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Estimating the benefits of linking ties in a deeply divided society: considering the relationship between domestic workers and their employers in South Africa¹

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ABSTRACT

In South Africa social exclusion remains a problem due to the multiple and overlapping divisions in post-apartheid society and the lack of linking ties bridging the worlds of those who have plenty and those without. To quantify the potential benefit of such linking ties for socio-economic mobility, we examine the relationship between domestic workers and their employers – a case where we find frequent, proximate and intimate contact between individuals from these two different worlds. We construct a well matched comparison group for domestic workers via propensity score matching using a pooled version of seven General Household Surveys. The households of domestic workers appear to have lower unemployment duration and better quality jobs, a higher likelihood of owning assets and a lower prevalence of child and adult hunger. These differences provide evidence that the linking ties of domestic workers with their more affluent employers increase well-being in a way that is consistent with social network theory.

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

JEL codes: Z13, Z10, D63

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1. Introduction

Research has shown that strong social ties emerge more easily amongst individuals who are similar, but for many outcomes, including economic mobility, the most valuable tie is often between individuals who are dissimilar. In this respect South Africa represents an extreme, but interesting scenario. To a large extent it has been difficult to overcome the legacy of apartheid and the social landscape remains polarized with minimal contact between individuals from different socio-economic and racial groups. According to the SA Reconciliation Barometer 2011 42% of South Africans say that they rarely or never speak to someone from another race group on a typical work day (Institute of Justice and Reconciliation, 2011).

For many individuals the socio-economic divide may appear even wider because the poor and the affluent are unlikely to reside in the same neighbourhood and have the same educational background. In many cases the poor and the affluent will not have the same first language and will identify themselves as belonging to different racial groups. The overlap between socio-economic status and race, education, geography and language reinforces social polarisation and accordingly, social exclusion remains a problem in post-apartheid society. There are few linking ties that connect these worlds and the lack of such ties has helped to maintain the economic divide between the affluent and the poor (Adato *et al*, 2006).

Under such an extreme scenario one would suspect that there may be large economic benefits from increased social integration. Here we examine the potential contribution of relationships bridging the divide to the economic mobility and well-being of disadvantaged individuals and households.

We consider the relationship between a domestic worker and her employer as a case study. It is viewed as an appropriate case study because domestic workers are, by the nature of their work, in regular and close contact with employers who would in most cases have a higher socio-economic status and, are also often of a different race. It also is widely applicable and extremely relevant for South Africa, where one in every three employed women work as domestic workers (Dinkelman and Ranchhod, 2012).

To explore whether domestic workers in South Africa benefit from their relationship with their affluent employers, we compare the vulnerability of women who were employed as domestic workers *versus* those who have a similar profile and socio-economic status, but worked in more formal and “anonymous” environments such as factories and shops. We test our hypothesis using

pooled data from the General Household Survey (GHS) (2002-2008)³.

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. Due to these factors studies find that this work is viewed as less desirable than other jobs offered at the same salary scale and tend to attract individuals at the back of the job queue who are unlikely to find other employment. To control for such bias, we use propensity score matching.

It is important to highlight upfront that our interest in the economic benefits of linking ties does not imply that we are blind to the potential negative consequences and hazards of such relationships. Qualitative studies on domestic workers show that where there is an imbalance in power or socio-economic status, the relationship can easily degenerate to an abusive dynamic marked by condescension and exploitation (Philips 2011; Budlender 2010; Gaitskell 1983). However, there are also counter examples that demonstrate that relationships across this divide can build a bridge of mutual respect and sensitivity to increase understanding and empathy. Furthermore, exploratory survey analysis using the Income and Expenditure survey 2000 suggests that benefits and payments in kind to domestic workers were significantly and positively correlated with wages, even prior to introduction of labour regulations.⁴ This provides some initial, tentative evidence to dispel the notion that the economic benefits we study in this paper are inextricably linked to the abusive and exploitative practices associated with patronage and paternalism.

The paper is structured along the following lines. We first set out the theoretical background to social mobility and the role of linking ties, 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, 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.

³ We are confined to this series because Statistics SA introduced a number of changes to the GHS in 2009.

⁴ Which introduced unemployment benefits for domestic workers, as discussed later in the paper. Unfortunately, we were not able to include controls for the number of hours worked. The metadata from the IES says that the data was collected but was considered too unreliable and inaccurate and was consequently not included in the public release.

