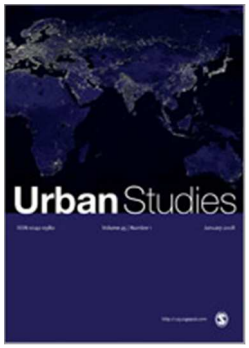

SPATIAL VARIATIONS IN PERSONAL INSOLVENCY CHOICES: THE ROLE OF STIGMA AND SOCIAL CAPITAL

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1. **Abstract:** This paper offers an explanation for the wide spatial variations in choice of insolvency route by personal debtors across local authorities in England and Wales. It is argued that formal bankruptcy has a more negative impact on social capital through stigma effects than the alternative of Individual Voluntary Arrangements. Consequently, spatial variations in choices are related to variations in social capital. The hypotheses derived from this approach are tested through the use of spatial econometric models utilising data from England and Wales. The results provide support for a positive link between variables related to social capital (age, mobility and home ownership) and choice of IVAs. It is argued that avoidance of stigma costs provides an explanation for the apparent paradox of the significant growth of IVAs despite their high cost to debtors compared to bankruptcy. Whilst there is only limited support for impacts directly related to the urban-rural environment, significant spatial interdependencies in choices across neighbouring areas are also uncovered.

Keywords: Personal Insolvency , Bankruptcy , Individual Voluntary Arrangements , Stigma , Social Capital

2. Introduction

In recent decades, there has been a dramatic rise in the number of personal insolvencies in many leading economies (Bishop and Gripaios, 2010). The rise has been particularly striking in England and Wales, where the insolvency rate increased fifteen-fold in the quarter of a century following the mid-1980s, with particularly rapid growth occurring from 2003 to 2006. One notable development has been the rise in the number of Individual Voluntary Arrangements (IVAs) which, since their introduction in 1986, have grown to account for over 50% of personal insolvencies. This growth has attracted critical attention as the administration fees for IVAs can be substantial, potentially providing an incentive for

providers to recommend this option rather than the alternative of bankruptcy (Walters, 2009).

One interesting feature of the growth of IVAs is the existence of wide regional variations in their usage. Whilst several studies have attempted to explain spatial variations in insolvency choices, most have utilised data from the USA and focused on differences in laws across states (McIntyre et al, 2010). Such an approach is of limited value for England and Wales and other countries in which there is a common legal system. This paper fills this gap by developing an explanation based on spatial aspects of stigma and social capital. It is argued that bankruptcy attracts considerable social stigma and has a more negative impact on social capital than IVAs. Consequently, spatial variations in insolvency choices are related to spatial variations in social capital; these may, in turn, be influenced by the composition of an area's population, the impact of the urban-rural environment and spatial spillover effects across neighbouring locations.

The analysis begins with an overview of current legal arrangements governing insolvency and recent trends in insolvency choices. This is followed by an examination of alternative explanations for insolvency choice, including a discussion of the role of stigma, social capital, the urban-rural environment and spillover effects. The derived hypotheses are then tested through the estimation of spatial econometric models for sub-regions of England and Wales. The results provide support for a positive link between variables associated with social capital (age, homeownership and mobility) and choice of IVAs. Whilst there is limited support for a direct influence of the urban-rural environment, significant spatial

interdependencies are uncovered. The final section discusses the implications of the research findings.

3. Personal Insolvency in England and Wales

Personal Insolvency arises if an individual is unable to pay their debts as payments fall due. The legal process prior to the 1986 Insolvency Act primarily involved bankruptcy - a form of *liquidation insolvency* in which the debtor surrenders non-exempt assets to creditors in return for a discharge of unsecured debts and retention of future income. Asset exemptions are relatively sparse, encompassing only the tools of trade that enable pursuit of employment and items necessary for basic needs. If debts are secured on an asset such as a house, the secured creditor may acquire the asset and any shortfall can be included within the bankruptcy as an unsecured debt. Un-discharged bankrupts are subject to certain job restrictions and disclosure of bankruptcy is required for credit applications. After a defined period most unsecured debts are discharged and the individual is free to have a fresh start.

Prior to the 1986 Insolvency Act, a second option was technically available - a Deed of Arrangement. This procedure embodied a *payment plan* approach in which individuals retained their assets but made payments out of ongoing income (Di Martino, 2005). However, Deeds accounted for less than 1% of insolvencies by the mid-1980s (Pond, 2002). IVAs sought to provide an updated and more attractive payment plan. Under an IVA, the debtor proposes a plan for partial debt repayment under the guidance of a licensed Insolvency Practitioner (IP); creditors may then accept, reject or propose changes to the

plan. If 75% or more of creditors accept, the agreement becomes binding and typically lasts for five years. Although there may be a requirement to release some equity in an owned property by re-mortgaging, an IVA enables an individual to retain their property. The IP supervises the arrangement and pays creditors in return for a fee paid by the debtor. A fundamental aspect of IVAs is that they require the mutual agreement of debtors and creditors; this differs from bankruptcy where either party may petition the court without the agreement of the other party.

