

d·i·e

Deutsches Institut für  
Entwicklungspolitik



German Development  
Institute

Discussion Paper

23/2013

# Women's Political Role and Poverty in the Educational Dimension

A District-Level Analysis in India

*Francesco Burchi*



# Women's political role and poverty in the educational dimension

A district-level analysis in India

Francesco Burchi

Bonn 2013

Discussion Paper / Deutsches Institut für Entwicklungspolitik  
ISSN 1860-0441

Die deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.d-nb.de> abrufbar.

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data is available at <http://dnb.d-nb.de>.

ISBN 978-3-88985-605-0

**Francesco Burchi** is a researcher at the German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE). He works for the "Sustainable Economic and Social Development" department.

Email: [francesco.burchi@die-gdi.de](mailto:francesco.burchi@die-gdi.de)

© Deutsches Institut für Entwicklungspolitik gGmbH  
Tulpenfeld 6, 53113 Bonn  
☎ +49 (0)228 94927-0  
☎ +49 (0)228 94927-130  
E-Mail: [die@die-gdi.de](mailto:die@die-gdi.de)  
[www.die-gdi.de](http://www.die-gdi.de)

## Abstract

This paper contributes to the debate on the effects of women's political representation. It has a threefold objective:

- (1) to analyse whether the gender of elected politicians is relevant to the educational achievements of residents of the Indian districts in which they were elected;
- (2) to test whether politicians are more sensitive to the needs of people of the same gender;
- (3) to explore the possible channels through which these relationships operate.

By applying instrumental variable regressions to a data set obtained by merging individual data with district-level political variables, we concluded that a 10% increase in women's political representation at district level may produce a 5.9% increase in the probability of children completing primary school. In a further analysis, we found a striking difference in the results when broken down by gender: women's political agency affects the education of a significantly larger number of girls than boys. Finally, none of the channels we examined relating to school buildings and the coverage of the Mid-Day Meal scheme helped explain the above relationship. This is due in part to poor-quality data. In conclusion, these findings provide further evidence of the benefits of women's political representation and should be taken into consideration in the current debate on the Women's Reservation Bill in India.



## Acknowledgements

I would like to thank the German Federal Ministry for Economic Cooperation and Development for funding this study as part of the research project on the political economy of inclusive growth. I would like to thank Markus Loewe for his supervision of the study, as well as Tilman Altenburg, Lilli Banholzer, Luis Camacho, Giorgio D'Agostino, Jörg Faust, Aimée Hampel-Milagrosa, Imme Scholz, Armin von Schiller and Sebastian Zaja for commenting on various versions of the paper. I am also grateful to Karan Singh for his excellent research assistance in the construction of the data sets.

Bonn, December 2013

Francesco Burchi



# Contents

## Abbreviations

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Literature review</b>	<b>2</b>
2.1	Women's representation in politics and policy-making	3
2.1.1	Provision of public goods	3
2.1.2	Expenditure and use of budget	4
2.1.3	Passing laws and reforms	5
2.1.4	Targeting poverty and corruption	5
2.2	Poverty outputs and outcomes	6
2.2.1	Health	6
2.2.2	Education	6
2.2.3	Employment	7
2.2.4	Participation in political life and women's empowerment	7
2.2.5	Safety	9
<b>3</b>	<b>The political economy of education</b>	<b>9</b>
<b>4</b>	<b>Data and methods</b>	<b>12</b>
4.1	Data	12
4.2	Variables	13
4.3	Estimation strategy	16
<b>5</b>	<b>Findings</b>	<b>16</b>
5.1	From politics to educational outcomes	16
5.2	From politics to educational inputs	20
<b>6</b>	<b>Conclusions and policy recommendations</b>	<b>22</b>
	<b>Bibliography</b>	<b>25</b>

## **Figures**

Figure 1:	Panel A and Panel B: Conceptual framework, step 1 + 2	11
Figure 2:	Trends in probability of primary schoolchildren completing primary education	13

## **Tables**

Table 1:	Descriptive statistics	14
Table 2:	Effect of women's political representation on primary education completion	17
Table 3:	Tests for the validity of the instrumental variables	18
Table 4:	Effect of women's political representation on primary education completion: disaggregated results	19
Table 5:	Effect of women's political representation on educational infrastructure	20
Table 6:	Effect of women's political representation on Mid-Day Meal (MDM) scheme coverage	21

## Abbreviations

ARIS-REDS	Additional Rural Incomes Survey (ARIS) and Rural Economic and Demographic Survey (REDS)
CMIE	Centre for Monitoring the Indian Economy
GP	<i>Gram panchayat</i>
IV	Instrumental variable
MDM	Mid-Day Meal
NREGA	National Rural Employment Guarantee Act
NSSO	National Social Survey Office
OLS	Ordinary least squares
SC	Scheduled Castes
SGRY	<i>Sampoorna grameen rozgar yojana</i>
ST	Scheduled Tribes
UNDP	United Nations Development Programme



## 1 Introduction

In the struggle against multidimensional poverty, national governments and international organisations have long focused on technical interventions. The question here is: what sort of economic environment and what economic policies do most in helping to alleviate poverty? Since the 1990s, the international community has paid more and more attention to the role of institutions and governance. Many empirical studies have shown how some policies work in certain political settings, but not in others. Against this background, a branch of the literature has looked at how political institutions, including political and electoral competition, can influence poverty outcomes.

In this context, a growing number of scholars have investigated the effects of women's political agency on various economic, political and social indicators. These studies have focused on high-income countries such as the United States (Thomas / Welch 2001; Rehavi 2007) and Germany (Geissel / Hust 2005), as well as middle-income and low-income countries such as Argentina (Franceschet / Piscopo 2008), Rwanda (Powley 2006), and Bangladesh (Panday 2008; Hossain / Akhter 2011). The empirical evidence has been drawn mostly from countries that have set more or less explicit gender quotas for national or sub-national assemblies or administrations.<sup>1</sup>

In the literature on political economy, the citizen-candidate model views politicians' identity as one of the fundamental determinants of investment choices (Besley / Coate 1997; Osborne / Silvinsky 1996). Building on these models, scholars have investigated the specific role played by politicians' gender in policy-making: men and women are assumed to have different preferences, which is why they make different choices once they obtain political agency. While most of the empirical studies based on these assumptions do not clearly define the nature of these differences, they often imply that it is 'biological', i.e. due to nature.

This paper looks at the relationship between female political agency and educational achievements in India. While most of the existing literature focuses on the lowest administrative unit, i.e. the *gram panchayat*,<sup>2</sup> or on the states, our analysis looks at the relationship in Indian districts. District politics have not been examined in detail to date. The fact that the Indian parliament is currently debating the possibility of reserving a proportion of seats in state assemblies for women is another important reason for focusing on India.

In detail, the paper tries to answer three questions. The first is:

- Does women's political agency have a positive effect on primary education completion rates?

Our aim is to test whether women pay more attention to education and try to divert more resources to this sector. If so, this should be reflected by high school completion rates. However, we do not assume that a potential effect is due to biological differences between

---

1 For comprehensive information on the different types of gender quotas used around the world, see the Global Database of Quotas for Women, <http://www.quotaproject.org/> (accessed on 18 September 2013).

2 A *gram panchayat* is a local self-government at village or small-town level in India. It is the lowest tier of *panchayat raj* institutions, a complex multi-level governance system. The *panchayat raj* institutions are responsible for civic administration and have independent powers of taxation.

the genders, but rather to different social positioning and perspectives, as women have long been marginalised in India. The above topic has been little explored: to the best of our knowledge, only one paper (Clots-Figueras 2012) has studied this relationship in India.

The two other important points are the following:

- Does women's political agency result in girls being more likely than boys to complete primary education? The study seeks to verify not just whether women are more interested than men in fields such as education, but also whether they pay more attention to the education of *girls*;
- What are the possible channels through which women's political representation affects educational achievements?

Given data constraints, we investigated only a few possible pathways of influence, such as the coverage of the Mid-Day Meal (MDM) scheme. The MDM scheme is a very large school meals programme that has boosted primary school attendance (e.g. Drèze / Goyal 2003; Singh et al. forthcoming). Our hypothesis is that female politicians pay more attention than male politicians to this welfare programme, thus improving educational attainment through this channel.

These three questions were answered by applying econometric techniques to a complex database combining individual data from the National Social Survey Office (NSSO, a nationally representative survey) with district-level information from the Election Commission of India. There is a methodological problem here, in that more progressive districts are more likely to have more women in political bodies and to invest more in education, generating an 'omitted variables' bias. We employed an instrumental variable (IV) approach in order to overcome this problem. Here, the proportion of district seats won by women is instrumented by the proportion of districts seats won by women in *close* female-male contests, i.e. elections in which there was a narrow gap between the winner and the runner-up.

The paper is divided into six chapters. Chapter 2 presents a review of the literature. Chapter 3 concentrates on the political economy of education and illustrates the conceptual framework. The data and variables are presented in chapter 4. Chapter 5 sets out the results of the quantitative analyses. Finally, concluding remarks and policy recommendations are presented in chapter 6.