2. Social mobility and linking ties in South Africa

Almost 20 years after the end of apartheid, the South African social and economic landscape is still greatly divided across race, social class and income. In a recent paper, Leibbrandt, Finn and Woolard (2012) show how income inequality in South Africa has increased between 1993 and 2008. Although inequality across race groups decreased during this period,⁵ black individuals still make up the overwhelming majority of South Africa's poor (Gradin, 2013; Finn, Leibbrandt and Woolard, 2013). This racial and socio-economic divide is further entrenched by the historic legacy of geographical division imposed by the apartheid regime. Given the high correlation between income inequality and race, ethnicity and language, economic inequality in South Africa is not a transitory phenomenon, but is greatly persistent and socially embedded⁶ (Mogues and Carter, 2005).

This socially embedded inequality has contributed to the polarization of society in South Africa through the depletion of social networks, specifically those across socio-economic and racial divides which would otherwise have provided a potential escape route out of poverty for households in poverty (Adato *et al*, 2006; Mogues and Carter, 2005).⁷

The interplay between low social mobility and social networks is illustrated clearly by Adato and Carter (2006). After identifying the households who remain below the dynamic asset poverty line in South Africa for the period 1993 - 2001 (and who essentially find themselves in a poverty trap with no upward mobility), Adato and Carter show how this group of households are characterized by a lack of strong social networks that include individuals outside of their immediate economic sphere.

In the rest of this paper we explore the relationship between upward social mobility and social networks in South Africa in more depth. We rely on the approach proposed 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. Networks can be viewed as a compromise between an over-socialised and under-socialised perspective because it acknowledges the power of individual choice, but concedes that individual choice is subject to social influences and constraints (Powell and Smith-Doerr 1994).

⁵ It is the increase in within-group inequality driving the increase in overall inequality.

⁶ Mogues and Carter (2005) use this term to describe the type of income inequality which results in a setting where socio-economic polarization is high and depletes the ability of the poor to invest in the accumulation of social capital with the rich. In a society which exhibits high levels of polarization, the investment of the poor in building their social network with the rich is extremely costly and very unlikely. This entrenches the initial income inequality.

⁷ Mogues and Carter (2005) show how the social capital patterns of individuals can exacerbate income inequality in a situation where inequality is socially embedded and markets are incomplete.

The literature distinguishes between bridging, bonding and linking ties. Bridging ties are essentially weak ties which are created between individuals from different backgrounds. Essentially the theory is that “like attracts like”. Instinctively, individuals tend to trust and reach out to those with whom they share important social identifiers such as age, race, language, education level and neighbourhood of residence.

Bonding ties, on the other hand, consists of strong ties between friends and families who share the same information and have similar backgrounds (Putnam, 1995). It has been said that bonding ties are to “get by” and bridging ties are to “get ahead”. This implies that bonding ties are considered important to provide stability and safety-nets during emergencies, whereas bridging ties are required to climb the socio-economic ladder.

Woolcock (2001) distinguishes a third social tie, which he calls a linking tie. A linking tie is often also a bridging tie, but the crucial differentiating feature is that it provides access to an individual in power and therefore provides access to information and resources. Due to the nature of polarisation in South Africa and the overlap between power, race and socio-economic status, we expect a large degree of convergence between bridging ties and linking ties.

Theories on pro-social behaviour could help to explain employer motives for generosity and caring behaviour. Portes (1998) distinguishes between what he refers to as the norm of reciprocity whereby the donor expects to be rewarded in the future; and norm internalisation, where giving is altruistic and inspired by values and norms held by the individual. In labour market settings the norm of reciprocity may link to the concept of efficiency wages. According to the efficiency wage theory the wage of an employer is determined on the assumption that wage influences productivity. A higher efficiency wage is assumed to lead to higher productivity and loyalty (Katz 1986: 2). In line with the efficiency wage argument, employers may pay their employees more in the hope that this would increase their loyalty, dedication and motivation – especially where supervision or monitoring is either not feasible or not affordable.

The theories of Clotfelter (2002) and Andreoni (1989, 2001) are more in line with the perspective of norm internalisation. According to this theory, donors are motivated to donate resources, because they derive some pleasure in giving and consequently experience a ‘warm glow’. Alternatively, altruistic acts could also originate from a rule-based religious or moral perspective that prescribes generosity.

The empirical literature on giving is more diffuse, but the general principle appears to be that the likelihood of giving is a (positive) function of familiarity, proximity and frequency of contact.

The literature suggests that familiarity and personal contact are important factors in predicting generosity. Studies on giving in the United States and South Africa find that donations are larger when giving is direct and not intermediated via an organisation (Schervish *et al.* 2002; Everatt & Solanki 2003).

