA/05/02, s.v Brunsdon (c.1762).

over to.. a Carrman under colour of Service but never actually served him as an apprentices but hath ever since acted as a Porter'.<sup>61</sup> While in Bristol in 1672 the Mayor and Aldermen ordered that the Master of the Shoemaker and Curriers' Company report on every apprentice before they were freed because of early marriages and 'secret practices and combinacons betwixt them & their said Masters [who] have taken severall somes of money of them & given leave to such servants to depart their service & to worke where they like & yet by such private agreements at their seven yeares end engage to make such servants free of the Citty'.<sup>62</sup> Other apprentices breached their indentures by marriage, or taking up some other occupation, even running away to sea, for a time.<sup>63</sup>

Of course, absences were not all one-sided: masters might abandon their apprentices. Some, such as Henry Fowler, purportedly attempted to drive them off with hard treatment in order to profit further from the premium they had received.<sup>64</sup> Others became bankrupt or fled both their debts and apprentices, leaving them 'without any manner of sustenance'.<sup>65</sup> The least fortunate, such as the Bristol goldsmith Elisha Kelson, ended in gaol, unable to employ or train their apprentice.<sup>66</sup>

In this section we examine three aspects of absences that shed some light on some of what implications apprentices' departures had for the institution. Firstly, we look at the capacity of the formal institution to manage the movement of apprentices and the evidence of movement of apprentices between masters in the same city and company. Secondly, we look at the relationship between the contractual absences we observe and entry to the freedom – the next major institutional stage in the civic hierarchy. Thirdly, we look more closely at the relationship between some aspects of apprentices' and masters' characteristics and the likelihood that apprentices would stay with their master.

The formal institution of apprenticeship did include one permissible way for apprentices to leave their original masters while continuing to be trained. This was for the apprentice to be 'turned over' to another master in the same craft. These transfers could be relatively common. Among London apothecaries in the seventeenth century, for example, Wallis found that 17% of apprentices were

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<sup>61</sup> LMA, COL/CA/05/02, A-C, 22 Jan 1711. See also: *ibid*, s.v. Clarke, n.d.

<sup>62</sup> BRO, MS 08018, p. 27. Examples include: McGrath, *Records*, pp. 38, 40, 49; Pelling, *Common Lot*, pp. 212-213.

<sup>63</sup> LMA, Repertories, v. 63, f. 91, v. 88, f. 1b, v. 91, f. 65; v. 94, f.45. see also: Ben-Amos, *Adolescence*, pp. 213-5; Griffiths, *Youth*, pp. 330-5.

<sup>64</sup> BRO, JTOL, J/2/1, p. 513. See also, *ibid*, pp. 543, 546-5, 516.

<sup>65</sup> Evans, *Eccho*, pp. 4-5; BRO, JTOL, J/2/1, p. 533. See also; *ibid*, p. 531.

<sup>66</sup> BRO, JTOL, J/2/1, p. 514.



turned over to another master.<sup>67</sup> Turning over was often a response to events undermining the original relationship, including the death, sickness, bankruptcy or retirement of a master. It was occasionally, and inconsistently, recorded in company or civic records. However, many, probably most, turnovers were not recorded in official sources, although company approval was technically expected in London and the company or Tolzey Court's approval in Bristol. Apprentices might engage with both formal and informal turning over, complicating the picture. Thomas Gibbs, a London bakers' apprentice served a different master for the first six years of his term 'but was not turn'd over to him according to ye Custome'. However, he was then 'turn'd over before ye Chamberlain to Joseph Golding of ye same Company & Trade with whom he completed the terme'.<sup>68</sup> Among our London apprentice sample, 27 (2.5%) were officially turned over; in Bristol the total was 54 (2.5%). These are implausibly low rates and may be in part due to the limitations of the administrative records available, although we do, of course, miss most moves forced by death or disruption of business.<sup>69</sup>

For apprentices, turning over was only one form by which they moved between masters. It shaded into working under license from their master, envisaged particularly in ordinances for the building trade, and into various underhand arrangements to circumvent company rules on the numbers of apprentices that masters were permitted to indenture. Fortunately, we can obtain some estimate of the scale of mobility between households in the same company using our sample. To estimate this we identified which individuals living as servants or lodgers in the households of the masters in our sample had been indentured to other masters in the same craft. In London, we found that 65 servants and others shared a name with an apprentice indentured in their head of household's company in the previous seven years.<sup>70</sup> Our sample group of masters had taken 916 apprentices in the seven years before (of whom 455 were present in June 1695). This suggests - as a very crude estimate of the minimum rate of mobility between masters' households- that around 7% of apprentices were passed to other masters, whether turned over or working under some other arrangement. In Bristol, where we have the entire population of apprentices, we searched for the 619 apprentices indentured in the city in the seven years to 1696

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<sup>67</sup> Wallis, 'Medicines', p. 146. On illicit inter-company transfers: Schwarz, *London*, p.218.

<sup>68</sup> LMA, COL/CA/05/02, D-K, s.v. Gibbs, c. 1718.

<sup>69</sup> In Bristol 53 apprentices (22 of whom were present) were bound to masters who died before 1696 and whose widows maintained their household.

<sup>70</sup> The linkage was restricted to apprentices bound in the master's company from 1688 to 1695, who were not found with their own master, and who did not possess a very common name (eg: John Wells; Thomas Powell). The 65 servants and others matched to apprentices were found with 46 different new masters. Four were part of our original master-apprentice sample.

whom we had not found with their original master. We identified 28 of these apprentices among the servants and others living in the households of those masters in our sample who practised the same trade as their original master. This gives a very small proportion of mobile apprentices compared to London (2%), but given the tight constraints on linkage in Bristol, this is likely to be an underestimate.<sup>71</sup> For Bristol, where the Marriage Duty Tax is most complete and the population small enough to render nominal linkage feasible, we can also look for absent apprentices in other households in the city.<sup>72</sup> We searched for two groups: coopers and soapmakers, given their high likelihood of returning to their master, and a general group of unusually named apprentices, to reduce the chance of bad matches.<sup>73</sup> Of 33 absent coopers and soapmakers' apprentices, two were with their parents and nine may have been servants in other households, although several of these were individuals with very common names.<sup>74</sup> Of the 24 apprentices with unusual names who were not with their master, two were 'servants' in other households, two were with their parents, and one had married and established an independent household. It is unclear how well any of these estimates can be generalised, as these masters were, of course, themselves recruiters of new apprentices, and their practices were not necessarily representative of other masters. Nonetheless, these rough figures seem to suggest that while movement to another master in the same trade and city might account for up to 10 percent of the apprentices who were absent in 1695, it is unlikely to explain the majority of absences.

Turning over and local movements were one way for the institution of apprenticeship to manage mobility. But to understand the implications of the absences we found earlier, we need to see how they influenced the next steps that apprentices took. In this, apprenticeships' institutional integration into the wider framework of corporate life offers us one way forward. Apprenticeship was the major method through which young men became freemen and burgesses, as citizens were termed in London and Bristol respectively, and the privileges of the citizen – particularly the economic right to trade independently and the political rights to vote – were one of the key benefits of completion. Becoming a citizen therefore offers a crude proxy for one kind of successful transition out of apprenticeship.

