

**Calculating the benefits of linking ties:  
the case of domestic workers in South Africa<sup>1</sup>**

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**ABSTRACT**

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In South Africa social networks are usually assumed to perpetuate socio-economic differences. Social exclusion remains a problem due the multiple and overlapping divisions in post-apartheid society and the lack of linking ties that can create bridges between these worlds. To quantify the potential impact of such linking ties, we examine the case of domestic workers in South Africa. Domestic workers are a vulnerable sector of workers, but often develop strong relationships with individuals from advantaged groups through their work, thus enabling the formation of a patron-beneficiary relationship that could be used to gauge the effect of linking ties on poor households in South Africa. This paper considers the contribution of networks to individual and household welfare, investigating a series of outcomes including unemployment duration, educational attainment, ownership of a selection of assets and the prevalence of child and adult hunger. We compare these outcomes using a pooled version of seven General Household Surveys (2002 – 2009) to construct a well matched comparison group for domestic workers via propensity score matching. Due to the personal nature of the relationship between domestic workers and their employers, the casual nature of the work and the difficulties monitoring conduct in this sector, domestic workers have often been exploited in the past and are traditionally viewed as being more vulnerable than counterparts earning a similar salary. Therefore, these estimates are regarded as a lower bound.

**Keywords:** *Social capital, social networks, domestic workers, inequality, South Africa*

**JEL codes:** *Z13, Z10, D63*

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## 1. Introduction

Neo-classical economics often view the individual as an atomised agent that operates in an anonymous market.<sup>2</sup> However, such a narrow view of individual interactions<sup>3</sup> underestimates the important impact of social structures on an individual's economic outcomes. Generally, the use of network theory is regarded as a balanced approach, representing a compromise between an over-socialised and under-socialised perspective. Networks acknowledge the power of individual choice, but concede that this individual choice is subject to social influences and constraints (Powell & Smith-Doerr 1994: 368).

In this paper we investigate the contribution of social capital to the economic mobility and well-being of individuals and households using the notion of social networks. In South Africa, a country greatly divided along race and socio-economic status, social networks often entrench the socio-economic divide. Accordingly, social exclusion remains a problem due the multiple and overlapping divisions in post-apartheid society and the lack of linking ties that can create bridges between these worlds.

An exception in this regard is the case of domestic workers. It is estimated that approximately 1 million women are employed as domestic workers in South Africa in 2010 (Department of Labour, 2010). These women are, by the nature of their work, in regular contact with employers who would almost certainly have a higher socio-economic status than them.

Due to the personal nature of the relationship between domestic workers and their employers, the casual nature of the work and the difficulties monitoring conduct in this sector, domestic workers have often been exploited in the past and are traditionally viewed as being more vulnerable than counterparts earning a similar salary. However, these women potentially have access to strong linking ties to improve their economic situation. The theory of social capital suggests that these ties could potentially be sufficient to improve the economic well-being of domestic workers and their households.

The aim of this paper is to explore whether there is any evidence that the theory of social capital and linking ties is applicable to the well-being of domestic workers in South Africa. To do this, we compare the vulnerability of women who were employed as domestic workers *versus* those who have a similar socio-economic status but were not employed as domestic workers using pooled data from the General Household Survey (2002-

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<sup>2</sup> According to Fachamps (2004:1) societies consist of individuals, institutions as well as networks of personal relationships. Economists usually disregard these networks and instead focus on individuals and institutions. Increasingly, it is acknowledged within economic circles that these interactions are vital for understanding human decisions and behaviour.

<sup>3</sup> In the sociological literature this perspective is often described as "under-socialised".

2009). The paper is structured along the following lines. We first set out the theoretical background to social capital and social networks, and then explore these concepts within the South African context. Some background on the situation of domestic workers in South Africa is also provided. We then construct a well-matched comparison group of women who are not employed as domestic workers, but are similar in terms of their observable characteristics, using propensity score matching. We find significant differences between these two groups, mostly related to unemployment duration, educational attainment, ownership of a selection of assets and the prevalence of child and adult hunger. These differences provide some evidence that the linking ties that domestic workers have access to increases their well-being in a way that is consistent with social network theory.

## 2. Social capital, networks and mobility in South Africa

The case of domestic workers in South Africa should be considered within the broader framework of the literature on social capital networks. These two concepts and the relevant literature are discussed below.

### 2.1. What is social capital?

The precise definition of the concept social capital has been somewhat controversial,<sup>4</sup> with two divergent approaches arising in the literature on the topic. On the one hand, Putnam (1995)<sup>5</sup> and Coleman (1990) take an aggregate view of social capital, emphasising benefits that are difficult to disentangle and assign to individuals. The Putnam-Coleman approach emphasises the importance of trust to foster social networks, in the process defining social capital to include both the networks that foster the trust as well as the trust contained in the social networks.

In this paper, we use the second approach advocated by, *inter alia*, Lin (1999), Burt (1992) and Granovetter (1983), which focuses on the investments made by and returns accruing to individuals within a social network. The Lin-Burt-Granovetter approach acknowledges that not all ties between individuals need to be formed on the basis of trust and prefers to consider trust as a benefit of social networks. According to this view, social capital is associated with the networks that provide access to resources that facilitate the realisation of economic gains (Schuller et al 2000:11).

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<sup>4</sup> For instance, Woolcock (1998, 2001) mentions that critics of social capital see it as an old idea just marketed in a new package and that the ideas around social capital are common sense.

<sup>5</sup> Putnam has popularised the idea of social capital through his book on the decline of civil society in America (Bowling Alone: The Collapse and Revival of American Community). He equates social capital with 'networks, norms and social trust that facilitate coordination and cooperation for mutual benefit'. Putnam uses membership in associations as a proxy for social capital (Putnam 1995: 66 – 67).

