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Walls of Glass. Measuring Deprivation in Social Participation

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Abstract
This paper proposes a measure for deprivation in social participation, an important but so far neglected dimension of human well-being. Operationalisation and empirical implementation of the measures are conceptually guided by the capability approach. Essentially, the paper argues that deprivation in social participation can often be convincingly established by drawing on extensive non-participation in customary social activities. In doing so, the present paper synthesises philosophical considerations, axiomatic research on poverty and deprivation, previous empirical research on social exclusion and subjective well-being. An empirical application illustrates the measurement approach using high-quality survey data for Germany. To evaluate the validity of the proposed measures, I also explore the empirical relation to adjacent concepts including material deprivation, income poverty, other potential determinants of social participation, and life satisfaction using regression techniques.

Keywords: social participation, capability approach, deprivation, social exclusion, social capital, life satisfaction, multidimensional poverty, SOEP

JEL classification: D63, I32

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1 Introduction

Social participation attracts scholarly attention for a long time. Aristotle considered humans as *zoon politikón*, as social or political animals, whereby he underlines the role of social participation for human existence.[1] Social participation, does however not only figure prominently in many disciplines, like sociology, economics or psychology, it matters also in political and practical affairs. The universal declaration of human rights of the United Nations, for instance, endorses the right to freely "participate in the cultural life of the community" (Art. 27. I). Somewhat more binding, the German constitutional court, for instance, re-emphasised in 2010 that a decent existence also includes social, cultural and political participation.[2]

Previous research relating to social participation is however far from being neatly arranged or well-structured. This is not only because different disciplines are concerned with social participation. Even within these research fields, there is often little consensus about the exact object of investigation. The literature on social exclusion is a case in point.[3] Even though considerable in size, it is still plagued by severe difficulties to provide clear definitions—in particular with regard to closely related concepts like poverty (e.g., Room, 1999, Levitas, 2006).[4] Empirical applications often seek to measure social exclusion along several dimensions, like exclusion from the labour market, from public or private service provision (e.g., health services), from consumption—or from "social interactions" in one form or another.[5] Interestingly, Levitas (2006, p. 154) however also observes that the social aspects and consequences so far received rather little attention in this line of research. Finally, if the social relation aspect is measured, this realized at times with social activities, the extent of social support (practical or emotional), the number of friends, but also the membership in civic organizations has been suggested (e.g., Robinson and Oppenheim, 1998).

Social participation also figures prominently in parts of poverty research. The Breadline Britain studies (Mack and Lansley, 1985, Gordon and Pantazis, 1997), for instance, rely on the concept of relative deprivation meaning "the absence or inadequacy of those diets, amenities, standards, services and activities which are common or customary in society" (Townsend, 1979, p. 915). Thus, in effect this approach seeks to a significant extent to identify the resource-driven lack of social participation. Relating to Townsend's relative-poverty approach, Sen (1983), actually also refers to social participation as one of those capabilities, whose achievement can require very different quantities of resources across countries. More specifically, Sen (1983, pp. 160–163) argues that because of capabilities like social participation, relative resource deprivation is well consistent with absolute capability deprivation; see also Townsend (1985), Sen (1985b) for the subsequent debate.

[1] Note that Aristotle did not distinguish between social and political. Moreover, he puts this aspect fairly drastic, by reasoning that anyone who does not partake in society "is either a beast or a god."

[2] Specifically, the court ruled the practice of paying standard benefits then to be unconstitutional, BVerfG, Judgment of the First Senate of 09 February 2010 - 1 BvL 1/09 - paras. (1–220), http://www.bverfg.de/e/ls20100209_1bvl000109en.html.

[3] Research on social capital however suffers from similar difficulties (e.g., Portes, 1998, Durlauf, 2002).

[4] On the value-added of the research on social exclusion see, e.g., Atkinson (1998), Room (1999), Sen (2000).

[5] Empirical attempts of measuring social exclusion are, e.g., Burchardt (2000), Burchardt *et al.* (2002). Moreover, the UK-survey on Poverty and Social Exclusion, now distinguishes four dimensions of social exclusion along these lines as well; for details see Gordon *et al.* (2000).

The present paper identifies deprivation in social participation as a key concept for which an accurate operationalisation and measurement is much-needed. Moreover, this paper argues that relying on a broad set of social activities for the society under study is a promising approach to measurement. The principal relevance of social connections and relatedness for human well-being is undisputed—also outside research on poverty and social exclusion. Indeed, recent efforts to improve measurement of human well-being more generally, unequivocally demand measurement of "social connections" in one form or another (Atkinson *et al.*, 2002, Stiglitz *et al.*, 2009, OECD, 2011). And yet, there is little consensus how to ideally measure achievements or deprivation in social participation, which at least partly originates from the conceptual obscurities. While the aforementioned reports all highlight the need for more research, they also do agree that proxy-measures, like formal membership in associations and political processes, voter turn-out, or charitable giving are inappropriate indicators. Instead, social activities and meeting friends are frequently enumerated indicators. Additionally, a large array of further indicators is usually mentioned, relating however to different concepts (which is freely admitted), including social capital (trust and reciprocity), social support, social networks, the number of close friends, workplace engagement, or religious engagement. Thus, after all, social connections serve as an umbrella term, for phenomena, concepts and relations, which as yet have to be explored and better understood.

In addition to this, more difficulties arise on the empirical side. First, social participation is a rather abstract activity, which manifests in a plethora concrete social activities. These concrete social activities, moreover, vary markedly—*inter alia* with time, culture, or age. Relatedly, social participation is an inherently relational concept, meaning that it refers to a specific society at a given point of time. To appropriately capture these aspects is essential for any exercise in measuring deprivation in social participation. Finally, Stiglitz *et al.* (2009) also note that aggregation is not trivial, which also applies for a rather narrow concept of social participation in the sense of social activities. In sum, a thorough understanding of social participation seems to be complicated by conceptual intricacies, empirical diversity and methodological challenges.

The present paper uses the capability approach to guide operationalization and measurement of deprivation in social participation. According to the capability approach, human well-being is a constitutively multidimensional construct, where social participation is one, among other so-called functionings (the doings and beings a person has reason to value). I argue that adopting a capability perspective not only entails several implications, which sharpen the contrast to related concepts like social capital, but also facilitates operationalization and measurement. Broadly speaking, the present paper proposes to rely on a wide set of specific social activities and to assert a deprivation if an individual is not performing any of these activities. More technically, I use the so-called intersection approach (Atkinson, 2003), a special case of the class of measures suggested by Alkire and Foster (2011), to aggregate across activities. In the empirical part of this paper I explore a possible implementation based on a dual-indicator approach using German data. In particular I investigate the links to related concepts. The results show, for instance, that income poverty, material deprivation and deprivation in social participation to a large extent identify different people as deprived. Using regression techniques to analyse potential determinants provides conclusive findings as well.

Importantly, the results also document a considerable loss in life satisfaction to be associated with deprivation in social participation. Overall the empirical analyses lend support to the validity of the measures and encourage to devise social indicators along the suggested lines.

The present paper complements the previous research in several ways. First, it adds a more grounded and consistent way to measure DSP to the poverty and social exclusion literature. In terms of the recently burgeoning literature on multidimensional poverty measurement, the present paper proposes an novel, so far missing dimension. Second, deprivation of social participation in particular, and social participation in general, are evermore conceived and studied as outcomes. Specifically, potential determinants of social participation are increasingly subjected to empirical scrutiny (e.g., Mood and Jonsson, 2016, Kunze and Suppa, 2017), but also already Levitas (2006), Platt (2009). From a human well-being perspective this is a highly welcome development, since unlike achievements in health or education, social participation is severely under-researched. The present paper adds additional outcome variables to this line of research, namely grounded and consistent deprivation indicators, which complement the analysis of single activities or the average level of activity.

Third, having well-defined concepts and measures for social participation and its deprivation, allows fruitful research of the links to the related concepts like social networks or social capital in which economists recently became more interested in (e.g., Bauernschuster *et al.*, 2014, Satyanath *et al.*, 2017). Indeed, a main criticism levelled against research on social capital is that distinct concepts are mixed (e.g., Portes, 1998, Durlauf, 2002). The present paper identifies social participation and its deprivation as meaningful and measurable concept. Thereby it locates social participation outside of, but in relation to social capital. The increasing interest of economists in these concepts calls for refined concepts and measures, which the present paper seeks to provide.

Fourth, the empirical analysis of the present paper also documents a significant loss of life satisfaction to be associated with DSP. Unlike single social activities (e.g., Winkelmann, 2009), the effect of more comprehensive deprivation measures have not been studied as yet. The loss of life satisfaction proves quantitatively similar to that of unemployment (Clark and Oswald, 1994, Winkelmann and Winkelmann, 1998, Kassenböhmer and Haisken-DeNew, 2009).[6] Thereby, the present paper complements current life satisfaction research by underlining the role of social interactions as a key factor for subjective well-being. In fact, social participation and interactions may well connect to the importance of relative income, which previous life satisfaction research documents as well (Clark and Oswald, 1996, 1998, Ferrer-i-Carbonell, 2005).

Finally, the present paper adds a new case of application to the axiomatic literature on multidimensional poverty or deprivation measurement, as the present paper justifies and adopts the intersection-approach (Atkinson, 2003). In contrast, the bulk of the methods proposed in this field of research however draws on the so-called union-approach (e.g., Alkire *et al.*, 2015, ch. 3.6).[7] Moreover, this case of application can characterised by (i) a potentially large number of indicators, where (ii) responses are recorded as quasi-count data. These features may offer new approaches to setting indicator-

[6] A more careful analysis seeking to identify causal effects is beyond the scope of this paper and left for future research.

[7] Dotter and Klasen (2014), for instance, recommend to include rather few, but important dimensions, adopt a union-approach, and to focus on the simple headcount ratio.

specific cutoffs or aggregating over activities.