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<sup>71</sup> Occupational information in Bristol is relatively precise compared to the company-level information for London, but this leads to the exclusion of links where apprentices were working in cognate trades (eg: blockmaker and shipwright) or masters pursued multiple occupations.

<sup>72</sup> It is worth noting that this is also a further argument against lodging out being an explanation for the persistence rates we find.

<sup>73</sup> Unusual names were defined as those that occur fewer than six times among the 356,000 people named in marriage licenses issued by the Vicar-General of the Archbishopric of Canterbury for the period 1694-1800: Society of Genealogists, Vicar Generals' Marriage Licence Index.

<sup>74</sup> For three apprentices, there was more than one possible nominal linkage.

Unfortunately, data on freedoms is scarcer and more fragmentary than on indentures. For London our data is limited to certain companies with the best records of freedoms.<sup>75</sup> We have better evidence for Bristol, from the published lists of Bristol Burgesses, and can establish with some measure of confidence which apprentices became citizens.<sup>76</sup> Historians have long been aware that many apprentices did not become freemen. However, they have not been able to identify whether this was because of they had not completed their apprenticeship, or because of what happened to them afterwards. The freedom data also allows us to address another related issue. Because it represented a continuation of a youth's corporate career, entry to the freedom allows us to consider the extent to which absence indicated a breakdown of service and training. We now turn to these questions.

Overall, only a minority of apprentices became freemen or burgesses, as we would expect from the literature. In London, a third (35%) became freemen, while in Bristol the proportion was slightly higher at 43%, as can be seen in Tables 2 and 3.<sup>77</sup> In both cities, local apprentices were more likely to become freemen than migrants (46% to 30% in London and 47% to 39% in Bristol), likely reflecting the role of the cities in providing training to the country as a whole and the advantages of local resources in establishing an independent business.

When we look at the relationship between apprentices' presence in their masters' households and the freedom, we find a less direct relationship than one might expect from the centrality of completion to approval as a citizen. In both cities, masters had to attest under oath to their apprentice having served his full indenture 'after the manner of an Apprentice' before they could be freed; the penalty for dishonesty was disenfranchisement for both.<sup>78</sup> Yet as Tables 2 and 3 show, a substantial minority of apprentices became freemen despite being apart from their original master. It is true that apprentices

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<sup>75</sup> We examined the freedom records of 19 companies, in which 593 apprentices were bound in the seven years to may 1695. Freedom registers were searched for the Apothecaries, Curriers, Cutlers, Distillers, Farriers, Feltmakers, Fishmongers, Founders, Grocers, Innholders, Ironmongers, Masons, Needlemakers, Painters, Pinmakers, Stationers, Turners, Tylers, and Vintners.

<sup>76</sup> Bristol & Avon Family History Society, *Bristol Burgess Books*.

<sup>77</sup> In the text we refer to the summary row covering the proportion of apprentices present from 6 months to seven years to reduce the impact of late arrivals on the figures.

<sup>78</sup> For the certification, see: LMA, COL/CHD/FR/12/048, s.v. Cheale 1766. Disenfranchisement was not frequent, but cases were regularly presented in the seventeenth and eighteenth centuries. See, for example, LMA, Repertories, v. 70, f. 19b; v. 87, ff. 199b, 206b, 210; v. 91 f. 98; v. 92, ff. 103, 215; LMA, COL CHD/FR/12/048, s.v. Ansley (1720). An index to disenfranchisement cases, including 'Masters disenfranchised for making their apps free upon untrue declarations.' is at LMA, COL/CHD/FR/12/005.

who became freemen were more likely to be found with their masters – on average 69% were present compared to 51% overall in London and 73% compared to 56% in Bristol. But it was not the case that future freemen always stuck with their master. The proportion of future freemen found with their master actually declined over their term of service in London (Table 2, column 7), although this is less apparent in Bristol. After peaking at four-fifths in the third year, in the second half of their term only around two-thirds of future freemen were still living with their original masters, and this plunged to 54% in year seven. If we look at the likelihood of becoming a freeman from the perspective of absent apprentices we find little difference between the cities. In London, 23 percent of those apprentices who were not living with their masters in 1695 were later freed. For Bristol, the figure is 26 percent.

Those apprentices who were absent but later freed were clearly still actively and successfully engaged in the craft, despite being away from their master for some time during their term of service. For both cities, the rates of absence among apprentices who later became freemen seem substantially to exceed our admittedly rough estimates for turning over and movement within the city. Evidence that some absent apprentices returned to their masters at the close of their term further suggests that absence captures more than turning over. This was visible in the figures discussed earlier, and can be seen here in the late surge in the proportion of apprentices present who were later freed (column 8). This is clearest in London, where from the proportion present rises from 44% in year six to 68% in year seven, but also seems visible in Bristol where the proportion rises to 65% in year seven. We can only speculate here, but it seems likely that these late returns were intended to regularize their service and allow their master to present them to company and city officials as having completed their term. Together with the evidence of relatively low rates of intra-city and company movement, this also seems to suggest that a substantial share of absent apprentices were working on a temporary basis outside the city, whether for their master or themselves. Inevitably our evidence is tentative on this, but the proportion of absent apprentices entering the freedom was little different when the usual suspects among merchant and seafaring apprentices are excluded, suggesting that mobility extended across a wide range of occupations.

As apprentices' low overall levels of entry into the freedom emphasise, service was not a direct route into the citizenry, particularly in London.<sup>79</sup> As a rough estimate, perhaps half of those apprentices who completed their contracts with their original master did *not* become freemen in London. Whether they

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<sup>79</sup> Cf. Farr, *Artisans*.

then remained in the city or not is unfortunately impossible to say. The relationship between remaining with one's master and entering the freedom was stronger in Bristol. By the final years of an apprenticeship, almost two-thirds of Bristol apprentices who remained with their master would later become burgesses. Although the exigencies of life could surely intervene in the plans of the most ambitious apprentice, it is hard to know if the remainder who completed but never became freemen should be seen as failures, given that migration remained an option and journeymen prospered in some trades. Either way, that around a third to one half of apprentices who completed their term did not become freemen underlines how outcomes varied even when an apprenticeship contract was completed.

As we have seen, the practice of apprenticeship varied between cities, between trades and between locals and migrants. But apprentices and masters varied in other ways that may have affected training practices: variations in their wealth, personal connections, and household characteristics may have shaped the likelihood that apprentices remained with their master over the duration of their indenture. Our data sources include information on several characteristics related to both masters and apprentices, which we have used to estimate regression models of apprentice persistence. Tables 4 and 5 present the results of this analysis.

