

# Wage structures and family economies in the Catalan textile industry in an age of nascent capitalism

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ABSTRACT. This article deals with changes in the management of industrial labour in Catalonia between 1830 and 1925. In the absence of state welfare, families developed a number of strategies to try and secure an adequate standard of living. During the nineteenth century labour markets were informal, and working contracts implicit. However, with the advent of scientific organization of labour in the 1920s, hourly wage agreements began to be recorded. The application of cooperative game theory illuminates the processes by which households in this era managed to generate income. Both kin- and non-kin-related networks were used to improve the living standards of the household. Strategies of co-residence initially developed by migrants were later imitated by locally born inhabitants. Initially the living standards of migrants were thus higher than those of natives.

## I. INTRODUCTION

Recent research on both European and American societies has emphasized the significance of the relationship between the micro-historical dynamics of working-class household economies and major features of the labour market.<sup>1</sup> The key issue in the link is the extent to which individuals were in a position to decide for themselves when and in what way to participate in the labour market. The ratio between economically active and inactive members of the household, its size and structure and the type of economic activity all served to influence both workers' earnings and the way in which members of the family entered the labour market. The impact of household dynamics on the composition of the workforce is even more apparent when focusing on those sections of the population,

particularly women and children, whose employment is often not recorded in the census.<sup>2</sup> Estimates of living standards fail to take account of the unregistered employment of women and children and can therefore be misleading<sup>3</sup> but they can be challenged by thorough analysis of family budgets.<sup>4</sup>

The aim of this essay is to document transformations of the labour market at regional level using micro-historical datasets. This micro-historical analysis has allowed us to build time-series as well as cross-section evidence on the transformation of the labour market during the second half of the nineteenth century and the first third of the twentieth. The area under study is Catalonia, the only Spanish region that witnessed the formation of nascent industrial capitalism prior to 1830. During the eighteenth century economic specialization took place within Catalonia. Pierre Vilar's<sup>5</sup> classic thesis argues that urban growth and agrarian specialization in commercialized agriculture in the littoral led to increased consumption of less expensive woollen textiles. These textiles were produced on a putting out basis and employment increased in the central part of the region and in the Pyrenees. During the first decades of the nineteenth century, the loss of colonial markets, British industrial competition and the nature of the domestic market itself required the mechanization of the textile industry and the transition to the factory system.<sup>6</sup> Industrial investment was rooted in the savings of the emerging bourgeoisie of the region. But the absence of mineral resources, and therefore the lack of competitiveness in foreign markets, hindered industrial activities. Thus, in this economic climate, the demand for labour with capital-intensive technologies was able to increase only up to certain limits.

In the first part of this article, the practices adopted by management to determine wage levels in the Catalan labour market during industrialization will be examined. My study will ascertain whether the 'perfect competition model' could apply to a labour market in which no written contracts were entered into between employers and employees.<sup>7</sup> In the second part of the article, the transformations of the labour market during the early part of the second industrial revolution will be measured by means of a cross-sectional analysis. Admittedly it is very difficult to quantify the nature of the regional labour market given the limitations of the available sources, but with care it is possible to examine the factors that governed the supply of labour by households and its application within the factories that employed textile workers. Aggregative approaches are less useful, although more representative in statistical terms. On the other hand the factory-based datasets established for the nineteenth century allow time-series perspectives, which, for the moment, cannot be undertaken with aggregation data.

Finally, variations in the wages and in the number of members in the household will be considered, and the context of the absence of state welfare in the late nineteenth and early twentieth centuries of the sort already in operation in Britain. It has been argued that in Britain specific household formation patterns (small households restricted largely to couples and to parents and unmarried children) were only made possible because of the financial assistance which the state provided to working families.<sup>8</sup> My argument, it should be stressed, is not that such assistance was unnecessary. However, I do wish to consider the extent to which households were able to adapt their composition in order to preserve their standard of living even when faced with an adverse economic situation.

The contextual evidence on industrial Catalonia in terms of wage structures and family economies and welfare is limited. I initially explored these topics by micro-historical analysis of several middle-sized industrial towns during the nineteenth century.<sup>9</sup> In 1997 there appeared Carbonells study of charity welfare and women's work in eighteenth-century Barcelona.<sup>10</sup> The present investigation highlights new research and considers its implications for our understanding of the extent of economic and social change between 1830 and 1925. The urban population was growing fast in this period, and by 1900 the proportion of the population living in towns and cities of more than 10,000 inhabitants accounted for 40 per cent of the Catalan population. According to De Vries, only England and Wales and Scotland had higher rates of urbanization. In the period under study in most of these towns, including Sabadell, migrants constituted between 40 and 60 per cent of the total population.<sup>11</sup> In Barcelona, by 1900, 60 per cent of the population had been born outside the province. It is evident that Catalan towns and cities were experiencing extensive immigration, comparable indeed to that observed in most urbanized regions of Britain.<sup>12</sup>