Greater physical proximity raises the likelihood of a relationship emerging and consequently also increases the likelihood of giving (Regan, 2011; Fehr, 2008; Walker *et al.*, 1994).⁸

Additionally, donations are more likely to occur where there is frequent contact and interaction. More frequent contact also enhances the efficiency of a resource transfer because it improves the quality of information available for matching needs with resources (Walker *et al.*, 1994).

In the next section we investigate whether these empirical findings and theories hold for South African domestic workers and their employers.

3. **Linking ties: the relationship between a domestic worker and her employer**

The relationship between the domestic worker and her employer is typical of a linking tie because it is characterised by considerable differences in income, status and power.⁹ According to the Income and Expenditure Survey of 2005, approximately 67.15% of the sample of the households who indicated that they spent money on domestic workers was white, while only 19.78% of this sample was black and 5.73% coloured. Since most domestic workers are black or coloured, this would imply that the majority of the domestic workers work for a household of a different race than themselves. This is also in line with the findings of Casale and Posel (2000) and Gaitskell *et al.* (1984).

Employers of domestic workers are more educated. According to the IES of 2005, households who did spend money on domestic workers have a mean education of 11.73 years, while those who did not, have a mean education of 6.57 years. In addition, the mean annual earnings of households that did not spend money on domestic workers is R49 025 (R18 979 *per capita*), while for those households who spent money on domestic workers it is R306 742 (R118 180 *per*

⁸ This may be intuitive because closer physical proximity implies a higher likelihood of observing the beneficiary. This may increase both the benefit associated with giving (e.g. the likelihood of reciprocity and the observation of the gratitude of the recipient) and help to reduce the risks associated with charitable giving (e.g. crowding out of own initiative and effort) (Rose-Ackerman 1996).

⁹ 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).

capita). Households who employ domestic workers are also far more likely to own expensive assets such as a motor vehicle and a satellite dish.

In contrast to the employer, domestic workers are generally regarded as a vulnerable group of workers characterised by low education levels, low income, low social status and few assets. Cock (1980) and Gaitskell *et al* (1984) described domestic workers as suffering from a ‘triple oppression’ during apartheid due to because of their race, their gender as well as the informal nature of their employment.¹⁰ The Basic Conditions of Employment Act 75 of 1977 was amended for the first time in September 2002¹¹ to include domestic workers in the ambit of the Act when providing for minimum wages and basic working conditions. Since April 2003, domestic workers have also been eligible for unemployment benefits.¹² However, while it may have helped to boost wages¹³, the private and unobserved nature of much of the interaction between employers and domestic workers means that such regulation cannot fully eliminate exploitation in this sector and the ‘triple oppression’ remains a valid concern.

Interviews with domestic workers suggested that domestic work is not regarded as a desirable occupation and is seen as a last resort (SA-German Development Co-operation, 2001). Domestic workers cited their lack of skills (36%) and the availability of domestic work (32%) as the main reasons why they chose to work in this sector. These conclusions are confirmed in the Department of Labour’s Investigation into Minimum Wages and Conditions of Employment of Domestic Workers, outlining that women ‘enter the domestic service, not by choice, but rather as a means to alleviate poverty’ (2001, p. 10) and that this is work with ‘perceived low economic value and limited social recognition’ (2001, p. 10). The report adds that it is an ‘undervalued activity performed by people from disadvantaged social groups’ (2001, p. 10).

Additionally, the relationship between a domestic worker and employer exhibit all of the characteristics that have been shown to be important correlates of generosity, namely familiarity, physical proximity¹⁴ and frequency of contact. Shefer (2012) refers to the closeness

¹⁰ Interviews with domestic workers in the late 1970s showed that they had long working hours and consequently no family or social life. Domestic work 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.

¹¹ This was done through Government notice No. R. 1068 entitled “Basic Conditions of Employment Act (75/1997): Sectoral Determination 7: Domestic Worker Sector, South Africa”.

¹² With the enactment of the Unemployment Insurance Contributions Act, No. 4 of 2002.

¹³ Research suggests that wages for domestic workers have indeed increased following the introduction of the regulation (Dinkelman and Ranchhod 2012; Budlender 2005; Hertz 2005). There is some evidence that weekly working hours have decreased (Hertz 2005), but this was disputed by Dinkelman and Ranchhod (2012).

