HUB RESEARCH PAPER
Faculteit Economie & Management

Choices in Threefold.
Home maintenance and improvement between household production, informal outsourcing and the formal economy

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HUB RESEARCH PAPER 2008/29.
SEPTEMBER 2008

partners in
Hogeschool-Universiteit Brussel

CHOICES IN THREEFOLD

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Abstract

Households depend on the existence of a home. The means invested in the maintenance of this home represent an important economic sector. However, the role of formal outsourcing in this maintenance work is often overestimated. Commissioning a formal enterprise is only one possibility to maintain the household's home. Alternative modes of production are informal outsourcing and do-it-yourself with unpaid help from primary network members like kin and friends.

In this paper we report the results of a survey of a representative sample of Flemish households (n=240).
In a first part the different production modes are quantified according to two different methods (expenses versus time invested). The question is not only how prevalent moonlighting is; it is just as important to estimate the proportion of do-it-yourself in relation to outsourcing. Both questions are relevant from a socio-economic and a policy viewpoint.

In the analytical part of the paper we construct and test a theoretical explanation of the determinants of the choice made. We hypothesize that the complexity of the maintenance

work has an impact, but also dimensions of social and cultural capital. Thereby we focus on factors such as dexterity, occupational acquaintance with maintenance work, social trust and social contacts. With the help of a multinomial logistic regression support for these hypotheses is established.

Samenvatting

Huishoudens bestaan bij de gratie van een gemeenschappelijke gezinswoning. De middelen die gepaard gaan met het onderhoud van deze woningen vertegenwoordigt een belangrijke economische sector. Doorgaans wordt de mogelijkheid van formele uitbesteding van het onderhoud van woningen overschat. Het is immers slechts een van de mogelijkheden om gezinswoningen te onderhouden door middel van een opdracht aan een onderneming. Alternatieve productiewijzen bestaan uit de informele uitbesteding en het zelf uitvoeren van onderhoudswerkzaamheden, met de onbetaalde hulp van primaire netwerken van gezinsleden, verdere familie of vrienden.

In deze paper brengen we verslag uit van een onderzoek naar onderhoudswerkzaamheden bij een representatief staal van de Vlaamse huishoudens (n=240).
In een eerste luik kwantificeren we de waarde van de verschillende vormen van onderhoud volgens diverse maatstaven. De vraag daarbij is niet alleen hoe groot de sector van zwartwerk is; evenzeer is het van belang om de verhouding tussen doe-het-zelven en uitbesteding in kaart te brengen. De socio-economische en beleidsmatige relevantie van beide vragen is even groot.

In het analytische deel van de paper construeren en toetsen we een theoretische verklaring over de determinanten van deze keuze. Theoretisch verwachten we dat niet alleen de aard en de complexiteit van de werkzaamheden, maar ook dimensies van sociaal en cultureel kapitaal een belangrijke invloed hebben op de keuze die gemaakt wordt. Met behulp van een multinomiale logistische regressie wordt vastgesteld dat deze hypothesen empirische ondersteuning vinden.

Introduction

Real life is all about making choices in a social context. These choices are modeled by preferences, relations and opportunities available. Therefore, people's decisions and actions in given societal circumstances can only be understood against the background of the resources that these actors perceive to have at their disposal.

In this paper we apply these behavioral starting points to choices people make between self-provisioning (or do-it-yourself), informal outsourcing and formal commissioning of home maintenance and repairs. Basically we argue that both self-supporting production and informal outsourcing are dimensions of the unrecorded economy, and that both types of non-formal activities require explanation. Underneath this lies a factual assumption. Most research with explanatory ambitions builds upon assumptions or assessments of a descriptive nature: Robert Merton (1987) denoted this dimension as 'establishing the phenomena'. In our case the descriptive assumption is that a significant part of the maintenance of homes is done outside the formal markets, thus in self-provisioning and on the black market of informal outsourcing.

Once this empirical regularity has been established, we will attempt to account for the choice households make with reference to capital theory. We will thus introduce the different levels of control people have or the resources people have control of as a hypothetical causal factor. Once the decision of a repair or maintenance job has been taken, the principal hypothetical determinants are distinctive types of capital, i.e. resources people perceive to have available. More specifically, we will concentrate ourselves on dimensions of cultural and social capital. In contemporary sociological research, both resources have become important causal factors in a broad area of explanations. In the area of underground economic activities they have proven to provide important explanations for engagement in the informal economy. To a lesser extent cultural or *human* capital has served as a possible explanation for the household division of labor in economics. However, the explanation in this tradition is primarily directed at the possible yields from human capital in the formal economy. In this paper, we account for the skills and specialization people may have in order to maintain their homes themselves.

In short, in this paper we attempt to answer two research questions:

1. What are the proportions of self-provisioning, informal outsourcing and formal commissioning of home maintenance and repairs?
2. To what extent does social and cultural capital account for the choices of the way households choose to maintain their homes?