## II. THE FORMATION OF THE FACTORY LABOUR MARKET IN THE NINETEENTH CENTURY

The relatively higher wages available in the industrial urban areas of Catalonia were a major attraction for immigrants, with woollen-textile cottage workers constituting most of the first cohort of urban factory workers.<sup>13</sup> A second characteristic of the migration pattern, applicable to both industrial and agricultural areas of Spain in the nineteenth century, was that the majority of the migrants had already formed families which had reached a critical phase in their life cycle by the time they settled permanently in an urban area.<sup>14</sup> In the Catalan industrial case, migration

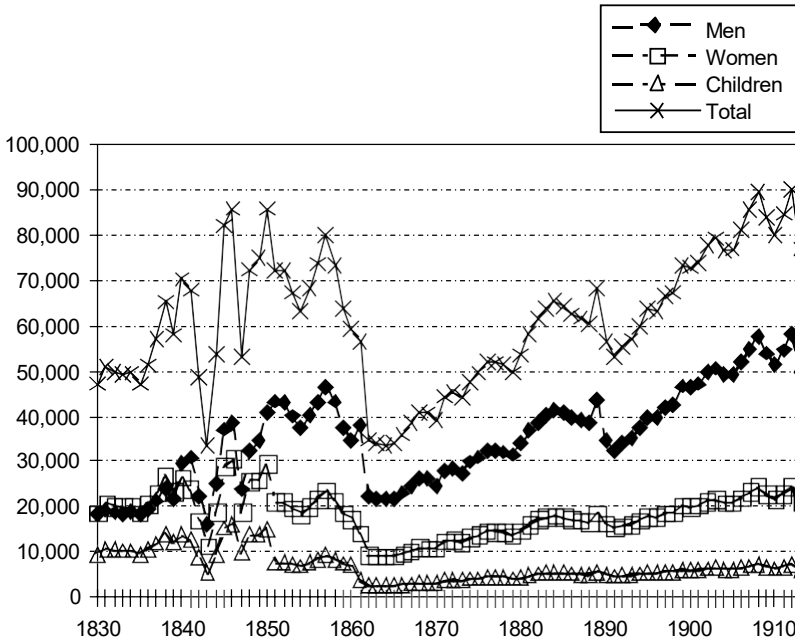


FIGURE 1. Total employment in the Catalan cotton textile industry, 1830–1913. (Source: G. Barnusell, E. Camps, A. Garcia, L. Muñoz and J. R. Roses, ‘Ocupación, productividad y salarios (1850–1913): una reflexión sobre el caso catalán, in *V Simposio de Análisis Económico, Universitat Autònoma de Barcelona* (Bellaterra, 1994).)

involved movement from town to town before a permanent job was obtained in the coal powered textile mills in urban areas.<sup>15</sup> The rapid adoption of capital-intensive techniques in the period 1830–1860<sup>16</sup> produced a slow and sustained rise in the demand for labour. Employers made substantial savings on their labour costs through increases in labour productivity.<sup>17</sup> Figure 1 charts the trends in the numbers employed in the textile industry between 1830 and 1910 and indicates that over this period there is no evidence of a dramatic increase in employment in this sector of the economy.<sup>18</sup>

Figure 1 records total employment in the textile industry according to gender and including children. These data, systematically registering the work of women and children in addition to adult males, offer an alternative view to that provided by the official population censuses. This graph indicates that textile employment peaked in the 1840s and in 1850 when manual work was expanding and technological advances had been introduced in spinning. Another aspect of the labour force in this earlier period

is the large proportion of women. The demand for labour organized on the basis of domestic production made possible the high participation rates of married women. The decrease in textile employment in the 1850s and 1860s resulted from the transition from manual to mechanized work combined with the impact of the American Civil War (and the resultant 'cotton famine'), which was followed by a financial crisis. In reality the supply of labour exceeded demand temporarily as a result of the contraction of employment caused by technological change and the proletarianization of Catalan society.<sup>19</sup> The presence of mobile textile workers with families is evidence of an uneven labour market in which there was a plentiful (and therefore cheap) supply of labour.

Despite the high elasticity of the labour supply with respect to wages, we cannot apply the perfect competition model<sup>20</sup> to this period because of two main factors: the nature of labour contracts and the process of qualification. As far as contracts are concerned, it should be noted that, until the First World War, labour contracts were implied rather than expressed. Written contracts did not exist. The word 'contract' is used in its purest sense: that of a mutual agreement between the worker and the employer. Thus, employers and workers reached a verbal agreement as to the remuneration for the work to be done, what the work involved and how it was to be organized. For example, the stages in the spinning process using the self-acting mule and weaving were organized in teams (that is to say, the team leader used subcontracted labour) and was paid as piecework. Moreover, variable payments were agreed to according to the team's productivity. The company payroll records the net income of the group. This latter point suggests that logically the man or woman who led the group and subcontracted the labour arranged for the payment of the workers. Many jobs, due to their very nature, could not exploit the economies of scale provided by factories. Such employments were corduroy finishing, knitting and laundering and were assigned to women living nearby to be undertaken at home. The working-class 'aristocracy' and foremen were, however, paid on a weekly or monthly basis. Blue-collar workers and apprentices were paid by the day. Such examples prove that in factories in the nineteenth century, different systems coexisted for the organization of work and its remuneration. In short, as there were no written rules concerning the management of human resources, when workers were required it was necessary to agree on a scale and method of payment. Therefore, in the large companies, before the development of more disciplined work regimes (which did not exist until the end of the nineteenth century), it was difficult to establish homogeneous formulas to regulate production. This occasioned greater reliance on skilled workers. Bookkeeping difficulties in a labour regime based on verbal agreements and on a variety of ways