¹⁴ During apartheid the state legislated separate neighbourhoods and blacks were not allowed to live in white neighbourhoods. Domestic workers were an exception and were allowed to live at their work site in accommodation provided by their white employers (Goodlad 1996).

and intimacy of the relationship between the employer and the domestic worker in South Africa and highlights that domestic workers are often such an integral part of the household that they act as ‘substitute mothers’ (2012:201).

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

Analysis of the Income and Expenditure Survey of 2000 provides preliminary evidence that linking ties do yield benefits.¹⁵ The size of these gifts in relation to the salary earned by the average domestic worker is set out in Table 1 above. This provides some tentative evidence to support our hypotheses regarding the benefits of linking ties. The remainder of the paper will be devoted to exploring this question more systematically.

4. Data and sample

To gauge the size of the potential economic benefit of linking ties, we start by selecting a typical group of domestic workers from the General Household Survey in South Africa. We use data from this survey for the years 2002-2008. The General Household survey is an annual survey conducted on a nationally representative sample of households.¹⁶ We restrict our sample to black and coloured females¹⁷ between the ages of 18 and 65 who reported 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 more than R1200 (in 2000 Rands) per month are excluded from the sample.

We construct a control group as counterfactual by selecting a group of women who are similar to the group of domestic workers, but who were not engaged in domestic work as a form of employment. To this effect, we similarly limit the control group to include only black and coloured females between the ages of 18 and 65 with reported earnings of more than R200 and less than R1200 (in 2000 Rands) per month who are living in households with more than one

¹⁵ Unfortunately this is the most recent information on donations given to domestic workers. The question was included in the IES 2005, but the data module was not released.

¹⁶ The study is not longitudinal and accordingly each year’s sample is drawn independently. All the results in this paper are from the sample obtained after pooling the households across all of these survey years.

¹⁷ In the GHS for the years 2002-2008, only 4.7% of domestic workers were male.

member. Importantly, we also limit the control group to household where none of the household members reported working as a domestic worker.

To justify the interpretation of the difference between these two groups as the impact of linking ties we also limit the woman in the control group to those who were employed in “elementary” occupations¹⁸, which are associated with more formal and anonymous work environments that are less likely to provide the opportunities for employees to form linking ties with their employers.

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

	Control group (Rest of subsample)	Domestic workers
Earnings in 2000 Rands	549.08 (252.18)	508.38 (222.17)
Years of education	6.99 (3.80)	6.42 (3.70)
Urban	0.44 (0.50)	0.59 (0.49)
Age	38.00 (10.49)	41.55 (10.10)
Married	0.49 (0.50)	0.49 (0.50)
Household size	5.16 (2.73)	4.88 (2.56)
Female head	0.52 (0.50)	0.53 (0.50)
Children in household	1.56 (1.48)	1.30 (1.31)

Table 2 sets out the descriptive statistics of the group of domestic workers and the control group of individuals. Prior to matching domestic workers are more disadvantaged than the control group along many dimensions including earnings and education. Domestic workers earn less on average and are also older than those in the control group. In addition, domestic workers have half a year less education on average 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.

¹⁸ Occupations include street vendors and other street service workers, cleaners and launderers, building caretakers, garbage collectors, messengers and porters, elementary sales occupations, agricultural and fishery labourers, mining and construction labourers and transport and freight handlers.

However, domestic workers tend to live in smaller households than those of the comparison group that contain fewer children aged 12 or younger. This may be because some domestic workers live in small flatlets on their employer's plot: the average household size for live-in domestic workers is 2.71 members while it is 4.91 for the domestic workers who do not live at their work site.

Given that Table 1 has shown that in kind donations to domestic workers are sizable compared to their remuneration, there may be an argument for including these gifts as part of the earnings. However, in the context of the literature on networks and social capital, these donations are seen as voluntary acts of giving – although not necessarily altruistic – and are therefore viewed as part of the returns to the linking ties between the domestic worker and her employer. This appears to be a defensible strategy. If the in kind donations were reliable and large enough to be viewed as a significant and substantive benefit linked to employment as a domestic worker, one would expect the profession to attract the most employable individuals from this segment of the labour market, but the comparison above suggests the opposite, i.e. that domestic work appears to be less desirable than other occupations available to this group of women.