As we discussed earlier, the tax records indicate whether apprentices were resident in their master's house on one particular day. We have estimated probit regression models where the dependant variable indicates whether or not the apprentice was present. The regression is estimated for apprentice observations where we have complete information about for the full range of apprentice and master characteristics. This leaves us with almost 700 observations for London, and over 1300 for Bristol. Summary statistics for the characteristics underlying the regression analysis are provided in appendix Tables A1 and A2. Absence may indicate either permanent or temporary departure from the master's household. We cannot distinguish between the two in the source we use. We can partially address this shortcoming by including year dummies to control for changes in presence rates over the length of the contract due to unmeasured factors causing temporary absence from the household. Tables 4 and 5 cut the samples across four dimensions: all apprentices (column 1), recent apprentices (2), and local (3) and migrants (4) respectively. The coefficients reported have been transformed into marginal effects. It should also be noted that caution must be exercised when comparing estimates in the two tables. In

particular, the Bristol sample contains greater occupational detail than the data for London, and for this reason, we have not created a pooled sample.

Most of the results confirm our earlier observations about occupational variation and the differences between local and migrant apprentices. The divergence in apprenticeship between occupations is most clear in the case of Bristol where the evidence is better. There, apprentices in manufacturing occupations, particularly coopering and carpentry, had a relatively high propensity to be present. For London, our data on this is weaker, but we find a general difference between apprentices in London's Great Twelve companies and the rest. Apprenticeship also clearly varied in duration for locals and migrants. The effect of distance is concentrated early on in apprenticeship (Table 4, column 2): among new migrant apprentices in London, those from 100 miles away were 10% more likely to be present. In Bristol, by contrast, the pattern is the reverse of that in London: migrants from further away were much less likely to be present, although the effect was not significant over the shorter time frame. In additional regressions (not included here) we found that the effect of distance on persistence declined with duration in both cities. For example, after three years in London, apprentices from Yorkshire were no more likely to be found in their master's household than Londoners. This suggests that the effect of distance is reflecting differences in when migrant and local apprentices began their service.

The real value of the regressions is in revealing reasons for absence among apprentices. While the evidence for intra-city movement and absent apprentices entering the freedom have demonstrated the importance of temporary absence as part of a mobile training and work regime, the results of the regression suggest that many of those apprentices who were absent had left because their prospects were better elsewhere, while those who remained were often endowed with resources that tied them to their city of apprenticeship. While the impossibility of distinguishing between the different kinds of apprentice absence renders any discussion tentative, the results suggest that some portion of absences were the result of apprentices responding to their future prospects and leaving opportunistically, and probably permanently.

The most compelling indication of this comes from Bristol (Table 5), where we have data on whether masters and parents shared an occupation. The coefficient on this variable is positive in the full sample and among local apprentices (columns 1 and 2), but is negative among migrants (column 3). Bristol-born apprentices whose father practised the occupation in which they trained were much more likely to be with their master. Migrant apprentices from a family engaged in the same occupation as their master

were more likely to leave. It would seem plausible that the value of a completed term was greater for those with local commercial connections, while migrants were more likely to leave to exploit existing familial networks, to which they added the benefit of Bristol training and connections.

In London, the size, quality and location of apprentices' networks and family resources also affected whether they stayed with their master. Local apprentices from prosperous origins (gentlemen, distribution and sales) and, especially, the sons of London citizens were significantly more likely to be present, with the opposite was true for migrant apprentices.<sup>80</sup> It seems that exploiting localised familial wealth and commercial connections attracted apprentices to their origins, whether distant or nearby. When their ties were in the City itself this meant completing their indentures: the effect of being a citizen's son is not significant among recent apprentices. The results are not as clear cut in Bristol, for which few of the parental background variables are important.

The results also throw some light on the relationship between the masters' household size and prosperity and the likelihood of apprentices being present. In London, both local and migrant apprentices training with masters with large households (seven people or more) were more likely to be found with their master; this mattered particularly later in their term (cf. Table 4, column 2). Again, this suggests that masters' volume of work, indicated by their total household size, and their levels of success also shaped apprentice outcomes. Interestingly, masters' wealth and location within the City walls only mattered for migrants (column 4). The difference may suggest that the quality of connections and opportunities that a master could provide was more important for migrants, whereas London-born apprentices were less reliant on their masters for networks. The results for Bristol on these characteristics are less clear. Household size has the same sign, but is only significant for migrant apprentices. The wealth of masters is reversed, however: and poorer masters were more likely to have their apprentices present, particularly if Bristol-born. This may indicate different patterns of employment in training, but could also be an effect of the importance of travel to the business of successful masters in a dedicated port city.

Finally, there are two other results that should be mentioned briefly. First, the presence of another London apprentice in the tax roll was negatively correlated to apprentice persistence. As the coefficient is smaller in the early years it seems plausible that this indicates replacement. In contrast, the presence

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<sup>80</sup> This parental connection is only relevant for London-origin apprentices.

of another apprentice is strongly significant for Bristol born apprentices, possibly indicating the greater importance of workshop clusters there. Second, apprentices whose father had died were no more or less likely to stay in training. A wealth shock associated with death of a parent may have had an impact on the ability to access training in London, but once in the city it does not appear to have affected the operation of apprenticeship.

Where does this leave our explanation of absences? Clearly, an apprentice could be absent for several quite different reasons. Apprenticeships surely did not only end because of sickness, abuse or exploitation, as has sometimes been suggested.<sup>81</sup> Some apprentices were away temporarily, either on their own account or their masters' behalf, and many of them seem likely to have been outside the city; some, although perhaps only a tenth, left to work for other masters; while others had seemingly quit entirely, preferring to use the skills they had acquired elsewhere. The experiences of apprenticeship also varied substantially between locals and migrants, rich and poor, in a way that suggests that apprentices' decisions were shaped by their alternative options, personal connections and access to capital.<sup>82</sup> In deciding whether to complete their indentures, at least some apprentices seem to have been responding rationally to the combination of resources and opportunities that they faced.

We can only speculate about the balance between permanent and temporary departures. A rough estimate based on entry to the freedom would suggest that at the close of their term around 10 percent of all apprentices in London were absent but continuing in service in some form, whether under the same master or another.<sup>83</sup> The rate would be higher in some occupations, such as merchants. This would also suggest that roughly 54 percent of London apprentices completed their term in some form. For Bristol, the equivalent calculation gives a slightly higher rate of 57%.<sup>84</sup> These levels of mobility among English apprentices undoubtedly reflect the unusual length of the national minimum contract of

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<sup>81</sup> De Munck and Soly, 'Learning', p. 10.

<sup>82</sup> See also: Stabel, 'Social mobility', p. 175.

<sup>83</sup> In London, 44 percent of apprentices were present with their original master in year 6 of their term. Around two-thirds (65%) of these apprentices became freemen, indicating that  $(44\% \times 0.65) = 28.6\%$  of apprentices at this stage were both present and would become freemen. Because 35 percent of all apprentices became freemen, this implies that  $(35\% - 28.6\%) = 6.4\%$  percent of future freemen were absent temporarily or had been turned over. If we assume that the proportion of two-thirds of completing apprentices becoming freemen applies to absent apprentices, we get an estimate that  $(6.4 \times 1/0.65) = 9.8\%$  of all apprentices were temporarily absent or turned over but still in the trade.