2 Conceptual Considerations

2.1 Conceptual Integration of Social Participation

The capability approach posits that human well-being is constitutively multidimensional.[8] Dimensions are called functionings, meaning the doings and being a person has reason to value; for instance being well-nourished, being well-sheltered, being healthy, or being happy. One such functioning often enumerated is participating in social life. In addition to achieving a single functioning, the capability approach also underlines the importance of the freedom to do so, which leads to the concept of an individual's capability: the set of all functionings the individual can actually choose from. Poverty is then conceived as capability deprivation, implying not only severe shortfalls in achievements of one or several functionings, but also that is was impossible to choose higher achievements, i.e. better achievements were not in the capability set in the first place. The capability approach claims that intrinsic importance can only be assigned to elements in the functioning space, i.e. functionings or capabilities. Howsoever important goods, income, and other resources are as means to achieve functionings, they are of instrumental relevance only. More formally, the resource-functioning link is often described as follows:

$$\boldsymbol{b}_i = \boldsymbol{f}(c(\boldsymbol{x}_i), \boldsymbol{z}_i, \boldsymbol{z}_s, \boldsymbol{z}_e) \tag{1}$$

where $\boldsymbol{x}_i$ is a vector of goods, which provides objective characteristic in the Lancaster-sense (Lancaster, 1966), such as a nutritional composition, a caloric content, etc. Resources are then transformed into functioning by a conversion function $f(\cdot)$, which is governed by so-called conversion factors ($\mathbf{z}_\bullet$), which can vary with environment, society, and individual. The capability of an individual can then be written as the set of actually available functionings, given the amount of resources (where X_i is set of commodity vectors, the individual is entitled to):

$$Q_i = \{\boldsymbol{b}_i \,|\, \boldsymbol{b}_i = \boldsymbol{f}(\boldsymbol{c}(\boldsymbol{x}_i), \boldsymbol{z}_i, \boldsymbol{z}_s, \boldsymbol{z}_e) \quad \forall \boldsymbol{x}_i \in X_i\} \tag{2}$$

For the present case it is instructive to focus on one specific functioning (social participation), explicitly introduce a vector of time-consuming activities $\boldsymbol{a}_i$, and drop the characteristics function for simplicity. An individuals social participation can then be described as

$$SP_i = f(\boldsymbol{x}_i, \boldsymbol{a}_i, \boldsymbol{z}_i, \boldsymbol{z}_s, \boldsymbol{z}_e) \tag{3}$$

where $\boldsymbol{a}_i$ like $\boldsymbol{x}_i$ is a choice variable, subject to some time constraint (e.g., $\sum a_{ij} = 1$), and SP_i is non-decreasing in both arguments. While some activities in $\boldsymbol{a}_i$ may be considered social, like visiting some friends, others may not, like house production. Moreover, as not all activities are available to

[8] On the capability approach see in particular Sen (1979, 1985a, 1992, 1999b), for introductions see Alkire (2009), Robeyns (2011).

everybody (e.g., going to the cinema two centuries ago, or in remote areas today), they are restricted to $\boldsymbol{a}_i \in A_i$. Social participation SP_i, a valued doing, is best conceived as an abstract activity, which can be achieved by individual, and often quite diverse, social activities (a_i). Consequently, it seems appropriate to view the social activities in $\boldsymbol{a}_i$ as substitutes, i.e. alternative ways to achieve SP_i. Deprivation in social participation is established if an individual's achievement falls short of the critical threshold, i.e. a normatively set cutoff, $\underline{SP}_i$:

$$DSP_i = \mathbb{1}[SP_i < \underline{SP}] \tag{4}$$

2.2 Selected Features and Implications

From this conceptual set-up, several features and implications central for the present study emerge. First, the dichotomy between concrete forms of social activities and the more abstract human functioning of social participation proves useful in several respects. Evidently, concrete forms of social activities vary substantially across time, and among cultures, but also within societies, e.g, with socio-demographic characteristics. As highlighted by equation (3), the different behavioural patterns and customs may however bring about similar levels of social participation in the functioning space. Thus, the present conceptualization (i) allows for heterogeneity in the specific forms, or means of social participation, while emphasizing the identity of the end—the more abstract activity of social participation itself. Moreover, this dichotomy (ii) clearly exposes the relational nature of social participation, since it inherently refers to a specific society at a given point of time and place. The relational nature of social participation is clearly a challenging demand for any measurement exercise, in particular if it seeks eventually to allow cross-country comparability. A final merit of this dichotomy is (iii) that it helps to better understand why the role of income for achieving social participation may vary with countries. Indeed, already Sen (1983) argues that relative resource-deprivation can translate into absolute capability deprivation. Following the present conceptualization, customary social activities may vary with countries. Since additionally, some social activities can be more costly than others, a relatively low income, can translate into (absolute) deprivation in social participation in some societies (where most social activities are associated with significant expenses) but does not necessarily do so in others.

A second aspect, the capability approach emphasizes also more generally, is relevance of conversion factors in transforming resources into functioning achievements (e.g., Sen, 1985a). Not only do individuals differ (parametrically) in their ability convert resources into social participation (somebody with mobility problems may need additional equipment to achieve similar levels of social participation). Moreover, since customary activities may vary with society and the marginal effect of a specific social activity on social participation may vary as well.

Third, functionings (and capabilities) are of *intrinsic* importance, i.e. objects of valuation (e.g., Sen, 1992, p. 43). On the one hand, it is important to note, that this intrinsic relevance of functionings does not preclude instrumental importance for achieving other functionings (e.g., Sen, 1999b, ch. 2). The leading example within the capability literature is being healthy, which is in a very fundamen-

tal way also instrumentally relevant for virtually all other functioning achievements. In a similar vein, social participation may additionally also be helpful for other outcomes, like, e.g., finding a job. On the the other hand, since functionings are of intrinsic relevance for human well-being they do not require additional justification. Consequently, if an individual is believed to be deprived in social participation, this is already reason enough for public policy to be concerned with this low achievement—by its very self. In particular, there is no need to adduce an associated low income, even though this may provide valuable insights *why* somebody is deprived in social participation. Likewise, one may also point out that social participation ranks top among correlates of subjective well-being (e.g., Kahneman and Krueger, 2006). While not necessary as a justification for social participation, this evidence clearly documents however the instrumental relevance of social participation for being happy, another functioning, which Sen (2008) calls "evidential interest."

Fourth, functionings are outcome variables, i.e. realised achievements.[9] Therefore, respective shortfalls may be caused by very diverse mechanisms. Low income may in many cases be part of the explanation, and even more so in countries where most social activities or organised through markets. In fact, Mood and Jonsson (2016) present some evidence in support of this channel. However, as equation (3) suggests there may be other mechanisms in progress which might be modelled, e.g., as conversion factor or through a constrained set A_i. Both ways however can prevent individuals from achieving higher social participation—irrespective of the access to resources. For instance, may social norms and their enforcement through family members, prevent girls and women to engage in certain forms social activities, in particular public ones. Social norms may, however, also operate more subtle or unconscious. Kunze and Suppa (2017) find for instance, that unemployed reduce their public social activities less, if the local unemployment rate is high and hence the norm to work rather weak. This evidence implies not only that a stigma is attached to unemployment, but also that this stigmatizing effect induces behavioural responses. Apparently, persons in such a position face a dilemma: either they reduce their (public) social participation or otherwise their self-respect, another frequently mentioned functioning, may suffer.[10] Or alternatively, think of wheel chair users. Only lately public facilities become increasingly accessible. Like social norms, this is conversion factor, which fairly directly affects the achievement of social participation largely independent of resource access. An outcome-based measurement allows to investigate these mechanisms more carefully.

2.3 Aggregation

There is no categorical answer to how many deprivation indicators should be used. Naturally, this depends on the concrete research question or measurement exercise. While stronger aggregation into say one deprivation indicator condenses information, it may also conceal more nuanced pictures. If the objective is to document more complex phenomena, a dual- or multi-indicator approach might

[9] A contrast of the achievement, the freedom to achieve, and the means to achievement can, e.g., be found in Sen (1992, ch. 2).

[10] Obviously, a formal description of this situation would go beyond equation 3 because at least one additional functioning would have to be considered.

be advisable. In fact, a prominent issue in the social exclusion literature is the question of whether social exclusion refers to individuals or to entire neighbourhoods and communities (e.g., Barnes, 2002, Lupton and Power, 2002). Even though the focus in this context is often on aspects like local service provision, this question also points to an important phenomenon of social participation in poor or deprived neighbourhoods (like "ghettos" or "banlieus"). While their residents may not participate in customary activities of the wider society under consideration, they may well participate in local social activities. Young adults living in these deprived areas, for instance, may be unable to participate in the customary activities of the society for very diverse reasons. Many activities might be too expensive, doormen may prevent them from entering clubs or pubs because they come from the wrong side of town, and the local sports club may suffer from underfunding. Despite these adverse conditions, however, they still can spend time *together*. Thus, even though none of these persons participates in any common social activity, each may very well share experiences with friends, enjoy meeting his or her peers, and provide and receive social support. The empirical part of this paper, illustrates such a dual indicator approach: while one indicator captures activities with friends, peer and family, another indicator captures participation in the most common activities of the society. Alternatively, the present dual indicator approach could also be argued to capture different qualities of social participation.

Constructing deprivation indicators based on concrete social activity data however also raises the question of how exactly to aggregate across activities. The present approach suggests to draw on a sufficiently wide set of concrete activities and require, low or entire non-participation in each activity. The rationale for this approach is to ensure that social participation is certainly not achieved through any other of the common concrete social activities. Thus, social activities are viewed as substitutes for achieving social participation.[11] One way to implement such a procedure is the so-called intersection-approach, which I borrow from research on multidimensional poverty and deprivation (see Atkinson, 2003). The intersection approach in turn represents a special case of the Alkire-Foster class of multidimensional poverty measures (Alkire and Foster, 2011). Analogously, a social activity j is considered to be performed if more than a critical amount of time, $\underline{a}_j$, is spent on it.[12] An overall social activity count can then be expressed as $ac_i = \sum \mathbb{1}(a_{ij} > \underline{a}_j)$, whereas deprivation in social participation is asserted if none of the social activities are carried out, i.e.

$$DSP = \mathbb{1}[0 = \sum \mathbb{1}(a_{ij} > \underline{a}_j)]. \tag{5}$$

Note that this approach allows a couple of refinements, whose exploration is however beyond the scope of this paper.[13] The adequate method may however vary, depending on the exact goal of the exercise (e.g., devising one comprehensive or a small set of complementary social indicators,

[11] Social activities are however not necessarily perfect substitutes. A more refined approach may allow for imperfections arising, e.g., from conversion factors and characteristics.