5. Estimation strategy

The literature and empirical evidence set out in the previous sections suggest that domestic workers are typically more desperate and vulnerable than their counterparts receiving comparable remuneration while being employed in other sectors.¹⁹ We would therefore expect a simple comparison of the well-being (including the educational attainment, employment levels and nutrition) of the domestic worker and control groups to reveal that the domestic worker group to be worse-off than the control group in all respects. However, this would ignore the negative self-selection of certain individuals into employment as domestic workers, which could potentially bias the results.²⁰

In order to ascertain whether domestic workers do indeed benefit from the linking ties between them and their employers, it is necessary to control for the bias resulting from this negative self-selection. Propensity score matching (PSM) is often proposed as a remedy for this kind of bias.

Using the language associated with treatment evaluation, we can view the domestic worker group as the treatment group in the sense that the linking tie with their employers is the treatment. The

¹⁹ Including the fact that domestic workers earn less on average, are less educated and are older on average than the women in the control group.

²⁰ In other words, because we observe that domestic workers are more vulnerable and desperate participants in the labour market than those women included in the control group, we would expect that domestic workers and their households would on average be less likely to access quality healthcare, education and employment opportunities.

aim of PSM is to ensure that none of the selection bias remains after conditioning on the propensity scores of individuals, in other words the propensity of selecting to enter employment as a domestic worker of both the treated and untreated group.

The conditions for the successful implementation of PSM are as follows. In the first place, the treatment effect can only be estimated if there is a region where the propensity scores of the treated and control units overlap (Ravallion, 2007), the so-called “region of common support”. It has been shown that PSM leads to biased results if sufficient overlap between the propensity scores of the treated and untreated units does not exist, (Caliendo & Kopeinig, 2008).

In addition, the observable covariates of the control group and treatment group should be balanced conditioned on the propensity score.²¹ Last, the conditional independence or unconfoundedness assumption should hold.²²

4.2.2 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.

The aim of the first stage estimation of the propensity score (i.e. the probability of working as a domestic worker) is to control for all observable differences between the group of domestic workers and the control group. In this regard, covariates are included to control for the log of 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 number of government grants received by the household and whether the domestic worker resides in the Gauteng province. These variables are all aimed at controlling for the main observable differences between the domestic worker and control groups, as set out in table 2. The inclusion of the Gauteng province indicator variable is necessitated by the fact that the GHS only includes data on geographic location (whether the household resides in an urban or rural area) for 2002-2004. Since Gauteng is the most

²¹ In other words, selection into treatment should be random for units with the same or similar propensity scores, and these units should be identical in terms of the observable characteristics (Cameron & Trivedi, 2005).

²² The condition requires that the outcome variables are independent of treatment, once conditioned on the propensity score. In other words, since selection into treatment has not been randomised, selection into treatment is often confounded with the same factors influencing selection into treatment also potentially influencing the outcome variables. In order to control for this, the propensity score should be estimated using covariates that control for this potential confoundedness. This assumption is, of course, not testable, which emphasises the importance of the choice of covariates.

urbanised province in our sample, we include it as a proxy for whether the household lives in an urban area or not.

In addition to this initial specification, a second set of covariates is also used to control for the fact that the decision to work as a domestic worker may also be based on the earnings of the household in which the domestic worker resides. For this reason, the second set of covariates includes both the initial variables listed above as well as a variable controlling for the log of *per capita* household earnings (minus that of the domestic worker) and the mean number of employed adults in the household.

To confirm the robustness of our estimates, we consider both the first and second specifications for all of the outcome variables except the measure of household income excluding that of the domestic worker (the last outcome variable in our list of employment related outcome variables).²³

We report the results of the probit regressions for the sample used in the estimation of the unemployment duration outcome variable for both of the specifications below.²⁴

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 earnings variables as well as the variables for education, age, the number of social grants received by the household and the fact that households with domestic workers have on average fewer employed adults than the control group.

²³ Since that would involve using the same variable as both control and outcome.

²⁴ Since each of the outcome variables is associated with a different sample, the results from the first stage estimation of the propensity score differ slightly. Results for the other outcome variables are not reported here due to space constraints but are available from the authors on request.

Table 3: Estimating the propensity score (probit estimation) for the sample

	Specification 1		Specification 2	
	Coefficient	Standard Error	Coefficient	Standard Error
Log of earnings	-0.23***	0.05	-0.48***	0.08
Years of Education	-0.01	0.01	-0.01	0.01
Age	0.02***	0.00	0.02***	0.00
Household size	-0.03***	0.01	-0.02**	0.01
Proportion of children <12 in hh	-0.68***	0.15	-0.34**	0.17
Write in at least one language	0.06	0.09	0.05	0.09
Number of grants received	0.19***	0.04	0.19***	0.05
Gauteng	0.10	0.07	0.14*	0.08
Log of <i>per capita</i> household earnings			0.20***	0.05
Mean number of employed adults in household			-0.22	0.23
Constant	-1.37***	0.33	1.90***	0.38
Pseudo R ²	0.04		0.04	
Number of observations	3 304		2 862	