Initially the growth of IVAs was relatively modest, reaching 4-5,000 per annum by the mid-1990s. However, the popularity of the arrangements grew markedly in the mid-2000s and, by 2014 the annual number of IVAs had reached 51,000 representing 52% of individual insolvencies. Statistics on insolvencies at the sub-regional level are only available from 2000 onwards. A recent analysis by Bishop (2013) concludes that there were significant spatial variations in total insolvencies per capita over the period 2000 to 2007. Similar variations are evident for IVAs. In 2011, for example, the average rate of IVAs per ten thousand adults was 11.08; however, at the sub-regional level, rates varied from 2.97 to 23.17. The data also suggest that the spatial distribution of choices is non-random. Figure 1, for example, shows areas with above or below average rates of IVAs to bankruptcies in 2011. One obvious feature is the cluster of low IVA areas across South West England and much of central and northern Wales, whilst higher rates of IVAs are evident across the central spine of England. This pattern suggests that interdependencies across neighbouring areas may be an important issue.

Insert figure 1

4. Determinants of Insolvency choice

Theoretical approaches to explaining insolvency choices have typically adopted a perspective in which rational economic agents make decisions on the basis of utility maximisation (White, 2005; McIntyre et al, 2010). These approaches are invariably based on the system in the USA and the analysis of spatial variations in insolvency choices has focused on differences in laws across states. However, these legal variations are not relevant in England and Wales where there is a common legal system. Nevertheless, there is one feature of the system in England and Wales that suggests an alternative explanation for spatial variations in choices. In the USA, creditors do not have to agree to a payment plan proposed by the debtor for the plan to be approved: the final authority is vested in the court. This contrasts with England and Wales where IVAs are only established through agreement between debtors and creditors. From a rational choice perspective, this implies that both parties must perceive additional net benefits compared to bankruptcy to co-operate on the establishment of an IVA. If these net benefits differ across space, then this may result in spatial variations in insolvency choices.

On the surface, the need for co-operation creates a paradox. IVAs impose a greater financial burden on debtors than bankruptcy due to higher payments to creditors (Pond, 2002) and substantially greater fees (Business, Innovation and Skills Committee, 2013). However, debtors have opted for IVAs in increasingly greater numbers. This suggests that there must be other factors that motivate the choice of IVAs. One possible explanation is the influence

of IPs who provide advice to consumers but have a financial interest in IVAs due to the fees involved. A piece of evidence that might support this is the rise in IVA failure rates during the period in which IVA growth surged in the mid-2000s. However, this resulted in a dispute between creditor institutions and IVA suppliers; as a consequence, IVA providers agreed to a new protocol and failure rates have since fallen (Walters, 2009). Whilst poor advice may have led to a high failure rate, the undermining of the reputation of providers prompted countervailing mechanisms to regulate the industry. Indeed, a survey by R3 (2010) found that two thirds of those undertaking IVAs had discussed alternatives with advisors and only 12% felt that they had been pushed towards IVAs. An alternative explanation for the rise of IVAs proposed in this paper is that debtors derive additional benefits from IVAs in terms of reduced stigma costs compared to bankruptcy. Debtors can induce creditors to opt for IVAs by offering greater financial payments and hence both parties benefit from co-operation. A spatial dimension arises through a recognition that the incentive to avoid stigma costs may vary across space due to the links between stigma and social capital.

The concept of stigma refers to the social devaluation of an individual who deviates from a social norm. A theoretical basis for stigma can be grounded within the concept of social capital, which can be broadly defined as the social networks, norms, reciprocity and trust that arise from human interactions in a community (Muir, 2011). Different theoretical perspectives conceptualise social capital in diverse ways. This paper adopts an approach which views social capital in terms of the assets produced by network interactions which yield potential benefits (or costs) to those involved (Hansen and Hansen, 2008). This allows the incorporation of social capital within a rational choice perspective in which individuals

invest in accumulating capital to acquire the benefits from such investments (Rutten and Boekema, 2007).

Social capital is a concept that has attracted interest amongst spatial analysts due to a recognition that network interactions may have an important spatial dimension. One approach argues that spatial variations in the impact of network interactions arises from the differing nature of the environments within which individuals live. Lannoo et al (2011) note two strands to this argument. First, a "traditional view" that urban locations foster lower levels of individual social capital due to the diverse social nature of urban settlements and the greater anonymity and ephemeral nature of relationships. More homogenous, rural communities in which individuals share common backgrounds, find it easier to build the trust upon which effective network ties are based (Vermuelen et al, 2012). Second, urban environments create different types of social capital to rural areas (Debertin and Goetz, 2013). The heterogeneity, size and density of urban environments increases the range of choices available in forming network ties. Individuals living in rural communities have fewer options and are characterised by more 'bonding' social capital involving family and friends in contrast to urban locations where 'bridging' or between group social capital dominates (Roskruge et al, 2013).