## 2 Literature review

This chapter reviews the growing literature on India. We look at the broad spectrum of female political roles, i.e. women as members of executive bodies (or political leaders) and as members of legislative assemblies or legislators, at different levels: state, district and local. Most studies concentrate on the lowest administrative level, i.e. the *gram panchayats* (GP), since the 73rd Amendment of the Indian Constitution (1992) stipulates that one third of the seats in local councils and one third of local leaders' posts (known as *pradhan* or *sarpanch*, depending on the state) must be reserved for women.<sup>3</sup> The decision

---

3 This system only affects rural areas.

on which GP is to be reserved for women is taken before each election and is 'random', i.e. independent of any village-specific characteristic. In particular, this means that women are also elected in villages with a female-hostile electorate. This allows a straight comparison in development inputs and outcomes between 'reserved' and 'unreserved' villages, allowing the differences to be attributed to the political leader's gender. For this reason, many scholars have exploited this unique research design.<sup>4</sup>

The studies may be divided into two groups:

- (1) those looking at the influence of women's political agency on 'input' indicators, i.e. indicators related to investment choices, use of budgets, policy-making, management of welfare programmes and the targeting of interventions;
- (2) those analysing the impact of women's political agency on poverty and development 'outcomes' (e.g. Nardo et al. 2008; Burchi / De Muro forthcoming).

To reflect this distinction, the chapter is divided in two sections.

## 2.1 Women's representation in politics and policy-making

Is a higher rate of female political representation associated with a different way of investing public money and pursuing public policies? The evidence is mixed. For example, women politicians seem to invest in different public goods and perform better overall than men in providing public goods. In terms of budget utilisation, however, there is no difference between the genders. This would suggest that female politicians manage the available resources better. The main findings in relation to the different indicators are briefly illustrated below.

### 2.1.1 Provision of public goods

In a highly influential study in Birbhum in the state of West Bengal and Udaipur in Rajasthan, Chattopadhyay and Duflo (2004a, 1431) concluded that 'in both places, there are significantly more investments in drinking water in GPs reserved for women'. Moreover, reserved villages invest less in informal education in West Bengal, where informal education is less important for women. As women *pradhans* (local leaders) are educated to a lower standard, have less political experience and are often unwilling to run for the next set of elections, Chattopadhyay and Duflo (2004b) also tested whether this endogenous selection of weaker *pradhans* determines policy outcomes. Their results show that this is not the case; it is the gender of the leader that explains the differences in terms of the provision of public goods.

In line with Chattopadhyay and Duflo (2004a; 2004b), Beaman et al. (2010) found that female leaders invest more in drinking water facilities and that the overall quantity of public goods was significantly higher in reserved villages, while the quality of public goods was higher, though not significantly so in statistical terms, in reserved villages.

---

4 There is a parallel literature that looks at the impact of caste reservation in Indian *panchayats* on different variables. These studies are not included in this chapter as they fall outside the scope of this paper.

A study of 12 districts in the state of Karnataka produced opposite results. The quality of rural services, as measured by subjective variables, would appear to be better in male-led villages (Raabe et al. 2009). The only exceptions are government schools and water supply, where satisfaction is higher in GPs reserved for women.

Deininger et al. (2011) made use of the recent ARIS-REDS data set,<sup>5</sup> which combines extensive village and GP data with household data. The database encompasses 233 villages all over the country. Deininger et al. (2011) tested whether there is a difference between reserved and unreserved villages in terms of the quality of public goods delivered, as measured by self-reported data. Their findings differ in part from those of other scholars, as they report reservation as having an adverse effect on the quality of public goods. However, attempting to isolate the effects of other characteristics of the leader, a more in-depth analysis shows that the main factor is the leader's lack of experience (rather than the gender). Deininger et al. (2011) also tried to identify any lagging effects, i.e. whether female reservation can affect the provision of public goods in the medium term. They found a positive, significant relationship between 'previous reserved' and the quality of goods. Finally, a disaggregated analysis revealed that women's reservation leads to better performance in the macro-social sector, i.e. schools, water, health and sanitation.

Using state panel data for 1967–2000, Clots-Figueras (2011) focused specifically on women's representation in state assemblies, educational public goods and health-related public goods. Her empirical study showed that female political representation is positively associated with the number of primary, middle and secondary schools per 1,000 individuals, the greatest effect being in relation to primary schools. Other interesting findings were that a larger number of female legislators is associated with a larger number of primary schoolteachers and a smaller number of female middle schoolteachers, and that 'female politicians increase the proportion of teachers that are female in primary schools' (Clots-Figueras 2011, 680). She also detected a positive correlation between women's representation and health inputs.

Clots-Figueras also found evidence of a positive relationship between women's representation and school facilities at district level (Clots-Figueras 2012).

### 2.1.2 Expenditure and use of budget

The gender of political leaders and legislators does not appear to have any relevant effect on the use made of budgets. The work of Raabe et al. (2009) shows that there was no substantial difference in Karnataka in the use made of GPs' own resources. Health and education are priorities in both reserved and unreserved villages. Similar results were obtained by Rajaraman and Gupta (2012), who collected primary data in four states in 2006, i.e. Madhya Pradesh, Chhattisgarh, Rajasthan and Orissa. They tried to verify whether more money was spent from the Sampoorna Grameen Rozgar Yojana (SGRY) programme on water (as opposed to roads and buildings) in reserved GPs, as water has traditionally been

---

5 The ARIS-REDS is a survey conducted by the Indian National Council of Applied Economic Research. The acronym stands for Additional Rural Incomes Survey (ARIS) and Rural Economic and Demographic Survey (REDS).

more of a priority for women. Their probit regressions indicate that the gender of the *sarpanch* (local leader) does not affect expenditure on water. There was a greater probability of expenditure on water in villages receiving more funds, where fewer people had access to hand pumps and the population was more dispersed in spatial terms.

In line with the above findings, Clots-Figueras (2011) showed that the proportion of female politicians in state assemblies does not influence budget allocation, either at aggregate level or in specific sectors such as health and education (the coefficients for these two sectors were positive, but not significant).

### 2.1.3 Passing laws and reforms

To the best of our knowledge, only Clots-Figueras (2011) looked at the effect on voting mechanisms in Indian states. Her paper concluded that 'general female legislators have a negative and significant effect on land reforms, while SC/ST female legislators have a positive and significant effect' (Clots-Figueras 2011, 678).

### 2.1.4 Targeting poverty and corruption

A study by Bardhan and Mookherjee (2006) in West Bengal looked at the impact of political reservation on anti-poverty targeting. They found contradictory evidence:

- there was better targeting in reserved villages for credit to farmers;
- the targeting of a programme for the delivery of mini-kits of seeds and fertilizers to farmers was indifferent;
- the targeting of employment programmes was worse (and statistically significant).

In a more recent paper based on better data, Bardhan, Mookherjee and Torrado (2010) still did not find any evidence of better targeting in reserved villages, either in general or in relation to women in particular. The findings hold good even after controlling for land inequality, as proxy for elite capture. On the contrary, the interaction is positive and significant for some outcomes. In other words, the positive effect of women's reservation increases as inequality rises.

In a comprehensive study on the state of Andhra Pradesh, Afridi, Iversen and Sharan (2013) sought to establish whether the presence of female *pradhans* improved the management of the National Rural Employment Guarantee Act (NREGA) programme. They focused on corruption, measured by whether or not people had to pay bribes to access the programme. Their initial conclusion was that there was a higher level of corruption in reserved GPs. The results do not suffer from a reporting bias. Factoring the leader's characteristics into econometric models, however, shows that the problem is female leaders' lack of experience rather than their gender. Furthermore, the likelihood of corruption declines where women in reserved councils have previous political experience or after a few years of reservation. By contrast, Beaman et al. (2010) found that fewer bribes were paid in reserved councils.

## 2.2 Poverty outputs and outcomes

This paper endorses the conceptualisation of poverty and development as a multidimensional phenomenon. In line with Amartya Sen's (1999) capability approach, poverty is viewed as capability deprivation, in which capabilities are the various sets of things people can be and do in their lives. The evidence for the relationship between women's political agency and the capabilities of the residents of the places where female politicians operate is set out below. The capabilities considered here range from basic capabilities, such as being educated and being in good health, to more complex capabilities, such as participation in political life and women's empowerment.

### 2.2.1 Health

A few studies have looked at the relationship between female leadership and health outputs and outcomes indicators. In a recent paper, Dongre (2010) examined the effect of female reservation and its combination with caste reservation on the prevalence of diarrhoea in villages in Andhra Pradesh. A simple comparison of reserved with unreserved villages revealed no significant difference in the prevalence of diarrhoea. A further disaggregation showed a negative and statistically significant relationship between women's reservation in the general category (not for SCs or STs) and the prevalence of diarrhoea. Dongre also investigated the channels through which female reservation affects the prevalence of diarrhoea, and concluded that the former raises the likelihood of taps being the main source of drinking water.

Kumar and Prakash (2012) compared districts in Bihar (the treated state) with districts in Jharkhand (the control state) before and after political decentralisation and the introduction of women's reservation. They used a 'difference in difference' estimation strategy. The authors clearly assumed that any differences in outcomes would be due mainly to policy reform and did not distinguish between the effects of decentralisation and the effects of reservation. Bearing this design limitation in mind, Kumar and Prakash (2012) found a greater probability of babies being born in health facilities and of being safely delivered, and also of their being fully vaccinated, after the institutional reforms. Decentralisation and reservation policies were not found to be significant explanatory factors of overall child mortality.

Unlike the findings of Kumar and Prakash (2012), there is some evidence of a negative association between women's political representation and infant and neonatal mortality at district level (Bhalotra and Clots-Figueras, 2011). The number of seats held by women in electoral constituencies seems to affect most health-seeking behaviours, such as antenatal care, early breast-feeding, child immunisation and home deliveries. One important channel through which this relationship is likely to work is information. However, this was not directly tested.