[12] Activity-specific cutoffs merely provide a degree of freedom in the specification to account for potentially different qualities or types of activities. Note that in contrast to the literature on multidimensional poverty measurement, I do not call the $\underline{a}_j$ deprivation-cutoffs since the deprivation is only asserted if none of the activities is actually performed.

[13] Obviously, the second cutoff in equation (5) implicitly assumed as $\underline{a}_{ij} = 0$ and could in principle be changed as well. Moreover, refined methods could explicitly exploit the quasi-count data nature of the social activities.

studying deprivation in social participation alone or in the context of multidimensional poverty etc.).

2.4 Related Concepts

This section briefly sketches how social participation connects with related concepts. These explanations are meant to be suggesting not definitive, as establishing the precise relationship goes well beyond the scope of this paper. The important aspect here is however that by their nature fundamentally distinct concepts are involved—and there is good reason to keep them separate, both conceptually and empirically. Only then an accurate operationalization of the respective concepts can be made which finally allows a careful empirical analysis.

Social networks, relate individuals and have been studied from different perspectives (e.g., Ioannides and Loury, 2004, Jackson, 2011, Wrzus *et al.*, 2013). Social participation may alter both size and quality of social networks, whereas social networks, in turn, may shape the scope for social participation. While social networks as such escape any reasonable normative assessment, they provide the basis for other important concepts. While the different benefits from social networks were found to play an important role for the poor across the globe (Narayan *et al.*, 2000), research is in this field is still plagued by severe conceptual vagueness and overlap.

It can, for instance, be argued that **affiliation**, which provides a sense of belonging and identity is an important functioning as well. Indeed, Nussbaum (2001) considers affiliation as one out of ten key functionings. However, she also subsumes various forms of social interactions, the social basis of self-respect and non-humiliation under this umbrella. Clearly affiliation is closely related to social participation: socializing may result in important shared experiences and ultimately create a sense of belonging and affiliation, but not necessarily so.[14] Conversely, affiliation may continue to live on even if concrete social participation with peers or family came to an end, e.g., due to migration. While social participation was previously described as an activity, affiliation is probably best conceived as a state or condition, for which an individual's social network is a key factor. Whether and how exactly affiliation is relevant for a specific analysis depends on the specific research question at hand. A promising approach, e.g., for multidimensional poverty measurement, might be to complement deprivation in social participation indicators, with separate deprived of affiliation indicators. Being deprived in both aspects may then be understood as **social isolation**. Indeed, Zavaleta *et al.* (2016) suggest frequencies of social contact (among other items) to measure social isolation.

A similar argument can be made for **social support**, which is often partitioned into emotional and practical support. Its importance is emphasised in the social exclusion literature (Gordon *et al.*, 2000) and the OECD (2011) suggests related indicators to measure social connections. While social support may represent a benefit arising from social relations, it may however also be viewed (i) to reflect affiliation, or (ii) to contain aspects which actually refer to other functionings.[15] Specifically,

[14] It is well-known that affiliation (or group identity) does not require previous direct social contact, and is in fact choice relevant; see, e.g., Tajfel and Turner (1979) or, more recently, Chen and Li (2009).

[15] Moreover, social support is a "two-way street" since resource claims, expectation of support, and social norms may

economic and social security, matters by itself for human well-being (Wolff and de-Shalit, 2007, Stiglitz *et al.*, 2009), and social support may provide services that could alternatively also be obtained through, e.g., insurance markets.

Social capital is another prominent concept, that received lots of academic and public attention. Seminal sociological contributions emphasised the thoroughgoing instrumental nature of social capital as a resource and its utilization by individual members of a group (Bourdieu, 1986). Subsequently, social capital was extended to be feature of communities, in particular by political scientist (Putnam, 1995), but also economists (e.g., Knack and Keefer, 1997). For the present analysis it seems sufficient to conceive social capital as stock, which resides in the totality of the individual social networks. Social participation, in contrast can then also be thought of an investment activity that helps to build social capital (Glaeser *et al.*, 2002). Note however that the view presented in this paper challenges the approach to measure human well-being using social capital indicators, e.g., using the "trust" or "fairness"-questions, as suggested in Stiglitz *et al.* (2009), OECD (2011). Neither reflects social capital in any direct way social participation, nor is another intrinsic relevance obvious. Instead, most of benefits arising from social capital seem to be of instrumental importance for other economic outcomes (e.g., lower crime rates or finding a job). More importantly, social capital is not an unambiguous desirable outcome, as already pointed out by Portes (1998), and more recently demonstrated by Satyanath *et al.* (2017).

3 Operationalisation

3.1 Data and Social Activities

This paper uses data from the German Socio-Economic Panel (SOEP) to illustrate an operationalization of deprivation in social participation. The SOEP is a high-quality panel data set, which started in 1984 and provides detailed information on different domains of life.[16]

Social participation can manifest itself in many different forms. Therefore, the present paper suggests to mount the operationalization on a comprehensive set of common activities and the frequency with which they are performed. Table 1 contains the social activities used for the present study along with the exact wording of the questions. Responses to these questions are usually recorded on 4-point scale (weekly, monthly, less than monthly, never).[17] These items as such are not new and, in fact, well-established. They are collected in the SOEP since the mid-1980s (even though with some modifications over time), but are also included in many other surveys (e.g., PSE, HILDA). Moreover, recommendations of how to measure social connections frequently include direct indicators like these (Stiglitz *et al.*, 2009).

Figure 1 shows the frequency distributions of the single social activities. Evidently, the shape of

also complicate the way out of poverty (Narayan *et al.*, 2000, pp. 55–57), see also Portes (1998, p. 16).

[16] The present paper uses the SOEP v32.1 (DOI:10.5684/soep.v32.1); for more details see Wagner *et al.* (2007).

[17] Additionally, there are more activities, which are however less frequently collected and moreover only recorded on a 5-point scale.

Table 1: Social Activities: Questions and Variables

Question	Variable
Going to cultural events (such as concerts, theater, lectures, etc.	culture
Going to the movies, pop music concerts, dancing, disco, sports events	cinema
Doing sports yourself	sports
Artistic or musical activities (playing music/singing, dancing, acting, painting, photographie)	art
Meeting with friends, relatives or neighbors	socialize
Helping out friends, relatives or neighbors	helping
Volunteer work in clubs or social services	volunteer
Involvement in a citizens' group, political party, local government	initiative
Attending church, religious events	church

Notes: Responses are recorded on a 4-point scale and labelled as 'at least once a week', 'at least once a month', 'less often', and 'never'.

the frequency distributions varies substantially: some variables are particular strongly skewed (e.g., with socialising having a mode of weekly or volunteer having a mode of never). Sports, in contrast, appears to be bimodal, while other variables exhibit more symmetric frequency distributions (e.g., culture or cinema). One question not easy to answer is to what extent the sum of these activities actually cover all social activities of the respondents (unless a more comprehensive time-use survey is also available). For the present analysis, it is of particular importance, whether some common social activity is not covered at all. What can be said, however, is that in 2011, for instance, 68% of the respondents do at least one activity on a weekly basis, whereas around 88% do at the minimum one activity either on a weekly or on a monthly basis (data not shown). While this evidence, of course, does not preclude further improvements in coverage, it does suggest that many important activities are already covered.[18]

3.2 Deprivation Indicators

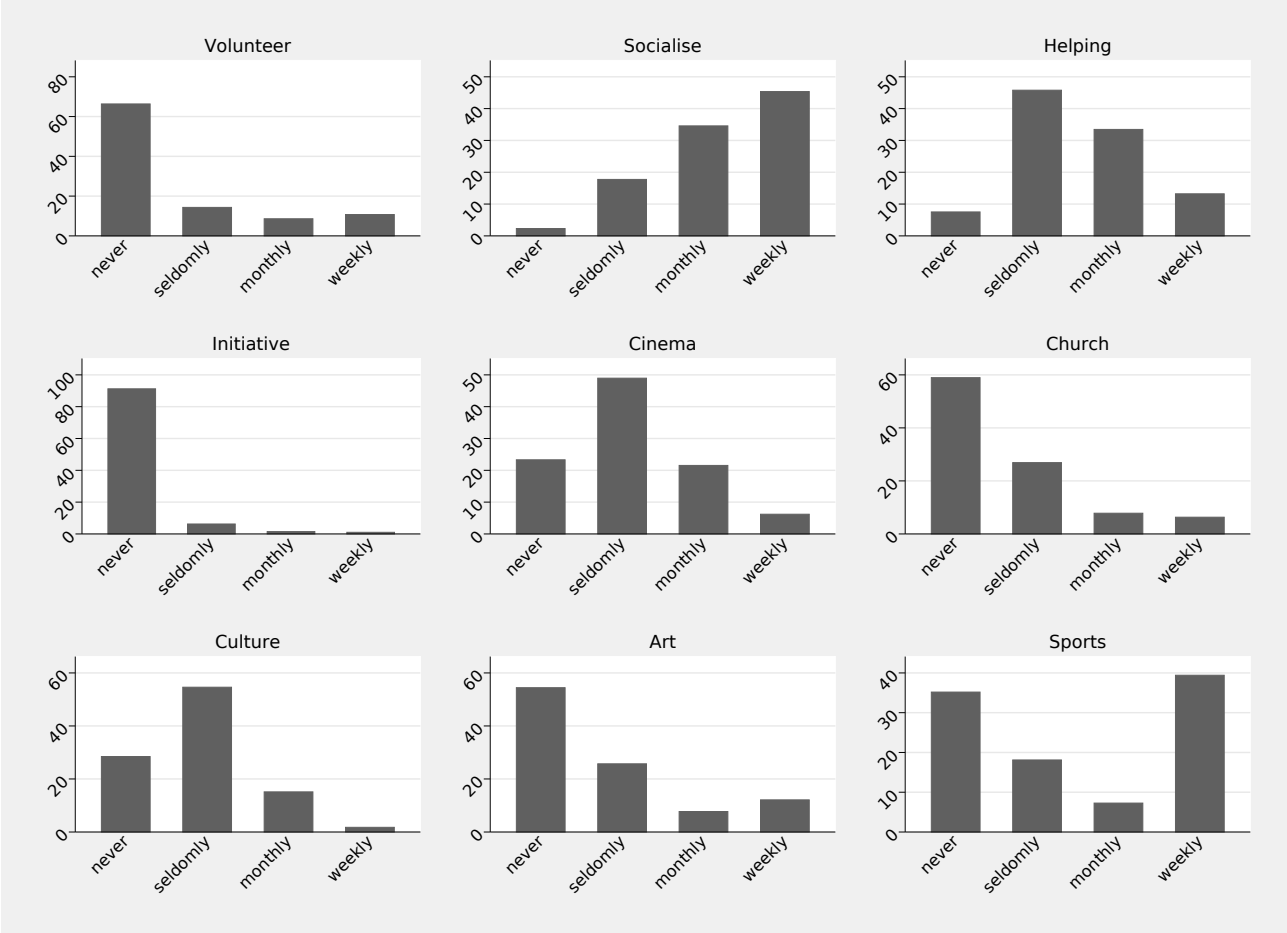
The present operationalization relies of two separate deprivation indicators, in order to allow more complex social deprivation patterns to be reflected as well. The first indicator is meant to capture deprivation from more intimate or private forms of social participation, which are often particular faithful and sincere, and are frequently also characterised by high mutual expectations. This first indicator of deprivation in social participation, denoted DSP1, draws on (i) how often a person meets with friends, relatives or neighbours, and (ii) how often a person is helping out friends, relatives or neighbours.[19] $DSP1$ indicates an individual to be deprived, if both activities are performed at most to "less often."