An alternative view is that urban-rural differences arise from the different characteristics of the population who live in these environments (Debertin and Goetz, 2013). If social capital varies with individual characteristics, then areas with different demographic and social

structures will exhibit variations in social capital. It is the demographic and social composition of an area rather than the environment *per se* that creates differences in social capital. Finally, there is a view that urban-rural differences have been eroded due to the widespread availability of communication and transport technologies, which have reduced the costs of interaction across space. Thus, even if, historically, the urban-rural distinction did impact on social capital, it is no longer of significance. However, it is important to recognise that this approach does not imply that spatial factors are unimportant. If neighbouring urban and rural areas are linked together due to commuting and transport linkages, they may form spatial clusters distinct from more remote areas where transport costs still limit face to face interactions.

The norms, values and trust that characterise networks may have a spatial dimension as they are related to the specific context within which interactions occur. Such trust and norms can be regarded as intangible assets that facilitate co-operation and create positive externalities by strengthening social networks and attitudes towards certain types of behaviour (Rutten and Boekema, 2007). However, individuals who violate norms may lose social status, adversely affecting the benefits they obtain from co-operation and this may affect job prospects and earning potential. In this regard, there is a clear link from social capital to the concept of stigma: the threat of stigmatization provides an incentive to conform to norms.

Modern approaches emphasise that stigma is related to the context in which it occurs (Bos et al, 2013). Individuals who benefit from significant investments in social capital suffer potentially greater costs from violating social norms than those with fewer investments, as a greater range of network ties may be adversely affected. Consequently, spatial variations in social capital create spatial variations in the impact of violating social norms and this affects the incentives to engage in certain types of behaviour. There is support for such effects from studies that have found that that the incentives to engage in criminal behaviour are affected by the extent to which local networks informally punish (i.e. stigmatise) behaviour that violates social norms (Akçomak and ter Weel, 2012).

If stigma effects are to explain insolvency choices, there must be substantive differences between the stigma attached to bankruptcy and IVAs. Efrat (2006a) argues that a strong stigma has historically been attached to bankruptcy as it has been associated with *wilful* conduct that violates significant social norms such as trust, honour and thrift. Bankrupts are regarded as having violated the trust of their creditors, failed to honour the terms of their legal agreements and managed their financial affairs in a profligate manner. The view that the conduct is wilful reflects an underlying view that the individual is autonomous and responsible for their own decisions (Mols, 2012). The breaking of these norms involves the individual's own deliberate conduct, in terms of fraudulent behaviour or financial mismanagement, rather than the impact of unavoidable external events.

The view that bankruptcy attracts a strong social stigma has deep historical and cultural roots as illustrated by the social condemnation of bankrupts in British bankruptcy law. Early laws regarded debtors as criminals who were deliberately dishonest and fraudulent (Di Martino, 2005). The legal system gradually developed a more nuanced approach and modern law primarily seeks the restitution of debts through financial means. Additional stigma arises as a consequence of restrictions that may be imposed by the court including the prohibition from certain professions and the requirement to disclose bankruptcy in credit applications (Maroto, 2012). Those deemed culpable or dishonest may face a Bankruptcy Restriction Order (BRO) which extends some of these restrictions for between 2 and 15 years. These extended restrictions vary from case to case but typically include a prohibition on becoming a company director and the necessity to reveal the bankruptcy in applications for credit of over £500. The breaching of a BRO is a criminal offence; this reflects a continuation of the view that wilful bankrupts deserve significant punishment. This may affect access to credit markets, the price of credit and employment prospects, leading to cumulative financial disadvantage. Public shaming in the local community has also been a consistent feature of the bankruptcy process. Until 2009, the names and addresses of bankrupts were published in the local press and, whilst this is no longer routinely done, details are published in the London Gazette and the Insolvency Register both of which can be searched on-line.

Information on contemporary attitudes to bankruptcy is scarce. A review of the 2002 Enterprise Act concluded that bankruptcy stigma remains as it was prior to the Act (The Insolvency Service, 2007). Another recent study found that a majority of an advice firms'

clients whom were advised that bankruptcy was the best option did not pursue it, primarily due to the perceived stigma (Credit Counselling Services, 2007). The Insolvency Service have also tracked attitudes in several surveys which have shown that, whilst there has been a small fall in the proportion of individuals thinking that stigma is attached to bankruptcy, a strong stigma still remains (The Insolvency Service, 2009). This stigma is associated primarily with the difficulty of accessing future credit, social embarrassment and the potential loss of the home.

There are a number of reasons why IVAs might involve lower stigma costs than bankruptcy. First, by avoiding usage of the term bankruptcy an individual avoids the historical, cultural opprobrium attached to the term. The payment plan approach is considered a new, modern form of debt management, whereas bankruptcy is a term associated with wrong-doing. The provision of IVAs by many reputable financial institutions lends credence to the notion that an IVA is a standard financial product. Indeed, there are numerous debt advice and IP web-sites which explicitly state that IVAs have less of a social stigma than bankruptcy.