<sup>84</sup> For Bristol, the figures are 53% present in year 6, of whom 76% become burgesses, while 43% of all apprentices became burgesses. So,  $(43 - (53 \times 0.76)) = 2.78\%$  of future freemen were absent and  $(2.78 \times 1/0.76) = 3.7\%$  of absent apprentices were away temporarily or turned over.



seven years. Indeed, for many English youths, apprenticeship would have combined experiences that elsewhere in Europe would be differentiated into the separate stages of apprenticeship and journeywork.<sup>85</sup>

#### IV

Our findings suggest that the institution of apprenticeship was much more fluid than is traditionally understood. Four conclusions can be highlighted. First, English apprenticeship was not 'inflexible'.<sup>86</sup> As we have seen, premodern apprenticeship in London and Bristol was often shorter than the term set in indentures, with months or years trimmed at the beginning or end. Youths entered apprenticeships in large numbers, but only around half completed their term with their original masters. Mobility was commonplace. The diverse practices apparent in London and Bristol resemble the negotiated variations in service apparent elsewhere in Europe much more than the rules would suggest. Second, the formal rigidity of the Statute of Artificers and guild and civic rules hid a wide variety of practices that differed across cities, trades and individuals. These patterns are largely invisible in the official records that are the main source on apprenticeship and offer a further caution, if one were needed, to attempts to extrapolate practices from rules.<sup>87</sup> Third, apprentices may have been in the social and legal position of children in their masters' households, but they were not behaving as children in their choices. Whether a common apprentice culture bridged such different experiences remains an open question, but the variety of forms of service we find seems likely to support Griffiths' account of a 'multitude of particular worlds' among apprentices.<sup>88</sup> Fourth, the differences between local and migrant apprentices, in particular, underline the importance of urban service as part of wider system of mobility and training. Apprenticeship encompassed flows through cities and their institutions in order to obtain the skills and connections that were concentrated there, as well as permanent in-migrations. Apprenticeship was not just one level of the urban labour market. It was an integral part of a wider, national training market.

What does this suggest about the role of the formal institutions of apprenticeship? Clearly, in these cities at least, apprenticeship indentures were not firmly secured by self-enforcing contracts, as has

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<sup>85</sup> Epstein, 'Labour Mobility'; Reith, 'Circulation'.

<sup>86</sup> Lane, *Apprenticeship*, p. 2.

<sup>87</sup> Ogilvie, 'Guilds', pp. 292-4; Ben-Amos, 'Failure'; Steidl, 'Silk Weaver', p. 151.

<sup>88</sup> Griffiths, *Youth and Authority*, p. 165. Cf. Smith, 'London apprentices'; Yarborough, 'Apprentices as adolescents'.

recently been suggested.<sup>89</sup> Apprentices departed in large numbers despite the consequences of non-completion and even among those who completed, the extent of their service was often shorter than that set out by law. As Wallis recently suggested, masters were unable to assume they could recover any initial training costs in the latter part of the contract, as anticipated in some interpretations of the economics of apprenticeship. Compensation for these masters' investment in training must therefore be managed through an alternative mechanism.<sup>90</sup> But while the rules of apprenticeship were not observed exactly, they did still matter. The formal completion of indentures remained a concern for a substantial proportion of apprentices, including a number who would not become freemen or burgesses. Among those who reached the end of their term with their original masters, apprenticeships did tend to end when they were meant to. And apprenticeship's entrenchment within the wider corporate system of early modern England led at least some apprentices to tailor their movements around the rules, ensuring that they returned to their official master in good time before their term finished.

It is for those apprentices who did make it to the end of their contracts that the institutions of premodern English apprenticeship appears most like the rent-seeking distributional coalitions that Sheilagh Ogilvie has discussed.<sup>91</sup> This group of advanced apprentices were relatively highly skilled and so had the largest incentive to defect to another employer or set up independently. Yet instead they generally stayed and served, or at the least returned for the final year or so. Some received compensation from their masters that may have appeased them to some extent, but the persistence of apprentices in the latter period of their terms of service suggests that completion and the reputational and legal benefits it brought did still matter. While apprenticeship was more fluid than is usually thought, England's urban economy continued to be shaped by the corporate structures of guilds and the requirements of the Statute of Artificers.

Once we abandon the assumption that apprenticeship needed high rates of completion to function, it becomes much less surprising that the practice of apprenticeship should take the form outlined here. Training would surely vary between occupations. Institutions in cities as different as London, with its half million inhabitants and Bristol, with fewer than a twentieth of its population, should be expected to differ. And the expectations of locals and migrants, rich and poor, the well-connected and the outsider must diverge, and their responses to their circumstances would diverge with them. Apprentices were

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<sup>89</sup> Epstein, 'Craft Guilds, Apprenticeship'; De Munck and Soly, 'Learning', p. 10.

<sup>90</sup> Wallis, 'Apprenticeship', pp. 845-91.

<sup>91</sup> Ogilvie, 'Whatever is, is right'.

starting later, finishing earlier and shifting master and household in ways that suggest that the institution of apprenticeship was widely adapted according to the individual and their circumstances and resources with at least some degree of agreement from both apprentices and masters. This was certainly not costless, but the costs of strictly enforced contracts that cannot be adapted to circumstances may also be high for the agents involved. A uniform training schedule imposed by law across all crafts and individuals could be burdensome for individuals and the economy as a whole. Evaluating the wider benefits and costs of the institution is beyond the reach of this paper, however.

Apprenticeship was, in short, not the uniform and rigid institution vigorously policed by society and guilds that is sometimes imagined. Rather it was an amalgam of informal norms developed around inflexible formal benchmarks. At times, this was presumably positive, allowing bad decisions to be fixed, changing situations to be responded to, and differing needs – whether for labour, training, or capital - to be met. At times such flexibility might be abused, as any deviation from the official formula for service supplied material that could be deployed in legal disputes if the agreement broke down, informal agreements could not be monitored and regulated by company or city, and both parties faced serious risks from asymmetric information and opportunistic behaviour in such circumstances. Certainly, apprenticeship should not be idealised: some apprentices were undoubtedly abused and exploited, while some masters suffered at the hands of wasteful or opportunistic apprentices.<sup>92</sup> Nonetheless, the evidence of internal and external mobility within apprenticeship suggests the existence of a market for training in which apprentices and masters engaged in numerous different ways. As our understanding of the premodern economy has slowly adjusted to recognise greater variation in productivity, output and rates of innovation, so it needs to encompass a more diverse understanding of relationships between actors within the labour market.

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<sup>92</sup> Rushton, 'Matter in variance', pp. 94-98; Griffiths, *Youth*, pp. 313-24; Pelling, 'Apprenticeship', pp. 41-51; Levene, 'Honesty', pp. 193-199.

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Table 1: Apprenticeship before and immediately after indenturing, London and Bristol

Period of service	Number of apprentices		Percentage of apprentices present	
	London	Bristol	London	Bristol
-1—0.5	38	0	0%	0%
-0.5-0	33	47	42%	6%
0-0.5	31	70	61%	24%
0.5-1	46	91	70%	41%
1 to 6 yrs	453	885	50%	58%

Notes: Children of masters excluded.