1. Unrecorded economies and the maintenance of homes

The literature on informal economies is a cacophony of different, overlapping and often contradictory concepts and meanings. Therefore a clarification of our conceptual choices is not superfluous. Basically unrecorded economic activities refer to the whole of economic activities that occur outside of the formal institutions of society, particularly

outside formal markets and not adhering to or comprised in formal regulation (compare Feige, 1990, 990; Portes & Haller, 2005). In this definition, both self-provisioning and unreported or informal economies belong to the unrecorded economy.

Household production and other forms of self-provisioning economic activities distinguish themselves from market transactions because agents do not exchange money for goods or services (Chadeau, 1992; Landefeld & McCulla, 2000). In addition this type of unrecorded activities almost always takes place within primary networks of kin, friends, acquaintances and so forth. In general there is a strong gender specialization in this kind of productive activities. In Europe e.g. around two thirds of the household work is done by women (European Commission, 2004). Also between different self-provisioning activities a strong gender specialization applies (Koelet, 2005).

Unreported economic activities on the other hand are monetary transactions that take place on a market. They therefore do not distinguish themselves from formal economic activities in the marketization criterion. The distinction with formal economic activity rather lies in its relation to government regulation. Unreported economic activities do not comply with government regulation. Most often this non-compliance implies the non-observance of tax regulation. In the case of this research, informal economic activities take the shape of tax evasion. This does not exclude however, that informal activities in the realm of home maintenance may at the same time transgress other regulation, e.g. legislation on working time or safety regulations. For example, most social-scientific research assumes that informal activities are strongly associated with poor working conditions (Galli & Kucera, 2003; Interational Labour Office, 2002).

Households' existence is centered round the existence of a 'home'. This concept refers to a set of intangible features as well as to a distinct objectified phenomenon: the house one usually lives in. The latter is in need of investments in order to keep its value, both in terms of its economic and emotional value. We focus on the socio-economic relevance now, as the most obvious relevance of home repair and maintenance lies also in its socio-economic importance. The expenditures for home repairs and improvements represent a significant part of households' expenditures, on average fluctuating around two percent of the overall budget. Moreover, the average expenditures for maintenance of the house tend to keep pace with the overall growth of average spending power of households during the past decades, as is shown in the figure below.

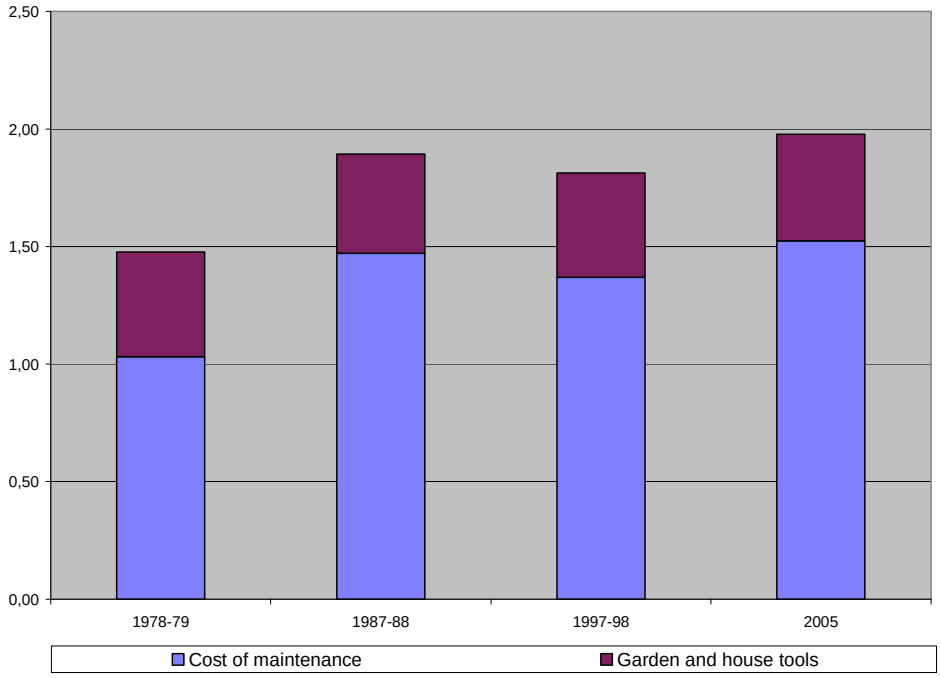


Figure 1: Expenditures for the home in % of total expenditures (Flanders, 1978-2005)[1]

The questions we go into are: which (1) way is the maintenance of homes is organized, and (2) which determinants affect the underlying choice. Quite central to these questions is the choice households or their members make whenever they have to take care of their home. Following the scheme explained above, this choice is basically decomposed into two questions:

1. Will the members of the household perform the maintenance work themselves without monetary compensation?
2. Provided the work is outsourced, will the household act as a principal in the formal economy, or will they appeal to informal work and payment?