Second, IVAs embody the concept of an 'earned fresh start' in which individuals make restitution for their violation of trust by partially paying off their debts. This is in contrast to bankruptcy which typically involves individuals being discharged from most debts, with creditors receiving minimal recompense (Pond, 2002). Third, until 2009, an IVA permitted a higher level of confidentiality than bankruptcy as the arrangement was not advertised in the local press (Walters, 2009). Finally, in principle, an IVA permits retention of the home and avoids the loss of social capital and sentiment attached to the home.

Some direct evidence that IVAs attract a lower stigma is available from a recent survey which found that that avoiding formal bankruptcy was the prime reason (70% of those surveyed) given for taking out an IVA (R3, 2010). In addition, The Insolvency Service (2008) conducted a survey of a sample of debtors who were asked to give the primary reason for taking out an IVA. The three main reasons were: wanting to pay back creditors, maintaining control of finances and avoiding the stigma of bankruptcy. Thus, in addition to directly avoiding the stigma of bankruptcy, debtors view IVAs as a mechanism to re-establish financial management of their affairs and make restitution to debtors, which may also indirectly help to reduce stigma.

5. Analytical framework, data and hypotheses

The analytical framework proposed in this article can be summarised as follows: individuals invest in social capital to acquire the benefits of assets produced by network interactions within their local community. These interactions are characterised by certain norms, values and trust; individuals who violate these norms may be stigmatised, adversely affecting the benefits they obtain from these networks. The greater the scale of an individual's stock of social capital, the greater will be the negative impacts arising from stigma as a greater range of network ties are affected. As bankruptcy attracts a greater stigma than IVAs, those with high stocks of social capital have an incentive to choose IVAs. Consequently, spatial variations in average levels of local social capital create spatial variations in insolvency choices.

Direct empirical testing of the impact of stigma on insolvency is problematic as it is intrinsically difficult to measure. However, the linking of stigma to social capital offers a mechanism for measuring these effects by utilising variables related to local social capital. Of course, measuring social capital is not an easy task as data on either the accumulation of local social capital (e.g. through participation in community activities) or direct measures of local social capital (e.g. trust) is often not readily available. One approach that offers potential has been adopted by Agwaral et al (2011) based on Glaeser et al's (2002) framework in which rational individuals invest in social capital on the basis of the relevant benefits and costs, which vary according to individual characteristics. Thus, variations in insolvency choices across communities can be related to the factors that influence location-specific social capital investment decisions, together with a range of control variables that reflect different economic, social and geographic conditions.

The remainder of this paper focuses upon an analysis of the impact of stigma on the choice between IVAs and bankruptcy (including Debt Relief Orders – a fast-track bankruptcy arrangement) across the 348 local administrative units in England and Wales in 2011. All data were derived from the 2011 population census apart from insolvencies which were obtained from The Insolvency Service and migration and earnings which were sourced from the Office of National Statistics (ONS). The units of observation vary in nature and include rural areas, towns, cities and suburbs of urban agglomerations, facilitating an examination of the impact of these factors. Whilst there are limitations to a cross-section approach, these are mitigated through the use of spatial regression techniques that account for spatial dependencies and omitted regionally correlated variables. Given that insolvent individuals

face a choice between IVAs and Bankruptcy, the dependent variable was defined in logit form as IVABANK = ln(q/1-q), where q is the probability of choosing an IVA in a region and (1- q) the probability of choosing bankruptcy.

Three variables identified as being of particular relevance to the social capital investment decision in the Glaeser et al (2002) model were utilised. First, age: individuals have a strong incentive to invest in social capital at early stages of their life cycle as lifetime returns are significant. However, the incentive falls in later years as the expected returns fall. Thus, the model predicts an inverted-U shaped relationship between age and social capital, with the stock of individual social capital accumulated by past investments peaking in mid-age where there is, consequently, the greatest incentive to avoid stigma. In the reported results, age effects are measured by the proportion of the local population in the 30-44 age groups (AGE3044) when the incentive to invest in social capital should be highest. A positive relationship is expected between this variable and the choice of IVAs. However, it is important to note that age may reflect factors other than social capital. For example, those in the mid-age group may be individuals who have relatively stable careers and employment opportunities in contrast to younger people who may be at the start of their working life without a clear career path. Creditors may be more willing to agree to IVAs with the mid-age group as the risks of IVA failure may be perceived as lower.

The second variable is labour mobility. Social capital arises from the network benefits of belonging to a community, unlike human capital which moves with an individual, social capital is relatively immobile (Buckley and Brinig, 1998). Individuals who are mobile have less incentive to invest in local social capital due to lower expected benefits. They may also

have reduced reputational concerns arising from behaviour that violates norms and imposes stigma costs. Thus, sub-regions characterised by high levels of labour mobility may have lower average levels of social capital and relatively higher rates of bankruptcy. The impact of mobility is measured by the turnover of population via internal migration, represented by MOB – (out-migrants plus in-migrants per 1000 resident population). (In initial runs of the model, inward and outward migration were included as separate variables; however, these variables are highly correlated and including both raises issues of multicollinearity. Running the model with either individually yields similar results to those for the combined variable and hence MOB was used for the final analysis.)