Portes (1998: 6) defines social capital along the lines of this second approach as *'the ability of actors to secure benefits by virtue of membership in social networks or other social structures'*. According to this definition, simply making ties is not sufficient to develop social capital. It is important that the connection must also possess resources useful to the individual's goal attainment.

While it is assumed that individuals join networks for the resources and benefits they can enjoy, it is argued that social connections are not made for the purpose of enjoying economic benefits (Arrow, 2000). Opportunities for economic growth come as a result of the connection, which is made for pleasure.

Unlike physical capital, social capital itself can certainly not be measured quantitatively, because of the capital being a part of the individual himself. Nevertheless, since there are tangible economic gains for the individual that result from being part of a social network, the relationship deserves to be categorized as capital (Chalupnicek, 2010).

## **2.2. Social networks and mobility**

Networks have been classified as being either open or closed. In an open network, an individual only has a connection to one or a few (but not all) of the people in the network. In a closed network, the individual has connections with all the people in the network and everyone knows one another (Coleman, 1990). Networks have also been categorised by the size of the network (in terms of individual members) and the strength of the tie (strong or weak).

It is claimed that weak ties rather than strong ties are easier to gain access to. Weak ties are often formed with people who are heterogeneous in nature. As individuals in a weak tie bring differences together, such ties are claimed to be easier to acquaint with and thus become part of the network rather easily. On the other hand, strong ties are said to be formed between individuals who are of the same background and therefore have access to similar resources and opportunities. This is a difficult network to enter as the network is based around people with homogenous characteristics which implies greater trust and bonding.

Strong and weak ties also differ in terms of the benefits to be gained from these ties. Lin (1990) highlights the fact that open networks which are formed between people of different backgrounds, make it easier to obtain resources and have access to new opportunities. On the other hand, with strong ties it is assumed that the network has access to similar, if not the same, information and therefore no new opportunities are created. It is, accordingly, beneficial to form weak ties with people who are not

from one's own background and experiences, as these ties could potentially lead to more gain (Granovetter, 1973).

Another distinction emphasized in the literature is between bridging and bonding capital. Bridging capital is essentially weak ties which are created between individuals from different upbringings. Bonding capital, on the other hand, consists of strong ties between friends and families who share the same information and backgrounds (Putnam, 2002). It has been said that bonding ties are to "get by" and bridging ties are to "get ahead". This implies that bonding ties are important to bring a stability in life and provide "safety-nets" during emergencies, whereas bridging ties are important to climb the economic ladder.

A study conducted by Zhang, Anderson and Zhan (2011) attempt to observe the different outcomes of bridging and bonding ties. While it has been accepted that bonding ties are important to maintain the *status quo* while bridging ties are essential for economic mobility, few studies have been conducted to test the common belief. Zhang *et al* (2011), claim that studying this impact is of importance, especially in getting a better understanding of people who come from poor households. For these individuals, opportunities arising from bridging ties are important as other forms of capital are in low supply and social capital is relatively inexpensive to obtain.

Zhang *et al* (2011) found that bridging capital, in line with the initial hypothesis, had a small but statistically significant impact on economic mobility. In addition, also in line with their hypothesis, it was found that bonding social capital did not have such an effect, but was seen as essential during times of trouble and emergency.

It is important to emphasise that not all weak ties necessarily result in economic mobility. Only ties that are *bridges* in terms of sending information from one network to another may have an effect on economic mobility. This is especially true for individuals seeking access to the labour market (Lin, 1999). Granovetter (1986) illustrates this point by showing that jobs obtained through referrals are less likely to face turnovers, and employees in these positions are more likely to be promoted.

In an interesting study on the effect of such bridging ties on employment status, Lancee (2010) finds that these ties do have a positive effect on the economic status of immigrants in the Netherlands, as the bridging ties held by immigrants were more strongly associated with income than language proficiency. These results have been explained by Friedberg (2000), who claims that a connection with natives shows that the immigrant has gained capital in terms of the norms and culture of the community and has proved his suitability to obtain a job in the new country.

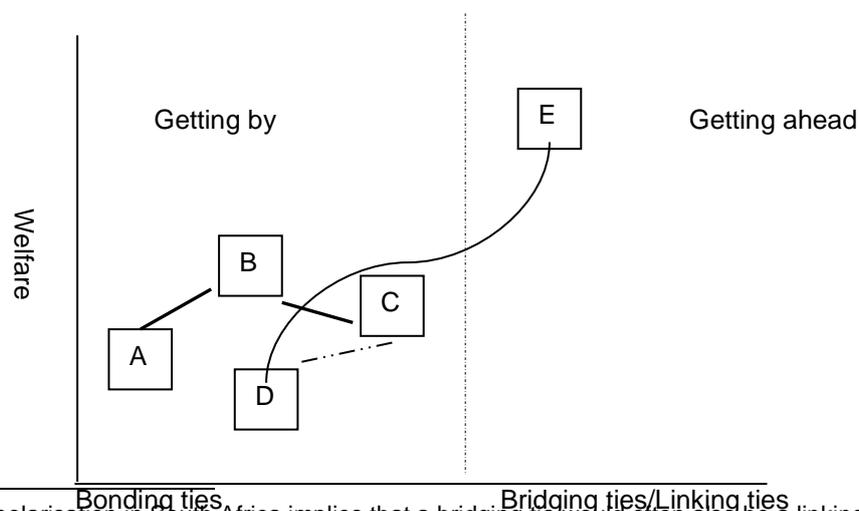
Although networks are mainly associated with the benefits they hold in terms of economic mobility, bridging ties have been found to be positively related with subjective well-being, creativity and social trust (Growiec and Growiec, 2010). In a recent study by Feigenberg, Field and Pande (2010) it was also found that social interaction through social networks leads to more trust, shared norms and economic cooperation.

