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Abstract

The French census of 1851 is one of the few nineteenth-century censuses that attempted to record the work of women and children carried out within households. This paper argues that the occupational designations in the nominative census lists are an accurate indicator of employment status. This paper analyzes a sample of 70,000 persons drawn from a set of rural communes in northern France. The data indicate that women's labour force participation was strongly affected by marital status, the occupation of the husband and the presence of young children in the household. The data lend support to the hypothesis that the main driver of labour force participation was poverty.

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Market-oriented labour performed by women and children in the home or family enterprise is poorly documented, although as Devries and Humphries have recently shown, its economic and social importance can hardly be exaggerated.¹ By contrast, adult male labour force participation is comparatively well-known from census and fiscal documents recording the principal occupation of the head of household. For household dependents, however, historians have had to infer allocation of time between domestic and market-oriented tasks from labour-force participation trends extrapolated from later data or from otherwise inexplicable movements in agricultural productivity.² For the late eighteenth and nineteenth century, there are a handful of working-class budgets and farm accounts registering wages paid to female hands that offer impressions of the trend in women's participation in market-oriented work and the contribution it made to family income, but as compared with the data bearing on men's work and wages, the evidence is thin and ambiguous.³ In principle, nineteenth-century censuses that recorded occupations of women and children should tell us much about their labour-market participation in the first century of industrialization; but in the majority of cases their employment was recorded only when they worked outside the home.⁴ The present paper exploits a census from mid-nineteenth-century France that appears to have overcome this deficiency by systematically designating women and children who worked at home in a family

¹ Devries, *Industrious Revolution*; Humphries, *Childhood and Child Labour*.

² Folbre and Wagman, 'Counting Housework'; Craig and Weiss, 'Agricultural Productivity Growth'

³ Verdon, 'A Diminishing Force?' Burnette, *Gender, Work and Wages*; Horrell and Humphries, 'Women's Labour Force Participation Rates'

⁴The British census of 1851 instructed enumerators to record farmers' wives and daughters who participated in farm work as having an occupation, but did not enjoin the same distinction for other trades, and enumerators do not seem to have consistently executed the instructions. Higgs, 'Women, occupations and work'

enterprise as having a remunerative occupation. In rural communities, the majority of such persons would have been dependents of farm operators. The census thus throws statistical light on participation rates of women and children in a preindustrial setting.

Because information bearing on the status and occupation of the head of household was the surest means of assessing fiscal capacity, the earliest occupation designations, such as those found in the medieval English lay subsidies and the French 'État des feux', were the by-product of direct royal taxation. They were not enumerations, but lists of households together with the assets constituting the tax base. The first enumeration of individuals in France, conducted in 1688 in cities in Flanders recently annexed by Louis XIV, was also motivated by fiscal concerns.⁵ For that purpose it was sufficient to record occupations of (mostly male) heads of household, or simply their status, for example, whether they were laymen or clerics, married or single, patrons or employees.⁶ It was only in the 1840s that growing concern about possible connections between mortality and materials to which workers were exposed led census administrators to collect information on the occupations of women. Thus, in 1841 the British census, which up to then had restricted occupational designations to men over the age of 19, ordered enumerators to record occupations of women employed outside the home.⁷ In 1845 the pioneering statistician Adolph Quételet directed the Belgian census in 1845 to collect data on women's work, including work performed in the home.⁸ A focus on public health, however, was not conducive to accurate reporting of work at home, since family members were exposed to noxious substances present whether or not

⁵ Gille, *Sources statistiques*

⁶ Desrosières, *Éléments pour l'histoire des nomenclatures*

⁷ Higgs, 'Occupational censuses'; Higgs, *Making sense of the census*

⁸ Lottin, *Quételet*

they worked with them. It was probably for this reason that British enumerators often recorded farm women as ‘farmer’s wife’ or ‘daughter,’ which says something about their environment, but nothing about their work. In 1851 the British census directed enumerators to record dependents as working if they contributed to the family enterprise, but the instructions were commonly misinterpreted or ignored. Thus, while in principle British censuses between 1851 and 1871 captured women’s participation in farming, they greatly understate the actual number working, making the census lists generally unusable for investigating causes of that participation.⁹