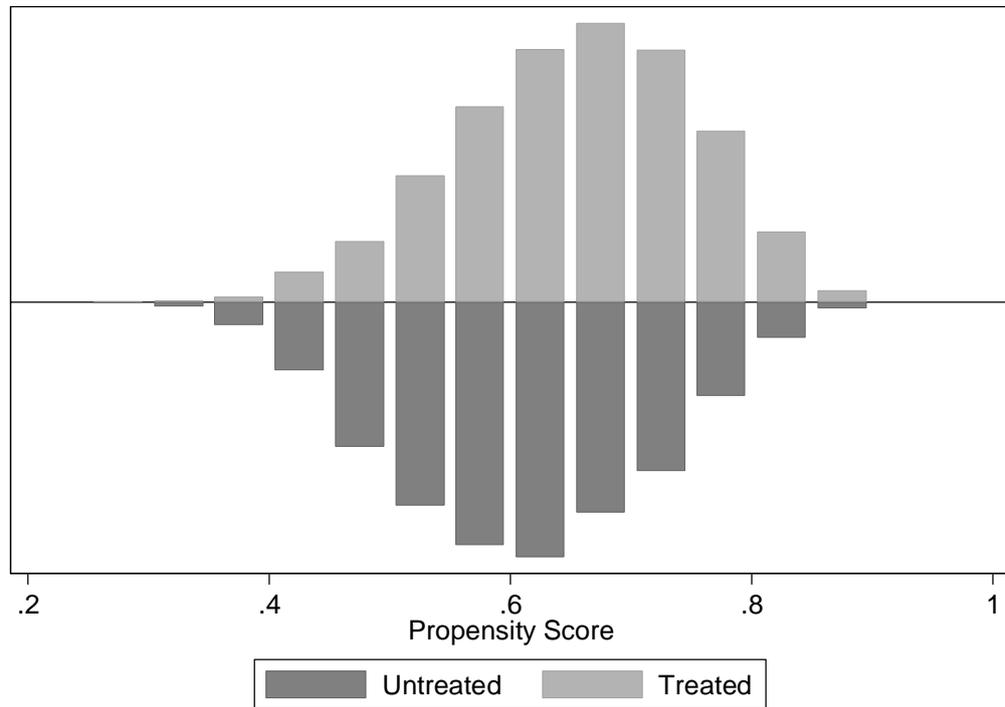
*** Significant at the 1 % level, ** significant at the 5% level, * significant at the 10% level

4.2.3 Overlap and region of common support

As indicated above, the common support condition requires sufficient overlap between the estimated propensity scores of the treated and control groups so as to ensure unbiased results.

Various methods of confirming compliance with this condition have been used in the PSM literature. However, Caliendo and Kopeinig (2008) argue that a visual inspection of the probability distribution of the estimated propensity scores is sufficient. Figure 2 sets 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 1: Overlap and region of common support



4.2.4 Matching Algorithms

Once the propensity score has been estimated, a set of potential control units are identified for each treated unit. This set is weighted and matched to ascertain the average difference in outcome between the treated and untreated units so as to calculate the average treatment effect.

There are various techniques available to obtain these weights (Cameron & Trivedi, 2005). In this paper, we make use of kernel matching as well as nearest neighbour matching. The former matches 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). The latter uses an algorithm to select, for each treated unit, 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).

4.2.5 Balance

Caliendo and Kopeinig (2008) 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.²⁵