The third social capital variable is home ownership, measured by OWN - the proportion of the population owning their own property. The high transaction costs involved in selling property tends to reduce mobility, thereby increasing the incentive to invest in location-specific social capital (Roskruge et al, 2013). Moreover, homeowners have an incentive to invest in social capital that increases local property values, whilst the sentiment attached to the home may raise its value above the market value making the owner reluctant to liquidate the asset through bankruptcy. Thus, high rates of home ownership should imply a higher average level of social capital and have a positive impact on the choice of IVAs. Of course, it is plausible that the possibility of realising the value of an owned home may make bankruptcy an attractive option for creditors and this may partially offset this positive impact on IVA choice.

In addition to the social capital variables, a number of control variables were included. First, less opprobrium has historically been attached to bankrupt entrepreneurs than to consumer

debtors as business failure is partly regarded as a result of risk-taking entrepreneurship rather than a deliberate violation of social norms. Consequently, it is plausible that there are lower stigma costs for self-employed insolvents. This was taken into account by the inclusion of SELF, defined as the proportion of the population who were full time self-employed. It is hypothesised that there will be a negative relationship between SELF and IVA choice. Second, it is necessary to control for variations in economic circumstances across areas. A recent survey of individuals with debt problems concluded that those on average incomes were more likely to opt for IVAs (R3, 2010). In order to measure the impact of differences in incomes, the (squared) difference between median average earnings in a sub-region and average median earnings across the sample as a whole (WMED) was included in the analysis. The hypothesis is that the choice of IVAs will be greatest in those sub-regions with a median income closest to the sample median and negatively related to deviations from this median.

Third, attitudes to insolvency might be affected by knowledge of the insolvency system. In areas with a high rate of insolvency, knowledge concerning insolvency procedures, personal knowledge of insolvents and the merits of alternative options may become widespread. Gathergood (2005) found a strong relationship between the likelihood an individual would consider bankruptcy and personal association with a bankrupt, suggesting a relationship between past levels of bankruptcy and current rates. The impact on the choice between insolvency routes is less clear. However, if information promotes better decision making and knowledge concerning the high cost of IVAs, high rates of insolvency might lead to lower rates of IVAs. This was taken into account by including the average rate of total insolvencies over the previous three year period (INSOL) as an explanatory variable.

Other control variables reflecting socio-economic status that might plausibly affect choices (e.g. occupation) were also included as control variables but proved to be insignificant; for parsimony these are not reported in the subsequent analysis. The final aspect of the modelling process was the incorporation of spatial effects. The previous discussion has noted that social capital may vary across rural and urban areas. However, there are differing views as to whether the impact arises from the nature of the rural-urban environment or compositional effects. In the latter case, the incorporation of social capital and control variables related to demographic and social characteristics will account for many of these factors. However, if environmental effects are important, it is necessary to include direct measures. Preliminary analysis experimented with a number of measures including the percentage of population living in urban areas, population density and dummy variables related to rural-urban classification schemes. The results were weak, with all measures (bar one dummy variable) having an insignificant impact. These negative results (and the significance of other variables) might lend some support to the view that it is compositional effects rather than the urban-rural environment that impacts on social capital and insolvency choices.

For the sake of parsimony, the reported results omit the urban-rural variables with the exception of the significant dummy variable SUBDUM, coded as 1 for areas defined as having suburban traits in the official 2011 area classification scheme and 0 otherwise. This scheme classifies areas into broad groupings on the basis of a cluster analysis of a range of variables. SUBDUM contains 39 local authorities which are typically characterised by populations concentrated in urban conurbations in the transitional areas between urban

centres and suburbia. These areas are primarily but not exclusively located in the South East of England and, in particular, in Outer London boroughs.

6. Method and Results

Table 1 presents the descriptive statistics of the variables (for ease of interpretation, MED refers to median earnings rather than the squared deviation WMED). The correlation matrix (Table 2) shows that correlations between independent variables are generally low (all below 0.5 apart from age and ownership) providing no initial indication of collinearity issues. The mapping data presented earlier suggest that the dependent variable may not be distributed randomly across space. This creates problems for OLS regression and hence it is essential to test for spatial autocorrelation. This requires specification of a spatial weight matrix (W) indicating the nature of the interaction across areas. With i = 1….N locations, W is an N x N matrix with non-zero elements in the ith row for locations which are "neighbours" to i. Neighbours may be defined on the basis of geographical contiguity or distance. Using a contiguity weight matrix (with neighbours defined as areas having contiguous boundaries and row weights standardised to sum to 1), the Moran test for spatial autocorrelation was significant (Moran I = 0.1038, p-value = 0.0009). This conclusion was robust to alternative specifications of W based on a variety of distance measures. This suggests evidence of positive global spatial autocorrelation involving geographical clustering of areas with similar values of the dependent variable.