The French Census of 1851

French censuses suffer from many but not all the defects of English and Belgian censuses. The main difference is that the extension of occupational recording to include women and children was motivated by politics rather than public health. No mid-nineteenth-century French government could afford the luxury of ignoring the current and prospective state of the economy, and in April, 1851, the Bureau de Statistique, which was then under the Minister of the Interior, instructed census enumerators to record the means of support of all enumerated persons, including family dependents. Persons deemed to be earning an income were assigned an occupation (or occupations if they had more than one) identifying their source of income. Persons living on the proceeds of interest or rent were recorded as rentiers or landowners (*propriétaire*). The crucial designation was the means of support of family members other than the head of household. Those deemed to be not working were recorded as living on the income of someone else. Thus, wives who did not contribute to family income by working are recorded as *vivant du revenu de son mari*, and children (less frequently) as *vivant du*

⁹ Higgs, ‘Women, occupations and work’; Burnette, ‘Wages and employment,’ 682-83

revenu de ses parents. When family members contributed materially to their own support, they were assigned an occupation, which in farming families was usually farming. It is this feature that permits one to peer into household decisions with respect to family members' labour force participation, whether that participation occurred inside or outside the household. The discriminating element is the explicit identification of family members of working age who did not work. In this respect the census of 1851 is unique among France's nineteenth and early twentieth-century censuses, which confined themselves to recording the occupation of the (usually male) head of household and reported women's work only when it was performed outside the household. The decision in 1856 to abandon complete recording seems to have been motivated by a desire to acquire information on the number of persons 'dependent' on a particular industry, which normally meant the one employing the head of household. Such information would have been used to assess the effects of prospective changes then under consideration in France's tariff regime.

Despite the wealth of detail on occupations of women and children, historians primarily interested in constructing consistent time series of the occupational distribution of the French labour force have nevertheless dismissed the census of 1851 as unusable. This is mainly owing to inconsistencies between the printed summary tables attached to the communal nominative list employed in working up the published totals and the individual entries from which the tables were compiled. Whereas in the actual census, enumerators entered occupational designations for individuals in a column assigned to record that information, the summary tables were printed with pre-established occupational categories, which meant that persons entered as having multiple occupations

were frequently counted more than once, but sometimes not counted at all if their occupation did not fit the procrustean categories established by the administration in Paris. Moreover, enumerators did not always follow instructions. Some entered the occupation of all dependents in a communal list as that of the head of household; others entered no occupation at all. But the main reason economic historians have dismissed the census is that its count of the French labour force differs significantly from the counts of previous and subsequent censuses.¹⁰ Prior to 1851 and after 1856 census enumerators recorded dependents as having an occupation only when they worked outside the household, whereas in 1851 family members who worked at home were also counted. The difference in the reported labour force produced by the difference in definitions is huge. In 1851 the census reported a labour force of 22.2 million; in 1856 it reported 14.2 million. The labour force reported in 1851 is so high it was not exceeded until 1974.¹¹ Not surprisingly, statisticians intent on constructing consistent time series of the French labour force have dismissed it. Its usefulness as a cross-section for investigating the variation and causes of that variation in the labour force participation of family members, however, has not been tested.

The 1851 census is a statistical outlier. The question is whether it exaggerates the France's working population or whether subsequent censuses systematically understated it. The question can be approached by analyzing the effect of changed procedures for

¹⁰ 'Le recensement de 1851, le premier à comporter une rubrique professionnelle, reste à peu près inutilisable, les chiffres de la population active qu'il indique ... relèvent d'une autre définition de la population active que tous les recensements postérieurs, et interdisent toute comparaison.' Dupaquier, *Histoire de la population française*, 244-45.