Table 2: London apprentices and the freedom

year of service	Apprentices indentured (N)	Apprentices present in 1695 (N)	Apprentices later freed (N)	Apprentices freed present in 1695 (N)	% Apprentices present in 1695	% Apprentices freed	% Apprentices freed present in 1695	% Apprentices present in 1695 and later freed
	I	II	III	IV	II/I	III/I	IV/III	IV/II
<b>1</b>	<b>65</b>	<b>42</b>	<b>18</b>	<b>11</b>	<b>65%</b>	<b>28%</b>	<b>61%</b>	<b>26%</b>
<b>(6m-1)</b>	<b>40</b>	<b>29</b>	<b>11</b>	<b>9</b>	<b>73%</b>	<b>28%</b>	<b>82%</b>	<b>31%</b>
<b>2</b>	<b>63</b>	<b>39</b>	<b>30</b>	<b>23</b>	<b>62%</b>	<b>48%</b>	<b>77%</b>	<b>59%</b>
<b>3</b>	<b>98</b>	<b>55</b>	<b>38</b>	<b>28</b>	<b>56%</b>	<b>39%</b>	<b>74%</b>	<b>51%</b>
<b>4</b>	<b>75</b>	<b>39</b>	<b>26</b>	<b>17</b>	<b>52%</b>	<b>35%</b>	<b>65%</b>	<b>44%</b>
<b>5</b>	<b>53</b>	<b>22</b>	<b>19</b>	<b>13</b>	<b>42%</b>	<b>36%</b>	<b>68%</b>	<b>59%</b>
<b>6</b>	<b>57</b>	<b>25</b>	<b>17</b>	<b>11</b>	<b>44%</b>	<b>30%</b>	<b>65%</b>	<b>44%</b>
<b>7</b>	<b>62</b>	<b>19</b>	<b>24</b>	<b>13</b>	<b>31%</b>	<b>39%</b>	<b>54%</b>	<b>68%</b>
8	80	19	22	10	24%	28%	45%	53%
9	56	6	4	2	11%	7%	50%	33%
Totals (yr 0-7)	593	289	205	135	49%	35%	66%	47%
Totals (yr 0.5-7)	448	228	165	114	51%	37%	69%	50%

Notes: see text for source details.

Table 3: Bristol apprentices and burgesses

year of service	Apprentices indentured (N)	Apprentices present in 1696 (N)	Apprentices later freed (N)	Apprentices freed present in 1696 (N)	% Apprentices present in 1696	% Apprentices freed	% Apprentices freed present in 1696	% Apprentices present in 1696 and later freed
	I	II	III	IV	II/I	III/I	IV/III	IV/II
-1	50	6	27	3	12%	54%	11%	50%
<b>1</b>	102	47	36	20	46%	35%	56%	43%
<b>(6 m – 1yr)</b>	182	72	75	35	40%	41%	47%	49%
<b>2</b>	200	133	74	58	67%	37%	78%	44%
<b>3</b>	194	132	92	79	68%	47%	86%	60%
<b>4</b>	179	103	73	57	58%	41%	78%	55%
<b>5</b>	212	115	92	68	54%	43%	74%	59%
<b>6</b>	189	100	82	62	53%	43%	76%	62%
<b>7</b>	148	79	67	51	53%	45%	76%	65%
8	131	42	63	25	32%	48%	40%	60%
9	91	10	34	9	11%	37%	26%	90%
total (all)	1576	792	679	447	50%	43%	66%	56%
total (yr 0.5-7)	1406	781	591	430	56%	42%	73%	55%

Notes: see text for source details.

Table 4: Explaining apprentice retention, London sample

	Probit – marginal effects			
	(1)	(2)	(3)	(4)
	bound may 1687-april 1695	Bound may 1693-april 1695	London or Middlesex origin, bound may 1687-april 1695	Migrant origin, bound may 1687-april 1695
Distance to London (miles) x 100	.06 (2.5)***	.10 (2.3)***	---	.05 (1.8)**
Parent deceased	.03 (0.6)	.06 (0.5)	-.02 (-0.2)	.08 (1.3)
Parent citizen of London	.14 (2.2)***	.09 (0.8)	.19 (2.4)***	---
Parent gentleman	-.05 (-0.7)	-.03 (-0.3)	.25 (1.5)*	-.13 (-1.5)*
Parent yeoman	-.02 (-0.3)	-.05 (-0.4)	.20 (1.1)	-.07 (-1.0)
Parent other agriculture	-.09 (-0.8)	-.20 (-1.2)	---	-0.7 (-0.7)
Parent distribution & sales	.03 (0.4)	-.12 (-1.0)	.18 (2.0)***	-.22 (-1.9)**
Parent service	-.13 (-1.6)*	-.24 (-1.4)	-.26 (-2.0)**	.01 (0.1)
Parent other professional	-.05 (-0.6)	-.37 (-2.2)***	-.16 (-0.8)	-.08 (-0.8)
Parent labourer	.02 (0.1)	.15 (0.7)	-.35 (-1.5)*	.32 (1.4)
Master household of seven or more	.15 (3.3)***	.14 (1.7)*	.19 (2.6)***	.11 (1.7)**
Other apprentice present, May 1695	-.18 (-3.9)***	-.05 (-0.6)	-.24 (-3.2)***	-.18 (-2.9)***
Master within city walls	.08 (1.9)**	.06 (0.8)	.02 (0.3)	.13 (2.3)***
Master below income/wealth threshold	-.07 (-1.4)	-.04 (-0.5)	.08 (1.0)	-.17 (-2.7)***
Parent in master company	-.07 (-0.9)	.09 (0.6)	-.12 (-1.1)	-.01 (-0.1)
“Great 12” company	-.17 (-3.2)***	-.08 (-0.8)	-.13 (-1.6)*	-.19 (-2.8)
Year dummies	Y	Y	Y	Y
Pseudo R-square	.13	.09	.22	.13
N	685	178	269	412

Notes: Coefficients are marginal effects, and z-scores are in parentheses. Craft worker is the excluded parent occupation group. Coefficients marked \*, \*\*, and \*\*\* are significant at the 15, 10, and 5 percent level.