### 3. Social Exclusion and the importance of linking ties in South Africa

Apart from the two distinctions drawn above (weak *versus* strong ties and bonding *versus* bridging ties), Woolcock's (2001: 72) identifies a third distinction of ties, namely a linking tie, a concept which could be useful for the South African context. A linking tie does not only form a bridge across different social characteristics but also forms a link to an individual in an absolute power position<sup>6</sup>. In South Africa, if the donor is from a different socio-economic status or race, linking social networks could have a decisive influence on income distribution amongst different race groups and classes. For an individual to cross a social cleavage and thus escape poverty, linking and bridging ties, which connect individuals with different race, gender, socio-economic status, would be of paramount importance<sup>7</sup>.

Ties that connect individuals across different race, gender and socio-economic qualities would be bridging ties (and linking ties in South Africa) as opposed to bonding ties, as described above. Figure 1 is an adaptation of Woolcock & Narayan's (2000: 232) original diagram that illustrates the effect of bridging versus bonding ties. On the x-axis the diversity of social networks is shown as being an important property of developing ties with potential donors (i.e. bridging/linking ties). Upward mobility depends on the characteristics of the donor (E).

**Figure 1: Linking/bridging ties in South Africa**



<sup>6</sup> The nature of polarisation in South Africa implies that a bridging tie would often also be a linking tie.

<sup>7</sup> Gittel and Vidal mentions a s membership to 'racially diverse networks' has a positive effect on

In South Africa, where a large group could be seen as socially excluded and more specifically marginalised, the diversity of social networks is very important to escape the poverty trap and improve personal and group welfare. Figure 1 presumes bonding ties between A, B, C and D. It is hence assumed that the individuals A, B, C and D have similar characteristics and forming ties with each other could have an impact on the improvement of welfare depending on the group's access to resources.<sup>8</sup> However, it is possible to imagine a situation of social exclusion and polarisation where these types of networks would have no real impact on welfare improvement, for instance if all the members in each of these networks are unemployed. Individuals could escape from this 'systematic disadvantage' by forming a 'bridging tie' (or a linking tie if there is a power differential) with a dissimilar and ideally also more privileged individual – as represented by E in this diagram<sup>9</sup>. The only way this tie would be formed is if E acts as a sort of patron towards D, thereby channelling some resources towards D and improving D's position. However, it seems that for E this resource delivery happens without E expecting direct reciprocal action.

Under narrowly defined neo-classical assumptions of self-interested maximisation<sup>10</sup> individuals who are not bounded by solidarity or some kind of goodwill would not be expected to offer this type of donation if no direct reciprocity could be achieved.

Given South Africa's recent history of racial segregation, most, if not all, development indicators in South Africa are connected to race. Blacks are seen to be severely disadvantaged in terms of education and income and have the most difficulty obtaining jobs and thus are the racial group to be the most unemployed. It has been said that due to the geographical differences between races, the races generally rely on members

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<sup>8</sup> As mentioned previously, bonding ties would be between individuals who have similar characteristics – they would have the same skills, socio-economic characteristics (same class) and would usually also be part of the same racial group. Location would also determine the formation of bonding ties where individuals with the same characteristics are grouped together in neighbourhoods.

<sup>9</sup> Assuming that the social networks of individuals, in terms of their ties with other individuals with necessary resources, would be paramount in helping them to improve their economic situation, fostering of bridging ties is very important. However, distrust in a multicultural society, consisting of individuals of great differences in socio-economic status as well as high degrees of cultural differences makes it very difficult to form economic beneficial linkages to individuals – mostly because donors would not be willing to trust potential newcomers from a different race and class.

<sup>10</sup> Self-interested maximisation implies that individuals would only be interested in activities if it increases their utility. Decisions on utility maximisation would be made in an individualistic and rational manner without any regard for the other (Rowen & Dietrich 2004: 1).

from their friends or families to gain access to jobs (Smith, 2000). This implies that there is a lack of bridging ties between the races.

One of the economic advantages of social capital, as set out above, is the availability of resources otherwise not attainable through formal means. However, an article by Adato (2004) claims that during Apartheid, South Africa's social capital was eroded. This lack of social capital, and the social exclusion it implies for those who do not have access to the necessary linking ties, has maintained the economic divide between the rich and the poor.<sup>11</sup>

Adato *et al* (2004) indicate that in societies as polarized as South Africa, social capital only stabilizes current income levels but does not do much for economic mobility.

It is within this context of potential social exclusion (at least in cases where no linking ties exist) that we now turn to examine the relationship between domestic workers and their employers.

#### 4. Domestic workers and social exclusion in South Africa

Domestic workers are generally regarded as a vulnerable group of workers characterised by low education levels, low income, low social status and few assets. Literature reviewing the plight of domestic workers in South Africa during the Apartheid years indicated that domestic workers experienced a 'triple oppression' that resided in their race, their sex as well as the informal nature of their employment (Cock 1980: 5; Gaitskell *et al* 1984: 86). Domestic workers have therefore been considered as one of the most powerless, marginalised and vulnerable groups in South Africa, with the informal nature of their employment often leading to extreme exploitation. Interviews with domestic workers in the late 1970s showed that they had long working hours and consequently no family or social life. They were unable to attend any voluntary associations such as religious activities due to time constraints as well as the constraint on mobility. Domestic service was also characterised by low wages and disrespectful treatment by the employer and his/her family (Cock 1980: 6- 7 and Berhardien *et al.* 1984: 15). Gaitskell *et al* (1984: 87) refer to the 'isolation, dependence, invisibility and low level of union organisation' as being characteristic of domestic service in South Africa.