Table 4: Balance

Variable	Sample	Mean Treated	Mean Control	%bias	% reduction in bias		P > t
					t-test		
Log of earnings	Unmatched	6.140	6.231	-19.6		-5.07	0.000
	Matched	6.140	6.141	0.0	99.8	0.01	0.989
Years of education	Unmatched	6.401	7.139	-19.9		-5.11	0.000
	Matched	6.401	6.494	-2.5	87.4	-0.75	0.451
Age	Unmatched	42.4788	38.975	33.2		8.55	0.000
	Matched	42.478	42.298	1.7	94.9	0.52	0.601
Household size	Unmatched	6.059	6.548	-16.2		-4.23	0.000
	Matched	6.059	6.003	1.8	88.7	0.58	0.559
Proportion of children < 12 years	Unmatched	0.226	0.259	-18.5		-4.75	0.000
	Matched	0.226	0.226	-0.0	99.9	-0.01	0.995
Write at least one language	Unmatched	0.809	0.855	-12.4		-3.13	0.002
	Matched	0.809	0.813	-1.0	91.8	-0.29	0.769
Grants	Unmatched	0.480	0.453	4.8		1.23	0.218
	Matched	0.480	0.476	0.6	88.4	0.17	0.868
Gauteng	Unmatched	0.132	0.117	4.7		1.23	0.218
	Matched	0.132	0.128	1.4	88.4	0.17	0.868
Log of <i>per capita</i> household earnings	Unmatched	4.905	4.857	5.9		1.50	0.134
	Matched	4.905	4.877	3.4	41.2	1.03	0.302
Mean number of employed adults in household	Unmatched	0.489	0.485	3.0		0.77	0.441
	Matched	0.489	0.486	2.0	32.8	0.62	0.537

²⁵ Again, as indicated above, what is reported here is just the balancing outcome for the estimation of the duration of unemployment outcome variable. All of the covariate are balanced (at the 5% level of significance) in all the other sub-samples except for the log of *per capita* household control variable which remained unbalanced for all outcome variables and the Gauteng variable which was unbalanced for the *Per capita* Household income (minus domestic worker) outcome.

6. Results

Prior to matching we often observe no difference in the outcomes of the domestic workers and the control group – and in some cases the comparators are more favourable than that for the domestic workers. However, when using matching, we find that evidence of benefits accruing to domestic workers emerges.

Table 5 below shows the results. The outcomes are examined based on four categories, namely: labour market outcomes, education, nutrition and assets. The findings suggests that there are discernible and positive differences in the labour market outcomes, nutrition and assets of domestic workers' households, but that there is little evidence of a positive impact on education.

Household members of domestic workers are significantly less likely to report discouragement and have significantly shorter unemployment spells. This seems to suggest that domestic workers' linking ties may help to access employment for their household members. However, there is no significant difference in the likelihood of employment of household members of the domestic worker, which may suggest that the jobs provided via these channels have a short duration - odd jobs, rather than long-term contracts.

The mean *per capita* household earnings of domestic workers' households (excluding the earnings of the domestic worker herself) is higher than for the control group. This could merely reflect the additional income earning opportunities provided via the domestic worker's linking ties or it could show that linking ties may give household members access to better jobs. The latter interpretation would be supported by South African research showing that job seekers often rely on referrals from friends and family members (e.g. Smith, 2000 and Seekings, 2003) and Granovetter (1983)'s work showing that employees hired via referrals are more likely to be promoted.

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.

The analysis also show 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, including donations and hand-me-downs.

In contrast, we find no evidence of positive education outcomes for the household members of domestic workers. Young adults in these households are no more likely to have completed matric (high school graduation) than children in the control group and there is also no significant difference

between children's²⁶ self-reported ability to read and write well between these two groups.²⁷ However, we do find that school bursaries are more prevalent in households where a domestic worker is present. This may also be attributed to the existence of linking ties – highly educated employees with access to resources may be more inclined to assist domestic workers by either assisting them to apply for funding on behalf of their children or to provide the funding in the form of a bursary.

²⁶ Children are defined to include all individuals in the household aged between 10 and 24 who is either the child or grandchild of the household head.

²⁷ The fact that we find no positive impact for the education outcomes may be explained in part by the fact that domestic workers are unable to support their children's school careers in the ways that matter due to their long work hours. Domestic work often requires long work hours and weekend work (SA-German Development Co-operation, 2001). The Department of Labour's investigation of working conditions concluded that domestic workers often have very limited free time and that some live-in domestic workers are on call day and night (Department of Labour, 2001).