¹¹ Marchand and Thélot, *Deux siècles de travail*, 174. The data for 1846 are unreliable, but if one extrapolates the 1856 figures on Marchand and Thélot's growth rate, the labour force in 1846 would have been about 13.5 million.

estimating the labour force that were introduced in the census of 1896, which supplemented occupational designations in the nominative lists with nominative information from returns filled out by employers. In 1896 the working-age population of France was 0.2 percent higher than in 1891, but the census labour force was 16 percent higher, which means the 1891 census did not count everyone who was employed. Since it used the same definition of the active labour force as the census of 1856, it follows that every census between 1856 and 1891 undercounted the active labour force, and that the census of 1851 must have picked up the missing workers. This inference has obvious implications for the measurement of aggregate productivity in the second half of the nineteenth century.

Who were the undercounted workers? Slightly over half of the eight million persons recorded as working in 1851 but not in 1856 consisted of 4.3 million women recorded as having an occupation in 1851 but not in 1856. That leaves 3.7 million missing male workers. Who were they, and how did they get omitted? The majority were in agriculture, which suggests that gap is attributable to a change in the way the census recorded agricultural employment of male dependents, since in 1856 as in 1851 workers in other sectors would have been assigned an occupation. The 1851 census records 7.7 million men in agriculture; that of 1856 returned only 5.1 million. Comparison of the agricultural work force reported by the *Enquêtes agricoles* of 1852, 1862, 1882, and 1892 with the agricultural labour force in the population censuses of 1851, 1861, 1881 and 1891 suggests that the difference is due to a change in the definition of agricultural workers between the censuses of 1851 and 1856.¹²

¹² The census of 1871 and the projected *Enquête agricole* of 1872 were disrupted by the Franco-German war and are thus unusable for the present purpose. The population census was conducted every five years,

The definition of the male labour force in the *Enquête agricole* is the sum of farm operators, hired hands, and day labourers. In 1852, the *Enquête* reported the same number male workers in agriculture as the population census of 1851, which means the undoubtedly came from the census. In 1862 the *Enquête agricole* reported a male agricultural labor force 18 percent higher than the one returned by the census of 1861, which implies that the census was using a new definition established in 1856, while the agricultural survey continued to employ the definition of 1851. It is not clear exactly how the *Enquête* applied the earlier definition in the absence of a true census, but the difference between the two counts persisted to the end of the century.¹³ In 1882 the *Enquête Agricole* returned a male agricultural labour force 15 percent greater than the 1881 census; the *Enquête* of 1892 count was still 9 percent greater than the 1891 census count. The missing agricultural workers were thus counted as employed by the *Enquête agricole* but not by the census. It would require extended analysis of the censuses and the *Enquêtes* to determine exactly where the source of the difference is located, but presumably most of the missing workers were boys employed on family farms. Some rural residents who were seasonally employed in agriculture may also have been counted by the surveys but not by the population census, but in that case the census enumerators should have registered their primary occupation. Analysis of labour force participation

whereas the agricultural enquiries were conducted roughly every ten years from 1852 to 1892. The first twentieth-century *enquête* was carried out in 1929.

¹³ The *Enquêtes agricoles*, the first of which was conducted between 1836 and 1840, were more than a survey but less than a census of agriculture. They are based on returns filled out by village mayors and revised by cantonal statistical committees who adjusted canton totals for missing entries, obvious underreporting (in the case of crop yields), and other deviations from what were considered likely values. The published *Enquêtes* of 1840 and 1852 report the data by arrondissement; subsequent publications reported them only by department. Many communal and most of the cantonal returns are lodged in departmental archives under the series M. The worksheets used to sum the canton returns for 1882 and 1892 are deposited in the Archives Nationales in Paris. Unfortunately, the worksheet entries have no headings, making them cumbersome, though not impossible to use.

rates below suggests this is unlikely to have been the case. The precise location of the difference between the two estimates of the male agricultural labour force is thus a conundrum.

That the problem of missing workers is largely confined to agriculture can be inferred from estimated labour force participation rates of men between the ages of 15 and 64. The agricultural labour force returned by the *Enquêtes agricoles* of 1862, 1882, and 1892 yields male participation rates 8 to 10 percent higher than those computed from the labour force returned by the previous year's census.¹⁴ Moreover, the participation rates derived from the *Enquêtes* are between 93 to 98 percent, which is consistent with expected rates for men in prime working ages. In the sample discussed below, the computed male participation rate is 96 percent. It thus appears that although the census of 1851 is an outlier, it probably comes closer to an accurate count of persons who were actually employed than any census prior to the twentieth century. In view of the importance of aggregate labour productivity in comparing the performance of national states, reworking estimates of the French labour force using information contained in the 1851 census is likely to produce major revisions in our understanding of productivity growth in late nineteenth- and early twentieth-century France.