Table 5: explaining apprentice retention, Bristol sample

	Probit – marginal effects			
	(1)	(2)	(3)	(4)
	Bound may 1688-may 1696	Bound may 1694- may 1696	Bristol origin, bound sept 1688-aug 1696	Migrant origin, bound may 1688-aug 1696
Distance to Bristol (miles) x 100	-.11 (-1.8)**	-.12 (-1.3)	---	.09 (0.8)
Parent gentleman	-.02 (-0.3)	.06 (0.4)	.27 (0.9)	-.04 (-0.5)
Parent yeoman	.02 (0.4)	-.11 (-0.9)	.14 (0.7)	.01 (0.2)
Parent other agriculture	-.0004 (-0.01)	-.03 (-0.4)	.10 (0.5)	-.02 (-0.3)
Parent distribution & sales	.11 (2.3)***	.16 (1.8)**	.14 (2.3)***	-.04 (-0.4)
Parent service	-.04 (-0.7)	-.13 (-1.4)	-.07 (-1.1)	.002 (0.02)
Parent other professional	.06 (0.9)	.05 (0.5)	.05 (0.4)	.05 (0.6)
Parent labourer	.12 (1.2)	1.1 (0.5)	.20 (1.8)**	-.16 (-0.8)
Master barber	.17 (2.0)***	.26 (1.5)*	.11 (1.0)	.25 (1.8)**
Master joiner	.01 (0.1)	-.06 (-0.3)	.16 (1.0)	-.10 (-0.9)
Master carpenter	.17 (1.8)**	.09 (0.3)	.17 (1.5)*	.14 (0.8)
Master tailor	.002 (0.02)	.0002 (0.00)	.07 (0.4)	-.01 (-0.04)
Master baker	-.001 (-0.02)	.07 (0.4)	.16 (1.1)	-.10 (-0.8)
Master cooper	.12 (2.1)***	.04 (0.4)	.17 (2.1)***	.08 (1.1)
Master grocer	.14 (1.6)*	.09 (0.5)	.27 (1.7)**	.11 (0.9)
Master merchant	-.31 (-4.7)***	-.28 (-2.4)***	-.15 (-1.6)*	-.45 (-5.2)***
Master soapmaker	.13 (1.8)**	.03 (0.2)	.17 (1.5)*	.11 (1.1)
Master weaver	.10 (1.1)	-.002 (-0.02)	.09 (0.9)	.07 (0.4)
Master seafaring trade	-.31 (-7.5)***	-.31 (-4.1)***	-.27 (-4.5)***	-.35 (-6.1)***
Master household of seven or more	.08 (2.4)	.13 (2.0)***	.05 (1.0)	.11 (2.4)***
Other apprentice present, May 1696	.044 (1.4)	.01 (0.1)	.14 (3.0)***	-.03 (-0.6)
Master below income/wealth threshold	.05 (1.3)	.07 (0.4)	.13 (2.1)***	.002 (0.05)
Master same occupation as parent	.12 (2.8)***	.18 (2.3)***	.13 (2.8)***	-.25 (-1.8)**
Pauper apprentice	-.04 (-0.2)	---	-.07 (-0.3)	.04 (0.1)
Year dummies	Y	Y	Y	Y
Pseudo R-square	.13	.14	.13	.18
N	1348	377	652	696

Notes: Coefficients are marginal effects, and z-scores in parentheses. Craft worker is the excluded parent occupation group. All other master occupations are the excluded group for master categories. Coefficients marked \*, \*\*, and \*\*\* are significant at the 15, 10, and 5 percent level.

Table A1: Summary statistics for London sample of apprentices

	bound may 1687-may 1695		
	All	London	Migrants
Present in May 1695 (%)	49	47	50
Distance to London (miles)	81 (100)	---	134 (97)
Parent gentleman (%)	12	5	17
Parent yeoman (%)	18	4	26
Parent other agriculture (%)	5	1	7
Parent craft (%)	36	52	26
Parent distribution & sales (%)	13	24	7
Parent service (%)	7	9	5
Parent other professional (%)	7	4	10
Parent labourer (%)	2	1	2
Master apothecary (%)	12	12	12
Master butcher (%)	8	7	8
Master stationer (%)	8	9	8
Master vintner (%)	21	21	20
Master great 12 company (%)	30	31	30
Father deceased (%)	23	23	23
Master household of seven or more (%)	47	51	39
Other apprentice present, May 1695 (%)	56	58	34
Master below income/wealth threshold (%)	60	60	75
Father in company of master (%)	7	12	4
Father citizen of London (%)	20	49	0.2
Master inside city walls (%)	52	50	54
N	685	272	413

Notes: see text for details of sample construction.

Table A2: Summary statistics for Bristol regression sample

	bound may 1688-may 1696		
	All	Bristol	Migrants
Present in May 1696	54	59	50
Distance to Bristol (miles)	23 (27)	---	44 (21)
Parent gentleman (%)	4	0.3	7
Parent yeoman (%)	8	1	14
Parent other agriculture (%)	13	1	25
Parent craft (%)	46	60	33
Parent distribution & sales (%)	11	17	6
Parent service (%)	9	15	5
Parent other professional (%)	7	3	10
Parent labourer (%)	2	3	1
Master joiner (%)	2	3	3
Master house carpenter (%)	2	3	2
Master merchant tailor (%)	2	2	2
Master baker (%)	3	2	3
Master cooper (%)	8	7	9
Master grocer (%)	3	2	4
Master merchant (%)	7	7	6
Master soapmaker (%)	5	4	5
Master weaver (%)	3	5	1
Master seafaring trade (%)	15	17	14
Master household of seven or more (%)	37	36	39
Other apprentice present, May 1696 (%)	32	29	34
Master below income/wealth threshold (%)	77	79	75
Master same occupation as parent (%)	19	37	2
Pauper apprentice (%)	1	1	0.4
N	1348	652	696

Notes: see text for details of sample construction.