In contrast, the second indicator, seeks to reveal non-participation in the wider public, often also

[18] Additionally, single social participation patterns are also fairly stable over time, except doing sports, which is slightly increasing since 2003 or so (data not shown).

[19] A motivation for the second question is that you usually ask people from which you can expect something rather than not random acquaintances.

Figure 1: Frequency distributions of Social Activities



Notes: Data from SOEP v32.1 (wave 2011); calculations use sampling weights.

taking place with rather casual acquaintances, and in the customary social activities of the society. While activities in this group may well generate a sense of belonging through shared experience, they often however remain interpersonal shallow, and non-binding. Ideally, this second deprivation in social participation indicator $DSP2$, would rely on all remaining activities enumerated in table 1. However, for two activities, doing sports and arts, it is no entirely clear to want extent they are actually performed in a social context, since, e.g., going jogging is also quite common. Therefore, the subsequent analysis employs two variants of the second deprivation indicator, one without the activities of sports and art ($DSP2A$) and one including both activities ($DSP2B$). Both $DSP2$-indicators signal a deprivation if all included activities are "never" performed. Since the social activity questions are asked on a yearly basis and, moreover, not all questions are always asked simultaneously, the indicators can only be calculated for selected years.[20]

It is important to note, that setting a deprivation cutoff like "never participating in any activity" is a *normative decision*, which is however inevitably in the analysis of poverty and deprivation. The capability approach is distinctively aware of this issue and requires such normative decision to be clearly exposed (e.g., Sen, 1999b, p. 75). Moreover, should the public debate contribute to decision like this as well, and certainly it is not the scientist on its own only needs to apply the "right" method. That said, a natural starting point to set a deprivation cutoff is, e.g., the most conservative approach, which requires all activities to be performed "never." The final cutoff may however not only be modified through public debate (Sen e.g., 1999b, ch. 6 or Sen 1999a), but also depends on the concrete exercise at hand (e.g., a long-run comparison over time, a cross-country comparison, or a multidimensional poverty analysis). As usual with potentially critical decisions in empirical analysis, robustness of key results should be routinely checked.

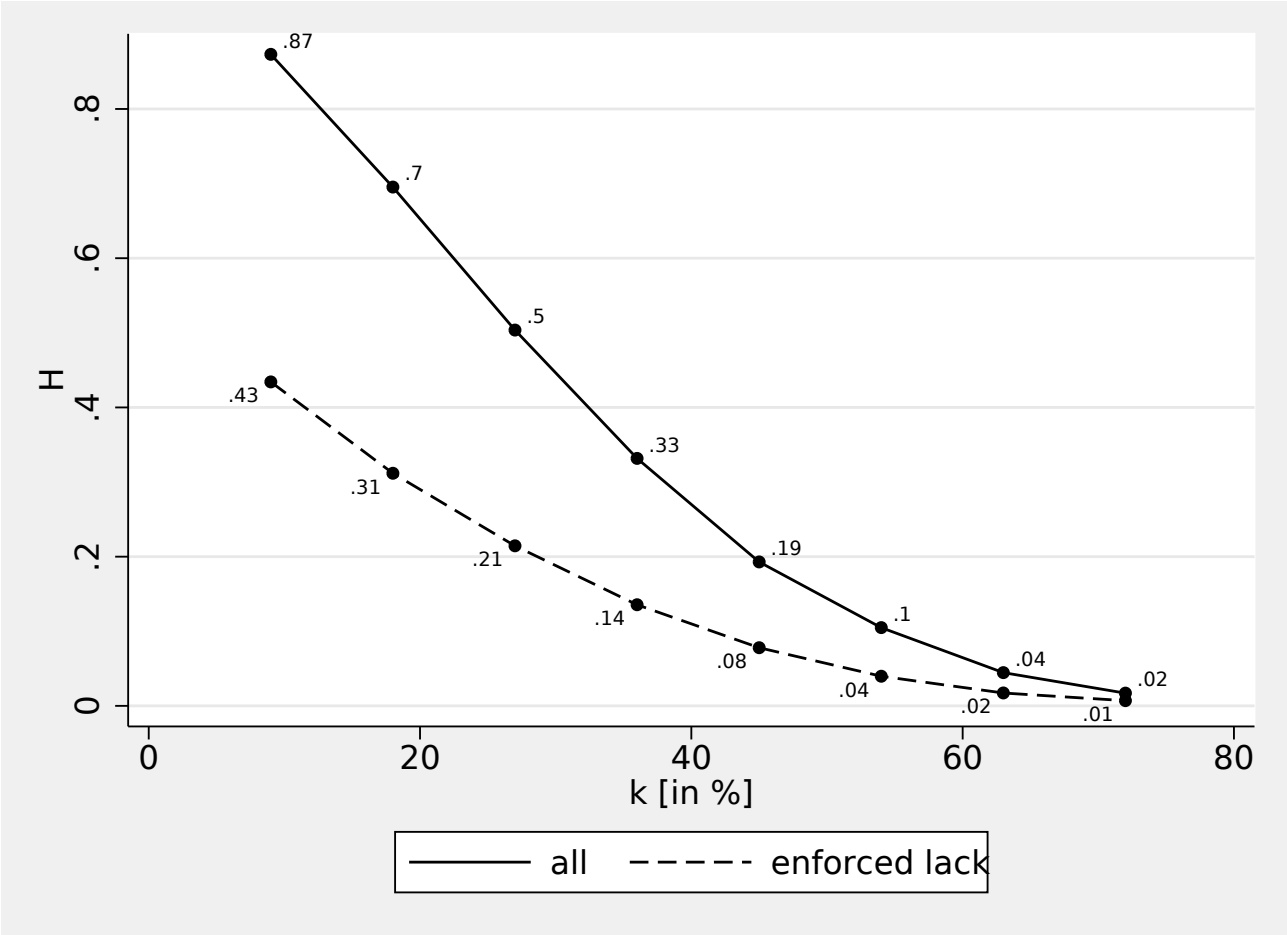
The subsequent section compares deprivation in social participation measures with income poverty and material deprivation. The income poverty measure is based on the monthly net household income and is adjusted using the modified OECD-equivalence scale, and deflated using a consumer price index with 2011 being the base year.[21] The poverty line is set using the official threshold, i.e. 60% of the median income. Additionally, I compile material deprivation index using items that are however only occasionally collected in the SOEP.[22] Moreover, the presented results rely on the so-called "enforced lack" (Mack and Lansley, 1985), i.e. a deprivation is only assigned if non-consumption of an item is reported to be for "financial reasons." Technically, I use a dual-cutoff counting approach (Alkire and Foster, 2011), using equal weights. By no means this is the only way to compile such an index, but it comprises important special cases and is a well documented and

[20] More specifically, $DSP1$ and $DSP2A$ can be compiled for 1992, 1994, 1996, 1997, 1999, 2001, 2005, 2007, 2009, 2011, 2015. Instead, $DSP2B$ can only be calculated for the years starting with 2001.

[21] I use the generated variables provided by the SOEP group, which entails some data cleaning and consistency checks; OECD weights.

[22] Specifically, the index draws on the following questions: the household has a color television; the household has a telephone; the household has an internet access; The household has a car; the flat is located in a building which is in good condition; the building is located in a good neighborhood; I have put some money aside for emergencies; I take a vacation away from home for at least one week every year; I invite friends over for dinner at least once a month; I eat a hot meal with meat, fish, or poultry at least every other day; furniture which is worn out but can still be used is replaced by new furniture. The index is calculated for 2005, 2007, 2011, where all the previous items are collected simultaneously.