The Sample and its Properties

We now turn to a small sample drawn from that census to see what it can tell us about the labour force participation of rural women. The sample consists of 70,925 individuals representing 127 communes located in 87 cantons and six *départements* of northern France (Aube, Eure-et-Loir, Haute-Marne, Mayenne, Meurthe and Seine-et-

¹⁴ Caron, *An economic history*, 17

Oise). With the exception of two communes for which some pages of the nominative list are missing, all persons entered on the communal nominative list are in the data base. The lists are organized by place name and household, the head household being named first, followed by his spouse, children, other relatives, live-in employees, and boarders. If more than one family inhabited the same building, the same order is followed, making it possible to attach dependents to their correct family. Since persons were enumerated where they were living when the census was taken, the employment status of family members residing in a different commune from the head of household cannot be tracked. Most such persons would have been boys and girls in their teens placed in other households as *domestiques*.¹⁵ The participation rates calculated from the sample are therefore lower bound estimates.

Sampled communes were selected using four criteria: they had to be situated in cantons for which a manuscript return of the 1852 *Enquête agricole* could be obtained; they had to be rural; they had to broadly reflect geographical characteristics of the canton in which they were located; and the nominative list had to distinguish wives of farmers who participated in the work of the farm from those who did not. Communes in which all wives were assigned the same occupation as their husband and communes in which they were all listed as living on the income of their husbands are therefore excluded, since it is impossible to tell whether the enumerators were distinguishing working from non-working wives. Farmers' wives are the most sensitive group with respect to categorizing family members' employment status, since apart from the wealthiest families, they all must have contributed in some way to the family enterprise, which

¹⁵ For analogous placing of young adults in early modern England see Kussmaul, *Servants in Husbandry*.

implies that in the enumerator's opinion a wife's contribution had to exceed a base line to warrant her being assigned an occupation. The usual designation in such cases is the feminine form of the masculine term such as *cultivatrice* or *fermière*. The sign that the term is not simply a descriptor for 'farmer's wife' is the presence in the same list of farmers' wives entered as *vivant du revenu de son mari*. Only where this distinction is observed can one be sure that enumerators tried to distinguish working from non-working wives and dependents. As to adult males, nearly all between the ages of 20 and 60 had an occupation, which we interpret as working. Occasional references to men as *mendiant* (beggar) or infirm and declining rates of occupational designation past the age of 60 suggests that the census listings are in fact picking up male employment, although cyclical unemployment in some of the industrial trades cannot be ruled out.

As noted above, the census occupational categories do not always clearly distinguish between occupation and status. For example, the term *propriétaire* tells us that the person owned land, but not whether he farmed it himself. In most cases, however, enumerators indicated a landowning farmer by *propriétaire-cultivateur* or a similar compound term. Many persons are listed as exercising multiple occupations. When they do, the principal one is listed first. Thus a person listed as *tisserand-journalier* was a weaver first and a day labourer second, while a *journalier-tisserand* was a day labourer for whom weaving was a by-employment. As with farmers' wives and other family members, when the occupational designation is the same as that of the head of household, it is interpreted as representing a real occupation and not a descriptor of status.