The first question concerns every job regarding the maintenance of the house. A household has to decide whether they will rely on monetary transactions or on their own productive and mobilizing resources in order to have a certain maintenance or repair done. This is a first dimension of *informality*: the possibility of agents to fulfill their needs through self-provisioning production. A heroic but quite often implicit assumption, both in social-scientific research and in everyday life judgments, concerns the decreasing relevance of non-market production. It implies that family life specializes in its affective function, but that its socio-economic functioning is more and more subjected to market relations. This so-called 'thesis of marketization', which has roots as far as Marx' and Engels' *Communist Manifesto*, is closely associated with modernization theory. In our conceptual scheme, this thesis implies that outsourcing becomes more prevalent at the expense of self-provisioning. The problem with this thesis of marketization, as Colin

[1] Source: Belgian National Institute for Statistics, http://statbel.fgov.be/ (downloaded on May 6, 2008).

Williams (2004) pertinently argues, is that the available data do not support it. One important indicator e.g. is the proportion of the working time spent in household production or other forms of unpaid work. In most countries this seems to be quite stable around or above 50%, as illustrated in the table below (similar data in European Commission, 2004, p. 74).

Country	Proportion unpaid work
Belgium	50.8
Canada	54.2
Denmark	43.3
Finland	54.5
France	57.5
Netherlands	57.9
UK	53.9
USA	58.4

Table 1: Proportion of unpaid work of persons aged 20-74, 1985-2004[2]

Though the debate about the marketization thesis is not at its final conclusion[3], it suffices for our purposes to assess that self-provisioning in order to fulfill one's needs takes a significant place in people's economic lives. There is little reason to rule out home maintenance and repair from this conclusion. Some have e.g. pointed to the success of DIY shops as an indicator of the importance of self-provisioning in the maintenance and repair of the home. A contraindication may be that DIY shops provide just as much an opportunity for moonlighting, as the employment of articles purchased here in informally remunerated maintenance work is more difficult to control for social and tax auditors.

The second question assumes that a household or its members may have the opportunity to outsource the maintenance or renovation of the private house. Thereby, the choice between formal or informal outsourcing forces itself upon the household. Though informality in this monetary form may have several motivators, the principal reason informal outsourcing takes place in home maintenance probably lies in the cost reduction due to tax evasion. To be precise, the price cut probably is the principal motivator to go underground for the demand side of the transaction; for the supply side, other factors may count. From this assumption we confer that the basic actual form informal outsourcing takes place is that the supplier of the maintenance does not provide the household with an invoice.

McCrohan's research in the U.S. points out that home repair and maintenance are the most important sector in informal consumption of goods and services, representing almost one third (29.5%) of total informal household expenditures, and 18.7% of the expenditures in home repair and improvements (McCrohan & Smith, 1991, p. 37). This latter proportion isn't necessarily confirmed in other countries. In a survey in the

[2] Sources: (Williams, 2004, p. 440) and http://statbel.fgov.be/

[3] For one thing, time spent is not equivalent to the proportion of consumption provided by self-provisioning. Probably this latter proportion is decreasing.

Netherlands in the beginning of the eighties e.g., only 7.6% of the expenditures for maintenance of homes was in the informal economy (Kazemier, 1984, p. 32); a research of homeowners a decade later revealed even lower proportions of around 3% (Meijer, 1993, p. 332). These latter findings seem to be consistent with the findings of Broderson in Norway, Denmark, Sweden and Germany, where 10% or less of the paid home repairs were carried out without an invoice (2003, p. 97).

3. Data and method

The problem is most effectively studied through a quantitative approach. As no existing data provide enough information, the researchers chose to collect their own data with face-to-face interviewing of standardized questionnaires. In order to reduce the errors, and due to the complex structure of the questionnaire, interviews were directly put in a handheld computer by the interviewers.

Quantitative research into the informal dimension of social life poses even greater challenges to reliability and validity than normally. Because of the sensitive nature of the problem, unit and item non-response, and motivated misreporting are serious threats to the reliability of the data (Groves *et al.*, 2004, p. 224-225). Therefore, the research was carefully designed in order to minify the problems cited. The researchers mainly took this into account in the approach of the respondents, in order to minify unit non-response, and the design of the questionnaire, in order to prevent socially desirable answering and item non-response in the sensitive questions.

The households were selected were through a two tier clustered sample from the population of Flemish households. In a first phase, 16 municipalities were selected with the help of a probability proportional per size sample. In each municipality a first respondent was randomly selected. From this starting point on, fifteen, respondents were selected from the neighborhood. Non-respondents were replaced by their neighbors. In research with sensitive topics, an effective strategy is to avoid introducing explicitly the sensitive topic (Gërxhani, 2007). Therefore, in the introduction of the face-to-face interview no mention was made of the focus on informal economic transactions. The research was introduced through the topic of home repair and maintenance.
In total, 604 respondents were approached. After three visits at different times and days, 425 respondents were reached (70.4 %). The refusals rate was 43.5 % (n=185). 240 respondents agreed to cooperate; the net response rate thus amounted to 56.5 %.