Figure 2: Incidences of Material Deprivation Indices



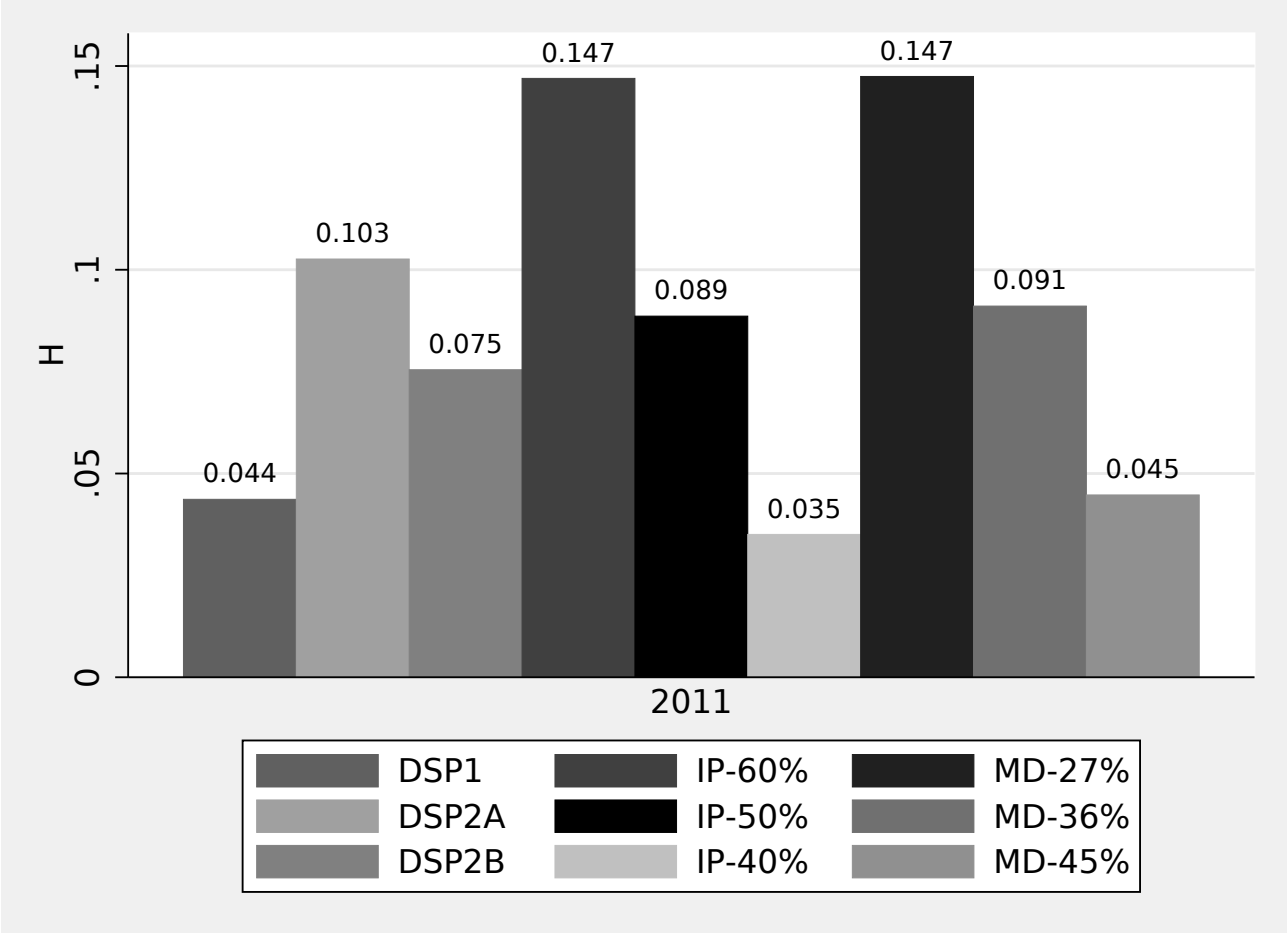
Notes: Data from SOEP v32.1 (wave 2007); calculations use sampling weights; material deprivation indices are constructed using the Alkire-Foster method with equal weighting.

understood method. Figure 2 shows how the implied headcount ratio depends on the chosen k- (or poverty) cutoffs, expressed as percent of the maximal possible number of deprivations. As expected, the graph reveals a systematically lower deprivation headcount ratio if only non-consumption of items due to an enforced lack is considered. Note, that $k \in [26, 54]$ provides interesting and useful headcount ratios, as DSP and poverty rates then are of similar magnitude, which is convenient for the concurrence analysis. In fact, it is one merit of the Alkire-Foster method that the effect of the chosen threshold can be studied empirically relatively easy.

Finally, figure 3 provides a first idea on incidences of the different different poverty and deprivation measures. A first observation is that deprivation in more private or intimate activities according to $DSP1$ is with 4.4% less wide-spread, than deprivation in more public and common activities, whether measured using DSP2A (10.3%) or DSP2B (7.5%).[23] The official income poverty measure, which uses the 60% of the median income as cutoff implies a poverty rate of almost 15%, whereas applying stricter cutoffs, i.e. 50% or 40% sharply reduces the headcount ratio to 9% and to 3.5%. Likewise the material deprivation index finds almost 15% as deprived at a cutoff of 27% of all pos-

[23] To observe the higher headcount ratio for the deprivation measure which does not include sports and arts ($DSP2A$) is not surprising, since the other one $DSP2B$ is more demanding in the sense that it additionally requires to never participate in art and sports.

Figure 3: Headcount Ratios for different Poverty and Deprivation Measures



Notes: Data from SOEP v32.1 (wave 2011); calculations use sampling weights. Measures of deprivation in social participation (DSP) as explained in the text; income poverty (IP) is calculated for poverty lines at 60%, 50% and 40% of the median income; material deprivation (MD) indices are calculated using the Alkire-Foster method for k-cutoffs of 27%, 36%, and 45% of the maximal possible deprivation.

sible deprivation, which also decreases substantially for stricter cutoffs ($k = 36, 45$) to 9% and 4,5% respectively.

4 Empirical Performance

This section provides evidence on the empirical performance of the suggested deprivation in social participation indicators, to present some first tentative results, but also to support the assessment of the validity of the indicators. First, a descriptive analysis identifies risk-factors and life-cycle patterns. Then the empirical link to related concepts like income poverty and material deprivation is examined, by analysing the concurrence of the different measures. Finally, regression analyses explore the conditional correlations of potential determinants and probe the role of the DSP indicators as predictors for overall life satisfaction.

4.1 Descriptive Analyses

Table 2 contains socio-economic characteristics by deprivation status for all DSP-indicator variables. Two general observations are salient: First, each socio-economic variable relates in the same way to each DSP indicator. Unemployed, for instance, are excessively represented in each deprivation indicator. Also note that this contrast for most variables is more pronounced for the $DSP2$-indicators than for the DSP1 indicators, suggesting the more intimate and private social activities to be less subject to socio-economic factors. Importantly, this finding also holds for income, income poverty, and the (uncensored) material deprivation count. Average equivalence income, for instance, is approximately one third lower for $DSP2$-deprived individuals.

A second important observation is that the age group dummies suggest a life cycle pattern, as deprivation in social participation is more common among older persons. Specifically, individuals aged 45 and below are less frequently deprived, whereas individuals aged 46 and above are more frequently deprived. In fact, the difference of the population shares between deprived and non-deprived is increasing with age (irrespective the deprivation indicator). Naturally, conclusions based on a descriptive analysis like this must treated with caution, since confounding factors may well drive some of the findings.

4.2 Concurrence Analyses of Deprivations

An instructive exercise for analysing deprivation indicators is to examine to what extent the different measures agree on the individuals deemed deprived. Table 3 (a) shows estimates of the population shares for the three social deprivation indices and for income-poverty with different cutoffs, namely 60, 50, and 40% of the net household equivalence income. Essentially, table 3 is a numerical representation of Venn diagrams, where one parameter (the poverty cutoff) is varied. Table 3 (a) reveals a remarkably large population share to be only income poor and the overlap with social deprivation

Table 2: Socio-economic variables by deprivation status

	DSP1		DSP2A		DSP2B	
	=0	=1	=0	=1	=0	=1
<25	0.15	0.07	0.15	0.05	0.14	0.05
26-35	0.22	0.14	0.22	0.18	0.19	0.17
36-45	0.25	0.22	0.25	0.24	0.26	0.23
46-55	0.21	0.28	0.21	0.27	0.23	0.28
56-65	0.17	0.29	0.16	0.27	0.17	0.28
65+	0.00	0.00	0.00	0.00	0.00	0.00
mar., living together	0.61	0.63	0.61	0.68	0.59	0.63
sep. or div.	0.09	0.15	0.09	0.14	0.10	0.17
unmarried	0.27	0.19	0.29	0.15	0.29	0.16
widowed	0.02	0.04	0.02	0.04	0.02	0.04
1-pers.	0.10	0.12	0.10	0.10	0.11	0.12
couple w. child.	0.25	0.27	0.25	0.27	0.25	0.26
single parent	0.07	0.09	0.07	0.08	0.08	0.10
couple no child.	0.55	0.47	0.55	0.49	0.54	0.48
other	0.04	0.05	0.03	0.05	0.02	0.05
years of education	12.06	11.32	12.19	10.64	12.50	10.59
full-time	0.50	0.42	0.51	0.38	0.49	0.34
part-time	0.13	0.10	0.13	0.09	0.15	0.10
training	0.03	0.02	0.03	0.01	0.03	0.01
precarious	0.05	0.03	0.05	0.04	0.06	0.05
olf	0.23	0.33	0.22	0.32	0.22	0.33
unemployed	0.07	0.11	0.06	0.16	0.06	0.17
pov40	0.03	0.07	0.02	0.07	0.03	0.09
pov50	0.07	0.15	0.06	0.16	0.06	0.21
pov60	0.12	0.24	0.11	0.29	0.12	0.36
pov70	0.21	0.34	0.19	0.41	0.19	0.49
neteqinc	1461.40	1253.46	1497.54	1062.51	1654.89	1084.66
md. count	18.42	28.98	17.84	28.35	18.00	29.82
md. count (el)	8.03	15.69	7.43	17.07	7.59	18.51
Observations	163752	7160	152594	17351	103937	7845

Notes: Data from SOEP v32.1 (all available waves, see fn. 20), calculation use sampling weights.

Table 3: Concurrence of Deprivation in Social Participation with Other Measures

(a) with income poverty measures

	DSP1			DSP2A			DSP2B		
poverty cutoff	40%	50%	60%	40%	50%	60%	40%	50%	60%
neither dep.	0.926*	0.876*	0.821*	0.874*	0.832*	0.787*	0.898*	0.854*	0.806*
only I-dep.	0.033*	0.084*	0.138*	0.028*	0.071*	0.115*	0.030*	0.074*	0.122*
only SP-dep	0.037*	0.032*	0.028*	0.089*	0.076*	0.062*	0.065*	0.054*	0.043*
both dep.	0.004*	0.008*	0.012*	0.009*	0.022*	0.035*	0.008*	0.019*	0.030*
B2IP	0.097	0.089	0.081	0.232	0.234	0.235	0.203	0.201	0.196
B2SPD	0.089	0.203	0.301	0.088	0.220	0.362	0.104	0.257	0.410

(b) with material deprivation indices

	DSP1			DSP2A			DSP2B		
k-cutoff	27%	36%	45%	27%	36%	45%	27%	36%	45%
neither dep.	0.822*	0.877*	0.920*	0.785*	0.834*	0.872*	0.804*	0.854*	0.895*
only MD-dep.	0.138*	0.083*	0.039*	0.117*	0.068*	0.030*	0.124*	0.073*	0.033*
only SP-dep	0.027*	0.030*	0.034*	0.063*	0.073*	0.083*	0.044*	0.053*	0.059*
both dep.	0.014*	0.010*	0.006*	0.034*	0.024*	0.015*	0.028*	0.020*	0.013*
B2MD	0.089	0.107	0.133	0.227	0.263	0.338	0.184	0.213	0.282
B2SPD	0.335	0.246	0.149	0.352	0.250	0.156	0.386	0.273	0.177

Notes: Data from SOEP v32.1 (wave 2011); calculations use sampling weights; panel (a) uses net real household equivalence income, material deprivation index in (b) is constructed using the Alkire-Foster method with equal weighting, enforced lack items; indicated levels of significance are $^{+}$ $p < 0.05$, * $p < 0.01$.

to be rather small. Specifically, around 12% of the population are income-poor (at the 60% cutoff), but not deprived according to the activity index. In contrast, the population share which is income poor and deprived according to the $DSP2$-indicators is only 3–3.5% and according to the $DSP1$-indicator even less than 1.2%. Moreover, applying a stricter income-poverty cutoff may give reason to expect a higher concurrence. However, 3 reveals that while shares for income only poor and both poor and deprived decrease with a stricter cutoff, the previous result does not change substantially. In fact, the share of individuals who are both income-poor and deprived in social participation relative to all income poor remains with 20–23% fairly constant (for the $DSP1$ indicator this share is around 8–10%).