The sampled communes represent a wide range of economic environments in northern rural France, ranging from wine-growing villages of Champagne and German-speaking districts in the Moselle valley to cantons in the West that specialized in livestock husbandry. Around Paris farms raising wheat for the Paris market were large tenanted operations employing hired labour; in the back country of eastern Champagne and Lorraine, the majority of farmers were land-owning peasants on small holdings. A few communes are located in the suburbs of Paris, Nancy, and Laval, where villagers specialized in growing fruits and garden vegetables for sale in an urban market. Other districts were home to winegrowers and still others to domestic manufacture of textiles and knitted goods. Wages and incomes varied greatly across this space, male day wages ranging from 3 francs near Paris to 1 franc in the back country, and estimated annual family income from more than 1400 francs to a little less than 400.¹⁶ The mean ratio of female to male wages was 0.67 for wages paid in cash and 0.62 for wages paid partly in kind, ranging from about 0.4 to 0.9. In general the ratio of female to male wages was highest in poor communes where male wages were extremely low. As the nutritional status of persons in such districts tended to be deficient, a small gender wage gap may reflect small difference in physical strength at low levels of food intake.¹⁷ Some districts were characterized by intensive mixed husbandry demanding heavy inputs of labour; others by land-intensive pastoral farming. The sample thus includes a variety of circumstances expected to influence the proportion of women and children who worked.

¹⁶ These data are taken from the cantonal manuscripts of the *Enquête agricole* of 1852.

¹⁷ For evidence that gender wage differentials in field work reflected relative physical strength of men and women, see Burnette, 'An Investigation of the Female-Male Wage Gap'

The most important issue is whether the census designations are useful indicators of employment status. Occupational designations tell us nothing about how much time the person spent in that occupation or how much she earned. The agricultural surveys report earnings and days worked for men, women, and children employed as day-laborers, but such information cannot be extrapolated to census individuals. A more serious issue raised by the use of census occupational designations to infer labour participation is potential circularity, since the plausibility of the designations as a sign of labour force participation rests on the plausibility of the participation rates extracted from them. In the absence of a fully specified model, this objection can only be met by appeal to intuition. For example, the finding that participation rates of young widows were high relative to married women their age, and that the rates for old widows were low relative to women their age is compatible with an expectation that younger widows lacked resources while many older ones would have inherited estates permitting them to live without working. Similarly, the finding that women with more than three young children had lower participation rates than married women the same age with fewer children suggests a real effect of child care on the ability of young mothers to participate in market-oriented work. Consistency with common-sense expectation of a large number of independent cases of this type suggests that the census registered women and children who were actually working. A more difficult problem is posed by the identification of households operating farms of different size. The largest farms can be identified by the presence of live-in hired hands, but below that thin slice of rural society, it is hard to tell the difference between a small and medium-sized holding from census nomenclature. In general, it may be assumed that a person listed as *fermier* had a larger farm than one

recorded as *cultivateur*, and that a *métayer* had a larger holding than a *bordier*, but distinctions based on this terminology are coarse. It is much more certain that persons recorded as *journalier-proprétaire* or *tisserand-proprétaire* were small-holders, along with *vignerons* and *jardiniers*.

The Results

As befits a rural sample, most households were engaged directly or indirectly in agriculture and nearly half of them owned land. Nearly 63 percent of household heads were farmers and in over 70 percent of all households at least one person worked in agriculture.

[insert table 1 here]

Craftsmen who built and maintained farm equipment and merchants marketing farm produce made up another 6.6 percent of households, so that in all nearly three-quarters of households depended directly or indirectly on income originating in agriculture. The remainder were occupied in forestry, road work, construction, retail trade, mining and metallurgy, textiles, and the clothing trades. Nearly 12 percent of households had members employed in rural industry, and close to 10 percent more in the clothing trades, including shoemaking, tailoring, and laundry services. The labourers in textiles, tailoring, and laundry services were overwhelmingly female; in road work, quarrying, and agricultural crafts almost exclusively male. A little over 3 percent of household heads were in liberal professions, a category that includes clerics and low-level government officials. As is to be expected, households were occupationally more diversified than individuals.

Farming claimed roughly equal proportions of men, women and children. In other sectors the sexual division of labour was more pronounced. The agricultural service trades were the exclusive province of men, along with the construction trades, forestry, road work, transportation, and the liberal professions. By contrast, women dominated textiles and the clothing trades. Outside agriculture, children were present only in rural industry, primarily in textiles. Very few started working before 12 or 13. Of 5,955 children aged 9 to 13 only 896 are listed as having an occupation, most of whom were at least 12 years old.