### 2.2.2 Education

To the best of our knowledge, not a single paper has looked at the effects of female reservation in Indian GPs – whether as local leaders or as members of a local council – on

outcome educational indicators, such as completion of primary or secondary education, or on children's learning abilities. Only a study by Binswanger-Mkhize, Nagarajan and Singh (2012) examined the impact of women's reservation on access to primary education, finding a positive relationship.

Clots-Figueras (2012), on the other hand, investigated whether people's educational levels correlated with women's political agency immediately before they enrolled in primary school. She found empirical evidence of a strong, positive relationship in urban areas, but found that this relationship was not significant in rural areas. The author's interpretation was that women assigned greater value to education in urban areas because of the higher expected returns.

### 2.2.3 Employment

An interesting study by Jha et al. (2011) looked at village political structure and a series of outcomes related to household work, time use, women's labour market participation and welfare. Their results revealed that political reservation improves the provision of water, reducing the time spent fetching water (an unproductive, time-consuming activity carried out by women), which in turn increases female labour participation and raises household income.

### 2.2.4 Participation in political life and women's empowerment

Several studies have investigated whether female reservation enhances women's capability of taking part in political life, measured in terms of their attendance of and participation in village meetings and women's organisations, and in terms of the likelihood of their running in the next elections.

Most papers found empirical evidence that female leaders had a positive effect on attendance of village meetings, with special reference to women (e.g. Chattopadhyay / Duflo 2004a and 2004b; Beaman et al. 2010). Using the findings of an all-India survey, Deininger et al. (2011) endorsed this hypothesis: female attendance was found to be significantly higher in villages with female leaders as compared to those with male leaders (8% vs. 6%). However, overall attendance was lower in the former. This was because female leadership would appear to discourage a significant number of men from joining the meetings. Deininger et al. (2011) went beyond simple attendance and found a general positive effect of reservation on active political participation. By contrast, Raabe et al. (2009) found male attendance to be slightly higher in reserved GPs, while female attendance was very low in both types of village (23%). However, women were far more satisfied with the contents and timing of meetings in reserved GPs. Finally, a number of studies in southern states concluded that reservation did not affect the likelihood of *gram sabha*<sup>6</sup> meetings being held or the probability of people attending them, nor even the presence of women's organisations (Besley / Rao / Pande 2005; Ban / Rao 2008).

---

6 A *gram sabha* is a village assembly, in which all residents with a vote are allowed to participate.

Evidence of the impact of reservation on political competition is mixed. One of the objectives of reservation is in fact to enable women to experience political roles, to gain confidence and then run for future elections. Reservation could also show men that women can be at least as good political agents as men, thus dispelling prejudices. The opposing argument is that, since reservation inserts a bias into political competition, it might actually help mobilise resistance to women.

Some studies have provided detailed information on the women elected as *pradhans* (local leaders) in reserved villages, including their willingness to compete in the next (unreserved) elections. In many cases, descriptive statistics showed that women did not have such an intention (e.g. Chattopadhyay / Duflo 2004a, 2004b). Scholars have also questioned whether women are no more than token leaders (Sharma 2003). For example, Chattopadhyay and Duflo (2004b) found that, in 17% of cases, women elected in reserved GPs were the spouses of previous *pradhans* or council members. Jafar (2013) reported that two female candidates had stated that their husband had organised everything for their election; one of them was the wife of a senior party leader. However, in-depth studies tend to reject this hypothesis (Ban / Rao 2008; Jayal 2006; Chattopadhyay / Duflo 2004b).

Using 1997 and 2002 election data for Mumbai, Bhavnani (2009, 28) showed that women's chances of winning ward elections were 'more than quintupled by the 1997 reservations'. Other indicators, such as the number of female candidates, the percentage of votes received by female candidates and the overall number of candidates, were significantly higher in 2002 in wards with female reservation in the preceding period. As argued by Bhavnani (2009, 34), 'reservations affect subsequent elections in part by introducing into politics women who are able to win elected office even after reservations are withdrawn and by increasing the willingness of parties to grant women tickets.' Jafar's findings (2013) from one district (Malappuram) in Kerala were less positive: he found little change in political competition after one third of the seats in the GP council had been allocated to women.

Overall, it is clear that the reservation of seats for women produces some important effects in terms of female empowerment in the political arena. As Jayal (2006, 32) put it:

*"It is clear that panchayats are performing a transformatory role, albeit one that is slow. The consciousness-raising potential of the new PRIs [Panchayati Raj Institutions] is indubitable. Even the women who speak of their powerlessness have, for the first time, squarely recognised it. It is true that, as of now, this recognition pertains to powerlessness in the domain outside the domestic, but it is surely only a matter of time before powerlessness within the walls of their homes also begins to be recognised. Similarly, the recognition of illiteracy as a handicap is the first step towards combating it. The transformatory potential of such trends is unmistakable, and their importance cannot be underestimated. [...] The attempt to empower women through quotas in local institutions clearly does not alter the preconditions in terms of, say, providing women with access to land, but it does provide them with a non-material political resource through which they can, over time, bring about a change in the norms and values governing the distribution of material resources. Their recognition of the importance of education for girls and a later age of marriage, for instance, may be the prelude to the assertion of other kinds of equality claims."*

### 2.2.5 Safety

One original study conducted by Iyer et al. (2012) with data from 17 major Indian states for 1985–2007 explored the relationship between the reservation of *pradhan* seats for women and crimes directed against women. Iyer and his colleagues analysed the relationship indirectly, by comparing districts across time to examine whether there was any change in the number of crimes committed against women after the policy shift. The paper showed that the adoption of female reservation helped to reduce the frequency of specific crimes against women, although it did not affect most other crimes.

## 3 The political economy of education

Most of the above papers also sought to test the validity of two alternative political economy models, namely the Downsian model (Downs 1957) and the citizen-candidate model.

The first type of model assumes that, once elected, leaders commit to policies that favour the median voter (i.e. a hypothesis of full policy commitment). In other words, the identity of political leader is assumed not to play any role. By contrast, the citizen-candidate model (Besley / Coate 1997; Osborne / Silvinsky 1996) assumes that political leaders will not simply comply with the wishes of the median voter (i.e. hypothesis of imperfect policy commitment). The latter model acknowledges that the identity of political leaders affects policy-making. The leader's gender is regarded as a fundamental component of his or her identity: female leaders will make policies in favour of women, of what women care about, or even for the general well-being of the community (Vyasalu / Vyasalu 1999).

Even more complex models have also been proposed, for example by Bardhan et al. (2010, the 'capture cum clientelism' model), which recognise the importance of leaders' gender, but nonetheless argue that other factors such as societal clientelistic behaviours may be more important.

The present paper joins the literature on the effects of women's political agency, albeit from the perspective of education. A lack of basic education is a crucial poverty indicator, as education has both a constitutive and an instrumental role. It enhances employability and income and is conducive to many other capabilities, such as health, nutrition, participation in public life and household decision-making (Sen 1999; Terzi 2007). Moreover, the educational system in India has several problems. While overall educational performance is gradually improving and does not collocate India in the lowest group (it ranks 134th out of 187 countries in the UNDP Education Index), there are high levels of inequality, not just between men and women, but also between social groups. These are proving hard to eradicate (Crespo-Cuaresma et al. 2012; Thomas / Wang / Fan 2001).

Current studies on India do not provide robust evidence of a role played by women's political representation in the educational sector. Higher female political agency seems to correlate positively with input indicators, especially those related to the quality of educational services. Similar results have been found in other countries and cross-country studies (e.g. Chen 2008, 2010).

However, none of the studies on India has actually examined whether women's representation, in turn, affects educational outcomes such as school completion rates or learning abilities. The only exception is the work performed by Clots-Figueras (2012), which points to a significant relationship in urban areas only.

While many previous studies tried to exploit the randomisation of the reservation of seats for women in *gram panchayats* in order to identify differences in policy-making and outcomes, this paper focuses instead on the district level. This is because:

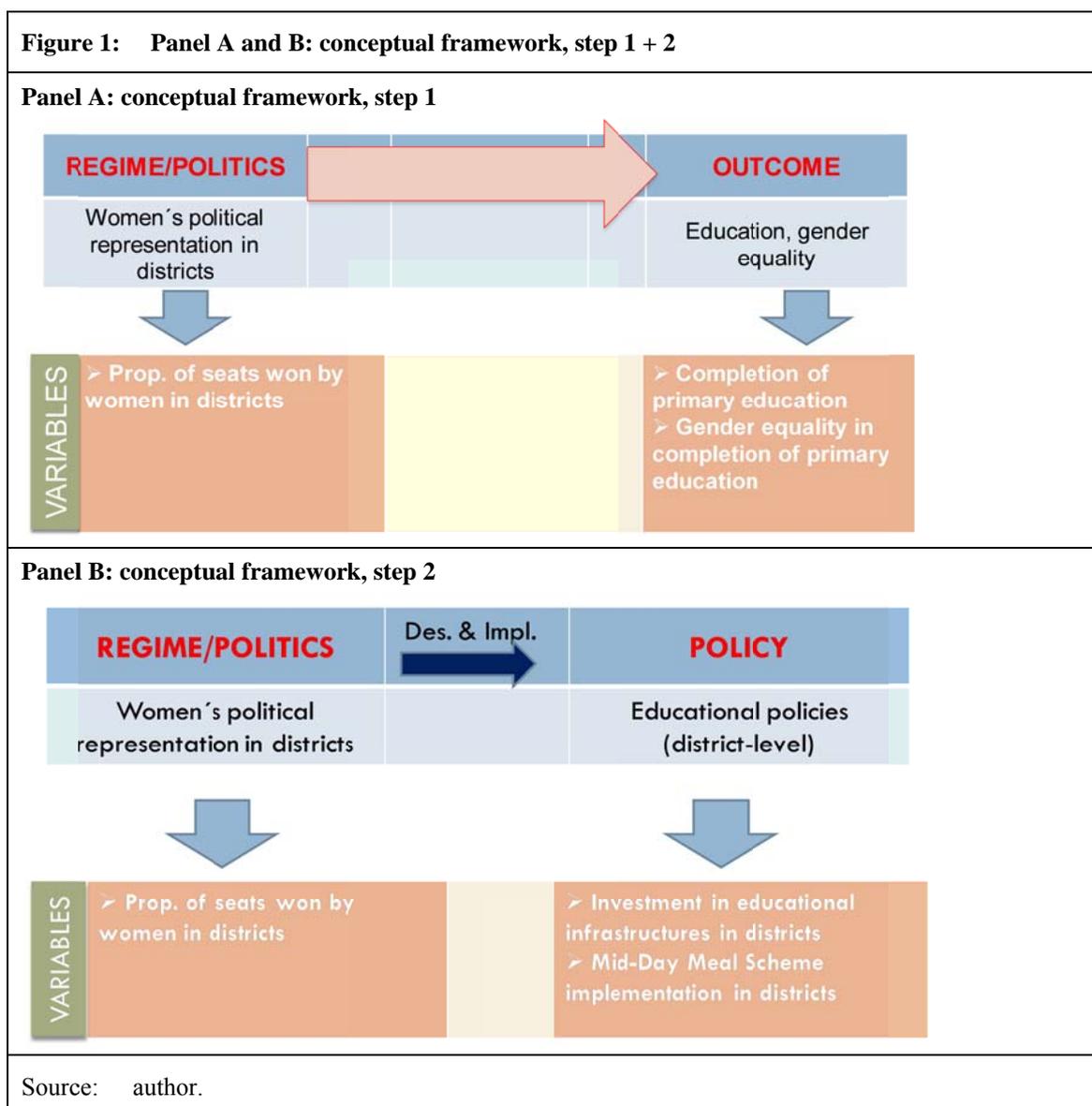
- (a) in practice, some states allocate very limited funds and responsibilities to GPs (Planning Commission 2011);
- (b) reservation is not always random (Nilekani 2010);
- (c) the reservation of seats in GPs creates a strong selection bias, as women leaders have less political experience and commitment, and a lower standard of education. Only a small number of papers published to date have contained good data that take account of these factors;
- (d) a *pradhan* does not always wield any genuine power in a GP council (there is no power of veto, for instance).

District politics have not been explored in depth so far. Candidates for the state assembly stand for election in single-member electoral constituencies. Unlike GP elections, there is no reservation of seats in state elections. Elected politicians are awarded a seat in the state assembly and have an important executive role in the district in which their constituency is located. Their tasks include managing sectors like education and welfare.

There are between one and 37 electoral constituencies in every district. For example, in the 1996 elections in the state of Uttar Pradesh, two of the ten constituencies in the district of Aligarh were won by women. In other words, women's political representation in this district may be quantified at 20%.

The conceptual framework underlying the study is shown in Figure 1. In the first, core stage, we analysed the effect of women's political representation on the probability of people completing primary education. We also investigated whether this effect is gender-differentiated (see panel A). In the second stage, we examined a number of channels through which women's political representation is supposed to influence the outcomes in which we are interested (panel B). Given the data constraints, we decided to look at two main channels, i.e. the presence of school buildings and the coverage of the mid-day meal scheme (MDM). The latter is the world's largest school feeding programme. It has a twofold object: raising school attendance and improving the nutrition of primary schoolchildren in government, local-body and government-aided schools. The programme was recently extended to cover children in alternative schools and schools funded by educational guarantee schemes.

District politicians play a key role in managing welfare programmes such as the MDM. A series of studies has already demonstrated that this programme has a positive effect on school attendance and completion (Drèze / Goyal 2003; Jayaramany / Simroth 2011; Singh et al. forthcoming), especially in relation to girls (Afridi 2011). The studies did not generate any conclusive findings on children's learning abilities.



As far as politicians are concerned, this study regards gender as being an important aspect, together with other identity-related factors such as membership of a caste, religious group or party. Our hypothesis is that women attach a higher value to education (and primary education in particular) than men do. In consequence, districts with more female politicians will invest more in this sector and pay more attention to a programme like the MDM.

Unlike other scholars, we do not treat women as a homogenous interest group that seeks to maximise its utility, i.e. to improve female-sensitive sectors such as education. We do not argue that education is universally more important for women than for men, as this would imply that the nature of the gender difference is 'biological' or 'due to nature'. If the gender of a political leader matters for policy-making, this is due to the 'social' positioning of women. Women in India lead very different lives from those led by men. As the main carers for children, they know better and care more about children's well-being (including their education). As they are often marginalised, they might care more about education as a tool for emancipation, as well as about the relative position of vulnerable groups such as other women, girls, members of SCs, STs or other backward castes. As the nature of these differences is not biological, this assumption might easily

not work in a different context from India, where culture, family structures, law and social norms are different.

Finally, factors other than the commitment to and investment in education may affect the intensity and even the direction of the relationship between women's political representation and education. Good examples would be women's capacity to implement adequate educational policies and their effective ability to express themselves in a district political environment dominated by men. The former is a serious problem in many GPs, as reservation has often pushed inexperienced women to stand for election (and win) in female-reserved villages. In our case, women run in fully competitive state elections, so there is no reason to expect a substantial gender difference in the ability to implement educational policies or programmes.

## 4 Data and methods

### 4.1 Data

This paper combines data from two main sources. The first is the recently released 2011/2012 National Sample Survey Office (NSSO) 'survey on employment and unemployment' conducted by the Ministry of Statistics of the Government of India. This nationally representative household survey contains basic information on people, such as age, gender and marital status, as well as a section specifically about people's general and technical education. We restricted our sample to individuals aged 14 or older, assuming that it would be 'normal' to have completed primary school by that age. Children are supposed to start primary school at the age of six. Depending on the state, primary education lasts for either four or five years. Accounting for some late starts and for some resits of one or two years, we decided to set the threshold at the age of 14.

The second data source is the database of political variables provided by Clots-Figueras (2012).<sup>7</sup> The author collected extensive information on election results in each constituency, from the statistical reports published by the Election Commissions of India for the 16 biggest states. Elections are held regularly in each constituency, resulting in one person winning the relevant seat in the state assembly. These data were then aggregated to create district-level indicators, such as the proportion of seats won by women in a district. Since Clots-Figueras' database only covers the 1967–2001 period, we extended it to the years 2002 and 2003.

We then merged the two data sets using two identifiers, i.e. the district code<sup>8</sup> and the year in which the individual started primary education, i.e. when he or she was six years old. Our unit of analysis is therefore the individual. His or her characteristics are linked to the political data for the district in which he or she lived at the age of six.<sup>9</sup> In this way, we can

---

7 The database is available at: <http://www.aeaweb.org/articles.php?doi=10.1257/app.4.1.212>.

8 Creating district codes to combine the two data sets took a lot of work as the district boundaries changed over time, especially in the 1991–2009 period.

9 Unfortunately, the 68th round of the NSSO survey does not contain information on migration. For this reason, we were not able to restrict the sample to people who did not migrate to a different district. However, the evidence points to a limited degree of migration between districts in the period under review (Topalova 2005; Munshi / Rosenzweig 2005). Other studies make the same assumption (e.g. Edmonds et al. 2010).

see whether district-level political factors influence (with some lags) the likelihood of people who have supposedly just started first grade, completing primary education.

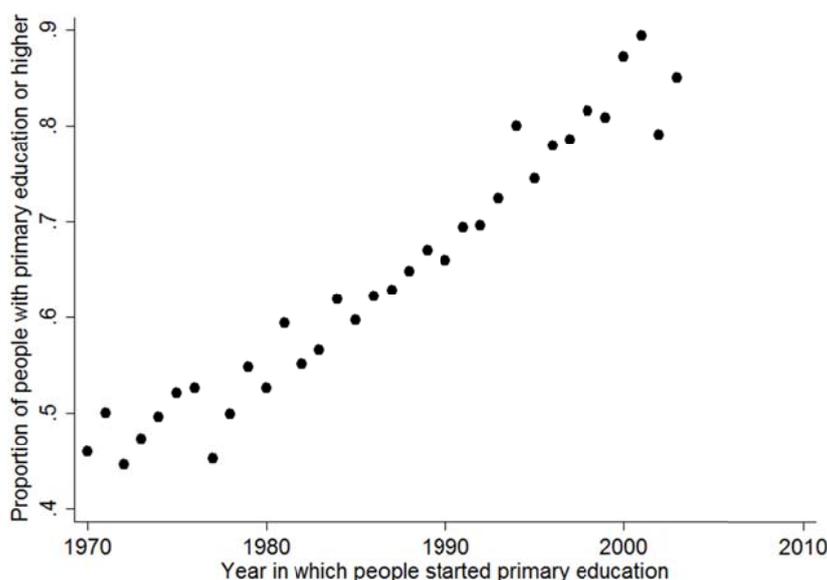
Finally, in order to explore the potential channels through which the relationship between women’s political agency and educational outcomes operates, we merged the NSSO database with three other small databases we constructed. The first database includes census data and concerns the availability of schools in villages in the district in certain years, i.e. 1971, 1981, 1991, and 2001. The second database is taken from the Centre for Monitoring Indian Economy (CMIE) and includes information on the number of schools per 100,000 inhabitants. This information has been collected every five years since 1980.