The questionnaire was designed in order to avoid situations conductive to item non-response or motivated misreporting. A second point of interest was the comprehensiveness of the maintenance work that was carried out in the past year. Therefore we explicitly chose not to work with one general set of questions regarding the *total* amount of work carried out, but instead assessed whether work had been carried out in eleven types of maintenance in and around the house. For each different work carried out, we collected the most important information in a set of twelve questions. In this set we only enquired indirect information about the illicit nature of the transactions (way of paying, invoice); no direct question about moonlighting or tax evasion was put. Only

after the enquiries about all the jobs performed in the last year, one direct and loaded question was asked about paying and working on the side.

4. Estimates of market shares of three types of maintenance

The first research question referred to the proportions of self-provisioning, informal outsourcing and formal commissioning of home maintenance and repairs. In this section, we attempt to estimate these shares of the three ways of carrying out home repairs. As the work done in self-provisioning is not valued in money by its very nature, it is a quite complex exercise to construct comparable measures of the value of home maintenance. One of the problems is that quite strong assumptions underlie the estimates. Furthermore, there are huge differences in the value of the output of household production and other self-provisioning work depending on the method adopted (see e.g. Chadeau, 1992; Hamermesh, 2008; Landefeld & McCulla, 2000; Merz & Wolff, 1993).

Before we estimate the market shares of the modes of production, it may be of interest to take a look at the participation of the respondents in home maintenance. These findings are summarized in table 2. Almost nine out of ten households indicate they performed at least one maintenance job in the past year. More or less half of the respondents formally commissioned a job, while only one fourth had maintenance work done off the books. Almost half (44.8%) of the respondents indicate they performed do-it-yourself work. This result is consistent with the findings of Broderson (2003, p. 24) in surveys in Denmark, Sweden, Norway, Germany and Great Britain around the turn of the century, where 43 to 68% of the respondents (depending on the country and the survey) carried out repairs or improvements in DIY. Another research based on a secondary analysis of government data in the UK in 1991 is not consistent with these shares. The latter research revealed only 28.6% of the owner-occupiers tackled work with the help f DIY (Davidson & Leather, 2000, p. 750). Probably the selection of major maintenance work explains the difference.

	Proportion (n)
Do-it-yourself	52.2% (121)
Informal outsourcing	23.3% (54)
Formal outsourcing	44.8% (104)
All maintenance work	87.5% (203)

Table 2: Participation of households to different modes of production in home maintenance

More important still is the share of the different modes of production. In the first phase we chose for a rather simple but comparable and unequivocal measure of the investments in home maintenance: working time. Investments in time are nominally comparable between all three categories. Therefore it is possible to estimate the weight of all three modes of production. In terms of time invested, formal commissioning is the modal mode of production, with a share of almost 60 %. Self-provisioning and informal outsourcing both represent approximately one fifth of the time invested in home maintenance and improvement.

One of the objections to working time as an indicator of the proportion of the production method is that productivity and value of the invested materials are disregarded. Therefore, working time is a poor indicator for the value of the output. In order to correct for this, we also constructed a second estimate with the help of money invested in home maintenance. As self-provisioning does not provide a straightforward measure of the value of the work done, we tentatively confined ourselves to the two monetarized modes of production. With approximately 80 % of the expenses the share of formal outsourcing is even larger in money than in working time, as shown in the table below. Still, around one fifth of the commissioned maintenance work is performed off the books.

		95% confidence interval		Proportion		
	Mean	**Lower bound**	**Upper bound**	**Mean**	**Lower bound**	**Upper bound**
Do-it-yourself (time)	4.48	3.57	5.40	18.21%	25.24%	15.37%
Informal outsourcing (time)	5.38	2.45	8.31	21.86%	17.34%	23.68%
Formal outsourcing (time)	14.76	8.12	21.39	59.94%	57.42%	60.95%
Total time	24.62	14.15	35.09	100.00%	100.00%	100.00%
Informal expenses	384.78	148.16	621.14	19.04%	11.35%	22.71%
Formal expenses	1635.61	1157.41	2113.81	80.96%	88.65%	77.29%
Total expenses	2020.40	1305.57	2734.95	100.00%	100.00%	100.00%

Table 3: Mean time (in hours) and expenses (in €) spent on home maintenance

If we compare these results with conclusions from research in other countries, the proportion of informal outsourcing seems to be significantly higher than elsewhere, as is shown in the second column of table 4. This is consistent with most estimates of the underground activities, which are usually higher in the Belgian economy than in comparable countries. However, we are not convinced that the comparison of our data with results from other studies suffices as evidence for a substantial difference in off the books transactions in home maintenance. If we compare the results of our studies with the findings of other research, there seems to be no consistent correlation between the informal expenditures in home maintenance found in different countries and the indicators of informal activities from both macro-economic estimates (fourth column of table 4) and survey research (fifth column). Therefore, the differences probably reflect a method effect rather than a real difference in expenditures on home maintenance. Once more this indicates that the use of different survey researches seriously hampers the comparability.