TABLE 1  
*Wages<sup>a</sup> of different marriage cohorts of employees of the firm España Industrial S.A., 1837–1867*

	<i>Period of marriage</i>					
	<i>1837–1846</i>		<i>1847–1856</i>		<i>1857–1867</i>	
	<i>N</i>	<i>Wage</i>	<i>N</i>	<i>Wage</i>	<i>N</i>	<i>Wage</i>
1847–1851	126	13.21	148	9.62	47	6.86
1852–1856	213	15.67	475	11.66	238	8.11
1857–1861	45	18.09	119	13.33	83	9.40
1862–1866	25	19.84	69	13.72	53	12.64
1867–1871	20	20.11	50	14.50	41	14.55
1872–1876	19	19.91	44	15.62	48	15.62
1877–1881	17	20.69	44	16.36	36	16.46
1882–1886	12	22.81	30	16.04	34	17.66

<sup>a</sup> In reales per day.

*Source:* E. Camps, *La formación del mercado de trabajo en la Cataluña industrial de siglo XIX*, Colección de Historia Social, Ministerio de Trabajo y Seguridad Social (Madrid, 1995), based on the nominal record linkage of the payrolls of the firm España Industrial S.A. (Barcelona, Arxiu Nacional de Catalunya, Nòmines de l'Espanya Industrial), with the marriage registers of the diocese of Barcelona (Arxiu Dicesà de Barcelona, Expedients matrimonials del bispat de Barcelona).

of organizing and remunerating labour suggest that the job market cannot have operated on the basis of perfect competition.

Implicit contracts also become apparent when we analyse trends in the wages received by successive marriage cohorts (see Table 1).<sup>21</sup> For example, for each cohort of workers the critical determinant of their future earnings was the time that had elapsed since the commencement of their employment. Table 1 has been compiled by linking marriage registers with the employment records of one of the largest textile cotton factories in the Iberian peninsula, España Industrial S.A. in Barcelona (Sans).<sup>22</sup> It is significant that members of later cohorts never obtained the earnings of the first cohort. The wage differentials experienced by the first cohort after 1870 suggest that implicit contracts were in force at this time.<sup>23</sup> Certain members of the first cohort received higher wages that were not offered to better-trained later cohorts. This pattern of earnings departs from that which would be expected had perfect competition applied. It also differs from the nature of the relationship between wages and length of service for workers in the late twentieth century for whom it has been observed that the wages achieved by younger cohorts rose faster with length of

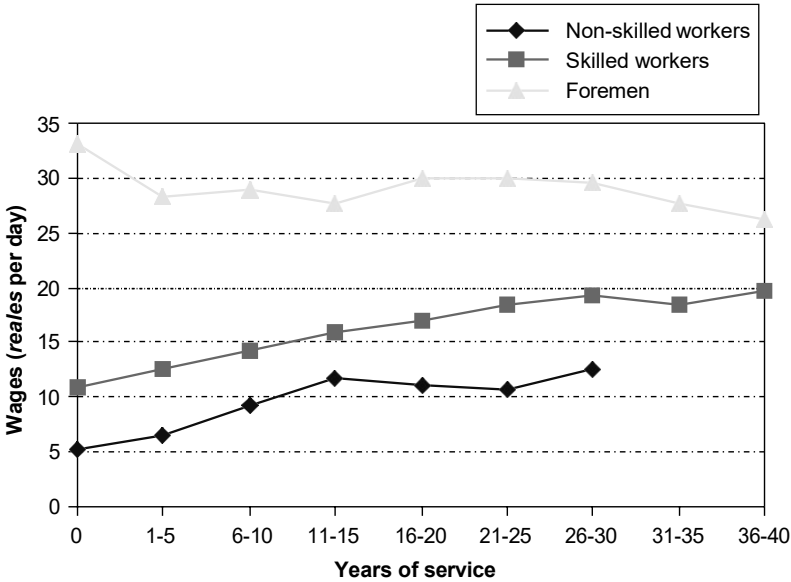


FIGURE 2. Wages of employees of the firm España Industrial S.A. according to their position in the labour hierarchy and years of service, 1847–1886. (Source: as in Figure 1.)

service than did those of the more senior.<sup>24</sup> The evidence of Table 1 shows instead that the rate of increase in income in the nineteenth century obtained by the most senior cohorts exceeded that of its successor. In this respect España Industrial S.A. seems typical of much of Catalan industry in the nineteenth century, as portrayed in the trade union press. In 1892, in the aftermath of a strike, the trade unions proposed: ‘in the event additional labour is required, follow custom and preference the most senior or, should fewer hands be needed, fire the most recent (workers)’.<sup>25</sup> Other practices resulted in the adaptation to the factory system of the artisanal conventions of promotion and training which in turn yielded a system of labour allocation that resembled in some ways modern internal labour markets.<sup>26</sup>