The third database contains data on the beneficiaries of the Mid-Day Meal scheme during a brief period, i.e. between 1999 and 2003. While the time frame is short, this is a good period as the MDM scheme was officially implemented at national level in 1995, and many states did not join the scheme until 2002, when the Supreme Court made it mandatory throughout the country. We identified both inter-state and inter-district differences in this period. This applied, for example, to states such as Tamil Nadu, where the programme had already been in place since 1982 and it served as a pilot for national implementation, as well as states like Madhya Pradesh, where it was not launched until 2004. We also noted temporal changes in the degree of coverage.

## 4.2 Variables

The dependent variable of the main specification is a dummy variable indicating whether the individual in question has completed primary education. Table 1 shows the descriptive statistics for all variables: although about 73% of people have completed primary education, there is considerable variability in time and across districts. There is a clear positive trend in primary school completion in 1970–2003 (see Figure 2), in line with the aggregate figures reported by the Ministry of Education.

**Figure 2: Trends in probability of primary schoolchildren completing primary education**



Source: Our calculations based on NSSO data

<b>Table 1: Descriptive statistics</b>				
	<b>Mean</b>	<b>SD</b>	<b>Observations</b>	<b>Source</b>
<b>Individual variables</b>				
Primary education or higher	0.73	0.44	96042	NSSO
Female	0.50	0.50	96042	NSSO
Urban	0.39	0.49	96042	NSSO
Scheduled Caste	0.18	0.38	96042	NSSO
Scheduled Tribe	0.07	0.25	96042	NSSO
Age	30.02	9.36	96042	NSSO
Marital status	1.73	0.51	96042	NSSO
Hindu	0.81	0.40	96042	NSSO
Islamic	0.13	0.34	96042	NSSO
Christian	0.02	0.13	96042	NSSO
Other religions	0.05	0.21	96042	NSSO
<b>District variables (main models)</b>				
Proportion of seats won by women: previous three-year average	0.04	0.07	1687*	Pol. database
Proportion of seats won by women in close male-female contests (2.5% margin): previous three-year average	0.00	0.02	1687	Pol. database
Proportion of seats won in close male-female contests (2.5% margin)	0.01	0.03	1687	Pol. database
Proportion of seats reserved for SCs/STs	0.25	0.13	1687	Pol. database
Proportion of districts with at least one seat won by a woman	0.31	0.46	1687	Pol. database
Female proportion of population	0.48	0.01	1687	Census
Literacy rate: male (previous 3-year average)	0.53	0.16	1687	Census
<b>District variables (channels)</b>				
Proportion of villages with one primary school	0.76	0.19	1101	CENSUS
Proportion of villages with one middle school	0.24	0.21	1067	CENSUS
Primary schools per 100,000 inhabitants	76.90	34.06	850	CMIE
Middle & high schools per 100,000 inhabitants	18.35	12.03	726	CMIE
Mean number of MDMs per month (children aged 6–10)	1.09	3.11	828	NSSO
Percentage of children aged 6–10 having three MDMs per week	4.87	15.40	828	NSSO
Percentage of children aged 6–10 having five MDMs per week	2.02	9.11	828	NSSO
*The descriptive statistics for these district variables were calculated only for election years.				

Other individual-level covariates include sex and religion, whether the individual in question lives in an urban or rural area,<sup>10</sup> and whether he or she belongs to a Scheduled Caste (SC) or a Scheduled Tribe (ST).<sup>11</sup>

The central district-level variable is the female share of seats, calculated as a three-year average. At a detailed level, we connected information on each individual's completion of primary education with information on the political structure of the district in the three years before he or she started school. Our assumption is that the local political structure may affect educational achievements through investment choices, which means that it is a lagged effect. Moreover, using an average results in a more stable indicator. While the present paper presents only those findings that were obtained with this particular indicator, we also tried a five-year measure, which yielded similar results. On average, women's representation is very low, at nearly 4%. The standard deviation is high, suggesting large differences across districts.

There could be other district determinants of primary education completion. For this reason, we controlled for the female proportion of the population and for male and female literacy rates. As Table 1 makes clear, the male literacy rate (53%) is almost double the female literacy rate (28%). These data are taken from the Indian census and have been interpolated for the period between two censuses.

To analyse the channels through which women's representation affects education, we used:

- (a) four variables related to school infrastructures. We obtained data from the national census on the proportion of villages with one primary school and the proportion of villages with one middle school in the district. Data on the number of primary schools and the number of middle or high schools per 100,000 inhabitants were obtained from the CMIE.
- (b) three different indicators of MDM coverage, namely the mean number of free meals taken by 6-10 year-old children<sup>12</sup> in school and the percentage of the latter taking at least three or five meals a week.<sup>13</sup> These figures were calculated by aggregating data from NSSO surveys at district level. Nearly 4.9% of school-age children took at least three meals a week, with 2% taking five meals per week. However, the mean monthly number of meals is very low. This is because the scheme was not adopted in many districts, particularly during the first few years.

---

10 We do not have data on rural-urban migration, so we need to assume there is no migration. Topalova's analysis (2005) suggests that this is a minor problem.

11 Scheduled Castes and Scheduled Tribes are communities that used in the past to suffer from social and economic deprivation due to discriminatory practices. They are protected under articles 341 and 342 of the Indian Constitution.

12 Unfortunately, we do not know whether children are enrolled in school, which means that this indicator underestimates MDM coverage. However, primary school dropout rates are low.

13 The question in the NSSO surveys refers to 'free school meals' in general and not specifically to the MDM scheme. While in some cases children were entitled to school meals under a local programme, in the vast majority of cases during 1999–2003, these were provided under the official MDM scheme.

### 4.3 Estimation strategy

The correlation between district characteristics, the likely presence of female politicians, and educational outcomes is one of the main concerns of our econometric analysis. More progressive districts are more likely to register relatively high levels of female political representation and educational attainments at the same time. Moreover, if the electorate believe that women will invest more in education and they would like to see more investment in education, they will vote for women. In both cases, we encounter a problem known in econometrics as an ‘omitted variables bias’, which makes the standard ‘ordinary least squares’ (OLS) or probit/logit estimates biased.

In order to remedy this problem, we examined the recent literature on electoral models and employed instrumental variable regression. In other words, the proportion of women’s seats in the district was instrumented by the proportion of women’s seats won in close contests with men (Lee 2008; Rehavi 2007; Clots-Figueras 2012; Behlotra / Clots-Figueras 2011). Close contests are defined as elections in which a man beats a woman (as the runner-up) or *vice versa* by a relatively narrow margin, set here at 2.5%.<sup>14</sup> The hypothesis is that, if there is a narrow margin of victory, both women and men can win. The result of the election will depend more on random factors. In other words, a female victory in a close contest cannot be interpreted as an indicator of a female-friendly electorate.

However, the incidence of a close male-female contest is not random. In accordance with the estimation strategy used in other studies (e.g. Behlotra / Clots-Figueras 2011; Clots-Figueras 2012) in both the first and second stages, we controlled for the existence of close male-female contests in the district. The descriptive statistics of these two variables are reported in Table 1. Section 5 presents all the tests used to verify the validity of the instrumental variable.

The results are presented both with and without district control variables, for the whole sample, and separately for urban and rural areas given the substantial differences between the two areas in terms of infrastructure, socio-economic conditions and lifestyles. District-fixed effects were used to account for time-invariant district-specific factors, while cohort-fixed effects were used to account for time-specific unobservable factors.

## 5 Findings

### 5.1 From politics to educational outcomes

Is a larger proportion of female politicians associated with better educational performance? The results obtained by using the different models are shown in Table 2.

For comparative reasons, the (biased) OLS estimates are reported in the first column,<sup>15</sup> while all the subsequent estimates are obtained with an IV approach. As expected, the

---

14 This choice is motivated as follows: the narrower the margin, the more reliable is the hypothesis of a random electoral outcome. As only those indicators with a 2.5% or 3.5% margin passed all the instrumental variable tests, we opted for the first option.

15 Given the binary nature of the dependent variable, we should use either probit or logit models. However, given that an econometric routine for instrumental variable probit regressions does not exist yet, it is better to

coefficient of the endogenous variable is lower in the OLS model. Moreover, all the statistical tests (Table 3) show that the IV approach used in this paper works well: the proportion of seats won by women in close male-female contests (our IV) is highly correlated with women's political representation (our endogenous variable; see Shea partial R-squared). Moreover, the IV is not weak, as confirmed by the Anderson-Rubin Wald tests. For this reason, we interpreted the IV estimates only.

Model 2 shown in Table 2 includes individual controls as well as district-fixed and cohort-fixed effects. Women's political agency has a clear positive influence on the likelihood of children completing primary education, though the coefficient is significant only at the 0.18 level in this specification.