Results of a survey on domestic workers and employers in South Africa showed that 36% of domestic workers interviewed, cited lack of skills as the reason for working as a

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<sup>11</sup> This divide has been further entrenched by the fact that uneducated and unemployed parents are unable to make use of their own social connections to assist their children in finding employment, creating a poverty trap for those children. This is in line with findings by Magruder (2007) on the ability of parents to secure employment for their children.

domestic worker, while 32% answered that it is easier to find a job as a domestic worker. These results suggest that domestic work is not viewed as an enjoyable occupation, but rather as the result of a 'lack of opportunities' (SA-German Development Co-operation, 2001: 22).

The Domestic Workers Act, which came into effect on 1 September 2002, changed the informal nature of domestic work by prescribing minimum wages and basic working conditions of domestic workers<sup>12</sup>. Despite the change in laws attempting to increase protection for this group, domestic workers are expected to have lower negotiating power and to be more exposed to income shocks than their counterparts in unionised industries. Due to the casual nature of their work, domestic workers are also assumed to be less inclined to have access to insurance.

In South Africa the relationship between a domestic worker and the employer is unique. It is an employer-employee relationship with great differences in status (and power)<sup>13</sup> and racial characteristics<sup>14</sup>, but also one of proximity and frequency of contact<sup>15</sup>. This uniqueness makes it ideal to combine social network theory<sup>16</sup> and the theory on giving in order to describe the employer-domestic worker relationship. The higher social position, as well as the difference in characteristics (such as race, socio-economic status and neighbourhood) links the domestic worker to possible resources. The tie between a domestic worker and the employer is therefore not only a bridging tie, but also a linking tie.

The relationship between a domestic worker and employer exhibit all of the characteristics that have been shown to be important predictors of giving – familiarity, proximity and frequency of contact.<sup>17</sup> As mentioned above, the strength of the tie is

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<sup>12</sup> A study done on the effects of this legislation on domestic workers in South Africa shows that wages for domestic workers have indeed increased, while weekly working hours have been decreasing. Although it seems to have a negative effect on the employment of domestic workers, it could entail a reduction in the poverty of domestic workers (Hertz 2004).

<sup>13</sup> The traditional 'master-servant' relationship between a domestic worker and her employer entailed that the employer had much greater power and superiority, while the domestic worker was placed in a position of dependence and servitude. This gave scope for either a paternalistic relationship, which extended 'kindly patronage' to the domestic worker, or an extremely exploitative and disrespectful relationship between a domestic worker and employer (Berhardien et al. 1984: 15).

<sup>14</sup> The majority of domestic workers in South Africa are black, unskilled women (Casale & Posel 2000: 11; Gaitskell et al. 1984: 86).

<sup>15</sup> The geographical segregation under apartheid entailed that blacks were not allowed to live in white neighbourhoods. The only exception was domestic workers, who often lived in accommodation provided by their white employers and on the same residence sites as their white employers (Goodlad 1996: 1630). The physical close proximity and frequency of contact between the domestic worker and her employer could be seen as the basis for fostering a tie between two polarised groups.

<sup>16</sup> It is interesting to note that a study in 1984 showed that employers used word of mouth most for recruiting domestic workers. 67.3% of domestic workers interviewed were recruited by word of mouth (Berhardien et al. 1984: 9).

<sup>17</sup> A study on giving in the United States showed that although individuals tend to give more often to formal charities, the average donation is considerably larger when made directly to the recipient than when giving to formal charities. A study of the Boston area showed that money donated directly to individuals were five times greater than the amount given to organisations (Schervish et al. 2002: 38 – 40). A South African survey on giving shows similar trends. Slightly less than 50% of the respondents indicated that they gave money or goods to

positively related to providing information and support. In a polarised society characterised by social exclusion such as South Africa, strong ties will be essential for the transfer of benefits. Due to the traditionally large discrepancies in income between employer and domestic worker the tie between a domestic worker and employer would be a bridging tie (or in Woolcocks's terminology a 'linking tie') that developed outside the domestic worker's neighbourhood and crossed the social cleavage of race and socio-economic status.

When and why would employers be prompted to provide resources or advice or moral support to their domestic workers? Portes (1998: 7) mentions two broad motivational factors that could motivate employers. The first factor is the 'norm of reciprocity' (economic perspective) and the second 'norm internalisation' (sociological view). In terms of the norm of reciprocity, the donor expects to be rewarded in the future even if it is in a different currency than the original transaction. However, the 'norm internalisation' motivation is based largely on an 'altruistic disposition' developed through values and norms which were taught to an individual from childhood by the society/community (Portes 1998: 7 - 8).<sup>18</sup> Another consideration that is worth mentioning is that of an efficiency wage. Much trust is required in the relationship between the employer and domestic worker, and donations over and above the earned wage could perhaps be

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individuals directly. As in the US study, more respondents in the South African survey gave higher amounts to individuals directly compared to the amounts given to formal charities. The survey also showed that 45% of respondents gave goods directly to individuals as opposed to 31% of respondents that gave goods to formal charities. Interestingly, there seems to be a strong correlation between education and giving money to individuals directly (Everatt & Solanki 2003: 5, 20 – 21). 'Familiarity' could be an important predictor of the size of giving. It seems that the 'donor-beneficiary relationship' could be an important determinant of the extent to which a donor would donate goods and money. It has been shown that personal contact is vital from encouraging donations - the higher the frequency of contact between a donor and a recipient, the greater the possibility of transferring these resources. Resources could also be allocated more efficiently because of frequency of contact – matching need and resource would be easier. It has also been found that proximity is related to the provision of goods and services (Walker et al, 1994: 61). Direct giving could affect the recipient's well-being in a direct observable way. This would increase the benefits of 'warm glow' to the donor. Identification with the recipient as well as the gratitude received from the recipient would overcome the free-rider problem of charitable giving (Rose-Ackerman 1996: 713).