Table 5: Matching Results

Outcome	Variable	Sample	Treated	Controls	Difference	S.E.	T-stat	Treated N	Control N
Employment of hh members	Unemployment duration	Unmatched	1.947	2.285	-0.338	0.057	-5.95	1 841	1 021
		ATT	1.947	2.320	-0.373	0.062	-6.04		
	Likelihood of discouragement for job seekers	Unmatched	0.083	0.084	-0.002	0.003	-0.46	7 928	4 924
		ATT	0.083	0.094	-0.011	0.004	-2.90		
	Likelihood of employment	Unmatched	0.784	0.803	-0.018	0.005	-3.81	7 928	4 924
		ATT	0.784	0.782	0.003	0.005	0.56		
Per capita Household income (minus domestic worker)	Unmatched	321.719	278.853	42.865	10.751	3.99	7 928	4 924	
	ATT	321.719	249.023	72.696	10.360	7.02			
Nutrition of hh members	Incidence of child hunger	Unmatched	0.253	0.303	-0.051	0.009	-5.68	6 319	4 082
		ATT	0.253	0.301	-0.048	0.010	-4.97		
	Incidence of adult hunger	Unmatched	0.255	0.311	-0.056	0.008	-6.91	7 879	4 909
		ATT	0.255	0.311	-0.056	0.009	-6.35		
Household assets	TV	Unmatched	0.653	0.578	0.075	0.009	8.52	7 913	4 921
		ATT	0.653	0.573	0.080	0.010	8.42		
	Books	Unmatched	0.538	0.530	0.008	0.010	0.85	6 609	4 583
		ATT	0.538	0.527	0.012	0.010	1.11		
	Radio	Unmatched	0.821	0.783	0.037	0.007	5.21	7 915	4 922
		ATT	0.821	0.785	0.035	0.008	4.50		
Educational outcomes of children in household	Years of education for young adults	Unmatched	9.803	9.797	0.005	0.078	0.07	2 909	1 685
		ATT	9.803	9.850	-0.047	0.086	-0.55		
	Proportion of young adults with matric	Unmatched	0.350	0.371	-0.021	0.015	-1.40	2 491	1 465
		ATT	0.350	0.374	-0.024	0.016	-1.46		
	Children's ability to read	Unmatched	0.930	0.933	-0.003	0.005	-0.64	5 392	3 343
		ATT	0.930	0.936	-0.006	0.005	-1.19		
	Children's ability to write	Unmatched	0.928	0.932	-0.004	0.005	-0.75	5 393	3 343
		ATT	0.928	0.935	-0.007	0.005	-1.41		
Number of bursaries to school children in household	Unmatched	0.033	0.022	0.011	0.003	3.52	7 928	4 924	
	ATT	0.033	0.026	0.007	0.003	2.24			

Note: ATT is the Average Treatment Effect on the Treated. All of the significant differences remained highly significant when errors were bootstrapped (to account for the estimation of propensity scores). We report the average treatment effect using the kernel matching technique. Except for the outcome variable relating to the per capita household income excluding that of the domestic worker, the results reported below use the propensity score estimated using the second specification, although the results are all robust to using the first specification.

5.1 Robustness check: does more intensive contact increase the observed benefits to these ties?

If these positive treatment effects emerge as a result of the linking ties between domestic workers and their employers, one would expect the treatment effect for domestic workers who live on the same property as their employer (“live-in” domestic workers) to be larger than that for domestic workers who live on their own away from their employer.

This would be in line with findings showing that familiarity, proximity and frequency of contact are strong predictors of generosity. In addition to the impact of living on the same property (enhancing familiarity and proximity), it is reasonable to assume that a live-in domestic workers are likely to be working for that specific employer on a full-time basis (enhancing frequency of contact).

In order to ascertain whether more deeply-rooted linking ties have a stronger impact, we create a variable to proxy for live-in domestic workers using a combination of two variables, namely the provision of rent-free housing as part of her employment contract and living in a brick house described as a dwelling, house, flat or room in a backyard or a room or flatlet. Our hypothesis is supported by the empirical evidence: We observe a larger treatment effect in terms of child- and adult hunger. The unemployment of household members is also less likely.

Unfortunately, the sample size available for this analysis is very small because we cannot include single households (because many outcome variables relate to other household members) and a great proportion of “live in” domestic workers reside on their own without any additional household members. While it is encouraging that this analysis provides further support for the hypothesis under investigation, we regard these findings as tentative and exploratory.

7. 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 version of the GHSeS from 2002 to 2008 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.

Domestic workers are typically more vulnerable than the comparison group and we implement two matching techniques (kernel matching and nearest neighbour matching) to control for observable differences between the two groups. After matching, we find that the household members of domestic workers are likely to be unemployed for shorter periods of time, are less likely to become discouraged workers and have lower adult and child hunger than the household members of a group of comparable women who are not employed as domestic workers. Similarly, we find that the households of domestic workers are more likely than their counterparts to own certain assets (radios and TVs). In

contrast, we find no discernible positive benefits in the education dimension apart from greater access to school bursaries.

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, in most of the dimensions we consider we find that these women appear to benefit from their regular and close contact with their employers. Broadly, this can be interpreted as evidence that linking ties may help to improve the lives of poor households in South Africa and that there may be significant benefits to repairing these deep divides in the social landscape.

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