<b>Table 2: Effect of women's political representation on primary education completion</b>			
	(1)	(2)	(3)
	OLS	IV	IV with district controls
SC or ST	-0.166 <sup>***</sup> (0.011)	-0.165 <sup>***</sup> (0.011)	-0.165 <sup>***</sup> (0.011)
Female	-0.165 <sup>***</sup> (0.007)	-0.165 <sup>***</sup> (0.007)	-0.165 <sup>***</sup> (0.007)
Urban	0.166 <sup>***</sup> (0.009)	0.165 <sup>***</sup> (0.009)	0.165 <sup>***</sup> (0.009)
Hindu	-0.118 <sup>***</sup> (0.018)	-0.118 <sup>***</sup> (0.018)	-0.118 <sup>***</sup> (0.018)
Islamic	-0.295 <sup>***</sup> (0.024)	-0.295 <sup>***</sup> (0.024)	-0.295 <sup>***</sup> (0.024)
Christian	-0.092 <sup>***</sup> (0.024)	-0.088 <sup>**</sup> (0.025)	-0.089 <sup>***</sup> (0.024)
<b>Proportion of seats won by women</b>	<b>-0.026</b> <b>(0.060)</b>	<b>0.465</b> <b>(0.342)</b>	<b>0.588*</b> <b>(0.359)</b>
Proportion of seats won in close male-female contests	–	-0.381* (0.197)	-0.455 <sup>**</sup> (0.217)
Literacy rate: male	–	–	0.874 <sup>***</sup> (0.214)
Literacy rate: female	–	–	-0.653 <sup>***</sup> (0.158)
Female proportion of population	–	–	-1.181 (1.694)
<i>N</i>	96037	96037	96037
adj. <i>R</i> <sup>2</sup>	0.249	0.247	0.247
Standard errors clustered at district level in parentheses. All estimates were made with cohort-fixed and district-fixed effects. * <i>p</i> < 0.10    ** <i>p</i> < 0.05    *** <i>p</i> < 0.01			

compare standard IV results with OLS results. We ran probit regressions and obtained almost identical coefficient and significance for women's representation (the results have been omitted for reasons of space).

<b>Table 3: Tests for the validity of the instrumental variables</b>		
<b>Test</b>	<b>Statistics</b>	<b>P value</b>
<b>Correlation IV – endogenous variable</b>		
Shea Partial R2 (from the first stage)	11.09	0.001
<b>Under-identification tests</b>		
Kleibergen-Paap rk LM statistic	Chi-sq(1)=10.57	0.001
Kleibergen-Paap rk Wald statistic	Chi-sq(1)=11.17	0.001
<b>Weak identification test</b>		
Anderson-Rubin Wald test	F(1,218)= 2.20	0.140
IV = proportion of seats won by women in close male-female contests. Endogenous variable = proportion of seats won by women.		

In the third model, female and male literacy rates and the female proportion of the population are added to account for other possible district-level characteristics that may influence educational outcomes. The effect of the proportion of district seats won by women is now significant, at the standard 0.10 level. This means that children living in districts with a higher female representation are significantly more likely to complete primary education. The size of the coefficient implies that, by increasing women's political representation at district level by 10%, the probability of an individual completing primary education will rise by almost 5.9%.<sup>16</sup> These results differ from those obtained by Clots-Figueras (2012) using older data, as she did not find a significant effect on the whole Indian sample.

India is a very large and heterogeneous country. In particular, there are substantial differences between rural and urban areas in terms of infrastructure and living standards. Only in recent years have the government and the private sector tried to improve the state of the infrastructure in rural areas, narrowing the gap with urban areas in certain respects. This change did not occur during the period under review. For the above reasons, we performed separate estimates for the two areas (see Table 4).

The effect of women's political agency is positive in both cases. However, in contrast with Clots-Figueras' (2012) results,<sup>17</sup> we found a larger, though not statistically significant, effect in rural areas. This might be due to lower average levels of education in the latter areas.

The above results seem to provide evidence of the validity of the citizen-candidate model of political economy, given that a politician's identity plays an important role in relation to education. Moreover, the findings appear to confirm that women pay more attention to education than men. We then decided to test another hypothesis from the literature: are women more interested in *girls'* education? In order to answer this question, we disaggregated the analysis of the determinants of primary school completion by gender.

16 Due to further potential problems of endogeneity, we decided not to include the proportion of seats allocated to SC and ST members in the models. The magnitude and significance of women's political representation does not change in our estimates, suggesting that we are really analysing the effect of politicians' gender, i.e. that we go beyond the caste effect.

17 Note that Clots-Figueras used the 1999–2000 NSSO data set, which included information on rural-urban migration. The 2011–2012 dataset used in this paper does not contain this information. As already mentioned, however, this type of migration is of limited intensity.

<b>Table 4: Effect of women's political representation on primary education completion: disaggregated results</b>				
	(1)	(2)	(3)	(4)
	IV Urban	IV Rural	IV Female	IV Male
SC or ST	-0.143*** (0.013)	-0.168*** (0.014)	-0.190*** (0.012)	-0.141*** (0.012)
Female	-0.101*** (0.007)	-0.191*** (0.008)	–	–
Urban	–	–	0.208*** (0.011)	0.124*** (0.008)
Hindu	-0.096*** (0.018)	-0.101*** (0.033)	-0.149*** (0.023)	-0.087*** (0.018)
Islamic	-0.291*** (0.032)	-0.264*** (0.039)	-0.334*** (0.031)	-0.261*** (0.024)
Christian	-0.073*** (0.028)	-0.082** (0.040)	-0.103*** (0.030)	-0.080*** (0.028)
<b>Proportion of seats won by women</b>	<b>0.258</b> <b>(0.319)</b>	<b>0.595</b> <b>(0.418)</b>	<b>1.081*</b> <b>(0.632)</b>	<b>0.077</b> <b>(0.306)</b>
Proportion of seats won in close male-female contests	-0.019 (0.205)	-0.587** (0.263)	-0.630 (0.412)	-0.310* (0.178)
Literacy rate: male	0.315 (0.243)	0.763*** (0.221)	1.215*** (0.277)	0.524** (0.219)
Literacy rate: female	-0.514** (0.199)	-0.413** (0.178)	-0.511** (0.201)	-0.784*** (0.171)
Female proportion of population	-2.779 (2.226)	0.767 (2.069)	-2.405 (2.515)	-0.320 (1.761)
<i>N</i>	37818	58219	47802	48235
adj. <i>R</i> <sup>2</sup>	0.173	0.256	0.284	0.179

Standard errors clustered at district level are given in parentheses. All estimates were made with cohort-fixed and district-fixed effects.  
 \*  $p < 0.10$     \*\*  $p < 0.05$     \*\*\*  $p < 0.01$

Columns (3) and (4) in Table 4 report the results for the female and male sample respectively. The difference is striking: female representation has a positive and significant effect on the probability of girls completing primary education, while the effect is largely insignificant in relation to boys. Given the magnitude of the coefficient, we may conclude that, on average, a 10% increase in female representation leads to an almost 11% greater likelihood of girls completing the full cycle of primary education. This seems to suggest that politicians do have a special concern for children of the same gender.

However, further qualitative research is needed to provide a more conclusive answer. This is because girls also happen to have a lower average standard of education. In fact, it is possible that girls' education rises as a natural, gender-indifferent effort to raise educational levels. In order to verify this, we would need to compare our results with a hypothetical curve indicating the 'natural' increase in girls' education. However, it is extremely difficult to draw this curve and, to the best of our knowledge, no such attempt has yet been made. Another interpretation is that female politicians are more concerned with the most vulnerable segments of the society, which in this case happen to be girls.

## 5.2 From politics to educational inputs

The previous subsection revealed a positive correlation between the number of female politicians and educational outcomes. But how does this relationship operate? What are the channels? The following paragraphs analyse two sets of pathways: school construction and MDM coverage.

The first part of Table 5 shows the estimated effect of women's political representation on the proportion of villages with a school in the district. The coefficients are always positive, but far larger for primary schools. This would suggest that women politicians are particularly interested in very basic education. However, the effects are insignificant, at 0.10 level.

The models with the number of primary and secondary/high schools per 100,000 inhabitants as dependent variables produce similar results. The proportion of district seats won by women is not a significant explanatory variable: in the latter case, the coefficient is actually negative. These results are highly reliable as the adjusted R-squared is above 0.8 in all models.