<sup>18</sup> Clotfelter (2002), Andreoni (1989, 2001) and Becker (1974) mention other incentives for giving that expand Portes' ideas on the sociological perspective and show that motivations based on reasons other than reciprocity are not incompatible with economic theory. Donors could be motivated to give resources, because they derive some pleasure in giving and consequently experience a 'warm glow'<sup>18</sup>. Donating resources could also be based on the assumption that donors are not maximising utility, but giving is the result of a religious belief system or a form of morality. This seemingly unselfish behaviour based on some form of moral motivation, could be compatible with utility maximisation. In a model by Brekke *et al.* (2001) a focus on moral and not social norms is assumed. Individuals perceive themselves to be socially responsible (self-image) and are led by a 'morally ideal effort'. A self-image which is determined by a comparison of actual effort to this morally ideal effort is continually being evaluated by comparing the benefits of maintaining such a self-image with the costs. This could in fact then be compared to the warm-glow model where the benefits of a good self-image are a private good. Thus behaviour based on morality or beliefs could also be explained by utility maximisation. There is, however, a major difference to warm-glow models in the sense that individuals really do try to strive towards a morally correct form of behaviour in which they believe. The model also found that economic incentives (monetary rewards) to increase giving could actually lead to a decline in contributions. This is in line with cognitive evaluation theory in psychology which states that external incentives could improve economic incentives, but reduce individuals' intrinsic motivation to contribute. In this case monetary incentives could decrease the self-image benefit obtained through charity.

equated to a sort of efficiency wage<sup>19</sup>. In line with the efficiency wage argument, providing resources that are additional to the basic salary would ensure hard work and loyalty, especially if constant supervision is not possible. Naturally, generous gestures by the employer could also be the result of a combination of the factors cited here.

Some preliminary evidence that such linking ties do indeed exist can be found from the non-monetary donations (i.e. gifts) received by domestic workers as set out in the Income and Expenditure Survey of 2000. The size of these gifts in relation to the salary earned by the average domestic worker is set out below.

**Table 1: Average value in Rand of non-monetary donations vs. salary of domestic worker**

Free food	160
Free clothing	63
Free accommodation	50
Salary	429

Source: IES 2000

The question is whether the benefit of the linking ties that domestic workers have with their employers stretches any further than these gifts. If network theory is to be believed, then we would expect some evidence of the good advice and assistance (both in terms of resources as well as economic opportunities) provided to domestic workers and other members of their households.

The objective of this paper is to gauge whether domestic workers indeed benefit from their access to well-resourced employers, in line with what theory predicts.

## 5. Gauging the impact of linking ties: the case of domestic workers in South Africa

### 5.1. Data and sample

To identify such benefits, a typical group of domestic workers are selected from the General Household survey of 2002-2009 and a control group is created with similar socio-economic and demographic characteristics. The group of domestic workers is restricted to black and coloured females between the ages of 18 and 65 who report working as a domestic worker in the past seven days and who live in households with more than one member. To avoid distorting effects of outliers, domestic workers earning less than R200 and R1200 (in 2000 Rands) per month were excluded from the sample. The control group includes black and coloured females between the

<sup>19</sup> According to the efficiency wage theory the wage of an employer is determined on the assumption that wage influences productivity. A higher efficiency wage would lead to higher productivity and loyalty (Katz 1986: 2). In the case of the domestic worker, channelling more resources would be similar to a high wage.

ages of 18 and 65 with reported earnings of more than R200 and less than R1200 (in 2000 Rands) per month and who are living in households with more than one member, but who are employed in a different sector (i.e. not as domestic workers).

Table 1 sets out the descriptive statistics of the group of domestic workers and the control group not working in that sector. Domestic workers earn less on average and live in households that, on average, own fewer assets (in terms of a TV, refrigerator and microwave oven) than the individuals in the control group. The women in the domestic worker group are also older than those in the control group. In addition, domestic workers on average have almost two years less education than the women in the control group. This suggests that such jobs may be undesirable and tend to be filled by individuals with few alternatives that find themselves at the back of the job queue.

**Table 2: Descriptive statistics – Mean with standard deviation in parenthesis**

	<b>Control group (Rest of subsample)</b>	<b>Domestic workers</b>
<b>Earnings in 2000 Rands</b>	631.01 (269.95)	507.21 (221.25)
<b>Years of education</b>	8.20 (3.74)	6.41 (3.70)
<b>Urban</b>	0.53 (0.50)	0.59 (0.49)
<b>Age</b>	36.55 (10.49)	41.55 (10.08)
<b>Married</b>	0.43 (0.49)	0.50 (0.50)
<b>Household size</b>	5.22 (2.72)	4.89 (2.56)
<b>Female head</b>	0.54 (0.50)	0.53 (0.50)
<b>Children in household</b>	1.52 (1.45)	1.30 (1.31)
<b>TV</b>	0.68 (0.46)	0.66 (0.47)
<b>Refrigerator</b>	0.66 (0.47)	0.61 (0.49)
<b>Microwave oven</b>	0.26 (0.44)	0.24 (0.43)

These initial descriptive statistics seem to confirm what is already known about domestic workers in South Africa – that they are a vulnerable and exploited group. While the focus of this paper is to understand whether the personal relationship that emerges between the domestic worker and his or her employer is conducive to creating social capital that benefits the domestic worker and her household, the researchers are aware that the personal nature of this relationship can also easily

lead to exploitation and make domestic workers more vulnerable and this category of job less desirable.