In a labour market composed of cheap and abundant labour, implicit contracts and informal labour markets seem to have minimized managerial transaction costs. Figure 2 and Table 1 detail wages paid according to seniority and years of service, based on the analysis of payments made to individual employees while they were employed by España Industrial S.A. I will focus first on the length of the contracts of skilled senior workers. The vital role played by senior artisans in the everyday management of labour and production guaranteed that their contracts were long: seven

years on average. Their prospects for promotion, their degree of skill and the organizational bases of the factory guaranteed that they were crucial for the smooth running of the firm. Senior artisans undertook training and organised work teams in the factory.<sup>27</sup> This explains why their wages increased in line with their length of service. The wages of unskilled workers also increased along with their years of service since these workers were in fact apprentices. By contrast foremen, despite their position at the top of the wages hierarchy, did not see their wages rise with the passage of time. Most of these foremen had migrated to Barcelona from Alsace and were older than most of the other employees at the time they joined the firm. For a managerial role, they would have needed language skills in order to discipline and motivate the workers. Their primary function was to make feasible the transmission of new technology. In addition, they were probably recruited to ensure an orderly process of labour recruitment. The failure of their wages to rise with the length of their service can only properly be understood when we bear in mind that the most experienced artisans performed most of the managerial tasks. It was only after the 1890s that training institutions within Catalonia were in a position to supply the middle-ranking and higher technicians needed to supervise production and the management of labour. From this point we shall see that labour markets were modernized, the relationship between seniority and the wage paid was modified and the managerial revolution transformed the internal job market. This was the experience of España Industrial S.A. during the 1890s. Only later did these patterns spread to other Catalan factories. After 1919, with the diffusion of 'scientific' labour organization, wages and labour procedures were standardized and the labour practices I have highlighted became obsolete.

### III. THE TRANSFORMATION OF LABOUR MARKETS AND HOUSEHOLD ECONOMIES, 1918-1936

One of the legacies for the economic historian of Primo de Ribera's dictatorship during the 1920s is the information he demanded on the social and economic characteristics of the population. Municipal archives across Spain contain, for the year 1925, the Municipal Censuses of Population that include both economic and demographic data.<sup>28</sup> For the town of Sabadell, detailed information on the economic activity and income of every member of a household has been preserved. The municipal census of 1925 can also fill some of the gaps in the 1920 returns. The nominal-record linkage of the labour census of 1919 with the municipal census of 1920 reveals that approximately 30 per cent of the employed



population was missing from the 1920 municipal census. Nevertheless, this absent population was recorded in 1925 and their residence patterns uncover some of the strategies families adopted to maintain their standard of living. For Sabadell, all three sources – the labour census of 1919, the municipal census of 1920 and municipal census of 1925 – have been linked. This town provides an interesting case study of migrant wage labour as is evident from its rapid expansion (from 2,000 inhabitants in 1787 to 20,000 in 1887 and 45,000 in 1925). Most of the inhabitants were migrants themselves or had parents or grandparents who had migrated to Sabadell. They had nothing to inherit, whether they were first-generation migrants or descendants of earlier migrants. There is evidence to show that most migrant urban households found it difficult to accumulate savings and lived at subsistence level.<sup>29</sup> In other words, the family and household strategies that operated in the urban context were not greatly influenced by other exogenous factors such as inheritance law and practice.

Evidence of the patterns of labour allocation in 1925 within the wage-earning population is presented in Figures 3 and 4. They were constructed by calculating the average age according to occupation and the corresponding average wage. Workers reporting casual work and those who declared no earnings are also included. In Figures 3 and 4 we notice that men and women undertook casual work at various ages and were of different regional origin. Altogether, casual workers in the 1920s comprised some 20 per cent of the economically active population at a time when the Spanish economy was prospering and full employment was obtained. Nonetheless we must recall that Sabadell specialized in woollen textiles, and textiles in general did not profit from Spanish neutrality in the First World War.

Figures 3 and 4 also illustrate that the relationship between age and income was very similar for natives,<sup>30</sup> and for migrants. This is in sharp contrast with the situation in the nineteenth century when migrants and those born in prosperous industrial towns had different expectations of future income over their working lives as a result of the implicit contracts discussed above. In the nineteenth century, members of the first cohort, the equivalents of the natives in Figures 3 and 4, had entered the factory labour market at a younger age than more recent immigrants and received higher wages (see Table 1, above). Admittedly, Figures 3 and 4, unlike Table 1, rely on cross-sectional and not longitudinal data. The evidence, however, is sufficient to indicate the absence of any association in 1925 between length of service and the prospect of future earnings. Had there been such a relationship, immigrants who settled in the town later in life would have been less well paid over their life cycle than were natives. This