<b>Table 5: Effect of women's political representation on educational infrastructure</b>				
	Proportion of villages with a school in the district <sup>a</sup>		Schools per 100,00 residents <sup>b</sup>	
	(1)	(2)	(3)	(4)
	Primary	Middle	Primary	Secondary/High
<b>Proportion of seats won by women</b>	<b>0.467</b>	<b>0.151</b>	<b>25.428</b>	<b>-11.202</b>
	<b>(0.433)</b>	<b>(0.344)</b>	<b>(60.415)</b>	<b>(8.507)</b>
Proportion of seats won in close male-female contests	0.001	-0.044	-20.501	6.126
	(0.177)	(0.155)	(36.505)	(4.433)
District-level control variables	X	X	X	X
District-fixed effects	X	X	X	X
Cohort-fixed effects	X	X	X	X
<i>N</i>	889	859	850	726
adj. <i>R</i> <sup>2</sup>	0.854	0.892	0.822	0.955
Standard errors clustered at district level are given in parentheses.				
* <i>p</i> < 0.10    ** <i>p</i> < 0.05    *** <i>p</i> < 0.01				
Source: Indian census, <sup>a</sup> CMIE <sup>b</sup>				

<b>Table 6: Effect of women's political representation on Mid-Day Meal (MDM) scheme coverage</b>			
	(1)	(2)	(3)
	Mean MDM	Three MDMs per week	Five MDMs per week
<b>Proportion of seats won by women</b>	<b>2.005</b> <b>(8.757)</b>	<b>28.785</b> <b>(52.093)</b>	<b>-5.573</b> <b>(21.769)</b>
Proportion of seats won in close male-female contests	-9.209* (4.829)	-15.142 (26.600)	-24.401** (11.366)
District controls	X	X	X
District-fixed effects	X	X	X
Cohort-fixed effects	X	X	X
<i>N</i>	828	828	828
adj. <i>R</i> <sup>2</sup>	0.468	0.358	0.092
Standard errors clustered at district level are given in parentheses. * <i>p</i> < 0.10    ** <i>p</i> < 0.05    *** <i>p</i> < 0.01			

The MDM scheme is a highly important social welfare programme in India. For this reason, we would expect politicians to pay more attention to education, nutrition and the well-being of children in general. By extension, we would expect them to invest more in the programme and manage it better. As the MDM scheme is relatively new and as efforts to make the budget allocation more transparent were not made until recently, the only data we have relate to the coverage of the scheme. Our analysis shows that there is no correlation between female political representation and MDM coverage: all the coefficients are highly insignificant (see Table 6).

In conclusion, we investigated a number of possible channels and found that none of them seems to be relevant. We need to acknowledge, however, that our analysis has some big weaknesses:

1. There are other important channels, such as those related to the use of the budget allocated to primary education and to the quality of schools.
2. The figures, in particular those for the MDM scheme, cover only a limited number of years, thus reducing potential variability.
3. Decisions taken by state assemblies are more important than those taken at district level in terms of the budget allocated to different aspects of education, including school buildings.
4. States also decide whether and when to join the MDM scheme. There is thus limited scope for district politicians to affect MDM coverage. District politicians play a more important role in the management of the scheme. For example, it would be interesting to see whether districts with a larger number of female politicians stick more closely to the national guidelines for the MDM scheme.<sup>18</sup> These include a more participatory approach (involving parent-teacher associations), a more transparent management of funds with tight external supervision, and respecting the nutritional content of the meals. However, no data are currently available on these practices.

18 All the guidelines for the MDM scheme were drawn up by the Ministry of Human Resource Development, see: <http://mdm.nic.in/>.

## 6 Conclusions and policy recommendations

This paper has a threefold objective:

- (1) to analyse whether politicians' gender has a bearing on the educational achievements of the residents of the districts in which they were elected;
- (2) to understand whether politicians are more sensitive to the needs of people of the same gender;
- (3) to explore the possible channels through which these relationships work.

By employing an instrumental variable approach on a data set obtained by merging individual data with political variables for Indian districts, the paper shows that women's political agency has a substantial effect on the probability of children completing primary education. A 10% increase in women's political representation at district level can produce a rise of almost 5.9% in the likelihood of an individual completing the full cycle of primary education. This finding seems to corroborate the validity of the citizen-candidate model. In other words, the leader's identity, and in particular his or her gender, matters.

A disaggregated analysis reveals that women's political agency increases the educational achievements of girls significantly more than that of boys. Given that girls are educated to a lower level than boys throughout India, we cannot firmly conclude that politicians favour people of the same gender. A qualitative study would need to be performed in order to explore this question in depth.

Finally, we investigated two possible macro-channels through which women's political roles might affect educational outcomes, i.e. the availability of school buildings and the coverage of the MDM scheme. Our results show that neither helps to explain the relationship. This is due in part to the poor quality of the available data. We hope that better data, especially on the management of the MDM scheme, will be produced at district level in the future.

This paper is part of a broader debate on the effects of women's political representation. Section 2 reviews the current literature in India, which shows that female political agency is associated with lower levels of poverty in several dimensions, though the evidence is not always clear. Moreover, one could argue that female political agency is beneficial to democracy as it forms the basis for a more pluralistic political life, given that more 'voices' can be heard. As Sen argued (2005, 240), an increase in women's (political) agency boosts 'the freedom to question established values and traditional priorities'. This paper shows that it can also be instrumentally important in raising educational levels in a country characterised by big educational inequalities. Moreover, as education is central to empowerment, an increase in female political agency can enhance women's empowerment and reduce gender disparities.

This means that multiple policy objectives could be reached with one policy tool. However, caution needs to be exercised in adopting quick fixes such as gender quotas. The 20-year experience with female political reservation in Indian *gram panchayats* and the experience of neighbouring countries like Bangladesh (Panday 2008) show that enhancing women's *substantial* role in the political arena cannot simply be achieved by

waving the magic wand of gender quotas. Female political reservation is an affirmative action that can help women to be heard, but it has to be integrated with multiple interventions aimed at diminishing gender gaps in terms of education, health and access to land and other assets. Otherwise, there is a serious risk that inexperienced women who have little education and are not economically independent will occupy seats in state assemblies, where they will be susceptible to easy manipulation by male politicians. Another risk is that only women from economic and political elites will be elected, thus exacerbating the discrimination suffered by women from the lowest classes. All these issues are currently under debate in the country. The Women's Reservation Bill, which is designed to reserve one third of the seats in the Lower House (*Lok Sabha*) and the state assemblies for women for a period of 15 years, was approved in the Upper House (*Rajya Sabha*) in March 2010 and is now pending in the Lower House.



## Bibliography

- Afridi, F. (2011): The impact of school meals on school participation: evidence from rural India, in: *The Journal of Development Studies* 47 (11), 1636–1656
- / V. Iversen / M. R. Sharan (2013): Women political leaders, corruption and learning: evidence from a large public program in India (IZA Discussion Papers 7212); online: [http://www.iza.org/en/webcontent/publications/papers/viewAbstract?dp\\_id=7212](http://www.iza.org/en/webcontent/publications/papers/viewAbstract?dp_id=7212) (accessed 13 Nov. 2013)
- Ban, R. / V. Rao (2008): Tokenism or agency? : the impact of women's reservations on village democracies in South India, in: *Economic Development and Cultural Change* 56, 501–530
- Bardhan, P. / D. Mookherjee (2006): Pro-poor targeting and accountability of local governments in West Bengal, in: *Journal of Development Economics* 79 (2), 303–327
- /–/ M. Parra Torrado (2010): Impact of political reservations in West Bengal local governments on anti-poverty targeting, in: *Journal of Globalization and Development* 1 (1), 1–38
- Beaman, L. et al. (2010): Powerful women : does exposure reduce bias?, in: *Quarterly Journal of Economics* 124 (4), 1497–1540
- Besley, T. / S. Coate (1997): An economic model of representative democracy, in: *Quarterly Journal of Economics* 112 (11), 85–114
- / R. Pande / V. Rao (2005): Participatory democracy in action: survey evidence from south India, in: *Journal of the European Economic Association* 3 (2–3), 648–657
- Bhalotra, S. R. / I. Clots-Figueras (2011): Health and the political agency of women (IZA Discussion Paper 6216); online: <http://ftp.iza.org/dp6216.pdf> (accessed 13 Nov. 2013)
- Bhavnani, R. R. (2009): Do electoral quotas work after they are withdrawn? : evidence from a natural experiment in India, in: *The American Political Science Review* 103 (1), 23–35
- Binswanger-Mkhize, H. / H. J. Nagarajan / S. K. Singh (2012): The impacts of public spending, private spending and school governance on schooling outcomes in rural India (NCAER Working Papers on Decentralization and Rural Governance in India); online: [http://www.ruralgov-ncaer.org/images/product/doc/2\\_1247121758\\_Schooling.pdf](http://www.ruralgov-ncaer.org/images/product/doc/2_1247121758_Schooling.pdf) (accessed 13 Nov. 2013)
- Burchi, F. / P. De Muro (s.a.): Measuring human development in a high-income country: a conceptual framework for well-being indicators, Forum for Social Economics, forthcoming
- Chattopadhyay, R. / E. Duflo (2004a): Women as policy makers : evidence from a randomized policy experiment in India, in: *Econometrica* 72 (5), 1409–1443
- /– (2004b): Impact of reservation in Panchayati Raj : evidence from a nationwide randomised experiment, in: *Economic and Political Weekly* 39 (9), 979–986
- Chen, L. J. (2008): Female policymaker and educational expenditure: cross-country evidence (Scandinavian Working Papers in Economics 2008:1); online: [http://swopec.hhs.se/sunrpe/abs/sunrpe2008\\_0001.htm](http://swopec.hhs.se/sunrpe/abs/sunrpe2008_0001.htm) (accessed 13 Nov. 2013)
- (2010): Do gender quotas influence women's representation and policies?, in: *The European Journal of Comparative Economics* 7 (1), 13–60
- Clots-Figueras, I. (2011): Women in politics : evidence from the Indian States, in: *Journal of Public Economics* 95 (7–8), 664–690
- (2012): Are female leaders good for education? Evidence from India, in: *American Economic Journal: Applied Economics* 4 (1), 212–244
- Crespo-Cuaresma, J. / K. C. Samir / P. Saure (2012): Gini coefficients of educational attainment: age group specific trends in educational (in)equality: paper presented at the 2012 annual meeting of the Population Association of America, San Francisco; online: <http://paa2012.princeton.edu/papers/121621> (accessed 13 Nov. 2013)