Country	**% informal expenditures**	**Source**	**Estimated underground**	**% of population**

	home maintenance		activity in % of the GNP[4]	reporting VAT-evasion[5]
Belgium	19.04	Own data	19.6	32.99
Netherlands	7.6	(Kazemier, 1984)	11.1	26.43
Denmark	3-10	(Broderson, 2003)[6]	16.1	35.93
Norway	2		16.8	27.03
Sweden	5-6		16.3	30.22
Germany	6-5		15.3	28.06
UK	15-10		10.3	19.08
Correlation (Pearson R) with % informal expenditures home maintenance (significance)			0.013 (0.978)	0.131 (0.780)

Table 4: Informal expenditures in home maintenance compared to indicators of overall informal activities in 7 countries

5. Capital forms as a social-scientific panacea?

Capital as a concept has made a remarkable odyssey throughout social-scientific and sociological history. Though some commentators deplore the void and tautological nature of many capital approaches (e.g. Elster, 2007), many others have seen it as a potentially potent conceptual scheme for explanations. Its success has inspired sociological theory to address contemporary contributions as 'neo-capital theory' (Lin, 2001). In general, capital refers to a resource people may use in order contribute to a better outcome for themselves or for significant others (compare Robison & Schmid, 2002, p. 3). The resource capital represents has a double life. First resources are produced and amassed; in a second phase the capital can be used in order to achieve an aim (Lin, 2001, p. 3). The idea of accumulation and banking up of assets is crucial; just as much it provides the basis for 'profit', the advantageous deployment of capital in the pursuit of goals[7].

Cultural capital refers to the set of skills or knowledge people may acquire and invest in their social activities. In an often used typology, Pierre Bourdieu distinguished between three types of cultural capital (Bourdieu, 1989).
The basic type is *embodied* cultural capital, representing all forms of skills actors may master or knowledge they may have. In this research we measured a specific type of

4 (Schneider, 2007)

5 The figure is based on one question asked in the second round of the European Social Survey: "How often, if ever, have you paid cash with no receipt so as to avoid paying VAT or other taxes in the past five years?" We recoded the answers into a dummy.

6 The first percentage refers to small maintenance work, the second to renovations.

7 Contrary to Lin e.g. (2001, pp. 3 and 19), we do not define the expectation of a profit or a return as a constitutive element of capital. Profit and return may or may not exist in the eyes of the agent. And even if this expectation is present, the agent may perceive quite different mechanisms to profit, and even different forms of return. The most important reason not to include this characteristic, however, is that a profit is conductive to the functionalist fallacy. If one selects everything that leads to beneficial results for the actor, it is self-evident that the model will have a high predictive power. Analytically this is invalid because one basically uses results as causes.

embodied cultural capital. Every respondent was asked to rate themselves and (in such cases) his/her partner on a five point Likert scale ranging from very clumsy to very handy.
Secondly, *institutionalized* cultural capital refers to titles and degrees, with credentials as the most important contemporary form. As background information the respondents were asked to rate their own and their partners' highest diploma.
Finally, *objectified* cultural capital refer to all tangible objects that contain or apply skills or knowledge, provided one has the corresponding embodied cultural capital at one's disposal.
We expect that indicators of embodied cultural capital referring to maintenance of the home, i.e. indicators of applied dexterity and skill referring to maintenance, will have a significant effect on households' decision *not* to outsource maintenance work, or in other words to choose for self-provisioning. The same applies for the accumulation intrahousehold support, i.e. the amount of people that can be employed to get a job done. Finally we assume that aging devalues embodied cultural capital for home maintenance, as the ability to do jobs is also dependent on physical strength.

Social capital as a concept is even harder to fetch than cultural capital. The first reason for this is that it is quite hard to grasp social capital at the level of individuals or even households, just because social capital is located *between* rather than *in* agents (Coleman, 1990). Secondly, there hardly exists agreement about the dimensions and aspects that are part of social capital. Elements causally prior to social capital and effects from social capital are quite often included in the very concept (Robison & Schmid, 2002). This does not add to conceptual clarity, to say the least. However, in the elaborate literature on social capital, an implicit consensus seems to emerge. Thereby the definition provided by Alejandro Portes is a good starting point. Building on the contributions of Bourdieu and Coleman, his definition of social capital refers to "the ability of actors to secure benefits by virtue of membership in social networks or other social structures" (1998, p. 6). Most obvious in this definition is the reference to a structural component of social capital. As is the case in the above definition, this structural component usually is called 'social networks', i.e. durable relations with other people.
In general, the structural component is seen to be the central element of social capital. One of the quintessential functions of social contacts is that they provide valuable information. For example, already in the seventies (Granovetter, 1977) research indicated that the information resource of social contacts significantly increases the chance of finding a (suitable) job. The relevance of information through social contacts is even higher in the informal economy. Due to its concealed nature, social capital becomes the most important nexus between supply and demand in the informal economy. Informal economic interactions are dependent on prior personal or indirect contacts with moonlighters or other suppliers of informal services or goods. Formal structures (advertisements, yellow pages…) are not very suitable for these interactions, as they are easily detected by institutions policing the economy[8].

[8] A counterexample is the open way domestic helpers are recruited in newspaper ads. This is only possible because the government obviously tolerates informal employment of domestics, or at least does not actively proceeds against the practice, and suppliers and demanders are aware of this government toleration.