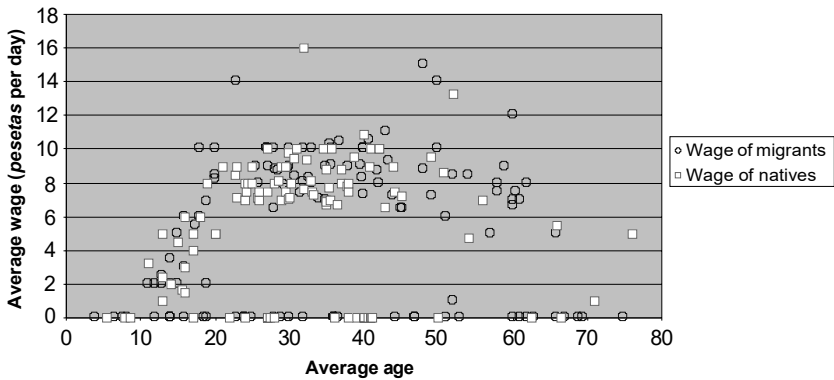


FIGURE 3. Average wages in relation to average ages of migrant and native men, Sabadell, 1925. (Sources: Arxiu Històric de Sabadell, Padró Municipal de 1925).

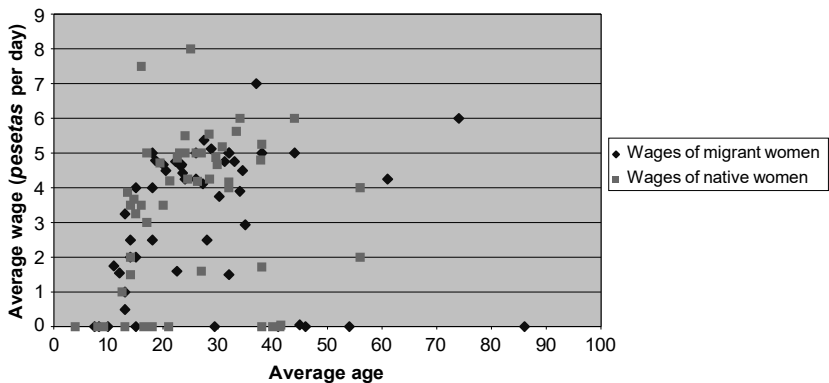


FIGURE 4. Average wages in relation to average ages of migrant and native women, Sabadell, 1925. (Sources: Arxiu Històric de Sabadell, Padró Municipal de 1925.)

applied for men as well as for women. This trend demonstrates that the implied contracts developed in an imperfect competitive labour market during the nineteenth century no longer obtained during the interwar period. On the one hand, capital accumulation, the development of a modern banking system, the use of electrical power and the creation of training institutions all helped to modernize the labour market. On the other hand, after 1919, the second industrial revolution – the spread of a new, more efficient labour organization based upon the payment of wages per hour – transformed the nature of labour contracts. In this new context labour contracts were recorded, the management of human resources

on a modern basis was possible and the labour-market segmentations described in section 2 were removed as they were no longer necessary.<sup>31</sup> This pattern of identical income between migrants and natives also departs from that observed for overseas migrants<sup>32</sup> from Northern Europe who took 15 years to reach the same income levels as their native counterparts. Nonetheless, in early-twentieth-century Catalonia, when the nature of training was identical, wages were also identical. Migration was mainly intraregional and therefore the process of training was similar for natives and migrants. With the same training, and when obstacles to free competition were removed, wages did not vary according to place of birth. Moreover, these figures demonstrate that, after the age of 50, income for men declined. Therefore we can expect that this age is suggestive of the beginning of the third age. The third-age threshold for women was also 50, although women's participation in the labour market had begun to fall abruptly after the age of 40.<sup>33</sup>

By 1925 there had been an improvement in the economic condition of working married women relative to that of working men. While it is true that during the eighteenth century most married working-class women undertook paid labour, they could earn as little as a twentieth of the wage of a senior artisan.<sup>34</sup> In the nineteenth century the earnings of women remained stable as they aged and job contracts were short,<sup>35</sup> evidence of another aspect of labour-market segmentation, one based on gender. By 1925 women could for the first time expect their wages to rise during at least part of their working life. One reason for this was that they could take advantage of the long-term job contracts and on-the-job training that were typical of the large firms that emerged during the early twentieth century.

On the other hand, although research on other regions has documented the entry of married women into the labour market even before the Second World War,<sup>36</sup> our results show that only 20 per cent of married women earned wages from factory work. Such a low rate of participation in the labour market demonstrates the short-run effects of mandatory schooling and the result that investment in human capital had upon labour supply. Mandatory schooling coupled with the fall in fertility during the demographic transition had the immediate effect of modifying the supply of family labour. The entry of married women into the paid labour market cannot be explained solely in terms of a reduction in the amount of time women devoted to housework and a more egalitarian approach to the employment of women. Another factor that prompted the entry of married women into the labour market was that one of the major supports of the family economy in the nineteenth century, work by children,<sup>37</sup> declined. Not only did the birth rate fall abruptly, but more children also