Table 3 (b) performs the same exercise for the material deprivation index. The observed pattern turns out to be quite similar, since the larger part of materially deprived persons is not deprived in social participation (at least 66%), i.e. at most a third of the materially deprived is also deprived in social participation. This finding holds independent of the chosen poverty cutoff for both DSP-indicators and is even pronounced for the $DPS2$ indicators. Conversely, there is also a significant share of the population who is only deprived in social participation: 3–8% depending on measure and cutoff.

Table 4 turns to the overlap of the DSP indicators and reveals that the more complex situation of not participating in customary activities, but spending time with friends or neighbours seems in fact to be quite common. Specifically, 74.6% ($=\frac{0.0595}{0.0595+0.0203}$) of those persons who are deprived according to

Table 4: Concurrence among deprivations in social participation

	neither deprived	only DSP1-deprived	only DSP2B-deprived	both deprived
<25	0.11	0.04	0.04	0.03
26-35	0.18	0.10	0.21	0.12
36-45	0.26	0.22	0.22	0.16
46-55	0.20	0.22	0.20	0.23
56-65	0.13	0.19	0.17	0.22
65+	0.12	0.24	0.15	0.26
years of education	12.64	11.97	10.71	10.60
full-time	0.42	0.34	0.30	0.20
part-time	0.16	0.11	0.09	0.06
training	0.02	0.01	0.01	0.01
precarious	0.06	0.04	0.06	0.05
out of labour force	0.30	0.41	0.40	0.53
unemployed	0.04	0.09	0.14	0.15
pov60	0.12	0.19	0.38	0.43
neteqinc	1686.08	1580.79	1091.40	1077.09
md. count	13.97	21.14	21.40	31.25
md. count (el)	5.09	8.61	11.62	17.62
Obs.	23604	761	1658	519
pop. share	0.891	0.0296	0.0595	0.0203

Notes: Data from SOEP v32.1 (wave 2011), calculations use sampling weights.

the $DSP2B$ indicator are not deprived of more private and intimate relations ($DSB1$). In absolute terms 5.95% of the population are "excluded" from common social life but not from social relations in general, and about 2% report alarmingly low social participation as they are deprived according to both DSP indicators. On the other hand, around about 60% who are deprived in $DSP1$ are not deprived according to $DSP2B$.

In sum, the previously presented evidence suggests, first, that in some cases low income and material deprivation seem to translate into DSP; second, that DSP is not only conceptually, but also empirically distinct from income poverty material deprivation: the large extent to which different people are identified as deprived is in support of this conclusion. Third, different mechanisms seem to account DSP—going beyond the lack of resources. Fourth, DSP measures which exclusively rely on resources are likely biased, as only a subset of DSP is identified. Finally, the overlap of DSP indicators documents both indicators to capture related, but distinct and non-redundant aspects of social participation.

4.3 Regression Analyses

This section explores potential determinants of social activities, and deprivation in social participation as well as the the link between deprivation in social participation indicators and life satisfaction using conventional regressions techniques. It should be noted that results are best viewed as conditional correlations, rather than causal effects. To assess the validity of the proposed measures,

conditional correlations suffice and, moreover, the identification of causal effects usually involves a specific empirical strategy to examine one particular regressor. All models are estimated using linear fixed effects and include control variables for regions and years, and a constant. Table 5 and 6 contain the results for single activities and the deprivation indicators. In general, results are in line with intuition, but some findings are of particular interest:

First, income, modelled as log-income to allow for a decreasing marginal effect, affects most activities as expected. Specifically, income increases cinema, culture, socialise, and sports, but not attending church, voluntary work or helping out friends and neighbours. These single effects of income also converge into significant lower chance to be deprived in social participation. Unlike income, unemployment increases some activities, but decreases others, whereas there is no significant influence on either deprivation indicator. This insignificance may result for quite distinct reasons: first, partly offsetting effects of single activities may play role, which could be interpreted as a shift in behavioural patterns for changing life circumstances. Moreover, the focus on particular low activity levels in combination with a within-estimator may leave rather little variation to be exploited for the estimation. Finally, results may suffer a endogeneity bias.[24]

The presence of children decreases almost all activities, except voluntary activities and attending church, which are expanded. Together, these effects seem to result in deprivation of $DSP1$, but not $DSP2$. Offsetting effects in different activities may drive the latter finding too, which then again may simply reflect change behavioural patterns due to a changed conditions of life. Finally, comparing the broader pattern of $DSP1$ and $DSP2$ reveals the earlier observed life-cycle pattern for the $DSP2$ indicators to be replaced by a stronger dependence on socio-economic factors. Public participation activities, therefore, seem to be driven more by socio-economic characteristics and events (children, employment or health), whereas engaging in intimate social relations seem to follow a more genuine life-cycle pattern.

Additionally, this section also probes the role of DSP indicators as predictors of overall life satisfaction—by now a widely accepted measure of subjective well-being. The evidence on the role DSP for predicting life satisfaction is not only interesting in itself. Moreover, such evidence is also helpful to assess the validity of the suggested indicators. Specifically, since social participation is a valued functioning, deprivation in social participation is expected to reduce life satisfaction sharply. Note, that for higher levels of participation one may expect smaller, or even negative effects on life satisfaction. Since deprivation indicators by nature focus on critically low achievements, increases should however unambiguously increase life satisfaction. To this end I estimate a conventional linear life satisfaction model controlling for fixed effects and the usual socio-economic variables.[25] Even though the main interest here lies on conditional correlation to assess validity (not to identify the causal effect of a specific determinant) it is instructive to add important related variables stepwise, as one can observe how strong the effect of the DSP indicators varies. Table 7 contains the results. First, as

[24] For instance, lowering social participation may precede the unemployment spell or individuals may adapt to deprivation in social participation during their unemployment spell. However, Kunze and Suppa (2017) find little evidence in support of these possibilities.

[25] Ferrer-i-Carbonell and Frijters (2004) identified controlling for fixed effects in life satisfaction regressions to be essential, while different models for the dependant variable usually lead to similar results.

Table 5: Regression Results—Part A

	(1) Cinema	(2) Culture	(3) Volunteer	(4) Church	(5) Socialise	(6) Helping
sep. or div.	0.171*	0.0719*	-0.0185	-0.0403*	0.0326+	0.0212
	(12.20)	(6.35)	(-1.23)	(-3.38)	(2.19)	(1.51)
unmarried	0.364*	0.156*	0.0499*	-0.0238+	0.0660*	0.0184
	(26.76)	(14.31)	(3.33)	(-2.14)	(5.18)	(1.36)
widowed	0.140*	0.0846*	0.0157	0.0687*	0.169*	0.131*
	(4.91)	(3.47)	(0.46)	(2.61)	(5.23)	(3.77)
1 child	-0.111*	-0.0705*	0.000802	0.0338*	-0.0730*	-0.0479*
	(-15.52)	(-12.09)	(0.10)	(5.66)	(-10.39)	(-6.38)
2 child.	-0.131*	-0.0906*	0.0463*	0.0955*	-0.101*	-0.0681*
	(-14.27)	(-12.24)	(4.10)	(11.44)	(-10.80)	(-6.98)
3+ child	-0.142*	-0.106*	0.0872*	0.122*	-0.132*	-0.101*
	(-9.68)	(-9.10)	(4.78)	(8.82)	(-8.81)	(-6.49)
26-35	-0.227*	0.00709	0.00316	-0.0335*	-0.00261	0.0503*
	(-20.47)	(0.78)	(0.27)	(-3.80)	(-0.26)	(4.30)
36-45	-0.183*	0.0352*	0.123*	0.0174	-0.0259	0.0559*
	(-12.31)	(2.85)	(7.41)	(1.40)	(-1.75)	(3.49)
46-55	-0.157*	0.0324+	0.129*	0.0150	-0.0257	0.0598*
	(-8.68)	(2.14)	(6.34)	(0.98)	(-1.37)	(2.96)
56-65	-0.102*	0.0294	0.0943*	0.00448	0.0368	0.0944*
	(-4.69)	(1.61)	(3.83)	(0.24)	(1.59)	(3.81)
lninc	0.0725*	0.0534*	-0.000645	0.00222	0.0437*	-0.0103
	(9.89)	(8.59)	(-0.07)	(0.35)	(5.63)	(-1.24)
part-time	0.0301*	0.0148+	0.0682*	0.0517*	0.0296*	0.0577*
	(3.52)	(2.02)	(6.38)	(6.66)	(3.34)	(5.98)
training	0.0824*	-0.0230	0.00749	0.0368*	0.0507*	-0.0496*
	(5.66)	(-1.81)	(0.50)	(3.43)	(3.92)	(-3.20)
precarious	0.0281+	0.0151	0.136*	0.0373*	0.0790*	0.118*
	(2.51)	(1.53)	(8.91)	(3.58)	(6.64)	(9.02)
olf	-0.0311*	-0.0163+	0.0413*	0.0268*	0.0690*	0.0451*
	(-4.07)	(-2.54)	(4.55)	(4.10)	(8.66)	(5.14)
unemployed	-0.0309*	-0.0214*	0.0298*	0.0168+	0.0726*	0.0876*
	(-3.28)	(-2.73)	(3.05)	(2.13)	(6.73)	(7.88)
Obs.	161906	162002	161711	161915	162022	161894
Ind.	52392	52395	52355	52382	52418	52397

Notes: Data from SOEP v32.1 (all available waves, see fn. 20), all underlying models fitted using linear fixed effects estimator, all models additionally include year dummies and a constant, indicated levels of significance are $^{+}$ $p < 0.05$, * $p < 0.01$.