Therefore, we expect that social contacts will be positively correlated with the propensity to engage in informal outsourcing of home maintenance.

All the more, in most measures of social capital one also discerns a cultural component (Van Deth, 2003). This cultural dimension makes reference to agents' dispositions toward social contact. Probably the most important – or at least the most frequently cited and measured – element of this cultural dimension of social capital is trust. Though there is some debate as whether social trust is causally prior to social capital or is a part of it, there is little doubt that trust in itself has an significant impact on the way people interact, reciprocate and exchange. Also in the case of home maintenance, we expect that social trust will enhance households' ability to outsource their maintenance work.
The effect however, is hypothetically stronger for informal than for formal commissioning. The mechanism supporting this hypothesis has to do with the inability to rely on courts and other official institutional arrangements in order to enforce contracts. Therefore, agents will be more inclined to engage into informal exchanges to the extent that he or she has reason to believe that the contractual party is trustworthy. Extending this mechanism to a more general level this implies that people with a higher overall trust in other people are more inclined to engage in off the books transactions, ceteris paribus.

As indicated, both the structural and the cultural dimension of social capital were measured in this research. At the individual or household level the structural dimension of social capital is usually measured through the social contacts people actually have. This is exactly the approach we followed in our survey: we assessed respondents' social contacts by asking them how often they met other people, engaged in social activities, and so on. However, this general measure of social contacts may not have been specific enough to assess the hypothetical relevance of networks for home maintenance. Therefore, we also specifically surveyed whether people had social contacts with people who were skillful in home maintenance.

6. Explaining choices made

In this section, we test a model to explain the choice for a mode of production with the help of indicators of cultural and social capital. Summarizing, in the preceding section we hypothesized that the following causal factors have a significant influence on the choice made:

1. Job complexity: the more complex a job is, the more likely it will be outsourced.
2. Age: households with older members are less inclined to do their maintenance jobs themselves.
3. Ownership: owners are more inclined to do-it-yourself as a result of a more general inclination to maintain their home more intensely.
4. Dexterity: the embodied cultural capital directly referring to skills regarding maintenance and repair.
5. Occupational dexterity: a dummy referring to the occupational acquaintance members of the household have through technical or handicraft occupations.
6. Social trust: the dimension of social capital referring to the inclination of actors to engage into social relationships.

7. Social contacts: the actual self-reported amount of social relationships people regularly have contact with.
8. Skills based contacts: the self-reported amount of social contacts with people that able to perform home maintenance.
9. Intrahousehold support: the amount of people within the household eligible to perform maintenance work. This was measured through the dummy single person household.

The problem to be explained is the choice for one of three modes of production. Technically this dependent variable is of a nominal nature. We therefore selected the multinomial logistic regression as the most appropriate multivariate technique for our problem. Table 5 shows the results of this regression. We chose formal outsourcing as the reference category, so the odd-ratios are modelled do-it-yourself versus formal outsourcing and of informal versus formal outsourcing.

		b[9]	st.error	Exp(b)	Wald	p-value
Informal	Intercept	0.175	1.333		0.017	0.895
	Age	0.010	0.010	1.010	1.009	0.315
	Ownership	0.854	0.635	2.349	1.810	0.179
	Complexity	**-0.141**	0.068	0.869	4.341	0.037
	Social trust	-0.031	0.116	0.970	0.070	0.791
	Social contacts	-0.315	0.257	0.729	1.506	0.220
	Skill based contacts	**0.409**	0.195	1.506	4.415	0.036
	Single person	0.074	0.436	1.077	0.029	0.865
	Dexterity	**-0.420**	0.174	0.657	5.847	0.016
	Technical/handcraft	-0.836	0.497	0.433	2.831	0.092
Do-it-yourself	Intercept	**3.659**	1.103		11.009	0.001
	Age	**-0.032**	0.010	0.969	10.897	0.001
	Ownership	0.293	0.428	1.340	0.468	0.494
	Complexity	**-0.557**	0.060	0.573	84.865	0.000
	Social trust	**-0.238**	0.099	0.788	5.819	0.016
	Social contacts	-0.313	0.226	0.731	1.907	0.167
	Skill based contacts	0.107	0.157	1.113	0.462	0.497
	Single person	-0.275	0.381	0.760	0.522	0.470
	Dexterity	**0.718**	0.156	2.051	21.203	0.000
	Technical/handcraft	0.249	0.334	1.283	0.555	0.456
Nagelkerke R^2 = 0.371						

Table 5: Results of the multinomial logistic regression

As table 4 shows, the complexity of a maintenance job decreases the probability that a job is performed off the books or in self-provisioning (compared to formally outsourced). In other words, more complex jobs are more likely to be outsourced formally. As expected this relation is the strongest if one takes self-provisioning into account. The background variables of age and ownership are not very important. Only the probability

[9] Coefficients in bold (underlined) are statistically significant at the 95% (99%) confidence level

of do-it-yourself seems to decrease a bit with age. There is a quite interesting regularity however: the proportion of formally outsourced jobs is more or less constant over the different age classes. The decrease of DIY by older people is compensated by a growth of the proportion of informal commissioning. This is illustrated by figure 2 and is confirmed by a Pearson chi-square-test (p-value = 0,395).