Insert Tables 1 and 2 approximately here

There are three types of interdependencies that might lead to spatial autocorrelation (Elhorst, 2014). First, endogenous interactions, whereby the dependent variable in one region directly affects the dependent variable in other regions. Second, exogenous interactions, where the independent variables in one region affect the dependent variable in neighbouring regions. Both of these effects may arise from economic and social interactions across boundaries arising, for example, through commuting, retail spending or interactions with family and friends. Of particular importance for the current paper is the potential for information flows across boundaries that might spread knowledge concerning insolvency choices. Third, error dependencies, through interactions amongst the error terms across neighbours which may arise from omitted variables that are spatially correlated or unobserved shocks that follow a regional pattern. Ignoring the first two effects can lead to bias in OLS estimates, whereas neglecting error dependence violates the assumption of independent errors and results in a loss of efficiency.

In the present paper, there is no particular reason to rule out any type of interaction effect. However, as Elhorst notes (2014), there are problems involved in identifying the parameters in models including all three effects. Consequently, the strategy followed is to estimate a Spatial Durbin Model (SDM) which incorporates endogenous and exogenous interactions. This model has the advantage that by imposing various restrictions it nests three other models: the spatial lag model (SAR) which only includes endogenous interaction effects, the SLX (spatial lag of independent variables) model which only includes exogenous interaction effects and the spatial error model (SEM) which only includes error dependence.

The SDM model takes the form $y = \rho Wy + X\beta + WX\theta + e$, where y is an N x 1 vector of the observations on the dependent variable, X an N x K matrix of the observations on K independent variables, W the weight matrix, β and θ are vectors of parameters to be estimated, ρ is a spatial lag coefficient, and e the vector of error terms. Wy denotes the endogenous interaction effects and can be interpreted as the average of the dependent variable in neighbouring regions. WX denotes the exogenous interaction effects. Restricting $\theta = 0$ yields the SAR model, $\rho = 0$ the SLX model and $\theta = \rho\beta$ the SEM model (Elhorst, 2014). The SLX model can be estimated by standard OLS, whilst maximum likelihood is used for the other spatial models. A second version of the SEM model (SEM2) was also estimated using a GMM estimator with robust standard errors (Kelejian and Prucha, 2010). (The relative advantages of alternative estimation techniques for spatial modelling are discussed in Elhorst (2014)).

Table 3 presents the results for the OLS and spatial models. For ease of interpretation WMED is expressed in units of £1000 (WMED1000). All coefficients were significant and of the expected sign in all models (apart from WMED1000 in SEM2 and AGE3044 in the SDM and SLX models). The spatial models were compared to the OLS model using Likelihood Ratio (LR) tests. In three cases (SAR: test statistic = 10.11, p = 0.001; SEM: 9.25, p = 0.002; SDM: 8.64, p = 0.003), the test rejected the hypothesis that the spatial effects were zero, suggesting a preference for the spatial models. In the SLX model, the hypothesis that the WX effects were zero could not be rejected (4.33, p = 0.74). An examination of this model

shows that all the exogenous interaction effects were insignificant. The lack of importance of these effects is also highlighted in the SDM model. Further LR tests revealed a preference for both the SEM and SAR models over the SDM model (test statistic = 3.728 and 2.668 compared to a critical value of 14.067).

The above results suggest that the spatial effects arise from either endogenous or error forms of dependence. The SEM and SAR models are not nested and so cannot be compared using LR tests, whilst the Akaike Information Criteria (AIC) values are very similar. It is possible to compare the models using Lagrangean Multiplier (LM) tests but these tests revealed no clear preference. As the coefficient estimates from the two models are similar, the substantive conclusions are not affected by model choice. However, the two models imply different underlying spatial processes. The error model implies the omission of variables that are spatially correlated or unobserved shocks that follow a regional pattern, whilst the SAR model implies that insolvency choices in one region directly affect those in neighbours. It is relatively straightforward to envisage the small sub-regions used in the present analysis suffering spatially correlated shocks; hence, the error interpretation is plausible and the remaining discussion focuses on this model. However, endogeneity effects are also possible: for example, as already noted, there is evidence of a strong relationship between the likelihood an individual would consider bankruptcy and personal association with a bankrupt (Gathergood, 2005). Personal relationships involving family, friends and colleagues are likely to spillover across adjacent area boundaries potentially creating information spillovers in which high rates of insolvency in one area raise awareness in neighbouring areas.