- Deininger, K. et al.* (2011): Does female reservation affect long-term political outcomes? : evidence from rural India, Washington, DC: The World Bank (Policy Research Working Paper 5708)
- Dongre, A.* (2010): Female political leadership and the prevalence of water borne diseases : evidence from a natural experiment in India, Santa Cruz, Calif.: University of California Santa Cruz
- Downs, A.* (1957): An economic theory of democracy, New York: Harper and Row
- Drèze, J. / A. Goyal* (2003): Future of mid-day meals, in: *Economic and Political Weekly* 38 (44), 4673–4683
- Edmonds, E.V. / N. Pavcnik / P. Topalova* (2010): Trade adjustment and human capital investments : evidence from Indian tariff reform, in: *American Economic Journal: Applied Economics* 2 (4), 42–75
- Franceschet, S. / J. M. Piscopo* (2008): Gender quotas and women’s substantive representation : lessons from Argentina, in: *Politics and Gender* 4 (3), 393–425
- Geissel, B. / E. Hust* (2005): Democratic mobilisation through quotas : experiences in India and Germany, in: *Commonwealth and Comparative Politics* 43 (2), 222–244
- Hossain, N. / S. Akhter* (2011): Gender, power and politics in Bangladesh : a baseline study for the Upazila Support Project : report prepared on behalf of the UNDP Bangladesh Local Governance Cluster; online: <http://www.sdc-decentralization.net/document.php?itemID=7650&langID=1> (accessed 19 Nov. 2013)
- Iyer, L. et al.* (2012): The power of political voice : women’s political representation and crime in India, in: *American Economic Journal: Applied Economics* 4 (4), 165–193
- Jafar, K.* (2013): Reservation and women’s political freedom : candidates’ experience from three Gram Panchayats in Kerala, India, in: *Social Change* 43 (1), 79–97
- Jayal, N. G.* (2006): Engendering local democracy : the impact of quotas for women in India’s panchayats, in: *Democratization* 13 (1), 15–35
- Jayaramany, R. / D. Simroth* (2011): The impact of school lunches on primary school enrollment: evidence from India’s Midday Meal scheme (CESIFO Working Paper 3679); online: <http://www.econstor.eu/bitstream/10419/54924/1/682033707.pdf> (accessed 19 Nov. 2013)
- Jha, R. / S. Nag / H. K. Nagarajan* (2011): Political reservations, access to water and welfare outcomes: evidence from Indian villages (ASARC Working Paper 2011/15); online: [https://crawford.anu.edu.au/acde/asarc/pdf/papers/2011/WP2011\\_15.pdf](https://crawford.anu.edu.au/acde/asarc/pdf/papers/2011/WP2011_15.pdf) (accessed 19 Nov. 2013)
- Kumar, S. / N. Prakash* (2012): Political decentralization, women’s reservation and child health outcomes: a case study of rural Bihar (International Growth Centre Working Paper 12/0591); online: <http://www.theigc.org/publications/working-paper/political-decentralization-womens-reservation-and-child-health-outcomes> (accessed 19 Nov. 2013)
- Lee, D. S.* (2008): Randomized experiments from non-random selection in U.S. house elections, in: *Journal of Econometrics* 142 (2), 675–697
- Munshi, K. / M. Rosenzweig* (2005): Why is mobility in India so low? Social insurance, inequality, and growth (BREAD Working Paper 97); online: <http://ipl.econ.duke.edu/bread/papers/working/097.pdf> (accessed 19 Nov. 2013)
- Nardo, M. et al.* (2008): Handbook on constructing composite indicators : methodology and user guide, Paris: OECD, EU Joint Research Centre
- Nilekani, J.* (2010): Reservation for women in Karnataka Gram Panchayats : the implications of non-random reservation and the effect of women leaders; online: <http://www.thaddunning.com/wp-content/uploads/2012/12/Janhavi-Nilekani-Economics-Senior-Essay.pdf> (accessed 19 Nov. 2013)
- Osborne, M. J. / A. Slivinski* (1996): A model of political competition with citizen candidates, in: *Quarterly Journal of Economics* 111 (1), 65–96
- Panday, K. P.* (2008): Representation without participation: quotas for women in Bangladesh, in: *International Political Science Review* 29 (4), 489–512

- Planning Commission of the Government of India* (2011): Mid-term appraisal for eleventh five year plan 2007–2012, New Delhi: Oxford University Press
- Powley, E.* (2006): Rwanda : the impact of women legislators on policy outcomes affecting children and families (UNICEF Background Paper); online: <http://www.unicef.org/sowc07/docs/powley.pdf> (accessed 19 Nov. 2013)
- Raabe, K. / M. Sekher / R. Birner* (2009): The effects of political reservations for women on local governance and rural service provision : survey evidence from Karnataka (IFPRI Discussion Paper 00878); online: <http://www.ifpri.org/sites/default/files/publications/ifpridp00878.pdf> (accessed 19 Nov. 2013)
- Rehavi, M.* (2007): Sex and politics : do female legislators affect state spending?, mimeo
- Sen, A. K.* (1999): Development as freedom, New York: Oxford University Press
- (2005): The argumentative Indian : writings on Indian history, culture and identity, London: Penguin Books
- Sharma, A.* (2003): Women's political participation and leadership in the governance of municipal institutions in an Indian state : paper presented at the International Conference on Women and Politics in Asia, Halmstad, June
- Singh, A. / A. Park / S. Dercon* (s.a.): School meals as a safety net : an evaluation of the Midday Meal scheme in India, in: *Economic Development and Cultural Change*, forthcoming
- Terzi, L.* (2007): The capability to be educated, in: M. Walker / E. Unterhalter (eds.), Amartya Sen's capability approach and social justice in Education, London: Palgrave
- Thomas, S. / S. Welch* (2001): The impact of women in state legislatures : numerical and organizational strength, in: S. J. Carroll (ed.), The impact of women in public office, Bloomington, Ind.: Indiana University Press
- Thomas, V. / Y. Wang / X. Fan* (2001): Measuring education inequality : Gini coefficients of education, Washington, DC: The World Bank (Policy Research Working Paper 2525)
- Topalova, P.* (2005): Factor immobility and regional impact of trade liberalization : evidence on poverty and inequality from India, mimeo
- Vyasalu, P. / V. Vyasalu* (1999): Women in Panchayati Raj : grassroots democracy in India : experience from Malgudi: 4th background paper at the UNDP Meeting on Women and Political Participation: 21st Century Challenges, New Delhi, 24–26 March



## Publications of the German Development Institute

### Studies

- 78 *Reeg, Caroline*: Micro, Small and Medium Enterprise Upgrading in India: learning from success cases, 299 pp., Bonn 2013, ISBN 978-88985-585-5
- 77 *Mahn, Timo*: Country-Level Aid Coordination at the United Nations – Taking the Resident Coordinator System Forward, 146 pp., Bonn 2013, ISBN 978-3-88985-584-8
- 76 *Loewe, Markus et al.*: Which Factors Determine the Upgrading of Small and Medium-Sized Enterprises (SMEs)? The case of Egypt, 288 pp., Bonn 2013, ISBN 978-3-88985-583-1
- 75 *Mallik, Vidyadhar*: Local and Community Governance for Peace and Development in Nepal, 179 pp., Bonn 2013, ISBN 978-3-88985-582-4
- 74 *Brandi, Clara et al.*: Sustainability Certification in the Indonesian Palm Oil Sector: Benefits and challenges for smallholders, 258 pp., Bonn 2013, ISBN 978-3-88985-581-7
- 73 *Klingebiel, Stephan*: Entwicklungszusammenarbeit – eine Einführung, 86 pp., Bonn 2013, ISBN 978-3-88985-580-0

[Price: EUR 10.00; books may be ordered from the DIE or through bookshops.]

### Discussion Papers

- 22/2013 *Mahn, Timo / Pio Wennubst*: A Resolution for a Quiet Revolution: taking the United Nations to sustainable development ‘beyond aid’, 50 pp., Bonn 2013, ISBN 978-3-8895-603-6
- 21/2013 *Hampel-Milagrosa, Aimée / Markus Loewe / Caroline Reeg*: Which Factors Determine the Upgrading of Micro, Small and Medium-Sized Enterprises? Evidence from Egypt, India and the Philippines, 24 pp., Bonn 2013, ISBN 978-3-88985-604-3
- 20/2013 *Schmitz, Birgit*: Macprudential Financial Market Regulation, 38 pp., Bonn 2013, ISBN 978-3-88985-602-9
- 19/2013 *Klingebiel, Stephan*: Multilateral Aid: structural change and donor preferences, 14 p., Bonn 2013, ISBN 978-3-88985-601-2
- 18/2013 *Janus, Heiner / Stephan Klingebiel / Sebastian Paulo*: Beyond Aid: Konzeptionelle Überlegungen zum Wandel der Entwicklungszusammenarbeit, 19 pp., Bonn 2013, ISBN 978-3-88985-600-5
- 17/2013 *Keijzer, Niels*: Unfinished Agenda or Overtaken by Events? Applying aid- and development-effectiveness principles to capacity development support, 65 pp., Bonn 2013, ISBN 978-3-88985-620-3

[Price: EUR 6.00; books may be ordered from the DIE or through bookshops.]

A complete list of publications available from the DIE is available at:

<http://www.die-gdi.de>