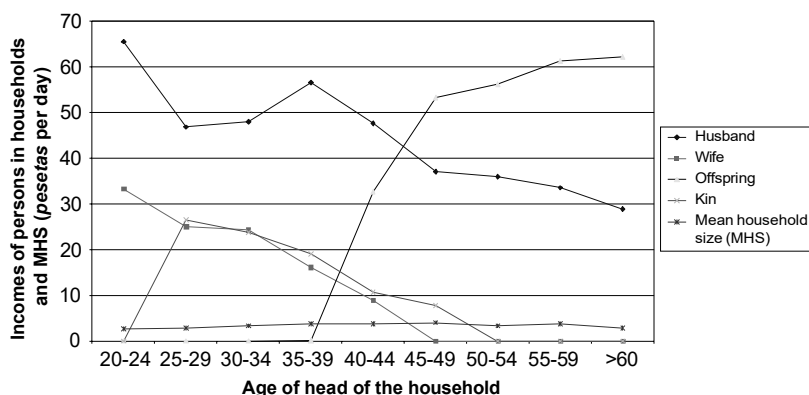


FIGURE 5. Income structure of households in Sabadell, 1925. (Source: Arxiu Històric de Sabadell, Padró Municipal de 1925)

delayed their entry into the labour market, increasing the demand for a replacement income for the family economy. From Figure 4, it can also be seen that employment for women came to an end by the age of 40. By that age, women were probably unable to perform the tasks required in the labour market.

However, higher rates of participation in the labour force by married women, as compared with the situation in the nineteenth century,<sup>38</sup> and rising wages over part of their life courses failed to meet all the consumption needs of their households. Additional sources of income were required, and these included contributions by women through in-migration of their relations and sub-letting accommodation to lodgers. To these issues we now turn.

Figure 5 indicates that by 1925 many urban households had become complex. The nature of the complexity differed from that produced by impartible inheritance which governed the transmission of land in the region and which typically involved the co-residence of a married son with his parents. By contrast, household complexity in Sabadell involved the presence in the household of collateral kin. The financial contribution to the household of unmarried relatives such as siblings and cousins replaced the income that children might otherwise have provided, had their numbers not been depleted as a result of mandatory schooling and the demographic transition. While the perfect competition model must be employed to analyse the labour market, cooperative game theory might be used to understand the formation of household income. Cooperative game theory assumes the existence of a bargaining process among the members of the

household that leads to the maximization of both individual and group (household) economic utility. In the absence of state welfare, but with a ready supply of cheap labour and fewer children in the labour market, other relatives provided the household with as much as 25 per cent of household income during the first stages of the family formation cycle. Most collateral kin were also migrants and while providing existing households with income they made use of their facilities. In a situation of scarce economic resources, this process led to the improvement in the economic position of both the collateral kin and the other members of the household.

Given the absence of welfare benefits, other economically active persons were required to enter households in order to supply alternative sources of income. Children entered the workforce at a later age than in previous generations and there were fewer of them as fertility fell, as we have seen. In the nineteenth century, the situation was very different, as I have already demonstrated, in that the earnings of children were an important element of many family economies.<sup>39</sup> By contrast, families in Sabadell in the early twentieth century could take advantage of the abundant supply of labour and elasticity in respect to wages. The absence of state welfare in combination with the cheap supply of labour made feasible the development of adaptive family strategies that activated kin networks.

We can also see how the average income of the household head sharply decreased after the age of 40. By then, the children had completed compulsory schooling and had become the mainstay of the family economy. Despite the important contribution of collateral kin in the first stages of the household formation cycle, the entry of children into the labour market (normally at the age of 15) compensated for the decline in adult male wages. Thus children were the primary human asset that adults had available as they entered the third age and the contribution of children to the household income helps to explain the adaptive family strategies discussed here.

These results differ from the British experience.<sup>40</sup> Evidence there demonstrates that the sources of household income were limited to members of the simple family household: couple and offspring. In these circumstances working families needed state welfare in order to maintain their standard of living. In the absence of state welfare, family economies in Catalonia appear to resemble others in continental Europe in their reliance on a broader group of relatives than spouse and children in order to improve living standards.<sup>41</sup> However, British family forms have recently been revisited, revealing higher degrees of complexity than previously reported.<sup>42</sup>

## IV. CONCLUSION

My purpose above has been to establish how employer and family strategies responded to an elastic labour supply with respect to wages, in the absence of a welfare system that involved a significant transfer of resources from rich to poor. During the nineteenth century, and in the absence of written labour contracts, large firms minimized their labour transaction costs through the adoption of implicit contracts and informal internal labour markets. After 1919, with the spread of the scientific organization of labour, the agreements between employer and employee were standardized and recorded in detail. With the availability of written contracts, labour markets modernized and wage and labour prospects became homogeneous for all workers of the same gender. The perfect competition model temporarily applied and segmentation of the labour market according to gender diminished.