These differences provide some evidence that the domestic worker group are in general more disadvantaged than the control group. Any results showing greater benefits for the domestic worker would therefore imply a reasonably strong counteracting effect from the relationship with her employer.

## 5.2. Propensity score matching

While a simple comparison between the characteristics of the domestic worker group *versus* the control group would lead one to believe that there is no benefit to be derived from the linking ties between domestic workers and their employers, this is not a reflection of the true impact of the effect of the linking ties, since domestic workers are typically more vulnerable than the control group. A mere comparison of the differences between these two groups would accordingly be biased. One technique which has often been used to deal with this kind of bias when evaluating the impact of a specific programme on selected outcomes is propensity score matching (PSM). More specifically, the average treatment effect<sup>20</sup> can be estimated as follows

$$\delta = E[y_{1i} | D_i = 1] - E[y_{0i} | D_i = 0]$$

$$\delta = E[y_{1i} - y_{0i} | D_i = 1] + \{E[y_{0i} | D_i = 1] - E[y_{0i} | D_i = 0]\}$$

where  $y_{1i}$  and  $y_{0i}$  are the treatment and control outcomes respectively, and  $D_i$  is the binary treatment variable for individual  $i$ , with  $D_i = 1$  (0) indicating the presence (absence) of treatment (Cameron & Trivedi, 2005: 872). In the equation above, the first term in the second line represents the average treatment effect on the treated, while the second term in the second line (i.e. the term in parenthesis) represents a bias term. Clearly the estimate of the treatment effect is potentially confounded in a situation where this bias term is not equal to zero, which will be the case where treatment was not assigned randomly.

PSM is based on conditions which ensure that, after conditioning on the propensity scores of individuals (i.e. the propensity of being selected into treatment of both the treated and untreated), none of the selection bias remains.

These conditions are set out below. In the first place, a meaningful estimation of the treatment effect can only be made if there is a region where the propensity scores of the treated and control units overlap (Ravallion, 2007: 3797). This has been referred

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<sup>20</sup> In this case, "treatment" would refer to the fact that a domestic worker has access to linking or bridging ties that could potentially enable her and her household to improve their well-being.

to in the literature as the “region of common support”. It has been shown that the results from PSM can be severely biased if sufficient overlap between the propensity scores of the treated and untreated units does not exist, (Caliendo & Kopeinig, 2008: 45).

In addition, following Rosenbaum and Rubin (1983: 42), there are two qualifying conditions for the use of PSM, which are listed below (notational adjustments have been made for the sake of consistency).

### **Balance**

As a first condition, it is held that the propensity score must be such that the conditional distribution of the covariates in  $x$ , given the propensity score  $p(x)$ , must be the same for treated ( $D = 1$ ) and control ( $D = 0$ ) units. In other words, for units with the same propensity score, selection into treatment is random, and these units should be identical in terms of the observable characteristics in  $x$  (Cameron & Trivedi, 2005: 865). This is a testable hypothesis (as will be illustrated below), and can be stated as

$$D \perp x \mid p(x).$$

### **Ignorability**

The second condition, referred to by Rosenbaum and Rubin (1983: 42) as “*strongly ignorable treatment assignment*” is also referred to as the conditional independence assumption. Rosenbaum and Rubin (1983: 44) show that the conditional independence condition also holds with the use of propensity scores, as in

$$y_0, y_1 \perp D \mid x \Rightarrow y_0, y_1 \perp D \mid p(x).$$

Therefore, conditional on the propensity score, the outcome variable is independent of treatment. This second condition takes into account the fact that selection into treatment is often confounded where data are not obtained from non-experimental sources. In other words, the same factors influencing selection into treatment could also potentially influence the outcome variable. This is, of course, not a testable assumption, which emphasises the importance of the choice of covariates.

### 5.2.1. Matching Algorithms

Once a set of potential control units have been identified (based on the propensity score) for each treated unit, this set is weighted and matched to gauge the average difference in outcome so as to calculate the average treatment effect. The way in which the weight is specified, will of course influence how the treatment effect is estimated (Cameron & Trivedi, 2005: 874). Three methods are used in this paper, namely

- Kernel matching match treated units with a weighted average of all the control units, with the weight being inversely proportional to the distance of the propensity score of each of the control units to the propensity score of the treated unit (Becker & Ichino, 2002: 361).
- Nearest neighbour matching chooses, for each treated unit  $i$ , the set of control units where the difference in propensity score is minimised (i.e. the “nearest neighbour” to the treated unit (Cameron & Trivedi, 2005: 875).
- Mahalanobis matching uses the Mahalanobis distance to match appropriate treated and control units based on how similar these individuals are in terms of their covariates (Caliendo & Kopeinig, 2008: 66).

### 5.2.2. Estimating the Propensity Score - Model Specification

The empirical work here considers four possible avenues for beneficiaries to benefit from their relationship with an individual with a higher socio-economic status: household assets, the employment of household members, the nutrition of household members and the educational outcomes of children in the household. In order to control for the differences between the group of domestic workers and the control group, a list of covariates are included in the first stage estimation of the propensity score. These covariates are the earnings of the domestic worker, the years of education, the age of the domestic worker, her household size, the proportion of children in her household aged 12 years or less, whether she can write at least one language, the amount of government grants received by the household and whether the domestic worker resides in Gauteng.