Table 6: Regression Results—Part B

	(1) Initiative	(2) Art	(3) Sports	(4) DSP2A	(5) DSP2B	(6) DSP1
sep. or div.	-0.0100	0.0458^{+}	0.0313	-0.0103	-0.00238	-0.00329
	(-1.38)	(2.18)	(1.48)	(-1.75)	(-0.36)	(-0.85)
unmarried	0.0169^{+}	0.0343	0.229*	-0.0253*	-0.0106^{+}	0.000827
	(2.42)	(1.59)	(11.46)	(-5.87)	(-2.26)	(0.29)
widowed	0.0254	0.0830	0.0847	-0.0331^{+}	-0.0153	-0.0189^{+}
	(1.41)	(1.88)	(1.92)	(-2.16)	(-0.89)	(-2.00)
1 child	-0.00539	-0.0347*	-0.0904*	0.0110*	0.00403	0.00640*
	(-1.37)	(-3.05)	(-8.37)	(4.05)	(1.35)	(3.40)
2 child.	0.00338	-0.0371^{+}	-0.0964*	0.00864^{+}	0.00329	0.00557^{+}
	(0.64)	(-2.46)	(-6.71)	(2.47)	(0.81)	(2.31)
3+ child	-0.00120	-0.0482^{+}	-0.0712*	0.00555	-0.00334	0.00288
	(-0.15)	(-2.22)	(-3.34)	(0.87)	(-0.48)	(0.72)
26-35	0.00723	-0.0399^{+}	-0.0184	0.00273	0.00384	-0.00835*
	(1.39)	(-2.20)	(-1.18)	(0.77)	(0.92)	(-3.47)
36-45	0.0356*	-0.00370	0.0456^{+}	-0.0136^{+}	-0.00839	-0.0163*
	(4.76)	(-0.15)	(2.08)	(-2.41)	(-1.30)	(-4.21)
46-55	0.0386*	0.0179	0.0306	-0.00711	-0.00621	-0.0181*
	(3.94)	(0.59)	(1.14)	(-0.98)	(-0.77)	(-3.51)
56-65	0.0231	0.0443	0.0366	-0.00987	-0.00531	-0.0220*
	(1.92)	(1.22)	(1.14)	(-1.08)	(-0.52)	(-3.29)
lninc	-0.00379	0.0181	0.0745*	-0.0237*	-0.0206*	-0.00726*
	(-0.83)	(1.52)	(6.78)	(-8.17)	(-6.54)	(-3.20)
part-time	0.00987^{+}	0.0223	0.0718*	-0.00837^{+}	-0.00230	-0.00274
	(2.00)	(1.61)	(5.27)	(-2.46)	(-0.64)	(-1.15)
training	-0.00750	0.00111	0.0207	-0.00230	-0.00294	0.0000491
	(-1.27)	(0.05)	(1.00)	(-0.61)	(-0.65)	(0.02)
precarious	0.0119	0.0512*	0.0993*	0.00655	0.00539	-0.00278
	(1.69)	(2.88)	(5.37)	(1.44)	(1.08)	(-0.89)
olf	0.00440	0.0765*	0.0538*	0.0175*	0.0125*	0.00504^{+}
	(1.03)	(5.94)	(4.54)	(5.47)	(3.42)	(2.21)
unemployed	0.000919	0.0402*	0.0497*	0.00875	-0.00552	-0.00496
	(0.20)	(2.59)	(3.67)	(1.82)	(-0.89)	(-1.59)
Obs.	161491	106047	161568	160767	105097	161611
Ind.	52335	45747	52368	52249	45586	52374

Notes: Data from SOEP v32.1 (all available waves, see fn. 20), all underlying models fitted using linear fixed effects estimator, all models additionally include year dummies and a constant, indicated levels of significance are $^{+}$ $p < 0.05$, * $p < 0.01$.

expected both DSP-indicators reduce life satisfaction significantly. Moreover, the $DSP1$ indicator seems to have the more detrimental effect (the $DSP2$ coefficients amount to approximately 70% of the $DSP1$ coefficients). Second, the combined effect of DSP indicators results in psychological distress similar to that of unemployment, thereby documenting their economic significance. Finally, the effects associated with the DSP indicators hardly vary after adding important potentially related control variables, like income and employment status. While a more careful analysis of the causal impact is left for future research, this finding already suggested the effect of the DSP indicators to be rather independent from income and unemployment, which is also supported by the concurrence analysis in the case of income poverty.

Table 7: Life Satisfaction Regressions

	(1)	(2)	(3)
DSP1	-0.347*	-0.333*	-0.334*
	(-10.20)	(-9.87)	(-9.99)
DSP2B	-0.245*	-0.233*	-0.225*
	(-7.77)	(-7.47)	(-7.27)
ln(income)			0.326*
			(14.74)
part-time			-0.00378
			(-0.16)
training			0.0940+
			(2.16)
precarious			-0.121*
			(-3.82)
out of labour force			-0.0165
			(-0.72)
unemployed			-0.566*
			(-15.73)
Obs.	118418	118418	118418
Ind.	48801	48801	48801

Notes: Data from SOEP v32.1 (waves 2001, 2005, 2007, 2009, 2011, 2015). The dependent variable is life satisfaction, recorded on a 10-point scale. All models are estimated using linear fixed effects and include control variables for age groups, marital status, number of children, regions, years, and a constant. Reference group for employment status is full-time employment; standard errors are clustered on the individual level; t-values in parentheses, indicated levels of significance are $^+$ for $p < 0.05$, * for $p < 0.01$.

5 Discussion

5.1 Validity of Indicators

Evaluating the validity of a measure looks into whether the proposed measure accurately reflects what it is supposed to capture. Thus a vital precondition is a sufficiently definite construct to be measured. As outlined in section 2, DSP seeks to identify critically low levels in *social participation*, an abstract activity. DSP is established if an individual is observed not to participate in any of the

enumerated concrete social activities. The construct's elements, concrete social activities, not only contrast with non-social activities (like house production) and other aspects related to social network (e.g., a sense of belonging). In addition to this, the construct of DSP itself is also clearly distinguished from, and yet related to, income poverty and material deprivation (both of which are located in the space of resources). Finally, DSP is a relational concept in the sense, that it refers to the society an individual is actually living in.

A first question, asks whether all aspects of the theoretical construct are captured (sometimes called content validity). In this respect, the validity of the suggested measures crucially hinges upon whether really all social activities relevant for the society under study are captured. Only then, simultaneous non-participation in all activities, can be confidently interpreted as DSP. If however important activities were disregarded, the indicators would systematically overlook a customary way to achieve social participation and thereby erroneously report deprivation. The accurate choice of common social activities is also central to adequately reflect the concept's relational nature. As noted above about 88% of the individuals participate in at least one of the activities at least monthly, which is already indicative of a considerable coverage. However, complementary research may deliberately assess social participation patterns and suggest refinements in terms of most common activities.

A second question is whether the measures under study empirically relate to adjacent concepts as theoretically expected (sometimes called construct validity). In this regard, the concurrence analysis demonstrates that DSP is neither equal to income-poverty nor to material deprivation (discriminant validity), which is backed by the conceptual considerations. Nonetheless these concepts are, however, also theoretically related as income and goods or services are often important means for achieving social participation. As theoretically expected, the regression analyses find low income, unemployment and material deprivation to be positively associated with DSP. Hence the conditional correlations from regression analyses lend further support to this nexus. Moreover, life-cycle patterns of social participation prove consistent with previous research on life-cycle pattern of social networks. Importantly, DSP also results in a significant loss of life satisfaction, which is expected since social participation is a valued functioning. This finding is of "evidential interest" (Sen, 2008) and can also be interpreted as predictive or concurrent validity.

Finally, note that both indicators aim to measure complementary aspects of DSP, or in some sense qualitatively different aspects, namely private and intimate versus wider public participation. This feature is also supported by the results, as the $DSP2$ indicator seem to be systematically closer tied to socio-economic factors and life-course developments. Additionally, the concurrence analysis also points to distinct and non-redundant aspects of social participation to be captured. In sum, the previous considerations justify confidence in the validity of the proposed measures.

5.2 Unobserved Heterogeneity

Is the suggested implementation of deprivation in social participation susceptible to unobserved heterogeneity, e.g., like being an extrovert or introvert or other personality traits? On the one hand

the regression results indicate that unobserved heterogeneity does matter and, therefore, should be controlled for if possible—if the task is to identify conditional expectations. In this regard, it should however be noted that low levels of participation in all activities indicate a deprivation—whether caused by unobserved heterogeneity (say a social anxiety disorder) or not. The identification of deprived individuals, instead, seems unlikely to suffer from a related response bias, through say scale interpretation or anchoring. Not only do the scales have objective and meaningful labels in particular the boundary values (like "weekly" or "never"). Importantly, all individuals are subjected to the same objective deprivation cutoff, which is precisely based on these explicitly stated labels.[26]

5.3 Details of Social Activities

How much detail about the activities is needed for a careful analysis of deprivation in social participation? Certainly, the underlying questions could be complemented by more information in different directions. For instance, it might be interesting to know whether an activity is performed together family or friends, or together with loved ones or bowing acquaintances. Additionally, one might be interested in the group size for an activity, or whether the same or different individuals join the respondent's activities. Naturally, one could also demand more detailed information on both duration and frequency of an activity. While each of these approaches would allow a deeper analysis, they however also increase the burden for respondents. A natural strategy for deprivation-measurement is to keep the survey instruments as parsimonious as possible. At the same time however one should probe whether certain assumptions are justified or whether additional information fundamentally change the assessment. Consequently, where additional information is available this can be used either to support a certain measurement approach or suggest grounded refinements. In the present case, for instance it would be interesting to know whether some activities, in particular doing sports and arts, take place in a social environment after all. Additional information is however particular useful for complementary studies seeking to understand the different patterns of social participation in more detail.