[insert table 2]

Landholding was widely distributed. In 'peasant' regions of Champagne and Lorraine (the *départements* of Aube and Haute-Marne), the proportion of farming households owning land reached 73 percent; near Paris, where arable land had long been consolidated into large holdings farmed by rich tenants, it was only 35 to 41 percent. The western *département* of Mayenne, where land was mostly farmed in *métayage*, had the lowest proportion of land-owning agricultural households. Among non-agricultural families the households headed by persons in a liberal profession had the highest incidence of landownership, exceeding even that of cultivators. Land ownership was nevertheless frequent in all occupational classes except hired hands, most of whom were young. Since land was acquired by saving and bequest, age was an important determinant of landholding status. Controlling for occupation, the probability of owning land rose 1.8 percent with each year of age.

Land-ownership also had an important effect on labour force participation, since its possession generated rental income for older men and women permitting them to cease working at an earlier age than landless persons. The unearned income effect is further evidence that census enumerators were picking up real choices with respect to family labour supply. Although it is tempting to suppose that in families headed by prime-age males land ownership would have led to increased labour-force participation by family members put to work on the family holding, the regressions reported below indicate that labour force participation of family members in land-owning households was lower than in landless households. This suggests that the primary factor driving women and children into field work was not the substitution effect created by the presence of a complementary input to family labour, but rather low income.

[insert tables 3 and 4]

About 11 percent of persons who worked had multiple occupations, while a nearly a quarter of all households had members in different occupations. The least diversified households were in farming, where only 10.6 percent of persons whose primary occupation was in agriculture engaged in secondary employment outside the sector; in households headed by farmers only 28 percent had family members working in occupations other than farming. The incidence of by-employment was lowest among households on sharecropped farms, where nearly all dependents worked on the family holding. It is significant that many of these farms are located in districts with extensive rural textile manufacturing, which suggests pronounced occupational division of labour

by household. This is probably because sharecropped farms made little use of wage labour, leaving little time for off-farm work, while the predominantly livestock-oriented production generated comparatively little demand for seasonal workers.. Winegrowers and market gardeners are two other groups for whom multiple employments are uncommon. Outside farming, the incidence of multiple occupations was significantly higher, ranging from 20 to 38 percent for individuals and 60 to 75 percent for households. The only non-agricultural class for which individual occupational diversification was low is textiles. Only 13 percent of persons returned as having primary employment in textile manufacturing had a second occupation, although 65 percent of textile households had at least one person working in another sector. The main conclusion to be drawn from these figures is that as compared with tradesmen and rural craftsmen, many of whom had agricultural by-employments, farming households proper were occupationally specialized. Agriculture was the secondary occupation of most non-farmers in rural communities because it provided remunerative seasonal employment and because landholding provided an outlet for the excess labour of poor families and a vehicle for capital accumulation for better off neighbors lacking alternative outlets for savings.

Labour Force Participation Rates

As one expects, rates for young people are lower than for adults. Young people of both sexes show similar rates of labour force participation to the age of 20, separating as girls married and temporarily left the labour force to bear children, as indicated by lower rates for married than for single women in the child-bearing cohorts. The most revealing class is young widows, whose participation rates sometimes approached those

of men, testifying to the devastating effect of a husband's death on young families that had not accumulated enough assets for the surviving widow to attract a new husband or to support herself on an inheritance. That situation was sharply reversed for elderly widows, whose participation rates are significantly below those of married women their age, suggesting both that many were living on an inheritance and that poor young widows were unlikely to survive to a ripe old age. By contrast, there is virtually no difference between participation rates of married men and widowers below the age of 60. Another sign that census occupational designations are capturing true employment status is that the participation rate for married women between the age of 20 and 40 whose children were less than three years old (60 percent) is lower than the rate for other married women in the same cohort (68 percent).