Figure 1: Proportion of London apprentices resident with their master

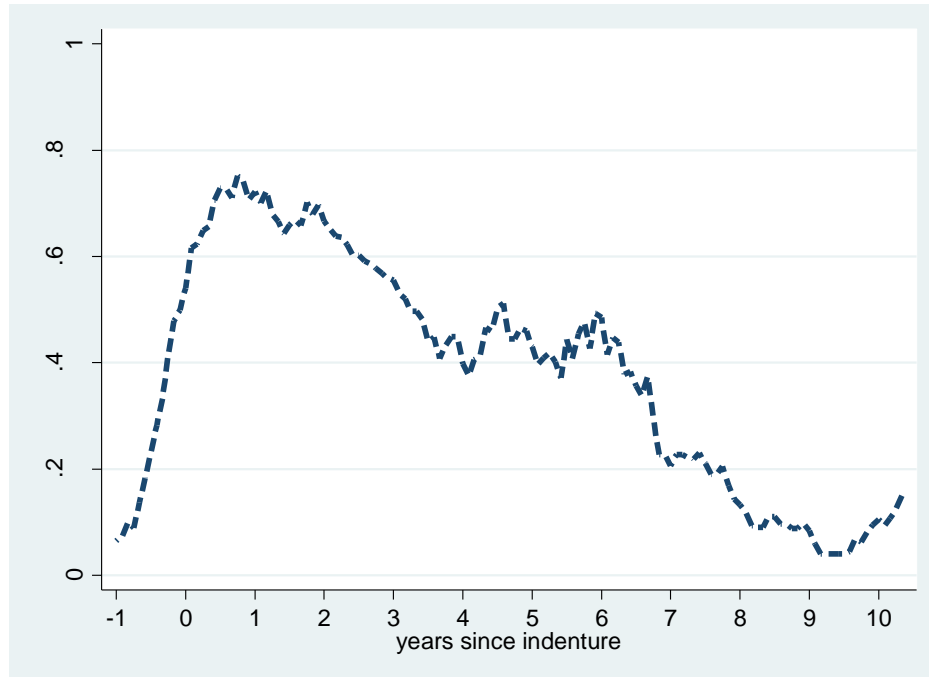


Figure 2: Proportion of Bristol apprentices resident with their master

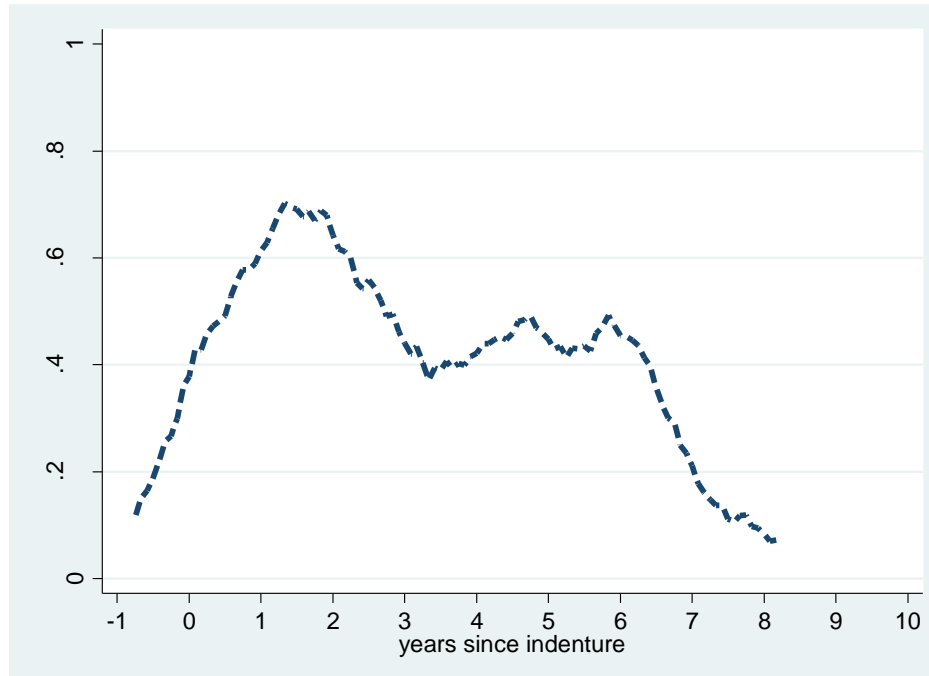


Figure 3: London apprentice persistence, migrants and locals

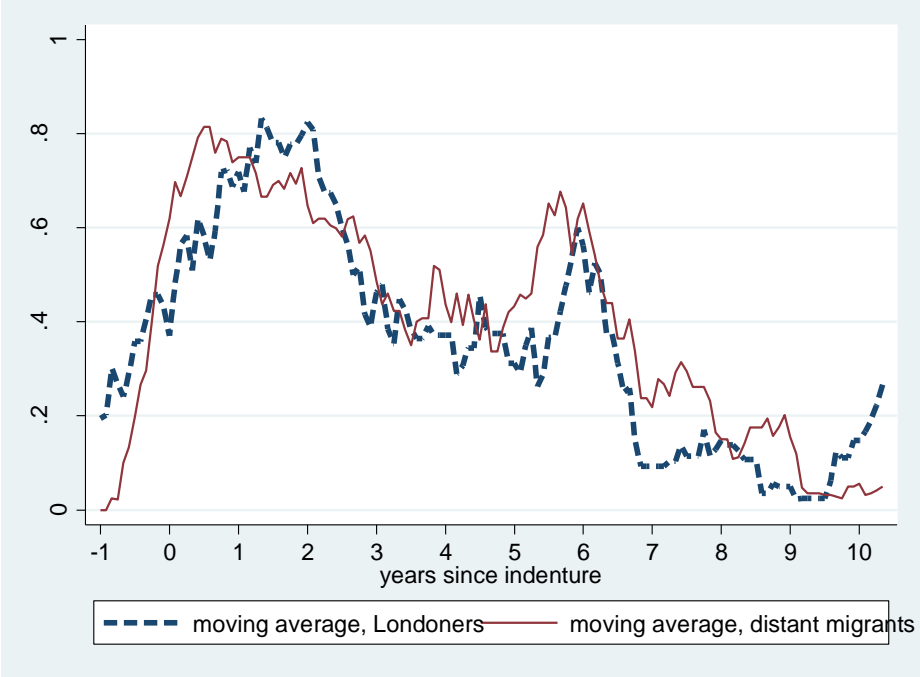


Figure 4: Bristol apprentice persistence, migrants and locals

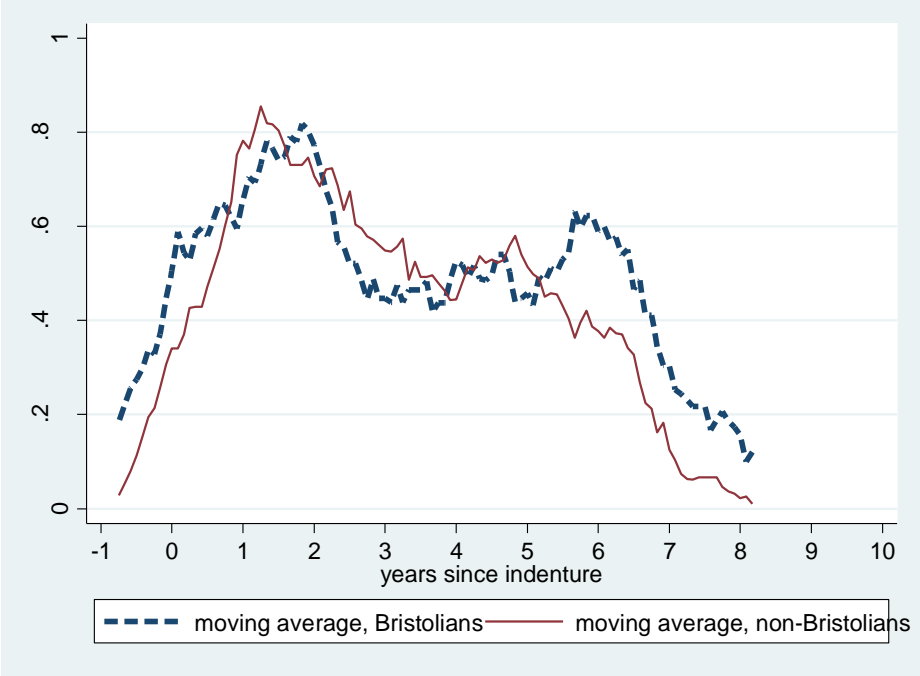
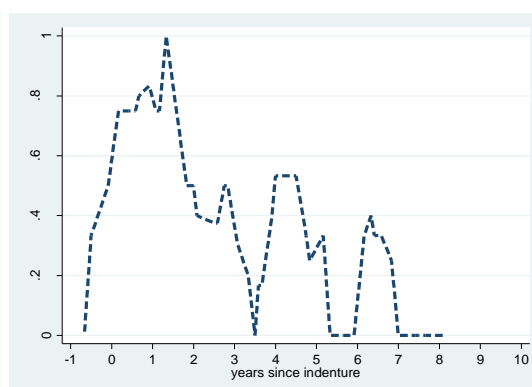
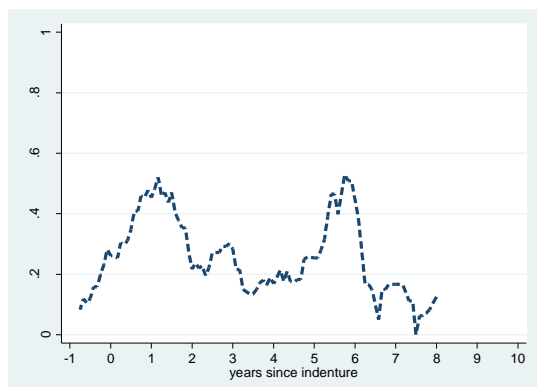