5.4 Preference or Deprivation?

A notorious intricacy in the measurement of poverty or deprivation is that an observed outcome, even though adverse, could also represent a preference and not a severe deprivation. A similar objection can also be raised with respect to single social activities, like, e.g., frequently attending the opera or the theatre.[27] The present approach takes, in some sense, a two-fold approach to address this concern. First, taking more than one activity explicitly into account, effectively enhances the informational basis on which the assignment of a deprivation status is grounded. For instance, we

[26] These properties do not hold, e.g., for subjective health assessments or overall life satisfaction.

[27] To distinguish preference and deprivation in the "consensual approach" to poverty, Mack and Lansley (1985) propose rely on the so-called "enforced lack" question; for critiques see, e.g., Piachaud (1987), McKay (2004). See Burchardt and LeGrand (e.g., 2002) for related approach. Moreover, Platt (e.g., 2009) found that individuals do indeed have different patterns of social participation.

may rightly hesitate to consider somebody deprived because she is only observed not to go to the cinema at least once a month. We may, however, be more confident if we additionally knew that this person is not participating in say ten explicitly enumerated activities either. Indeed, the present approach relies on a comprehensive level of information on social activities.

In addition to widening the informational basis, the present approach, however, also seeks to lift the identification of deprivation from the resource into the functioning space, where according to the capability approach normative assessments can take place.[28] While the principle concern for freely chosen low achievements does not vanish, it seems however less serious and less detrimental to deprivation measurement. First, because preferences may matter for choosing the specific activity (say going to the opera, or going the stadium), but less so for achieving the functioning, which is the object of valuation—an end in itself, and not the specific means to achieve it. Important in this context is that the capability approach entails a universal claim with respect the valuation of functionings and capabilities (e.g., for the freedom-aspect of the capability see Sen, 1999b, p.244–246). This claim is also supported by a large body of empirical evidence that across the world essentially the same functionings are valued (see, e.g., the overview in Alkire, 2008). Moreover, it should also be noted that not choosing a certain functioning, does not imply its non-valuation, since choice, like desire too, involves "considerations of 'feasibility' and of 'practical possibility"'. Valuation, in contrast, is a reflective activity which may go well beyond the current circumstances (e.g., Sen, 1985a, p. 15).

Second, the capability approach does indeed emphasise the importance of counter-factual information for an accurate normative assessment of an situation.[29] For instance, discriminating between a fasting and starving person, who may have similar nutritional achievements, requires knowledge about different underlying choice (or capability) sets. It emerges that while deliberately chosen low functioning achievements may occasionally exist, many empirical exercises work convincingly well without relying on any counterfactual information. The application of malnutrition indicators illustrates this point very clearly—and essentially rests on the fact that most people virtually do value "being well-nourished" and therefore also seek achieving it. Additionally, the choice of the deprivation cutoff can also support the interpretation as deprivation, as an extremely low achievement will be more widely perceived as problematic. Falling short of a "good" or "decent" level of social participation is one thing, falling short of a basic minimum level is another. Finally, the previous life satisfaction analysis (see section 4.3) precisely indicates that DSP *does* hurt, thereby, lending additional support to their interpretation as deprivation in a valued functioning.[30]

[28] The degree to which this is successful essentially hinges upon the validity of the measurement; in particular whether all relevant activities are covered. In fact, since the activities are given empirically, it can be seen as the task of the researcher to process this information and reformulate in the functioning space in such a way that, in the course of a public debate, a normative assessment can be reached.

[29] Indeed, the notion of freedom is central to the capability approach, see, Sen (e.g., 1992, ch.2–3).

[30] Note, however, that non-hurting deprivation indicators do not necessarily indicate non-deprivation, since individuals may experience entrenched deprivation to which they ultimately adapt.

5.5 Cross-Country Comparisons

Cross-country comparisons are usually intricate and often deceptive. This certainly holds for measures of deprivation in social participation as well. Deprivation in social participation is thoroughgoing relational in nature, since it inherently refers to the society under consideration and thus critically depends on their common social practices and customs. Therefore, one could, on the one hand, acknowledge that valid comparisons can only be made between societies, where the concrete social activities essentially coincide. In this case, a deprivation indicator would provide for both countries exactly the same (and thus comparable) information: namely that an individual is not participating in any of the same given activities. On the other hand, however, if it is believed that deprivation in social participation is accurately captured in two countries, where both countries may divert in terms of the common concrete social activities, one could argue that since the relational deprivation in social participation is accurately identified, deprivation in this more abstract sense (i.e. in the functioning space) *is* comparable. A final, more comprehensive, and evidence-based assessment of this issue is however left for future research.

5.6 Social Indicator

Measures of DSP may also serve as a social indicators, which would however require aggregation across individuals in the first place. A natural candidate for aggregation is the simple headcount ratio.[31] Indeed, the share of people who never meet their friends or relatives is already considered as a core indicator of the German reports on poverty and wealth (e.g., Bundesregierung, 2013, p. 476).

Social indicators are usually required to comply with several principles (e.g., Atkinson *et al.*, 2002, pp.20–23) some of which are briefly discussed in sequence. First, social indicators should *measure outcomes*, not inputs. In fact, the suggested DSP indicators seek to measure an outcome variable by construction. This requirement immediately follows as a central implication from the capability approach. Second, indicators should *identify the essence of the problem* and have a *clear and accepted normative interpretation*. Critically low social participation *is* the outcome which is of normative concern to the society and its policy makers. Provided the concrete activities are correctly chosen, the simultaneous non-participation in all social activities virtually reflects this problem. Individuals who are indicated as deprived, then indeed fall short of an activity they have good reason to value, i.e. they lead a life that is severely diminished in an important domain. Moreover, it is this severe shortfall in an intrinsically valuable activity from which the normative force of the indicator follows. Note that the normative force inherent to deprivation in social participation, is more cogent than of, say, average social participation. Consequently, a reduction in the headcount ratio can be expected to represent widely-accepted improvement for the society.[32]

[31] However, other members of the class suggested by Foster *et al.* (1984) or the adjusted headcount ratio of Alkire and Foster (2011) may prove useful.

[32] Setting the deprivation cutoff appropriately (in terms of process and result) adds to the approval of general public, and moreover, will help to produce results that seem "reasonable" most citizens. Finally, it also supports the interpretation as deprivation, see section 5.4.

Third, an indicator should be *robust and statistically validated*. The present paper only proposes a novel way to measure of DSP. Naturally, future studies have to explore the measures' robustness and apply them to further contexts. Importantly, assumptions made at this stage have to be assessed, possibly along with appropriate refinements (like additional social activities). On the other hand, the proposal already draws on statistically reliable survey instruments which are well-studied and widely applied. Additionally, the present paper also provides some promising, though tentative results which suggest a valid and reliable measurement is feasible.

Fourth, the *burden to the respondents* seems acceptable, since a battery of around ten carefully worded questions, may suffice. Fifth, a detailed assessment of the *responsiveness to policy interventions* is beyond the scope of this paper. However, the presented evidence, in particular of the regression analyses, provides supporting evidence. Specifically, incisive life events like the birth of the first child or becoming unemployed seem to signal changes in social participation immediately.[33] One may however criticise that DSP is less directly subject to policy interventions, than say income. In this respect DSP, however, closely resembles educational attainments or health outcomes, two widely accepted and yet fairly mediated targets of policy interventions.[34] After all, this only underlines the need of research to provide effective policy advice. Finally, *cross-cross comparisons* are challenging but may be feasible as discussed earlier in this section.

6 Concluding Remarks

I conclude with some remarks why we should measure deprivation in social participation and embark on its in-depth analysis. First, there is already a broad consensus that social participation is an important activity. Indeed, this paper emphasises that social participation is not only of instrumental relevance but also intrinsically important. Consequently, social participation can be conceived as a constituent, but so far neglected dimension of human well-being. Second, in particular with the focus on *deprivation* in social participation, the measurement unfolds a normative force, and its analysis emerges as imperative. Specifically, improvements in respective social indicators, like a simple deprivation rate for instance, can be expected to be widely met with approval. Achievements in health or education are already routinely examined and *low* achievements in these dimensions are already often a concern for policy makers—whether coupled with other deprivations or not, and irrespective the reason. Additionally, the present paper also provides evidence that deprivation in social participation is highly relevant for subjective well-being, meaning that people do suffer from this deprivation.

Third, the present paper argues that DSP is relatively straightforward to operationalise, drawing on established survey instruments. While identifying relevant customary activities is essentially an empirical question, collecting this information and processing it such that it can be interpreted as functioning achievement are more technical ones. Setting the deprivation cutoff is, finally, a

[33] While shocks are not analysed directly, the presented results however exploit within-variation.

[34] A difference is that common *inputs* for educational attainments (or health outcomes) have already been identified are considered relevant policy targets, like teacher per student, class-size, expenditures, etc.

normative question, requiring, among other things, a public debate. In sum, the presented evidence suggests measurement of deprivation in social participation to be feasible and valid. Fourth, the conceptual integration and chosen level of abstraction offers a coherent and compact underlying construct. Together with a feasible measurement this significantly facilitates an empirical analysis with related concepts like material deprivation, monetary poverty, social capital, or social cohesion. For instance, the link with labour market participation, or health impairments can be subjected to empirical scrutiny, rather than being stipulated in the course of measurement.

Fifth, indicators like the suggested DSP are, after all, still outcome variables, which in addition to this, immediately reflect the essence of a problem and also have a normative force. Importantly, this directly allows to demonstrate that barriers which prevent individuals from social participation *do* exist. This is vital, because some problems, which are more difficult to grasp in the first place, like the now-famous glass-ceiling for professional achievements of women, only receive attention after being corroborated by a substantial body of empirical evidence. Otherwise, problems like these tend to be ignored or even denied—by policy makers and academics alike. Unveiling walls of glass, which prevent individuals from social participation, may involve rather diverse and possibly subtle mechanisms. Relevant mechanisms may range from deliberate exclusion, by law or by skin colour, to the exclusionary effect of prices, to more subtle channels like shying away to avoid stigmatisation. Therefore, a careful analysis becomes even more important to provide grounded advice for policy makers. Future research may probe and refine the coverage of customary activities, devise and apply measures for different countries, and commence exploring its determinants. Admittedly, cross-country comparability seems to be a major challenge, which therefore should receive special attention.

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