[insert table 6]

Table 7 gives participation rates of wives by husband's occupation. Perhaps the most striking feature is the high rate for women in families headed by farmers. Fully 70 percent of farmers' wives worked; among sharecroppers and winegrowers, the proportion was 91 percent and 84 percent, respectively. These rates are exceptionally high by contemporary British standards, which judging from the sample of budgets compiled by Horrell and Humphries were under 50 percent in high-wage counties and only a little more than 60 percent in those characterized as having low wages.¹⁸ This is probably due to the structure of French farming, with its high proportion of owner-occupiers, winegrowers, and sharecroppers. It is nevertheless noteworthy that wives of day

¹⁸ Horrell and Humphries, 'Women's Labour Force Participation Rates'

labourers in this sample have the lowest participation rates among farm families. This probably reflects sample bias due to the low female participation in the champion districts of the Île de France, where male wages were high and where there was little rural manufacturing to soak up the local supply of female labour.¹⁹

In general the data indicate a negative correlation between household income and women's labour force participation. Participation rates for households headed by blacksmiths, cartwrights, roofers, and carpenters are lower than for households headed by coopers, tilers, and stone masons. The former were skilled crafts often requiring an apprenticeship, and therefore comparatively highly remunerated. Among households headed by men engaged in rural industry, the participation rates of metalworkers' wives is only two-thirds that of wives of weavers. Shoemakers' wives were half as likely to work as tailors' wives. The spouses of blacksmiths, metal workers, carpenters, and cartwrights had much lower participation rates than those of farmers. In all these cases, wives' participation rates are negatively correlated with the status and likely income of their husbands.

The most striking feature of the sample, then, is the high rate of participation among female family members of farming households. By contrast participation rates of wives of merchants and tradesmen were low, although shopkeepers' wives typically had high participation rates, especially those keeping inns and taverns, where the work was an extension of housework. The lowest rates are for wives and daughters of professionals, for whom manual work or shop keeping was incompatible with elevated

¹⁹ This was not true in the seventeenth and eighteenth century, when many champion districts in the Beauce, were home to a thriving domestic woollen manufacture.

social status. It was only among textile workers and the clothing trades, where seamstresses and tailors substituted for household sewing, that the participation rates of women were as high as in farming. The data thus suggest that women were pushed rather than pulled into the rural labour force. They also show gender-based division of labour. Wives of blacksmiths, metal tradesmen, carpenters, and cartwrights did not work in their husband's trades, and were less likely to work at all than wives of farmers, spinners, spinners and weavers. On the other hand, participation by women in retail food services other than meat processing was high.

[insert table 7]

We can begin to sort out the various determinants of women's labour force participation by making a probit analysis of the participation rate on demographic, structural and economic variables potentially affecting women's decision to work. The demographic variables include age, marital status, number of young children and family size. The structural variables are the property-holding status of the household and the occupation of the head of household. The economic variables are male and female day wages, labouring family income estimated as the sum of reported expenditures plus saving, labour input per hectare in cereals, and the percentage of arable in root crops, sugar beets, oil crops, vines, and fallow. These data are taken from the canton returns for the agricultural *enquête* of 1852, the nominative list for each commune being assigned to the canton in which it is situated. The literature on women's work in England suggests that field work was positively related to the labour intensity of cropping, in particular to the incidence of root crops. Economic theory predicts that female participation rates

should be positively related to the female wage and negatively related to family income and the male wage. The demographic variables have been discussed above.

Table 8 sets out the probit regression of female labour force participation on the variables mentioned above. As the previous tables indicate, the condition of marriage significantly lowered participation rates, while being widowed significantly increased them. The latter was clearly due to the negative income effect of widowhood, as the relative increase in widows' participation is situated in ages 30 to 55. Having young children reduced women's tendency to engage in remunerative work, which supports the hypothesis that the decision to work was affected by the opportunity cost of time. The status of cultivator is strongly associated with women working, as is that of sharecropping and wine-growing. Surprisingly, among market gardening families, the probability of women working was relatively low, contrary to expectation. Landholding has a strong negative effect, suggesting that 'unearned' income lessened the need or desire of women to work for pay.