Within the household, the absence of state welfare was overcome by means of distinctive forms of workers' solidarity. Despite the modernization of the labour market, the different components of family income reveal the extent to which economic survival was still difficult. The high frequency of complex households, together with the presence of lodgers, demonstrates how migrant workers had to supplement their income by expanding their households to enable other economically active persons to contribute to the family economy. We have stressed the major contribution of the work undertaken by migrant married women in bringing into the household collateral relatives. Nevertheless in due course natives began to imitate the residential strategies of migrants.<sup>43</sup> This indicates that the entire working class needed to attract additional sources of income to supplement what could be provided by members of a simple family household. In Sabadell by 1925, migrants were clearly more prosperous than natives because although their earnings were equally stable across the life course, they were better able to expand their households by incorporating additional wage-earners. In historical terms our case study proves that populations in the past responded to adversity by generating the economic resources needed to guarantee subsistence. In the absence of welfare, families attracted other economically active members into the household (kin and non-kin) in order to provide additional sources of income. In economic terms this study demonstrates that the ideas stemming from game theory can be applied to the formation of household income in early-twentieth-century populations.

## ACKNOWLEDGEMENTS

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#### ENDNOTES

- 1 For further evidence see 'The microeconomic analysis of the household and the labour market', in the *Proceedings of the 12th International Economic History Conference* (Madrid, 1998), Session B 17.
- 2 See A. Janssens, *Family and social change: the household as a process in an industrialising community* (Cambridge, 1993) and the recent summary of the debate by P. Scholliers and P. Van den Eckout, 'The construction of women's paid labour', in the *Proceedings of the 12th International Economic History Congress* (Madrid, 1998), Session B 17. I have emphasized this point in E. Camps-Cura, 'Transition in women's and children's work patterns and implications for the study of family income and household structure', *The History of the Family: An International Quarterly* 3, 2 (1998).
- 3 S. Horrell, and J. Humphries, 'Women's labour force participation and the transition to the male-breadwinner family, 1790–1865', *Economic History Review* 48 (1995).
- 4 See the article by M. R. Haines, 'Industrial work and family life cycle, 1889–1890', *Research in Economic History* 4 (1979), based on thousands of European and North American family budgets in 1890 and all the case studies that followed. For the British case see also Horrell and Humphries, 'Women's labour force participation' and their 'The origins and expansion of the male breadwinner family: the case of nineteenth-century Britain', in A. Janssens ed., *The rise and decline of the male breadwinner family?*, *International Review of Social History* 42, Supplement 3 (1997).
- 5 P. Vilar, *Catalunya dins de l'Espanya Moderna* (Barcelona, 1966).
- 6 See J. Nadal, *El fracaso de la revolución industrial en España, 1814–1913* (Barcelona, 1975), and L. Prados de la Escosura, *De imperio a nación. Crecimiento y atraso económico en España (1870–1930)*, (Madrid, 1988).
- 7 The concepts of the 'perfect competition model' and 'cooperative game theory' (discussed below) can be found in many manuals by neo-classical economists. See for example A. Mas-Colell, M. D. Whinston and J. R. Green, *Microeconomic theory* (1993), and A. Mas-Colell, 'A general class of adaptive strategies' (UPF Working Paper, 1999). On the historical application of these concepts see for example D. N. McCloskey, *Knowledge and persuasion in economics* (Cambridge, 1994), G. Postel-Vinay, *La terre et l'argent: l'agriculture et le crédit en France du XVIIIe au début du Xxe siècle* (Paris, 1998), and D. C. North, *Institutions, institutional change and economic performance* (Cambridge, 1990).
- 8 T. Hatton and R. V. Bailey, 'Poverty and the Welfare State in interwar London', in the *Proceedings of the 12th International Congress of Economic History* (Madrid, 1998), Session B 17.
- 9 E. Camps, *La formación del mercado de trabajo en la Cataluña industrial de siglo XIX*, Colección de Historia Social, Ministerio de Trabajo y Seguridad Social (Madrid, 1995).
- 10 M. Carbonell, *Sobreviure a Barcelona. Dones, pobresa i assistència al segle XVIII* (Vic, 1997).
- 11 E. Camps, *La formación del mercado de trabajo*.
- 12 The intensity of internal migrations in Catalonia were calculated *ibid.* The result is that over the period in consideration 1 out of every 4–5 people of rural birth definitively