These variables are included in the first stage probit regression which is used to estimate the probability of each individual of becoming a domestic worker (i.e. the propensity score).

**Table 3: Estimating the propensity score**

	<b>Coefficient</b>	<b>Standard Error</b>
Log of earnings	-0.35***	0.00
Years of Education	-0.06***	0.00
Age	0.02***	0.00
Household size	-0.02***	0.00
Proportion of children <12 in hh	-0.36***	0.05
Write in at least one language	-0.31***	0.04
Amount of grants received	-0.28***	0.04
Gauteng	0.27***	0.03
Constant	0.71***	0.08
Pseudo R <sup>2</sup>		0.06
Number of observations		18591.00

\*\*\* Significant at the 1 % level, \*\* significant at the 5% level, \* significant at the 10% level

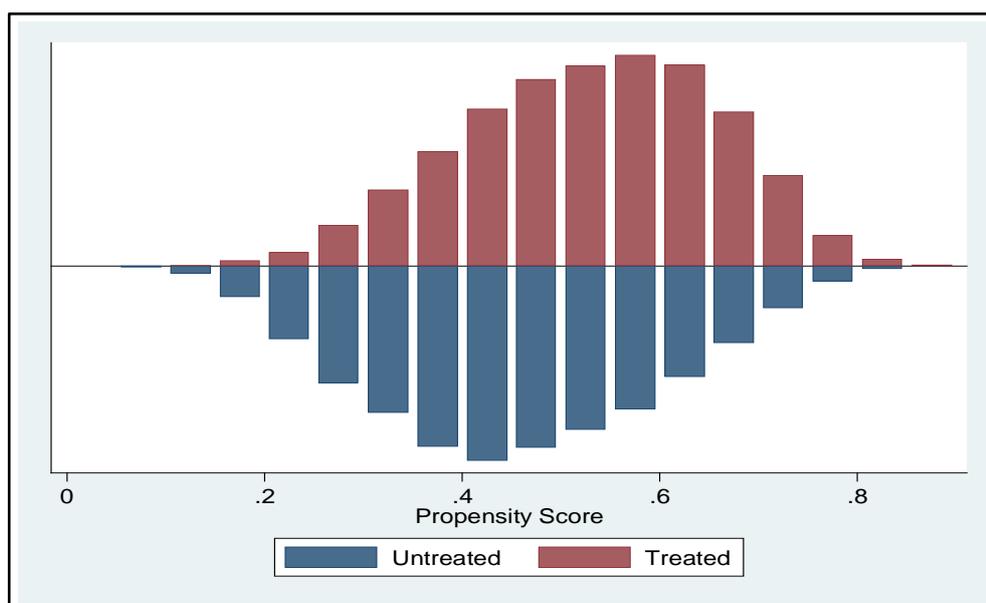
The results from this regression are set out in Table 3. The fact that domestic work is seen as a last outcome for women who are unable to find work elsewhere is confirmed by the sign of the coefficients on the education, age, proportion of children in the household, whether the individual can write in at least one language and the amount of government grants received by the household.

### 5.2.3. **Overlap and region of common support**

Before continuing with the estimation of the average treatment effect, it is important to confirm the existence of a region of common support. As indicated above, sufficient overlap between the estimated propensity scores of the treated and control groups is required to ensure that the results are not biased, since the average treatment effect is estimated from the observations included in this region of common support.

Although various methods of confirming compliance with this condition have been used in the PSM literature, Caliendo and Kopeinig (2008: 45) suggest a visual inspection of the density distribution of the estimated propensity scores of both the treated and control groups. Figure 2 set out the histograms of the propensity scores for both the treated and control groups. It's clear that there is quite a substantial overlap in the two groups for most of the distribution.

**Figure 2: Overlap and region of common support**



#### 5.2.4. Balance

Caliendo and Kopeinig (2008: 47) discuss a variety of ways in which compliance with the balancing condition can be evaluated. The method we employ here is to compare the unmatched and matched means of the domestic worker group as well as the control group for each of the covariates included in the model. Table 4 below summarises these results. It's clear that any significant differences between the covariates of the group of domestic workers and the control group become insignificant after matching.

**Table 4: Balance**

Variable	Sample	Mean Treated	Mean Control	%bias	% reduction in bias	t-test	P > t
Earnings	Unmatched	478.05	571.31	-39.2		-6.95	0
	Matched	478.05	483.2	-2.2	94.5	-0.37	0.71
Years of education	Unmatched	8.786	9.5024	-25		-4.58	0
	Matched	8.786	8.8924	-3.7	85.2	-0.56	0.579
Age	Unmatched	21.938	21.813	7.2		1.3	0.193
	Matched	21.938	21.924	0.8	88.3	0.13	0.895
Household size	Unmatched	4.9794	5.1306	-5.8		-1.05	0.294
	Matched	4.9794	4.9556	0.9	84.2	0.14	0.886
Proportion of children < 12 years	Unmatched	0.24782	0.23291	7.9		1.44	0.15
	Matched	0.24782	0.24328	2.4	69.5	0.37	0.711
Write at least one language	Unmatched	0.9465	0.9683	-10.8		-2.06	0.04
	Matched	0.9465	0.95234	-2.9	73.2	-0.41	0.678

Grants	Unmatched	0.03909	0.07589	-14.5		-2.48	0.013
	Matched	0.03909	0.03521	1.5	89.4	0.3	0.761
Gauteng	Unmatched	0.07613	0.09798	-7.8		-1.38	0.167
	Matched	0.07613	0.08199	-2.1	73.2	-0.34	0.735

### 5.3. Matching Results

In line with this observation the results show that before matching on this list of characteristics, there is often no difference in the outcomes – and in some cases the comparators are more favourable than that for the domestic workers. However, when use these characteristics to achieve a more comparable match, there does appear to be evidence of benefits accruing to domestic workers – which is consistent with a role for social capital broadly and bridging capital (weak ties) specifically.