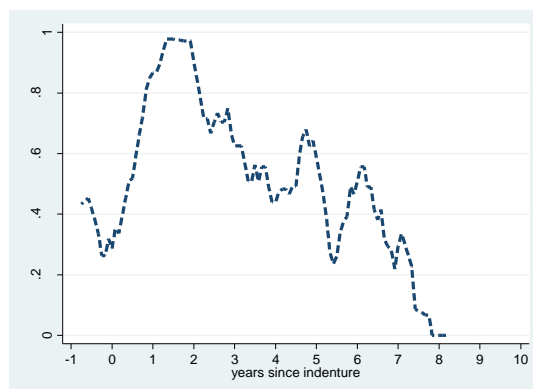
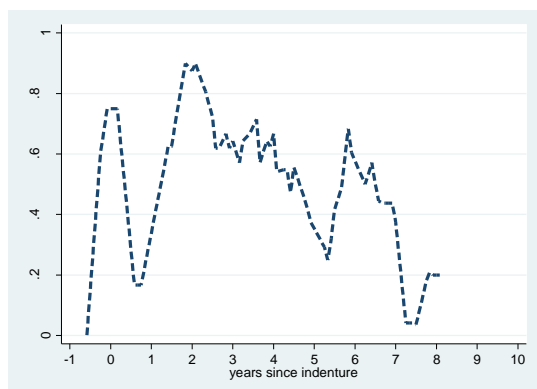


Figure 5: Bristol apprenticeship persistence, selected trades



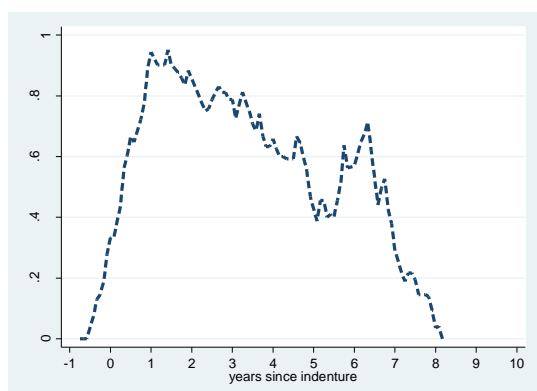
a) Merchant and seafaring apprentices

b) Baker and butcher apprentices



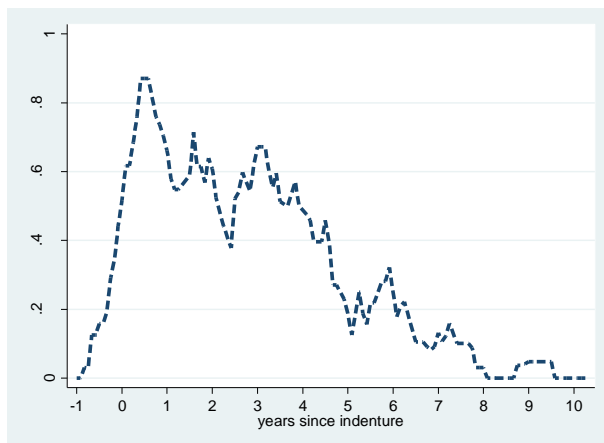
c) Building craft apprentices

d) Other craft apprentices (not port-specific)

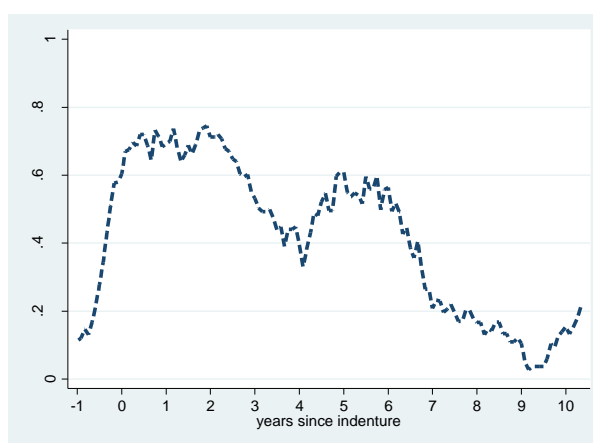


e) Cooper and soapmaker apprentices

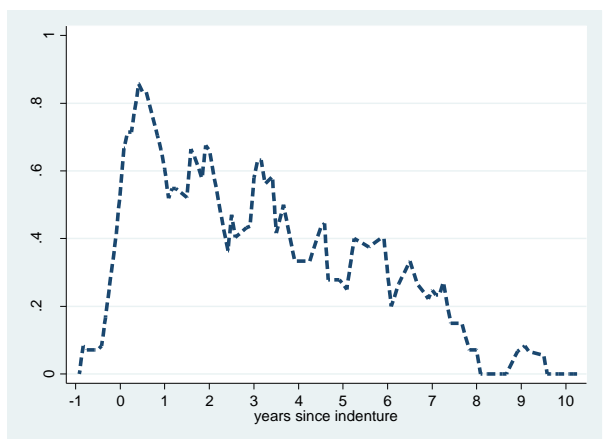
Figure 6: London apprenticeship persistence, inside and outside the Great 12



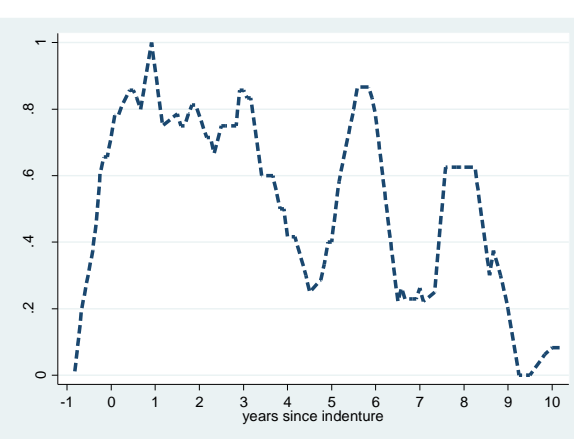
a) Great 12 apprentices



b) Apprentices outside Great 12



c) Vintner apprentices



d) Apothecaries apprentices