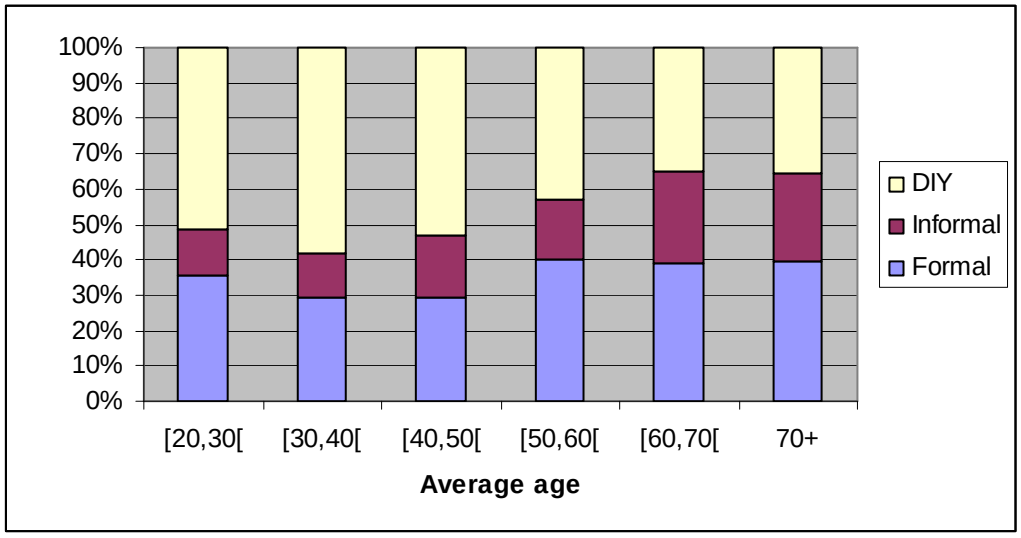


Figure 2: Proportion of modes of production by age class

Social capital has a significant impact on the choice of the mode of production. For the structural component of networks, it is not the general level of social contacts that plays a role, but rather the level of acquaintance one has with people that are able to perform maintenance jobs. The latter increases the probability of off the books outsourcing. This effect even survives the control for the general level of social contacts people report to have.
On the other hand, social trust has a negative relation with do-it-yourself: households with a lower social trust are more likely to do the job themselves.

Finally cultural capital also plays a significant role. The probability a household chooses for DIY increases with the availability of dexterity of household's members. On the other hand, households with a lower maximum dexterity have a higher probability that the job is outsourced informally. The overall picture seems to point in the direction of a trade-off effect between informal outsourcing and DIY. This is illustrated by the following graph: the fraction do-it-yourself increases as the maximum dexterity increases, while the fraction informal outsourcing decreases, but the fraction formally outsourced jobs seems to be more or less constant. This is confirmed by a Pearson chi-square-test (p-value = 0.053).

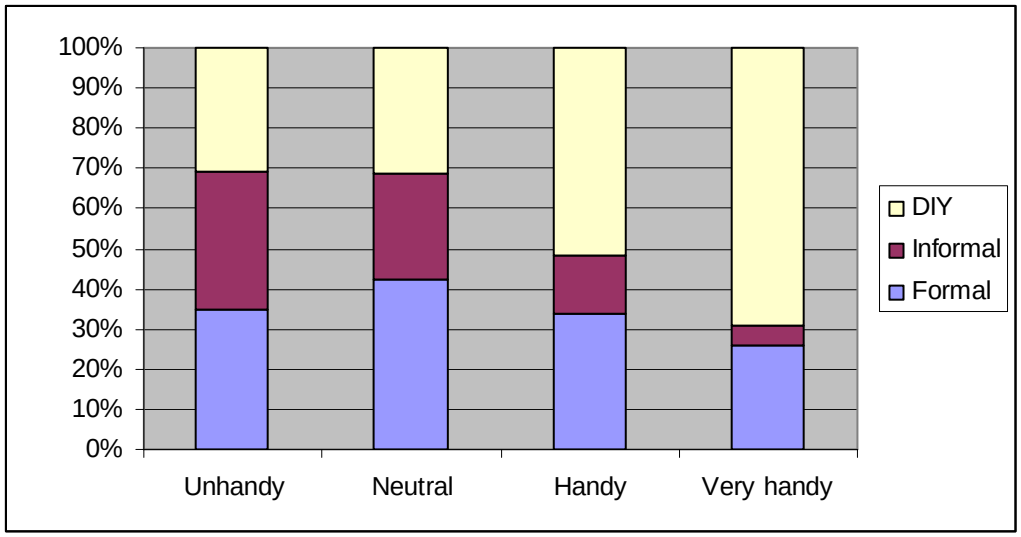


Figure 3: Proportion of modes of production by type of dexterity in the households

As a final remark we mention that many households performed more than one job, so not every job in the sample corresponds to a different household. We disregarded this effect in our analyses. We will present a solution for this drawback in following paper, using multilevel techniques.