Table 5 below shows the results. The outcomes are examined based on four broad groups of outcomes: labour market, education, nutrition and assets. The findings suggests that there are discernable and positive differences in the labour market outcomes, nutrition and assets of domestic workers' households, but that there is little evidence of an impact on education. According to the table household members of domestic workers are significantly less likely to report discouragement and have significantly shorter unemployment spells. However, there is no significant difference in the incidence of unemployment.

There is also no significant difference in the years of education of young adults in the household and there is no difference in young household members' ability to read or write. Domestic workers' households are less likely to complain that school fees are too high, which may indicate that they receive support, but it may also suggest that the children in the household attend schools with lower school fees.

In terms of nutrition, the incidence of both adult and child hunger is significantly lower in the households of domestic workers. This is not unsurprising given that Table 1 showed that domestic worker employers tend to donate food to the domestic worker and her family.

Lastly, the analysis also indicate that domestic worker households are significantly more likely to have a TV and a radio, but no more likely to have books in the house. There are multiple channels through which such an effect could work, but again donations and hand-me-downs would be an important option to consider.

## 6. Conclusion

In this paper we set out to estimate the effect of linking or bridging ties to the well-being of domestic workers and their households. In order to get a realistic estimate of the impact of these ties, we make use of a pooled GHS dataset for the years 2002 to 2009 and employ PSM, a technique which provides a way in which to deal with the selection bias inherent in a simple comparison of the outcomes between the two groups. A comparison of domestic workers to a comparable control group in terms of age, gender and earnings provides corroborating evidence of the vulnerability of these women, and the fact that the domestic worker group is in general more disadvantaged than the control group. Any results showing greater benefits for the domestic worker would therefore imply a reasonably strong counteracting effect from the relationship with her employer. Applying three different matching techniques (kernel matching, Mahalanobis matching and nearest neighbour matching) we find a significant average treatment effects for domestic workers.

In other words, although these women and their households are typically more vulnerable than the comparison group, after controlling for the observable differences between the two groups, we find that domestic workers and their households are more likely to own certain assets (TV and radio), be unemployed for shorter periods of time and have lower adult and child hunger than the group of comparable women who are not employed as domestic workers. We interpret this as evidence of the potential benefit of these women's access to the linking or bridging ties via their employers.

In the South African context, where there is large-scale social exclusion and socio-economic divides between individuals of different races, education levels and income, domestic workers mostly find themselves on the wrong side of the divide. However, our results show that despite the "triple burden" there is evidence that these women and their households benefits from regular interaction with an employer-benefactor from a higher socio-economic background – as social network theory would predict.

**Table 5: Matching Results**

Outcome	Variable	Sample	Treated	Controls	Difference	S.E.	T-stat	Treated n	Control n
<b>Employment of hh members</b>	Unemployment duration	Unmatched	1.636	1.714	-0.078	0.019	-4	9137	9454
		ATT	1.636	1.762	-0.127	0.021	-6.07		
	Likelihood of discouragement for job seekers	Unmatched	0.077	0.079	-0.001	0.003	-0.51	7980	9007
		ATT	0.077	0.085	-0.007	0.003	-2.45		
	Likelihood of unemployment	Unmatched	0.785	0.796	-0.012	0.004	-2.88	7980	9007
		ATT	0.785	0.787	-0.003	0.004	-0.61		
<b>Nutrition of hh members</b>	Incidence of child hunger	Unmatched	0.248	0.266	-0.018	0.007	-2.54	7268	7977
		ATT	0.248	0.286	-0.038	0.008	-5.02		
	Incidence of adult hunger	Unmatched	0.250	0.280	-0.030	0.006	-4.57	9426	9071
		ATT	0.250	0.297	-0.047	0.007	-6.7		
<b>Educational outcomes of children in hh</b>	Years of education for young adults in hh	Unmatched	9.380	9.689	-0.309	0.054	-5.76	5632	5056
		ATT	9.380	9.362	0.018	0.058	0.31		
	Ability to read for children in hh	Unmatched	0.925	0.955	-0.029	0.010	-2.810	486	1041
		ATT	0.925	0.939	-0.014	0.012	-1.190		
	Ability to write for children in hh	Unmatched	0.924	0.952	-0.028	0.011	-2.650	486	1041
		ATT	0.924	0.937	-0.013	0.012	-1.080		
	High school fees regarded as a problem	Unmatched	0.145	0.160	-0.015	0.004	-3.49	6610	7304
		ATT	0.145	0.158	-0.013	0.005	-2.73		
<b>Household assets</b>	TV	Unmatched	0.662	0.647	0.015	0.007	2.19	9097	9444
		ATT	0.662	0.596	0.066	0.007	8.78		
	Books	Unmatched	0.557	0.590	-0.032	0.008	-4.19	7785	8882
		ATT	0.557	0.559	-0.002	0.008	-0.22		
	Radio	Unmatched	0.819	0.817	0.001	0.006	0.24	9097	9444
		ATT	0.819	0.799	0.020	0.006	3.22		

*Note: please note that all of the significant differences remained highly significant when errors were bootstrapped (to account for the estimation of propensity scores)*

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