Insert Table 4 approximately here

Specification tests of the SEM model revealed the presence of hetero-scedasticty and the model was re-estimated using robust standard errors (SEM2). The only difference to emerge was the insignificance of the WMED1000 control variable, casting doubt on the importance of controlling for income effects. However, the other control variables were significant and of the expected signs. Thus, self-employed individuals are less likely to choose IVAs, consistent with the view that bankruptcy imposes a lower level of stigma on such individuals. INSOL is also significant and negative suggesting support for the view that high rates of insolvency improve information flows making IVAs less attractive. The significance of SUBDUM suggest that those areas with suburban traits are more likely to choose IVAs. Debertin and Goetz (2013) suggest that suburban locations are often characterised by a strong desire for neighbourhood stability, safety, increasing property values and geographically-based neighbourhood associations. It might be hypothesised that they are characterised by relatively high levels of social capital and norm enforcement having a positive impact on the choice of IVAs.

The results confirm the importance of the social capital variables which are significant and of the expected sign in all equations. The choice of IVAs is positively associated with a high rate of home ownership, low levels of labour mobility and a high proportion of the population in the 30-44 years age group. This lends support to the contention that individuals with greater social capital have a stronger preference for IVAs in order to avoid the stigma effects associated with bankruptcy. Spatial effects arise as a consequence of

variations in social capital associated with spatial variations in these factors. Hence, the role of social capital is of considerable importance to the analysis of individual financial decisions across spatial areas.

It is, of course, important to recognise that the variables utilised in the study are only proxies for social capital and other interpretations of the results are possible. In particular, some of the effects identified may, at least partially, reflect the impact of creditor behaviour. Creditors may be more willing to agree to IVAs with individuals in mid-career, who own their own homes and are relatively immobile as these individuals may be seen as having a relatively low risk of failing to meet the payments required during an IVA. However, even if these effects are of some importance, debtors must have an incentive to agree to an IVA and the social capital approach provides a coherent explanation for debtor behaviour that is consistent with the empirical results.

A more detailed inspection of the results offers insights into the regional clusters of low IVA take-up in the South West (comprising most of Devon, Cornwall, Dorset, Somerset and Wiltshire) and central and northern Wales. Both clusters have a proportion of the population in the 30-44 age group that is significantly lower than the rest of the sample suggesting that demographic factors may be important in explaining IVA take-up rates. The two clusters also have above average rates of home ownership (although the difference is not statistically significant). However, the impact of labour mobility differs, with the South West cluster having significantly above average rates of labour mobility whilst the opposite is true for Wales, suggesting that the impact of the social capital factors is not of uniform importance. In addition, both clusters have an above average rate of self-employment and

median incomes below the sample average. The former factor implies that the clusters contain a greater proportion of the population who suffer less from the stigma attached to bankruptcy, whilst the latter implies a higher proportion of debtors for whom IVAs are unaffordable or unattractive to creditors.

7. Conclusion

Whilst the dramatic increase in insolvency in England and Wales during the 2000s has attracted some interest, the spatial aspects have remained under-researched. This paper has sought to fill this gap by focusing on the factors determining insolvency choices across sub-regions of England and Wales. At a theoretical level, the analysis has proposed an explanation for spatial choices rooted in the geography of social capital, extending this analytical framework to a new area of enquiry. The linking of stigma to social capital integrates the literature on consumer insolvency with the wider literature concerning social capital. This offers a theoretical basis for the importance of stigma costs and their variation across space. It also demonstrates how the incentives created by a common legal system may vary across space due to variations in factors associated with social capital.

The study has argued that bankruptcy has a greater impact on social capital through stigma effects than IVAs. This reflects the long historical association of bankruptcy with wilful wrongdoing as evidenced by social condemnation, punishment and public shaming. This contrasts with IVAs which are regarded as a modern method of debt management promoted by reputable institutions. IVAs constitute a mechanism for both avoiding stigma

and re-establishing control over a debtor's financial affairs. Hence, whilst the cost of IVAs has attracted considerable criticism, from the individual's point of view they may be an option that yields substantial non-pecuniary benefits.

From an empirical point of view, the analysis examined the relationship between stigma and choice of insolvency route by utilising a modelling approach accounting for spatial autocorrelation. The model builds upon the Glaeser et al (2002) approach to social capital which offers a useful mechanism for tackling the dilemma of measuring stigma effects. The significance of the spatial coefficients also emphasises the importance of taking into account spatial autocorrelation. Treating spatial areas as independent entities risks ignoring the importance of spatial dependencies and clusters. This is highlighted by the existence of a cluster of areas with a low take-up of IVAs in the South West region and much of Wales. The lack of significance of most direct measures of the urban-rural environment suggests that, at least in the case of insolvency choices, social capital effects associated with compositional effects may be of more importance. Further research into alternative facets of differing environmental and compositional effects would be useful to explore this in more detail.

Finally, the paper offers a potential explanation for the apparent paradox concerning the significant growth of IVAs despite their high cost to debtors. Existing explanations have focused on the supply side impact of the rise of mass IVA providers, suggesting that these providers have a financial incentive to recommend IVAs rather than bankruptcy. The present paper suggests an alternative demand side explanation by arguing that the rise IVAs is related to the desire of insolvents to avoid the stigma associated with bankruptcy. It is also

plausible that the results may partially reflect the behaviour of creditors who may be more willing to agree to IVAs with individuals having certain desirable characteristics. Future research might usefully attempt to ascertain the relative importance of debtors, creditors and IPs within an integrated explanation of insolvency choice.