- migrated to a town. This result is close to the evidence provided in J. De Vries in *European urbanization, 1500–1800* (London 1985) for the most industrialized regions of Europe.
- 13 E. Camps i Cura, 'Population turnover and the family cycle: the migration flows in a Catalan town during the 19th century', *Continuity and Change* 7, 2 (1992).
  - 14 See D. S. Reher, *Town and country in pre-industrial Spain* (Cambridge, 1991); D. S. Reher and E. Camps Cura, 'Las economías familiares dentro de un contexto histórico comparado', *Revista Española de Investigaciones Sociológicas* 55 (1991), M. Arbaiza, 'Labor migration in the first phase of Basque industrialisation: the labor market and family motivations', *The History of the Family: An International Quarterly* 3, 2 (1998); and Camps i Cura, 'Population turnover'.
  - 15 See Camps i Cura, 'Population turnover'. More than half of all migrants had to move through at least three industrial towns before finding a more permanent settlement during the critical phase of the family life cycle.
  - 16 For the patterns of technological change see J. Nadal, 'El fracaso de la revolución', and J. Nadal and J. Maluquer de Motes, *Catalunya la fàbrica d'Espanya* (Barcelona, 1985).
  - 17 See S. Pollard, *Peaceful conquest* (Oxford, 1981) for the labour savings resulting from the use of capital-intensive techniques in cotton spinning.
  - 18 These trends in textile employment were first presented in G. Barnusell, E. Camps, A. García, L. Muñoz and J. R. Roses, 'Ocupación, productividad y salarios (1850–1913): una reflexión sobre el caso catalán', in *V Simposio de Anàlisis Econòmic, Universitat Autònoma de Barcelona* (Bellaterra, 1994). All employees (men, women and children) have been included.
  - 19 E. Camps, *La formación del mercado de trabajo*.
  - 20 The perfect competition model applies when real wages are equal to marginal productivity. It implies the same wage for the same level of skill.
  - 21 Admittedly, the number of cases is small but this was the first study to show the relationship between wage profiles and cohorts (Camps, *La formación del mercado de trabajo*). It was impossible to lengthen the series because in 1887–1890 the workforce was restructured and most of the workers in these cohorts were fired.
  - 22 See Camps, *La formación del mercado de trabajo*.
  - 23 See S. Rosen 'Implicit contracts: a survey', quoted in T. Hatton and R. E. Bailey, *Household labour supply and women's work in inter-war Britain*, *Explorations in Economic History* 30 (1993); G. Ferrerol and P. Deubel, *Economie du travail* (Paris, 1990); D. Gambier and M. Vernière, *Le marché du travail* (Paris, 1985), and an historical perspective in M. Huberman, *Escape from the market* (Cambridge, 1996).
  - 24 These data can be found in the Arxiu Nacional de Catalunya, Nomines de l'Espanya Industrial, which contains series of weekly payrolls since 1947 (archive with catalogue in Barcelona).
  - 25 *Nuevo Régimen* (newspaper), 18 July 1892.
  - 26 These internal labour markets were informal in character and were not bureaucratic like the modern internal labour markets of the twentieth century. See Camps, *La formación del mercado de trabajo*; W. Sundstrom, 'Internal labour markets before World War I: on-the-job training and employee promotion', *Explorations in Economic History* 25 (1988); and M. Brown and P. Philips, 'The historical origin of job ladders in U.S. canning industry and their effects on gender division of labour', *Cambridge Journal of Economics* (1986).
  - 27 For further details see Camps, *La formación del mercado de trabajo*.
  - 28 For the case of Cuenca see D. Reher, 'Town and country', and for Mallorca, K. Schuñter and I. Moll-Blanes, 'Working lives: rhythms of household income in early



- twentieth century Mallorca', given at the 10th International Economic History Congress (Leuven, 1990).
- 29 Camps, *La formación del mercado de trabajo*. Another sign that they lacked property is that there is no mention of any property in the marriage contracts of wage-workers, which were drawn up by notaries.
  - 30 In practice the vast majority of persons termed here 'natives' were second- and third-generation migrants.
  - 31 The details in the archives of wages and hours worked indicate the transformation of labour relations and the reward for labour during the period.
  - 32 See T. Hatton and J. G. Williamson, *The age of mass migration: causes and economic impact* (Oxford, 1998).
  - 33 Camps, 'Transitions'.
  - 34 This is based on evidence for Barcelona in 1764, see Instituto Municipal d'Historia de Barcelona, *Fondo de la Junta de Comercio*, vol. 81.
  - 35 See Camps, *La formación del mercado de trabajo*. Between 1847 and 1887 the average length of service by women was no more than five years.
  - 36 C. Goldin, *Understanding the gender gap: an economic history of American women* (New York, 1990); C. Goldin, 'The U-shaped female labour force function in economic development and economic history', National Bureau of Economic Research, Working Paper Series no. 4707 (Cambridge, Mass., 1994); Hatton and Bailey, 'Household labour supply and women's work'.
  - 37 E. Camps, 'Family strategies and children's work patterns in nineteenth-century Catalonia', in H. Cunningham and P. P. Viazzo, *Child labour in historical perspective: case studies from Europe, Japan and Colombia* (Florence, 1996).
  - 38 In the nineteenth century the majority of women employed in factories were young and unmarried.
  - 39 E. Camps, 'Family strategies'.
  - 40 See Hatton and Bailey, 'Poverty and the welfare state', and D. Baines and P. Johnson, 'Labour force participation and economic well-being of older men in London, 1929–31', International Congress of Economic History (Madrid, 1998).
  - 41 See for example C. Lis, *Social change and the labouring poor: Antwerp, 1770–1860* (New Haven, Conn., 1986).
  - 42 R. Wall, 'The transformations of the European family across the centuries', in R. Wall, T. K. Hareven and J. Ehmer, *Family history revisited: comparative perspectives* (Newark, 2001).
  - 43 The data on household and household income come from Arxiu Històric de Sabadell, Padró Municipal de 1925 and 1920 and Cens Obrer del 1919.