The other structural variables reproduce information presented above. The textile and clothing trades were associated with higher rates of female labour participation, while the agricultural crafts and liberal professions are associated with lower ones. Female labour force participation is positively related to the percentage of arable in sugar beets, suggesting that the extension of intensively weeded row crops increased demand for women in field work. On the other hand, the female participation rates are negatively related to the proportion of land in intensively cultivated oil crops like flax, hemp and rape, which on the above hypothesis should have caused them to rise. Overall,

however, greater intensity as measured by the percentage of arable land in fallow is associated with higher rates of female labour participation.

The structural variables lend support to the belief that women's decision to engage in remunerative work was influenced by the opportunity cost of their time. They also suggest that poverty was a powerful inducement to their participation in the labour force. Widows worked more often than single and married women; women in landholding families worked less often. The 'poor' clothing and textile trades are associated with higher participation than the 'rich' agricultural crafts. But poverty was clearly not the only cause of women's participation in the labour force. Wives of farmers who judging by nomenclature were not poor also worked in large numbers, as did wives of grocers, inn-keepers, millers and at least some merchants. It is clear enough that many small businesses, including the business of farming, were joint husband-wife enterprises. The most disappointing result is the absence of a statistical relation between female labour supply and the wage and income variables. To be fair, these variables taken from the 1852 agricultural survey cover only the income of day labourers and hired hands, and thus fail to capture budget constraints affecting decisions of women in households not headed by day labourers. The lack of correlation also probably reflects the nature of the sample, which covers districts that varied enormously in level of economic development. The most economically advanced were in the *département* of Seine-et-Oise. Whereas in all other *départements* the female labour-force participation is unrelated to the day wage, in the Seine-et-Oise the statistical relation is positive and significant. As noted above, the department also has the lowest rate of labour force participation for women in households headed by day labourers. It may be that in districts where seasonal markets for

agricultural labour were well-developed, the harvest wage gap high, and a large and growing market for female domestic servants beckoned in the nearby capital, women who did engage in field work were highly responsive to wages.

The highest female participation rates are in the *département* of Mayenne. Was this because it was the poorest department, or because most of its farms were held on sharecrop tenure, which as is well known was a device for exploiting the labour of entire families? Given the roughly 3:1 range in wages and estimated income of day labourers in the sample as a whole, the insensitivity of female participation rates to wages and family income is nevertheless surprising. It may be that the other factors affecting participation rates were so powerful that they drowned out the wage and income effects. Sharecropping communes in the West were situated on stiff soils requiring huge labour inputs to plough and weed, and as long as farmers in these regions continued to produce cereals for local consumption, the amount of work they demanded would not have been terribly sensitive to the wage rate. This situation would change in the decades to follow as lower transport costs exposed such districts to competition from grain farmers in other regions. The tenurial structure also counts for something. Data on days worked per year in the *Enquete agricole* of 1852 show that the correlation between the proportion of farms held as sharecrops and the days worked by female labourers was more than double that for men (0.39, and 0.16, respectively). Wages and incomes in stiff-soil districts were low because agricultural productivity was low. Despite high rates of seasonal emigration, or perhaps because of it, low-wage districts retained their population at low wages and income.

In 1851 rural France had just emerged from an economic recession brought on by the harvest shortfalls of 1846/47 and the Revolution of 1848. The surge in rural wages and income in the subsequent decade and a half had just begun. The participation rates inferred from the 1851 census give a picture of the rural labour force on the eve of France's most rapid industrialization before the twentieth century. That picture shows an industrious population, in which two thirds to three quarters of women in farm families engaged in market-oriented work, mostly in farming. One of the major economic questions in early industrial history is whether changes in women's labour force participation affected the statistical measure of labour productivity, which is conventionally normalized on the number of male workers. There is evidence that French agricultural productivity accelerated in the century after 1750.²⁰ Capital accumulation is surely one reason, but unmeasured increase in labour inputs may well be another. France's agrarian structure was dominated by family farms held on tenure that even before the Revolution was remarkably secure. The expansion of market outlets provided rural families with opportunities to improve their economic security through hard work. It is perhaps not coincidental that the decline in the birth rate after 1790 was most pronounced among small holders, for whom redirection of female labour into market-oriented work was greatest.

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²⁰ Grantham, 'The growth of labour productivity'; Hoffman, *Growth in a traditional society*

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