Conclusion

Theoretically three modes of production exist in home maintenance. The most explicit, and often the only one taken into account, is the formal commissioning of maintenance jobs to a firm. However, families and households have alternatives for this way of maintaining their home. First of all, people may decide to do the work by themselves, or with the unpaid help of kin and friends. This choice for self-provisioning is often denoted as do-it-yourself (DIY) in the area of home maintenance. But even if households do choose to outsource the maintenance of their home, they will not always rely on formal commissioning. An alternative for some is to rely on off the books transactions, basically as a way of evading taxes and therefore cutting costs.

This paper investigates (1) whether these alternatives take a quantitatively important place in home maintenance and (2) which dimensions of social and cultural capital are able to predict the choice made for on of the three modes of production in home maintenance. Both research questions are tackled with the help of a face-to-face survey taken from a sample of Flemish households (n=240). The questionnaire was developed in such a way that the classical problems of unit and item non-response, and of the resulting underreporting of informal activities, were minimized.

At the descriptive level, we estimated the proportion of the respective modes of production with the help of two indicators.
All three modes of production were calculated with the working time invested in the maintenance work. This resulted in a share of around 60% of formal outsourcing, and one

fifth of both other modes of production. Working time however does not necessarily measure added value, as productivity and goods used may differ. Therefore we assume that the share in terms of value is higher for informal maintenance work (because of the cost advantage of tax evasion) and lower for DIY (due to the lower average productivity of DIY workers).
The second approach was only applied to the two monetarized modes of production (formal respectively informal outsourcing). The proportion is approximately 80/20.

In the analytical part the paper attempts to account for the decision taken with the help of the conceptual framework of neo-capital theory. Basically we distinguish between social and cultural capital.
The former refers to social relationships, and distinguishes two dimensions: a structural (social contacts and networks) and a cultural (trust in other people) component. Social contacts with people that have the right skills increase the probability of off the books transactions; social trust decreases the probability of DIY.
Cultural capital refers to skills and knowledge necessary to perform maintenance jobs. Self-reported dexterity enhances people's capacities to maintain their homes themselves. This significantly increases the probability of DIY activities.

Finally one striking regularity seems to suggest that an important trade-off between informal outsourcing and DIY applies to home maintenance. Thereby, the real decision is between the two cited modes of production, while the nature of the maintenance job (probably its technical complexity) determines whether the job is outsourced formally. The overall picture is that regardless of e.g. cultural capital or age of the household's members, a quite stable proportion of the maintenance work is outsourced formally. The cited variables doe however affect the choice for DIY or off the books commissioning.

Appendix: suggestions for further research

Analyzing data and reporting about ongoing research is a frustrating activity, as one is confronted with the weaknesses of the design, data or theories. Therefore, it may be interesting to list some suggestions for future research, in order to prevent that the same weaknesses would recur.

The most important piece of advice can be summarized in the following list:

1. **The population studied**:
   The limitation to Flemish households confines the relevance of the results, as a significant part of the policy, especially regarding tax evasion and labor regulations, is a federal Belgian matter. Therefore an extension of the population studied to the Belgian level would be more consistent and relevant. Even more, a comparative perspective would allow us to assess the relevance of the national policy.
2. **Sampling**:
   a. The sampling design can be refined. An interesting approach would be to start with so-called 'statistical sectors' as the basis for the first sample of the two-tier selection. These statistical sectors consist of rather small neighborhoods. The most recent Belgian census provides data on the level of these sectors, so that the sample can be stratified based on relevant variables, mainly home characteristics. Such a stratified sample based on the frame of statistical sectors would allow us to control for the extensive variation within villages and cities. The possible sampling error would be reduced significantly this way.
   b. Due to the considerable variation in types of maintenance works, and more importantly still in the magnitude and cost of it, some effects probably are not recorded or are not significant due to the rather limited sample. An enlarged sample would allow us to test more refined hypotheses.
3. **Data collected**:
   Some evident and theoretically interesting variables have not been included into the questionnaire. Most importantly, home characteristics, indicators on economic capital and on objectified cultural capital should be included into the questionnaire. In order to avoid an overload for the respondents, home characteristics can partly be documented through interviewers' assessments.
4. **Supply side**:
   One of the more fundamental flaws of the model discussed above is the assumption that the choice between formal and informal outsourcing is necessarily and totally initiated by the principal. However, qualitative data collected for the preparation of this research indicate that formal

entrepreneurs regularly suggest working off the books. Therefore, the model could be substantially supplemented by information about the supplier of the services. Moreover, some information about the contractor could help us to document the characteristics of suppliers of informal services.

5. **Analysis**:
    a. A reliable estimator for the output value of all three modes of production should be constructed.
    b. As the data basically refer to properties of different levels (the household, the members of the household, maintenance works performed), a multilevel model making use the multinomial logistic regression would be more appropriate.

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