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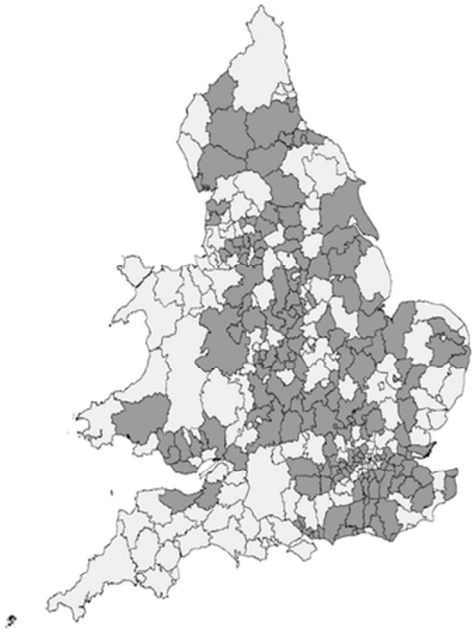

Figure 1: IVA to bankruptcy ratio by area, 2011
Note: darker shaded areas have an above average ratio

120x87mm (150 x 150 DPI)

Table 1: Descriptive statistics

Variable	Mean	Std. Dev.	Minimum	Maximum
IVABANK	-0.363	0.338	-1.684	0.483
AGE3044	20.030	2.678	13.300	30.600
OWN	0.660	0.100	0.237772	0.829
MOB	94.643	31.257	43.500	243.200
SELF	0.206	0.0765	0.075	0.517
MED	507.334	84.628	267.200	1006.900
INSOL	28.775	7.063	12.282	54.227
SUBDUM	0.112	0.316	0.000	1.000

Table 2: Correlation Matrix

	AGE3044	OWN	MOB	SELF	WMED	INSOL	SUBDUM
AGE3044	1						
OWN	-0.6376	1					
MOB	0.4662	-0.4652	1				
SELF	-0.2886	0.2604	0.0662	1			
WMED	0.3946	-0.2587	0.4298	-0.0088	1		
INSOL	-0.4026	0.1522	-0.4977	-0.178	-0.3482	1	
SUBDUM	-0.0187	0.0544	-0.031	-0.0128	-0.0274	0.0387	1

Table 3: Model results

	OLS	SAR	SEM	SLX	SDM	SEM2
CONSTANT	-0.986**	-0.836**	-0.907**	-1.556**	-1.153**	-0.908**
	(0.345)	(0.336)	(0.363)	-(0.578)	(0.563)	(0.357)
AGE3044	0.034**	0.031**	0.030**	0.020	0.021	0.030**
	(0.009)	(0.009)	(0.009)	(0.013)	(0.013)	(0.010)
OWN	1.170**	1.043**	1.164**	1.113**	1.135**	1.164**
	(0.219)	(0.216)	(0.233)	(0.283)	(0.272)	(0.229)
MOB	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SELF	-0.871**	-0.715**	-0.887**	-0.932**	-0.900**	-0.887**
	(0.229)	(0.229)	(0.244)	(0.309)	(0.297)	(0.261)
WMED1000	-0.003**	0.002**	0.002**	0.003**	0.003**	0.002
	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)
INSOL	-0.012**	-0.011**	-0.012**	-0.010**	-0.010**	-0.012**
	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
SUBDUM	0.129**	0.123**	0.126**	0.121**	0.119**	0.126**
	(0.050)	(0.048)	(0.047)	(0.050)	(0.048)	(0.048)
WAGE3044				0.036*	0.023	
				(0.019)	(0.019)	
WOWN				0.197	-0.159	
				(0.420)	(0.414)	
WMOB				-0.001	0.000	
				(0.001)	(0.001)	
WSELF				0.222	0.318	
				(0.465)	(0.451)	
WWMED1000				0.001	0.001	
				(0.002)	(0.002)	
WINSOL				0.001	0.003	
				(0.006)	(0.005)	
WSUBDUM				-0.007	-0.031	
				(0.115)	(0.111)	
rho		0.234**			0.240**	
		(0.068)			(0.075)	
LAMBDA			0.249**			0.238**
			(0.075)			(0.096)
R^2(Adj)	0.261			0.255		
Log Likelihood	-59.575	-54.522	-54.953	-57.408	-53.088	-54.953
AIC	135.15	127.045	125.905	144.82	138.177	125.905

Note: R^2 is the standard adjusted R^2 for OLS and SLX models; although a variety of pseudo-R^2's are available for maximum likelihood estimation there is no directly comparable measure and hence the models are compared using the log-likelihoods and AIC values; the number of observations is 348 in all cases. **** signifies that p<0.05.**